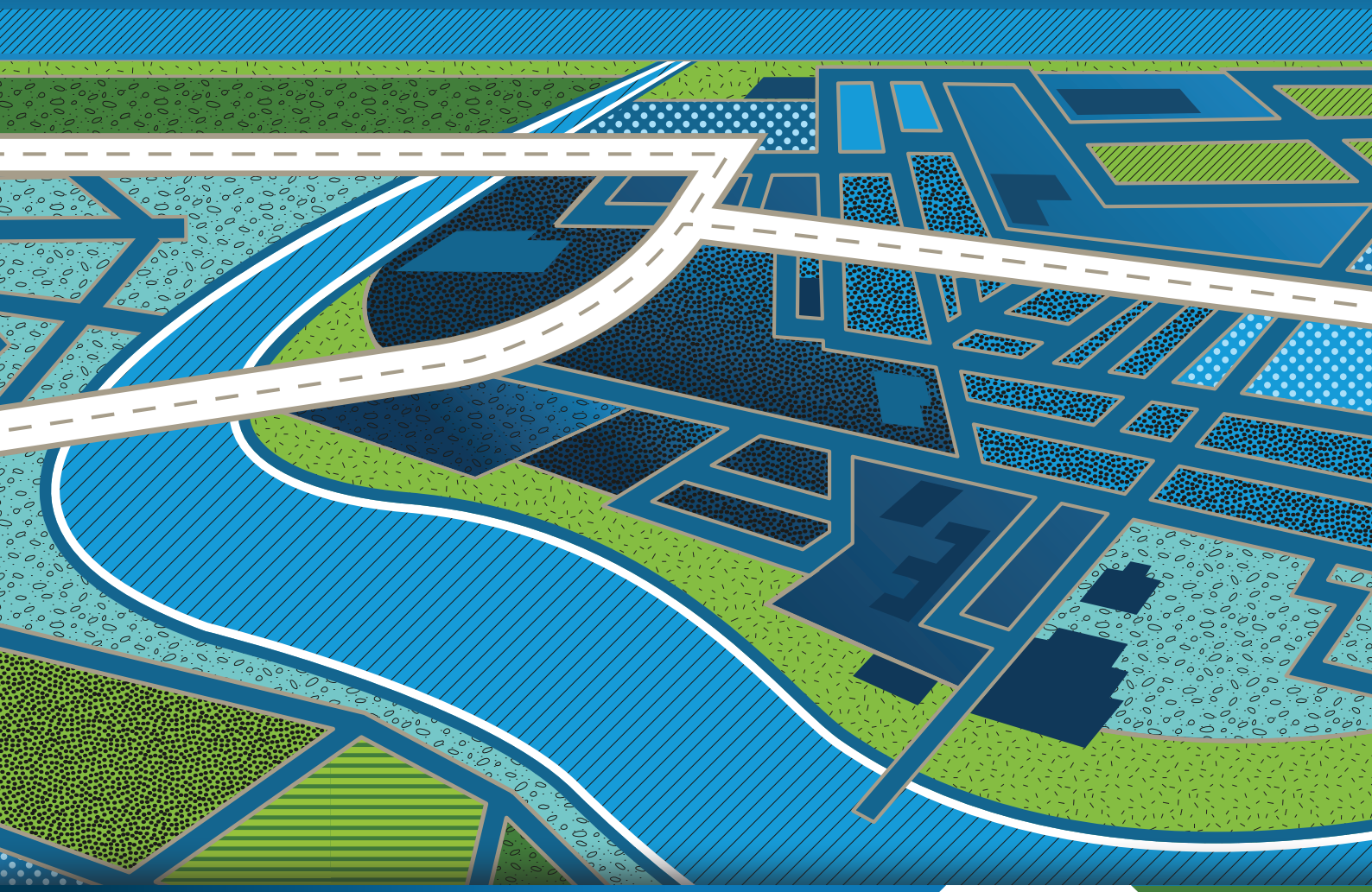

Mackay Region
PLANNING SCHEME
ONE REGION, ONE VISION

Mackay Region Planning Scheme 2017
Version 1.0

Mackay REGIONAL COUNCIL

Citation and commencement

This planning scheme may be cited as Mackay Region Planning Scheme 2017.

A notice was published in the Government Gazette on 30 June 2017 for the planning scheme for the region of Mackay.

The commencement date for the planning scheme was 24 July 2017.

Amendments to the planning scheme are included at Appendix 2.

Community statement

The Mackay region is vibrant, prosperous and diverse. Our region offers liveability, investment opportunity and a unique natural environment to enjoy from the blue water Pioneer River to the national park hinterland and with 31 pristine beaches and over 40 unique communities. We value our environment, our community and our relaxed yet vibrant way of life.

Our community and economic infrastructure supports an active and connected lifestyle across our region. The economic foundation has been built upon servicing the industries of agriculture, tourism, mining and engineering. As a region we aim to facilitate economic growth, attract further investment and deliver strategic planning that creates employment, supports diversity, protects our natural environment and provides opportunities for all in our community.

The Mackay Region Planning Scheme 2017 seeks to give effect to these aspirations and goals.

Editor's note – the community statement is extrinsic material to the planning scheme.

Strategic vision

The strategic vision for the Mackay region is "***a vibrant prosperous lifestyle today – held in trust for tomorrow's generations."***

Editor's note – the strategic vision is extrinsic material to the planning scheme.

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Part 1 About the planning scheme

1.1 Introduction

(1) The Mackay region planning scheme (planning scheme) has been prepared in accordance with the *Sustainable Planning Act 2009* (the Act) as a framework for managing development in a way that advances the purpose of the Act.

(2) In seeking to achieve this purpose, the planning scheme sets out Mackay Regional Council's intention for the future development in the planning scheme area, over the next 20 years.

(3) The planning scheme seeks to advance state and regional strategies, including state planning policies and the Mackay Isaac Whitsunday regional plan, through more detailed local responses, taking into account the local context.

(4) While the planning scheme has been prepared with a 20 year horizon, it will be reviewed periodically in accordance with the Act to ensure that it responds appropriately to the changes of the community at a local, regional and state level.

(5) The planning scheme applies to the planning scheme area of Mackay Regional Council including all premises, roads, internal waterways and tidal areas, and interrelates with the surrounding local government areas illustrated in Figure 1.

Editor's note—State legislation may state that the planning scheme does not apply to certain areas, e.g. strategic port land under the *Transport Infrastructure Act 1994* and Mackay Airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*.

Figure 1 – Local government planning scheme area and context

1.2 Planning scheme components

(1) The planning scheme comprises the following components:

- (a) about the planning scheme
- (b) state planning provisions
- (c) the strategic framework
- (d) the priority infrastructure plan
- (e) tables of assessment
- (f) the following zones:
  - (i) Community facilities zone
  - (ii) Conservation zone
  - (iii) District centre zone
  - (iv) Emerging community zone
    - (A) Alexandra Street precinct (precinct no. EC1)
    - (B) Andergrove lakes precinct (precinct no. EC2)
    - (C) Mirani precinct (precinct no. EC3)
    - (D) Northern Beaches south precinct (precinct no. EC4)
    - (E) Ooralea precinct (precinct no. EC5)
    - (F) Sarina north precinct (precinct no. EC6)
    - (G) Shoal Point–Bucasia precinct (precinct no. EC7)
    - (H) Walkerston precinct (precinct no. EC8)
  - (v) High density residential zone
  - (vi) High impact industry zone
    - (A) Sugar mill precinct (precinct no. HI1)
    - (B) Air quality management (precinct no. HI2)
  - (vii) Industry investigation zone
    - (A) Boundary Road east precinct (precinct no. II1)
    - (B) Cowleys Road precinct (precinct no. II2)
    - (C) Glenella precinct (precinct no. II3)
    - (D) Marian precinct (precinct no. II4)
    - (E) Paget south precinct (precinct no. II5)
    - (F) Sarina precinct (precinct no. II6)
  - (viii) Local centre zone
  - (ix) Low density residential zone
  - (x) Low impact industry zone
  - (xi) Major centre zone
  - (xii) Medium density residential zone
    - (A) Low-medium density precinct (precinct no. MD1)
    - (B) General medium density precinct (precinct no. MD2)
    - (C) Multi-storey medium density precinct (precinct no. MD3)
  - (xiii) Mixed use zone
    - (A) Amenity and convenience precinct (precinct no. MX1)
    - (B) Fringe commercial precinct (precinct no. MX2)
  - (xiv) Neighbourhood centre zone
  - (xv) Open space zone
  - (xvi) Principal centre zone
  - (xvii) Rural zone:
    - (A) Investigation area precinct (precinct no. RU1)
  - (xviii) Rural residential zone

(xix) Special purpose zone
  (A) Future road precinct (precinct no. SP1)
(xx) Specialised centre zone
  (A) Showrooms and hardware precinct (precinct no. SC1)
  (B) Tavern precinct (precinct no. SC2)
(xxi) Sport and recreation zone
(xxii) Tourism area (major) zone
(xxiii) Township zone

(g) the following local plans:
  (i) Mackay city centre local plan:
    (A) City core precinct (precinct no. CC1)
    (B) City mixed use precinct (precinct no. CC2)
    (C) Education mixed use precinct (precinct no. CC3)
    (D) Exhibition / events precinct (precinct no. CC4)
    (E) Civic precinct (precinct no. CC5)
  (ii) Marian central local plan

(h) the following overlays:
  (i) Acid sulfate soils overlay
  (ii) Agricultural land overlay
  (iii) Airport environs overlay
  (iv) Biodiversity overlay
  (v) Bushfire hazard overlay
  (vi) Extractive resources and high impact activities overlay
  (vii) Flood and coastal hazards overlay
  (viii) Heritage and neighbourhood character overlay
  (ix) Landscape character and image corridor overlay
  (x) Landslide hazard overlay
  (xi) Regional infrastructure overlay
  (xii) Residential density overlay (overlay involves map for the purpose of changing the level of assessment only, and therefore no overlay code is provided in Part 8)
  (xiii) Road hierarchy overlay (overlay involves map for information purposes only and therefore no overlay code is provided in Part 8)
  (xiv) Transport noise corridor overlay (overlay involves map for information purposes only and therefore no overlay code is provided in Part 8)

(i) the following development codes:
    (A) statewide codes: Community residence code
    (B) Forestry for wood production code
  (i) Reconfiguring a lot (subdividing one into two lots) and associated operational work code
  (ii) use codes:
    (A) Caretaker's accommodation, dwelling unit and rural workers accommodation code
    (B) Centre activities code
    (C) Child care centre code
    (D) Community activities code
    (E) Dual occupancy compliance assessment code
    (F) Dwelling house code
    (G) Extractive industry code
    (H) Home based business code
    (I) Industry activities code
    (J) Intensive rural activities code

(K) Market and roadside stall code
(L) Multiple dwelling activities code
(M) Outdoor business activities code
(N) Parking station code
(O) Recreation activities code
(P) Sales office code
(Q) Service station and car wash code
(R) Ship-sourced pollutants reception facilities in marinas code
(S) Short term accommodation code
(T) Telecommunications facility code
(U) Tourist park and relocatable home park code

(iii) other development codes:
(A) General development requirements code
(B) Healthy waters code
(C) Reconfiguring a lot code

(j) the following other plans:
(i) land use plans under the Transport Infrastructure Act 1994
(ii) land use plan under the Airport Assets (Restructuring and Disposal) Act 2008
(iii) Priority Development Area under the Economic Development Act 2012

(k) schedules and appendices:
(i) Schedule 1 Definitions
(ii) Schedule 2 Mapping
(iii) Schedule 3 Priority infrastructure plan mapping and support material
(iv) Schedule 4 Notations required under the *Sustainable Planning Act 2009*
(v) Schedule 5 Land designation for community infrastructure
(vi) Schedule 6 Planning scheme policies
(vii) Appendix 1 Index and glossary of abbreviations and acronyms
(viii) Appendix 2 Table of amendments.

(2) The following planning scheme policies support the planning scheme:

(a) Engineering design guidelines – bushfire protection planning scheme policy
(b) Engineering design guidelines – constructed lakes planning scheme policy
(c) Engineering design guidelines – cycleway and pathway design planning scheme policy
(d) Engineering design guidelines – geometric road design planning scheme policy
(e) Engineering design guidelines – healthy waters planning scheme policy
(f) Engineering design guidelines – landscape planning scheme policy
(g) Engineering design guidelines – pavement design planning scheme policy
(h) Engineering design guidelines – quality assurance requirements for design planning scheme policy
(i) Engineering design guidelines – sewerage system design planning scheme policy
(j) Engineering design guidelines – site regrading planning scheme policy
(k) Engineering design guidelines – stormwater drainage design planning scheme policy
(l) Engineering design guidelines – structures / bridge design planning scheme policy
(m) Engineering design guidelines – subsurface drainage design planning scheme policy
(n) Engineering design guidelines – water supply design planning scheme policy
(o) Open space planning scheme policy

1.3 Interpretation

1.3.1 Definitions

(a) A term used in the planning scheme has the meaning assigned to that term by one of the following the Act; or

(b) the definitions in Schedule 1 of the planning scheme; or

(c) the Sustainable Planning Regulation 2009 (the Regulation); or

(d) the *Acts Interpretation Act 1954*; or

(e) the ordinary meaning where that term is not defined in the Act, the Regulation, Schedule 1 of the planning scheme or the *Acts Interpretation Act 1954*.

Note—a term which is defined in more than one of the above listed items, adopts the definition from the highest item in the list (i.e. a definition under item (a) overrides a definition under item (c) for the same term).

(1) In the event a term has been assigned a meaning in more than one of the instruments listed in clause 1.3.1(1), the meaning contained in the instrument highest on the list will prevail.

(2) A reference in the planning scheme to any act includes any regulation or instrument made under it, and where amended or replaced, if the context permits, means the amended or replaced act.

(3) A reference in the planning scheme to a specific resource document or standard, means the latest version of the resource document or standard.

(4) A reference to a part, section, table or schedule is a reference to a part, section, table or schedule of the planning scheme.

1.3.2 Standard drawings, maps, notes, editor's notes and footnotes

(1) Standard drawings contained in codes or schedules are part of the planning scheme.

(2) Maps provide information to support the outcomes and are part of the planning scheme.

(3) Notes are identified by the title 'note' and are part of the planning scheme.

(4) Editor's notes and footnotes are extrinsic material, as per the *Acts Interpretation Act 1954*, are identified by the title 'editor's note' and 'footnote' and are provided to assist in the interpretation of the planning scheme; they do not have the force of law.

Note—this is an example of a note.
Editor's note—this is an example of an editor's note.
Footnote[1]—this is an example of a footnote.

1.3.3 Punctuation

(1) A word followed by ';' or ', and' is considered to be 'and'

(2) A word followed by '; or' means either or both options can apply.

1.3.4 Zones for roads, closed roads, waterways and reclaimed land

(1) The following applies to a road, closed road, waterway or reclaimed land in the planning scheme area:

(a) if adjoined on both sides by land in the same zone—the road, closed road, waterway or reclaimed land is in the same zone as the adjoining land

(b) if adjoined on one side by land in a zone and adjoined on the other side by land in another zone—the road, closed road, waterway or reclaimed land is in the same zone as the adjoining land when measured from a point equidistant from the adjoining boundaries

(c) if the road, closed road, waterway or reclaimed land is adjoined on one side only by land in a zone—the entire waterway or reclaimed land is in the same zone as the adjoining land

(d) if the road, closed road, waterway or reclaimed land is covered by a zone then that zone applies.

Editor's note—the boundaries of the local government area are described by the maps referred to within the Local Government Regulation 2012.

1.4 Categories of development

(1) The categories of development under the Act are:

(a) exempt development

Editor's note—a development permit is not required for exempt development.

(b) self-assessable development

Editor's note—a development permit is not required for self-assessable development.

(c) development requiring compliance assessment

Editor's note—a compliance permit is required for development requiring compliance assessment.

(d) assessable development

Editor's note—a development permit is required for assessable development.

(e) prohibited development.

Editor's note—a development application or a request for compliance assessment cannot be made for prohibited development.

(2) The Act and Regulation prescribe levels of assessment for certain types of development.

(3) The planning scheme also states the level of assessment for development in the planning scheme area in Part 5.

1.5 Hierarchy of assessment criteria

(1) Where there is inconsistency between provisions within the planning scheme, the following rules apply:

(a) the strategic framework prevails over all other components to the extent of the inconsistency;

(b) statewide codes prevail over all other components (other than the strategic framework) to the extent of the inconsistency;

(c) overlays prevail over all other components (other than the strategic framework and statewide codes) to the extent of the inconsistency;

(d) local plan codes prevail over zone codes, use codes and other development codes to the extent of the inconsistency;

(e) zone codes prevail over use codes and other development codes to the extent of the inconsistency;

(f) provisions of Part 10 may override any of the above.

1.6 Building work regulated under the planning scheme

(1) Section 78A of the Act states that a local planning instrument must not include provisions about building work to the extent the building work is regulated under the building assessment provisions unless permitted under the *Building Act 1975*.

(2) The building assessment provisions are listed in section 30 of the *Building Act 1975*.

Editor's note—the building assessment provisions are stated in section 30 of the *Building Act 1975* and are a code for integrated development assessment system for the carrying out of building assessment work or self-assessable work (see also section 31 of the *Building Act 1975*).

(3) This planning scheme, through Part 5, regulates building work in accordance with sections 32 and 33 of the *Building Act 1975*.

Editor's note—the *Building Act 1975* permits planning schemes to:

- regulate, for the Building Code of Australia (BCA) or the Queensland Development Code (QDC), matters prescribed under a regulation under the *Building Act 1975* (section 32). These include variations to provisions contained in part MP 1.1, MP 1.2 and MP 1.3 of the QDC such as heights of buildings related to obstruction and overshadowing, siting and design of buildings to provide visual privacy and adequate sight lines, on-site car parking and outdoor living spaces. It may also regulate other matters such as designating land liable to flooding, designating land as bushfire prone areas and transport noise corridors;
- deal with an aspect of, or matter related or incidental to building work prescribed under a regulation under section 32 of the *Building Act 1975*;
- specify alternative boundary clearances and site cover provisions for Class 1 and 10 structures under section 33 of the *Building Act 1975*.

Refer to Schedule 3 of the Regulation to determine assessable development and the type of assessment.

(4) The building assessment provisions are contained in the following parts of this planning scheme:

- Overlay codes
- Dwelling house code

Editor's note—a decision in relation to building work that is assessable development under the planning scheme can only be issued as a preliminary approval. See section 83(b) of the *Building Act 1975*.

Editor's note—in a development application, the applicant may request preliminary approval for building work. The decision on that development application also be taken to be a referral agency's response under section 271 of the Act, for building work assessable against the *Building Act 1975*.

1.7 Local government administrative matters

There are no administrative matters for this planning scheme.

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Part 2 State planning provisions

2.1 State planning policy

The minister has identified that the state planning policy is integrated in the planning scheme in the following ways:

Aspects of the state planning policy appropriately integrated

- Liveable communities and housing
  - Housing supply and diversity
  - Liveable communities
- Economic growth
  - Agriculture
  - Development and construction
  - Mining and extractive resources
  - Tourism
- Environment and heritage
  - Biodiversity
  - Coastal environment
  - Cultural heritage
  - Water quality
- Safety and resilience to hazards
  - Emissions and hazardous activities
  - Natural hazards, risk and resilience
- Infrastructure
  - Energy and water supply
  - State transport infrastructure
  - Strategic airports and aviation facilities
  - Strategic ports

Aspects of the state planning policy not integrated

Nil

Aspects of the state planning policy not relevant to Mackay Regional Council

Nil

2.2 Regional plan

The minister has identified that the planning scheme, specifically the strategic framework, appropriately advances the Mackay Isaac Whitsunday Regional Plan 2012, as it applies in the planning scheme area.

2.3 Referral agency delegations

Schedule 7 of the Regulation identifies referral agencies for certain aspects of development. The following referral agencies have delegated the following referral agency jurisdictions to Mackay Regional Council:

Table 2.3.1—Delegated referral agency jurisdictions

Column 1 Application involving	Column 2 Referral agency and type	Column 3 Referral jurisdiction
There are no delegated agency referral agency jurisdictions for the planning scheme		

2.4 Standard planning scheme provisions

The minister has identified that the Queensland Planning Provisions Version 4.0 released in January 2016 are appropriately reflected in the planning scheme.

Editor's note—section 53 of the Act states that where a planning scheme is inconsistent with the QPP, as amended from time to time, the QPP prevails to the extent of the inconsistency.

Part 3 Strategic framework

3.1 Preliminary

(1) The strategic framework sets the policy direction for the planning scheme and forms the basis for ensuring appropriate development occurs within the planning scheme area for the life of the planning scheme.

(2) Mapping for the strategic framework is included in Schedule 2.

(3) For the purpose of describing the policy direction for the planning scheme, the strategic framework is structured in the following way:

- (a) the strategic intent;
- (b) the following eight themes that collectively represent the policy intent of the scheme:
  - (i) settlement pattern;
  - (ii) natural environment and regional landscapes;
  - (iii) strong communities;
  - (iv) natural resource management;
  - (v) transport;
  - (vi) infrastructure;
  - (vii) strong economy;
  - (viii) sustainability, climate change and natural hazards;
- (c) the strategic outcome/s sought for development in the planning scheme area for each theme;
- (d) the element/s that refine and further describe the strategic outcomes;
- (e) the specific outcomes sought for each, or a number of, elements; and
- (f) the land use strategies for achieving these outcomes.

(4) Although each theme has its own section, the strategic framework in its entirety represents the policy intent for the planning scheme.

3.2 Strategic intent

3.2.1 Regional strategic vision

The Mackay region is sustainable, vibrant and prosperous as central Queensland's agricultural and mining services hub. Growth and development in the Mackay region is planned sustainably, both economically and environmentally for the collective benefit of landowners, residents and business. Development is planned and sequenced to ensure the efficient provision and use of infrastructure.

The region supports a lifestyle that is connected to its natural areas, tropical climate, diverse and vibrant community and unique urban, rural and coastal locations which extend across the region to Bloomsbury in the north, Eungella in the west, the extended coastline and islands to the east and Koumala in the south.

The diverse regional economy is driven by coal mining in the Bowen Basin, associated industries and resource exports; agricultural production with the focus on cane production for sugar, bio-fuels, and electricity; tourism development; the supply of household goods and retail activity; and a growing services sector and marine related activities. Sustainable rural industries contribute to the regional economy, capitalise on existing competitive advantages, respond to technological advances and adapt to climate variability. The Pioneer River and Plane Creek basins serve as the region's key agricultural production areas. Tourism development capitalises on the region's unique natural areas, inland forests, rural landscapes, coastal areas and islands.

The healthy natural environment supports the biodiversity and ecosystem services that underpin sustainable development in the Mackay Region. Sustainable growth management protects natural areas and continually assesses the demands and impacts of growth to maintain a resilient natural environment for future generations. Development that facilitates the appreciation, presentation and conservation of the land's natural condition and cultural values is encouraged.

The liveability of the region is characterised by the tropical climate and associated lifestyle and the sense of place and community found in distinctive neighbourhoods in urban areas and unique rural and coastal living opportunities. The key urban areas of Mackay, Walkerston, Sarina, Marian and Mirani provide diversity in housing types and accommodation; compact and sustainable urban living with walkable centres and active transport; and access to quality open spaces and a range of quality health, education, community and recreational facilities that serve the demography and diversity of the population. The region provides a safe living environment for families and individuals at different stages of their lifecycle; is resilient against natural hazards and climate change impacts, and provides a diverse economy and range of employment opportunities.

3.2.2 Growth management and urban consolidation

The ***settlement pattern*** supports regional growth towards a population of 180,000 by focusing growth in the key urban areas of Mackay, Walkerston, Sarina, Marian, and Mirani, whilst enabling continuation of a rural lifestyle within the rural landscape in designated nodes. The settlement pattern supports growth that aligns with existing and planned economically efficient infrastructure, creates an integrated and compact urban form that provides accessible and walkable communities, facilitates active modes of transport, advances the primacy of productive agricultural land and areas of environmental significance and reduces urban sprawl through infill development within the key urban areas.

The ***urban form*** is characterised by the higher development intensity and building heights in the principal, major and district centres; the compact urban form that increases densities in and around centres, along high frequency public transport corridors and areas with high amenity value and maximises the efficient use of land and infrastructure within urban areas; the mix of higher to lower density housing achieved through the street network, block size and building types within the key urban areas of Mackay, Walkerston, Sarina, Marian, and Mirani; water sensitive design in urban areas in response to the tropical climate and the low built form in rural and coastal townships.

The Mackay region responds to the ***growth management challenges*** associated with:

- protecting the unique natural environment and regional landscape;
- sustaining agricultural production and facilitating expansion and diversification of agriculture;
- supporting industry expansion related to the mining sector and growing household demands;
- accommodating population growth and migration into the region with associated pressure on community facilities;
- efficient transport and logistics networks to support economic activity;
- providing and sequencing development for urban purposes in alignment with planned economically efficient infrastructure provision;
- ensuring that development for urban purposes does not occur in investigation areas before they are sequenced for development;
- providing a range of affordable short-term and permanent housing choices that respect the changing household composition of the growing population;
- sustaining the liveability of the region whilst providing healthy and active lifestyle choices,
- development in a tropical climate with high rainfall and flooding; and
- climate change impacts, including coastal hazards and avoiding exposure and risk to development.

The ***outcomes of growth management*** in the Mackay region are:

- focussing population growth in the key urban areas of Mackay, Walkerston, Sarina, Marian and Mirani whilst enhancing liveability and lifestyle options;
- maintaining the natural environment and associated natural ecological processes for future generations;
- a functional regional green and open space network with appropriate recreational opportunities;
- protecting agricultural land from encroachment of incompatible uses;
- providing appropriately located and accessible employment areas;
- providing appropriately located land to accommodate future growth, including commercial, industrial and residential expansion;
- providing efficient and sequenced economically efficient infrastructure and services in support of urban growth within priority infrastructure areas;
- the extent and intensity of development is commensurate with and does not exceed the capacity of infrastructure available to service the area;
- integrating development with existing and planned service and community infrastructure and employment areas to achieve a compact urban form;
- encouraging affordable housing through the provision of a range of housing choices, including short-term accommodation in the key urban areas;
- providing integrated transport solutions that reduce travel demand and expand active transport options such as walking and cycling;
- settlement and building design that responds to the tropical climate and improves resilience to natural hazards and climate change impacts which includes avoiding the risk associated with coastal hazards; and
- development for urban purposes outside of priority infrastructure areas provides all infrastructure necessary to service the ultimate development for the area with full cost, including ongoing lifecycle cost, to the developer.

Each of the urban areas of Mackay, Walkerston, Sarina, Marian and Mirani is subject to the following principles of ***urban consolidation***:

- a clear boundary is established between the urban area and non-urban uses;
- infill opportunities at appropriate locations that support a compact urban form and achieves effective use of land and infrastructure are maximised;

- new development areas achieve a high level of self-containment including increasing access to employment opportunities and social and community facilities in close proximity to residential areas;
- infill and increased residential densities around centres, major transport corridors, and areas of high amenity are encouraged;
- the provision of community health, education and social facilities respect the hierarchy of centres, and achieve high levels of public access and economic efficiency;
- development supports active transport and mobility options that includes access to public transport, walking and cycling;
- sport and recreation facilities are provided at regional and local scale;
- the open space system and provision of parklands maximises access to rivers and esplanades in urban areas;
- infrastructure is sequenced and targeted in support of growth within priority infrastructure areas, with due consideration of economic efficient infrastructure and connectivity between local and regional infrastructure networks; and
- strategic infrastructure is protected from the encroachment of residential and incompatible development.

The ***Mackay urban area*** accommodates the bulk of the region's population and contains the principal regional centre located in the Mackay City Centre ("the City Centre") along the south bank of the Pioneer River. The Mackay urban area is the primary employment and industrial location in the region and offers regional services and functions, including tertiary education, regional health, cultural, entertainment, sport and recreation facilities, government services, specialised personal and professional services, and specialised commercial and retail employment. The Mackay urban area provides regional agriculture support services and associated transport logistics. The Mackay urban area is well connected to the regional transport network and provides regional road, rail, and air and sea connectivity.

New development is sequenced to support planned infrastructure investment in the preferred urban growth areas within Mackay, Walkerston, Sarina, Marian and Mirani in the period to 2026. New development areas achieve residential choice and support a self-contained and compact urban form.

Investigation areas in Mackay and Sarina do not form part of the urban area and provide protection of the land from incompatible uses that can compromise the opportunities for potential future urban expansion. Low-intensity agricultural activities are to continue in the interim period before 2026 at Ooralea, before 2031 at Richmond and Sarina east and in the life of this planning scheme at Rosella.

Priority is given to development within priority infrastructure areas. Out of sequence development does not occur in investigation areas unless detailed land use and infrastructure planning of that investigation area has been carried out and there is full cost recovery from the development of all infrastructure to be provided, including ongoing lifecycle cost. The infrastructure to be provided must be of sufficient capacity to service all development in the area.

The ***Ooralea investigation area*** (Investigation area 1) considers urban expansion in the area bounded by the Central Queensland University Ooralea campus, Schmidtkes Road, Broadsound Road, Stockroute Road and Cowleys Road. The development of the Ooralea investigation area for urban purposes is not sequenced before 2026. Interim development of the investigation area does not compromise its potential future development for urban purposes.

The ***Richmond investigation area*** (Investigation area 2) considers urban expansion in the area bounded by the Glenella Richmond Road, Habana Road, Mackay-Bucasia Road and future multimodal transport corridor to the south. The development of the Richmond investigation area for urban purposes is not sequenced before 2031. Interim development of the investigation area does not compromise its potential future development for urban purposes.

The ***Rosella investigation area*** (Investigation area 3) considers urban expansion to accommodate industrial development in the area bounded by the Fenners Road, Bruce Highway, Holmes Road, and an eastern boundary that respects environmental, acid sulfate soil and coastal storm tide constraints. The potential future development of the Rosella investigation area should achieve a staged conversion of agricultural land to industrial use. The development of the Rosella investigation area is not considered in the life of this scheme. Interim development of the investigation area is limited to low-intensity rural uses with limited built form and infrastructure that do not compromise future industrial development of the land.

The ***Sarina east investigation area*** (Investigation area 4) considers urban expansion to accommodate residential development south of Brooks Road. The development of the Sarina east investigation area is not sequenced before 2031. The potential future development of the Sarina east investigation area should retain the visual backdrop of the hill by not developing the upper reaches thereof, ensure effective northern and western connectivity to the road network and provide appropriate open space.

The ***Sarina*** urban area is a major regional centre for employment and services in the southern Mackay region, including the Sarina coastal townships and areas south of Sarina to St Lawrence. The Sarina urban area provides residential expansion to the north of Sarina Beach Road and industrial expansion to the north-west of the Bruce Highway. New neighbourhoods are focused around local centres and provide access to active transport, appropriate open space and recreational opportunities. Opportunities for infill within the urban area around the town centre encourage medium density residential development in support of a range of housing types, including multiple dwellings, dual occupancy and smaller lot sizes. The main street contains a mix of uses and retail activity and is designed to serve as a focal point for community interaction with active street frontages. The scenic value of the Sarina hills as a backdrop to the town is protected from development. The Plane Creek Mill and associated sugar cane processing provides employment and serves as a historical icon in the identity of Sarina with related tourism activity.

Walkerston provides a range of housing options that includes higher densities around the town centre to rural residential living on the south-eastern periphery of the urban area. The district centre provides a mixture of moderate to small scale services and facilities to serve the catchment of Walkerston and rural communities to the south-west. Walkerston offers an integrated transport system with active transport and mobility options and transport linkages to the Mackay urban area which offers regional services and employment opportunities.

Marian and Mirani provide commercial functions within the centres and local employment at the Sugar Mill and within industrial areas. These are compact settlements that provide walkable neighbourhoods, green and recreational spaces that favour linkages to the Pioneer River, residential choice that is predominantly low-rise, tropical building design, heritage protection of historical built form, local administrative functions of government and transport connections to the principal centre of Mackay. Marian provides a strengthened town centre, access to a sub-regional sports facility, local employment and limited residential expansion to the south to accommodate a mix of housing options. The towns of Marian and Mirani achieve self-containment and function in a complementary manner in providing employment and services to the needs of residents and tourists of the Pioneer Valley.

Rural townships provide limited infill opportunity within each urban area, local convenience and community facilities with development complementing the scale, intensity, character and amenity of each township. Growth within rural and coastal townships is limited to the urban area in accordance with its role as principal, secondary or tourism-orientated township. The principal townships of Midge Point, Calen, Seaforth, Farleigh, Finch Hatton, Eton, Sarina Beach and Koumala accommodate limited infill and provide support services to the surrounding area.

Coastal townships provide low-density coastal living with local convenience and community facilities. Development in coastal townships occurs within the urban area and provides limited growth due to the lack of local employment opportunities; lack of community and health services, local topographic and climate change impact constraints, the need to protect natural vegetation, scenic value and rural landscapes and the limited capacity of the infrastructure networks.

The principal coastal townships of Midge Point, Seaforth and Sarina Beach provide low intensity residential development and a range of non-residential activities that are located in a cluster to achieve a cohesive town centre. Sarina Beach, as both principal and tourist-orientated township, may offer future development opportunity based on meeting demand and addressing infrastructure, environmental and other constraints – noting the area bounded by the Sarina Beach township, Sarina Beach Road, Sarina inlet and rural residential land (opposite Herta Lane). Tourist-orientated development is provided in Haliday Bay, Ball Bay, Salonika Beach, Grasstree Beach, Campwin Beach and Armstrong Beach. Secondary coastal townships offer limited growth in St Helens Beach, McEwens Beach, Dunnrock, Half Tide Beach and Grasstree Beach as it avoids expansion whilst accommodating local convenience and community facilities. The residential development at Laguna Whitsundays is an intrinsic part of the regional tourist facility.

The ***offshore islands*** are protected for their natural, environmental and scenic amenity value. Tourism development that maintains sensitive environmental and landscape character values is encouraged on Lindeman, Brampton and Keswick Islands. The development of Keswick Island avoids increasing the scale of activity within the Tourism area (major) zone and achieves appropriate environmental and servicing outcomes.

The ***liveability*** of urban areas is characterised by the protection of residential character areas, creating high amenity neighbourhoods, protection of residential areas from undesirable industrial impacts such as air and noise pollution and hazardous materials, providing active recreation and transport opportunities and avoiding development in areas at risk of landslide, natural hazards or climate change impacts. The settlement pattern provides a sustainable long-term land use pattern by avoiding and minimising the encroachment of urban development into agricultural land, natural resource areas, areas of environmental significance and high impact activity areas. The historical location of urban uses in close proximity to sugar mills is acknowledged and the interface between the sugar mill industry and sensitive uses is managed to protect the wellbeing of the resident community and the long term viability of the sugar mill activity.

The range of ***social facilities and community services*** in the urban areas of Mackay, Walkerston, Sarina, Marian and Mirani respond to the needs of all members of the community, including the youth, families, lone person households, migrant and seasonal workers and the longer term increase in the older population. Education, health and emergency services are planned and appropriately located to support population growth in urban areas, including the emerging communities in new development areas, whilst maintaining appropriate access to facilities in rural areas. Regional art and cultural facilities respond to the diversity of residents in the region with the primary facilities located in the Mackay urban area. Community facilities are designed to integrate with the established visual amenity of the surrounding urban neighbourhood and provide high quality design outcomes that reinforce the sense of identity of the local area or region.

The ***regional infrastructure network*** provides water, waste water and waste management facilities, storm water management, energy distribution and a road network that services existing urban areas and the orderly extension thereof into new growth areas. Economically efficient infrastructure provision supports the expansion of employment areas in Mackay, Walkerston, Sarina, Marian and Mirani, including potential industrial expansion in the Paget industry investigation area and potential future industrial expansion in Rosella. Waste management encourages sustainable practices in providing regional collection, recycling, transfer, and storage of waste. Trunk infrastructure provision outside the priority infrastructure area is subject to full cost recovery, including lifecycle cost.

The ***regional integrated transport network*** provides for the safe and efficient movement of people and goods through a range of transport options. The network fosters opportunity to establish the region as a distribution hub. The road network links the high-impact industrial area of Paget and potential future high-impact industrial area of Rosella to mining destinations to the west, the major Ports of Mackay and Hay Point and associated support industries. The hierarchy of roads maintains effective traffic movement in urban and rural areas and connects to the national road and rail network. The future multimodal transport corridor connects the Mackay Harbour to the Bruce Highway and the major State and road network, including the future Mackay Ring Road (bypass road).

The future Mackay Ring Road (bypass road) enables the movement of heavy vehicles west of the Mackay urban area boundary and across the Pioneer River without intrusion into the residential areas, inner suburbs and the City Centre. The rail system enables the movement of passengers and bulky goods and connects to the north coast rail line as well as the Ports of Mackay and Hay Point. The sugar cane rail network supports efficient movement of cane to sugar mills.

Active transport in the key urban areas of Mackay, Walkerston, Sarina, Marian and Mirani provides residents with access to public transport, cycling and walking options to access employment areas, community services and major recreational facilities.

The regional ***air and sea ports*** play a key role in the regional and state economy and are a focus for employment and land use opportunities associated with the location and operations of ports. Mackay Airport serves as a multimodal integrated transport hub for the greater Mackay, Isaac and Whitsunday region and provides infrastructure that supports the tourism, commerce, agricultural and resource sectors as well as international and domestic travel. The Mackay Airport Land Use Plan and masterplans for seaports strengthen the strategic role of ports and enable their development as key regional economic infrastructure. Mackay Airport is protected from development that may adversely affect the safety, efficiency and regularity of aircraft operations and its capacity to serve as a regional airport for passenger movement, freight movement and emergency services. The development of the airport maintains its integration with the transport network and supports the network of centres within the Mackay urban area. The 'Priority Port' of Hay Point and Mackay are developed as key regional economic infrastructure under the *Sustainable Ports Development Act 2015*. The Port of Mackay, including transport infrastructure corridors, is protected from incompatible development that limits its function as an export and import port in support of the regional economy. Mackay Marina performs an important leisure and tourism function. The Port of Hay Point, including transport infrastructure corridors, is appropriately buffered and protected from incompatible development enabling port development and export expansion.

Freight transport on rail and road supports the regional economy as a distribution hub. Freight related infrastructure is protected from incompatible development. The future regional intermodal freight facility at Rosella as well as future truck stop facilities along the Bruce Highway benefit from being buffered from residential areas and having direct access to the regional freight road network. Similarly, existing and future transport infrastructure corridors servicing the Ports of Mackay and Hay Point are protected from incompatible development. The regional freight network provides connectivity to the national north-south road and rail distribution network and the mining related east-west freight movement.

Key Resource Areas (including processing and separation areas) and haulage routes from key resource area quarries are appropriately buffered and protected from urban development and encroachment of incompatible uses. Potential future development in the Richmond investigation area responds to the location of The Cedars Quarry separation area.

Agricultural land is protected from incompatible uses to prevent loss and fragmentation of land for agricultural production. Agricultural land is a key component of the resilience and diverse economic base of the Mackay region, which includes local food supply and sugar cane production as a dominant agricultural use.

The ***sugar cane industry*** is supported through protection of agricultural land, supporting infrastructure and enabling diversification of sugar production into energy production, biofuels and other products at Racecourse and Plane Creek Mills. The current and future productivity and operational efficiency of Racecourse Mill, co-generation plant, refinery, other future diversification projects and associated infrastructure is protected from, and not compromised by, the encroachment of sensitive or incompatible non-residential development.

Rural production areas of agricultural land are protected from permanent impacts, diminished productivity, fragmentation and urban and rural residential development.

The ***employment areas*** serve the needs of the regional economy through specialist industrial activity related to mining; low-impact industrial activity in support of mining, commercial and household demand; agricultural support services and milling related to the sugar cane industry; the commercial activity in the principal, major and district centres; and the expanding services sector which includes tourism.

The activities within employment areas respect the maintenance of air quality and well-being of the community, including special measures to buffer the impact of high impact activities on sensitive uses. The regional abattoir at Bakers Creek is appropriately buffered to limit its impacts on the amenity of the surrounding urban area. The expanded Central Queensland University campus and technology industries in Ooralea and the City Centre support the skills requirements and diversification of the regional economy.

Tourism opportunities range from activities showcasing natural assets in the region including mountains, forests, beaches and reefs, to other valued qualities including regional recreation resources, the region's landscape character, integrated resorts such as Brampton Island, Keswick Island, Laguna Quays, Lindeman Island and other tourist nodes. Mackay Marina Village and East Point (Mackay Harbour), within the Mackay urban area, provides recreational and tourism opportunities that respect environmental constraints of the area and benefits from the unique location on the riverine and / or seaside foreshore. These form the foundation for the further development of a vibrant and sustainable tourism industry that celebrates and supports the region's unique qualities and tourism assets. It is important these assets are protected for their many values and can be enjoyed by residents and visitors.

All types of short-term accommodation, particularly hotels, backpacker accommodation, serviced apartments and motels are strongly encouraged and supported in the Mackay and Sarina urban areas and in the coastal townships of Midge Point, Seaforth, Haliday Bay, Ball Bay, Salonika Beach, Grasstree Beach, Campwin Beach and Armstrong Beach, where supported by appropriate urban infrastructure. Tourism development also provides for nature based and eco-tourism experiences in the rural hinterlands (such as Broken River, Eungella, Crediton, Cameron's Pocket and Finch Hatton Gorge), adventure-based attractions, marine, and business and events tourism.

The Mackay Region provides ***a range of sport and recreation opportunities*** that includes organised sport, cultural and recreational activities in the key urban areas. The regional sports nodes in Mackay and Sarina are supplemented by local sports facilities in Marian, Mirani and Walkerston to ensure access to a range of sporting facilities. The Pioneer Valley provides a sub-regional sports facility located within, or adjacent to, the Marian urban area and in close proximity to the Marian district centre. Opportunities for recreation boating and fishing occur along the coast with large scale anchorage facilities provided at the Mackay marina. The interface between sport and recreational activities and sensitive land uses is managed to minimise land use conflicts, maintain high levels of amenity for sensitive land uses and ensure the long term viability and operational efficiency of sport and recreation activities.

The Mackay, Walkerston, Sarina, Marian and Mirani urban areas ensure access to areas of high amenity value for ***recreation opportunities in urban areas***. Seaside foreshores, riverine esplanades, regional and local parks, and open space corridors provide recreational opportunities in close proximity to the urban population.

Development responds to the ***tropical climate and incidence of flooding*** by providing sufficient drainage infrastructure for minor local flooding or overland flow, using water sensitive design of road infrastructure and open spaces, and establishing evacuation routes through disaster risk management. Urban and rural residential development adopts best practice water catchment planning, water cycle management and tropical building design. Settlements in the Mackay region adjust to the risks associated with natural hazards through appropriate location and design of urban development and new development avoids places at significant risk of hazard.

Urban development is compatible with the natural and human-made ***constraints on development*** including agricultural land, vegetation, air quality, noise, slope, natural hazards, flooding risk, erosion prone land, acid sulfate soils, areas of environmental value and risks posed by coastal hazards.

The ***cultural and built heritage*** is protected to ensure new development is sympathetic to the historical significance of sites within the Mackay region. Sites of State and local significance provide a reflection on the indigenous cultural heritage, history of settlement, sugar cane farming and historic development of the region in both urban and rural settings.

The Mackay region provides opportunities for ***rural living*** on land that does not impact negatively on the use of agricultural land. The expansion of rural residential land is avoided due to impacts on the fragmentation or loss of agricultural land, high cost of servicing such land, and lack of access to community facilities, including health, education and emergency services. Limited infill opportunities exist within designated rural residential nodes that do not encourage expansion into agricultural land.

The ***rural areas*** are protected from the impacts of urban growth and managed to sustain their role in providing the natural resource base, maintaining the landscape function and ecosystem services, and supporting agricultural industries. Rural land is subject to sustainable agricultural practices and catchment management that controls soil erosion and stream bank stability, protects riparian vegetation and limits the movement of chemical residues and nutrients from farms into the aquatic environment.

The ***natural resources and natural environment*** in the region are protected to support the resilience of the biodiversity network, species habitats, and ecological services and supports tourism and outdoor recreation.

Development, such as ecotourism facilities, in natural environments are encouraged in order to facilitate the presentation, appreciation and conservation of the land's natural condition, cultural resources and values. Development that is inconsistent with this primary purpose and that would require significant change to the land's natural condition or would adversely affect the conservation of the land's cultural resource and values should be avoided.

A ***regional green space network*** assists in preventing loss or degradation of environmental significance (including biodiversity value, remnant vegetation, wetlands and natural wildlife habitats) and protects natural linkages and environmental corridors between nature reserves, along waterways and coastal foreshore areas. Development avoids sensitive habitats and areas with biodiversity and environmental significance. Natural open space corridors provide natural linkages at regional and local scale across the Mackay region. New urban development ensures the continuation of healthy waterways through stormwater quality and flow management and waste water management. The regional green space network provides opportunities for active recreation and a healthy lifestyle.

The ***regional open space network*** provide opportunities for active and passive outdoor recreation activities through a hierarchy of open spaces (regional, district and local parks) and prevent loss or degradation to areas of natural environmental value such as bushland, wetlands or waterways from urban development. Open spaces in neighbourhoods and urban areas provide natural environment amenity, urban breaks, recreation spaces, and walkable connections. Development is designed to visually integrate with the open space and landscape character setting.

The ***regional landscape character*** is retained and enhanced for future generations. Development avoids impacting on landscapes of high aesthetic value and amenity as represented by the scenic backdrop of the Clarke and Connors Ranges; the scenic amenity of the coast, the coastal hills, ridgelines and hillsides; the rivers and estuaries of the Pioneer and O'Connell Rivers and Bakers and Plane Creeks; the unique forest and vegetation communities, core habitat areas and wetlands; the natural linkages between the hinterland and coast along riparian corridors; and the natural environmental values of the offshore islands.

3.2.3 Network of centres and industrial areas

The ***network of centres*** within the key urban areas of Mackay, Walkerston, Sarina, Marian and Mirani is designed to service sub-regional population catchments and do not undermine the role of the City Centre and each other. The centres network provides a hierarchy of principal, major, district, local, neighbourhood and specialised centres. Higher intensity and mixed uses are focused within centres in support of a compact urban form. Out of centre development is discouraged and avoids commercial strip development along roads.

The ***principal, major and district centres*** are connected to the transport network and accessible by public transport, cycling and pedestrian networks; contain a mix of higher intensity land uses and services in relation to its role within the hierarchy of centres; provide active street frontages and main street development; and are characterised by well-designed public spaces that utilise tropical design responses.

The ***City Centre*** as principal centre in the region provides a range of functions as the:

- regional economic and commercial centre for the Mackay and broader Mackay Isaac Whitsunday region with the largest and most diverse mix of uses and a concentration of retail, commercial, business, office, employment, high density residential, health services, administrative, community, education, cultural, recreational and entertainment activities;
- primary regional destination for social interaction, vibrant cultural events, festivals and regional recreational activities;
- high density residential centre that includes high rise residential and short-term accommodation developments;
- regional administrative hub with State and local government services;
- regional transport hub that connects transport modes in the region including active transport accessibility;
- historical first major urban settlement with associated cultural heritage places and buildings; and
- walkable city that embraces its tropical climate and location through an active public realm and connectivity to the Pioneer River.

Major centres are sub-regional activity nodes that provide a diverse mix and concentration of retail, commercial, small-scale offices, higher density residential, health services, community, cultural and entertainment facilities that do not compromise the viability, role or function of the principal centre (the City Centre) and other designated centres in the centres network. The built form enables development of a higher density than the surrounding area, achieves high quality design outcomes in the public realm that responds to the tropical climate and landscape setting, and enables buildings to address the public realm through active and articulated frontages and a human scale. The major centres in the Mackay urban area are located at Mount Pleasant and Rural View and the southern portion of the Mackay region is served by a major centre in Sarina. The Mount Pleasant major centre's catchment includes the Mackay's inner and middle northern suburbs and rural communities to the north. The Rural View major centre's catchment includes Mackay's northern beaches. The major centre in the Sarina town centre serves a catchment that includes Sarina, the Sarina's coastal communities and rural communities in the southern portion of the region.

District centres are suburban activity nodes that do not compromise the viability, role or function of the major centres or the principal centre (the City Centre) and serve the suburbs immediately surrounding such centres. District centres provide a mix of uses and activities including retail, commercial, residential, small-scale offices, administrative and health services, community, small-scale entertainment and recreational facilities. The built form and building height reflects the intensity and prominence of district centres as suburban activity nodes, but respects and integrates with surrounding low-rise and low-intensity development. Key main streets within district centres are characterised by active and articulated buildings defining and addressing the street and a vibrant street-orientated atmosphere with high quality pedestrian amenity.

In the Mackay urban area, the three district centres service the population catchments around Andergrove, North Mackay and West Mackay (Fourways and Parkside). The district centre in Marian serves a broader catchment including Mirani and surrounding Pioneer Valley. The district centre in Walkerston serves the Walkerston urban area and surrounding rural area.

Local centres are local activity nodes that offer a limited range of land uses and activities to service local convenience needs in the key urban areas of Mackay, Walkerston, Sarina, Marian and Mirani. The built form of local centres integrates with the surrounding development and buildings address the public realm by providing street orientated and articulated frontages.

Neighbourhood centres are neighbourhood activity nodes that offer small scale land uses and activities to service the convenience needs of residential neighbourhoods in the key urban areas. The built form of neighbourhood centres integrates with the surrounding residential neighbourhood and buildings address the public realm by providing street orientated and articulated frontages.

Specialised centres provide for unique and single-purpose activities such as large-format showroom, bulky household goods and hardware store development at Richmond and Ooralea, and standalone tavern development at Marian. The specialised centres do not compete with other centres in the centres network. The built form and scale of development is integrated throughout the centre and provide active and articulated building frontages that address streets and public spaces.

The Mackay region contains a ***network of industrial areas*** that support employment and economic activity. High impact industrial areas are directed away from sensitive land uses to minimise the impacts on residents and the natural environment. Industrial areas are protected from encroachment by sensitive land uses and incompatible non-residential uses, which extend to the protection of industrial activity and operation of strategic ports. The built form of industrial areas provides high quality design outcomes that include landscaping and avoids buildings being visually overbearing.

The ***industrial*** area of Paget provides high impact industry and associated industrial uses to support coal mining in the Bowen, Central Galilee and the Upper Surat basins and industrial activity within the Mackay region. The potential future development of the Rosella investigation area provides for large scale industrial uses and development of the investigation area for urban purposes is not in the life of this scheme.

Low-impact industrial uses in the Mackay urban area are located close to major centres and within the low impact industrial areas along Harbour Road (North Mackay), Slade Point, Glenella, northern and eastern Paget, the City Centre (east) and Rural View. The Sarina urban area provides a mix of high and low-impact industrial uses in the north-west along the Bruce Highway. Mirani and Marian provide local opportunities for industrial activity beyond that offered by the sugar industry. The low impact industrial activity adjacent to the east of the Racecourse Mill benefits from and integrates with technology and skills development activity at the Central Queensland University campus in Ooralea.

Industry investigation areas protect potential future industrial sites, which are of strategic importance to the Mackay region's economic development, from the encroachment of sensitive and incompatible non-residential development. The industry investigation areas in the Mackay urban area provides for both low impact expansion in Glenella, Cowleys Road, Boundary Road east and for medium to high impact industry expansion south of Paget towards Bakers Creek and in the north-west of the Sarina township. The expansion of the Paget industrial area to the south towards Bakers Creek provides medium term industrial development opportunities with appropriate road access, avoiding crossing of the north coast rail line and stormwater quality management. Development of industry investigation areas for urban purposes is subject to feasible and holistic infrastructure provision based on full cost recovery, including lifecycle cost, of trunk infrastructure from the developer.

3.3 Settlement pattern

3.3.1 Strategic outcomes

(1) The pattern of planned land use:

(a) integrates existing and future development;

(b) aligns with the assumptions contained in the priority infrastructure plan for the planned expansion of key urban areas;

(c) ensures development is located and designed to maximise the economically efficient extension and safe operation of infrastructure;

(d) provides appropriate infill development;

(e) increases densities and housing choice;

(f) maintains the natural functions and scenic qualities of the landscape; and

(g) minimises impacts on and loss of agricultural land and areas of environmental significance.

(2) The Mackay region achieves efficient use of land and infrastructure within a compact urban form. Urban development is contained within the urban area to:

(a) ensure that development for urban purposes and trunk infrastructure is sequenced in an orderly, planned and economically efficient manner;

(b) maintain and enhance continued access to urban services, recreational and social infrastructure;

(c) protect agricultural land, environmentally sensitive, physically constrained and scenic land from urban expansion;

(d) protect areas of environmental significance;

(e) integrate land use and transport within the compact urban form;

(f) encourage the use of active transport and passenger transport in major urban areas and reduce single-occupancy car dependency;

(g) foster a strong and positive sense of place and community cohesion and connectedness; and

(h) ensure development avoids or minimises the exposure of coastal communities to the risk of adverse coastal hazard impacts.

(3) The City Centre is the principal mixed-use centre and is complemented by a network of major, district, local, neighbourhood and specialised centres in the region. The retail, commercial, civic and social services in the City Centre serve the wider Mackay-Isaac-Whitsunday region.

(4) Residential and employment areas are located in a manner that reduces travel time, supports housing affordability and promotes active and public transport options in the key urban areas of Mackay, Walkerston, Sarina, Marian and Mirani.

(5) Residential communities are connected to and focused around centres that provide retail facilities, employment opportunities, an appropriate range of community facilities, and open space and recreational uses. A significant proportion of residential properties in urban areas are within walking distance of a centre.

(6) Infill development is encouraged in the urban areas of Mackay, Walkerston, Sarina, Marian and Mirani to achieve effective utilisation of land and infrastructure within a compact urban form. Infill development includes the increase of residential densities at appropriate locations to provide housing choice and focuses on development around centres, major transport corridors, and areas of high amenity.

(7) Urban areas are designed to respond to the tropical climate and incorporate water sensitive design and energy conservation measures.

(8) Rural residential development provides rural lifestyle options and does not compromise agricultural production or the natural environment values of the landscape.

(9) The liveability of urban areas is characterised by a sense of place and community in distinctive neighbourhoods, access to quality open spaces, a range of community and recreation facilities, active transport and mobility options, measures to protect amenity such as appropriate buffers and design measures to mitigate conflict between sensitive uses and high impact activities and a range of housing and accommodation options.

(10) Coastal foreshores and riverine esplanades fulfil a range of functions that include enabling the continuation of natural processes and ecosystems, being developed in a manner that mitigates flooding and storm surge, and providing public access and recreation opportunities as part of the region's open space network.

(11) New urban areas avoid development in areas of medium and high risk flood hazard, whilst development within existing urban areas considers appropriateness of land use and building design to minimise flood risk.

(12) New urban areas are located outside of coastal hazard areas other than for coastal-dependent development or temporary or relocatable uses (including open space or recreation facilities).

Table 3.3.1 Theme components - Settlement pattern

3.3.2 Element - Localities	**3.3.2.1 Specific outcomes**	**3.3.2.2 Land use strategies**
(1) Role of localities in decisions on future land use	(1) Decisions on future land use are cognisant of their locational context and reflect the unique role of each of the localities in the region – be it urban areas, rural or coastal townships, rural production areas, tourist destinations, natural landscape or coastal areas and islands.	
3.3.3 Element – Key urban areas	**3.3.3.1 Specific outcomes**	**3.3.3.2 Land use strategies**
(1) Role of key urban areas in managing growth	(1) The Mackay region's population is concentrated within the key urban areas of Mackay, Walkerston, Sarina, Marian and Mirani. (2) The Mackay urban area contains the majority of the Mackay region's growing population and facilitates growth in: (a) development areas within the priority infrastructure area that can be well serviced through planned infrastructure investment; and	(1) The Mackay, Walkerston, Sarina, Marian and Mirani urban areas are developed in accordance with the hierarchy of centres, the principles of urban consolidation in sequence with planned infrastructure investment, and applicable local plans.

	(b) appropriate infill sites that support increased density and strengthens employment in expanding centres and industrial areas. (3) The Sarina urban area is the major commercial and community service centre in the southern part of the Mackay region with moderate residential expansion to the north supporting a range of housing choices and industrial expansion to the north-west. (4) The Walkerston urban area contains a district centre, provides limited growth opportunities within the urban area through local retail opportunities and residential expansion to the south whilst ensuring access to regional employment areas and community facilities in the nearby Mackay urban area. (5) The Marian urban area serves as a local employment hub through the Marian Mill and local retail opportunities (to facilitate increased levels of self-containment), provides sub-regional sports and community facilities in the Pioneer Valley and accommodates limited residential growth to the south. (6) The Mirani urban area provides civic, administrative, recreational, community and educational services with limited commercial and low-impact industrial opportunities to service the Marian-Mirani catchment within the Pioneer Valley and facilitates increased levels of self-containment.	

3.3.4 Element – Rural and coastal townships	3.3.4.1 Specific outcomes	3.3.4.2 Land use strategies
(1) Role of rural and coastal townships in managing growth	(1) Rural and coastal townships maintain a compact urban form and contain growth within the urban area in accordance with its role as principal, secondary or tourism orientated township. (2) Principal townships accommodate limited infill and services to support the rural catchment and nearby secondary townships. (3) Secondary townships serving smaller catchments avoid expansion and accommodate local convenience services and community and education facilities only. (4) Tourist-orientated townships accommodate tourist-orientated development outside of Mackay, Walkerston, Sarina, Marian and Mirani (5) Significant development outside of the Township zone, on productive rural lands, areas of scenic amenity and areas of significant biodiversity value is not encouraged.	(1) Development is consistent with the intended role, function and identity of the township. (2) Development in close proximity to sugar mills in townships does not accommodate sensitive uses and serve the needs of the rural catchment.
3.3.5 Element – Compact urban form	**3.3.5.1 Specific outcomes**	**3.3.5.2 Land use strategies**
(1) Compact urban form and sequenced growth	(1) Growth is contained within the key urban areas of Mackay, Walkerston, Sarina, Marian and Mirani and the coastal and rural townships to ensure efficient land use and avoid adverse impacts on primary production land and environmental and landscape values. (2) Development for urban purposes is sequenced to ensure efficient use of planned infrastructure investment.	(1) The Ooralea investigation area is not sequenced for development before 2026. Low-intensity agricultural land uses are envisaged that do not compromise the long term use and the staged development of the area. (2) The Richmond investigation area is not sequenced for development before 2031. Low-intensity agricultural land uses are envisaged that do not compromise the long term use and the staged development of the area.

	(3) The pattern of growth aligns with the assumptions contained in the priority infrastructure plan for the orderly expansion of urban areas. (4) Within the Mackay urban area, the urban growth areas encourage a mix of housing choice that includes higher density residential development. (5) The development of industrial land is sequenced in support of low and high impact industrial activity and efficient use of planned infrastructure investment.	(3) The Rosella investigation area is investigated for future industrial development. Low-intensity agricultural land uses are envisaged that do not compromise the long term industrial use and the staged development of the area. The Rosella investigation area is not sequenced for development in the life of this planning scheme. (4) The Marian town centre and linkage to the emerging community to the south is developed in accordance with a local plan to ensure a functional urban structure. (5) Development in emerging community precincts is facilitated through appropriate development framework planning of land uses that considers self-containment, development intensity, the mobility and access network, trunk infrastructure and key open space corridors. (6) The Sarina east investigation area is not sequenced for development before 2031. Low-intensity agricultural land uses are envisaged that do not compromise the long term use and the staged development of the area
3.3.6 Element – Urban services	**3.3.6.1 Specific outcomes**	**3.3.6.2 Land use strategies**
(1) Access to a range of urban services	(1) The Mackay, Walkerston, Sarina, Marian and Mirani urban areas provide a range of services, including health, education, and community and recreation facilities appropriate to its function within the region.	

3.3.7 Element – Higher density residential development	3.3.7.1 Specific outcomes	3.3.7.2 Land use strategies
(1) Encouraging higher density residential development at appropriate locations	(1) Higher residential densities in Mackay, Walkerston, Sarina, Marian and Mirani provide affordable living options and add to diversity of housing choice. (2) Residential densities within urban areas increase around centres, major transport corridors and areas with high amenity in support of a compact urban form and efficient use of land and infrastructure. (3) The Mackay urban area accommodates the bulk of higher density residential development including high rise apartment buildings and short-term accommodation. (4) Higher density residential development in Sarina, Walkerston, Mirani and Marian around the town centres provides mixed use and medium density housing options.	(1) Residential densities of a minimum of 12 dwellings per hectare are achieved in the Emerging community zone (2) Medium density residential zones identify land in close proximity to multi-purpose centres, public transport corridors and areas with high amenity values such as beaches, parklands and open space nodes to provide a range and mix of dwelling types. (3) Medium to high density apartment living in the Mackay urban area is encouraged: (a) in and around the City Centre, Mackay Marina (Mackay Harbour), Mount Pleasant major centre, Rural View major centre, North Mackay district centre, West Mackay district centre (Fourways and Parkside) and Mackay Base Hospital; and (b) at Town Beach (East Mackay), Illawong Beach (South Mackay), and Belangason Way (Shoal Point). (4) Medium density apartment living is encouraged in and around the Sarina major centre.
3.3.8 Element – Mobility and transport orientated design	**3.3.8.1 Specific outcomes**	**3.3.8.2 Land use strategies**
(1) Encouraging mobility and transport orientated design in urban areas	(1) Mobility within Mackay, Walkerston, Sarina, Marian and Mirani is characterised by a range of modes of transport, transport-orientated design and active transport options such as walking and cycling.	(1) Heavy vehicular movement is diverted to the future western Mackay Ring Road (bypass road) to avoid movement through the City Centre and Mackay urban area core.

	(2) The principal, major and district centres are connected through public transport and a range of transport modes. (3) The use of different modes of transport is encouraged and single-occupancy car dependency is reduced within Mackay, Walkerston, Sarina, Marian and Mirani. (4) The future Mackay Ring Road (bypass road) in the Mackay urban area connects major employment areas, industrial areas and ports and supports effective highway traffic across the Pioneer River.	
3.3.9 Element – Infrastructure sequencing	**3.3.9.1 Specific outcomes**	**3.3.9.2 Land use strategies**
(1) Economically efficient infrastructure is sequenced in support of orderly urban development	(1) Economically efficient infrastructure provision is sequenced to support urban consolidation and achieves well planned, cost effective and orderly expansion of the infrastructure network. (2) Development for urban purposes does not adversely impact on the continued operation, viability and maintenance of existing infrastructure or compromise the future provision of planned infrastructure. (3) Infrastructure provision occurs in an orderly, sequenced and economically efficient manner and occurs prior to, or in conjunction with, the first stages of development. (4) The preferred option for urban development is 'in sequence'-development that is located within priority infrastructure areas, maximises the use of existing infrastructure, and provides the range of infrastructure in accordance with the priority infrastructure plan.	(1) Priority is given to development located in priority infrastructure areas. (2) The Ooralea investigation area is not sequenced for development before 2026. (3) The Richmond and Sarina east investigation areas are not sequenced for development before 2031. (4) The Rosella investigation area is not sequenced for development within the life of the planning scheme. (5) Land affected by trunk infrastructure includes and incorporates a strategy for the economically sustainable delivery of that infrastructure.

3.3.10 Element – Agricultural land	3.3.10.1 Specific outcomes	3.3.10.2 Land use strategies
(1) Protecting Agricultural land Class A and B and Important Agricultural Areas *(See 3.6.2 Element – Natural resources)*	(1) Urban development is contained within distinct boundaries between urban and non-urban areas to avoid the loss of, and encroachment of incompatible uses onto, Agricultural land, Class A and B and Important Agricultural Areas (2) The loss and fragmentation of agricultural land is avoided. (3) The infrastructure that supports agricultural activities is protected from the adverse effects of urban development and incompatible uses.	(1) Urban boundaries include, adequate buffers to minimise the potential for conflict between the agricultural uses and urban areas.
3.3.11 Element – Network of centres	**3.3.11.1 Specific outcomes**	**3.3.11.2 Land use strategies**
(1) Network of centres that support compact urban form	(1) The region is serviced by a network of principal, major, district, local, neighbourhood and specialised centres. (2) The principal centre contains the region's most diverse mix and concentration of land uses to service the region and the wider Mackay Isaac Whitsunday region, including civic / administrative, commercial, office, retail, high density residential, short-term accommodation and recreation uses. (3) The major and district centres contain a mix of land uses to service the catchment of each centre, including retail, commercial, small-scale office and recreation uses.	(1) The development of the City Centre is guided by a local area plan and an economically efficient infrastructure provision strategy to achieve the appropriate mixed land use and high intensity built form as the principal centre for the region. (2) Where a centre or portions thereof front onto a shared roadway, it is designed as a singular centre with an integrated transport solution (i.e. Mackay Urban area at West Mackay (Fourways and Parkside), Bucasia, Blacks Beach and Andergrove).

	(4) The built form in centres provides higher intensity development than the surrounding area, high quality design outcomes in the public realm, building design and landscaping that allows for natural light, respond to the tropical climate, active and articulated street frontages and shelter and trees for protection from the sun and inclement weather. (5) The City Centre as the region's principal centre: (b) has a built form characterised by a mix of historic art deco buildings, multi-level accommodation high rises, and pedestrian activated streets, (c) contains the most intense mix of uses, scale and height of development in the region, (d) is designed to protect the distinctive character of streetscapes, heritage buildings and architecture, (e) provides shelter and trees to protect pedestrians in the public domain from the sun and inclement weather, (f) provides distinctive main street and pedestrian activated street areas, and (g) provides high mobility and access through public and active transport and pedestrian-friendly streets and laneways.	(3) The principal, major and district centres are designed to provide comfortable pedestrian environments and spaces for social interaction and associated embellishments incorporating crime prevention through environmental design (CPTED) and all-abilities design principles.

	(6) Major centres within the Mackay urban area are located in Mount Pleasant and Rural View and meet requirements for transit-orientated design. Major centres do not compromise the viability, role or function of the principal centre and other designated centres within the centres network. (7) The major centre in Sarina provides a mix of uses and retail activity along the main street and is designed to serve as a focal point for community interaction with active street frontages, walkability and access to public transport. (8) District centres within the Mackay urban area are located at Andergrove, North Mackay and West Mackay (Fourways and Parkside). District centres are also located at Walkerston and Marian. District centres do not compromise the viability, role or function of the major centres. (9) Local centres serve the convenience needs of residents within its local catchment at appropriate locations in Mackay, Walkerston, Sarina, Marian and Mirani. (10) Neighbourhood centres serve the convenience needs of residential neighbourhoods within neighbourhood catchments at appropriate locations in the key urban areas. (11) Specialised centres for household bulky goods and hardware are appropriately located at Ooralea and Richmond. (12) Bulky goods are part of the unique mix of the uses in the expanding Mount Pleasant major centre.	

	(13) Specialised centre for standalone tavern developments is located at Marian.	
3.3.12 Element – Pedestrian and cycling access	**3.3.12.1 Specific outcomes**	**3.3.12.2 Land use strategies**
(1) Pedestrian and cycling access to centres and community facilities	(1) Most residential properties in urban areas are within walking distance of a centre. (2) Centres are designed to be walkable with pedestrian and cycle access to services within the hierarchy of centres.	(1) Development within the network of centres and industrial areas provides access to public and active transport (walking/ cycling) including appropriate end of trip facilities.
3.3.13 Element – Residential and employment areas	**3.3.13.1 Specific outcomes**	**3.3.13.2 Land use strategies**
(1) Residential and employment areas (*See 3.9.3 Element - Employment areas*)	(1) Residential and employment distribution facilitates efficient movement between residence and workplace through an effective transport network that offers a range of transport options including public and active transport. (2) New residential areas are connected to the integrated transport system and provide appropriate access to employment areas. (3) Employment opportunities in the Mackay urban area are encouraged north of the Pioneer River within industrial areas, the major centres of Mount Pleasant and Rural View; the district centres of Andergrove, and North Mackay and port related and services activities in the Mackay Harbour area. (4) Residential development in the Mackay urban area occurs within the priority infrastructure area and in close proximity to the major employment areas of the City Centre and Paget.	

3.3.14 Element – Infill development	3.3.14.1 Specific outcomes	3.3.14.2 Land use strategies
(1) Infill development in urban areas to support compact urban form	(1) Infill development within the key urban areas focuses on the development of vacant land, redevelopment of existing underutilised land and development of growth areas within the urban area through a range of land uses that support the planning scheme outcomes of a compact urban form. (2) Infill development achieves more effective utilisation of land and infrastructure to accommodate growth within the urban areas of Mackay, Walkerston, Sarina, Marian and Mirani. (3) Development for urban purposes at infill locations provides for infrastructure and services that are commensurate with the nature and scale of development that is expected to occur in the area and consistent with the assumptions contained in the priority infrastructure plan.	(1) Infill development within the key urban areas targets development around centres, major transport corridors, and areas of high amenity.
3.3.15 Element – Tropical settlement and building design	**3.3.15.1 Specific outcomes**	**3.3.15.2 Land use strategies**
(1) Settlement and building design to respect the tropical climate	(1) Development respects the tropical climate through the application of water sensitive urban design, tropical design of buildings and public spaces, appropriate infrastructure design, and efficient water and energy usage. (2) Development is designed to respect the depth, flow and duration of flooding events.	

3.3.16 Element – Green and open space	3.3.16.1 Specific outcomes	3.3.16.2 Land use strategies
(1) Development supports a regional network of green and open space	(1) The regional green space network protects areas of environmental significance (including biodiversity, remnant vegetation, and natural wildlife habitats) and protects natural linkages and environmental corridors between nature reserves, along waterways and coastal foreshore areas. (2) The regional open space network provide opportunities for active and passive outdoor recreation activities through a hierarchy of open spaces (regional, district and local parks); and protect areas of natural environmental value such as bushland, wetlands or waterways from urban development. (3) Open spaces in neighbourhoods and urban areas provide natural environment amenity, green urban breaks, recreation spaces, and walkable connections. (4) The regional open space network includes bikeways and walkways for recreation use. (5) Development facilitates public access to urban waterways and coastal watercourses. (6) New urban development areas provide appropriate linkages and open spaces in support of the green and open space network.	(1) Development adjacent to the open space network and related waterways is limited to low impact activities, facilities or works. (2) Vegetated buffers improve landscape function and assist in stormwater quality management in support of the open space network. (3) The open space network considers multi-usage of open space and co-location of parks and waterways in the key urban areas. (4) The Bluewater Activity Trail is developed as a circular pedestrian and cycle route as part of the regional open space network in the Mackay urban area. (5) Conservation zones protect natural habitat areas including the national parks, conservation parks and nature reserves.

3.3.17 Element – Rural residential areas	3.3.17.1 Specific outcomes	3.3.17.2 Land use strategies
(1) Rural residential development is supported at appropriate locations	(1) Rural residential development provides rural lifestyle options within designated rural residential nodes, respect natural environmental and landscape values and does not compromise the use of agricultural land.	(1) Rural residential activity is limited to the designated nodes such as Habana, Devereux Creek and Sarina Beach
3.3.18 Element – Liveability in urban areas	**3.3.18.1 Specific outcomes**	**3.3.18.2 Land use strategies**
(1) Liveability in urban areas is enhanced through quality public spaces, housing diversity, walkability and active transport options and tropical design.	(1) Urban areas provide quality public spaces for active and passive recreation. (2) Urban areas provide a diversity of housing choice including medium and high density housing that support compact and sustainable urban living. *(See 3.5.5 Element – Housing affordability)* (3) The location and design of sensitive land uses do not impact the operational efficiency of sporting grounds and recreation and entertainment facilities, and maintain high levels of amenity for the sensitive land uses. (4) Neighbourhoods provide walkability to centres, transport connections and recreation spaces through a well-connected street network, cycle- and walkways. (5) Residential neighbourhoods are protected from the impact of air and noise impacts from industrial activity and major roads. (6) Development applies tropical settlement and building design to enhance liveability and reduce energy costs. *(See Element – Tropical settlement and building design)*.	(1) Buffers and design measures protect and mitigate the impact between sensitive uses and uses that emit air, noise and odour pollution.

	(7) Development promotes active transport options; including walking and cycling.	
3.3.19 Element – Coastal zone development	**3.3.19.1 Specific outcomes**	**3.3.19.2 Land use strategies**
(1) Development respects coastal processes and constraints	(1) Development in the coastal zone is planned, located, designed, constructed and operated to: (a) avoid the social, financial and environmental costs arising from the impacts of coastal hazards, taking into account the projected effects of climate change, (b) manage the coast to protect, conserve and rehabilitate coastal resources and biological diversity, and (c) preferentially allocate land on the coast for coastal-dependent development. (2) Urban development in the coastal zone follows a nodal settlement pattern and avoids creating or extending a linear pattern along the coast.	(1) Development within urban areas that are projected to be within a high coastal hazard area by the year 2100 is guided by the coastal hazard adaptation strategy.

3.4 Natural environment and regional landscapes

3.4.1 Strategic outcomes

(1) The Mackay region values and protects the unique natural environment and regional landscape that is defined by the vegetated uplands of the Clarke Ranges, the coastal hills, the Pioneer River and Plane Creek catchments, the unique vegetation communities and core habitat areas, the natural linkages between the hinterland and coast along riparian corridors, and water and ecological processes that support the Great Barrier Reef, including the coastal habitat and island ecology.

(2) Regional landscape areas with aesthetic and amenity values are protected and enhanced, including the Clark ranges and coastal hills, the unique clusters of native vegetation, and land and seascapes that define the visual experience of the region.

(3) Areas of environmental significance are protected and conserved. Ecotourism facilities in natural environments are encouraged in order to facilitate the management and appreciation of scenic, environmental and cultural values.

(4) The scenic amenity of the coast is protected and enhanced.

(5) The ecological integrity of core habitat areas, whether terrestrial, riparian or marine, is protected to enable species to be sustained.

(6) Natural riparian and environmental corridors provide linkages that protect biodiversity and sustain the functioning of natural processes.

(7) Development recognises natural environmental constraints and avoids detrimental impacts on groundwater, salt water intrusion and acid sulfate soils.

(8) Development avoids areas of high risk and takes appropriate mitigating action in areas subject to flooding, landslide, natural bushfire hazards and coastal hazards.

Table 3.4.1 Theme components – Natural environment and regional landscapes

3.4.2 Element – Areas of environmental significance	3.4.2.1 Specific outcomes	3.4.2.2 Land use strategies
(1) Protecting areas of environmental significance	(1) Urban development is planned to avoid and prevent loss or degradation to areas of environmental significance, including protection of endangered, vulnerable or threatened species habitats, natural corridors, remnant vegetation, wetlands and waterways, biodiversity areas, and conservation areas. (2) Where avoidance is not possible, development is managed to minimise and offset residual impacts whilst actively managing to enhance the existing values of areas of environmental significance.	(1) Development maintains the scenic, environmental and cultural values of regional areas of environmental significance, including the unique coastal vegetation areas around Midge Point, Slade Point; rainforest communities in the region of Eungella and Mt. Ossa; intact mangrove communities along the coastline; internationally significant habitat for migratory shorebirds at Sandfly Creek (East Mackay); shorebird habitats at St Helen's Bay, Sandringham Bay (Bakers Creek);

	(3) The design and location of development minimises offsite impacts and provide appropriate buffers to areas of environmental significance, including along waterways. (4) Conservation zones protect areas of significant biological diversity and ecological integrity, including national parks, State forests, conservation parks and nature reserves. (5) Habitats that support a critical life state of ecological process such as feeding, breeding or roosting are protected, managed and enhanced.	and the coastal wetlands in St Helens Bay, Sand Bay, and estuaries of Bakers Creek and Alligator Creek.
3.4.3 Element – Aquatic habitat	**3.4.3.1 Specific outcomes**	**3.4.3.2 Land use strategies**
(1) Protecting aquatic habitats	(1) Aquatic and coastal habitats and wetlands, including ecological processes in the coastal zone, are protected from inappropriate development. (2) Intensification of development in the coastal zone is avoided and considers the impact of climate change on areas at risk from erosion, inundation or permanent sea level rise.	(1) Development, other than coastal dependent development, avoids locating within or impacting on tidal lands or wetlands and appropriate buffers provide for future landward habitat shifts along tidal lands. (2) Development is planned to avoid locating within, and provides for adequate buffers to, wetlands in the coastal management district. (3) Development in declared Fish Habitat Areas is limited to those activities specified in *Section 214 of the Fisheries Regulation 2008,* which include restoration, research, public health or safety measures and providing public infrastructure to facilitate and provide access for fishing.
3.4.4 Element – Riparian corridors	**3.4.4.1 Specific outcomes**	**3.4.4.2 Land use strategies**
(1) Protecting riparian corridors	(1) Riparian corridors protect the continued functioning of river and creek catchments.	(1) Riparian corridors in the key urban areas are treated as open space zones with appropriate buffers.

3.4.5 Element – Sensitive soils and groundwater	3.4.5.1 Specific outcomes	3.4.5.2 Land use strategies
(1) Development impacts on sensitive soils and groundwater	(1) Development promotes sustainable use of surface and groundwater and considers the ability of groundwater to recharge. (2) Development avoids and mitigates salt water intrusion in coastal areas. (3) Development in areas containing acid sulfate soils is planned and managed to avoid potential adverse effects on the natural and built environment.	(1) Development in the Pioneer Valley respect relevant water resource planning regarding the extraction of and interference with groundwater.
3.4.6 Element – High risk areas	**3.4.6.1 Specific outcomes**	**3.4.6.2 Land use strategies**
(1) Development in high risk areas	(1) Development respects natural constraints and avoids construction in areas of high risk or mitigates potential impacts of landslide, bushfire hazards, flooding and seawater inundation hazards. (*See 3.5.4 Element – Designing safe communities)*. (2) Development in areas subject to bushfire hazard, landslide risk and inundation in riverine and local flood events (defined flood level – DFE) is located and designed to minimise the risk of harm to people and property. (3) Development on steep land is adequately protected from landslide hazard and does not increase the landslide risk on adjoining and nearby sites.	

3.4.7 Element – Landscape character and image corridors	3.4.7.1 Specific outcomes	3.4.7.2 Land use strategies
(1) Development respects landscape character and image corridors	(1) The distinctive landscapes and seascapes of the Mackay region are protected. (2) Landscape character areas are protected from development and include the inland mountain ranges, waterways and the scenic amenity of all coastal areas and hills in the Mackay region. (3) Development in landscape character areas is sensitively located and designed to maintain landscape character attributes and enhance the visual amenity of the region. (4) Development adjacent to image corridors provides high quality built form and landscaping outcomes.	(1) The landscape character is protected and enhanced by providing urban breaks, natural environment corridors, scenic viewpoints and gateways, waterfront access, undeveloped riparian corridors (wetland, streams, and estuaries) and undeveloped hillsides, ridgelines, islands and coastal areas. (2) Development does not dominate the landscape and is limited to areas which respect the landscape features.

3.5 Strong communities

3.5.1 Strategic outcomes

(1) Urban development creates safe and connected places for community interaction particularly within the centres network and residential neighbourhoods.

(2) The Mackay region's distinctive cultural and heritage places are protected and enhanced.

(3) Adequately sized, well designed, appropriately located and cost effective open space and sports and recreation facilities are provided in the Mackay region.

(4) Developments that increase housing diversity and affordability are encouraged, including the range of residential lot sizes, higher residential densities, short-term and permanent accommodation and social housing.

(5) The liveability of the region is supported by healthy lifestyle options by providing suitable areas for physical activity, recreation and community connection.

(6) Community and recreation facilities are accessible and protected from incompatibles uses.

(7) The range of social facilities and community services in the urban areas of Mackay, Walkerston, Sarina, Marian and Mirani respond to the demographic profile of the growing and ageing population and needs of all members of the diverse community.

Table 3.5.1 – Theme components - Strong communities

3.5.2 Element - Cultural heritage and neighbourh-ood character areas	3.5.2.1 Specific outcomes	3.5.2.2 Land use strategies
(1) Protecting the region's distinctive cultural and heritage places	(1) The region's distinctive cultural and heritage places and buildings are protected, maintained and enhanced. (2) Development enables the re-use and conservation of heritage places and buildings. (3) Neighbourhood character areas protect the unique building heritage in the west, east and south Mackay urban area. (4) Places of regional heritage significance are protected including the unique buildings and heritage in the City Centre, the Greenmount Homestead and Mackay General Cemetery.	

3.5.3 Element – Active and healthy lifestyle	3.5.3.1 Specific outcomes	3.5.3.2 Land use strategies
(1) Encouraging an active and healthy lifestyle	(1) Urban areas and neighbourhoods provide opportunities to practice a healthy and active lifestyle. (2) Open space, sports and recreation facilities are located in proximity to neighbourhoods with a regional sports node in the Mackay urban area at South Mackay and sub-regional sports nodes at Sarina, Glenella, North Mackay/Andergrove, Northern Beaches and Marian. (3) Active transport is encouraged in support of an active lifestyle.	(1) A sub-regional sports facility is provided within, or adjacent to, the Marian urban area and in close proximity to the Marian district centre.
3.5.4 Element – Designing safe communities	**3.5.4.1 Specific outcomes**	**3.5.4.2 Land use strategies**
(1) Designing safe communities	(1) Development in urban areas avoids and minimise the impacts of flood, bushfire and landslide risk and the impacts of climate change. (2) Urban areas are disaster resilient and infrastructure planning and development considers disaster recovery. (3) Development maintains the safety of people from flooding up to and including the Defined Flood Event (DFE). (4) Development, particularly where it interfaces with publicly accessible areas and high activity generators, adheres to CPTED principles to reduce opportunities for antisocial and criminal behaviour, enhance community safety and improve liveability.	

	(5) Public places and neighbourhoods conform to universal access standards to promote safe and convenient living and enable emergency response access and effective disaster evacuation routes.	
3.5.5 Element – Housing affordability	**3.5.5.1 Specific outcomes**	**3.5.5.2 Land use strategies**
(1) Enhancing housing affordability in urban areas	(1) Urban development in Mackay, Walkerston, Sarina, Marian and Mirani provides diversity in housing types that respond to housing affordability, changes in household demographics and income and the ability to age in place. (2) Housing affordability and choice is supported by a diversity of residential lots sizes, including smaller lots and dwellings for 1 or 2 person households. (3) Affordable living is supported by the design of walkable neighbourhoods, complete streets within centres that include mixed uses and active transport connectivity and providing diversity in housing choice within the key urban areas.	(1) Higher density residential development in urban areas is located in and around the principal, major and district centres, transport corridors and areas with unique amenity. (2) New and infill development support walkability by connecting streets and walkways to the existing road network with high levels of internal and external connectivity and strong linkages between key neighbourhood hubs and open spaces.
3.5.6 Element – Community facilities	**3.5.6.1 Specific outcomes**	**3.5.6.2 Land use strategies**
(1) Creating accessible community facilities	(1) Community and recreational facilities serve the social and cultural needs of the diverse community in the Mackay region. (2) Community facilities are protected from incompatible uses and are accessible and connected to the transport network including public and active transport.	

	(3) Recreation and sports facilities are optimally utilised in Mackay, Walkerston, Sarina, Marian and Mirani; including the sharing of facilities between sporting codes and clubs. (4) Community facilities provide spaces for community interaction and events in the key urban areas, including community halls, art galleries, libraries and museums. (5) The City Centre provides for a regional arts and cultural precinct. (6) The regional sports node at South Mackay and the sub-regional sports nodes at Sarina, Glenella, North Mackay/Andergrove, Northern Beaches and Marian provide a range of sports facilities and codes, and are connected to the transport network.	

3.6 Natural resource management

3.6.1 Strategic outcomes

(1) The Mackay region's natural resources and agricultural production land are protected to meet current and future needs. This includes productive agricultural land on the floodplains of the Pioneer and O'Connell Rivers and Plane Creek catchments, extractive resources and minerals, fresh water, air, natural inland and coastal forests, island habitats, and native plants and animal species.

(2) Best practice catchment management principles and total water cycle management are applied in the region to protect water resources, ensure sustainable water use and water quality.

(3) Key resource areas and extractive resource deposits are protected for sustainable usage and its operation avoids adverse impacts on sensitive uses.

(4) Risks to water quality from existing and future land uses and development activity in drinking water supply catchments are managed.

Table 3.6.1 – Theme components – Natural resource management

3.6.2 Element – Natural resources	3.6.2.1 Specific outcomes	3.6.2.2 Land use strategies
(1) Protecting natural resources in the region	(1) The region's natural resources are protected, including agricultural land, water resources, native plants and animals and marine resources. (2) Agricultural land is protected from non-agricultural uses. (3) Marine plants, tidal lands and marine resources along the eastern seaboard are protected through appropriate buffers and land use allocation and enables sustainable fish habitats and fisheries production. (4) Fishing resources and fish habitats are protected and managed in support of conservation values and its relationship to commercial and recreational fishing.	(1) The rural, conservation and open space zones are utilised to protect land that hosts natural resource processes. (2) The potential for conflict between rural uses and other land use activities is minimised by the location, design and management of potentially conflicting uses.
3.6.3 Element – Water and soil management	**3.6.3.1 Specific outcomes**	**3.6.3.2 Land use strategies**
(1) Development respects sustainable water usage and soil management	(1) Total water cycle management ensures sustainable usage of water resources, water quality and supports healthy waterways.	

	(2) Development manages development impacts on soils, including minimising erosion and ensuring sediment control. (3) The cumulative extraction of ground water within urban and rural areas are monitored and effectively managed to ensure protection of the natural resource. (4) The network of dams and water catchments are protected and managed in urban and rural areas including the Eungella, Teemburra and Kinchant dams.	
3.6.4 Element – Extractive resources	**3.6.4.1 Specific outcomes**	**3.6.4.2 Land use strategies**
(1) Protecting extractive resources in the region *(See 3.9.7 Element - Extractive resource industries and high impact activities*)	(1) Key resource areas are protected from encroachment by incompatible development. (2) The impacts of hard rock extractive industries, such as drilling, blasting and crushing are mitigated to retain the amenity of nearby properties. (3) Transportation and haulage routes associated with extractive resources are protected.	(1) Buffer areas protect sensitive uses from impacts of extractive resource areas and high impact activities.

3.7 Transport

3.7.1 Strategic outcomes

(1) The region has an integrated, efficient and safe transport system with a range of transport modes to meet the mobility needs of residents and the economy.

(2) The road network facilitates efficient and safe movement throughout the region.

(3) Highway traffic and heavy vehicles bypass the Mackay and Walkerston urban areas on major roads that provide efficient access to the north, south and west, major industrial areas and ports.

(4) Freight is moved, transferred and distributed efficiently throughout the region by appropriate transport modes.

(5) Long distance passenger terminals are integrated with the public transport network and are designed to provide passenger comfort, end of trip facilities and information about the region.

(6) Urban development is designed to integrate transport and land use by providing public transport facilities and end of trip facilities in centres and supporting active transport solutions within communities.

Table 3.7.1 – Theme components - Transport

3.7.2 Element – Integrated transport system	3.7.2.1 Specific outcomes	3.7.2.2 Land use strategies
(1) An effective regional integrated transport system	(1) The integrated, efficient and safe transport system provides a range of transport modes, including improvements and extensions to public and active transport networks within and between Mackay, Walkerston, Sarina, Marian, and Mirani. (2) The road network connects to rail, sea and airports and enables efficient movement between residential, employment and recreational areas. (3) A high level of self-containment within emerging communities provides access to employment, services and facilities in close proximity. (4) Transport corridors link employment destinations and residential areas and support public and active transport.	

	(5) Existing and future transport corridors, such as the major road and rail networks, future Mackay Ring Road (bypass road), the Bowen Basin Service Link and road-widening projects, are protected from incompatible uses. (6) Urban development seeks to reduce car dependence but provides for vehicle movement and parking facilities appropriate to land use. (7) Emerging communities are planned using transport orientated design that provides choice of transport mode and access to public transport. (8) Active transport involves safe, efficient, continuous and pleasant pedestrian routes and cycleways in the Mackay, Walkerston, Sarina, Marian and Mirani urban areas.	
3.7.3 Element – Road hierarchy and road network	**3.7.3.1 Specific outcomes**	**3.7.3.2 Land use strategies**
(1) Supporting an efficient road hierarchy and road network in the region	(1) The road hierarchy provides roads with appropriate functions and capacities to ensure efficient and safe traffic movement within urban areas and linkages to the regional and national road network. (2) New residential areas and commercial and industrial development are connected with and extend the road hierarchy. (3) The road network supports effective movement on major roads and the future Mackay Ring Road (bypass road) and Bowen Basin Service Link.	(1) Development is managed to establish and maintain the road hierarchy in the road hierarchy overlay.

	(4) The future Mackay Ring Road (bypass road) ensures that heavy vehicular movement connects major industrial areas and ports and avoids movement through the central Mackay urban area. (5) Western road corridors connect the industrial areas of Paget and potential future industrial area of Rosella to the mining activities in the Bowen Basin via the Peak Downs Highway, Bowen Basin Service Link and Homebush Road, and ensure efficient north-south movement of goods through the region.	
3.7.4 Element – Freight transport	**3.7.4.1 Specific outcomes**	**3.7.4.2 Land use strategies**
(1) Supporting a regional freight transport network	(1) Freight is moved, transferred and distributed efficiently throughout the region by appropriate modes, including road, rail, sea and air. (2) Freight transport facilities provide logistics support and storage capacity and benefits from access to regional freight routes. (3) The potential future intermodal freight transport facility in Rosella enables freight transfer from rail to road and provides road linkages to the Paget and potential future Rosella industrial area, Bowen Basin mines and strategic ports.	(1) Rail infrastructure, including cane and coal rail corridors, are protected from the constraining effects of sensitive land uses by acoustic screens or forms of physical separation. (2) Overnight transport depots for the storage of trucks in Mackay and Sarina are buffered from residential uses and do not intrude into agricultural land.
3.7.5 Element – Long distance travel facilities	**3.7.5.1 Specific outcomes**	**3.7.5.2 Land use strategies**
(1) Supporting long distance travel facilities in the region	(1) Long distance transport terminals at the Mackay railway station (Paget) and bus terminal in the City Centre as well as Sarina railway station and bus terminal in the Sarina town centre provide for vehicle and passenger needs and are integrated with the local public transport network.	

3.7.6 Element – Public transport	3.7.6.1 Specific outcomes	3.7.6.2 Land use strategies
(1) Supporting public transport in the region	(1) Development supports public transport linkages between residential areas, employment areas, community facilities and services and recreational facilities that reduce car dependency. (2) The public transport network connects the principal, major and district centres within and between the Mackay, Walkerston, Sarina, Marian and Mirani urban areas. (3) Development supports the integration of land and transport by providing appropriate public transport terminals and / or end of trip facilities within centres and developments.	(1) The establishment of public transport linkages between the principal, major and district centres does not detract from the intent of development to support self-containment in the key urban areas and emerging communities.
3.7.7 Element – Walking and cycling routes	**3.7.7.1 Specific outcomes**	**3.7.7.2 Land use strategies**
(1) Walking and cycling routes as an integral part of the transport system	(1) Cycleways and footpaths are an integral part of the transport system within the Mackay region and support active transport and connectivity to public transport. (2) Bikeways and footpaths connect residential areas to centres, recreational spaces and parklands, employment areas and schools. (3) On-road and off-road cycleways in existing and new development enable safe travel; including dedicated lanes, low speed travel, prioritised road crossings, cycle friendly intersections and end of trip facilities.	(1) Pedestrian, cycle and public transport movement are treated as superior to vehicular movement within the town centres, school nodes and regional recreation open space areas within Mackay, Walkerston, Sarina, Marian and Mirani.

3.8 Infrastructure

3.8.1 Strategic outcomes

(1) Infrastructure provision is economically efficient, supports the desired settlement pattern in priority infrastructure areas in the key urban areas of Mackay, Walkerston, Sarina, Marian and Mirani and occurs in an orderly sequenced manner.

(2) The trunk infrastructure networks support orderly growth and development including water, waste water treatment, stormwater systems, transport and energy and telecommunication networks and road connections to port land.

(3) Development for urban purposes aligns with the planning assumptions of the priority infrastructure plan and is appropriately sequenced.

(4) Future development maintains the operational efficiency and capacity of infrastructure. Land use planning recognises the integration of State and local infrastructure provision in servicing growth and development.

(5) Future development for urban purposes includes and incorporates a strategy for the delivery of economically efficient infrastructure.

(6) Development outside of priority infrastructure areas provides the full range of urban infrastructure (including trunk infrastructure) necessary to service the ultimate development for the area at full cost, including total lifecycle cost, to the developer.

(7) The region is served by an efficient stormwater system, including the subterranean drainage that respects the tropical climate with high incidence of rainfall.

(8) The region has effective waste management systems and recycles waste to avoid impacts on the environment.

(9) The information and communications technology network maintains connectivity to national broadband and global mobile communication networks.

(10) Strategic sea and airport infrastructure serves the needs of the local and regional economy and is protected from development that constrains safe and efficient port operations.

(11) Development for essential community service infrastructure is located, designed and constructed to ensure it is able to function during, and after, a recommended storm-tide inundation event.

Table 3.8.1 – Theme components - Infrastructure

3.8.2 Element – Infrastructure network	3.8.2.1 Specific outcomes	3.8.2.2 Land use strategies
(1) Economically and operationally efficient infrastructure network	(1) Economically efficient infrastructure provision supports the settlement pattern and protects the operational efficiency of infrastructure, including consideration of the impacts of natural hazards and climate change. (2) Infrastructure networks avoid impacting on areas of environmental significance, natural environment values and natural and coastal hazards.	(1) The operational efficiency of infrastructure is protected through provision of appropriate buffers, corridors and application of Special purpose zones. (2) Transport corridors are protected from incompatible uses to enable their safe and efficient operation, including railway lines and cane rail and access routes to sea and airports.

	(3) Planned infrastructure investment is sequenced and supports a compact urban form in the urban areas of Mackay, Walkerston, Sarina, Marian and Mirani. (4) Major economic infrastructure and strategic port land are connected to trunk infrastructure corridors. (5) The operational efficiency of the transport network serving the seaport, airport, railway and industrial areas is protected. (6) Waste management infrastructure enables sustainable waste management practices that include recycling. (7) The telecommunication and energy network provides connectivity to urban and rural areas in the region.	(3) Noise corridors along major transport corridors mitigate noise impacts on sensitive uses, including acoustic screens, physical separation of uses and the design and siting of buildings.
3.8.3 Element – Trunk infrastructure	**3.8.3.1 Specific outcomes**	**3.8.3.2 Land use strategies**
(1) Supporting an economically and operationally efficient trunk infrastructure network	(1) Trunk infrastructure corridors and utilities are provided in an economically sustainable manner in line with sequenced growth. (2) New development maintains the operational efficiency of trunk infrastructure and utilities. (3) Development for urban purposes outside of priority infrastructure areas provides the full range of urban infrastructure (including trunk infrastructure) necessary to service the ultimate development for the area at full cost, including lifecycle cost, to the developer.	(1) Trunk infrastructure corridors are protected and achieve connectivity between existing and new developments. (2) Land affected by trunk infrastructure includes and incorporates a strategy for the economically sustainable delivery of that infrastructure.

3.8.4 Element – Stormwater management	3.8.4.1 Specific outcomes	3.8.4.2 Land use strategies
(1) Supporting an efficient stormwater management system	(1) The region is served by efficient treatment of storm water discharge and subterranean drainage systems.	
3.8.5 Element – Communication networks	**3.8.5.1 Specific outcomes**	**3.8.5.2 Land use strategies**
(1) Supporting the regional communication network	(1) Development supports investment in information and communications technology, including broadband and global communication networks in both urban and rural areas.	
3.8.6 Element – Strategic port infrastructure	**3.8.6.1 Specific outcomes**	**3.8.6.2 Land use strategies**
(1) Protecting the efficient operation of strategic air and sea port infrastructure	(1) The region's sea ports and airport are protected from development that constrains port operations, including residential development in close proximity to strategic sea ports. (2) Development in the vicinity of the Mackay Airport avoids adverse impacts on the safety and operational efficiency of the airport, avoids significant increases in the numbers of people adversely affected by aircraft noise, and avoids an increase in public safety risk in proximity to airport runways. (3) The access routes to air and sea ports are protected to ensure operational efficiency, including the routes to the Mackay Airport and the Ports of Mackay and Hay Point.	(1) Development in the vicinity of the Mackay Airport provides noise reduction and attenuation measures where subject to the airport noise impacts. (2) Development of strategic port land occurs in terms of any applicable land use plan and details of the Mackay Airport land use plan may be obtained from the airport lessee. (3) Sensitive land uses and the operational efficiency of ports are protected through provision of appropriate buffers and corridors.

3.8.7 Element – Electricity infrastructure	3.8.7.1 Specific outcomes	3.8.7.2 Land use strategies
(1) Providing efficient electricity infrastructure	(1) The Mackay Region is serviced by energy infrastructure that meets the needs of the community and minimises environmental impacts. (2) Demand for centralised energy generation and infrastructure is minimised through development incorporating best practice energy efficiency design principles and maximising the use of renewable and sustainable energy supplies and sources. (3) Development in urban expansion areas provides land for energy infrastructure, including land for sub-stations and transmission lines, required to service or traverse the area. (4) Development for renewable energy projects are facilitated and encouraged where appropriately located and sensitively designed to respect rural and regional landscape values.	(1) The operational efficiency of electricity infrastructure is protected through provision of appropriate buffers and corridors.

3.9 Strong economy

3.9.1 Strategic outcomes

(1) The City Centre is the primary administrative, professional service, civic, recreational and cultural service centre for the Mackay, Isaac and Whitsunday Region.

(2) The region provides appropriate high and low impact industrial areas to serve the needs of the regional economy.

(3) The Mackay urban area provides support to the resource industry with appropriate access to commercial and industrial services and air and sea ports.

(4) Employment areas within Mackay, Walkerston, Sarina, Marian and Mirani are intensified in support of a compact urban form.

(5) New employment opportunities are encouraged within the network of centres and expansion of industrial areas.

(6) The diversity of economic activities is supported through appropriate land uses, minimising land use conflicts, protection from incompatible development and protecting economic infrastructure.

(7) Tourism opportunities are maximised in the region. Tourism facilities enable residents and tourists to experience the region's landscape character and environmentally important areas and is supported by short-term accommodation, transport infrastructure and related services.

(8) Knowledge based and innovative industries are encouraged with the focus on the Central Queensland University campus and nearby low impact industries.

(9) Primary rural production land, operations and associated infrastructure, including aquaculture facilities and sugar cane infrastructure, are protected from encroachment by incompatible development.

(10) The Mackay Airport, and priority port of Hay Point and Mackay, is developed as key infrastructure in support of the regional and state economy.

Table 3.9.1 – Theme components – Strong economy

3.9.2 Element – Mackay as resource industry and services hub	3.9.2.1 Specific outcomes	3.9.2.2 Land use strategies
(1) Supporting Mackay as Central Queensland's industry services hub	(1) The Mackay urban area provides industrial and service infrastructure in support of the mining industry, agricultural sector and regional industrial needs. (2) High and low impact industrial land is appropriately located to serve the needs of the economy, is well connected to the transport network and avoids impacts on the natural environment and amenity of sensitive uses.	(1) Industry investigation areas in the urban area of Mackay (Glenella, Cowleys Road, and Boundary Road east, south of Paget), Sarina and Marian, and the investigation area in Rosella protect land that is suitable for industrial activities and enable further detailed planning of the appropriate design and mix of industrial uses.

	(3) The Paget industrial area and potential future Rosella industrial area (not sequenced for development in the life of this planning scheme) is developed for major and high impact industries servicing the expanding mining industry and resource sector by providing large lot sites with connectivity to the freight road network, air and seaports and is protected from encroachment by sensitive uses and incompatible non-residential uses. In addition to the dominant high impact industrial uses, Paget provides low impact industrial uses servicing the Mackay region. (4) The current and future productivity and operational efficiency of Racecourse Mill, Co-generation plant, Refinery, other future diversification projects and associated infrastructure is protected from encroachment by sensitive uses and incompatible non-residential uses. (5) Mining-related facilities, services and transport logistics avoid encroachment on sensitive or incompatible land uses. (6) The industry investigation areas in the Mackay urban area (Glenella, Cowleys Road, Boundary Road east) provides for low impact industry development, whilst the industry investigation areas south of Paget and in Sarina provide for a mix of low, medium and high impact industry development.	

3.9.3 Element – Employment areas	3.9.3.1 Specific outcomes	3.9.3.2 Land use strategies
(1) Supporting accessible employment areas	(1) Employment within centres, industrial areas and strategic ports are accessible through the integrated transport network. (2) In the Mackay urban area, employment opportunities north and south of the Pioneer River support a compact urban form and improve accessibility from residential areas to avoid excessive traffic movements across the Pioneer River.	
3.9.4 Element – Diversified economy	**3.9.4.1 Specific outcomes**	**3.9.4.2 Land use strategies**
(1) Supporting a diversified economy	(1) The settlement pattern and infrastructure investment supports a diverse economy including mining industries and resource exports, agricultural production, knowledge-based activities, tourism development, retail activity and marine related activities. (2) The centres network and the industrial, commercial and retail activity in employment areas support a diversified economy.	
3.9.5 Element – Knowledge and skills development	**3.9.5.1 Specific outcomes**	**3.9.5.2 Land use strategies**
(1) Supporting knowledge and skills development	(1) Skills development and technology based industries are particularly encouraged within the City Centre and surrounding the Central Queensland University campus.	(1) Industrial expansion in proximity to the Central Queensland Central University campus in Ooralea supports the development of skills and technology serving the local economy, mining and sugar industry.

	(2) The Central Queensland University campus: (a) provides regional university services and facilities (b) provides support services and facilities and publicly accessible district sports facilities; and (c) has high levels of connectivity with the adjoining residential neighbourhood and nearby low impact industry development.	
3.9.6 Element – Retail development	**3.9.6.1 Specific outcomes**	**3.9.6.2 Land use strategies**
(1) Supporting appropriately located retail development	(1) Retail activity is concentrated within the network and hierarchy of centres, is appropriately located and accessible in serving the needs of the community.	(1) Development is managed to establish an appropriate mix of uses relating to the function and catchment of each centre and catchment, including the size of retail activity.
3.9.7 Element – Extractive resource industries and high impact activities	**3.9.7.1 Specific outcomes**	**3.9.7.2 Land use strategies**
(1) Supporting extractive resources and high impact activities *(See 3.6.4 Element - Extractive resources*)	(1) The economic viability and function of extractive industries is protected. (2) Key resource areas and high impact activity areas are buffered from sensitive uses. (3) The haulage routes of extractive industries are connected to the appropriate road hierarchy and provide buffers along such routes to mitigate impacts on sensitive uses. (4) The health, wellbeing, amenity and safety of communities are protected from the impacts of air, noise and odour emissions, and from the impacts of hazardous materials.	(1) High impact activities, such as the abattoir at Bakers Creek, coal terminals and sugar mill ponds, are buffered to protect residents from impacts of noise, air and hazardous materials. (2) High impact and noxious industries are directed away from sensitive land uses to avoid impacts on sensitive uses. (3) Design measures are incorporated where sensitive land uses are located within a buffer area related to a high impact activity.

	(5) The interface between industrial land and sensitive land uses are managed to support industrial land uses in appropriate locations.	
3.9.8 Element – Tourism development	**3.9.8.1 Specific outcomes**	**3.9.8.2 Land use strategies**
(1) Supporting tourism development in the region	(1) Tourism development is supported by short-term accommodation options and support services within the region. (2) Tourist facilities and outdoor recreation areas benefit from its location in areas of natural recreational, cultural and scenic value. (3) Access to tourism attractions and localities is supported by appropriate transport infrastructure, (such as small airports, jetty landings, safe harbours and barge landings) to enable residents and tourists to experience the region's high value landscape character and environmentally important areas.	(1) Tourism development is encouraged at locations with high quality amenity: (a) within urban areas, particularly: the City Centre, Mackay Harbour (including Mackay Marina Village and East Point) and other coastal areas; and (b) outside the key urban areas of Mackay, Walkerston, Sarina, Marian and Mirani particularly: Laguna-Whitsundays, Eungella (particularly the area south of Jack Cunningham Street), Broken River, Crediton, Finch Hatton Gorge, Kinchant Dam, Seaforth, Haliday Bay, Ball Bay, Cape Hillsborough, Salonika Beach, Grasstree Beach, Campwin Beach and Armstrong Beach and Lindeman, Brampton and Keswick Islands.
3.9.9 Element – Rural production	**3.9.9.1 Specific outcomes**	**3.9.9.2 Land use strategies**
(1) Sustaining rural production	(1) Agricultural land is protected for agricultural use, including food production and focuses on sugar cane production in the Mackay region. (2) Primary production activities are protected from incompatible land uses.	(1) In rural areas residential uses are limited to those in support of rural production.

	(3) The provision of industrial land supports the diversification of the sugar industry whilst protecting the operation of established sugar mills. (4) Primary production operations and infrastructure of agricultural industries are protected, notably cane tramways, rail systems, haul routes and irrigation infrastructure. (5) Sustainable land-based aquaculture development in coastal areas is protected from incompatible land uses.	

3.10 Sustainability, climate change and natural hazards

3.10.1 Strategic outcomes

(1) Development avoids and mitigates risks to life, property and infrastructure associated with the adverse coastal and natural hazard impacts (taking into account the projected effects of climate change) within the Mackay region.

(2) A compact urban form responds to the impacts of climate change and support a reduction in the carbon footprint of development activity, including providing a range of transport modes.

(3) The design and location of community infrastructure and services minimise the risk of failure during a natural hazard.

(4) Settlement design promotes sustainable water use and effective utilisation of energy sources.

Table 3.10.1 Theme components- Sustainability, climate change and natural hazards

3.10.2 Element – Areas vulnerable to climate change impacts	**3.10.2.1 Specific outcomes**	**3.10.2.2 Land use strategies**
(1) Development avoids and is sensitive to areas vulnerable to climate change impacts	(1) New urban development avoids areas of high risk to natural hazards and climate change impacts, whilst existing development considers mitigating action regarding natural hazards and climate change impacts including increased temperatures, high intensity rainfall, flooding, bushfire risk and cyclone events. (2) Intensification of development in coastal hazard areas is not encouraged and the impacts of climate change including coastal erosion, storm tide and permanent inundation are mitigated in urban areas.	(1) Urban development is designed to mitigate the impact of flooding, coastal erosion, storm tide and permanent inundation and is subject to minimum building floor heights.
3.10.3 Element – Climate change and compact urban form	**3.10.3.1 Specific outcomes**	**3.10.3.2 Land use strategies**
(1) Encouraging a compact urban form in response to climate change impacts	(1) A compact urban form enables public and active transport and foster self-containment to reduce the need to travel and car dependency.	(1) Densities and mixed use development are increased in centres and transport corridors to support active transport and self-containment.

3.10.4 Element – Water and energy	3.10.4.1 Specific outcomes	3.10.4.2 Land use strategies
(1) Supporting sustainable water and energy usage	(1) Urban development promotes sustainable water use and total water cycle management, and considers climate change impacts on rainfall patterns, evaporation and water availability. (2) Settlement design and development encourages sustainable energy usage, and promotes the use of renewable energy sources.	(1) Settlement and building design utilise passive design techniques such as shading within the landscape and tropical building design. (*see Element – Tropical settlement and building design*)

Part 4 Priority infrastructure plan

Advisory note

Amendments made to the *Sustainable Planning Act 2009* (Act) in June 2014 require that a local government that wants to levy infrastructure charges for trunk infrastructure must include a Local Government Infrastructure Plan as part of their planning scheme before 1 July 2016. Amendments made to the Act in November 2015, allow for the Planning Minister to extend this timeframe up to 1 July 2018. Mackay Regional Council made an application to the Planning Minister and was granted an extension to the Local Government Infrastructure Plan timeframe to 30 June 2018.

As a result of the requirement to include a Local Government Infrastructure Plan in the planning scheme, this section – *Part 4 Priority Infrastructure Plan* will be replaced through a future amendment to include – *Part 4 Local Government Infrastructure Plan*. Until such time that the *Part 4 Local Government Infrastructure Plan* is adopted by Council and becomes part of the planning scheme, the Mackay Regional Council Adopted Infrastructure Charges Resolution has force and effect in relation to the following:

- the Desired Standards of Service for trunk infrastructure;
- identification of the Priority Infrastructure Area; and
- the plans for trunk infrastructure for each infrastructure network.

The resolution can be found at:
http://www.mackay.qld.gov.au/business/planning_and_development/planning_schemes_and_strategic_planning/strategic_planning/adopted_infrastructure_charges_regime

The development of the *Part 4 Local Government Infrastructure Plan* and the subsequent amendment to the planning scheme will be undertaken in accordance with the requirements of the Act and the relevant statutory guideline at that time. This will include a separate public consultation process and will require separate Ministerial approval.

4.1 Preliminary

4.1.1 Introduction

(1) This priority infrastructure plan (PIP) has been prepared in accordance with the requirements of the *Sustainable Planning Act 2009.*

4.1.2 Purpose

(1) The purpose of the PIP is to:

(a) integrate and coordinate land use planning and infrastructure planning; and

(b) ensure that trunk infrastructure is planned and provided in an efficient and orderly manner.

4.1.3 Structure of priority infrastructure plan

(1) The PIP:

(a) states in section 4.2 (planning assumptions) the projections of future urban growth and the assumptions of demand for each trunk infrastructure network, which have informed the preparation of the priority infrastructure plan

(b) identifies in Section 4.3 (priority infrastructure area (PIA)) the prioritised area to accommodate urban growth for 10 to 15 years

(c) states in Section 4.4 (desired standards of service (DSS)) for each network of development infrastructure the desired standard of performance of infrastructure; and

(d) identifies in Section 4.5 (plans for trunk infrastructure (PFTIs)) the existing and planned trunk infrastructure for the following networks:

(i) water supply
(ii) wastewater
(iii) stormwater
(iv) transport; and
(v) public parks and land for community facilities.

4.2 Planning assumptions

(1) The planning assumptions form a logical and consistent basis for the planning of the trunk infrastructure networks and the determination of the PIA.

4.2.1 Dwellings, non-residential floor space and land area

(1) The distribution and timing of future development (residential dwellings, non-residential floor space and land area) to accommodate projected population and employment growth have been estimated taking into account the following factors:

(a) physical constraints on the land
(b) land use planning provisions of the planning scheme
(c) current development applications and approvals
(d) development trends
(e) cost efficient provision of infrastructure
(f) average occupancy rate projections
(g) existing level of development
(h) population growth
(i) distribution and timing of growth
(j) land available for development
(k) potential uptake rate of development of available land
(l) changing household size and occupancy rates
(m) workforce trends
(n) floor space utilizations rates and non-residential development vacancy rates; and
(o) rental properties vacancy rates.

4.2.2 Geographical areas

(1) The projections about residential and non-residential development are prepared at a level that allows re-aggregation of data into areas to support infrastructure planning for the service catchments of different trunk infrastructure networks.

(2) The PIA localities referred to in Table 4.2.10.1, Table 4.2.10.2, Table 4.2.10.3 and Table 4.2.10.4 provide a geographical overview of the growth projections for residential and non-residential development.

(3) The PIA localities and plans for trunk infrastructure are identified in Schedule 3. Planning scheme zones and precincts are identified in Schedule 2.

4.2.3 Time periods

(1) The planning assumptions have been prepared for the following time periods to align with the Australian Bureau of Statistics census years:

- 2006–mid 2011
- mid 2011–mid 2016
- mid 2016–mid 2021
- mid 2021–mid 2026; and
- mid 2026–mid 2031.

4.2.4 Existing level of development

(1) The existing level of development (base year for PIP) has been estimated at:
- water supply- 2006
- wastewater- 2006
- stormwater- 2006 and 2009
- transport- 2006; and
- public parks and land for community facilities- 2006.

4.2.5 Development potential of land

(1) The net developable area is land designated for urban purposes under the planning scheme minus land required for infrastructure, easements which constrain development and is not affected by the following site constraints:

(a) 1% annual exceedence probability flood inundation

(b) biodiversity overlay

(c) any resumption plans

(d) landscape character areas

(e) steep land

(f) agricultural land; and

(g) recycled water storage and irrigation areas (Mackay Water Recycling Project).

4.2.6 Assumed scale of development

(1) The assumed scale of development for purposes of the PIP has been determined to reflect the realistic level (scale and intensity) of development having regard to the land use planning provisions of the planning scheme, site constraints and development trends. These assumptions are reflected in Table 4.2.6.1 and Table 4.2.6.2.

(2) Table 4.2.6.1 identifies the assumed scale of development for residential zones expressed as a number of dwellings per net developable hectare.

Table 4.2.6.1 – Assumed scale of development for residential zones

Planning scheme area identification		Planning scheme use type	Assumed density (dwellings / net developable ha)
Zone	**Precinct**		
District Centre	NA	Dwelling unit, multiple dwellings	30
Emerging Community	NA	Dwelling house	15
High density residential	NA	Dwelling unit, multiple dwellings	88
Low density residential	NA	Dwelling house, dwelling unit, multiple dwellings	12
Medium density residential	Low-medium density	Dwelling unit, multiple dwellings	20
	General medium density	Dwelling house, dwelling unit	30
	Multi-storey medium density	Dwelling unit, multiple dwellings	44

Mixed use	NA	Dwelling unit, multiple dwellings	30
Principal centre	City core and City mixed use (local plan precincts)	Dwelling unit, multiple dwellings	88
	Education mixed use (local plan precinct)	Dwelling unit, multiple dwellings	20
Township	NA	Dwelling house	7

(3) Table 4.2.6.2 identifies the assumed density (scale) of development for non-residential zones expressed as floor space (square metres) per employee.

Table 4.2.6.2 – Assumed scale of development for non-residential zones

Planning scheme area identification		Planning scheme use type	Assumed density (floor space / net developable m^2
Zone	**Precinct**		
District centre	NA	Centres activities, child care centre, community activities, garden centre, rooming accommodation, hotel, indoor sport and recreation, sales office, and service industry	25
High impact industrial	NA	Food and drink outlet, industry activities, special industry, sales office, service station	200
	Air quality management	Food and drink outlet, home based business, industry activities, special industry, sales office, service station	200
	Sugar mill	Special industry	200
Local centre	NA	Centre activities, child care centre, community activities, garden centre, hotel, indoor sport and recreation, sales office, service industry	25
Low impact industry	NA	Agriculture supplies store, educational establishment (training facility), food and drink outlet, hardware and trade supplies low impact industry, service industry and warehouse	100
Major centre	NA	Centres activities, child care centre, community activities, garden centre, rooming accommodation, hotel, indoor sport and recreation, Major sport, recreation and entertainment facility, nightclub entertainment facility, outdoor sales, sales office and service industry	25
Mixed use	NA	Centres activities, child care centre, community activities, community residence, home based business and sales office	30
Principal centre	City core (local plan precinct)	Centre activities, child care centre, community activities, , rooming accommodation, hotel, indoor sport	30

Planning scheme area identification		Planning scheme use type	Assumed density (floor space / net developable m^2
Zone	**Precinct**		
		and recreation, major sport, recreation and entertainment facility, nightclub entertainment facility, bar, outdoor sport and recreation, sales office and service industry	
	City mixed use (local plan precinct)	Centre activities, child care centre, community activities, rooming accommodation, hotel, indoor sport and recreation, major sport, recreation and entertainment facility, sales office and service industry	30
	Education mixed use (local plan precinct)	Centre activities, child care centre, community activities, rooming accommodation, hotel, indoor sport and recreation, outdoor sport and recreation and service industry	25
	Exhibition / events (local plan precinct)	Major sport, recreation and entertainment facility, outdoor sport and recreation and tourist park.	20
	Civic (local plan precinct)	Child care centre, community activities, indoor sport and recreation, major sport, recreation and entertainment facility, outdoor sport and recreation.	20
Rural	NA	Agricultural supplies store, animal husbandry, bulk landscape supplies, intensive animal industry, intensive horticulture, rural industry, sales office, wholesale nursery and winery	40
Specialised centre	NA	Hardware and trade supplies, showroom and telecommunications facilities	30
Township	NA	Child care centre, centre activities, community activities, garden centre, home based business, hotel, indoor sport and recreation, outdoor sport and recreation, sales office, tourist park and wholesale nursery	30

4.2.7 Occupancy rates

(1) Table 4.2.7.1 outlines the average residential occupancy rates for different types of residential dwellings.

Table 4.2.7.1 – Average residential occupancy rates

PIP projection category	Occupancy rate (persons/dwelling)
Single dwelling	2.6 people per dwelling
Multiple dwelling	1.8 people per dwelling

4.2.8 Floor area and jobs

(1) Table 4.2.8.1 outlines the average number of jobs per floor area for different types of non-residential development.

Table 4.2.8.1 – Average job numbers per gross floor Area (GFA)

PIP projection category	Employment ratio (employee/m²)
Retail	25 m²/ employee
Commercial	25 m²/ employee
Industrial	200 m² /employee
Other	105 m² /employee

4.2.9 PIP Projection Categories

(1) Table 4.2.9.1 and Table 4.2.9.2 identify the relationship between the residential and non-residential planning scheme land uses and the PIP projection categories used in 0, 0, 0, 0 and 0.

Table 4.2.9.1 – PIP projection categories and residential planning scheme land uses

PIP projection category	Residential planning scheme zone type
Single dwelling	Emerging community, Low density residential, Medium density residential, Rural, Rural residential, Township
Multiple dwelling	District centre, Emerging community, High density residential, Local centre, Major centre, Medium density residential, Mixed use, Principal centre, Township
Other dwelling	• Emerging community / Low density residential / Medium density residential (retirement facility, residential care facility, tourist park) • District centre / Emerging community / Low density residential / Major centre / Medium density residential / Mixed use / High density residential / Principal centre / Tourism area (major) / Township (short-term accommodation)

Table 4.2.9.2 – PIP projection categories and non-residential planning scheme land use

PIP projection category	Non-residential projection category uses related to the following
Industry	Agriculture, forestry and fishing; mining; manufacturing; construction; wholesale trade; transport; postal and warehousing and telecommunications
Retail	Retail trade, accommodation and food services
Commercial	Administrative and support services; financial and insurance services; rental, hiring and real estate services; professional, scientific and technical services; and arts and recreation services

PIP projection category	Non-residential projection category uses related to the following
Education and Training	Child care centre, education and training
Other Community Services	Public administration and safety; health care and social assistance; electricity, gas, water and waste services

4.2.10 Population and Employment

(1) Projections of population and employment growth expected to occur within local government area are contained in Table 4.2.10.1, 4.2.10.2, 4.2.10.3 and 4.2.10.4.

Table 4.2.10.1 – Existing and projected population

PIA locality	PIP projection category	Existing and projected population				
		2011	2016	2021	2026	2031 (capacity)
Andergrove	Single dwelling	8,216	9,514	10,550	10,989	11,429
	Multiple dwelling	155	155	155	473	473
	Other dwelling	253	253	253	292	292
	Total	8,624	9,922	10,957	11,755	12,194
Bakers Creek	Single dwelling	729	1,104	2,017	2,053	2,053
	Multiple dwelling	9	9	50	50	50
	Other dwelling	324	346	427	427	427
	Total	1,062	1,459	2,494	2,530	2,530
Beaconsfield	Single dwelling	4,442	5,439	6,328	6,819	7,490
	Multiple dwelling	295	385	423	772	907
	Other dwelling	0	77	77	99	99
	Total	4,737	5,901	6,828	7,690	8,496
Blacks Beach	Single dwelling	2,611	3,824	4,181	4,657	4,687
	Multiple dwelling	56	56	164	283	283
	Other dwelling	49	49	49	49	49
	Total	2,716	3,929	4,394	4,988	5,019
Bucasia	Single dwelling	4,031	4,357	4,753	5,203	6,082
	Multiple dwelling	43	43	128	128	128
	Other dwelling	36	36	36	96	96
	Total	4,110	4,437	4,917	5,427	6,306
Dolphin Heads	Single dwelling	378	378	378	460	460
	Multiple dwelling	41	41	41	41	41
	Other dwelling	0	0	0	0	0
	Total	419	419	419	502	502

PIA locality	PIP projection category	Existing and projected population				
		2011	2016	2021	2026	2031(capacity)
East Mackay	Single dwelling	3,159	3,252	3,375	3,439	3,555
	Multiple dwelling	517	517	765	965	1,217
	Other dwelling	191	248	248	248	248
	Total	3,867	4,016	4,388	4,652	5,020
Eimeo	Single dwelling	3,183	3,371	3,471	3,972	5,232
	Multiple dwelling	0	0	0	0	0
	Other dwelling	0	0	0	0	0
	Total	3,183	3,371	3,471	3,972	5,232
Glenella	Single dwelling	3,999	4,225	4,402	4,577	4,662
	Multiple dwelling	18	18	95	95	95
	Other dwelling	100	100	100	100	100
	Total	4,117	4,343	4,598	4,772	4,857
Greenmount	Single dwelling	84	89	110	110	505
	Multiple dwelling	0	0	0	0	0
	Other dwelling	0	0	0	0	0
	Total	84	89	110	110	505
Mackay City Centre	Single dwelling	1,712	1,727	1,794	1,794	1,987
	Multiple dwelling	1,906	2,047	2,660	3,695	4,790
	Other dwelling	679	700	893	1,013	1,046
	Total	4,297	4,474	5,347	6,502	7,823
Mackay Harbour	Single dwelling	667	667	1,063	1,507	1,921
	Multiple dwelling	272	272	311	446	626
	Other dwelling	0	0	100	150	200
	Total	939	939	1,474	2,104	2,747

PIA locality	PIP projection category	Existing and projected population				
		2011	2016	2021	2026	2031 (capacity)
Marian Urban	Single dwelling	2,022	2,768	3,333	4,490	5,479
	Multiple dwelling	0	0	0	0	0
	Other dwelling	10	10	10	10	10
	Total	2,032	2,778	3,343	4,500	5,489
Mirani Urban	Single dwelling	1,045	1,410	1,757	2,368	3,065
	Multiple dwelling	0	0	0	0	0
	Other dwelling	48	48	55	55	55
	Total	1,093	1,458	1,812	2,423	3,120
Mount Pleasant	Single dwelling	4,093	4,412	4,602	5,108	5,108
	Multiple dwelling	576	635	781	907	979
	Other dwelling	16	16	16	16	16
	Total	4,685	5,063	5,399	6,032	6,104
North Mackay	Single dwelling	5,862	6,042	6,152	6,306	6,378
	Multiple dwelling	821	882	1,053	1,354	1,748
	Other dwelling	261	261	261	261	261
	Total	6,944	7,185	7,466	7,921	8,387
Ooralea	Single dwelling	2,614	3,570	3,971	4,217	4,217
	Multiple dwelling	0	0	47	47	47
	Other dwelling	66	104	224	344	464
	Total	2,680	3,674	4,241	4,608	4,728
Paget	Single dwelling	221	221	221	221	221
	Multiple dwelling	0	0	0	0	0
	Other dwelling	51	51	51	51	51
	Total	272	272	272	272	272

PIA locality	PIP projection category	Existing and projected population				
		2011	2016	2021	2026	2031 (capacity)
Richmond	Single dwelling	132	708	1,769	2,199	3,363
	Multiple dwelling	0	0	0	0	0
	Other dwelling	0	0	0	0	0
	Total	132	708	1,769	2,199	3,363
Rural View	Single dwelling	2,973	4,993	6,684	9,411	12,276
	Multiple dwelling	0	0	133	328	328
	Other dwelling	0	0	0	0	0
	Total	2,973	4,993	6,817	9,738	12,604
Sarina Urban	Single dwelling	3,232	3,504	4,558	5,380	5,907
	Multiple dwelling	160	160	160	358	358
	Other dwelling	181	231	231	231	231
	Total	3,573	3,896	4,949	5,970	6,496
Shoal Point	Single dwelling	1,193	1,720	3,059	4,653	7,097
	Multiple dwelling	0	0	178	333	560
	Other dwelling	0	0	0	0	0
	Total	1,193	1,720	3,237	4,986	7,656
Slade Point	Single dwelling	3,858	3,871	3,892	3,946	3,977
	Multiple dwelling	14	14	14	113	158
	Other dwelling	36	36	36	36	36
	Total	3,909	3,922	3,942	4,095	4,171
South Mackay	Single dwelling	7,039	7,131	7,242	7,265	7,265
	Multiple dwelling	779	842	925	949	949
	Other dwelling	42	42	42	42	42
	Total	7,860	8,016	8,209	8,256	8,256

PIA locality	PIP projection category	Existing and projected population				
		2011	2016	2021	2026	2031 (capacity)
Walkerston	Single dwelling	2,835	3,113	3,452	3,696	4,426
	Multiple dwelling	27	27	27	27	27
	Other dwelling	6	6	6	6	6
	Total	2,868	3,146	3,485	3,729	4,459
West Mackay	Single dwelling	6,326	6,514	6,796	6,809	6,976
	Multiple dwelling	526	634	929	1,107	1,121
	Other dwelling	830	830	830	830	830
	Total	7,682	7,977	8,555	8,746	8,928
Total PIA	Single dwelling	76,656	88,028	100,272	111,862	125,818
	Multiple dwelling	6,215	6,737	9,042	12,472	14,886
	Other dwelling	3,179	3,444	3,945	4,356	4,559
	Total	86,050	98,210	113,258	128,691	145,263
Mackay Urban (Outside PIA): Andergrove (Rural Residential)	Single dwelling	119	132	132	132	132
	Multiple dwelling	0	0	0	0	0
	Other dwelling	0	0	0	0	0
	Total	119	132	132	132	132
Mackay Urban (Outside PIA): Bakers Creek	Single dwelling	16	391	972	972	972
	Multiple dwelling	0	0	0	0	0
	Other dwelling	0	0	0	0	0
	Total	16	391	972	972	972

PIA locality	PIP projection category	Existing and projected population				
		2011	2016	2021	2026	2031 (capacity)
Mackay Urban (Outside PIA): Ooralea	Single dwelling	0	0	0	166	166
	Multiple dwelling	0	0	56	56	56
	Other dwelling	0	0	86	86	86
	Total	0	0	142	308	308
Mackay Urban (Outside PIA): Richmond	Single dwelling	5	5	5	29	29
	Multiple dwelling	0	0	0	0	0
	Other dwelling	0	0	0	0	0
	Total	5	5	5	29	29
Rural Remainder (Outside PIA)	Single dwelling	28,655	29,614	30,265	32,887	33,521
	Multiple dwelling	117	117	117	117	117
	Other dwelling	305	305	305	305	305
	Total	29,077	30,036	30,687	33,309	33,943
Total Outside PIA	Single dwelling	28,795	30,142	31,374	34,186	34,820
	Multiple dwelling	117	117	173	173	173
	Other dwelling	305	305	391	391	391
	Total	29,217	30,564	31,938	34,749	35,384
Total planning scheme area	Single dwelling	105,451	118,170	131,646	146,048	160,638
	Multiple dwelling	6,332	6,854	9,214	12,645	15,059
	Other dwelling	3,484	3,749	4,336	4,747	4,950
	Total	115,268	128,774	145,197	163,440	180,647

Table 4.2.10.2 – Existing and projected dwellings

PIA locality	PIP projection category	Existing and projected dwellings				
		2011	2016	2021	2026	2031(capacity)
Andergrove	Single dwelling	3,043	3,548	3,951	4,122	4,293
	Multiple dwelling	86	86	86	210	210
	Other dwelling	253	253	253	292	292
	Total	3,382	3,887	4,290	4,624	4,795
Bakers Creek	Single dwelling	270	416	771	785	785
	Multiple dwelling	5	5	28	28	28
	Other dwelling	49	71	152	152	152
	Total	324	492	951	965	965
Beaconsfield	Single dwelling	1,645	1,923	2,269	2,460	2,721
	Multiple dwelling	164	214	235	429	504
	Other dwelling	0	77	77	99	0
	Total	1,809	2,214	2,581	2,988	3,225
Blacks Beach	Single dwelling	967	1,439	1,578	1,763	1,775
	Multiple dwelling	31	31	91	157	157
	Other dwelling	49	49	49	49	49
	Total	1,047	1,519	1,718	1,969	1,981
Bucasia	Single dwelling	1,493	1,620	1,774	1,949	2,291
	Multiple dwelling	24	24	24	24	24
	Other dwelling	36	36	36	96	96
	Total	1,553	1,680	1,834	2,069	2,411
Dolphin Heads	Single dwelling	140	140	140	172	172
	Multiple dwelling	23	23	23	23	23
	Other dwelling	0	0	0	0	0
	Total	163	163	163	195	195

PIA locality	PIP projection category	Existing and projected dwellings				
		2011	2016	2021	2026	2031(capacity)
East Mackay	Single dwelling	1,170	1,206	1,254	1,279	1,324
	Multiple dwelling	287	287	425	536	676
	Other dwelling	191	248	248	248	248
	Total	1,648	1,741	1,927	2,063	2,248
Eimeo	Single dwelling	1,179	1,252	1,291	1,486	1,976
	Multiple dwelling	0	0	0	0	0
	Other dwelling	0	0	0	0	0
	Total	1,179	1,252	1,291	1,486	1,976
Glenella	Single dwelling	1,481	1,569	1,638	1,706	1,739
	Multiple dwelling	10	10	53	53	53
	Other dwelling	100	100	100	100	100
	Total	1,591	1,679	1,791	1,859	1,892
Greenmount	Single dwelling	31	33	41	41	195
	Multiple dwelling	0	0	0	0	0
	Other dwelling	0	0	0	0	0
	Total	31	33	41	41	195
Mackay City Centre	Single dwelling	634	640	666	666	741
	Multiple dwelling	1,059	1,137	1,478	2,053	2,661
	Other dwelling	679	700	893	1,013	1,046
	Total	2,372	2,477	3,037	3,732	4,448
Mackay Harbour	Single dwelling	247	247	401	574	735
	Multiple dwelling	151	151	173	248	348
	Other dwelling	0	0	100	150	200
	Total	398	398	674	972	1,283

PIA locality	PIP projection category	Existing and projected dwellings				
		2011	2016	2021	2026	2031 (capacity)
Marian Urban	Single dwelling	749	1,038	1,401	1,784	2,094
	Multiple dwelling	0	0	0	0	0
	Other dwelling	10	10	10	10	10
	Total	759	1,048	1,411	1,794	2,104
Mirani Urban	Single dwelling	387	529	664	902	1,173
	Multiple dwelling	0	0	0	0	0
	Other dwelling	48	48	55	55	55
	Total	435	577	719	957	1,228
Mount Pleasant	Single dwelling	1,516	1,640	1,714	1,911	1,911
	Multiple dwelling	320	353	434	504	544
	Other dwelling	16	16	16	16	16
	Total	1,852	2,009	2,164	2,431	2,471
North Mackay	Single dwelling	2,171	2,241	2,283	2,343	2,371
	Multiple dwelling	456	490	585	752	971
	Other dwelling	261	261	261	261	261
	Total	2,888	2,992	3,129	3,356	3,603
Ooralea	Single dwelling	968	1,340	1,496	1,592	1,592
	Multiple dwelling	0	0	26	26	26
	Other dwelling	66	104	224	344	464
	Total	1,034	1,444	1,746	1,962	2,082
Paget	Single dwelling	82	82	82	82	82
	Multiple dwelling	0	0	0	0	0
	Other dwelling	51	51	51	51	51
	Total	133	133	133	133	133

PIA locality	PIP projection category	Existing and projected dwellings				
		2011	2016	2021	2026	2031 (capacity)
Richmond	Single dwelling	49	273	686	853	1,306
	Multiple dwelling	0	0	0	0	0
	Other dwelling	0	0	0	0	0
	Total	49	273	686	853	1,306
Rural View	Single dwelling	1,101	1,887	2,545	3,606	4,721
	Multiple dwelling	0	0	74	182	182
	Other dwelling	0	0	0	0	0
	Total	1,101	1,887	2,619	3,788	4,903
Sarina Urban	Single dwelling	1,197	1,303	1,713	2,033	2,238
	Multiple dwelling	89	89	89	199	199
	Other dwelling	181	231	231	231	231
	Total	1,467	1,623	2,033	2,463	2,668
Shoal Point	Single dwelling	442	647	1,168	1,788	2,739
	Multiple dwelling	0	0	99	185	311
	Other dwelling	0	0	0	0	0
	Total	442	647	1,267	1,973	3,050
Slade Point	Single dwelling	1,429	1,434	1,442	1,463	1,480
	Multiple dwelling	8	8	8	63	88
	Other dwelling	36	36	36	36	36
	Total	1,473	1,478	1,486	1,562	1,604
South Mackay	Single dwelling	2,607	2,643	2,686	2,695	2,695
	Multiple dwelling	433	468	514	527	527
	Other dwelling	42	42	42	42	42
	Total	3,082	3,153	3,242	3,264	3,264

PIA locality	PIP projection category	Existing and projected dwellings				
		2011	2016	2021	2026	2031 (capacity)
Walkerston	Single dwelling	1,050	1,158	1,290	1,385	1,669
	Multiple dwelling	15	15	15	15	15
	Other dwelling	6	6	6	6	6
	Total	1,071	1,179	1,311	1,406	1,690
West Mackay	Single dwelling	2,343	2,416	2,526	2,531	2,596
	Multiple dwelling	292	352	516	615	623
	Other dwelling	830	830	830	830	830
	Total	3,465	3,598	3,872	3,976	4,049
Total PIA	Single dwelling	28,391	32,706	37,469	41,979	47,414
	Multiple dwelling	3,453	3,743	4,976	6,829	8,170
	Other dwelling	2,904	3,169	3,670	4,081	4,185
	Total	34,748	39,618	46,115	52,889	59,769
Mackay Urban (Outside PIA): Andergrove (Rural Residential)	Single dwelling	44	49	49	49	49
	Multiple dwelling	0	0	0	0	0
	Other dwelling	0	0	0	0	0
	Total	44	49	49	49	49
Mackay Urban (Outside PIA): Bakers Creek	Single dwelling	6	152	378	378	378
	Multiple dwelling	0	0	0	0	0
	Other dwelling	0	0	0	0	0
	Total	6	152	378	378	378

PIA locality	PIP projection category	Existing and projected dwellings				
		2011	2016	2021	2026	2031 (capacity)
Mackay Urban (Outside PIA): Ooralea	Single dwelling	0	0	0	64	64
	Multiple dwelling	0	0	31	31	31
	Other dwelling	0	0	86	86	86
	Total	0	0	117	181	181
Mackay Urban (Outside PIA): Richmond	Single dwelling	2	2	2	11	11
	Multiple dwelling	0	0	0	0	0
	Other dwelling	0	0	0	0	0
	Total	2	2	2	11	11
Rural Remainder (Outside PIA)	Single dwelling	10,613	11,523	11,776	12,796	13,043
	Multiple dwelling	65	65	65	65	65
	Other dwelling	305	305	305	305	305
	Total	10,983	11,893	12,146	13,166	13,413
Total Outside PIA	Single dwelling	10,665	11,726	12,205	13,298	13,545
	Multiple dwelling	65	65	96	96	96
	Other dwelling	305	305	391	391	391
	Total	11,035	12,096	12,692	13,785	14,032
Total planning scheme area	Single dwelling	39,012	44,383	49,674	55,277	60,959
	Multiple dwelling	3,518	3,808	5,072	6,925	8,266
	Other dwelling	3,209	3,474	4,061	4,472	4,576
	Total	45,739	51,665	58,807	66,674	73,801

Table 4.2.10.3 – Existing and projected employment

PIA locality	PIP projection category	Existing and projected employment				
		2011	2016	2021	2026	2031(capacity)
Mackay Urban Area (Northern Beaches)	Retail	725	1,245	1,400	1,505	1,580
	Commercial	345	450	675	750	788
	Industrial	600	860	1,240	1,550	1,628
	Community purposes	465	755	835	1,045	1,097
	Other	16	19	17	19	20
	Total	2,151	3,329	4,167	4,869	5,113
Mackay Urban Area (Northern Mackay)	Retail	2,363	2,632	2,906	3,080	3,234
	Commercial	1,585	1,695	1,760	1,810	1,901
	Industrial	3,535	3,942	4,625	5,125	5,381
	Community purposes	2,986	3,380	3,605	3,680	3,864
	Other	106	90	90	70	74
	Total	10,575	11,739	12,986	13,765	14,454
Mackay Urban Area (Mackay City Centre)	Retail	3,800	4,400	4,800	5,000	5,250
	Commercial	700	4,100	4,200	4,250	4,463
	Industrial	3,000	3,300	3,500	3,600	3,780
	Community purposes	3,280	3,370	3,540	3,730	3,917
	Other	112	60	20	30	32
	Total	10,892	15,230	16,060	16,610	17,442
Mackay Urban Area (Southern Mackay)	Retail	985	1,060	1,127	1,205	1,265
	Commercial	755	825	852	875	919
	Industrial	1,890	2,130	2,270	2,580	2,709
	Community purposes	2,430	3,010	3,175	3,310	3,476
	Other	48	45	34	37	39
	Total	6,108	7,070	7,458	8,007	8,408

PIA locality	PIP projection category	Existing and projected employment				
		2011	2016	2021	2026	2031 (capacity)
Mackay Urban Area (Paget and Bakers Creek)	Retail	250	450	550	600	630
	Commercial	1,050	1,100	1,150	1,200	1,260
	Industrial	5,700	7,200	7,800	8,100	8,505
	Community purposes	200	230	260	350	368
	Other	130	110	16	16	17
	Total	7,330	9,090	9,776	10,266	10,780
Marian	Retail	115	133	150	170	192
	Commercial	13	15	17	19	22
	Industrial	144	166	188	213	241
	Community purposes	85	98	110	123	139
	Other	0	0	0	0	0
	Total	357	412	465	525	593
Mirani	Retail	148	170	193	218	246
	Commercial	17	20	22	24	27
	Industrial	185	213	241	273	309
	Community purposes	109	125	142	161	183
	Other	0	0	0	0	0
	Total	459	528	598	676	764
Sarina	Retail	472	533	577	625	676
	Commercial	170	191	207	224	243
	Industrial	703	793	859	930	1,008
	Community purposes	151	170	184	199	216
	Other	0	0	0	0	0
	Total	1,496	1,687	1,827	1,979	2,143

PIA locality	PIP projection category	Existing and projected employment				
		2011	2016	2021	2026	2031 (capacity)
Walkerston	Retail	175	200	250	300	315
	Commercial	75	90	100	110	116
	Industrial	150	200	350	500	525
	Community purposes	170	290	380	400	420
	Other	3	3	3	3	3
	Total	573	783	1,083	1,313	1,379
Total PIA	Retail	9,033	10,823	11,953	12,702	13,388
	Commercial	4,710	8,486	8,983	9,263	9,738
	Industrial	15,907	18,804	21,073	22,871	24,086
	Community purposes	9,876	11,428	12,231	12,999	13,679
	Other	415	327	180	175	185
	Total	39,941	49,868	54,420	58,010	61,076
Total Outside PIA	Retail	1,708	1,724	1,744	1,769	1,857
	Commercial	188	188	193	193	203
	Industrial	1,708	1,724	1,744	1,769	1,857
	Community purposes	249	250	256	267	280
	Other	641	716	768	821	889
	Total	4,494	4,602	4,705	4,819	5,086
Total planning scheme area	Retail	10,741	12,547	13,697	14,471	15,245
	Commercial	4,898	8,674	9,176	9,456	9,941
	Industrial	17,615	20,528	22,817	24,640	25,943
	Community purposes	10,125	11,678	12,487	13,266	13,959
	Other	1,056	1,043	948	996	1,074
	Total	44,435	54,470	59,125	62,828	66,162

Table 4.2.10.4 – Existing and projected non-residential floor space

PIA locality	PIP projection category	Existing and projected non-residential floor space				
		2011	2016	2021	2026	2031 (capacity)
Mackay Urban Area (Northern Beaches)	Retail	18,125	31,125	35,000	37,625	39,506
	Commercial	6,900	9,000	13,500	15,000	15,750
	Industrial	120,000	172,000	248,000	310,000	325,500
	Community purposes	13,950	22,650	25,050	31,350	32,918
	Other	320	380	340	380	399
	Total	159,295	235,155	321,890	394,355	414,073
Mackay Urban Area (Northern Mackay)	Retail	59,075	65,800	72,650	77,000	80,850
	Commercial	31,700	33,900	35,200	36,200	38,010
	Industrial	707,000	788,400	925,000	1,025,000	1,076,250
	Community purposes	89,580	101,400	108,150	110,400	115,920
	Other	2,120	1,800	1,800	1,400	1,470
	Total	889,475	991,300	1,142,800	1,250,000	1,312,500
Mackay Urban Area (Mackay City Centre)	Retail	95,000	110,000	120,000	125,000	131,250
	Commercial	14,000	82,000	84,000	85,000	89,250
	Industrial	600,000	660,000	700,000	720,000	756,000
	Community purposes	98,400	101,100	106,200	111,900	117,495
	Other	2,240	1,200	400	600	630
	Total	809,640	954,300	1,010,600	1,042,500	1,094,625
Mackay Urban Area (Southern Mackay)	Retail	24,625	26,500	28,175	30,125	31,631
	Commercial	15,100	16,500	17,040	17,500	18,375
	Industrial	378,000	426,000	454,000	516,000	541,800
	Community purposes	72,900	90,300	95,250	99,300	104,265
	Other	960	900	680	740	777
	Total	491,585	560,200	595,145	663,665	696,848

PIA locality	PIP projection category	Existing and projected non-residential floor space				
		2011	2016	2021	2026	2031 (capacity)
Mackay Urban Area (Paget and Bakers Creek)	Retail	6,250	11,250	13,750	15,000	15,750
	Commercial	21,000	22,000	23,000	24,000	25,200
	Industrial	1,140,000	1,440,000	1,560,000	1,620,000	1,701,000
	Community purposes	6,000	6,900	7,800	10,500	11,025
	Other	2,600	2,200	320	320	336
	Total	1,175,850	1,482,350	1,604,870	1,669,820	1,753,311
Marian	Retail	2,306	5,852	7,402	7,798	8,247
	Commercial	267	307	347	392	443
	Industrial	28,870	33,208	37,586	42,544	48,155
	Community purposes	2,544	2,926	3,312	3,749	4,243
	Other	NA	NA	NA	NA	NA
	Total	33,987	42,293	48,647	54,483	61,089
Mirani	Retail	2,960	3,405	3,854	4,362	4,938
	Commercial	342	394	446	505	571
	Industrial	37,060	42,630	48,249	54,608	61,806
	Community purposes	3,266	3,756	4,252	4,814	5,450
	Other	NA	NA	NA	NA	NA
	Total	43,628	50,185	56,801	64,289	72,764
Sarina	Retail	9,446	10,655	11,535	12,488	13,519
	Commercial	3,392	3,826	4,142	4,484	4,855
	Industrial	140,639	158,648	171,750	185,937	201,295
	Community purposes	4,521	5,099	5,521	5,977	6,471
	Other	NA	NA	NA	NA	NA
	Total	157,998	178,228	192,948	208,886	226,139

PIA locality	PIP projection category	Existing and projected non-residential floor space				
		2011	2016	2021	2026	2031 (capacity)
Walkerston	Retail	4,375	5,000	6,250	7,500	7,875
	Commercial	1,500	1,800	2,000	2,200	2,310
	Industrial	30,000	40,000	70,000	100,000	105,000
	Community purposes	5,100	8,700	11,400	12,000	12,600
	Other	60	60	60	60	63
	Total	41,035	55,560	89,710	121,760	127,848
Total PIA	Retail	222,162	269,587	298,616	316,898	333,566
	Commercial	94,201	169,727	179,675	185,281	194,764
	Industrial	3,181,569	3,760,886	4,214,585	4,574,088	4,816,806
	Community Purposes	296,261	342,831	366,935	389,990	410,387
	Other	8,300	6,540	3,600	3,500	3,675
	Total	3,802,493	4,549,571	5,063,411	5,469,757	5,759,197
Total Outside PIA	Retail	42,700	43,100	43,600	44,225	46,436
	Commercial	3,760	3,760	3,860	3,860	4,053
	Industrial	341,600	344,800	348,800	353,800	371,490
	Community Purposes	7,470	7,500	7,680	8,010	8,411
	Other	680	640	540	360	378
	Total	396,210	399,800	404,480	410,255	430,768
Total planning scheme area	Retail	264,862	315,887	342,216	361,123	380,002
	Commercial	97,961	173,487	183,535	189,141	198,817
	Industrial	3,523,169	4,105,686	4,563,385	4,927,888	5,188,296
	Community Purposes	303,731	350,331	374,615	398,000	418,798
	Other	8,980	7,180	4,140	3,860	4,053
	Total	4,198,703	4,952,571	5,467,891	5,880,012	6,189,965

4.2.11 Demand generation

4.2.11.1 Demand rates

(1) Table 4.2.11.1 stipulates the level of average demand each use type has on trunk infrastructure networks.

Table 4.2.11.1 – Demand rates

Planned infrastructure demand rate					
Zone	**Water supply (ET / gross / ha)**	**Wastewater (ET / gross ha)**	**Stormwater Quantity (Imp fraction)**	**Transport (trips /net developable ha)**	**Public parks and land for community facilities (People / net developable ha)**
Rural	0	0	0	0	(*)
Rural Residential	2	1	0.4	8	5 person/ha
Township	14	14	0.5	91	26 person/ha
Residential	14	14	0.5	91	2.6 person/dwelling
Commercial	12	15	0.9	(*)	(*)
Industry	9	12	0.9	(*)	(*)
Other	(*)	(*)	(*)	(*)	(*)

Footnote: (*) These are assessed by Council on a case by case basis

4.2.11.2 Development and demand generation rates

(1) Table 4.2.11.2 identifies the assumed demand generation rates for reconfiguring a lot, a material change of use of premises, or carrying out building work.

Table 4.2.11.2 – Demand generation rates

Planning scheme area identification and land use				Demand generation rates (units of demand)				
				Water supply	Wastewater	Transport	Stormwater	Public parks and community land
Use type	**Zone**	**Defined use**	**Use intensity**	**EP**	**EP**	**Trips**	**Impervious fraction / Gross Ha**	**Unit per lot**
Residential	Low density residential	Dwelling house	3 or more bed	2.55	2.55	6.5	0.5	1.0
	Medium density residential and High density residential	Dual occupancy	1 bed unit	1.25	1.25	5.0	0.75	1.0
			2 bed unit	1.9	1.9	5.0	0.75	1.0
			3 bed or more	2.55	2.55	5.0	0.75	1.0
		Retirement facility	1 bed unit	1.25	1.25	3.0	0.75	1.0
			2 bed unit	1.9	1.9	3.0	0.75	1.0
			3 bed or more	2.55	2.55	5.0	0.75	1.0
		Multiple dwelling	1 bed unit	1.25	1.25	5.0	0.75	1.0
			2 bed unit	1.9	1.9	5.0	0.75	1.0
			3 bed or more	2.55	2.55	5.0	0.75	1.0
Industry	High impact industry	High impact industry and medium impact industry	$100m^2$ use area	1.2	1.2	3.5	0.9	0.003
	Low impact industry	Low impact industry, research and technology industry, service industry and warehouse	$100m^2$ use area	2.55	2.55	3.5	0.9	0.003
Retail and commercial	Principal centre, Major centre, District	Food and drink outlet (restaurant / fast food premises)	$100m^2$ GFA	4.5	5.55	8.0	0.9	0.3
		Food and drink outlet (catering	$100m^2$ GFA	3	4	5.0	0.9	0.3

Planning scheme area identification and land use				Demand generation rates (units of demand)				
				Water supply	Wastewater	Transport	Stormwater	Public parks and community land
	centre, Local centre, Neighbourhood centre	business)						
		Shopping centre	100m^2 use area	1.4	1.7	40.0	0.9	0.003
		Shop (small, single purpose)	100m^2 GFA	1.0	1.25	30.0	0.9	0.3
		Outdoor Sales	100m^2 use area	1.0	1.0	20.0	0.9	0.3
		Office	100m^2 use area	1.0	1.0	7.0	0.9	0.3
	Various	Child care facilities	100m^2 use area	0.2	0.3	2.2 (per enrolment)	0.9	0.3

4.2.12 Projected demand summaries by network

4.2.12.1 Projected demand summary for water supply network

(1) The assumed demand summary for each service catchment is based upon the population and employment projections summarised in Table 4.2.10.1, 4.2.10.2, 4.2.10.3 and 4.2.10.4 and the assumed infrastructure demand rates identified in Table 4.2.11.1 and 0; and

(2) A summary of the assumed demand on the water supply network for each service catchment is identified in Table 4.2.12.1.

Table 4.2.12.1 Projected demand summary - Water supply network

Charge area	Cumulative demand, (*EP*)					Demand (*EP*)*
	2006	2011	2016	2021	2026	
Mackay urban	96,012	108,717	21,423	134,128	146,833	146,833
Northern Beaches	3,471	6,244	8,253	9,665	11,005	11,005
Sarina	4,050	4,965	5,924	6,884	7,660	7,660
Armstrong Beach	719	1,611	1,937	2,167	2,243	2,243
Koumala	221	250	283	320	362	362

*Represents the ultimate demand of sewerage network per area

4.2.12.2 Projected demand summary for wastewater network

(1) The assumed demand summary for each service catchment is based upon the population and employment projections summarised in Table 4.2.10.1, 4.2.10.2, 4.2.10.3 and 4.2.10.4 and the assumed infrastructure demand rates identified in Table 4.2.11.1 and 0; and

(2) A summary of the assumed demand on the wastewater network for each service catchment is identified in 0

Table 4.2.12.2 Projected demand summary - Wastewater network

Charge area	Cumulative demand, (*EP*)					Demand (*EP*)*
	2006	2011	2016	2021	2026	
Northern Beaches	6,375	6,995	7,871	8,908	9,890	9,890
Bucasia	5,079	7,032	9,462	11,992	13,592	13,592
Shoal Point	1,771	2,533	3,599	5,219	6,750	6,750
Beaconsfield	11,833	12,856	4,067	15,795	17,012	17,012
Andergrove	9,964	10,214	10,674	11,290	11,870	11,870
North Mackay	9,629	10,061	10,554	11,552	12,702	12,702
Slade Point	5,863	6,419	7,204	8,028	8,848	8,848
Mackay	32,109	34,639	37,337	40,552	43,012	43,012
Bakers Creek	831	1,659	2,987	4,371	5,734	5,734
Paget	4,532	5,465	6,494	7,524	8,449	8,449
Walkerston	2,961	3,290	3,689	4,447	5,443	5,443
Sarina	3,743	4,557	5,581	6,607	7,447	7,447

4.2.12.3 Projected demand summary for stormwater network

(1) The assumed demand summary for each service catchment is based upon the population and employment projections summarised in Table 4.2.10.1, 4.2.10.2, 4.2.10.3 and 4.2.10.4 and the assumed infrastructure demand rates identified in Table 4.2.11.1 and 0; and

(2) A summary of the assumed demand on the stormwater network for each service catchment is identified in Table 4.2.12.3.

Table 4.2.12.3– Projected demand summary Stormwater network

Charge area	Cumulative demand, (Imp HA)					Demand (Imp HA)*
	2009	2014	2019	2024	2029	
Paget east	67	318	336	336	336	336
Paget west	144	275	275	275	275	275
Ooralea	22	58	215	216	216	216
Walkerston south	22	54	66	66	66	66

*Represents the ultimate demand of stormwater quality per area.

4.2.12.4 Projected demand summary for transport network

(1) The assumed demand summary for each service catchment is based upon the population and employment projections summarised in Table 4.2.10.1, 4.2.10.2, 4.2.10.3 and 4.2.10.4 and the assumed infrastructure demand rates identified in Table 4.2.11.1 and 0; and

(2) A summary of the assumed demand on the transport network for each service catchment is identified in Table 4.2.12.4.

Table 4.2.12.4– Projected demand summary Transport network

Charge area	Cumulative demand, (*Trips*)					Demand (*Trips*)*
	2006	2011	2016	2021	2026	
Shoal Point	9,950	12,801	15,652	18,503	21,354	21,354
Northern Beaches	16,022	18,175	20,328	22,481	24,634	24,634
Mt Pleasant	88,185	94,662	101,138	107,615	114,091	114,091
Mackay Harbour	9,581	10,875	12,170	13,464	14,758	14,758
City Centre	32,983	38,943	44,902	50,862	56,821	56,821
West Mackay	45,270	51,525	57,779	64,034	70,288	70,288
Paget/Bakers Creek	4,165	4,584	5,002	5,421	5,839	5,839
Walkerston Village	12,852	14,983	17,115	19,246	21,377	21,377
South West (incl Sarina, Mirani, Marian)	34,304	42,384	50,464	58,543	66,623	66,623

Source: Based on trip matrix table supplied from MATM transport Model (DMTR, 2010)

4.2.12.5 Projected demand summary for public parks and land for community facilities network

(1) The assumed demand summary for each service catchment is based upon the population and employment projections summarised in Table 4.2.10.1, 4.2.10.2, 4.2.10.3 and 4.2.10.4 and the assumed infrastructure demand rates identified in Table 4.2.11.1 and 0; and

(2) A summary of the assumed demand on the public parks and land for community facilities network for each service catchment is identified in 0.

Table 4.2.12.5 – Projected demand summary - Public parks and land for community facilities network

Charge area	Cumulative demand, (EP)					Demand (EP)
	2006	2011	2016	2021	2026	
Mackay Regional Council – inside PIA	78,871	93,545	107,797	116,436	116,887	135,031

4.3 Priority infrastructure area

(1) The PIA is the area where suitable and adequate development infrastructure exists, or where it can be provided most efficiently.

(2) The PIA identifies the area where Mackay Regional Council (MRC) gives priority to provide trunk infrastructure for urban development up to 2026.

(3) The PIA is identified in Schedule 3.

4.4 Desired standards of service (DSS)

(1) The DSS details the standards that comprise an infrastructure network most suitable for the local context.

(2) The DSS is supported by the more detailed network design standards included in planning scheme policies, legislation, statutory guidelines and other relevant controlled documents about design standards identified below.

4.4.1 Water supply

(1) Ensure drinking water complies with the National Health and Medical Research Council (NHMRC) Australian drinking water health guidelines.

(2) Collect, store, treat and convey potable water from source to consumers in accordance with the *Water Act 2000*.

(3) Minimise non-revenue water loss.

(4) Design the water supply network in accordance with Council's adopted standards identified in the planning scheme to provide:

- (a) average day consumption (AD) – 300 l/EP/day
- (b) minimum and maximum supply pressure of 220kPa and 800kPA at each property boundary; and
- (c) fire flow for residential (15 l/s for 2 hours), industrial and commercial (30 l/s for 4 hours) development.

(5) Design recycled water systems to meet requirements of *Water Supply (Safety and Reliability) Act 2008* in accordance with state regulatory guidelines.

4.4.2 Wastewater

(1) Provide a reliable network that collects, stores, treats and releases sewerage from premises.

(2) Provide a sewerage reticulation network that minimises Inflow and Infiltration.

(3) Design the sewerage network in accordance with:

- (a) council's adopted standards identified in the planning scheme;
- (b) Water Services Association of Australia (WSAA) guidelines the *Water Act 2000*;
- (c) all Environmental Protection Agency (EPA) licence conditions; and
- (d) key design parameters identified in Table 4.4.2.1.

Table 4.4.2.1 – Key design parameters for the wastewater network

Infrastructure item	Design parameters
All (network)	Average dry weather flow (ADWF) - 230l/EP/day Peak wet weather flow (PWWF) - 5 x ADWF (1,150L/EP/day)
Pump stations	Emergency storage of 4 hrs @ ADWF for the gravitational component the flows arriving at the pump station. Installed pump capacity - 5 x ADWF (Single Duty)
Gravity sewers	Flows not to exceed 70% of pipe diameter to allow for ventilation and free air flow above the sewer Slope to achieve self-cleansing velocities

Infrastructure item	Design parameters
Rising mains	Minimum velocity 0.9 m/s (Preferred velocity 1.2m/s) Maximum velocity 2.0 m/s
Sewage treatment/ release	Existing and future EPA licence conditions

4.4.3 Stormwater[1]

(1) Collect and convey stormwater flows for both major 100 year and minor low flow year flood events (plus increased rainfall intensity as described in "increasing Queensland's resilience to inland flooding in a changing climate: final report on the Inland Flooding Study") from existing and future land use in a manner that protects life and does not cause nuisance or inundation of habitable rooms.

(2) Design the stormwater network to comply with Council's adopted standards identified in the planning scheme, which generally accord with the Queensland Urban Drainage Manual.

(3) For specific development ensure that the planning horizons for developments match the expected life of the asset and required AEP immunity as indicated in "Increasing Queensland's resilience to inland flooding in a changing climate: Final report on the Inland Flooding Study".

(4) Design road crossing structures to provide an appropriate level of flood immunity for a minimum 10 year flood event in accordance with Council's adopted standards identified in the planning scheme, subject to adequate overland flow paths existing downstream.

(5) Meet water quality objectives for receiving waters at all times.

(6) Design the water quality system to achieve the maximum desirable pollutant loads according to Queensland Government "Urban Stormwater Quality Planning Guidelines December 2010 Table 2.2" and Council's Stormwater Quality Management Plan.

(7) Design the water quality system to achieve the design objectives for management of stormwater quality – operational (post-construction) phase of development according to the Queensland Government "Urban Stormwater Quality Planning Guidelines December 2010 Table 2.3 and Figure 2.5" and Council's Stormwater Quality Management Plan.

4.4.4 Transport

4.4.4.1 Roads

(1) Provide a functional urban hierarchy that supports settlement patterns, commercial and economic activities, and freight movement achieving the following outcomes:

- (a) managed network of streets with clear physical distinctions between arterial routes and local streets based on function, legibility, convenience, traffic volume, vehicle speed, public safety and amenity;
- (b) minimal impact on residential communities by non-local traffic;
- (c) efficient freight transportation routes;
- (d) optimal connectivity which minimises community severance;
- (e) convenient linkages to activity centres such as schools, public transport stops and other destinations;
- (f) design capacity of roads based on the efficient movement of goods and people;
- (g) appropriate flood immunity.

[1] Drainage elements that form an inherent part of road infrastructure such as culverts and bridge structures can be included with road infrastructure network planning.

(2) Design the road network to comply with the following:

(a) adopted standards identified in the planning scheme;

(b) Austroads guides;

(c) the Department of Transport and Main Roads' Road Planning and Design Manual;

(d) maximum road volume to capacity ratios identified in Table 4.4.4.1.1; and

(e) maximum degree of saturation for intersections identified in Table 4.4.4.1.2.

Table 4.4.4.1.1 – Maximum volume to capacity ratios for the road network

Infrastructure item	Maximum volume to capacity ratio by land use	
	Residential	Non-residential
Arterial	0.85	0.85
Sub-arterial	0.85	0.85
Major collector	0.85	0.85

Table 4.4.4.1.2 – Maximum degree of saturation for road intersections

Road network item	Maximum degree of saturation[2]
Traffic signals	0.9
Roundabout	0.85
Priority controlled	0.8

4.4.4.2 Footpaths and cycle ways

(1) Plan footpaths and cycle ways to provide a safe, attractive and convenient network that links residential areas to major activity nodes and public transport interchanges, thereby encouraging walking and cycling as acceptable travel alternatives.

(2) Design footpaths and cycle ways to comply with the following:

(a) adopted standards identified in the planning scheme;

(b) Austroads – Guide to Road Design Part 6A: Pedestrian and Cyclist Paths; and

(c) Cycling Aspects of Austroads Guides.

4.4.4.3 Public transport

(1) Ensure development accommodates the integration of public transport services.

(2) Provide bus stops including bus bays, shelters, seating and bus information systems in accordance with adopted standards identified in the planning scheme.

4.4.5 Public parks and land for community facilities

(1) Provide an accessible network of parks, open space, and community facilities that meets the needs of residents and visitors in accordance with the rate of provision identified in Table 4.4.5.1 and accessibility standards outlined in Table 4.4.5.2.

(2) Ensure land for public parks and community facilities has:

(a) minimum land size as identified in Table 4.4.5.3;

[2] Degree of saturation is a measurement of traffic volumes per lane

(b) configuration, slope, and acceptable level of flood immunity in accordance with adopted standards identified in the planning scheme;

(c) for public parks maximum area grades not to exceed 1:10;

(d) for community facilities flood immunity of the land to be a minimum of Q100; and

(e) for community facilities maximum areas/grades are not to exceed 1:10.

(3) Embellish public parks to complement the type and purpose of the public park as identified in Table 4.4.5.4.

(4) Parks should be functional and compliment other open space areas and adjoining land uses within Council.

(5) Facilities to incorporate provision for people with disabilities including paved footpaths from adjacent parking bays to all ability play equipment;

(6) Planting to be low maintenance varieties, native to the region. Parks to maximise retention of natural vegetation and landscape features, (e.g. natural watercourses or wooded hillsides/ridges); and

(7) Compliance with all environmental management plans and performance standards.

Table 4.4.5.1 – Rate of land provision for public parks and community facilities

Infrastructure item	Rate of provision (Ha/1000 people)	
	District	Local government–wide
Recreation park	1.4 ha	0.5 ha
Sport park	2.3 ha	0.6 ha
Land for community facilities	NA	NA

Table 4.4.5.2 – Accessibility standards for public parks and land for community facilities

Infrastructure item	Accessibility standard (km)	
	District	Local government–wide
Recreation park	Between 2 km and 5km from dwellings	15 km from dwelling
Sport park	Between 2 km and 5km from dwellings	15 km from dwelling
Land for community facilities	NA	NA

Source: Lambert Recreational Planning, "Infrastructure Planning for Public Parks and Community Land for Sport and Recreation", December 2004.

Table 4.4.5.3 – Size of public parks and land for community facilities

Infrastructure item	Minimum size (Ha)	
	District	Local government–wide
Recreation park	3.0 ha	10 ha
Sport park	5–10 ha	10 ha
Land for community facilities	NA	NA

Source: Lambert Recreational Planning, "Infrastructure Planning for Public Parks and Community Land for Sport and Recreation", December 2004.

Table 4.4.5.4 Standard facilities/embellishments for public parks

Embellishment type	Recreation parks		Sport parks	
	District	Local government–wide	District	Local government–wide
Water / tap	2 / park	2 / ha	2 / ha	2 / ha
Path / bikeways	200m / ha	100m / ha	200m / ha	200m / ha
Playground / activity area	1 large / park or multiple	Regional play space / park	0.5 / ha	1 / ha
Public amenities	0.25 / ha	0.125 / ha	0.25 / ha	0.125 / ha
Seating	2 / ha	1 / ha	2 / ha	2 / ha
Picnic tables	2 / ha	1 / ha	2 / ha	2 / ha
Barbeques	2 / ha	0	2 / ha	2 / ha
Parking	5 spaces / ha	5 spaces / ha	5 spaces / ha	5 spaces / ha
Fencing / bollards	Boundary >200m	Boundary >200m	Boundary >200m	Boundary >200m
Lighting	2 / ha	2 / ha	2 / ha	2 / ha

Source: Lambert Recreational Planning, "Infrastructure Planning for Public Parks and Community Land for Sport and Recreation", December 2004.

4.5 Plans for trunk infrastructure

(1) The Plans for trunk infrastructure (PFTI) identify the existing and proposed trunk infrastructure networks intended to service the assumed development at the desired standard of service stated in the PIP.

(2) The PFTIs are identified in Schedule 3.

4.5.1 Trunk infrastructure networks, systems and items

(1) Table 4.5.1.1 broadly outlines the trunk infrastructure networks, systems and items covered by the PIP.

(2) Landowners wishing to develop land affected by trunk infrastructure must include and incorporate a strategy for the delivery of that infrastructure in consultation with Council at development proposal stage.

Table 4.5.1.1 – Trunk infrastructure networks, systems and items

Network	System	Items
Water supply	Bulk supply	Water sources (including dams, bores and water extraction infrastructure) Bulk Supply Mains Major Pump Stations Water Treatment Facilities Balance Reservoirs, and Telemetry, instrumentation and associated monitoring systems
	Distribution	Distribution mains Local storage reservoirs Booster bulk pump stations Rechlorination facilities Bulk flow metering facilities
Wastewater	Reticulation	Gravity sewers, vacuum systems, positive pressure systems and associated manholes Sewage pump stations Odour control systems Rising mains Telemetry and Instrumentation
	Sewage Treatment	Sewage treatment plants Controlled release points Recycled water storage and pump stations Associated monitoring and control systems Recycled water network
Stormwater	Quantity	Natural waterways Overland flow paths/channels (natural and constructed) Piped drainage (including pipes, culverts, manholes, inlets and outlets) Exclude items that have been included in the road network. Detention and retention facilities

Network	System	Items
	Quality	Stormwater Quality Infrastructure Devices (SQIDs) Gross Pollutant Traps (GPTs) Constructed wetlands Riparian corridors Bio-retention facilities Bank stabilisation, erosion protection and revegetation Grassed swale drainage systems Access points to enable mosquito control programs
Transport	Local government and state controlled roads (separately identified)	Arterial roads, sub-arterial roads and major collector streets The local function of state controlled roads Associated intersections, traffic lights, lighting, bridges, culverts, kerb and channel, local street drainage, pedestrian footpaths and cycleways (within the road reserve), on road cycleways, basic revegetation.
	Public transport	Bus stops, shelters and route information Dedicated public transport corridors and associated infrastructure
	Off-road pathway	Cycleways and pedestrian pathways not within the road reserve Associated lighting, culverts, bridges, directional and information signage, surface marking
Public parks and land for community facilities	Public parks	Park embellishments including public amenities, playgrounds, fencing, bollards, on-site car parks, footpaths, cycleways, lighting, drink bubblers and taps, picnic tables, turf and irrigation, BBQs, sporting facilities, provision of services such as water and power Local Park[3] Lineal Park Dog off-leash areas Skate parks District Parks Multi use parks Foreshore Park District Sports / Recreation Parks Metropolitan Parks Regional Parks Community gardens
	Other community facilities	Land and basic works associated with the clearing of land and connection to services Neighbourhood Centre Branch Library Community Meeting Room Multi-purpose community hall or centre Youth centre Senior Citizens centre Performing Arts centre Swimming Pool

[3] Local Parks shown in the Plans for Trunk Infrastructure (PFTI) for Parks and Community Facilities are existing parks earmarked for upgrading to higher level parks.

Network	System	Items
		Cemetery Central Library Camping Area Museum Central Art Gallery Council Chambers

4.5.2 Trunk infrastructure mapping

(1) Plans identifying the existing and future trunk infrastructure for each infrastructure network are shown in Schedule 3.

4.5.3 Trunk infrastructure networks not provided within the PIA

(1) Not all premises within the PIA will be serviced by all networks of trunk infrastructure. Those areas not serviced are shown in Table 4.5.3.1.

Table 4.5.3.1 – Trunk infrastructure networks not provided within the PIA

Trunk Infrastructure Type	Affected Area	Scope of Variation to Service
Water Supply	NA	NA
Wastewater	NA	NA
Stormwater	Mirani and Marian PIA	No trunk stormwater extension proposed during the life of the PIP
	Sarina PIA	No trunk stormwater extension proposed during the life of the PIP
Transport	Mirani and Marian PIA	No trunk transport extension proposed during the life of the PIP
	Sarina PIA	Only Brooks Road proposed for upgrading during the life of the PIP No other trunk Road affected by PFTI areas proposed for upgrading
Public parks and land for community facilities	Mirani PIA	Local parks are to be provided by individual developments and are not considered trunk infrastructure. The proposed District Sports Park in Marian is also to be provided by the Developer and is therefore excluded from the future works.
Parks	Sarina PIA	Local parks are to be provided by individual developments and are not considered trunk infrastructure.

Table 4.5.3.2 – Reference Material [4]

Name of Map Group	Purpose of Map
Growth projections, planning assumptions and PIA (for all networks)	Australian Bureau of Statistics (2003). *C-Data 2001, Second Release.* Australian Bureau of Statistics, Canberra, 2003. Australian Bureau of Statistics (2007a). *Regional Population Growth, Australia and New Zealand, 2004-05*. Cat. No. 3218.0, ABS, Canberra. Australian Bureau of Statistics (2007b). *Age by sex count of persons, 2006 Census Population and Housing.* Cat No. 2068.0, ABS, Canberra. Australian Bureau of Statistics (2007c). *Number of persons by household by family composition, 2006 Census Population and Housing.* Cat No. 2068.0, ABS, Canberra. Australian Bureau of Statistics (2007d). *Tenure type by landlord type by family structure, 2006 Census Population and Housing.* Cat No. 2068.0, ABS, Canberra. Australian Bureau of Statistics (2007e). *Housing loan repayment (monthly) by number of persons usually resident, 2006 Census Population and Housing.* Cat No. 2068.0, ABS, Canberra. Australian Bureau of Statistics (2007f). *Rent (weekly) by landlord type, 2006 Census Population and Housing.* Cat No. 2068.0, ABS, Canberra. Australian Bureau of Statistics (2007g). *Gross household income (weekly) by household composition, 2006 Census Population and Housing.* Cat No. 2068.0, ABS, Canberra. Australian Bureau of Statistics (2007h). *Building Approvals Australia, June 2007*. Cat. No. 8731.0, ABS, Canberra. Cardno, "Mackay Population Model Report", July 2010. Cardno, "Sarina Population Model Report", February 2011. Cardno, "Mirani and Marian Population Model Report", February 2011. Commerce Queensland (2007). Commerce Queensland- St. George Pulse Survey of Business Conditions, June Quarter 2007. Commerce Queensland, website. Last accessed: 9 may, 2007. www.commerceqld.com.au Department of Employment and Workplace Relations (2006). *Small Area Labour Market Data.* Department of Employment and Workplace Relations, Canberra. Department of Local Government and Planning (2006). *Projected Resident Population, Queensland LGAs, 2001-2026*. Planning Information and Forecasting Unit, Department of Local Government and Planning, Brisbane.

[4] The documents identified in table 4.5.3.2 assist in the interpretation of the PIP, and are extrinsic material under the *Statutory Instruments Act 1992*.

Name of Map Group	Purpose of Map
	Department of State Development (2007a). Queensland Government: Department of State Development, website. Last accessed: 16 May, 2007. http://www.sd.qld.gov.au/dsdweb/v3/guis/templates/content/gui_cue_menu.cfm?id=245 Department of State Development (2007b). *Mackay Whitsunday: An Economic Powerhouse*. Department of State Development, Brisbane. Mackay Whitsunday Regional Economic Development Board (2007). *Mackay / Whitsunday Regional Economic Report.* Report prepared by AEC Group Ltd on behalf of MWREDC. Real Estate Institute of Queensland (2006). 'Median House Prices', *Queensland Property and Lifestyle Magazine,* Vol. 10-18. Real Estate Institute of Queensland (REIQ), Brisbane. RP Data (2007). *Queensland Sales History Database* [online]. RP Data Information Services, Brisbane. Office of Economic and Statistical Research (2006). *Index of Retail Prices in Regional Centres, May 2006*. Office of Economic and Statistical Research, Brisbane. Office of the Government Statistician (2004). *Queensland Regional Input-Output Tables: 1996/97*. Office of the Government Statistician, Queensland Government. Brisbane, Queensland. WHaMBROC (2006). *Whitsunday Hinterland and Mackay Regional Plan*. Whitsunday Hinterland and Mackay Bowen Regional Organisation of Councils, Mackay. Department of Local Government and Planning (2012): *Mackay, Isaac and Whitsunday Regional Plan (MIW Regional Plan)*, State of Queensland.
Water supply	Cardno MBK, Water Supply System Planning Report, (Sept 2007)
Sewerage	Cardno MBK Sewer Network Planning Report, (January 2008)
Stormwater	GHD - Kellys Road Catchment Stormwater Trunk Infrastructure Study (November 2007) Cardno Ullman and Nolan - Bakers Creek Stockroute Road East, Stormwater Trunk Infrastructure Study (June 2009) JWP - Bakers Creek South Mackay Main Drain (Sub-Catchment 3) Stormwater Trunk Infrastructure Study (March 2007) Cardno Ullman and Nolan - South West Mackay Main Drain Trunk Drainage Study (September 2006)
Transport	DTMR, MATM Results summary trip matrix (17th May 2010)

Name of Map Group	Purpose of Map
	GHD - Paget Area Road Network Study – Needs Assessment and Concept Development (October 2009) Eppell Olsen – Road hierarchy Levels and Objectives – Urban Area Tables (2003) Eppell Olsen – Mackay Four Level Road Hierarchy (August 2003) Drawing AO-01320 – Mackay Four Level Road Hierarchy (2006) Drawings – A3-3620, A3-3616, A3-3617, A3- 3618, – Collector and Local St Cross Sections (2006) Drawing – A3 4095 – Standard Service Corridor Cross Section (2007)
State-controlled roads	Capital Works Table from DTMR – PIPSCR Information (7th May 2010) Demand: MATM Results summary trip matrix (17th May 2010)

Part 5 Tables of assessment

5.1 Preliminary

The tables in this part identify the level of assessment and assessment criteria for development in the planning scheme area.

5.2 Reading the tables

The tables identify the following:

(1) development that is prohibited, exempt or requires self, compliance, code or impact assessment.

(2) the level of assessment for development in:

  (a) a zone and, where used, a precinct of a zone;

  (b) a local plan and, where used, a precinct of a local plan; and

  (c) an overlay where used.

(3) the assessment criteria for development, including:

  (a) whether a zone code or specific provisions in the zone code apply (shown in the 'assessment criteria' column);

  (b) if there is a local plan, whether a local plan code or specific provisions in the local plan code apply (shown in the 'assessment criteria' column); and

  (c) if there is an overlay:

    (i) whether an overlay code applies (shown in the table in section 5.10.1); or

    (ii) whether the assessment criteria as shown on the overlay map (noted in the 'assessment criteria' column) applies;

  (d) any other applicable code(s) (shown in the 'assessment criteria' column).

(4) any variation to the level of assessment (shown as an 'if' in the 'level of assessment' column) that applies to the development for the level of assessment.

Note – development will only be taken to be prohibited development under the planning scheme if it is identified in Schedule 1 of the Act, a state planning regulatory provision or within the standard planning scheme provisions.

Editor's note – examples of a variation are gross floor area, height, numbers of people or precinct provisions.

5.3 Levels of assessment

5.3.1 Process for determining the level of assessment

The process for determining a level of assessment is:

(1) for a material change of use, establish the use by reference to the use definitions in Schedule 1.

(2) for all development, identify the following:

  (a) the zone or zone precinct that applies to the premises, by reference to the zone map in Schedule 2

  (b) if a local plan or local plan precinct applies to the premises, by reference to the local plan map in Schedule 2; and

  (c) if an overlay applies to the premises, by reference to the overlay map in Schedule 2.

(3) determine if the development has a prescribed level of assessment, by reference to the tables in section 5.4 Prescribed levels of assessment.

(4) if the development is not listed in the tables in section 5.4 Prescribed levels of assessment, determine the initial level of assessment by reference to the tables in:

- section 5.5 Levels of assessment – Material change of use
- section 5.6 Levels of assessment – Reconfiguring a lot
- section 5.7 Levels of assessment – Building work
- section 5.8 Levels of assessment – Operational work

(5) a precinct of a zone may change the level of assessment and this will be shown in the 'level of assessment' column of the tables in sections 5.5, 5.6, 5.7 and 5.8.

(6) if a local plan applies refer to the table(s) in section 5.9 Levels of assessment – Local plans, to determine if the local plan changes the level of assessment for the zone.

(7) if a precinct of a local plan changes the level of assessment this will be shown in the 'level of assessment' column of the table(s) in section 5.9.

(8) if an overlay applies refer to section 5.10 Levels of assessment – Overlays, to determine if the overlay further changes the level of assessment.

5.3.2 Determining the level of assessment

(1) A material change of use is impact assessable –

(a) unless the table of assessment states otherwise

(b) if a use is not listed or defined

(c) unless otherwise prescribed within the Act or the Regulation.

(2) Reconfiguring a lot is code assessable unless the tables of assessment state otherwise or unless otherwise prescribed within the Act or the Regulation.

(3) Building work and operational work is exempt development, unless the tables of assessment state otherwise or unless otherwise prescribed within the Act or the Regulation.

(4) Minor building work and minor building work – industry activities is exempt development, unless the tables of assessment state otherwise.

(5) Where development is proposed on premises included in more than one zone, local plan or overlay, the level of assessment is the highest level for each aspect of the development under each of the applicable zones, local plans or overlays.

(6) Where development is proposed on premises partly affected by an overlay, the level of assessment for the overlay only relates to the part of the premises affected by the overlay.

(7) For the purposes of Schedule 4, table 2, item 2 of the Regulation, an overlay does not apply to the premises if the development meets the self-assessable acceptable outcomes of the relevant overlay code.

(8) If development is identified as having a different level of assessment under a zone than under a local plan or an overlay, the highest level of assessment applies as follows –

(a) self-assessable prevails over exempt

(b) compliance assessment prevails over self-assessable and exempt

(c) code assessable prevails over self-assessable and exempt

(d) impact assessable prevails over code, self-assessable and exempt.

Note – where a development is comprised of a number of defined uses (not in an activity group) the highest level of assessment applies.

(9) Despite sub-subsection 5.3.2(4) and (7) above, a level of assessment in a local plan overrides a level of assessment in a zone and a level of assessment in an overlay overrides a level of assessment in zone or local plan.

(10) Provisions of Parts 10 may override any of the above.

(11) State prescribed levels of assessment identified in Part 5, section 5.4, override all other levels of assessment for that development, with the exception of the Act or the Regulation.

(12) Despite all of the above, if development is listed as prohibited development under Schedule 1 of the Act, a development application cannot be made.

Note – development is to only be taken to be prohibited development under the planning scheme if it is identified in Schedule 1 of the Act, state planning regulatory provisions, or in section 5.4 of the standard planning scheme provisions.

5.3.3 Determining the assessment criteria

(1) The following rules apply in determining assessment criteria for each level of assessment:

(2) self-assessable development:

- (a) is to be assessed against all the identified self-assessable acceptable outcomes of the applicable code(s) identified in the assessment criteria column
- (b) that complies with the with the self-assessable acceptable outcomes of the applicable code(s) complies with the code(s)
- (c) that does not comply with one or more identified self-assessable acceptable outcomes of the applicable code(s), becomes assessable development unless otherwise specified.

(3) development requiring compliance assessment:

(4) is to be assessed against all the identified compliance outcomes of the applicable code(s) identified in the assessment criteria column

- (a) that complies with, or is conditioned to comply with, the compliance outcome(s) complies with the code(s).

(5) code assessable development:

- (a) is to be assessed against all the applicable codes identified in the assessment criteria column
- (b) that occurs as a result of development becomes code assessable pursuant to clause 5.3.3(2)(c), should:
  - (i) be assessed against the assessment criteria for the development application, limited to the subject matter of the self-assessable acceptable outcomes that were not complied with or were not capable of being complied with under sub-section 5.3.3(2)(a), other than those mentioned in sub-section 5.3.3(2)(c)
- (c) that complies with:
  - (ii) the purpose and overall outcomes of the code complies with the code
  - (iii) the performance or acceptable outcomes complies with the purpose and overall outcomes of the code
- (d) is to have regard to the purposes of any instrument containing an applicable code.

Note – in relation to section 5.3.3(4)(d) above, and in regard to section 313(3)(d) of the Act, the strategic framework is considered to be the purpose of the instrument containing an applicable code.

(6) impact assessable development:

- (a) is to be assessed against all identified code(s) in the assessment criteria column (where relevant)
- (b) is to be assessed against the planning scheme, to the extent relevant.

Note – the first row of each table of assessment is to be checked to confirm I there are assessment criteria that commonly apply to general scenarios in the zone, local plan or overlay.

Note – The planning prescribes that Adult stores are Impact assessment in all circumstances. As well as being assessable against the planning scheme, proposed Adult stores will also be subject to assessment against the State Regulatory Planning Provision (Adult Stores) which sets out requirements regarding separation distances from sensitive uses.

5.4 Prescribed levels of assessment

For the development specified in the "use", "zone" or "development" columns, the levels of assessment are prescribed.

Table 5.4.1 – Prescribed levels of assessment: material change of use

Use	Level of assessment	Assessment criteria
Community residence	**Self-assessment**	
	If in a residential zone or residential zone category or a rural residential zone	9.2.2 Community residence code

Table 5.4.2 – Prescribed levels of assessment: reconfiguring a lot

Zone	Level of assessment	Assessment criteria
Residential zone category or industry zone category	**Compliance assessment**	
	Subdivision of one lot into two lots (and associated operational work) if compliance assessment is required under Schedule 18 of the Regulation	9.2.1 Reconfiguring a lot (subdividing one lot into two lots) and associated operational work code

Table 5.4.3 – Prescribed levels of assessment: building work

Table not used

Table 5.4.4 – Prescribed levels of assessment: operational work

Zone	Level of assessment	Assessment criteria
Residential zone category or industry zone category	**Compliance assessment**	
	Operational work associated with reconfiguring a lot requiring compliance assessment under Schedule 18 of the Regulation	9.2.1 Reconfiguring a lot (subdividing one lot into two lots) and associated operational work code

Table 5.4.5 – Prescribed levels of assessment: overlays

Table not used

5.5 Levels of assessment – Material change of use

The following tables identify the levels of assessment for development in a zone for making a material change of use.

Table 5.5.1 – Community facilities zone

Use	Level of assessment	Assessment criteria
Caretaker's accommodation	**Code assessment**	
	All circumstances	• Community facilities zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Cemetery	**Exempt**	
	If involving an extension to an existing facility and undertaken by or on behalf of Mackay Regional Council.	Not applicable
	Code assessment	
	If not exempt.	• Community facilities zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Child care centre	**Code assessment**	
	All circumstances	• Community facilities zone code • Child care centre code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Community activities	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment.	• Community facilities zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Environment facility	**Exempt**	
	All circumstances	Not applicable
Health care services	**Code assessment**	
	All circumstances	• Community facilities zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Market	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Community facilities zone code • Market and roadside stall code
Park	**Exempt**	
	All circumstances	Not applicable
Recreation activities	**Code assessment**	
	All circumstances	• Community facilities zone code • Recreation activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Residential care facility	**Code assessment**	
	All circumstances	• Community facilities zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Tourist park	**Code assessment**	
	If located within the Sarina Showgrounds site or Finch Hatton Showgrounds site.	• Community facilities zone code • Tourist park and relocatable home park code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Telecommunications facility	**Code assessment**	
	All circumstances	• Community facilities zone code • Telecommunications facility code • General development requirements code

Use	Level of assessment	Assessment criteria
Utility installation	**Exempt**	
	If not impact assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; or • sewerage treatment plant with a design capacity of more than 100 Equivalent Persons; or • waste (refuse) management facilities	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.2 – Conservation zone

Use	Level of assessment	Assessment criteria
Caretaker's accommodation	**Code assessment**	
	All circumstances	• Conservation zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code - General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Community use	**Code assessment**	
	All circumstances	• Conservation zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Environment facility	**Exempt**	
	All circumstances	Not applicable
Food and drink outlet	**Code assessment**	
	All circumstances	• Conservation zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Nature-based tourism	**Code assessment**	
	All circumstances	• Conservation zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Park	**Exempt**	
	All circumstances	Not applicable
Permanent plantation	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Conservation zone code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	Conservation zone code
Tourist park	**Code assessment**	
	All circumstances	• Conservation zone code • Tourist park and relocatable home park code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Utility installation	**Exempt**	
	If not impact assessment	Conservation zone code – all self-assessable acceptable outcomes
	Impact assessment	
	If involving: • mail depot; or • sewerage treatment plant with a design capacity of more than 100 Equivalent Persons; or • waste (refuse) management facilities	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.3 – District centre zone

Use	Level of assessment	Assessment criteria
Car wash	**Code assessment**	
	All circumstances	• District centre zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Caretaker's accommodation	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation and rural workers accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• District centre zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Centre activities	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a centre activity; and • complying with all assessment criteria for self-assessment; and • not involving a bar; and • not involving a showroom involving a gross floor area of over 500m^2.	Centre activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment or impact assessment	• District centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If a showroom involving a gross floor area of over 500m^2	The planning scheme
Child care centre	**Code assessment**	
	All circumstances	• District centre zone code • Child care centre code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Community activities	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment.	• District centre zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Dwelling unit	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation, dwelling unit and rural workers accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• District centre zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Environment facility	**Exempt**	
	All circumstances	Not applicable
Garden centre	**Code assessment**	
	All circumstances	• District centre zone code • Outdoor business activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Home based business	**Exempt**	

	If:
	• occupying a floor area of 30m^2 or less and the activity does not involve:
	  - employees on the site that do not also reside in the dwelling; and
	  - customers or clients visiting the site; or
	• involving home based childcare.
		Not applicable

Use	Level of assessment	Assessment criteria
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes
	Code assessment	
	If not exempt or self-assessment	• District centre zone code • Home based business code
Hotel	**Code assessment**	
	All circumstances	• District centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Indoor sport and recreation	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Recreation activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• District centre zone code • Recreation activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Market	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• District centre zone code • Market and roadside stall code
Multiple dwelling	**Code assessment**	
	If the site also accommodates existing or proposed centre activities or community activities.	• District centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Park	**Exempt**	
	All circumstances	Not applicable

Use	Level of assessment	Assessment criteria
Parking station	**Code assessment**	
	All circumstances	• District centre zone code • Parking station code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Rooming accommodation	**Code assessment**	
	All circumstances	• District centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• District centre zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Service industry	**Self-assessment**	
	If: • within an existing building / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Industry activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• District centre zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Service station	**Code assessment**	
	All circumstances	• District centre zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Short-term accommodation	**Code assessment**	
	All circumstances	• District centre zone code • Short-term accommodation code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Substation	**Code assessment**	
	If the input and/or output voltage is 66kV or less	• District centre zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Telecommunications facility	**Code assessment**	
	All circumstances	• District centre zone code • Telecommunications facility code • General development requirements code
Utility installation	**Exempt**	
	If not impact assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; or • sewerage treatment plant; or • waste (refuse) management facilities	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation

Table 5.5.4 – Emerging community zone

Use	Level of assessment	Assessment criteria
Animal husbandry	**Exempt**	
	All circumstances	Not applicable
Car wash	**Code assessment**	
	All circumstances	• Emerging community zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Caretaker's accommodation	**Code assessment**	
	All circumstances	• Emerging community zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Centre activities	**Code assessment**	
	All circumstances	• Emerging community zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Child care centre	**Code assessment**	
	All circumstances	• Emerging community zone code • Child care centre code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Community activities	**Code assessment**	
	All circumstances	• Emerging community zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Community residence	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Community residence code
	Code assessment	
	If not self-assessment	• Emerging community zone code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only Healthy waters code (section 9.4.3.1. identifies if the code applies)
Cropping	**Exempt**	
	All circumstances	Not applicable

Use	Level of assessment	Assessment criteria
Dual occupancy	**Compliance assessment**	
	If complying with all assessment criteria for compliance assessment	Dual occupancy compliance assessment code – all compliance outcomes
	Code assessment	
	If not complying with all assessment criteria for compliance assessment	• Emerging community zone code • Multiple dwelling activities code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Dwelling house	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Dwelling house code – all self-assessable acceptable outcomes
	Code	
	If not self-assessment	• Emerging community zone code • Dwelling house code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Dwelling unit	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation, dwelling unit and rural workers accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Emerging community zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Environment facility	**Exempt**	
	All circumstances	Not applicable
Hardware and trade supplies	**Code assessment**	
	All circumstances	• Emerging community zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes
	Code assessment	
	If not exempt or self-assessment	• Emerging community zone code • Home based business code
Hotel	**Code assessment**	
	All circumstances	• Emerging community zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Market	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Emerging community zone code • Market and roadside stall code • General development requirements code
Multiple dwelling activities (other than dual occupancy)	**Code assessment**	
	All circumstances	• Emerging community zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Park	**Exempt**	
	All circumstances	Not applicable
Parking station	**Code assessment**	
	All circumstances	• Emerging community zone code • Parking station code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Recreation activities	**Code assessment**	
	All circumstances	• Emerging community zone code • Recreation activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Roadside stall	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	Emerging community zone code Market and roadside stall code
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Emerging community zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Service station	**Code assessment**	
	All circumstances	• Emerging community zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Short-term accommodation	**Code assessment**	
	All circumstances	• Emerging community zone code • Short-term accommodation code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Substation	**Code assessment**	
	If the input and/or output voltage is 66kV or less	• Emerging community zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Tourist park	**Code assessment**	
	All circumstances	• Emerging community zone code • Tourist park and relocatable home park code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies when the code)

Use	Level of assessment	Assessment criteria
Utility installation	**Exempt**	
	If not code assessment	Not applicable
	Code assessment	
	If involving: • mail depot; or • sewerage treatment plant; or • waste (refuse) management facilities	• Emerging community zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.5 – High density residential zone

Use	Level of assessment	Assessment criteria
Caretaker's accommodation	**Code assessment**	
	All circumstances	• High density residential zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Centre activities	**Self-assessment**	
	If: • only located on ground floor; and • within an existing / approved building that has been previously, or is approved to be, occupied by a centre activity; and • not involving a bar; and • complying with all assessment criteria for self-assessment.	Centre activities code – all self-assessable acceptable outcomes
	Code assessment	
	If: • located on the same site as multiple dwelling or short-term accommodation; and • located on ground floor only; and • not involving a bar; and • the total gross floor area of the proposed use is no more than 150m^2.	• High density residential zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme
Child care centre	**Code assessment**	
	All circumstances	• High density residential zone code • Child care centre code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Community activities	**Self-assessment**	
	If: • not involving a place of worship; • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use other than sales office; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If: • located on the same site as multiple dwelling or short-term accommodation; and • located on ground floor only; • the total gross floor area of the proposed use is no more than 150m^2	• High density residential zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme
Community residence	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Community residence code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• High density residential zone code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only Healthy waters code (section 9.4.3.1. identifies if the code applies)
Dwelling house	**Exempt**[1]	
	All circumstances	Not applicable
Environment facility	**Exempt**	
	All circumstances	Not applicable

[1] Overlays may identify a Dwelling house as assessable development. Refer to Section 5.10 Level of Assessment – Overlays.

Use	Level of assessment	Assessment criteria
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes
	Code assessment	
	If not exempt or self-assessment	• High density residential zone code • Home based business code
Multiple dwelling	**Code assessment**	
	All circumstances	• High density residential zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Park	**Exempt**	
	All circumstances	Not applicable
Port services	**Code assessment**	
	All circumstances	• High density residential zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Rooming accommodation	**Code assessment**	
	All circumstances	• High density residential zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• High density residential zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Short-term accommodation	**Code assessment**	
	All circumstances	• High density residential zone code • Short-term accommodation zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Utility installation	**Exempt**	
	If not impact assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; or • sewerage treatment plant; or • waste (refuse) management facilities	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.6 – High impact industry zone

Use	Level of assessment	Assessment criteria
Aquaculture	**Code assessment**	
	If all fish growing areas are contained, and all handling, processing, packing and storage is carried out within, an enclosed building/s.	• High impact industry zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Car wash	**Code assessment**	
	If not located within the sugar mill precinct (precinct no. HI1)	• High impact industry zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Caretaker's accommodation	**Code assessment**	
	All circumstances	• High impact industry zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Educational establishment	**Code assessment**	
	If: • involving the provision of training exclusively and specifically related to industry activities and other uses of an industrial nature; and • not located within the sugar mill precinct (precinct no. HI1).	• High impact industry zone code • Industry activities zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Emergency services	**Code assessment**	
	All circumstances	• High impact industry zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Environment facility	**Exempt**	
	All circumstances	Not applicable

Use	Level of assessment	Assessment criteria
Food and drink outlet	**Code assessment**	
	If: • not located within the sugar mill precinct (precinct no. HI1); and • the total gross floor area is not more than 150m^2.	• High impact industry zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable
	Impact assessment	
	If not exempt	The planning scheme
Industry activities	**Exempt**	
	If development constitutes minor building work – industrial activities	Not applicable
	Code assessment	
	If: • not involving special industry and not located within the sugar mill precinct (precinct no. HI1); or • involving special industry directly associated with sugar mill operations and located within the sugar mill precinct (precinct no. HI1); or • involving special industry (other than sugar mill) that is not located within: - the sugar mill precinct (precinct no. HI1); and - a minimum 1,500 metres from a residential zone or existing sensitive land use.	• High impact industry zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
	Impact assessment	
	If not exempt or code assessment	The planning scheme
Major electricity infrastructure	**Code assessment**	
	All circumstances	• High impact industry zone code • General development requirements code
Park	**Exempt**	
	All circumstances	Not applicable
Parking station	**Code assessment**	
	If not located within the sugar mill precinct (precinct no. HI1).	• High impact industry zone code • Parking station code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Sales office	**Self-assessment**	
	If: • not within the sugar mill precinct (precinct no. HI1); • complying with all self-assessable acceptable outcomes identified in the assessment criteria column	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If: • not within the sugar mill precinct (precinct no. HI1); • not complying with all self-assessable acceptable outcomes identified in the assessment criteria column	• High impact industry zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme
Service station	**Code assessment**	
	If not within the sugar mill precinct (precinct no. HI1)	• High impact industry zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme

Use	Level of assessment	Assessment criteria
Shop	**Code assessment**	
	If: • not located within the sugar mill precinct (precinct no. HI1); and • the total gross floor area is not more than 150m^2.	• High impact industry zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Substation	**Code assessment**	
	All circumstances	• High impact industry zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Telecommunications facility	**Code assessment**	
	All circumstances	• High impact industry zone code • Telecommunications facility code • General development requirements code
Utility installation	**Exempt**	
	If not code assessment or impact assessment	Not applicable
	Code assessment	
	If not located in the sugar mill precinct (precinct no. HI1) and involving: • mail depot; or • sewerage treatment plant; or • waste (refuse) management facilities	• High impact industry zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If located within the sugar mill precinct (precinct no. HI1) and involving: • mail depot; or • sewerage treatment plant; or • waste (refuse) management facilities	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.7 – Industry investigation zone

Use	Level of assessment	Assessment criteria
Agricultural supplies store	**Code assessment**	
	All circumstances	• Industry investigation zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Animal husbandry	**Exempt**	
	If not code assessment	Not applicable
	Code assessment	
	If involving a roofed building with a gross floor area of over 100m^2.	Industry investigation zone code
Caretaker's accommodation	**Code assessment**	
	All circumstances	• Industry investigation zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Car wash	**Code assessment**	
	All circumstances	• Industry investigation zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Cropping	**Exempt**	
	If not code assessment	Not applicable
	Code assessment	
	If involving a roofed building with a gross floor area of over 100m^2.	• Industry investigation zone code • General development requirements code
Educational establishment	**Code assessment**	
	If involving the provision of training exclusively and specifically related to industry activities and other uses of an industrial nature	• Industry investigation zone code • Industry activities zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme

Use	Level of assessment	Assessment criteria
Emergency services	**Code assessment**	
	All circumstances	• Industry investigation zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Environment facility	**Exempt**	
	All circumstances	Not applicable
Food and drink outlet	**Code assessment**	
	If the total gross floor area is not more than 150m^2	• Industry investigation zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Hardware and trade supplies	**Code assessment**	
	All circumstances	• Industry investigation zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
High impact industry	**Code assessment**	
	If located within the: • Boundary Road east precinct (precinct no. II1); or • Marian precinct (precinct no. II4); or • Paget south precinct (precinct no. II5); or • Sarina precinct (precinct no. II6).	• Industry investigation zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; • involving home based childcare.	Not applicable

Use	Level of assessment	Assessment criteria
	Impact assessment	
	If not exempt	The planning scheme
Indoor sport and recreation	**Code assessment**	
	If located within the: • Cowleys Road precinct (precinct no. II2); or • Glenella precinct (precinct no. II3); or • Marian precinct (precinct no. II4); or • Sarina precinct (precinct no. II6).	• Industry investigation zone code • Recreation activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Low impact industry	**Code assessment**	
	All circumstances	• Industry investigation zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Major electricity infrastructure	**Code assessment**	
	All circumstances	• Industry investigation zone code • General development requirements code
Medium impact industry	**Code assessment**	
	If located within the: • Boundary Road east precinct (precinct no. II1); or • Marian precinct (precinct no. II4); or • Paget south precinct (precinct no. 16); or • Sarina precinct (precinct no. II6).	• Industry investigation zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Outdoor sales	**Code assessment**	
	If located within the: • Cowleys Road precinct (precinct no. II2); or • Glenella precinct (precinct no. II3); or • Marian precinct (precinct no. II4); or • Sarina precinct (precinct no. II6).	• Industry investigation zone code • Outdoor business activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme

Use	Level of assessment	Assessment criteria
Park	**Exempt**	
	All circumstances	Not applicable
Parking station	**Code assessment**	
	All circumstances	• Industry investigation zone code • Parking station code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Research and technology industry	**Code assessment**	
	All circumstances	• Industry investigation zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Roadside stall	**Self-assessment**	
	If complying with all self-assessable acceptable outcomes identified in the assessment criteria column	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessable	• Industry investigation zone code • Market and roadside stall code
Sales office	**Code assessment**	
	All circumstances	• Industry investigation zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Service industry	**Code assessment**	
	All circumstances	• Industry investigation zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Service station	**Code assessment**	
	All circumstances	• Industry investigation zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Special industry	**Code assessment**	
	If located: • within the: – Marian precinct (precinct no. II4); or – Paget south precinct (precinct no. II5); or – Sarina precinct (precinct no. II6); and • a minimum of 1,500 metres from an existing residential zone and sensitive land use.	• Industry investigation zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Substation	**Code assessment**	
	All circumstances	• Industry investigation zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Telecommunications facility	**Code assessment**	
	All circumstances	• Industry investigation zone code • Telecommunications facility code • General development requirements code
Transport depot	**Code assessment**	
	If located within the: • Marian precinct (precinct no. II4); or • Paget south precinct (precinct no. II5); or • Sarina precinct (precinct no. II6).	• Industry investigation zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Utility installation	**Exempt**	
	If not code assessment	Not applicable
	Code assessment	
	If involving: • mail depot; • sewerage treatment plant; or • waste (refuse) management facilities	• Industry investigation zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Warehouse	**Code assessment**	
	All circumstances	• Industry investigation zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment unless, otherwise prescribed within the Act or the Regulation.

Table 5.5.8 – Local centre zone

Use	Level of assessment	Assessment criteria
Car wash	**Code assessment**	
	All circumstances	• Local centre zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Caretaker's accommodation	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation and rural workers accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Local centre zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Centre activities	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a centre activity; and • not involving a bar; and • complying with all assessment criteria for self-assessment.	Centre activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment or impact assessment	• Local centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If a showroom	The planning scheme
Child care centre	**Code assessment**	
	All circumstances	• Local centre zone code • Child care centre code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Community activities	**Self-assessment**	
	If: • not a hospital; and • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment or impact assessment	• Local centre zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If a hospital	The planning scheme
Dwelling unit	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation, dwelling unit and rural workers accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Local centre zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Environment facility	**Exempt**	
	All circumstances	Not applicable
Garden centre	**Code assessment**	
	All circumstances	• Local centre zone code • Outdoor business activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes
	Code assessment	
	If not exempt or self-assessment	• Local centre zone code • Home based business code
Hotel	**Code assessment**	
	All circumstances	• Local centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Indoor sport and recreation	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Recreation activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Local centre zone code • Recreation activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Market	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Local centre zone code • Market and roadside stall code

Use	Level of assessment	Assessment criteria
Multiple dwelling	**Code assessment**	
	If the site also accommodates existing or proposed centre activities or community activities.	• Local centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Outdoor sales	**Code assessment**	
	If: • only involving vehicle hire premises; and • located at Mackay Marina local centre	• Local centre zone code • Outdoor business activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Park	**Exempt**	
	All circumstances	Not applicable
Parking station	**Code assessment**	
	All circumstances	• Local centre zone code • Parking station code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Port services	**Code assessment**	
	If located at Mackay Marina local centre	• Local centre zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Rooming accommodation	**Code assessment**	
	If the site also accommodates centre activities or community activities.	• Local centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Local centre zone code • Sales office code • General development requirements code – provisions in the “utility and infrastructure services” and “Flooding” subsections only

Use	Level of assessment	Assessment criteria
Service industry	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; • complying with all assessment criteria for self-assessment.	Industry activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Local centre zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Service station	**Code assessment**	
	All circumstances	• Local centre zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Short-term accommodation	**Code assessment**	
	If located at Mackay Marina local centre	• Local centre zone code • Short-term accommodation code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Telecommunications facility	**Code assessment**	
	All circumstances	• Local centre zone code • Telecommunications facility code • General development requirements code
Utility installation	**Exempt**	
	If not impact assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; or • sewerage treatment plant; or • waste (refuse) management facilities	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.9 – Low density residential zone

Use	Level of assessment	Assessment criteria
Caretaker's accommodation	**Code assessment**	
	All circumstances	• Low density residential zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Centre activities	**Self-assessment**	
	If: • only located on ground floor; and • within an existing / approved building that has been previously, or is approved to be, occupied by a centre activity; and • complying with all assessment criteria for self-assessment; and • not involving a bar, food and drink outlet or showroom.	Centre activities code – all self-assessable acceptable outcomes
	Impact assessment	
	If not self-assessment	The planning scheme
Child care centre	**Code assessment**	
	All circumstances	• Low density residential zone code • Child care centre code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Community activities	**Self-assessment**	
	If: • not involving a place of worship; and • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use other than sales office; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Impact assessment	
	If not self-assessable.	The planning scheme

Use	Level of assessment	Assessment criteria
Community residence	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Community residence code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Low density residential zone code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Dual occupancy	**Compliance assessment**	
	If complying with all assessment criteria for compliance assessment	Dual occupancy compliance assessment code – all compliance outcomes
	Code assessment	
	• If not complying with all assessment criteria for compliance assessment	• Low density residential zone code • Multiple dwelling activities code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Dwelling house	**Exempt**[2]	
	All circumstances	Not applicable
Dwelling unit	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation, dwelling unit and rural workers accommodation code – all self-assessable outcomes
	Code assessment	
	If not self- assessment	• Low density residential zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Environment facility	**Exempt**	
	All circumstances	Not applicable
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable

[2] Overlays may identify a Dwelling house as assessable development. Refer to Section 5.10 Level of Assessment – Overlays.

Use	Level of assessment	Assessment criteria
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes
	Code assessment	
	If not exempt or self-assessment	• Low density residential zone code • Home based business code
Multiple dwelling	**Code assessment**	
	If complying with: • the maximum building height provisions of the zone code (Table 6.2.9.3.A – Acceptable outcome AO5.1); and • the maximum plot ratio provisions of the zone code (Table 6.2.9.3.A – Acceptable outcome AO5.2).	• Low density residential zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Park	**Exempt**	
	All circumstances	Not applicable
Retirement facility	**Code assessment**	
	If complying with: • the maximum building height provisions of the zone code (Table 6.2.9.3.A – Acceptable outcome AO5.1); and • the maximum plot ratio provisions of the zone code (Table 6.2.9.3.A – Acceptable outcome AO5.2).	• Low density residential zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Low density residential zone code • Sales office code • General development requirements code – provisions in the “utility and infrastructure services” and “Flooding” subsections only

Use	Level of assessment	Assessment criteria
Tourist park	**Code assessment**	
	If involving an extension to an existing tourist park	• Low density residential zone code • Tourist park and relocatable home park code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Utility installation	**Exempt**	
	If not impact assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; • sewerage treatment plant; or • waste (refuse) management facilities	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.10 – Low impact industry zone

Use	Level of assessment	Assessment criteria
Agricultural supplies store	**Code assessment**	
	All circumstances	• Low impact industry zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Car wash	**Code assessment**	
	All circumstances	• Low impact industry zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Caretaker's accommodation	**Code assessment**	
	All circumstances	• Low impact industry zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Educational establishment	**Code assessment**	
	If involving the provision of training exclusively and specifically related to industry activities and other uses of an industrial nature	• Low impact industry zone code • Industry activities zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Emergency services	**Code assessment**	
	All circumstances	• Low impact industry zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Environment facility	**Exempt**	
	All circumstances	Not applicable
Food and drink outlet	**Code assessment**	
	If the total gross floor area is not more than 150m^2.	• Low impact industry zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme

Use	Level of assessment	Assessment criteria
Hardware and trade supplies	**Code assessment**	
	All circumstances	• Low impact industry zone code • Industry activities zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Indoor sport and recreation	**Code assessment**	
	All circumstances	• Low impact industry zone code • Recreation activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Low impact industry	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be occupied by a non-residential use; and • complying with all assessment criteria for self-assessment; and • not involving a car repair workshop.	Industry activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Low impact industry zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Major electricity infrastructure	**Code assessment**	
	If not impact assessment	• Low impact industry zone code • General development requirements code
	Impact assessment	
	If within 100 metres of a site within a Residential zone	The planning scheme
Marine industry	**Code assessment**	
	All circumstances	• Low impact industry zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Outdoor sales	**Code assessment**	
	All circumstances	• Low impact industry zone code • Outdoor business activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Park	**Exempt**	
	All circumstances	Not applicable

Use	Level of assessment	Assessment criteria
Parking station	**Code assessment**	
	All circumstances	• Low impact industry zone code • Parking station code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Research and technology industry	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Industry activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Low impact industry zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Low impact industry zone code • Sales office code • General development requirements code – provisions in the “utility and infrastructure services” and “Flooding” subsections only
Service industry	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Industry activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Low impact industry zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Service station	**Code assessment**	
	All circumstances	• Low impact industry zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Substation	**Code assessment**	
	If not impact assessment	• Low impact industry zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If: • if the input and/or output voltage is more than 66kV; and • the proposed substation is within 100 metres of a site within a Residential zone	The planning scheme
Telecommunications facility	**Code assessment**	
	All circumstances	• Low impact industry zone code • Telecommunications facility code • General development requirements code
Tourist park	**Code assessment**	
	If involving an extension to an existing tourist park	• Low impact industry zone code • Tourist park and relocatable home park code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies when the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Transport depot	**Code assessment**	
	If only involving the storage of: • vehicles associated with a taxi service; or • B99 or smaller vehicles.	• Low impact industry zone code • Industry activities code • General development requirements code
	Impact assessment	
	If not code assessment	The planning scheme
Utility installation	**Exempt**	
	If not code assessment or impact assessment.	Not applicable
	Code assessment	
	If involving mail depot	• Low impact industry zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
	Impact assessment	
	If involving: • sewerage treatment plant; or • waste (refuse) management facilities	The planning scheme
Warehouse	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Industry activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Low impact industry zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.11 – Major centre zone

Use	Level of assessment	Assessment criteria
Car wash	**Code assessment**	
	All circumstances	• Major centre zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Caretaker's accommodation	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	• Caretaker's accommodation and rural workers accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Major centre zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Centre activities	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a centre activity; and • not involving a bar; and • complying with all assessment criteria for self-assessment.	Centre activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Major centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Child care centre	**Code assessment**	
	All circumstances	• Major centre zone code • Child care centre code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Community activities	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment.	• Major centre zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Dwelling unit	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation, dwelling unit and rural workers accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Major centre zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Environment facility	**Exempt**	
	All circumstances	Not applicable
Garden centre	**Code assessment**	
	All circumstances	• Major centre zone code • Outdoor business activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable

Use	Level of assessment	Assessment criteria
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes
	Code assessment	
	If not exempt or self-assessment	• Major centre zone code • Home based business code
Hotel	**Code assessment**	
	All circumstances	• Major centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Indoor sport and recreation	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Recreation activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Major centre zone code • Recreation activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Major sport, recreation and entertainment facility	**Exempt**	
	If involving extensions to an existing facility that increase patron[3] capacity by 20% or less.	Not applicable
	Code assessment	
	If not exempt	• Major centre zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Market	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Major centre zone code • Market and roadside stall code

[3] Refer to Schedule 1 for definition of "Patron".

Use	Level of assessment	Assessment criteria
Multiple dwelling	**Code assessment**	
	If the site also accommodates existing or proposed centre activities or community activities.	• Major centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Outdoor sales	**Code assessment**	
	All circumstances	• Major centre zone code • Outdoor business activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Outdoor sport and recreation	**Code assessment**	
	All circumstances	• Major centre zone code • Recreation facilities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Park	**Exempt**	
	All circumstances	Not applicable
Parking station	**Code assessment**	
	All circumstances	• Major centre zone code • Parking station code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Rooming accommodation	**Code assessment**	
	All circumstances	• Major centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Major centre zone code • Sales office code • General development requirements code – provisions in the “utility and infrastructure services” and “Flooding” subsections only

Use	Level of assessment	Assessment criteria
Service industry	**Self-assessment**	
	If: • within an existing / approved building that has previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Industry activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Major centre zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Service station	**Code assessment**	
	All circumstances	• Major centre zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Short-term accommodation	**Code assessment**	
	All circumstances	• Major centre zone code • Short-term accommodation code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Substation	**Code assessment**	
	If the input and/or output voltage is 66kV or less.	• Major centre zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Utility installation	**Exempt**	
	If not impact assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; • sewerage treatment plant; or • waste (refuse) management facilities	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.12 – Medium density residential zone

Use	Level of assessment	Assessment criteria
Caretaker's accommodation	**Code assessment**	
	All circumstances	• Medium density residential zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Centre activities	**Self-assessment**	
	If: • only located on ground floor; and • within an existing / approved building that has been previously, or is approved to be, occupied by a centre activity; and • complying with all assessment criteria for self-assessment; and • not involving a bar, food and drink outlet or showroom.	Centre activities code – all self-assessable acceptable outcomes
	Impact assessment	
	If not self-assessment	The planning scheme
Child care centre	**Code assessment**	
	All circumstances	• Medium density residential zone code • Child care centre code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Community activities	**Self-assessment**	
	If: • not involving a place of worship; and • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use other than sales office; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Impact assessment	
	If not self-assessment	The planning scheme

Use	Level of assessment	Assessment criteria
Community residence	**Self-assessment**	
	If complying with all self-assessable acceptable outcomes identified in the assessment criteria column	Community residence code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Medium density residential zone code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Dual occupancy	**Compliance assessment**	
	If: • complying with all assessment criteria for compliance assessment; and • located within the Low-medium density precinct (precinct no. MD1) or General medium density precinct (precinct no. MD2).	Dual occupancy compliance assessment code – all compliance outcomes
	Code assessment	
	If: • not complying with all assessment criteria for compliance assessment; and • located within the Low-medium density precinct (precinct no. MD1) or General medium density precinct (precinct no. MD2).	• Medium density residential zone code • Multiple dwelling activities code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
	Impact assessment	
	If not compliance assessment or code assessment	The planning scheme
Dwelling house	**Exempt**[4]	
	All circumstances	Not applicable
Dwelling unit	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation, dwelling unit and rural workers accommodation code – all self-assessable outcomes

[4] Overlays may identify a Dwelling house as assessable development. Refer to Section 5.10 Level of Assessment – Overlays.

Use	Level of assessment	Assessment criteria
	Code assessment	
	If not self- assessment	• Medium density residential zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Environment facility	**Exempt**	
	All circumstances	Not applicable
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes
	Code assessment	
	If not exempt or self-assessment	• Medium density residential zone code • Home based business code
Multiple dwelling	**Code assessment**	
	All circumstances	• Medium density residential zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Park	**Exempt**	
	All circumstances	Not applicable
Residential care facility	**Code assessment**	
	All circumstances	• Medium density residential zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Rooming accommodation	**Code assessment**	
	If located within the: • General medium density precinct (precinct no. MD2); or • Multi-storey medium density precinct (precinct no. MD3).	• Medium density residential zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Retirement facility	**Code assessment**	
	All circumstances	• Medium density residential zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Medium density residential zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Short-term accommodation	**Code assessment**	
	If: • located within the Multi-storey medium density precinct (precinct no. MD3); or • an extension to an existing short-term accommodation use	• Medium density residential zone code • Short-term accommodation code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Tourist park	**Code assessment**	
	If involving an extension to an existing tourist park	• Medium density residential zone code • Tourist park and relocatable home park code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme

Use	Level of assessment	Assessment criteria
Utility installation	**Exempt**	
	If not impact assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; or • sewerage treatment plant; or • waste (refuse) management facilities	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.13 – Mixed use zone

Use	Level of assessment	Assessment criteria
Agricultural supplies store	**Code assessment**	
	If located in the Fringe commercial precinct (precinct no. MX2)	• Mixed use zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not Code assessment	The planning scheme
Car wash	**Code assessment**	
	If located in the Fringe commercial precinct (precinct no. MX2)	• Mixed use zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Caretaker's accommodation	**Code assessment**	
	All circumstances	• Mixed use zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Centre activities	**Self-assessment**	
	If: • within an existing / approved part of the building previously or approved to be occupied by a centre activity; and • not involving a bar; and • not involving a shopping centre in the Fringe commercial precinct (precinct no. MX2); and • complying with all assessment criteria for self-assessment.	Centre activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment or impact assessment	• Mixed use zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If involving a bar or shopping centre in the Fringe commercial precinct (precinct no. MX2)	The planning scheme

Use	Level of assessment	Assessment criteria
Child care centre	**Code assessment**	
	If not impact assessment	• Mixed use zone code • Child care centre code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If located on a site that has frontage to Sydney Street or Juliet Street	The planning scheme
Community activities	**Self-assessment**	
	If: • within an existing / approved part of the building previously or approved to be occupied by a non-residential use; and • not involving a hospital; and • not involving emergency services in the Amenity and convenience precinct (precinct no. MX1); and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Mixed use zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Community residence	**Self-assessment**	
	If: • complying with all assessment criteria for self-assessment; and • not located on a site that has frontage to Sydney Street or Juliet Street	Community residence code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment or impact assessment	• Mixed use zone code • General development requirements code – provisions in the “utility and infrastructure services” and “Flooding” subsections only
	Impact assessment	
	If located on a site that has frontage to Sydney Street or Juliet Street	The planning scheme

Use	Level of assessment	Assessment criteria
Dual occupancy	**Compliance assessment**	
	If: • complying with all assessment criteria for compliance assessment; and • located within the Fringe commercial precinct (precinct no. MX2); and • not located on a site that has frontage to Sydney Street or Juliet Street	Dual occupancy compliance assessment code – all compliance outcomes
	Code assessment	
	If: • not complying with all assessment criteria for compliance assessment; and • located within the Fringe commercial precinct (precinct no. MX2); and • not located on a site that has frontage to Sydney Street or Juliet Street	• Mixed use zone code • Multiple dwelling activities code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
	Impact assessment	
	If not compliance assessment or code assessment	The planning scheme
Dwelling house	**Self-assessment**	
	If: • complying with all assessment criteria for self-assessment; • located within the Fringe commercial precinct (precinct no. MX2); and • not located on a site that has frontage to Sydney Street or Juliet Street	Dwelling house code – all self-assessable acceptable outcomes
	Code assessment	
	If: • not complying with all assessment criteria for self-assessment; • located within the Fringe commercial precinct (precinct no. MX2); and • not located on a site that has frontage to Sydney Street or Juliet Street	• Mixed use zone code • Dwelling house code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme

Use	Level of assessment	Assessment criteria
Dwelling unit	**Self-assessment**	
	If complying with all self-assessable acceptable outcomes identified in the assessment criteria column	Caretaker's accommodation, dwelling unit and rural workers accommodation code – all self-assessable outcomes
	Code assessment	
	If not self- assessment	• Mixed use zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Environment facility	**Exempt**	
	All circumstances	Not applicable
Garden centre	**Code assessment**	
	If located in the Fringe commercial precinct (precinct no. MX2)	• Mixed use zone code • Outdoor business activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Hardware and trade supplies	**Code assessment**	
	If: • the use does not include a retail shop open to the general public[5]; and • located within the Fringe commercial precinct (precinct no. MX2)	• Mixed use zone code • Industry activities zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes

[5] "Hardware and trade supplies" that does include retail shop open to the general public is considered a "Centre activity"

Use	Level of assessment	Assessment criteria
	Code assessment	
	If not exempt or self-assessment	• Mixed use zone code • Home based business code
Hotel	**Code assessment**	
	If located within the Amenity and convenience precinct (precinct no. MX1)	• Mixed use zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Indoor sport and recreation	**Self-assessment**	
	If located within the Fringe commercial precinct (precinct no. MX2) and: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Recreation activities code – all self-assessable outcomes
	Code assessment	
	If located within the Fringe commercial precinct (precinct no. MX2) and: • not within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; or • not complying with all assessment criteria for self-assessment.	• Mixed use zone code • Recreation activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme
Low impact industry	**Self-assessment**	
	If located on a site that has frontage to Sydney Street or Juliet Street and: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	• Industry activities code – all self-assessable acceptable outcomes

Use	Level of assessment	Assessment criteria
	Code assessment	
	If located on a site that has frontage to Sydney Street or Juliet Street and: • not within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; or • not complying with all assessment criteria for self-assessment.	• Mixed use zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Multiple dwelling	**Code assessment**	
	If not located on a site that has frontage to Sydney Street or Juliet Street	• Mixed use zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Outdoor sales	**Code assessment**	
	If located in the Fringe commercial precinct (precinct no. MX2)	• Mixed use zone code • Outdoor business activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Park	**Exempt**	
	All circumstances	Not applicable
Parking station	**Code assessment**	
	If located in the Fringe commercial precinct (precinct no. MX2)	• Mixed use zone code • Parking station code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme

Use	Level of assessment	Assessment criteria
Research and technology industry	**Self-assessment**	
	If located on a site that has frontage to Sydney Street or Juliet Street and: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	• Industry activities code – all self-assessable acceptable outcomes
	Code assessment	
	If located on a site that has frontage to Sydney Street or Juliet Street and: • not within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; or • not complying with all assessment criteria for self-assessment.	• Mixed use zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme
Residential care facility	**Code assessment**	
	If: • located within the Fringe commercial precinct (precinct no. MX2); and • not located on a site that has frontage to Sydney Street or Juliet Street	• Mixed use zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Retirement facility	**Code assessment**	
	If not located on a site that has frontage to Sydney Street or Juliet Street	• Mixed use zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme

Use	Level of assessment	Assessment criteria
Rooming accommodation	**Code assessment**	
	If not located on a site that has frontage to Sydney Street or Juliet Street.	• Mixed use zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Mixed use zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Service industry	**Self-assessment**	
	If located in the Fringe commercial precinct (precinct no. MX2) and: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	• Industry activities code – all self-assessable acceptable outcomes
	Code assessment	
	If located in the Fringe commercial precinct (precinct no. MX2) and: • not within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; or • not complying with all assessment criteria for self-assessment.	• Mixed use zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme

Use	Level of assessment	Assessment criteria
Service station	**Code assessment**	
	If located on a site that has frontage to Sydney Street or Juliet Street.	• Mixed use zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Short-term accommodation	**Code assessment**	
	If not located on a site that has frontage to Sydney Street or Juliet Street	• Mixed use zone code • Short-term accommodation code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Substation	**Code assessment**	
	If: • the input and/or output voltage is 66kV or less; and • located on a site that has frontage to Sydney Street or Juliet Street.	• Mixed use zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Telecommunications facility	**Code assessment**	
	If located on a site that has frontage to Sydney Street or Juliet Street.	• Mixed use zone code • Telecommunications facility code • General development requirements code
	Impact assessment	
	If not code assessment	The planning scheme
Transport depot	**Code assessment**	
	If located on a site that has frontage to Sydney Street or Juliet Street and only involving the storage of: • vehicles associated with a taxi service; or • B99 or smaller vehicles.	• Mixed use zone code • Industry activities code • General development requirements code
	Impact assessment	
	If not code assessment	The planning scheme
Utility installation	**Exempt**	
	If not code assessment or impact assessment.	Not applicable

Use	Level of assessment	Assessment criteria
	Code assessment	
	If involving a mail depot located on a site that has frontage to Sydney Street or Juliet Street.	• Mixed use zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If involving: • mail depot located on a site that does not have frontage to Sydney Street or Juliet Street; or • sewerage treatment plant; or • waste (refuse) management facilities	The planning scheme
Warehouse	**Self-assessment**	
	If located on a site that has frontage to Sydney Street or Juliet Street and: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Industry activities code – all self-assessable acceptable outcomes
	Code assessment	
	If located on a site that has frontage to Sydney Street or Juliet Street and: • not within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; or • not complying with all assessment criteria for self-assessment.	• Mixed use zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.14 – Neighbourhood centre zone

Use	Level of assessment	Assessment criteria
Car wash	**Code assessment**	
	If involving an extension to an existing car wash	• Neighbourhood centre zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	• The planning scheme
Caretaker's accommodation	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation and rural workers accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Child care centre	**Code assessment**	
	All circumstances	• Neighbourhood centre zone code • Child care centre code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Club	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Community care centre	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Community residence	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Community residence code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Community use	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Dual occupancy	**Compliance assessment**	
	If complying with all assessment criteria for compliance assessment	Dual occupancy compliance assessment code – all compliance outcomes
	Code assessment	
	If not compliance assessment	• Neighbourhood centre zone code • Multiple dwelling activities code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Dwelling house	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Dwelling house code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Dwelling House Code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Dwelling unit	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation, dwelling unit and rural workers accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Educational establishment	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Emergency services	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Environment facility	**Exempt**	
	All circumstances	Not applicable
Food and drink outlet	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a centre activity; and • complying with all assessment criteria for self-assessment; and • not involving 'drive-through' facilities	Centre activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment or impact assessment	• Neighbourhood centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If involving 'drive-through' facilities	The planning scheme
Garden centre	**Code assessment**	
	All circumstances	• Neighbourhood centre zone code • Outdoor business activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Health care services	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Centre activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes
	Code assessment	
	If not exempt or self-assessment	• Neighbourhood centre zone code • Home based business code
Market	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Market and roadside stall code
Multiple dwelling	**Code assessment**	
	All circumstances	• Neighbourhood centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Park	**Exempt**	
	All circumstances	Not applicable

Use	Level of assessment	Assessment criteria
Retirement facility	**Code assessment**	
	All circumstances	• Neighbourhood centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Service industry	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Industry activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Service station	**Code assessment**	
	If involving an extension to an existing service station	• Neighbourhood centre zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	• The planning scheme
Shop	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a centre activity; and • complying with all assessment criteria for self-assessment.	Centre activities code – all self-assessable acceptable outcomes

Use	Level of assessment	Assessment criteria
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Shopping centre	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a centre activity; and • complying with all assessment criteria for self-assessment.	Centre activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Neighbourhood centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Utility installation	**Exempt**	
	If not impact assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; or • sewerage treatment plant; or • waste (refuse) management facilities	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.15 – Open space zone

Use	Level of assessment	Assessment criteria
Caretaker's accommodation	**Code assessment**	
	All circumstances	• Open space zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Community use	**Code assessment**	
	All circumstances	• Open space zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Environment facility	**Exempt**	
	All circumstances	Not applicable
Food and drink outlet	**Code assessment**	
	All circumstances	• Open space zone code • Centre activities codes • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Market	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Open space zone code • Market and roadside stall code
Nature-based tourism	**Code assessment**	
	All circumstances	• Open space zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Outdoor sport and recreation	**Exempt**	
	If: • undertaken by or on behalf of Mackay Regional Council; or • involving extensions to an existing facility not more than 25% increase in total participant / spectator capacity.	Not applicable
	Code assessment	
	If not exempt	• Open space zone code • Recreation facilities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Park	**Exempt**	
	All circumstances	Not applicable
Permanent plantations	**Exempt**	
	All circumstances	Not applicable
Telecommunications facility	**Code assessment**	
	All circumstances	• Open space zone code • Telecommunications facility code • General development requirements code
Tourist park	**Code assessment**	
	If an extension to an existing tourist park	• Open space zone code • Tourist park and relocatable home park code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Utility installation	**Exempt**	
	If not code assessment or impact assessment	Not applicable
	Code assessment	
	• If involving sewerage treatment plant or waste (refuse) management facility undertaken by or on behalf of Council	• Open space zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If involving • mail depot or waste (refuse) management facility undertaken by an entity / entities other than Council; or • sewerage treatment plant undertaken by an entity / entities other than Council and with a design capacity of more than 100 Equivalent Persons	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.16 – Principal centre zone

Use	Level of assessment	Assessment criteria
Car wash	**Code assessment**	
	All circumstances	• Principal centre zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Caretaker's accommodation	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation and rural workers accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Principal centre zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Centre activities	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a centre activity; and • not involving a bar; and • complying with all self-assessable acceptable outcomes identified in the assessment criteria column	Centre activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Principal centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Child care centre	**Code assessment**	
	All circumstances	• Principal centre zone code • Child care centre code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Community activities	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment.	• Principal centre zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Dwelling unit	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation, dwelling unit and rural workers accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Principal centre zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Environment facility	**Exempt**	
	All circumstances	Not applicable
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes
	Code assessment	
	If not exempt or self-assessment	• Principal centre zone code • Home based business code

Use	Level of assessment	Assessment criteria
Hotel	**Code assessment**	
	All circumstances	• Principal centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Indoor sport and recreation	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; • complying with all assessment criteria for self-assessment.	Recreation activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Principal centre zone code • Recreation activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Major sport, recreation and entertainment facility	**Exempt**	
	If involving extensions to an existing facility that increase patron[6] capacity by 20% or less.	Not applicable
	Code assessment	
	If not exempt	• Principal centre zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Market	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Principal centre zone code • Market and roadside stall code
Multiple dwelling	**Code assessment**	
	All circumstances	• Principal centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

[6] "Patron" includes any person who attends the facility for an event. Therefore, patrons can include spectators, delegates, sporting competitors, performers, officials, employees and other types of participants.

Use	Level of assessment	Assessment criteria
Outdoor sport and recreation	**Exempt**	
	If involving extensions to an existing facility not more than 25% increase in total participant / spectator capacity.	Not applicable
	Code assessment	
	If not exempt	• Principal centre zone code • Recreation facilities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Park	**Exempt**	
	All circumstances	Not applicable
Parking station	**Code assessment**	
	All circumstances	• Principal centre zone code • Parking station code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Rooming accommodation	**Code assessment**	
	All circumstances	• Principal centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Principal centre zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Service industry	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; • complying with all assessment criteria for self-assessment.	Industry activities code – all self-assessable acceptable outcomes

Use	Level of assessment	Assessment criteria
	Code assessment	
	If not self-assessment	• Principal centre zone code • Industry activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Service station	**Code assessment**	
	All circumstances	• Principal centre zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Short-term accommodation	**Code assessment**	
	All circumstances	• Principal centre zone code • Short-term accommodation code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Substation	**Code assessment**	
	If the input and/or output voltage is 66kV or less.	• Principal centre zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Utility installation	**Exempt**	
	If not impact assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; or • sewerage treatment plant; or • waste (refuse) management facilities .	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.17 – Rural zone

Use	Level of assessment	Assessment criteria
Agricultural supplies store	**Code assessment**	
	If on a site that adjoins, or is within 50 metres of land within the township zone	• Rural zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Animal husbandry	**Exempt**	
	All circumstances	Not applicable
Animal keeping	**Self-assessment**	
	If: • involving stables or wildlife refuge; and • not located within the Investigation area precinct (precinct no. RU1).	Intensive rural activities code – all self-assessable acceptable outcomes
	Code assessment	
	If: • not involving stables or wildlife refuge; and • not located within the Investigation area precinct (precinct no. RU1).	• Rural zone code • Intensive rural activities code • General development requirements code
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme
Aquaculture	**Code assessment**	
	If: • not located within the Investigation area precinct (precinct no. RU1); and • the fish growing area and any ancillary operation areas are 100 metres or more from an existing sensitive land use on an adjoining or nearby site; and • involving a facility that grows fish in: - a recirculating tank based system with an area of 50m^2 or less; or - ponds or above ground tanks with a total surface area or 5ha or less.	• Rural zone code • Intensive rural activities code • General development requirements code

Use	Level of assessment	Assessment criteria
	Impact assessment	
	If not code assessment	The planning scheme
Bulk landscape supplies	**Code assessment**	
	If on a site that adjoins or is within 1 kilometre of land within an urban zone.	• Rural zone code • Outdoor business activities code • General development requirements code
	Impact assessment	
	If not code assessment	The planning scheme
Caretaker's accommodation	**Code assessment**	
	All circumstances	• Rural zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Cropping	**Exempt**	
	If not involving forestry for wood production	Not applicable
	Self-assessment	
	If: • involving forestry for wood production; and • complying with all assessment criteria for self-assessment.	Forestry for wood production code – all self-assessable acceptable outcomes
	Code assessment	
	If not exempt or self-assessment	• Rural zone code • Forestry for wood production code
Dwelling house	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Dwelling house code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Rural zone code • Dwelling house code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Emergency services	**Code assessment**	
	All circumstances	• Rural zone code • Community uses code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Environment facility	**Exempt**	
	All circumstances	Not applicable

Use	Level of assessment	Assessment criteria
Extractive industry	**Code assessment**	
	If: • not located within the Investigation area precinct (precinct no. RU1); and • involving the extraction of 5,000 tonnes or less of material per annum; and • not involving blasting or the use of crushing plant.	• Rural zone code • Extractive industry code • General development requirements code
	Impact assessment	
	If not code assessment	The planning scheme
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes
	Code assessment	
	If not exempt or self-assessment	• Rural zone code • Home based business code
Intensive animal industry	**Exempt**	
	If: • not located within the Investigation area precinct (precinct no. RU1); and • involving: - a poultry and egg production farm involving 20 poultry or less, or - a piggery involving 5 pigs or less; or - a feedlot involving 20 cattle (or other hard-hoofed animal) or less.	Not applicable

Use	Level of assessment	Assessment criteria
	Code assessment	
	If: • not located within the Investigation area precinct (precinct no. RU1); and • involving: - a poultry and egg production farm involving between 21 and 500 poultry; or - a piggery involving between 6 and 21 pigs ; or - a feedlot involving between 21 and 150 cattle (or other hard-hoofed animal).	• Rural zone code • Intensive rural activities code • General development requirements code
	Impact assessment	
	If not exempt or code assessment	The planning scheme
Intensive horticulture	**Code assessment**	
	If not located within the Investigation area precinct (precinct no. RU1)	• Rural zone code • Intensive rural activities code • General development requirements code
	Impact assessment	
	If not code assessment	The planning scheme
Nature based tourism	**Code assessment**	
	If: • involving not more than 25 accommodation rooms; and • providing accommodation for not more than 60 guests[7].	• Rural zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Park	**Code assessment**	
	All circumstances	Not applicable
Permanent plantations	**Exempt**	
	All circumstances	Not applicable
Roadside stall	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Rural zone code • Market and roadside stall code

[7] The number of accommodation rooms and number of guests thresholds do not include accommodation facilities provided for the manager or other employees.

Use	Level of assessment	Assessment criteria
Rural industry	**Code assessment**	
	All circumstances	• Rural zone code • General development requirements code
Rural workers accommodation	**Code assessment**	
	All circumstances	• Rural zone code • Caretaker's accommodation and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Rural zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Short-term accommodation	**Code assessment**	
	If involving a farm stay: • with not more than 10 accommodation rooms; and • providing accommodation for not more than 30 guests[8].	• Rural zone code • Short-term accommodation code • General development requirements code
	Impact assessment	
	If not code assessment	The planning scheme
Substation	**Code assessment**	
	If the input and/or output voltage is 66kV or less.	• Rural zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Telecommunications facility	**Code assessment**	
	All circumstances	• Rural zone code • Telecommunications facility code • General development requirements code

[8] The number of accommodation rooms and number of guests thresholds do not include accommodation facilities provided for the manager or other employees.

Use	Level of assessment	Assessment criteria
Tourist park	**Code assessment**	
	If involving not more than 50 caravan or camping sites.	• Rural zone code • Tourist park and relocatable home park code • General development requirements code
	Impact assessment	
	If not code assessment	The planning scheme
Utility installation	**Exempt**	
	If not code assessment or impact assessment	Not applicable
	Code assessment	
	If involving sewerage treatment plant or waste (refuse) management facility undertaken by or on behalf of Council	• Rural zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If involving: • mail depot or waste (refuse) management facility undertaken by an entity / entities other than Council; or • sewerage treatment plant undertaken by an entity / entities other than Council and with a design capacity of more than 100 Equivalent Persons	The planning scheme
Wholesale nursery	**Exempt**	
	If not code assessment	• Not applicable
	Code assessment	
	If involving buildings or structures (including green-house / netting structures) that exceed: • a maximum area that is the lesser of 20% of the total site area or 2,000m^2; or • a maximum height of 8.5 metres.	• Rural zone code • General development requirements code
Winery	**Code assessment**	
	All circumstances	• Rural zone code • General development requirements code
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.18 – Rural residential zone

Use	Level of assessment	Assessment criteria
Animal husbandry	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Rural residential zone code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	Rural residential zone code
Cropping	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Rural residential zone code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	Rural residential zone code
Dwelling house	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Dwelling house code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Rural residential zone code • Dwelling house code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Environment facility	**Exempt**	
	All circumstances	Not applicable
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Rural residential zone code • Home based business code
Park	**Exempt**	
	All circumstances	Not applicable

Use	Level of assessment	Assessment criteria
Roadside stall	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Rural residential zone code • Market and roadside stall code
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Rural residential zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Utility installation	**Exempt**	
	If not impact assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; or • sewerage treatment plant with a design capacity of more than 100 Equivalent Persons; or • waste (refuse) management facilities	The planning scheme
Wholesale nursery	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Rural residential zone code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Rural residential zone code • General development requirements code
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.19 – Special purpose zone

Use	Level of assessment	Assessment criteria
Environment facility	**Exempt**	
	All circumstances	Not applicable
Major electricity infrastructure	**Code assessment**	
	All circumstances	• Special purpose zone code • General development requirements code
Park	**Exempt**	
	All circumstances	Not applicable
Renewable energy facility	**Code assessment**	
	If not involving a wind farm	• Special purpose zone code • General development requirements code
	Impact assessment	
	If not code assessment	• Special purpose zone code • General development requirements code
Substation	**Code assessment**	
	If not impact assessment	• Special purpose zone code • General development requirements code
	Impact assessment	
	If: • if the input and/or output voltage is more than 66kV; and • the proposed substation is within 100 metres of a site within a Residential zone	The planning scheme
Telecommunications facility	**Code assessment**	
	All circumstances	• Special purpose zone code • Telecommunications facility code • General development requirements code
Utility installation	**Exempt**	
	If not code assessment	Not applicable
	Code assessment	
	If not undertaken by or on behalf of Mackay Regional Council and involving: • mail depot; or • sewerage treatment plant with a design capacity of more than 100 Equivalent Persons; or • waste (refuse) management facilities	• Special purpose zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Editor's note – Development on strategic port land at the Port of Mackay and Port of Hay Point is regulated by applicable land use plans under the *Transport Infrastructure Act 1994* and at Mackay Airport under the *Airport Assets (Restructuring and Disposal) Act 2008*. Development on the urban development area at Bedford Road, Andergrove is regulated under the *Urban Land Development Authority Act 2007*.

Table 5.5.20 – Specialised centre zone

Use	Level of assessment	Assessment criteria
Caretaker's accommodation	**Code assessment**	
	If in the Tavern precinct (precinct no. SC2)	• Specialised centre zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Community residence	**Self-assessment**	
	If: • in the Tavern precinct (precinct no. SC2); and • complying with all assessment criteria for self-assessment	• Community residence code – all self-assessable acceptable outcomes
	Code assessment	
	If: • in the Tavern precinct (precinct no. SC2); and • not complying with all assessment criteria for self-assessment	• Specialised centre zone code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
	Impact assessment	
	All circumstances	Not applicable
Dual occupancy	**Code assessment**	
	If in the Tavern precinct (precinct no. SC2)	• Specialised centre zone code • Multiple dwelling activities code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
	Impact assessment	
	If not code assessment	The planning scheme
Dwelling house	**Self-assessment**	
	If: • in the Tavern precinct (precinct no. SC2); and • complying with all assessment criteria for self-assessment	Dwelling house code – all self-assessable acceptable outcomes
	Code assessment	
	If: • in the Tavern precinct (precinct no. SC2); and • not complying with all assessment criteria for self-assessment	• Specialised centre zone code • Dwelling house code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only

Use	Level of assessment	Assessment criteria
	Impact assessment	
	If not self-assessment or code assessment.	The planning scheme
Dwelling unit	**Self-assessment**	
	If: • in the Tavern precinct (precinct no. SC2); and • complying with all assessment criteria for self-assessment	• Caretaker's accommodation, dwelling unit and rural workers accommodation code – all self-assessable outcomes
	Code assessment	
	If: • in the Tavern precinct (precinct no. SC2); and • not complying with all assessment criteria for self-assessment	• Specialised centre zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme
Environment facility	**Exempt**	
	All circumstances	Not applicable
Hardware and trade supplies	**Code assessment**	
	If in the Showrooms and hardware precinct (precinct no. SC1)	• Specialised centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Home based business	**Exempt**	
	If: • occupying a floor area of 30m^2 or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable
	Self-assessment	
	If complying with all assessment criteria for self-assessment	Home based business code – all self-assessable acceptable outcomes.
	Code assessment	
	If not exempt or code assessment	• Home based business code • Specialised centre zone code

Use	Level of assessment	Assessment criteria
Hotel	**Code assessment**	
	If in the Tavern precinct (precinct no. SC2)	• Specialised centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Market	**Self-assessment**	
	If: • in the Tavern precinct (precinct no. SC2); and • complying with all assessment criteria for self-assessment	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If: • in the Tavern precinct (precinct no. SC2); and • not complying with all assessment criteria for self-assessment	• Specialised centre zone code • Market and roadside stall code
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme
Multiple dwelling	**Code assessment**	
	If in the Tavern precinct (precinct no. SC2)	• Specialised centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Outdoor business activities	**Code assessment**	
	If in the Showrooms and hardware precinct (precinct no. SC1)	• Specialised centre zone code • Outdoor business activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Park	**Exempt**	
	All circumstances	Not applicable

Use	Level of assessment	Assessment criteria
Retirement facility	**Code assessment**	
	If in the Tavern precinct (precinct no. SC2)	• Specialised centre zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Sales office	**Self-assessment**	
	If: • in the Tavern precinct (precinct no. SC2); and • complying with all assessment criteria for self-assessment	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If: • in the Tavern precinct (precinct no. SC2); and • not complying with all assessment criteria for self-assessment	• Specialised centre zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme
Showroom	**Code assessment**	
	If in the Showrooms and hardware precinct (precinct no. SC1)	• Specialised centre zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Telecommunications facility	**Code assessment**	
	All circumstances	• Specialised centre zone code • Telecommunications facility code • General development requirements code
Utility installation	**Exempt**	
	If not code assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; or • sewerage treatment plant; or • waste (refuse) management facilities	The planning scheme

Use	Level of assessment	Assessment criteria
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.21 – Sport and recreation zone

Use	Level of assessment	Assessment criteria
Caretaker's accommodation	**Code assessment**	
	All circumstances	• Sport and recreation zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Club	**Code assessment**	
	All circumstances	• Sport and recreation zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Community use	**Code assessment**	
	All circumstances	• Sport and recreation zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Environment facility	**Exempt**	
	All circumstances	Not applicable
Major sport, recreation and entertainment facility	**Exempt**	
	If: • involving extensions to an existing facility that increase patron[9] capacity by 20% or less; and • the site does not adjoin land within a residential zone.	Not applicable
	Code assessment	
	If not exempt	• Sport and recreation zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Market	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Sport and recreation zone code • Market and roadside stall code

[9] Refer to Schedule 1 for definition of "Patron".

Use	Level of assessment	Assessment criteria
Park	**Exempt**	
	All circumstances	Not applicable
Parking station	**Code assessment**	
	All circumstances	• Sport and recreation zone code • Parking station code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Recreation activities	**Exempt**	
	If undertaken by or on behalf of Mackay Regional Council	Not applicable
	Self-assessment	
	If: • involving extensions to an existing facility not more than: - 25% increase in the total participant, spectator and employee capacity of outdoor sport and recreation, or - 25% increase in the total GFA of indoor sport and recreation; • complying with all self-assessable acceptable outcomes identified in the assessment criteria column.	Recreation activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not exempt of self-assessment	• Sport and recreation zone code • Recreation activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Telecommunications facility	**Code assessment**	
	All circumstances	• Sport and recreation zone code • Telecommunications facility code • General development requirements code

Use	Level of assessment	Assessment criteria
Utility installation	**Exempt**	
	If not impact assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; or • sewerage treatment plant with a design capacity of more than 100 Equivalent Persons; or • waste (refuse) management facilities	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.22 – Tourism area (major) zone

Use	Level of assessment	Assessment criteria
Caretaker's accommodation	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Tourism area (major) zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Environment facility	**Exempt**	
	All circumstances	Not applicable
Food and drink outlet	**Code**	
	All circumstances	• Tourism area (major) zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Market	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Tourism area (major) zone code • Market and roadside stall code
Nature-based tourism	**Code**	
	All circumstances	• Tourism area (major) zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Park	**Exempt**	
	All circumstances	Not applicable
Resort complex	**Exempt**	
	If involving alterations or additions that increase the total gross floor area by not more than 10%	Not applicable
	Code assessment	
	If not exempt	• Tourism area (major) zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Tourism area (major) zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Short-term accommodation	**Code assessment**	
	All circumstances	• Tourism area (major) zone code • Short-term accommodation code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Tourist park	**Code assessment**	
	All circumstances	• Tourism area (major) zone code • Tourist park and relocatable home park code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Utility installation	**Exempt**	
	If not code assessment or impact assessment	Not applicable
	Code assessment	
	If involving a sewerage treatment plant: • undertaken by or on behalf of Council; or • with a design capacity of more than 100 Equivalent Persons	• Tourism area (major) zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If involving: • mail depot; or • waste (refuse) management facilities	The planning scheme
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

Table 5.5.23 – Township zone

Use	Level of assessment	Assessment criteria
Agricultural supplies store	**Code assessment**	
	All circumstances	• Township zone code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Car wash	**Code assessment**	
	All circumstances	• Township zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Caretaker's accommodation	**Code assessment**	
	All circumstances	• Township zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Centre activities	**Self-assessment**	
	If: • only located on ground floor; and • within an existing / approved building that has been previously, or is approved to be, occupied by a centre activity; and • complying with all assessment criteria for self-assessment; and • not involving a bar or food and drink outlet.	Centre activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not involving a bar and: • not entirely located on ground floor; or • not within an existing / approved building that has been previously, or is approved to be, occupied by a centre activity; or • not complying with all assessment criteria for self-assessment; or • involving a food and drink outlet.	• Township zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not self-assessment or code assessment	The planning scheme

Use	Level of assessment	Assessment criteria
Child care centre	**Code assessment**	
	All circumstances	• Township zone code • Child care centre code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Community activities	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use; and • complying with all assessment criteria for self-assessment.	Community activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Township zone code • Community activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Community residence	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Community residence code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Township zone code • General development requirements code – provisions in the “utility and infrastructure services” and “Flooding” subsections only
Dwelling house	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Dwelling house code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Township zone code • Dwelling house code • General development requirements code – provisions in the “utility and infrastructure services” and “Flooding” subsections only

Use	Level of assessment	Assessment criteria
Dwelling unit	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Caretaker's accommodation, dwelling unit and rural workers accommodation code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Township zone code • Caretaker's accommodation, dwelling unit and rural workers accommodation code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Dual Occupancy	**Code assessment**	
	If complying with: • the maximum building height provision of the zone code (Table 6.2.23.3.A – Acceptable outcome AO11.1); and • the maximum density provision of the zone code (Table 6.2.23.3.A – Acceptable outcome AO11.2).	• Township zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Environment facility	**Exempt**	
	All circumstances	Not applicable
Garden centre	**Code assessment**	
	All circumstances	• Township zone code • Outdoor business activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Home based business	**Exempt**	
	If: • occupying a floor area of $30m^2$ or less and the activity does not involve: - employees on the site that do not also reside in the dwelling; and - customers or clients visiting the site; or • involving home based childcare.	Not applicable
	Self-assessment	
	If complying with all assessment criteria for self-assessment.	Home based business code – all self-assessable acceptable outcomes

Use	Level of assessment	Assessment criteria
	Code assessment	
	If not exempt or self-assessment	• Township zone code • Home based business code
Hotel	**Code assessment**	
	If involving an extension to an existing hotel use	• Township zone code • Centre activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme
Indoor sport and recreation	**Self-assessment**	
	If: • within an existing / approved building that has been previously, or is approved to be occupied by a recreation activity; and • complying with all assessment criteria for self-assessment.	Recreation activities code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Township zone code • Recreation activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Market	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Township zone code • Market and roadside stall code
Multiple dwelling activities	**Code assessment**	
	If complying with: • the maximum building height provision of the zone code (Table 6.2.23.3.A – Acceptable outcome AO7.1); and • the maximum density provision of the zone code (Table 6.2.23.3.A – Acceptable outcome AO7.2).	• Township zone code • Multiple dwelling activities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
	Impact assessment	
	If not code assessment	The planning scheme

Use	Level of assessment	Assessment criteria
Outdoor sport and recreation	**Code assessment**	
	All circumstances	• Township zone code • Recreation facilities code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Park	**Exempt**	
	All circumstances	Not applicable
Roadside stall	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Market and roadside stall code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessable	• Township zone code • Market and roadside stall code
Sales office	**Self-assessment**	
	If complying with all assessment criteria for self-assessment.	Sales office code – all self-assessable acceptable outcomes
	Code assessment	
	If not self-assessment	• Township zone code • Sales office code • General development requirements code – provisions in the "utility and infrastructure services" and "Flooding" subsections only
Service station	**Code assessment**	
	All circumstances	• Township zone code • Service station and car wash code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Short-term accommodation	**Code assessment**	
	All circumstances	• Township zone code • Short-term accommodation code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)
Tourist park	**Code assessment**	
	All circumstances	• Township zone code • Tourist park and relocatable home park code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies if the code applies)

Use	Level of assessment	Assessment criteria
Utility installation	**Exempt**	
	If not impact assessment	Not applicable
	Impact assessment	
	If involving: • mail depot; or • sewerage treatment plant with a design capacity of more than 100 Equivalent Persons; or • waste (refuse) management facilities	The planning scheme
Wholesale nursery	**Code assessment**	
	All circumstances	• Township zone code • General development requirements code
Impact assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the level of assessment column. Any other undefined use.		The planning scheme

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation.

5.6 Levels of assessment – Reconfiguring a lot

The following table identifies the levels of assessment for reconfiguring a lot.

Table 5.6.1 – Reconfiguring a lot

Zone	Level of assessment	Assessment criteria
All zones	**Exempt**	
	If: • involving the *Sustainable Planning Regulation 2009*, Schedule 4, table 3 applies; or • the reconfiguration is for the purposes of a utility installation or other municipal facility undertaken by or on behalf of Mackay Regional Council	
	Code assessment	
	If not exempt	• Relevant zone code • Reconfiguring a lot code • General development requirements code • Healthy waters code (section 9.4.3.1. identifies when the code applies)

Editor's note – unless listed above the default level of assessment is impact assessment, unless otherwise prescribed within the Act or the Regulation

5.7 Levels of assessment – Building work

There is no building work regulated under the planning scheme.

Editor's note - please see table of assessment for overlays for building work regulated under the planning scheme i.e. heritage and character overlay

5.8 Levels of assessment – Operational work

The following table identifies the levels of assessment for operational work.

Table 5.8.1 – Operational work

Zone	Level of assessment	Assessment criteria
All zones	**Exempt**	
	Operational works for placing an advertising device associated with a home based business[10]	Not applicable
	Operational work for undertaking works in, on, over or under premises that materially affects the premises or their use when undertaken by a public sector entity	Not applicable
	Undertaking roadworks on a road to provide access to a lot (driveway crossovers)	Not applicable
	Self-assessment	
	Operational works for placing an advertising device on premises, if: • not within the open space zone or a residential zone; and • complying with all self-assessable acceptable outcomes identified in the assessment criteria column	Advertising devices code – self-assessable acceptable outcomes
	Code assessment	
	Operational works for placing an advertising device on premises, if not self-assessment	Advertising devices code
	Operational work where associated with a reconfiguration of a lot	Zone code General development requirements code
	Operational work for car parking and vehicle circulation where the area of the carpark and associated vehicle circulation area is more than 200m^2.	• Zone code • General development requirements code
	Operational work involving waste water discharge from an urban purpose	• General development requirements code • Healthy waters code (section 9.4.3.1. identifies when the code applies)

[10] Home based business (HBB) signage is addressed by the Home based business code and it is not intended to duplicate process in this section. In a number of zones, a code assessable MCU application is triggered if a proposed HBB sign does not comply with the relevant Acceptable Outcomes of the Home based business code, Please refer to the table of assessment for each zone for more detail.

Zone	Level of assessment	Assessment criteria
Key urban areas[11] and township zones	**Code assessment**	
	Operational work for the excavation or filling of land if: • the proposed works involve more than 20m^3 or more than 200mm in depth; or • the proposed works, combined with previously undertaken exempt or self-assessable excavation or filling, exceeds 20m^3 or 200mm in depth.	Zone code General development requirements code Healthy waters code (section 9.4.3.1. identifies when the code applies)
Rural residential zone	**Code assessment**	
	Operational work for the excavation or filling of land if: • the proposed works involve more than 200m^3 within 50m from a property boundary, or • the proposed works involve more than 500m^3; or • the proposed works, combined with previously undertaken exempt or self-assessable excavation or filling, exceed: - 200m^3 if within 50m of a property boundary; or - 500m^3.	Zone code General development requirements code
All other zones[12], including rural zone	**Self-assessment**	
	Operational work for the excavation or filling of land if: • the proposed works involve 500m^3 or less or are 100m or more from a property boundary • the proposed works, combined with previously undertaken exempt or self-assessable excavation or filling, involve 500m^3 or less	General development requirements code

[11] Refer to Schedule 1 for definition of "Key urban area"
[12] Zones that are not within the key urban areas, township zone or rural residential zone

Zone	Level of assessment	Assessment criteria
	Code assessment	
	Operational work for the excavation or filling of land if: • the proposed works involve more than 500m^3 and are within 100m from any property boundary • the proposed works, combined with previously undertaken exempt or self-assessable excavation or filling, exceed 500m^3 within 100m from a boundary	Zone code General development requirements code
Exempt		
Any other operational work not listed in this table, or less than the thresholds identified in the level of assessment column.		

Editor's note—unless listed above the default level of assessment is exempt, unless otherwise prescribed within the Act or the Regulation.

5.9 Levels of assessment – Local plans

The following tables identify the levels of assessment for development when a local plan changes the level of assessment from that of a zone.

Table 5.9.1 – Mackay city centre local plan: material change of use

Use	Level of assessment	Assessment criteria
MCU for: • **Caretaker's accommodation;** • **Short-term accommodation**	**Impact assessment**	
	If located within the: • education mixed use precinct (precinct no. CC3); and • civic precinct (precinct no. CC5)	The planning scheme
Bar	**Self-assessment**	
	If: • located: – within the city core precinct (precinct no. CC1); and – within an existing building and the podium level/s; and • complying with all self-assessable acceptable outcomes identified in the assessment criteria column	Mackay city centre local plan code – all self-assessable acceptable outcomes
	Code assessment	
	If: • not self-assessable; and • located within the city core precinct (precinct no. CC1)	• Principal centre zone code • Mackay city centre local plan code • Centre activities code • General development requirements code
Centre activities	**Code assessment**	
	If located within the education mixed use precinct (precinct no. CC3) and involving: • food and drink outlet • health care services • office • shop • shopping centre • theatre • veterinary services	Mackay city centre local plan code

Use	Level of assessment	Assessment criteria
	Impact assessment	
	If involving: • function facility located within the education mixed use precinct (precinct no. CC3); or • funeral parlour located within the education mixed use precinct (precinct no. CC3), civic precinct (precinct no. CC5) and exhibition/events precinct (precinct no. CC4); or • hardware and trade supplies (if involving a retail shop open to the general public only) located within the education mixed use precinct (precinct no. CC3), civic precinct (precinct no. CC5) and exhibition / events precinct (precinct no. CC4); or • health care services located within the civic precinct (precinct no. CC5) and exhibition/events precinct (precinct no. CC4); or • office located within the exhibition/events precinct (precinct no. CC4); or • shop located within the civic precinct (precinct no. CC5) and exhibition/events precinct (precinct no. CC4); or • shopping centre located within the civic precinct (precinct no. CC5) and exhibition/ events precinct (precinct no. CC4); or • showroom located within the education mixed use precinct (precinct no. CC3), civic precinct (precinct no. CC5) and exhibition/events precinct (precinct no. CC4); or	The planning scheme

Use	Level of assessment	Assessment criteria
	• theatre located within the exhibition/events precinct (precinct no. CC4); or • veterinary services located within the city core precinct (precinct no. CC1), civic precinct (precinct no. CC5) and exhibition/ events precinct (precinct no. CC4)	
Child care centre	**Impact assessment**	
	If located within the exhibition /events precinct (precinct no. CC4)	The planning scheme
Community activities	**Code assessment**	
	If located within the education mixed use precinct (precinct no. CC3) and involving: • community care centre • community use • emergency services • place of worship	Mackay city centre local plan code
	Impact assessment	
	If involving: • community care centre located within the civic precinct (precinct no. CC5) and exhibition/events precinct (precinct no. CC4); or • educational establishment located within the exhibition/ events precinct (precinct no. CC4); or • emergency services located within the civic precinct (precinct no. CC5) and exhibition/events precinct (precinct no. CC4); or • place of worship located within the civic precinct (precinct no. CC5) and exhibition/events precinct (precinct no. CC4)	The planning scheme
MCU for: • **Dwelling unit;** • **Rooming accommodation;** • **Multiple dwelling;** • **Sales office**	**Impact assessment**	
	If located within the: • education mixed use precinct (precinct no. CC3); and • exhibition/events precinct (precinct no. CC4); and • civic precinct (precinct no. CC5)	The planning scheme

Use	Level of assessment	Assessment criteria
Hotel	**Self-assessment**	
	If: • located within the city core precinct (precinct no. CC1); and • within: – an existing building; and – the podium level/s; and • complying with all self-assessable acceptable outcomes identified in the assessment criteria column; and • where not involving short-term accommodation.	Mackay city centre local plan – all self-assessable acceptable outcomes
	Code assessment	
	If: • not self-assessable; and • located within the city core precinct (precinct no. CC1)	• Principal centre zone code • Mackay city centre local plan code • Centre activities code • General development requirements code
	Impact assessment	
	If located within the exhibition/events precinct (precinct no. CC4)	The planning scheme
Landing	**Code assessment**	
	All circumstances	• Relevant zone code • Mackay city centre local plan code • Ship-sourced pollutants reception facilities code • General development requirements code
MCU for: • **Indoor sport and recreation;** • **Service industry**	**Impact assessment**	
	If located within the: • exhibition/events precinct (precinct no. CC4); and • civic precinct (precinct no. CC5)	The planning scheme
Major sport, recreation and entertainment facility	**Impact assessment**	
	If located within the education mixed use precinct (precinct no. CC3)	The planning scheme

Use	Level of assessment	Assessment criteria
Nightclub entertainment facility	**Self-assessment**	
	If: • located within the city core precinct (precinct no. CC1); and • within: – an existing building; – the podium level/s or no higher than the second level of a building; and • complying with all self-assessable acceptable outcomes identified in the assessment criteria column	Mackay city centre local plan code – all self-assessable acceptable outcomes
	Code assessment	
	If: • not self-assessable; and • located within the city core precinct (precinct no. CC1)	• Principal centre zone code • Mackay city centre local plan code • Centre activities code • General development requirements code
Outdoor sport and recreation	**Impact assessment**	
	If located within the: • city core precinct (precinct no. CC1); and • city mixed use precinct (precinct no. CC2)	The planning scheme
Parking station	**Impact assessment**	
	If located within the education mixed use precinct (precinct no. CC3).	The planning scheme
Service station	**Impact assessment**	
	If located within the city core precinct (precinct no. CC1), education mixed use precinct (precinct no. CC3), exhibition/events precinct (precinct no. CC4) or civic precinct (precinct no. CC5).	The planning scheme
Tourist park	**Code assessment**	
	If located within the exhibition/events precinct (precinct no. CC4).	• Principal centre zone code • Mackay city centre local plan code • Tourist park and relocatable home park code • General development requirements code

5.10 Levels of assessment – Overlays

The following table identifies where an overlay changes the level of assessment from that stated in a zone or local plan and the relevant assessment criteria.

Note: Further to 5.3.2(8) and (9) above, unless otherwise specified overlays can elevate but not reduce the level of assessment set under the relevant zone (5.5), reconfiguration of a lot table (5.6), building work table (5.7), operational work table (5.8) or local plan (5.9). For example:

- development will be code assessable if identified as self-assessment under the relevant zone and code assessment under a relevant overlay
- development will be impact assessable if identified as impact assessment under the relevant zone and code assessment under a relevant overlay (in this instance, the overlay becomes relevant to the assessment of the application).

Table 5.10.1 – Assessment criteria for overlays

Development	Level of assessment	Assessment criteria
Acid sulfate soils overlay		
MCU for all uses except: • animal husbandry • cropping • dual occupancy • dwelling house • dwelling unit • environment facility • home based business • market • park • permanent plantation • roadside stall	Code assessment if: • within "land at or below 5m AHD" or "land above 5m AHD and below 20m AHD" and excavating or otherwise removing 100m^3 or more of soil or sediment at or below 5 metres AHD; or • within "land at or below 5m AHD" and filling with 500m^3 or more of material with an average depth of 0.5 metre or greater.	Acid sulfate soils overlay code
ROL where increasing the total number of lots by 2 or more and OW	Code assessment if: • within "land at or below 5m AHD" or "land above 5m AHD and below 20m AHD" and excavating or otherwise removing 100m^3 or more of soil or sediment at or below 5 metres AHD; or • within "land at or below 5m AHD" and filling with 500m^3 or more of material with an average depth of 0.5 metre or greater.	Acid sulfate soils overlay code
Agricultural land overlay		
MCU for permanent plantation if the plantation area is more than 2ha	Code assessment if on land identified as "Locally important agricultural area".	Agricultural land overlay code

Development	Level of assessment	Assessment criteria
MCU for all other uses except: • animal husbandry • caretaker's accommodation • cropping • dwelling house • dwelling unit • environment facility • home based business • intensive animal industry • market • park • roadside stall • rural workers' accommodation • utility installation where undertaken by or on behalf of Mackay Regional Council	Code assessment if on land identified as: • "Agricultural land classification class A and B"; or • "Agricultural land classification class A and B buffer"; or • "Locally important agricultural area"; or • "Locally important agricultural area buffer".	Agricultural land overlay code
ROL	Code assessment if on land identified as: • "Agricultural land classification class A and B"; or • "Agricultural land classification class A and B buffer"; or • "Locally important agricultural area"; or • "Locally important agricultural area buffer".	Agricultural land overlay code
OW for excavation or filling of land if greater than 500m^3	Code assessment if on land identified as: • "Agricultural land classification class A and B"; or • "Locally important agricultural area".	Agricultural land overlay code

Development	Level of assessment	Assessment criteria
Airport environs overlay		
MCU, ROL and OW (not including OW identified as exempt or self-assessment in section 5.9)	Code assessment if within: • an aviation facility "building restriction area – zone A"[13]; or • "public safety area"; or • "lighting management area" and involves: - lighting in straight parallel lines with a length between 500 and 1,000 metres; or - flare plumes; or - reflective cladding; or - upward shining lights; or - flashing lights; or - sodium lights.	Airport environs overlay code
MCU for: • child care centre • community care centre • community residence • dual occupancy • dwelling house • dwelling unit • educational establishment • health care services • hospital • multiple dwelling • office • relocatable home park • residential care facility • retirement facility • rooming accommodation • short-term accommodation • tourist park	Code assessment if within the "20 ANEF noise contour" or greater noise contours.	Airport environs overlay code

[13] Refer to the SPP Guideline for Strategic airports and aviation facilities (diagrams for each type of aviation facility) to confirm whether development in areas mapped as "Zone A/B" is high enough to be considered within Zone A.

Development	Level of assessment	Assessment criteria
MCU for: • animal husbandry involving: - stables, - stock handling or slaughtering, or - pig production, • animal keeping involving: - stables, or - wildlife outside enclosures, • aquaculture, • cropping involving fruit tree or turf farm production, • industrial activities involving food handling or processing, • intensive animal industry involving: - stock handling or slaughtering, or - pig production, or • major sport and recreation facility involving stables • tourist attraction where involving a zoo	Code assessment if within "wildlife hazard buffer zone - 8km".	Airport environs overlay code
MCU or BW (if not also assessable as an MCU) for built structures with a height exceeding the obstacle limitation surface	Code assessment.	Airport environs overlay code
MCU for uses involving: • the emission of airborne particulates (including smoke, dust, ash or steam) • the disposal of putrescible waste	Impact assessment if within "wildlife hazard buffer zone - 13km".	The planning scheme
ROL including a street/s that has: • a straight section with a length of between 500 and 1000 metres; • street lighting	Impact assessment if within "lighting management area".	The planning scheme
OW that generate gaseous plumes or airborne particulates	Code assessment if within "wildlife hazard buffer zone - 13km".	Airport environs overlay code

Development	Level of assessment	Assessment criteria
Biodiversity overlay		
MCU for all defined uses except: • animal husbandry • cemetery • cropping • dwelling house • environment facility • home based business • market • park • permanent plantation • roadside stall • utility installation	Code assessment if within: • "environmentally significant vegetation" • "wildlife habitat" • "waterways" • "wetlands" • "waterway buffers" • "wetlands buffers".	Biodiversity overlay code
ROL	Code assessment if: • within "environmentally significant vegetation" • "wildlife habitat" • "waterways" • "wetlands" • "waterway buffers" • "wetlands buffers".	Biodiversity overlay code
OW if earthworks or filling involving the displacement of soil more than: • 200mm deep/high; • 50m^3 total	Code assessment if: • within "environmentally significant vegetation" • "wildlife habitat" • "waterways" • "wetlands" • "waterway buffers" • "wetlands buffers".	Biodiversity overlay code
Bushfire hazard overlay		
MCU for: • adult store • agricultural supplies store • brothel • centre activities • child care centre • community activities • community residence • detention facility • extractive industry • home based business where involving bed and breakfast accommodation • hotel • industry activities	Code assessment if within the: • "very high bushfire hazard area"; or • "high bushfire hazard area"; or • "medium bushfire hazard area"; or • "within 100m of a bushfire hazard area".	Bushfire hazard overlay code

Development	Level of assessment	Assessment criteria
• major electricity infrastructure • major sport, recreation and entertainment facility • multiple dwelling activities • nightclub entertainment facility • non-resident workforce accommodation • outdoor business activities • relocatable home park • resort complex • rural industry • service station • short-term accommodation • substation • telecommunications facility • tourist attraction • tourist park • utility installation (other than utility installation undertaken by or on behalf of Mackay Regional Council); • winery		
ROL	Code assessment if within the: • "very high bushfire hazard area"; or • "high bushfire hazard area"; or • "medium bushfire hazard area"; or • "within 100m of very high bushfire hazard area" • "within 100m of high bushfire hazard area" • "within 50m of medium bushfire hazard area".	Bushfire hazard overlay code

Development	Level of assessment	Assessment criteria
Extractive resources and high impact activities overlay		
MCU for: • Child care centre • Community care centre • Community residence • Dual occupancy • Educational establishment • Health care services • Hospital • Multiple dwelling • Relocatable home park • Residential care facility • Resort complex • Retirement facility • Rooming accommodation • Short-term accommodation • Tourist park	Code assessment if within any of the following: • Key resource area (KRA) "processing area" or "separation area"; or • 100 metres of a KRA "transport route"; or • "High impact activity" or "high impact activity buffer"; or • "Non-KRA quarry" or "Non-KRA quarry buffer".	Extractive resources and high impact activities overlay code
MCU for Dwelling house on a property with an area greater than 5,000m^2	Code assessment if: • within a KRA "processing area" or "separation area" • within a "High impact activity" or "high impact activity buffer" • "Non-KRA quarry" or "non-KRA quarry buffer".	Extractive resources and high impact activities overlay code
MCU for High impact industry where involving concrete batching or asphalt manufacturing	Code assessment if within a KRA "processing area"[14].	Extractive resources and high impact activities overlay code
ROL	Code assessment if within any of the following: • KRA "processing area" or "separation area"; or • 100 metres of a "KRA transport route"; or • "High impact activity" or "high impact activity buffer"; or • "Non–KRA quarry" or "non-KRA quarry buffer".	Extractive resources and high impact activities overlay code

[14] The text on page 5 - 116 (at the start of Part 5.10) regarding levels of assessment in overlays not being able to reduce levels of assessment does not apply in this instance. In this instance, the level of assessment is reduced from impact assessment to code assessment.

Development	Level of assessment	Assessment criteria
Flood and coastal hazards overlay		
MCU for: • dwelling house • dual occupancy • dwelling unit	Self-assessment if: • within the "area affected by 1% AEP flood event" or "area affected by 0.2% AEP flood event"; and • complying with all relevant Acceptable Outcomes identified in the assessment criteria	Flood and coastal hazards overlay code – all self-assessable acceptable outcomes
MCU for: • dwelling house • dual occupancy • dwelling unit	Code assessment if: • within the "area affected by 1% AEP flood event" or "area affected by 0.2% AEP flood event"; and • not complying with all relevant Acceptable Outcomes identified in the assessment criteria.	Flood and coastal hazards overlay code
MCU for all defined uses except: • animal husbandry • cropping • cemetery • dwelling house • dual occupancy • dwelling unit • environment facility • home based business • market • park • permanent plantation • roadside stall • utility installation • non-residential uses within an existing building.	Code assessment if within the: • "area affected by 1% AEP flood event"; or • "area affected by 0.2% AEP flood event"; or • "storm tide inundation area".	Flood and coastal hazards overlay code
ROL	Code assessment if within the: • "area affected by 1% AEP flood event"; or • "area affected by 0.2% AEP flood event"; or • "storm tide inundation area".	Flood and coastal hazards overlay code
OW involving filling where: • outside of the building envelope of a proposed building; • net fill exceeds 50m^3	Code assessment if within the: • "area affected by 1% AEP flood event"; or • "area affected by 0.2% AEP flood event"; or • "storm tide inundation area".	Flood and coastal hazards overlay code

Development	Level of assessment	Assessment criteria
MCU for all uses except: • animal husbandry • cropping • dwelling house • environment facility • home based business • market • park • permanent plantation • roadside stall • utility installation • new uses within an existing building	Code assessment if within the "erosion prone area".	Flood and coastal hazards overlay code
ROL and OW (not including OW identified as exempt or self-assessment in section 5.9)	Code assessment if within the "erosion prone area".	Flood and coastal hazards overlay code
Heritage and neighbourhood character overlay		
MCU for all defined uses except: • animal husbandry; • centre activities within an existing building identified as "local heritage place" involving internal works only; • cropping; • environment facility; • home based business; • hotel within an existing building identified as "local heritage place" involving internal works only; • market; • nightclub entertainment facility within an existing building identified as "local heritage place" involving internal works only; • park; • roadside stall	Code assessment[15] if within or adjoining a property identified as "local heritage place".	Heritage and neighbourhood character overlay

[15] Notwithstanding the identified levels of assessment, development is not assessable if an exemption certificate is issued in accordance with the *Queensland Heritage Act 1992*.

Development	Level of assessment	Assessment criteria
MCU for all defined uses except: • home based business; • environment facility; • market; • park; • roadside stall	Code assessment if within a "neighbourhood character area".	Heritage and neighbourhood character overlay
MCU for extension to dwelling house	Self-assessment if: • within a neighbourhood character area; and • complying with all assessment criteria for self-assessment.	Heritage and neighbourhood character overlay – all self-assessable acceptable outcomes
	Code assessment if not self-assessment.	Heritage and neighbourhood character overlay
ROL	Code assessment if within or adjoining a property identified as "local heritage place".	Heritage and neighbourhood character overlay
OW (not including OW identified as exempt or self-assessment in section 5.9)	If: • within or adjoining a property identified as "local heritage place"; or • within a "neighbourhood character area".	Heritage and neighbourhood character overlay
BW (including minor building work) where involving external extensions visible from a public road or public open space	Code assessment if within or adjoining a property identified as "local heritage place".	Heritage and neighbourhood character overlay
BW where involving the demolition of any part of a building that is not visible from a public road or public open space	Code assessment if within a property identified as "local heritage place".	Heritage and neighbourhood character overlay
BW where involving: • the total demolition of a building; or • the demolition of any part of a building visible from a public road or public open space	Impact assessment if within a property identified as "local heritage place".	The planning scheme

Development	Level of assessment	Assessment criteria
Landscape character and image corridor overlay		
MCU for all defined uses except: • animal husbandry • cemetery • cropping • dwelling house • environment facility • home based business • market • park • permanent plantation • roadside stall • new uses within an existing building	Code assessment if: • within a "landscape character area"; or • on land adjoining an "image corridor".	Landscape character and image corridor overlay code
ROL	Code assessment if: • within a "landscape character area"; or • on land adjoining an "image corridor".	Landscape character and image corridor overlay code
OW if earthworks or filling involving the displacement of soil more than: • 200mm deep/high; • 50m^3 total	Code assessment if: • within a "landscape character area"; or • on land within 10 metres of an "image corridor".	Landscape character and image corridor overlay code
Landslide hazard overlay		
MCU for dwelling house, dwelling unit, dual occupancy, caretaker's accommodation, rural worker's accommodation	Self-assessment if: • within the "landslide hazard area"; • complying with all relevant Acceptable Outcomes identified in the assessment criteria.	Landslide hazard overlay code – all self-assessable acceptable outcomes
MCU for dwelling house, dwelling unit, dual occupancy, caretaker's accommodation, rural worker's accommodation	Code assessment if: • within the "landslide hazard area"; • not complying with all relevant Acceptable Outcomes identified in the assessment criteria.	Landslide hazard overlay code

Development	Level of assessment	Assessment criteria
MCU for all uses, except: • animal husbandry • cemetery • cropping • environment facility • home based business • market • park • roadside stall • telecommunications facility	Code assessment if within the "landslide hazard area".	Landslide hazard overlay code
ROL	Code assessment if within the "landslide hazard area".	Landslide hazard overlay code
OW involving earthworks if involving excavation or filling more than $50m^3$ (other than the placement of less than 200mm high of topsoil)	Code assessment if within the "landslide hazard area".	Landslide hazard overlay code
Regional infrastructure overlay		
MCU for all uses except: • environment facility • major electricity infrastructure • park • substation • utility installation	Code assessment if within "regional electricity infrastructure" or "substation".	Regional infrastructure overlay
MCU for all uses except: • environment facility • park • utility installation	Code assessment if within "railway infrastructure".	Regional infrastructure overlay

Development	Level of assessment	Assessment criteria
MCU for all uses except: • animal husbandry • cropping • dwelling house • dwelling unit • environment facility • home based business • major electricity infrastructure • market • park • permanent plantation • roadside stall • substation • utility installation	Code assessment if within: • "proximate to regional electricity infrastructure"; or • "proximate to a substation"; or • "proximate to railway infrastructure"; or • "regional irrigation area".	Regional infrastructure overlay
ROL	Code assessment if within: • "regional electricity infrastructure"; or • "substation"; or • "railway infrastructure"; or • "regional irrigation area"; or • "proximate to regional electricity infrastructure"; or • "proximate to a substation"; or • "proximate to railway infrastructure".	Regional infrastructure overlay
Residential densities overlay		
MCU for a new[16]: • Dwelling house • Dual occupancy	Impact assessment if on land identified as "strategic residential density area".	The planning scheme

Note—some overlays may only be included for information purposes. This may result in no change to the level of assessment or assessment criteria under the planning scheme.

[16] The overlay does not apply to extension of existing Dwelling houses and Dual occupancies.

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Part 6 Zones

6.1 Preliminary

(1) Zones organise the planning scheme area in a way that facilitates the location of preferred or acceptable land uses.

(2) Zones are mapped and included in Schedule 2.

(3) The levels of assessment for development in a zone are in Part 5.

(4) Assessment criteria for zones are contained in a zone code.

(5) A precinct may be identified for part of a zone.

(6) Precinct provisions are contained in the zone code.

(7) Each zone code identifies the following:

- (a) the purpose of the code;
- (b) the overall outcomes that achieve the purpose of the code;
- (c) the performance outcomes that achieve the overall outcomes and the purpose of the code;
- (d) the acceptable outcomes that achieve the performance and overall outcomes and the purpose of the code; and
- (e) the performance and acceptable outcomes for the precinct.

(8) The following are the zone codes for the planning scheme:

- (a) Community facilities zone code
- (b) Conservation zone code
- (c) District centre zone code
- (d) Emerging community zone code
  - (i) Alexandra Street precinct (precinct no. EC1)
  - (ii) Andergrove lakes precinct (precinct no. EC2)
  - (iii) Mirani precinct (precinct no. EC3)
  - (iv) Northern Beaches south precinct (precinct no. EC4)
  - (v) Ooralea precinct (precinct no. EC5)
  - (vi) Sarina north precinct (precinct no. EC6)
  - (vii) Shoal Point–Bucasia precinct (precinct no. EC7)
  - (viii) Walkerston precinct (precinct no. EC8)
- (e) High density residential zone code
- (f) High impact industry zone code
  - (i) Sugar mill precinct (precinct no. HI1)
  - (ii) Air quality precinct (precinct no.HI2)
- (g) Industry investigation zone code
  - (i) Boundary Road east precinct (precinct no. II1)
  - (ii) Cowleys Road precinct (precinct no. II2)
  - (iii) Glenella precinct (precinct no. II3)
  - (iv) Marian precinct (precinct no. II4)
  - (v) Paget south precinct (precinct no. II5)
  - (vi) Sarina precinct (precinct no. II6)
- (h) Local centre zone code
- (i) Low density residential zone code

(j) Low impact industry zone code

(k) Major centre zone code

(l) Medium density residential zone code

  (i) Low-medium density precinct (precinct no. MD1)

  (ii) General medium density precinct (precinct no. MD2)

  (iii) Multi-storey medium density precinct (precinct no. MD3)

(m) Mixed use zone code

  (i) Amenity and convenience precinct (precinct no. MX1)

  (ii) Fringe commercial precinct (precinct no. MX2)

(n) Neighbourhood centre zone code

(o) Open space zone code

(p) Principal centre zone code

(q) Rural zone code

  (i) Investigation area precinct (precinct no. RU1)

(r) Rural residential zone code

(s) Special purpose zone code

  (i) Future road precinct (precinct no. SP1)

(t) Specialised centre zone code

  (i) Showrooms and hardware precinct (precinct no. SC1)

  (ii) Tavern precinct (precinct no. SC2)

(u) Sport and recreation zone code

(v) Tourism area (major) zone code

(w) Township zone code

6.2 Zone codes

6.2.1 Community facilities zone code

6.2.1.1 Application

This code applies to assessing development in the Community facilities zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.1.2 Purpose

(1) The purpose of the Community facilities zone code is to provide for community related activities and facilities whether under public or private ownership.

These may include the provision of municipal services, public utilities, government installations, hospitals and schools, transport and telecommunication networks and community infrastructure of an artistic, social or cultural nature.

(2) The local government purpose of the zone code is to enrich community wellbeing and liveability by providing for a diverse range of social, cultural, education and other community orientated pursuits in accessible, safe and attractive facilities, predominantly located in urban areas.

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Uses:

(i) the predominant form of development within the zone is community activities and other community orientated uses; and

(ii) where practical, development accommodates multiple community activities by:

(A) co-locating a variety of facilities; or

(B) providing robust facilities suitable for shared use; and

(b) Infrastructure:

(i) development is efficiently serviced by the full range of urban infrastructure networks or, in rural areas where urban infrastructure is not available, appropriate on-site systems; and

(c) Built form and development intensity:

(i) low rise buildings integrate with the established visual amenity of the surrounding urban neighbourhood and/or natural / rural landscape; and

(ii) road frontage setbacks:

(A) are consistent with other buildings in the surrounding urban neighbourhood or contribute to the open character of natural / rural landscapes; and

(B) accommodate landscaping; and

(C) avoid buildings being visually overbearing; and

(iii) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(d) Amenity:

(i) development does not adversely affect the amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses; and

(e) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.1.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.1.3.A – Community facilities zone - assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses	
PO1 The zone primarily accommodates community activities, child care centre, cemetery, crematorium, health care services and other community uses.	No acceptable outcome prescribed.
PO2 Other uses are compatible, and have a direct relationship, with the primary community use on the site.	No acceptable outcome prescribed.
Infrastructure	
PO3 Development is serviced by all forms of urban infrastructure relevant to the use, through connection to: (a) reticulated systems if practically available; or (b) appropriate on-site systems[1].	**AO3.1** If within a key urban area, the development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
	AO3.2 If not within a key urban area, the development is connected to: (a) reticulated water supply infrastructure if available or an appropriate on-site water source[1]; and (b) reticulated sewerage infrastructure if available or an appropriate on-site wastewater disposal system; (c) a sealed road; and (d) stormwater infrastructure where available or an appropriate lawful point of discharge; and (e) electricity and telecommunications infrastructure.

[1] The provision of an on-site water source must give consideration to the *Water Act 2000* and, where applicable, the *Water Resource (Pioneer Valley) Plan 2002, Water Resource (Fitzroy Basin) Plan 2011* or *Water Resource (Burdekin Basin) Plan 2007*.

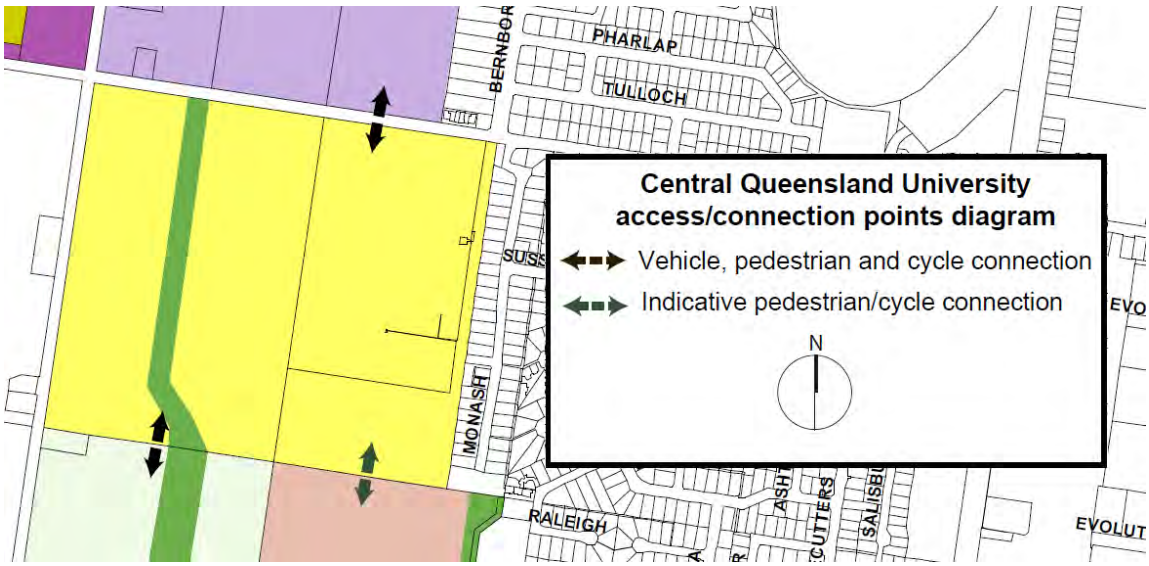
Performance outcomes	Acceptable outcomes
PO4 Building height and plot ratio: (a) integrates with the prevailing character of the surrounding urban neighbourhood or natural / rural landscape; and (b) does not form overdevelopment of the site.	**AO4.1** Buildings have a maximum height of 8.5 metres above ground level (2 storeys).
	AO4.2 Development has a plot ratio that does not: (a) exceed 0.6:1 where the site adjoins sites within the Medium density residential zone[2]; and (b) exceed 0.5:1 where the site adjoins sites within the Low density residential zone[2]; and (c) exceed 0.3:1 where the site adjoins sites within the Township zone[2]; and (d) detract from the prevailing character of the surrounding urban and neighbourhood or natural / rural landscape where the site does not adjoining a site within a zone mentioned in (a), (b) and (c).
PO5 At the Central Queensland University Ooralea campus, building heights: (a) complement the adjoining medium residential land use intent on adjoining land south of the campus; and (b) respect adjoining built form of the urban areas to the north and east of the campus; and (c) transition towards the areas mentioned in (a) and (b).	**AO5** Development at the Central Queensland University Ooralea campus has building heights as follows: (a) maximum – 17 metres (5 storeys) across the campus site; and (b) where located on the eastern boundary with adjoining low intensity residential uses – 8.5 metres above ground level (2 storeys).
PO6 Buildings are setback from road frontages to: (a) integrate with the prevailing character of the surrounding urban neighbourhood or natural / rural landscape; and (b) accommodate landscaping between the building and the street; and (c) avoid buildings from being visually overbearing as viewed from the street.	**AO6.1** On sites within key urban areas, or adjoining a site within the Township zone, the minimum road frontage setbacks are: (a) from arterial roads and sub-arterial roads – 10 metres; and (b) from collector streets and access streets – 6 metres; and (c) from rear laneway: (i) 0 metres where the wall height is 3.5 metres or less above ground level; and (ii) 2 metres where the wall height is more than 3.5 metres above ground level.
	AO6.2 On sites in rural areas (not within key urban areas, or not adjoining a site within the Township zone), the minimum road frontage setbacks are: (a) from arterial roads – 20 metres; and (b) from sub-arterial roads, collector streets and access streets – 10 metres.

[2] Where a site adjoins more than one of the zones mentioned in AO4.2(a), (b) and (c), the relevant maximum plot ratio is the lesser plot ratio.

Performance outcomes	Acceptable outcomes
PO7 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable, require minimal maintenance, and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Accessibility	
PO8 The internal road network of the Central Queensland University Ooralea campus provides a high level of physical integration and connectivity to adjoining areas through strong access / connection points.	**AO8** Development within the Central Queensland University Ooralea campus provides the following access / connection points identified in Figure 6.2.1.3.A – Central Queensland University Ooralea campus access / connection points: (a) at Boundary Road, align with northern access point into the northern low impact industrial area to allow future vehicle, pedestrian and cycling connectivity; and (b) a minimum of 2 access / connection points on the southern boundary to future higher density residential activities, of which: (i) the western connection point on the southern boundary allows for future vehicle, pedestrian and cycling connectivity; and (ii) the eastern connection point on the southern boundary allows for future pedestrian and cycling connectivity; and (c) pedestrian / cycling connectivity from Boundary Road to the southern boundary.
Amenity	
PO9 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO10 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
Environment	
PO11 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

Figure 6.2.1.3.A – Central Queensland University Ooralea campus access / connection points



6.2.2 Conservation zone code

6.2.2.1 Application

This code applies to assessing development in the Conservation zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.2.2 Purpose

(1) The purpose of the Conservation zone code is to provide for the protection, restoration and management of areas identified as supporting significant biological diversity and ecological integrity.

(2) The local government purpose of the zone code is to provide for the conservation of natural habitat areas with declared conservation status, including:

- (a) National Parks: Bluff Hill, Brampton Islands, Cape Hillsborough, Cape Palmerston, Eungella, Lindeman Islands, Mackay Islands, Mount Martin, Mount Ossa, Newry Islands, Pioneer Peaks, Reliance Creek, Smith Islands and South Cumberland; and
- (b) State forests: Cathu, Crediton, Mia Mia and Mount Pelion; and
- (c) Conservation parks and nature / environmental reserves: Morag McNichol, Sandfly Creek, Sandringham Bay and Slade Point; and
- (d) Land gazetted as protected estate under the *Nature Conservation Act 1992* (no current examples in the region); and
- (e) Land acquired by Council under the "Natural Environment Levy": Blacks Beach Spit.

The zone also provides for limited small-scale buildings and infrastructure that maintain the area's ecological integrity and visually integrate with the natural setting.

(3) The purpose of the code will be achieved through the following overall outcomes:

- (a) Uses:
  - (i) the predominant form of development in the zone is undeveloped natural habitat areas and environment facilities; and
  - (ii) a limited range of low intensity accommodation activities and other small scale buildings and infrastructure may be appropriate if these uses:
    - (A) enhance access to, and enjoyment of, the area; and
    - (B) enable administration and maintenance; and
- (b) Infrastructure:
  - (i) development is efficiently serviced by urban infrastructure networks or appropriate on-site systems relevant to the use; and
- (c) Site requirements and environment:
  - (i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land; and
  - (ii) development is designed to incorporate sustainable land management practices such as retention and enhancement of native vegetation and water sensitive design; and
- (d) Built form:
  - (i) development is located, designed and operated to:
    - (A) maintain the ecological integrity and biological diversity of the area; and
    - (B) visually integrate with the natural environment and landscape character of the area; and

(e) Amenity:
  (i) development does not adversely affect amenity of the conservation area or of surrounding areas.

6.2.2.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.2.3.A – Conservation zone – assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Permanent plantations	
PO1 Permanent plantations: (a) maintain and enhance endemic habitat elements, biodiversity and the ecological integrity of the area; and (b) are adequately setback to enable the management of potential bushfire risk.	**AO1.1** Permanent plantations entirely consist of vegetation species endemic to the area.
	AO1.2 Permanent plantations maintain the alignment of natural watercourses and drainage lines.
	AO1.3 The minimum setback, for proposed trees, from boundaries adjoining sites in private ownership is the higher of: (a) 1.5 times the expected canopy height of the proposed trees; or (b) 10 metres.
For assessable development	
Uses	
PO2 The zone primarily accommodates undeveloped natural habitat areas including extensive areas containing remnant vegetation, wetlands, watercourses, foreshore areas and other elements of high ecological value.	No acceptable outcome prescribed.
PO3 Development is limited to buildings, structures and infrastructure required to: (a) provide low intensity accommodation such as nature based tourism and tourist park; and (b) enhance public access and enjoyment of the area such as roads, pathways, picnic shelters, playground, amenities, signage, small scale food and drink outlets and information / souvenir shops; and (c) facilitate administrative or maintenance services; and (d) provide local access and utility services.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
Infrastructure	
PO4 Development is serviced by all forms of urban infrastructure relevant to the use, through connection to: (a) reticulated systems if practically available; or (b) appropriate on-site systems[3].	**AO4** Where relevant to the use, development is connected to: (a) the reticulated water supply infrastructure if available or an appropriate on-site water source[3]; and (b) the reticulated sewerage infrastructure if available or an appropriate on-site wastewater disposal system; and (c) stormwater infrastructure where available or an appropriate lawful point of discharge; and (d) electricity and telecommunications infrastructure.
PO5 Stormwater infrastructures is designed to minimise environmental impacts by utilising natural overland flow and water quality and quantity control measures as part of the landscape design.	No acceptable outcome prescribed.
Built form	
PO6 Building location, scale, design and appearance integrates with surrounding native vegetation and/or physical landform features is not visually obtrusive as viewed from: (a) public roads and parks; and (b) walking trails or lookouts within a national park; and (c) beaches or the ocean; and (d) adjoining residential sites.	**AO6.1** Buildings have a maximum height of 6 metres above ground level (1 storey).
	AO6.2 The minimum setback for buildings from road frontage boundaries, and boundaries adjoining lots within a residential zone, is 15 metres.
	AO6.3 Publicly accessible buildings, such as food and drink outlets, information / souvenir shops and public amenities are adjoined by gardens containing vegetation: (a) that is endemic to the area; and (b) with a variety of heights (trees, shrubs and groundcovers).
	AO6.4 Buildings not intended for public access, such as caretaker's accommodation and maintenance and storage sheds, are screened from view from publicly accessible areas by either or a combination of the following: (a) publicly accessible buildings; or (b) endemic trees and shrubs with dense foliage; or (c) physical landform features such as hills.

[3] The provision of an on-site water source must give consideration to the *Water Act 2000* and, where applicable, the *Water Resource (Pioneer Valley) Plan 2002, Water Resource (Fitzroy Basin) Plan 2011* or *Water Resource (Burdekin Basin) Plan 2007*.

Performance outcomes	Acceptable outcomes
PO7 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements such as sunshading devices; and (c) materials that are durable and respond to the surrounding natural elements and landscape character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Environment and site requirements	
PO8 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways, wetlands and coastal areas; and (b) the ecological integrity of other natural features and habitat areas and corridors.	No acceptable outcome prescribed.
PO9 The site layout responds sensitively to on-site and surrounding topography, drainage patterns, vegetation and utility services, such that: (a) earthworks are minimised; and (b) retention of natural drainage lines is maximised; and (c) retention of existing remnant vegetation is maximised; and (d) disruption to existing services is minimised.	No acceptable outcome prescribed.
PO10 Buildings and infrastructure are located in areas that are already cleared or degraded.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
Amenity	
PO11 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO12 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.

6.2.3 District centre zone code

6.2.3.1 Application

This code applies to assessing development in the District centre zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.3.2 Purpose

(1) The purpose of the District centre zone code is to provide for a mix of uses and activities.

It includes a concentration of land uses including retail, commercial, residential, limited offices, administrative and health services, community, small-scale entertainment and recreational facilities capable of servicing a district.

(2) The local government purpose of the zone code is to provide for a range of centre activities, community activities, multiple dwelling activities and other compatible uses that form compact, vibrant, attractive and pedestrian orientated multi-purpose centres and activity nodes serving the surrounding district. District centres include:

(a) Andergrove district centre;

(b) West Mackay (Fourways and Parkside) district centre;

(c) Marian district centre;

(d) North Mackay district centre; and

(e) Walkerston district centre.

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Centre role and function:

(i) district centres are:

(A) larger and more accessible, diverse and intensely developed than local centres and neighbourhood centres; and

(B) subordinate to major centres and the principal centre (Mackay city centre ("the City Centre")); and

(ii) district centres serve the suburbs immediately surrounding the centre; and

(iii) the total gross floor area of centre activities is up to:

(A) 20,000m^2 in the North Mackay district centre; and

(B) 15,000m^2 in the Andergrove, West Mackay (combined Fourways and Parkside) and Walkerston district centres; and

(C) 10,000m^2 in the Marian district centre; and

(iv) district centres are strengthened as important district activity nodes; and

(v) district centres accommodate a mixture of small and moderate scale services and facilities, suitable for serving the intended catchment; and

(b) Uses:

(i) district centres accommodate a diverse range of compatible uses enabling the creation of vibrant and diverse activity nodes providing service, employment, residential and recreation opportunities; and

(ii) district centres contain the following types of uses:

(A) centre activities:

- weekly and convenience retail services and limited comparison services (full size supermarkets, specialty stores and personal services); and

- small scale and low intensity offices and professional and service businesses; and
- limited entertainment and leisure facilities and services; and

(B) community activities: range of local community activities; and

(C) residential development: medium density residential development and short-term accommodation development where need exists and generally located above podium level/s; and

(iii) in addition to uses mentioned in (ii), the West Mackay (Fourways and Parkside) district centre creates synergies with Mackay Base Hospital by providing a range of medical services and facilities; and

(iv) impacts are managed to minimise potential land use conflicts and provide a high level of amenity for sensitive land uses; and

(c) Infrastructure:

(i) development is efficiently serviced by the full range of urban infrastructure networks; and

(d) Accessibility:

(i) the street network provides high levels of connectivity internally and to surrounding urban neighbourhoods; and

(ii) the pedestrian access network to and within the centre is attractive, convenient, safe and, as much as practical, is protected from sun and rain; and

(iii) footpaths, cycle lanes and end of trip facilities throughout the centre provide a high level of accessibility for pedestrians and cyclists; and

(iv) high quality public transport facilities including interchanges are provided at key locations (convenient for users) in district centres to facilitate efficient public transport services to, and through, the centre; and

(v) arterial roads and sub-arterial roads adjacent to and through district centres facilitate high traffic volumes; and

(vi) other streets within district centres facilitate lower volumes of traffic, safe bicycle movement, safe vehicle access to sites, pedestrian priority crossing points and street parking; and

(e) Built form and public realm:

(i) built form layout and design is integrated with adjoining and nearby development within the centre; and

(ii) built form and the public realm are characterised by high quality design outcomes and a strong sense of identity by responding to:

(A) the region's tropical climate; and

(B) the district centre's urban and landscape setting; and

(iii) buildings address the public realm by providing active and articulated frontages at a human scale; and

(iv) development is of a higher intensity than the surrounding urban area, but it respects and integrates with the surrounding urban area's established layout, character and visual amenity; and

(f) Amenity:

(i) conflicts between sensitive land uses and uses generating amenity impacts are minimised through location, design and/or operation; and

(g) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.3.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.3.3.A – District centre zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Centre role and function	
PO1 Development in district centres: (a) fulfils, but does not exceed, the needs of the relevant catchment: (i) Andergrove district centre: Beaconsfield, Andergrove and Slade Point; or (ii) West Mackay (Fourways and Parkside) district centre: West Mackay and South Mackay; or (iii) Marian district centre: Marian, Mirani and rural communities to the north and west; or (iv) North Mackay district centre: North Mackay and Mackay Harbour; or (v) Walkerston district centre: Walkerston and rural communities to the south-west; and (b) does not compete with or compromise the viability, role or function of other district centres, major centres or the principal centre (Mackay city centre).	**AO1.1** Centre activities do not exceed a total gross floor area of[4]: (a) 0.4 times the area of the site in the Andergrove district centre; or (b) 0.25 times the area of the site in the West Mackay (Fourways and Parkside) district centre; or (c) 0.30 times the area of the site in the Marian district centre; or (d) 0.25 times the area of the site in the North Mackay district centre; or (e) 0.55 times the area of the site in the Walkerston district centre.
	AO1.2 Office uses do not exceed: (a) a maximum gross floor area of 250m^2; and (b) a maximum height of 6m above ground level (1 storey).
	AO1.3 Showrooms with a gross floor area of over 500m^2, discount department stores and department stores are not located in district centres.
	AO1.4 Development involving a total gross floor area of over 1,000m^2 in the Walkerston district centre and the Marian district centre demonstrates that: (a) the development is needed to service the relevant catchment; and (b) the development will not undermine the role, function and viability of other multi-purpose centres.

[4] The gross floor area of uses on the site other than centre activities, such as community activities or multiple dwelling activities, are not included in the calculation.

Performance outcomes	Acceptable outcomes
Uses	
PO2 District centres accommodate a diverse range of compatible uses enabling the creation of vibrant and diverse activity nodes providing service, employment, residential and recreation opportunities.	**AO2** District centres accommodate a mix of the following uses: (a) centre activities, small scale and low intensity offices, hotel, market; and (b) community activities and child care centre; and (c) multiple dwelling activities and short-term accommodation; and (d) recreation activities and park; and (e) service industry, car wash, service station; and (f) other compatible uses.
Infrastructure	
PO3 Development is serviced by all forms of urban infrastructure.	**AO3** Development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
Accessibility	
PO4 Vehicle access points do not compromise: (a) the safety, operational capacity, or efficiency of arterial roads and sub-arterial roads; and (b) pedestrian safety and amenity on key active frontage streets.	**AO4.1** Development does not gain direct vehicular access from Anzac Avenue in the Marian district centre.
	AO4.2 Development gains vehicular access from: (a) a non-residential side street; or (b) co-ordinated rear access; or (c) a combined access point (1 access shared between 2 or more sites), rather than gaining direct vehicular access from: • Oak Street in the Andergrove district centre; or • Nebo Road and Bridge Road in the West Mackay (Fourways and Parkside); or • Malcomson Street, Evans Avenue and Palmer Street in the North Mackay district centre; or • Dutton Street (Peak Downs Highway) in the Walkerston district centre; or • key active frontage streets[5].
Built form and the public realm	
PO5 Built form is integrated with adjoining and nearby development within the centre to provide: (a) co-ordinated layout; and (b) consistent streetscape rhythm.	No acceptable outcome prescribed.

[5] "Key active frontage streets" are defined in Schedule 1.

Performance outcomes	Acceptable outcomes
PO6 Building height reflects the intensity and prominence of district centres as district activity nodes, but also respects and integrates with, surrounding low-rise and low-intensity built form.	**AO6** Building height does not exceed a maximum building height of: (a) 17 metres above ground level (5 storeys) in the North Mackay and West Mackay (Fourways) ; and (b) 11 metres above ground level (3 storeys) in the Andergrove and Walkerston district centres; and (c) 8.5 metres above ground level (2 storeys) in the Marian and West Mackay (Parkside) district centres.
PO7 Key active frontage streets provide: (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity; and (d) a safe and efficient environment for pedestrians, cyclists and vehicles.	**AO7.1** Street-orientated development is provided along key active frontage streets[6]. **AO7.2** The following is not provided across / adjacent to State controlled roads: (a) formal mid-block pedestrian access (for example - signalised crossing points, raised pedestrian crossings, painted pedestrian crossings and pedestrian refuges); and (b) footpath dining areas within the road reserve.
PO8 Buildings are setback from road frontages to: (a) provide street-orientated development on key active frontage streets; and (b) enable buildings to effectively address and engage with other streets; and (c) provide a human scale streetscape and not be visually overbearing.	**AO8.1** On key active frontage streets: (a) the minimum setback for the podium (maximum height 8.5 metres above ground level (2 storeys)) is 0 metres; and (b) the maximum setback for the podium is 2.5 metres; and (c) the minimum setback for parts of the building above the podium is: (i) 3 metres from the front edge of the podium to the front edge of a balcony; and (ii) 6 metres from the front edge of the podium to the building wall.

[6] "Key active frontages" are defined in Schedule 1.

Performance outcomes	Acceptable outcomes
	AO8.2 On 'non-key active frontage streets': (a) the minimum setback for the podium (maximum height 8.5 metres above ground level (2 storeys)) is 0 metres; and (b) the maximum setback for the podium is 14 metres; and (c) the minimum setback for parts of the building above the podium is: (i) 3 metres from the front edge of the podium to the front edge of a balcony; and (ii) 6 metres from the front edge of the podium to the building wall.
	AO8.3 The minimum setbacks from rear laneways are as follows: (a) 0 metres where the wall height is 4.5 metres or less above ground level; and (b) 3 metres where the wall height is more than 4.5 metres above ground level.
PO9 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
PO10 Development strengthens the centre's sense of place and identity by maintaining and/or creating visual connections with nearby built and landscape elements.	**AO10** Development maintains and/or creates views and vistas of the following from roads and other public space areas: (a) North Mackay district centre: Vines Creek estuary and adjoining open space, high rise buildings in the City Centre and Mount Oscar; and (b) West Mackay (Fourways and Parkside) district centre: high rise buildings in the City Centre; and (c) Walkerston district centre: Bakers Creek and adjoining open space; and (d) Marian district centre: Pioneer River and adjoining open space and surrounding hills.

Performance outcomes	Acceptable outcomes
Amenity	
PO11 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO12 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

6.2.4 Emerging community zone code

6.2.4.1 Application

This code applies to assessing development in the Emerging community zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.4.2 Purpose

(1) The purpose of the Emerging community zone code is to:

- (a) identify land that is suitable for urban purposes and conserve land that may be suitable for urban development in the future; and
- (b) manage the timely conversion of non-urban land to urban purposes; and
- (c) prevent or discourage development that is likely to compromise appropriate longer term land use.

(2) The local government purpose of the zone code is to:

- (a) provide for low-intensity and low impacting uses until land is required for the planned, co-ordinated, efficient and sequenced delivery of highly accessible, diverse and liveable urban communities located within the key urban areas of the region; and
- (b) manage the timely and planned conversion of land within the zone to urban purposes in accordance with a development framework plan; and
- (c) coordinate, integrate and efficiently provide trunk infrastructure in accordance with the priority infrastructure plan.

The Emerging community zone includes the following zone precincts: Alexandra Street precinct (precinct no. EC1), Andergrove lakes precinct (precinct no. EC2), Mirani precinct (precinct no. EC3), Northern Beaches south precinct (precinct no. EC4), Ooralea precinct (precinct no. EC5), Sarina north precinct (precinct no. EC6), Shoal Point–Bucasia precinct (precinct no. EC7) and Walkerston precinct (precinct no. EC8). The Marian central local plan area contains land zoned Emerging community. The Emerging community zone also applies to land that is not within a zone precinct or local plan area.

(3) The purpose of the code will be achieved through the following overall outcomes:

- (a) Interim uses:
  - (i) until land is developed for urban purposes, the predominant form of development within the zone is low-intensity, low impacting rural uses with limited built form and infrastructure; and
  - (ii) the following types of development are avoided:
    - (A) high-intensity and/or high impacting uses that are likely to conflict with or compromise the full realisation of the land for urban purposes including sensitive land uses; and
    - (B) development for urban purposes that:
      - is out of sequence with planned infrastructure provision and assumptions contained in the priority infrastructure plan; and
      - cannot be serviced by the full range of urban infrastructure networks in a way that does not prevent or compromise the orderly and planned provision of trunk infrastructure networks to service the ultimate development in the area; and

- prevents or compromises the full realisation of the land for urban purposes; and
- is premature or not required, in that it cannot be demonstrated that there is an overriding community need for the development.

(b) Development framework plans:

(i) development for urban purposes must accord with a development framework plan over the site and all surrounding land zoned Emerging community that provides for:

(A) co-ordinated, planned, integrated and efficiently sequenced development and infrastructure provision across the development framework plan area; and

(B) effective integration with existing nearby development; and

(C) diverse, liveable neighbourhoods with a strong sense of place;

(ii) as a minimum, development framework plans identify the following over the development framework plan area: land uses, development intensity, key elements of the access network, efficient trunk infrastructure (including an infrastructure delivery strategy), community facilities, open space areas and corridors, development and infrastructure sequencing, and visual linkages with landscape character elements; and

(c) Development for urban purposes:

(i) development for urban purposes is provided in a planned, co-ordinated, integrated and efficiently sequenced manner in accordance with:

(A) the relevant local plan if applicable; and

(B) an approved development framework plan; and

(ii) development is efficiently serviced by the full range of urban infrastructure networks and provides for infrastructure services, in accordance with an approved infrastructure delivery strategy relevant to the ultimate development in the development framework plan area; and

(iii) development located outside of the priority infrastructure area must demonstrate that trunk water, sewer, stormwater and road infrastructure required to service the ultimate development in the area and is provided at full cost, including lifecycle cost, to the developer; and

(iv) development for urban purposes creates new neighbourhoods that provide:

(A) residential communities supported by a diverse mix of non-conflicting land uses promoting, as far as practical, a degree of self-containment; and

(B) diverse mix of residential densities including appropriately located higher density residential development; and

(C) accessible, multi-purpose, usable and adequately sized open space areas and corridors that form neighbourhood focal points; and

(D) access networks for private vehicles, public transport and bicycles / pedestrians with high levels of internal and external connectivity and strong linkages between key neighbourhood hubs and open spaces; and

(E) measures that maintain and respond to high value ecological features and physical constraints of the land; and

(F) high quality visual outcomes and a strong sense of place; and

(d) Precinct-specific outcomes:

(i) Alexandra Street precinct (precinct no. EC1):

(A) low-medium density residential development is provided along Alexandra Street and addresses the Mackay Regional Botanic Gardens; and

(ii) Andergrove Lakes precinct (precinct no. EC2):

(A) a local centre (Andergrove Lakes local centre) is provided in the vicinity of the Beaconsfield Road east and Norris Road intersection to service the local area; and

(B) medium density residential development is provided in close proximity of the Andergrove Lakes local centre; and

(C) the access network connects with existing adjoining streets; and

(iii) Mirani precinct (precinct no. EC3):

(A) low-medium density residential development is provided in close proximity to:

- the Pioneer River and the western end of Mary Street; and
- the northern end of Leichardt Road; and

(B) a riverside park is provided adjacent to the Pioneer River, predominantly below the "high bank", in the westernmost part of the precinct; and

(C) an open space corridor, along and above the "high bank" of the Pioneer River, is provided to link the riverside park with Mirani local centre; and

(iv) Northern Beaches south precinct (precinct no. EC4):

(A) higher density residential development is provided to utilise strategic locations near centres and schools; and

(B) community activities are provided for at a highly accessible location in close proximity to the Rural View major centre;

(C) the access network includes:

- co-ordinated road linkages between centres and major roads; and
- connections with existing adjoining streets; and
- regional pedestrian and cycle linkages which connects the entire precinct from McCready Creek to the Blacks Beach Spit; and

(D) public open space is provided along, links and accentuates McCready Creek, wetlands and vegetated hilltops throughout the precinct; and

(v) Ooralea precinct (precinct no. EC5):

(A) development north of Schmidtkes Road provides:

- medium density residential development northeast of Ferris Gully; and
- a coordinated access network of collector streets and access streets across stages that connects with the surrounding road network; and
- pedestrian / cycling connections into the Central Queensland University Ooralea campus; and
- opportunities for overlooking and access to the Ferris Gully open space corridor; and

(vi) Sarina north precinct (precinct no. EC6):

(A) low-medium density residential development is provided in the vicinity of Sarina Beach Road and the open space corridor through the area; and

(B) the access network connects with existing adjoining streets; and

(vii) Shoal Point–Bucasia precinct (precinct no. EC7):

(A) a local centre (Shoal Point local centre) is provided in the vicinity of the intersection between Shoal Point Road and Seychelles Road; and

(B) low-medium density residential development is provided in close proximity of the Shoal Point local centre; and

(C) medium density residential development is provided in the vicinity of Shoal Point Road; and

(D) a regional sporting facility is provided in the precinct to meet the needs of the rapidly growing Northern Beaches community; and the access network includes:

- access points into the precinct that align with existing access points east from Shoal Point Road; and
- the access network connects with existing adjoining streets in the existing "Royal Sands" residential estate; and

(viii) Walkerston precinct (precinct no. EC8):

(A) the access and open space network integrates with the surrounding area.

6.2.4.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.4.3.A – Emerging community zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Interim uses	
PO1 Until land is developed for urban purposes, the zone primarily accommodates a limited range of low intensity, low impacting rural activities and associated uses that do not compromise: (a) the full realisation of the land for urban purposes; and (b) transport and utility infrastructure corridors and works required to serve the ultimate development.	**AO1.1** Interim uses consist of: (a) animal husbandry; or (b) cropping; or (c) dwelling house; or (d) home based business; or (e) roadside stall; or (f) other uses where it is demonstrated that the use: (i) will not conflict with future development for urban purposes including sensitive land uses; and (ii) will integrate with future development for urban purposes or can be easily removed when land is required for development.
	AO1.2 Buildings associated with interim uses have a maximum height of 6 metres above ground level (1 storey).
	AO1.3 The minimum setback for buildings from road frontage boundaries is: (a) 10 metres from an existing arterial road or sub-arterial road; and (b) 6 metres from an existing collector street or access street.

Performance outcomes	Acceptable outcomes
	AO1.4 The minimum setback for buildings from the centrelines of future roads as follows: (a) 200 metres from a future highway; and (b) 30 metres from a future arterial road; and (c) 25 metres from a future sub-arterial road; and (d) 20 metres from a future collector street.
Development framework plans	
PO2 Development for urban purposes must accord with a development framework plan over the development framework plan area. The development framework plan area includes: (a) the site; and (b) all adjoining and surrounding sites within the Emerging community zone; and (c) sites in the broader area.	No acceptable outcome prescribed.
PO3 As a minimum, development framework plans identify the following over the development framework plan area: (a) land uses (residential and non-residential) – mapped and written intent[7]; and (b) maximum residential density and, where applicable, average and minimum density; and (c) building height; and (d) interface and mitigation measures between proposed sensitive land uses and existing / proposed impact generating uses (such as rural activities, industry activities and transport corridors) nearby; and (e) arterial road, sub-arterial road and collector street layout[8]; and (f) public transport (bus) routes; and (g) key pedestrian and bicycle routes; and (h) details on the efficient provision and sequencing of trunk water, sewerage, transport, parkland and stormwater infrastructure required to service ultimate development in the development framework plan area, including a delivery strategy; and (i) open space areas and corridors and sports and recreation facilities; and (j) development sequencing according to: (i) feasible, orderly, planned and efficient infrastructure provision; and (ii) need for the development.	No acceptable outcome prescribed.

7 Land use intents should be consistent with zones and zone precincts in the planning scheme.

8 An indicative layout for access streets may also be requested, particularly where it is required that adjoining access streets continue into the site.

Performance outcomes	Acceptable outcomes
PO4 Development framework plans provide for community activities where there is likely to be a need for a community activity.	**AO4** Development framework plans either: (a) provide for community activities, particularly educational establishments, emergency services, child care centres and community uses; or (b) demonstrate that community activities are not required in the development framework plan area due to available capacity in existing nearby facilities.
PO5 Development framework plans identify visual linkages with landscape character elements within the development framework plan area and in surrounding areas, to enable the creation of a strong sense of place and identity.	**AO5** Views of landscape character features (such as mountains / hills, coastline, watercourses, significant vegetation and agricultural landscapes), and open space areas and corridors: (a) are provided from key neighbourhood hubs such as multi-purpose centres and community hubs; and (b) are provided from open space areas and corridors; and (c) visually frame the view line along streets.
Development for urban purposes – general	
PO6 Development for urban purposes provides water supply, sewerage, road and stormwater infrastructure servicing the site in accordance with an approved infrastructure delivery strategy and with the capacity to service the ultimate development in the development framework plan area. Out of sequence development does not prejudice the efficient, orderly and planned provision of infrastructure to service the ultimate development in the development framework plan area.	No acceptable outcome prescribed.
PO7 Development located outside of the priority infrastructure area must demonstrate that trunk water, sewer, stormwater and road infrastructure required to service the ultimate development in the area and is provided at full cost including lifecycle cost to the developer.	No acceptable outcome prescribed.
PO8 Stormwater infrastructure and drainage corridors are provided in accordance with the adopted Stormwater Infrastructure Study relevant to the area.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO9 Development creates highly liveable and diverse neighbourhoods comprising residential development, with a range of densities and housing products, supported by: (a) a range of viable non-residential development providing convenient local services and employment; and (b) community activities where required; and (c) sport and recreation facilities and open space areas and corridors.	**AO9.1** The predominant form of development in the zone is residential development.
	AO9.2 Residential development is provided: (a) at a minimum net density of 12 dwellings per hectare across the development framework plan area; and (b) a minimum of 15 percent of dwellings is provided at a higher density[9].
	AO9.3 Higher density residential development is located within any or a combination of the following: (a) 800 metres of a major centre or district centre; or (b) 800 metres of the Central Queensland University Ooralea campus, Base Hospital or Mater Hospital; or (c) 400 metres of a local centre or neighbourhood centre; or (d) 200 metres of a centre activity or community activity; or (e) 200 metres of an existing public transport route or usable open space[10].
	AO9.4 Neighbourhood centres[11] are encouraged where they will: (a) fulfil a demonstrated need of the local area; and (b) not compromise the viability of: (i) existing or intended uses within a multi-purpose centre; and (ii) similar existing or approved uses in the local area.
	AO9.5 Neighbourhood centres are located: (a) a minimum of 800 metres from an existing or planned multi-purpose centre or centre activity; and (b) on sub-arterial roads or collector streets and not on arterial roads or access streets.

9 Refer to Schedule 1 for definition of "higher density".
10 Refer to Schedule 1 for definition of "usable open space".
11 Refer to Schedule 1 for definition of "neighbourhood centre".

Performance outcomes	Acceptable outcomes
	AO9.6 Open space areas and corridors are provided: (a) along the coastlines, watercourses and natural drainage lines; and (b) in low-lying areas subject to inundation; and (c) in areas containing remnant vegetation so that the vegetation can be retained; and (d) on hilltops so that viewpoints are publicly accessible; and (e) to continue open space areas and corridors from adjoining sites; and (f) in accordance with Council's Open space planning scheme policy.
PO10 Building height and scale: (a) the integrates with the existing or intended low-rise character of the surrounding neighbourhood; and (b) does not form overdevelopment of the site.	**AO10** Buildings, other than buildings within the Ooralea precinct (precinct no. EC5) north of Schmidtkes Road, have a maximum height of 8.5 metres above ground level (2 storeys).
PO11 Residential buildings are setback from road frontages to: (a) contribute to the open, low-intensity character of the surrounding residential area; and (b) accommodate landscaping between the building and the street; and (c) provide privacy for the building; and (d) avoid buildings from being visually overbearing as viewed from the street.	**AO11.1** Minimum road frontage setbacks for residential buildings are: (a) from arterial roads and sub-arterial roads – 10 metres; and (b) from collector streets – 6 metres; and (c) from access streets: (i) 6 metres for garages, outbuildings and carports; and (ii) 4.5 metres for other parts of the building; and (d) from rear laneways: (i) 0 metres where the wall height is 3.5 metres or less above ground level; and (ii) 2 metres where the wall height is more than 3.5 metres above ground level.

Performance outcomes	Acceptable outcomes
PO12 Street layouts, public transport routes and bicycle / pedestrian pathways provide: (a) provide safe and efficient access and have high levels of internal and external connectivity; and (b) co-ordinated and integrated access networks: (i) across sites within the development framework plan area; and (ii) between the development framework plan area and surrounding areas; (c) provide strong connections between key neighbourhood hubs within the development framework plan area and in surrounding areas; and (d) utilise the amenity of, and provide access and casual surveillance to, open space areas and corridors.	**AO12.1** Centrally located sub-arterial roads and collector streets: (a) provide co-ordinated and integrated access across sites and the throughout the development framework plan area; and (b) provide highly accessible and efficient public transport route/s through the development framework plan area; and (c) link key neighbourhood hubs, such as multi-purpose centres and community activities; and (d) align with discontinued sub-arterial roads and collector streets adjoining or opposite the site; and (e) adjoin open space areas and corridors.
	AO12.2 Access streets: (a) minimise the use of cul-de-sacs and other non-continuing roads; and (b) align with discontinued access streets adjoining or opposite the site; and (c) provide high levels of internal connectivity; and (d) adjoin open space areas and corridors.
	AO12.3 Bicycle and pedestrian pathways are provided: (a) throughout the development framework plan area and form part of larger regional networks; and (b) link key neighbourhood hubs, such as multi-purpose centres and community activities; and (c) along sub-arterial roads, collector streets and open space corridors; and (d) align with discontinued pathways and proposed future pathways adjoining or opposite the site.
PO13 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO14 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.
Development for urban purposes – Alexandra Street precinct (precinct no. EC1)	
PO15 Low-medium density residential development is provided in the eastern part of the precinct to: (a) reflect the area's strategic location in close proximity to the Mackay Regional Botanic Gardens; and (b) increase the amount of development overlooking, and enjoying the amenity provided by, the gardens; and (c) achieve a more efficient use of land and increase the diversity of housing product in the precinct.	**AO15** Low-medium density residential development is provided in the eastern part of the precinct, nearest Alexandra Street and overlooking the Mackay Regional Botanic Gardens.
Development for urban purposes – Andergrove Lakes precinct (precinct no. EC2)	
PO16 A local centre (Andergrove Lakes local centre): (a) is provided in close proximity to the strategic intersection of Beaconsfield Road east (sub-arterial road) and Norris Road (collector street); and (b) services, but does not exceed, the needs of the local catchment (southern part of Beaconsfield, south-western part of Andergrove, north-eastern part of Mount Pleasant, north-western part of North Mackay); and (c) does not compete with compromise other multipurpose centres; and (d) provides vibrant street-orientated design, high quality building design, and a high quality pedestrian environment; and (e) includes views to landscape character elements to provide a strong sense of place and identity.	**AO16.1** A local centre is provided in close proximity to the intersection of Beaconsfield Road east and Norris Road. **AO16.2** The total gross floor area of all centre activities in the local centre is 5,000m^2. **AO16.3** The local centre primarily accommodates: (a) centre activities; and (b) community activities child care centre; and (c) recreation activities and park; and (d) service industry and service station. **AO16.4** The local centre does not accommodate department stores, discount department stores, showrooms and full-sized supermarkets.

Performance outcomes	Acceptable outcomes
	AO16.5 The local centre includes a main street, to be addressed by street orientated development.
	AO16.6 The local centre provides views and vistas from streets and other public places to: (a) the open space / lake area; and (b) Mount Oscar.
PO17 Medium density residential development is provided in close proximity to Andergrove Lakes local centre: (a) reflect the area's strategic location in close proximity to the local centre, public transport and open space / lake area; and (b) increase the amount of development overlooking, and enjoying the amenity provided by, open space / lake area; and (c) achieve a more efficient use of land and increase the diversity of housing product in the precinct.	**AO17** Medium density residential development is provided within 400 metres of the Andergrove Lakes local centre.
Development for urban purposes – Mirani precinct (precinct no. EC3)	
PO18 Low-medium density residential development is provided in close proximity to Mirani local centre and the Pioneer River to: (a) reflect the area's strategic location in close proximity to the river and adjoining open space, local centre and public transport; and (b) increase the amount of development overlooking, and enjoying the amenity provided by, river and adjoining open space; and (c) achieve a more efficient use of land and increase the diversity of housing product in the precinct.	**AO18.1** In the area east of Leichhardt Road, low-medium density residential development is provided in the area closest to the Mirani local centre (the north-western part of this area).
	AO18.2 In the area west of Mirani–Eton Road, low-medium density residential development is provided: (a) along roads and open space fronting the Pioneer River; and (b) in the area closest to the Mirani local centre (near the western end of Mary Street).
PO19 Usable land adjacent to the Pioneer River: (a) forms part of the open space network of parks and green corridors; and (b) provides a safe, efficient and attractive bicycle and pedestrian linkage between the riverside park and Mirani local centre	**AO19.1** In the area west of Mirani–Eton Road, a park with an area of approximately 6.5 hectares, is provided adjacent to the river and predominantly below the "high bank" of the river.
	AO19.2 In the area west of Mirani–Eton Road, an open space corridor, with a minimum width east of the "high bank" of 5 metres, is provided between the park required by AO19.1 and the northern boundary of the precinct.

Performance outcomes	Acceptable outcomes
	AO19.3 In the area west of Mirani–Eton Road, a sealed footpath, with a minimum width of 2 metres, is provided for the full length of the open space corridor required by AO19.2.
Development for urban purposes – Northern Beaches south precinct (precinct no. EC4)	
PO20 Higher density residential development is provided to: (a) utilise strategic locations in close proximity to centres; and (b) utilise highly accessible sites; and (c) overlook and take advantage of the amenity provided by open space corridors; and (d) achieves a more efficient use of land and increase the diversity of housing product in the precinct.	**AO20.1** Multi-storey medium density residential development is provided on sites: (a) adjoining and opposite Rural View major centre; and (b) opposite the Northern Beaches GP Superclinic site.
	AO20.2 Medium density residential development is provided in close proximity to Rural View major centre, Blacks Beach local centre and the future Blacks Beach State Primary School site.
	AO20.3 Medium density residential development and low-medium density residential development is provided along: (a) McCreadys Creek open space corridor; and (b) the natural drainage line corridor extending north from Wallmans Road.
PO21 Community activities are provided for in a central and highly accessible location adjoining / opposite the Rural View major centre, Northern Beaches State High School and Northern Beaches Bowls Club.	**AO21** Land at the intersection of Rosewood Drive and Reed Street is designated for community activities.
PO22 The access network includes: (a) co-ordinated road linkages between centres and major roads; and (b) integration with established adjoining access points; and (c) safe, convenient and highly attractive pedestrian and bicycle links along natural drainage line corridors.	**AO22.1** Co-ordinated sub-arterial roads are provided to provide linkages between: (a) Mackay-Habana Road and Wallmans Road (Dawson Boulevard); and (b) Mackay-Bucasia Road and Blacks Beach Road (Reed Street and Chenoweth Drive); and (c) Development progresses from and connects to the emerging road network and not from unformed minor roads such as Orphanage Road or Boveys Road.
	AO22.2 A co-ordinated collector street is provided to provide a linkage between Golflinks Road and Rosewood Drive (Norwood Parade and Reed Street).

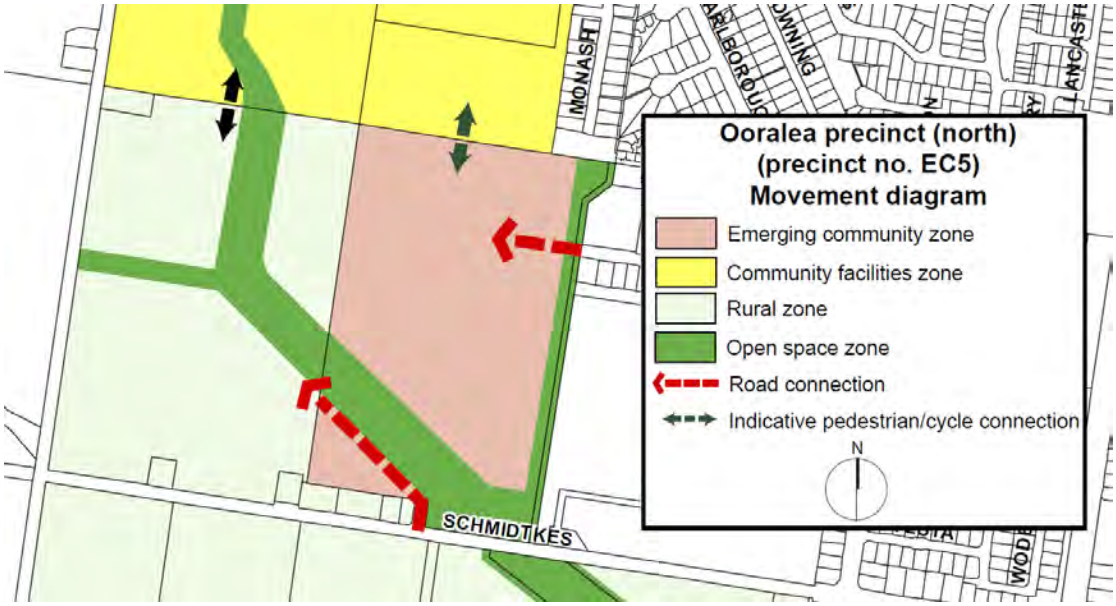
Performance outcomes	Acceptable outcomes
	AO22.3 Pedestrian and cycle pathways are provided along natural drainage lines including McCreadys Creek and the adjoining wetlands to provide a linkage between: (a) the "Richmond Hills", "Kerrisdale", "Plantation Palms" and "Blacks Beach Cove" residential estates; and (b) Dawson Boulevard and Saint Brendan's Catholic Primary School (along the natural drainage line north of Wallmans Road); and (c) the intersection of Mackay-Bucasia Road and Old Eimeo Road and Saint Brendan's Catholic Primary School (along the natural drainage lines north of Wallmans Road).
PO23 Public open space is provided throughout the precinct to: (a) provide recreation opportunities and linkages; and (b) contribute to the sense of place of the precinct by retaining elements of landscape character and environmental value.	**AO23.1** Public open space corridors provided along natural drainage lines, including but not limited to: (a) McCreadys Creek and Little McCreadys Creek; and (b) the natural drainage line extending north from Wallmans Road. **AO23.2** Public open space is provided over the vegetated hilltops / knolls: (a) east of Florence Street; and (b) east of Rural View major centre.
PO24 For sites with frontage to Boveys Road: (a) development does not provide direct access to Boveys Road; and (b) the internal road network does not access or intersect with Boveys Road. All access and internal road connectivity is provided from the east (Dawson Boulevard).	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
Development for urban purposes – Ooralea precinct (precinct no. EC5)	
PO25 Development north of Schmidtkes Road: (a) provides medium density residential development northeast of Ferris Gully; and (b) achieves a more efficient use of land and increase the diversity of housing product in the precinct; and (c) overlooks and takes advantage of the Ferris Gully open space corridor; and (d) the access network includes integration with established adjoining access points and a high level of internal connectivity.	**PO25.1** Development north of Schmidtkes Road provides: (a) medium density residential development on the north-eastern side of Ferris Gully; and (b) access connection points are provided in accordance with Figure 6.2.4.3.A – Ooralea precinct (north) (precinct no. EC5) – movement, and include: (i) southern access from the road stub on the northern side of Schmidtkes Road; and (ii) northern access from Bradco Avenue; and (iii) a northern pedestrian / cycling connection point to the Central Queensland University Ooralea campus; and (iv) western road connection south of Ferris Gully.
	AO25.2 Buildings have a maximum height of: (a) 12 metres (3 storeys) above ground level within the medium density residential designation located north-east of Ferris Gully; and (b) 8.5 metres (2 storeys) above ground level on land located south-west of Ferris Gully.
Development for urban purposes – Sarina north precinct (precinct no. EC6)	
PO26 Low-medium density residential development is provided in close proximity to Sarina Beach Road and the open space corridor: (a) reflect the area's strategic location in close proximity to Beach Road local centre, Sarina Beach Road and the open space corridor; and (b) increase the amount of development overlooking, and enjoying the amenity provided by, the open space corridor; and (c) achieve a more efficient use of land and increase the diversity of housing product in the precinct.	**AO26** Low-medium density residential development is provided within 200 metres of Sarina Beach Road and the open space corridor.

Performance outcomes	Acceptable outcomes
Development for urban purposes – Shoal Point-Bucasia precinct (precinct no. EC7)	
PO27 A local centre (Shoal Point local centre): (a) is provided west of, and in close proximity to, the intersection of Shoal Point Road and Seychelles Road; and (b) services, but does not exceed, the needs of the local catchment (Shoal Point); and (c) does not compete with compromise other multipurpose centres; and (d) provides vibrant street-orientated design, high quality building design, and a high quality pedestrian environment; and (e) provides a strong sense of place and identity.	**AO27.1** A local centre is provided west of, and in close proximity to, the intersection of Shoal Point and Seychelles Road.
	AO27.2 The total gross floor area of all centre activities in the local centre is 5,000m^2.
	AO27.3 The local centre primarily accommodates: (a) centre activities; and (b) community activities child care centre; and (c) recreation activities and park; and (d) service industry and service station.
	AO27.4 The local centre does not accommodate department stores, discount department stores, showrooms and full-sized supermarkets.
	AO27.5 The local centre includes a main street, to be addressed by street orientated development.
	AO27.6 The local centre provides a strong sense of place and identity by providing views and vistas from streets and other public places to landscape character elements.
PO28 Low-medium and medium density residential development is provided in close proximity to Shoal Point local centre and Shoal Point Beach to: (a) reflect the area's strategic location in close proximity to the local centre and public transport or the beach; and (b) increase the amount of development overlooking, and enjoying the amenity provided by, the open space / beach area; and (c) achieve a more efficient use of land and increase the diversity of housing product in the precinct.	**AO28.1** Low-medium density residential development is provided within 400 metres of Shoal Point local centre.
	AO28.2 Medium density residential development is provided in close proximity of Shoal Point Beach.

Performance outcomes	Acceptable outcomes
PO29 A regional sporting facility serving the ultimate needs of the Northern Beaches community is provided at a central and highly accessible location.	**AO29** A regional sporting facility is provided: (a) to meet the needs of the projected population of the Northern Beaches to 2031; and (b) west of Shoal Point Road and south of "Royal Sands" residential estate; and (c) adjacent to a collector street; and (d) generally in accordance with Council's Open Space, Sport and Recreation Strategy 2009
PO30 Access points into the Shoal Point-Bucasia precinct (precinct no. EC7) with access points east of Shoal Point Road to provide an integrated street layout in the area.	**AO30** Access points into the Shoal Point-Bucasia precinct (precinct no. EC7) align with the following intersections: (a) Shoal Point Road and Seychelles Road; and (b) Shoal Point Road and Fisher Street; and (c) Shoal Point Road and Gentle Avenue; and (d) Shoal Point Road and Kemp Street.
Development for urban purposes – Walkerston precinct (precinct no. EC8)	
PO31 An integrated open space network is provided by the continuation of the open space corridor north of Robinson Avenue continues into and through the Walkerston precinct (precinct no. EC8).	No acceptable outcome prescribed.
Development for urban purposes – The Waters at Ooralea development area	
PO32 An east-west drain north of Stages 6-8 of The Waters development is provided with the width and alignment subject to investigation, and Council approval.	No acceptable outcome prescribed.

Figure 6.2.4.3.A – Ooralea precinct (north) (precinct no. EC5) - movement



6.2.5 High density residential zone code

6.2.5.1 Application

This code applies to assessing development in the High density residential zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.5.2 Purpose

(1) The purpose of the High density residential zone code is to provide for higher density multiple dwellings supported by community uses and small-scale services and facilities that cater for local residents.

(2) The local government purpose of the zone code is to provide for medium-high and high intensity residential development at certain locations, within 6 kilometres of the principal centre (Mackay city centre) that has a strong connection to a regionally significant activity, amenity and/or tourism / recreation node. The zone applies to the area adjacent to Mackay Marina (Mackay Harbour) south of the Mackay Marina local centre.

The zone also provides for short-term accommodation and a limited range of small scale, low intensity and compatible non-residential activities.

(3) The purpose of the code will be achieved through the following overall outcomes:

- (a) Uses:
  - (i) the predominant form of development within the zone is high density residential development; and
  - (ii) the zone also accommodates short-term accommodation on sites:
    - (A) with strong connections to centres and/or elements of high amenity and recreation value; and
    - (B) that are prominently located and highly accessible; and
  - (iii) a limited range of small-scale and low intensity non-residential uses may be appropriate if these uses are:
    - (A) required to serve the needs of the local area; and
    - (B) located on prominent, highly accessible sites; and
    - (C) consistent with the amenity and character of the surrounding urban area; and
  - (iv) port services at Mackay Marina maintain the high quality amenity and safety for visitors to the area and nearby residents; and

- (b) Infrastructure:
  - (i) development is efficiently serviced by the full range of urban infrastructure networks; and

- (c) Built form and development intensity:
  - (i) high density residential development including medium-rise and high-rise buildings reflect the site's strategic location but has a lesser development intensity than buildings in the Principal centre zone (Mackay city centre ("the City Centre")); and
  - (ii) road frontage setbacks are small enough to enable the development to effectively interact with the street but large enough to accommodate landscaping and avoid buildings being visually overbearing; and
  - (iii) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(d) Amenity:

(i) development does not adversely affect the amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses; and

(e) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.5.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.5.3.A – High density residential zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses	
PO1 The zone primarily accommodates high density residential development including multiple dwellings at the Mackay Marina (Mackay Harbour).	No acceptable outcome prescribed.
PO2 Short-term accommodation is located: (a) in close proximity to, and has strong visual and physical connection with: (i) the Mackay Marina local centre; and (ii) open space adjoining Mackay Marina and Mulherin Park; and (b) on an arterial road, sub-arterial road, collector street or access street with a road reserve width of not less than 20 metres.	No acceptable outcome prescribed.
PO3 Non-residential activities, such as centre activities and community activities, are: (a) required to serve the needs of the local area and do not compromise the viability of: (i) existing or intended uses within a multi-purpose centre; and (ii) similar existing or approved uses in the local area; and (b) of a small scale and are subordinate to the primary residential use (on the site); and (c) generate minimal impacts; and (d) located on the ground floor of buildings.	No acceptable outcome prescribed.
PO4 Port services at Mackay Marina maintain the visual and general amenity and public safety for adjoining and nearby residential development and publicly accessible areas.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
Infrastructure	
PO5 Development is serviced by all forms of urban infrastructure.	**AO5** Development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
Built form and development intensity	
PO6 Building height and residential density: (a) utilises the strategic location of the site in close proximity to: (i) high value amenity elements and recreation opportunities provided by the Mackay Marina and Harbour Beach; and (ii) the mixed use local centre and employment area to the north; and (b) integrates with the intended high intensity built form of the area; and (c) does not: (i) form overdevelopment of the site; and (ii) challenge the primacy of the City Centre as the region's most intensely developed precinct.	**AO6.1** Buildings have a maximum height of 32 metres above ground level (10 storeys). **AO6.2** The maximum plot ratio is 2.5:1. **AO6.3** The minimum number of dwellings provided is the equivalent of 1 dwelling per every 75m^2 of site area.
PO7 Buildings are setback from road frontages to: (a) provide for landscaping between the building and the street; and (b) avoid buildings from being visually overbearing as viewed from the street.	**AO7** Minimum road frontage setbacks are within: (a) from arterial roads and sub-arterial roads – 10 metres; (b) from collector streets and access streets – 6 metres; and (c) from a rear laneway: (i) 0 metres where the wall height is 3.5 metres or less above ground level; and (ii) 6 metres where the wall height is more than 3.5 metres above ground level.

Performance outcomes	Acceptable outcomes
PO8 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable, require minimal maintenance, and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Amenity	
PO9 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO10 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.
Environment	
PO11 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

6.2.6 High impact industry zone code

6.2.6.1 Application

This code applies to assessing development in the High impact industry zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.6.2 Purpose

(1) The purpose of the High impact industry zone code is to provide for high impact industry uses.

It may include non-industrial and business uses that support the industrial activities where they do not compromise the long-term use of the land for industrial purposes.

Activities considered appropriate in this zone are defined as high impact industry in the schedule of definitions.

(2) The local government purpose of the zone code is to provide for large scale, medium and high impact industrial development, which make a significant contribution to the region's economy and employment base, at specific localities including:

(a) Paget; McLennan Street, Ooralea; Harbour Road, North Mackay; and Brewers Road, Sarina; and

(b) Sugar Mills at Racecourse, Marian, Sarina, Farleigh and Pleystowe.

The zone does not accommodate incompatible development, particularly sensitive land uses and non-industrial activities.

The High impact industry zone includes the Sugar mill precinct (precinct no. HI1) and the Air quality management precinct (precinct no. HI2).

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Uses:

(i) the predominant form of development within the zone is large scale, medium and high impact industrial development and other complementary industrial activities; and

(ii) a limited range of small-scale non-industrial uses (excluding sensitive land uses) may be appropriate if these uses are:

(A) required to serve the needs of the local area; and

(B) located on prominent, highly accessible sites; and

(C) not affected by, or able to mitigate, impacts generated by surrounding industrial uses; and

(iii) development on land east of Horse and Jockey Road and north of Lagoon Creek operates effectively without trunk infrastructure; and

(iv) sensitive land uses are not located within the High impact industry zone; and

(v) the Sugar mill precinct (precinct no. HI1) primarily accommodates special industry for the purposes of sugar mill operations; and

(vi) the Air quality management precinct (precinct no. HI2) accommodates development that does not result in air emissions significantly affecting nearby sensitive land uses; and

(b) Infrastructure:

(i) trunk infrastructure is not extended to service land east of Horse and Jockey Road and north of Lagoon Creek;

(ii) development is efficiently serviced by the full range of urban infrastructure networks; and

(iii) development maximises access to appropriate transport infrastructure relevant to the use (roads and railways); and

(c) Built form and development intensity:

(i) significant buildings optimise the use of the site, but also integrate with the built form of the area and do not constitute over-development of the site; and

(ii) road frontage setbacks:

(A) accommodate landscaping; and

(B) avoid buildings being visually overbearing; and

(iii) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(d) Amenity:

(i) development does not adversely affect the amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses; and

(e) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.6.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.6.3.A – High impact industry zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses	
PO1 In areas other than the Sugar mill precinct (precinct no. HI1), the zone accommodates large scale, medium and high impact industrial development, such as: high impact industry, marine industry, medium impact industry, research and technology industry, special industry, transport depot and substation.	No acceptable outcome prescribed.
PO2 In areas other than the Sugar mill precinct (precinct no. HI1), the zone also accommodates: (a) other forms of industrial development such as: hardware and trade supplies (not containing a retail shop open to the general public), low impact industry, service industry and warehouse; and (b) other compatible uses requiring a location in the industry area such as: education establishment (specifically involving industry related training) and service station.	No acceptable outcome prescribed.
PO3 The Sugar mill precinct (precinct no. HI1) primarily accommodates special industry for the purposes of sugar mill operations. Substation is also an acceptable use in this precinct.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO4 The Air quality management precinct (precinct no. HI2): (a) does not accommodate Special industry; (b) accommodates industry activities that does not result in air emissions significantly affecting nearby sensitive land uses including the Ooralea investigation area.	No acceptable outcome prescribed.
PO5 Office areas and general retail or sales display areas that form part of an industrial development, are ancillary and subordinate to the primary industrial use.	**AO5** Offices and/or general retail or sales display areas, that form part of an industrial development, must: (a) be ancillary to the primary industrial use; and (b) have a gross floor area of not more than 10% of the total gross floor area of the development.
PO6 Special industry does not expose adjacent or surrounding uses, particularly sensitive land uses, to impacts that affect: (a) human health, wellbeing and amenity; and (b) human safety as a result of the risks posed by the type of use.	**AO6.1** In areas other than the Sugar mill precinct (precinct no. HI1), special industry is not located within 1,500 metres of: (a) an existing sensitive land use; and (b) a residential zone.
	AO6.2 Special industry takes all measures necessary to ensure safety risks and amenity nuisances are mitigated: (a) for employees on, and visitors to, the subject site; and (b) as experienced from adjoining and nearby sites.
PO7 Non-industrial activities, such as food and drink outlet, health care services, shop and emergency services are[12]: (a) required to serve the needs of the local area and do not compromise the viability of: (i) existing or intended uses within a multi-purpose centre; and (ii) similar existing or approved uses in the local area; and (b) of a small scale and are subordinate to the primary industrial use of the area; and (c) are not affected by, or mitigate impacts, generated by surrounding industrial uses.	No acceptable outcome prescribed.

[12] Provisions focusing specifically on 'out-of-centre' centre activities and other non-industrial development are also provided in the relevant development codes (Part 9).

Performance outcomes	Acceptable outcomes
PO8 Sensitive land uses are not located in the High impact industry zone to: (a) protect the health and safety and amenity of sensitive land uses; and (b) maintain the operational efficiency and viability of industry activities.	No acceptable outcome prescribed.
Infrastructure	
PO9 Development is serviced by all forms of urban infrastructure.	**AO9** Development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; and (c) a sealed road of an appropriate width; (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
PO10 Trunk infrastructure is not extended to service land east of Horse and Jockey Road and north of Lagoon Creek (the former 'Westline Drive-in' site) and the type of development on this land reflects this (operates effectively without trunk infrastructure).	**AO10** No acceptable outcome prescribed.
Built form and development intensity	
PO10 Building height and scale: (a) contributes toward the optimal use of the site; and (b) integrates with the built form of the area; and (c) does not form overdevelopment of the site.	**AO10.1** Buildings have a maximum height of 15 metres above ground level. **AO10.2** The maximum site cover of all buildings is 60% of the total site area.
PO11 Buildings are setback from road frontages to: (a) integrate with the streetscape of the area; and (b) accommodate landscaping between the building and the street; and (c) avoid buildings from being visually overbearing as viewed from the street.	**AO11** Minimum road frontage setbacks are: (a) from arterial roads and sub-arterial roads – 10 metres; and (b) from collector streets and access streets – 6 metres.
PO12 Buildings are setback from side and rear boundaries to maintain views, privacy, access to natural light and visual amenity on adjoining sites zoned for sensitive land uses.	**AO12** The minimum setback for buildings from boundaries adjoining sites within a residential zone is 10 metres.

Performance outcomes	Acceptable outcomes
PO13 Industry activities in the Air quality management precinct (precinct no. HI2) are located, designed and operated to minimise potential air quality impacts on nearby sensitive land uses including the Ooralea investigation area.	**AO13.1** In the Air quality management precinct (precinct no. HI2), industry activities are located and designed so that: (a) external work and/or storage areas are located as far eastward on the site as possible; and (b) offices and other low impact activities are located on the western side of the site; and (c) openings to parts of the building containing work and/or storage areas face eastward.
	AO13.2 In the Air quality management precinct (precinct no. HI2), the manufacture, storage and/or use of hazardous materials takes place: (a) on the easternmost part of the site; and (b) within fully enclosed buildings that only have openings that face eastward[13].
PO14 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable, require minimal maintenance, and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Amenity	
PO15 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby sites containing an existing sensitive land use.	**AO15** Higher impact industrial development is separated from existing residential zones and sensitive land uses as per the following minimum separation distances: (a) special industry – 1,500 metres; and (b) high impact industry – 500 metres; and (c) medium impact industry – 250 metres.

[13] Unless it is demonstrated that this requirement is not possible due to safety requirements.

Performance outcomes	Acceptable outcomes
Environment	
PO16 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

6.2.7 Industry investigation zone code

6.2.7.1 Application

This code applies to assessing development in the Industry investigation zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.7.2 Purpose

(1) The purpose of the Industry investigation zone code is to identify and protect land that may be suitable for industrial activities where further detailed planning, investigations and studies are required to determine the suitability of the industry investigation zone for use as an industry zone.

(2) The local government purpose of the zone code is to:

(a) provide for low-intensity uses until land is required for the planned, co-ordinated, efficient and sequenced delivery of fully serviced and highly accessible industrial development located within the key urban areas of the region; and

(b) manage the timely and planned conversion of non-industrial land to industrial purposes in accordance with a development framework plan; and

(c) coordinate, integrate and efficiently provide trunk infrastructure in accordance with the priority infrastructure plan; and

(d) prevent or discourage development that is likely to compromise appropriate longer term land use.

The Industry investigation zone includes the Boundary Road east precinct (precinct no. II1), Cowleys Road precinct (precinct no. II2), Glenella precinct (precinct no. II3), Marian precinct (precinct no. II4), Paget south precinct (precinct no. II5) and Sarina precinct (precinct no. II6).

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Interim uses:

(i) until land is developed for industrial purposes, the predominant form of development within the zone is low-intensity rural uses with limited built form and infrastructure; and

(ii) the following types of development are avoided:

(A) sensitive land uses and/or large-scale non-industrial development that is likely to conflict with or compromise the full realisation of the land for industrial purposes; and

(B) development for industrial purposes that:

- is out of sequence with planned infrastructure provision and assumptions contained in the priority infrastructure plan; and
- cannot be serviced by the full range of urban infrastructure networks in a way that does not prevent or compromise the orderly and planned provision of trunk infrastructure networks to service the ultimate development in the area; and
- prevents or compromises the full realisation of the land for industrial purposes; and
- is premature or not required, in that it cannot be demonstrated that there is an overriding need for the development; and

(b) Development framework plans:

(i) development for industrial purposes must accord with a development framework plan over the site and all surrounding land zoned Industry investigation that provides for:

(A) co-ordinated, integrated and efficiently sequenced development and infrastructure provision across the development framework plan area; and

(B) effective integration with existing nearby industrial development; and

(ii) as a minimum, development framework plans identify the following over the development framework plan area: land uses, intended impact level of industrial development, appropriate separation distances from residential zones and existing sensitive land uses, key elements of the access network, efficient trunk infrastructure (including an infrastructure delivery strategy), open space areas and corridors, and development and infrastructure sequencing; and

(c) Industrial development:

(i) development for industrial purposes is provided in a planned, co-ordinated, integrated and efficiently sequenced manner in accordance with:

(A) the relevant local plan if applicable; and

(B) an approved development framework plan; and

(ii) development is efficiently serviced by the full range of urban infrastructure networks and provides for infrastructure services, in accordance with an approved infrastructure delivery strategy, relevant to the ultimate development in the development framework plan area; and

(iii) development located outside of the priority infrastructure area must demonstrate that trunk water, sewer, stormwater and road infrastructure required to service the ultimate development in the area and is provided at full cost, including lifecycle cost, to the developer; and

(iv) development creates new industrial areas that provide:

(A) opportunities for medium and high impact industry uses and/or low impact industry uses depending on the characteristics of the precinct and proximity to sensitive land uses; and

(B) appropriate separation and/or buffering from nearby sensitive land uses; and

(C) appropriate transport infrastructure relevant to the use (roads and rail lines); and

(D) internal access networks with:

- high level of internal connectivity; and
- integration with nearby industrial areas; and
- direct connection to an arterial road; and

(E) measures that maintain and respond to high value ecological features and physical constraints of the land; and

(F) high quality visual outcomes, particularly along adjoining arterial roads; and

(v) sensitive land uses avoid the Industry investigation zone:

(A) to avoid future land use conflicts and amenity impacts on the sensitive land use; and

(B) so the site and area can be fully utilised for future industrial development; and

(d) Precinct specific outcomes:

(i) Boundary Road east precinct (precinct no. II1):

(A) is developed as infrastructure is provided; and

(B) accommodates low, medium and/or high impact industry uses; and

(C) development provides high quality design outcomes and development that is not visually overbearing as viewed from Boundary Road east – an important gateway area for the city and region; and
(D) maintains a high level of amenity for nearby sensitive land uses; and
(E) does not adversely impact on, and is not adversely impacted by, the operations of Mackay Airport; and
(F) appropriately responds to environmental and land constraints; and
(G) provides an appropriate interface with the existing sports park to the south; and

(ii) Cowleys Road precinct (precinct no. II2):
(A) is developed as infrastructure is provided; and
(B) is not developed until such time as the various future ultimate road corridors and alignments have been finalised; and
(C) primarily accommodates low impact industry uses, particularly those which establish synergies with the nearby Central Queensland University Ooralea campus and trade training school; and
(D) maintains a high level of amenity for nearby sensitive land uses; and
(E) does not adversely impact on, and is not adversely impacted by, the operations of Racecourse Mill; and

(iii) Glenella precinct (precinct no. II3):
(A) is developed as infrastructure is provided; and
(B) primarily accommodates low impact industry uses; and
(C) integrates with industrial development east of Glenella Connection Road; and
(D) provides high quality built form along, and casual surveillance of, (old) Glenella Connection Road and the sport and recreation area adjoining Gooseponds Creek; and
(E) provides bicycle and pedestrian from Sugarshed Road and Fursden Creek in anticipation of the existing Fursden Creek Bridge ultimately becoming a bicycle and pedestrian only bridge; and

(iv) Marian precinct (precinct no. II4):
(A) is developed as infrastructure is provided; and
(B) accommodates a mix of low and appropriately located high impact industrial uses; and
(C) maintains a high level of amenity for nearby sensitive land uses; and
(D) does not adversely impact on, and is not adversely impacted by, the operations of the cane rail line; and

(v) Paget south precinct (precinct no. II5):
(A) is developed as infrastructure is provided; and
(B) accommodates a mix of low and appropriately located medium and high impact industrial uses; and
(C) integrates with the high impact industry area to the north through direct road access; and maintains a high level of amenity for nearby residential sites; and
(D) maintains a high level of amenity for nearby sensitive land uses; and
(E) does not adversely impact on, and is not adversely impacted by, the operations of the abattoir at Bakers Creek; and

(F) does not adversely impact on, and is not adversely impacted by, the North Coast railway by limiting the number of road crossings; and
(G) appropriately responds to environmental and land constraints; and
(H) does not adversely impact on the functionality and efficiency of the stormwater drainage area north of Cooks Lane; and

(vi) Sarina precinct (precinct no. II6):
(A) is developed as infrastructure is provided; and
(B) accommodates a mix of low and appropriately located medium and high impact industrial uses; and
(C) maintains a high level of amenity for nearby sensitive land uses; and
(D) does not adversely impact on, and is not adversely impacted by, the operations of the North Coast railway and cane rail line.

6.2.7.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.7.3.A – Industry investigation zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Interim uses	
PO1 Until land is developed for industrial purposes, the zone primarily accommodates a limited range of low intensity rural activities and associated uses that do not compromise: (a) the full realisation of the land for urban purposes; and (b) transport and utility infrastructure corridors and works required to serve the ultimate development.	**AO1.1** Interim uses consist of: (a) animal husbandry; or (b) cropping; or (c) dwelling house; or (d) home based business; or (e) roadside stall; or (f) other uses where it is demonstrated that the use: (i) will not conflict with future development for industrial purposes; and (ii) will integrate with future development for industrial purposes or can be easily removed when land is required for development.
	AO1.2 Buildings associated with interim uses have a maximum height of 4.5 metres (1 storey) above ground level.
	AO1.3 The minimum setback for buildings from road frontage boundaries is: (a) 10 metres from an existing arterial road or sub-arterial road; and (b) 6 metres from an existing collector street or access street.

Performance outcomes	Acceptable outcomes
	AO1.4 The minimum setback for buildings from the centrelines of future roads as follows: (a) 200 metres from a future highway; and (b) 30 metres from a future arterial road; and (c) 25 metres from a future sub-arterial road; and (d) 20 metres from a future collector street.
Development framework plans	
PO2 Development for industrial purposes is supported by a development framework plan over the development framework plan area. The development framework plan area includes: (a) the site; and (b) adjoining sites within the Industry investigation zone; and (c) sites in the broader area the Industry investigation zone.	No acceptable outcome prescribed.
PO3 As a minimum, development framework plans identify the following over the development framework plan area: (a) land uses – mapped and written intent[14]; and (b) intended impact level of industrial development (i.e. low impact, medium impact, high impact or special industry); and (c) building height; and (d) arterial road, sub-arterial road and collector street layout[15]; and (e) public transport (bus) routes; and (f) key pedestrian and bicycle routes; and (g) details on the efficient provision and sequencing of trunk water, sewerage, transport, parkland and stormwater infrastructure required to service ultimate development in the development framework plan area, including a delivery strategy; and (h) open space areas and corridors; and (j) development sequencing according to: (i) feasible, orderly, planned and efficient infrastructure provision; and (ii) need for the development.	No acceptable outcome prescribed.

[14] Land use intents should be consistent with zones and zone precincts in the planning scheme.

[15] An indicative layout for access streets may also be requested, particularly where it is required that adjoining access streets continue into the site.

Performance outcomes	Acceptable outcomes
Development for industrial purposes – general	
PO4 Industrial development provides water supply, sewerage, road and stormwater infrastructure servicing the site in accordance with an approved infrastructure delivery strategy and with the capacity to service the ultimate development in the development framework plan area. Out of sequence development does not prejudice the efficient, orderly and planned provision of infrastructure to service the ultimate development in the development framework plan area.	No acceptable outcome prescribed.
PO5 Development located outside of the priority infrastructure area must demonstrate that trunk water, sewer, stormwater and road infrastructure required to service the ultimate development in the area and is provided at full cost, including lifecycle cost, to the developer.	No acceptable outcome prescribed.
PO6 Stormwater infrastructure and drainage corridors are provided in accordance with the adopted Stormwater Infrastructure Study relevant to the area.	No acceptable outcome prescribed.
PO7 Development creates fully serviced, strategically located and highly accessible industrial areas that: (a) are adequately separated and buffered from nearby sensitive land uses; and (b) use design measures to minimise noise, odour, dust, air emission, light or vibration impacts affecting adjoining or nearby properties within a residential zone and existing sensitive land uses; and (c) do not accommodate sensitive land uses in order to: (i) to avoid future land use conflicts and amenity impacts on the sensitive land use; and	**AO7.1** The predominant form of development in the zone is industrial development. **AO7.2** Sensitive land uses are not located within the Industry investigation zone. **AO7.3** Higher impact industrial development is separated from land within the residential zone and existing sensitive land uses as per the following minimum separation distances: (a) special industry - 1,500 metres; and (b) high impact industry - 500 metres; and (c) medium impact industry - 250 metres.

Performance outcomes	Acceptable outcomes
(ii) enable the full utilisation of the area for future industrial development; and (d) include open space areas and corridors; and (e) can potentially include a limited range of small-scale centre activities that: (i) fulfil a local need; and (ii) do not compete with or compromise the viability of multi-purpose centres and existing uses.	**AO7.4** Open space areas and corridors are provided: (a) along the watercourses and natural drainage lines; and (b) in low-lying areas subject to inundation; and (c) in areas containing remnant vegetation so that the vegetation can be retained; and (d) to continue open space areas and corridors from adjoining sites; and (e) in accordance with Council's Open space planning scheme policy.
	AO7.5 Centre activities: (a) fulfil a demonstrated need of the local area; and (b) have a maximum gross floor of 150m^2; and (c) do not compete with or compromise the viability of: (i) existing or intended uses within a multi-purpose centre; and (ii) similar existing or approved uses in the local area.
	AO7.6 Centre activities are located: (a) a minimum of 800 metres from an existing or planned multi-purpose centre or centre activity; and (b) on sub-arterial roads or collector streets and not on arterial roads or access streets.
PO8 Building height and scale: (a) contributes toward the optimal use of the site; and (b) integrates with the built form of the area; and (c) does not form overdevelopment of the site.	**AO8.1** In areas identified for high impact industry, buildings have a maximum height of 15 metres above ground level.
	AO8.2 In areas identified for low impact industry, buildings have a maximum height of 8.5 metres above ground level.
	AO8.3 The maximum site cover of all buildings is 60% of the total site area.

Performance outcomes	Acceptable outcomes
PO9 Street layouts, public transport routes and bicycle / pedestrian pathways provide: (a) provide safe and efficient access and have high levels of internal and external connectivity; and (b) co-ordinated and integrated access networks: (i) across sites within the development framework plan area; and (ii) between the development framework plan area and surrounding industrial areas.	**AO9** The road network provides: (a) co-ordinated and integrated access across sites and the throughout the development framework plan area; and (b) direct access to an arterial road without passing through a residential area; and (c) high levels of internal connectivity including avoiding the use of cul-de-sacs; and (d) high levels of external connectivity by having roads align with discontinued roads in industrial areas adjoining or opposite the site; and (e) provides highly accessible and efficient public transport route/s through the development framework plan area.
	AO9.2 Bicycle and pedestrian pathways are provided: (a) throughout the development framework plan area and form part of larger regional networks; and (b) along sub-arterial roads, collector streets and open space corridors; and (c) align with discontinued pathways adjoining or opposite the site.
PO10 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.
Development for urban purposes – Boundary Road east precinct (precinct no. II1)	
PO11 The Boundary Road east precinct (precinct no. II1) accommodates low, medium and/or high impact industrial development.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO12 Development presents high quality design and visual amenity outcomes as viewed from Boundary Road east, an important gateway area for the city and region, by: (a) ensuring that development in close proximity to Boundary Road east is not visually overbearing; and (b) providing low intensity uses adjacent to Boundary Road east; and (c) ensuring that development in close proximity to Boundary Road east is not visually overbearing; and (d) providing building activation and articulation along the Boundary Road East frontage; and (e) providing feature landscaping along Boundary Road east.	**AO12.1** Buildings within 50 metres of the Boundary Road east frontage do not exceed a height of 8.5 metres above ground level. **AO12.2** Industrial development provides the following along the Boundary Road east frontage: (a) administrative, training and/or customer service facilities; and (b) activation measures such as pedestrian entrances / doors, windows and balconies; and (c) articulation measures such as building line projections / recessions (minimum depth 500mm), awnings, articulated roof profile, alternating materials and colours; and (d) a minimum 3 metre wide landscaping strip containing feature planting.
PO13 Development for industrial purposes maintains a high level of amenity for adjoining sensitive land uses.	**AO13** Amenity impacts on any sensitive land uses on the Mackay Airport land are minimised by: (a) providing adequate separation distance and/or buffer elements between industrial development and adjoining residential uses; and (b) ensuring that industrial development is orientated away from adjoining residential uses and designed to mitigate potential impacts.
Development for urban purposes – Cowleys Road precinct (precinct no. II2)	
PO11 The Cowleys Road precinct (precinct no. II2) primarily accommodates low impact industrial development in order to: (a) provide high quality design outcomes and development that is not visually overbearing as viewed from Peak Downs Highway, Cowleys Road and Boundary Road; and (b) minimise potential land use conflicts with nearby sensitive land uses. Technology based industries and other industrial uses that establish synergies with the Central Queensland University Ooralea campus are particularly encouraged in this precinct.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO12 Development for industrial purposes maintains a high level of amenity for adjoining sensitive land uses.	**AO12.1** Amenity impacts on adjoining residential zoned sites fronting the Peak Downs Highway, Winifred Court, Tammy Court, Alan Court and Bernborough Avenue are minimised by: (a) providing adequate separation distance and/or buffer elements between industrial development and adjoining residential uses; and (b) ensuring that industrial development is orientated away from adjoining residential uses and designed to mitigate potential impacts.
Development for urban purposes – Glenella precinct (precinct no. II3)	
PO13 The Glenella precinct (precinct no. II3) primarily accommodates low impact industrial development[16] in order to: (a) provide high quality design outcomes and development that is not visually overbearing as viewed from Heaths Road, old Glenella Connection Road and new Glenella Connection Road; and (b) minimise potential land use conflicts with nearby sensitive land uses and outdoor sport and recreation uses.	No acceptable outcome prescribed.
PO14 Safe and attractive bicycle and pedestrian facilities along the (old) Glenella Connection Road frontage contributes toward a regional connection between the Glenella residential area and the Edmund Casey Bridge.	**AO14.1** Bicycle and pedestrian facilities are provided adjacent to the Glenella precinct (precinct no. II3) between Sugarshed Road and the Fursden Creek bridge as follows: (a) a 2.5 metre wide concrete footpath is provided along the western side of (old) Glenella Connection Road; and (b) shade trees are provided along the footpath; and (c) the section of (old) Glenella Connection Road to be closed for vehicles, is maintained for use by bicycles and pedestrians.
PO15 Public roads and active and articulated building frontages and landscaping provide high quality visual amenity and casual surveillance of: (a) the sport and recreation area adjacent to Gooseponds Creek; and (b) the bicycle and pedestrian pathway along Glenella Connection Road.	**AO15.1** A public road running east-west separates development for industrial purposes from the sport and recreation area adjacent to Gooseponds Creek.

[16] Refer to the provisions of the low impact industry zone code for detailed guidance on appropriate outcomes.

Performance outcomes	Acceptable outcomes
	AO15.2 Industrial development provides the following along the Glenella Connection Road frontage, and the frontage addressing the sport and recreation area adjacent to Gooseponds Creek: (a) administrative, training and/or customer service facilities; and (b) activation measures such as pedestrian entrances / doors, windows and balconies; and (c) articulation measures such as building line projections / recessions (minimum depth 500mm), awnings, articulated roof profile, alternating materials and colours; and (d) a minimum 3 metre wide landscaping strip containing feature planting is provided along the frontage.
Development for urban purposes – Marian precinct (precinct no. II4)	
PO16 The Marian precinct (precinct no. II4) primarily accommodates: (a) low impact industry development[17] that is located in the area adjacent to (but does not gain direct vehicular access from) Marian-Eton Road and in the north-eastern section of the site, in order to: (i) provide high quality design outcomes and development that is not visually overbearing as viewed from Marian-Eton Road; and (ii) minimise potential land use conflicts with sensitive land uses; and (b) medium and high impact industrial development[18] in the south-western part of the precinct.	**AO16.1** Medium and high impact industrial development is separated from residential zones in accordance with the following minimum separation distances: (a) high impact industry – 500 metres (b) medium impact industry – 250 metres. **AO16.2** Special industry is not provided within the Marian precinct (precinct no. II4).
PO17 Development for industrial purposes does not affect the operation of, or is not detrimentally affected by the cane rail line on the northern boundary of the precinct.	No acceptable outcome prescribed.

[17] Refer to the provisions of the Low impact industry zone code for detailed guidance on appropriate outcomes.
[18] Refer to the provisions of the High impact industry zone code for detailed guidance on appropriate outcomes.

Performance outcomes	Acceptable outcomes
Development for urban purposes – Paget south precinct (precinct no. II5)	
PO18 The Paget south precinct (precinct no. II5) primarily accommodates: (a) low impact industry development[19] that is located in the area adjacent to (but does not gain direct vehicular access from) the Bruce Highway and residential sites fronting Main Street, Bakers Creek, in order to: (i) provide high quality design outcomes and development that is not visually overbearing as viewed from the Bruce Highway; and (ii) minimise potential land use conflicts with existing sensitive land uses; and (b) medium and high impact industrial development[18] in the eastern part of the precinct.	**AO18.1** Medium and high impact industrial development is separated from residential zones in accordance with the following minimum separation distances: (a) high impact industry – 500 metres (b) medium impact industry – 250 metres. **AO18.2** Special industry is not provided within the Paget south precinct (precinct no. II5).
PO19 Development for industrial purposes maintains a high level of amenity for adjoining sensitive land uses.	**AO19.1** Amenity impacts on adjoining residential zoned sites west of the Bruce Highway and fronting Main Street, Bakers Creek are minimised by: (a) providing adequate separation distance and/or buffer elements between industrial development and adjoining residential uses; and (b) ensuring that industrial development is orientated away from adjoining residential uses and designed to mitigate potential impacts.
PO20 The access network provides: (a) a high level of internal connectivity; and (b) external connectivity via: (i) Connors Road for sites east of the North Coast railway; and (ii) Cooks Lane / Main Street or the extension of Stockroute Road for sites west of the North Coast railway.	**AO20** A north-south collector street (industrial): (a) extends south of Cooks Lane; and (b) services all Industry investigation zoned properties south of Cooks Lane and to the east of the North Coast railway; and (c) aligns with Connors Road serving the high impact industry area to the north, and creates an appropriately designed intersection with the extension of Stockroute Road.
PO21 Development for industrial purposes does not affect the operation of the North Coast railway.	**AO21.1** In relation to level crossing points over the North Coast railway: (a) the level crossing on Cooks Lane is closed in favour of a new crossing point on the extension of Stockroute Road; and (b) no other crossing points over the North Coast railway are provided.

[19] Refer to the provisions of the Low impact industry zone code for detailed guidance on appropriate outcomes.

Performance outcomes	Acceptable outcomes
PO22 Development does not adversely impact on the functionality and efficiency of the stormwater drainage area north of Cooks Lane.	No acceptable outcome prescribed.
Development for urban purposes – Sarina precinct (precinct no. II6)	
PO23 The Sarina precinct (precinct no. II6) primarily accommodates: (a) low impact industry development[20] that is located in the area adjacent to (but does not gain direct vehicular access from) the Bruce Highway and Sarina-Homebush Road in order to: (i) provide high quality design outcomes and development that is not visually overbearing as viewed from the Bruce Highway; and (ii) minimise potential land use conflicts with existing sensitive land uses; and (b) medium and high impact industrial development[20] in the middle western part of the precinct.	**AO23.1** Medium and high impact industrial development is separated from residential zones in accordance with the following minimum separation distances: (a) high impact industry – 500 metres (b) medium impact industry – 250 metres. **AO23.2** Special industry is not provided within the Sarina precinct (precinct no. II6).
PO24 Development for industrial purposes does not affect the operation of, or is not detrimentally affected by: (a) the North Coast railway to the west of the precinct; and (b) the cane rail line on the south-western boundary of the precinct.	No acceptable outcome prescribed.

[20] Refer to the provisions of the Low impact industry zone code for detailed guidance on appropriate outcomes.

6.2.8 Local centre zone code

6.2.8.1 Application

This code applies to assessing development in the Local centre zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.8.2 Purpose

(1) The purpose of the Local centre zone code is to provide for a limited range of retail, commercial and community activities to service local needs.

It includes local shopping, local employment nodes, commercial, cafes and dining, entertainment, community services and residential development where it can integrate and enhance the fabric of the activity centre.

(2) The local government purpose of the zone code is to provide for centre activities, community activities and other compatible uses that form compact, vibrant, attractive and pedestrian-orientated multi-purpose centres and activity nodes serving the surrounding local area. Local centres include:

(a) strategic local centres – strategically important centres that serve a specific local catchment, not otherwise served by a multipurpose centre including:

(i) Blacks Beach local centre; and
(ii) Bucasia local centre; and
(iii) Mackay Marina local centre, which also performs a tourism and regional leisure function; and
(iv) Mirani local centre; and
(v) Ooralea east local centre; and
(vi) Sarina Beach Road local centre; and
(vii) Slade Point local centre; and

(b) existing local centres – centres that complement a larger nearby multi-purpose centres including:

(i) Blacks Beach Road east (Blacks Beach) local centre; and
(ii) Celeber Drive (Andergrove) local centre; and
(iii) Evan Street (South Mackay) local centre; and
(iv) Gasworks (Shakespeare Street, Mackay) local centre; and
(v) George Street (Mackay) local centre; and
(vi) Martins Corner (Shakespeare Street, Mackay) local centre; and
(vii) Moore Street (Mackay) local centre; and
(viii) Pheasant Street (Slade Point) local centre; and
(ix) Ungerer Street (North Mackay) local centre.

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Centre role and function:

(i) strategic local centres are larger than existing local centres and neighbourhood centres, but subordinate to district centres, major centres and the principal centre (Mackay city centre); and
(ii) existing local centres are larger than neighbourhood centres but subordinate to strategic local centres, district centres, major centres and the principal centre (Mackay city centre); and
(iii) strategic and existing local centres generally serve the suburb surrounding the centre. The Mackay Marina local centre also services tourism, leisure and port related activities; and

(iv) the total gross floor area of centre activities is up to 5,000m^2 in strategic local centres (up to 7,000m^2 in the Sarina Beach local centre) and 2,500m^2 in existing local centres; and
(v) local centres are strengthened as local activity nodes; and
(vi) local centres accommodate mostly small scale services and facilities, suitable for serving the intended catchment; and

(b) Uses:
(i) local centres accommodate a range of compatible uses enabling the creation of vibrant and diverse activity nodes providing service, employment and other opportunities; and
(ii) local centres contain the following types of uses:
(A) centre activities: convenience services and limited weekly services (medium size supermarkets, limited specialty stores and personal services); and
(B) community activities: local community facilities; and
(C) residential development: limited medium density residential development where it can be mixed with centre activities; and
(D) tourism and port orientated activities at Mackay Marina local centre; and
(iii) impacts are managed to minimise potential land use conflicts and provide a high level of amenity for sensitive land uses; and

(c) Infrastructure:
(i) development is efficiently serviced by the full range of urban infrastructure networks; and

(d) Accessibility:
(i) the street network provides high levels of connectivity internally and to surrounding urban neighbourhoods; and
(ii) the pedestrian access network to and within the centre is attractive, convenient, safe and, as much as practical, is protected from sun and rain; and
(iii) footpaths, cycle lanes and end of trip facilities throughout the centre provide a high level of accessibility for pedestrians and cyclists; and
(iv) high quality public transport facilities including interchanges are provided at key locations (convenient for users) in local centres to facilitate efficient public transport services to the centre; and
(v) arterial roads and sub-arterial roads adjacent to local centres facilitate high traffic volumes; and
(vi) other streets within local centres facilitate lower volumes of traffic, safe bicycle movement, safe vehicle access to sites, pedestrian priority crossing points and street parking; and

(e) Built form and public realm:
(i) built form layout and design is integrated with adjoining and nearby development within the centre; and
(ii) built form and the public realm are characterised by high quality design outcomes and a strong sense of identity by responding to:
(A) the region's tropical climate; and
(B) the local centre's urban and landscape setting; and
(iii) buildings address the public realm by providing street orientated and articulated frontages at a human scale; and
(iv) development effectively integrates with surrounding urban form; and

(f) Amenity:
(i) development does not adversely affect the amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses; and

(g) Environment:
(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.8.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.8.3.A – Local centre zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Centre role and function	
PO1 Development in local centres: (a) fulfils, but does not exceed, the needs of the relevant catchment: (i) Blacks Beach local centre: Blacks Beach, Dolphin Heads and Eimeo; (ii) Bucasia local centre: Bucasia; or (iii) Mackay Marina local centre: Mackay Harbour and tourism, leisure and port related activities; or (iv) Mirani local centre: Mirani; or (v) Ooralea East local centre: eastern part of Ooralea and western part of Paget; or (vi) Sarina Beach Road local centre: northern part of Sarina; or (vii) Slade Point local centre: Slade Point; or (viii) the residential neighbourhood immediately surrounding the existing local centre; and (b) does not compete with or compromise the viability, role or function of other strategic local centres, district centres, major centres or the principal centre (Mackay city centre).	**AO1.1** Centre activities do not exceed a total gross floor area of[21]: (a) up to a total of 5,000m^2 in the Blacks Beach local centre; or (b) 0.35 times the area of the site in the Bucasia local centre; or (c) 0.45 times the area of the site in the Mackay Marina local centre; or (d) 0.2 times the area of the site in the Mirani local centre; or (e) 0.25 times the area of the site in the Ooralea East local centre; or (f) up to 7,000m^2 in the Sarina Beach Road local centre; (g) up to a total of 5,000m^2 in the Slade Point local centre; or (h) up to a total of 2,500m^2 in existing local centres.
	AO1.2 Office uses do not exceed: (a) a maximum gross floor area of 200m^2; and (b) a maximum height of 6m above ground level (1 storey).
	AO1.3 Full-sized supermarkets, showrooms, discount department stores and department stores are not located in local centres.
Uses	
PO2 Local centres accommodate a range of uses enabling the creation of vibrant activity nodes providing local services and employment.	**AO2.1** Local centres accommodate a mix of the following uses: (a) centre activities, small scale and low-intensity offices and market; and (b) community activities and child care centre; and (c) recreation activities and park; and (d) service industry, car wash and service station; and (e) other compatible uses.

[21] The gross floor area of uses on the site other than centre activities, such as community activities or multiple dwelling activities, are not included in the calculation.

Performance outcomes	Acceptable outcomes
	AO2.2 In addition to the uses set out in AO2.1, Mackay Marina local centre accommodates: (a) vehicle hire premises (covered by the "outdoor sales" use definition); and (b) port services; and (c) short-term accommodation.
Infrastructure	
PO3 Development is serviced by all forms of urban infrastructure.	**AO3** Development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; and (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
Accessibility	
PO4 Vehicle access points do not compromise: (a) the safety, operational capacity, or efficiency of arterial roads and sub-arterial roads; and (b) pedestrian safety and amenity on key active frontage streets.	**AO4** Development gains vehicular access from: (a) a non-residential side street; or (b) co-ordinated rear access; or (c) a combined access point (1 access shared between two or more sites); rather than gaining direct vehicular access from arterial roads, sub-arterial roads and key active frontage streets[22].
Built form and the public realm	
PO5 Built form is integrated with adjoining and nearby development within the centre to provide: (a) co-ordinated layout; and (b) consistent streetscape rhythm.	No acceptable outcome prescribed.
PO6 Building height respects and integrates with surrounding built form.	**AO6** Building height does not exceed a maximum building height of: (a) 11 metres above ground level (3 storeys) in the Mackay Marina local centre; and (b) 8.5 metres above ground level (2 storeys) in all other local centres.
PO7 Key active frontage streets provide: (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity; and (d) a safe and efficient environment for pedestrians, cyclists and vehicles	**AO7.1** Street-orientated development is provided along key active frontage streets[22].

[22] "Key active frontage streets" are defined in Schedule 1.

Performance outcomes	Acceptable outcomes
	AO7.2 The following is not provided across / adjacent to State controlled roads: (a) formal mid-block pedestrian access (for example - signalised crossing points, raised pedestrian crossings, painted pedestrian crossings and pedestrian refuges); and (b) footpath dining areas within the road reserve.
PO8 Buildings are setback from road frontages to: (a) provide street-orientated development on key active frontage streets; and (b) enable buildings to effectively address and engage with other streets; and (c) provide a human scale streetscape and not be visually overbearing.	**AO8.1** On key active frontage streets: (a) the minimum setback is 0 metres; and (b) the maximum setback is 2.5 metres.
	AO8.2 On 'non-key active frontage streets': (a) the minimum setback is 0 metres; and (b) the maximum setback is 14 metres.
	AO8.3 The minimum setbacks from rear laneways are as follows: (a) 0 metres where the wall height is 4.5 metres or less above ground level; and (b) 3 metres where the wall height is more than 4.5 metres above ground level.
PO9 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO10 Development strengthens the centre's sense of place and identity by maintaining and/or creating visual connections with nearby built and landscape elements.	**AO10** Development maintains and/or creates views and vistas of the following from roads and other public space areas: (a) Mackay Marina local centre: Mackay Marina and adjoining open space and infrastructure associated with the Port of Mackay; and (b) Martins Corner local centre: Mackay showground; and (c) Mirani local centre: Pioneer River and adjoining open space; and (d) Ungerer Street (North Mackay) local centre: Vines Creek estuary and adjoining open space.
Amenity	
PO11 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO12 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.
Environment	
PO13 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

6.2.9 Low density residential zone code

6.2.9.1 Application

This code applies to assessing development in the Low density residential zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.9.2 Purpose

(1) The purpose of the Low density residential zone code is to provide for predominantly dwelling houses supported by community uses and small-scale services and facilities that cater for local residents.

(2) The local government purpose of the zone code is to provide for low intensity residential development in locations that are:

(a) not in close proximity to important multi-purpose centres or public transport corridors; or

(b) otherwise not considered suitable for higher density residential development.

The zone also provides for appropriately located low-medium intensity residential development and a limited range of small scale, low intensity and compatible non-residential activities.

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Uses:

(i) the predominant form of development within the zone is low density residential development such as dwelling houses, and appropriately located multiple dwelling activities; and

(ii) a limited range of small-scale and low intensity non-residential uses may be appropriate if these uses are:

(A) required to serve the needs of the local area; and

(B) located on prominent, highly accessible sites; and

(C) consistent with the amenity and character of the surrounding urban area; and

(b) Infrastructure:

(i) development is efficiently serviced by the full range of urban infrastructure networks; and

(c) Built form and development intensity:

(i) low rise buildings integrate with the character and amenity of the local area; and

(ii) residential development is predominantly low density, however, low-medium density residential is suitable on sites in close proximity to centres and other key activity nodes, public transport services or recreation opportunities; and

(iii) road frontage setbacks:

(A) contribute to the open, low-intensity character of the local area; and

(B) accommodate landscaping; and

(C) provide privacy for buildings; and

(D) avoid buildings being visually overbearing; and

(iv) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(d) Amenity:

(i) development does not adversely affect the amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses; and

(e) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.9.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.9.3.A – Low density residential zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses	
PO1 The zone primarily accommodates low density residential development such as dwelling houses.	No acceptable outcome prescribed.
PO2 Multiple dwelling activities are located in close proximity to either: (a) a multi-purpose centre or other key activity node such as the Base Hospital or Mater Hospital; or (b) existing centre activity or community activity; or (c) a public transport route or usable open space[23].	No acceptable outcome prescribed.
PO3 Non-residential activities, such as centre activities and community activities, are[24]: (a) required to serve the needs of the local area and do not compromise the viability of: (i) existing or intended uses within a multi-purpose centre; and (ii) similar existing or approved uses in the local area; and (b) of a small scale and are subordinate to the primary residential character of the area; and (c) generate minimal impacts.	No acceptable outcome prescribed.
Infrastructure	
PO4 Development is serviced by all forms of urban infrastructure.	**AO4** Development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.

[23] Refer to Schedule 1 for definition of "usable open space".

[24] Provisions focusing specifically on 'out-of-centre' non-residential development are also provided in the relevant development codes (part 9).

Performance outcomes	Acceptable outcomes
Built form and development intensity	
PO5 Building height and residential density: (a) integrates with the low-rise and low intensity built form of surrounding residential areas; and (b) does not form overdevelopment of the site.	**AO5.1** Buildings have a maximum height of 8.5 metres above ground level (2 storeys). **AO5.2** The maximum plot ratio is 0.5:1.
PO6 Buildings are setback from road frontages to: (a) contribute to the open, low-intensity character of the surrounding residential area; and (b) accommodate landscaping between the building and the street; and (c) provide privacy for the building; and (d) avoid buildings from being visually overbearing as viewed from the street.	**AO6** Minimum road frontage setbacks are: (a) from arterial roads and sub-arterial roads – 10 metres; and (b) from collector streets – 6 metres; and (c) from access streets: (i) 6 metres for garages, outbuildings and carports; and (ii) 4.5 metres for other parts of the building; and (d) from rear laneways: (i) 0 metres where the wall height is 3.5 metres or less above ground level; and (ii) 2 metres where the wall height is more than 3.5 metres above ground level.
PO7 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable, require minimal maintenance, and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Amenity	
PO8 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO9 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.
Environment	
PO10 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

6.2.10 Low impact industry zone code

6.2.10.1 Application

This code applies to assessing development in the Low impact industry zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.10.2 Purpose

(1) The purpose of the Low impact industry zone code is to provide for service and low impact industry uses.

It may include non-industrial and business uses that support the industrial activities where they do not compromise the long-term use of the land for industrial purposes.

Activities considered appropriate in this zone are defined as low impact industry or service industry in the schedule of definitions.

(2) The local government purpose of the zone code is to provide for low impact industrial development, which provides services and employment for local areas and in some cases a transition between the High impact industry zone and residential zones, in the following locations:

(a) Cremorne – Cremorne Street and Palm Street;
(b) Glenella – Heaths Road/Glenella Connection Road;
(c) Mackay city centre – eastern part, and southern part;
(d) Mackay Harbour – Harbour Road and Mulherin Drive;
(e) Mirani – Clive Rogers Drive;
(f) North Eton – Marian-Eton Road;
(g) North Mackay – Hamilton Street;
(h) Paget – northern part, and Farrellys Road;
(i) Racecourse – Cowleys Road;
(j) Range Road – Sarina;
(k) Rural View – Carl Street/Arana Drive;
(l) Sarina – Sarina Beach Road;
(m) Slade Point – Lester Hansen Street/David Muir Street;
(n) South Mackay – Paradise Street and Archibald Street; and
(o) West Mackay – Cemetery Road and Nebo Road (southern end at the “city gates”).

The zone also provides for a limited range of small scale and compatible activities. The zone does not accommodate incompatible development, particularly sensitive land uses.

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Uses:
  (i) the predominant form of development within the zone is low impact industrial development and other complementary activities; and
  (ii) a limited range of small-scale non-industrial uses (not including sensitive land uses) may be appropriate if these uses are:
    (A) required to serve the needs of the local area; and
    (B) located on prominent, highly accessible sites; and
    (C) not affected by, or able to mitigate, impacts generated by surrounding industrial uses; and
  (iii) sensitive land uses (other than caretaker’s accommodation) are not located within the Low impact industry zone; and

(b) Infrastructure:

(i) development is efficiently serviced by the full range of urban infrastructure networks; and

(ii) development maximises access to appropriate transport infrastructure relevant to the use (roads and railways).

(c) Built form and development intensity:

(i) buildings integrate with the built form of the area and do not constitute over-development of the site; and

(ii) road frontage setbacks:

(A) accommodate landscaping; and

(B) avoid buildings being visually overbearing; and

(iii) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(d) Amenity:

(i) development does not adversely affect the amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses; and

(e) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.10.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.10.3.A – Low impact industry zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses	
PO1 The zone primarily accommodates: (a) low impact industrial development such as: hardware and trade supplies (not containing a retail shop open to the general public), low impact industry, research and technology industry, service industry and warehouse; and (b) marine industry; and (c) other compatible uses appropriately located in the industry area such as: education establishment (specifically involving industry related training) and service station and outdoor sales; and (d) minor extensions to existing transitional or support uses such as tourist parks.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO2 Office areas and general retail or sales display areas that form part of an industrial development, are ancillary and subordinate to the primary industrial use.	**AO2** Offices and/or general retail or sales display areas, that form part of an industrial development, must: (a) be ancillary to the primary industrial use; and (b) have a gross floor area of not more than 10% of the total gross floor area of the development.
PO3 Non-industrial activities, such as food and drink outlet, health care services, shop and emergency services are[25]: (a) required to serve the needs of the local area and do not compromise the viability of: (i) existing or intended uses within a multi-purpose centre; and (ii) similar existing or approved uses in the local area; and (b) of a small scale and are subordinate to the primary industrial use of the area; and (c) are not affected by, or mitigate impacts, generated by surrounding industrial uses.	No acceptable outcome prescribed.
PO4 Development involving sensitive land uses (other than caretaker's accommodation) and industrial development generating medium, high and very high impacts avoid the zone in order to: (a) protect the health and safety and amenity of sensitive land uses; and (b) maintain the operational efficiency and viability of low impact industry activities.	**AO4** The following uses are not located on land within the Low impact industry zone: (a) sensitive land uses; and (b) high impact industry; and (c) medium impact industry; and (d) special industry; and (e) transport depot; and (f) other industrial activities generating medium or high intensity impacts.
Infrastructure	
PO5 Development is serviced by all forms of urban infrastructure.	**AO5** Development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; and (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
Built form and development intensity	
PO6 Building height and scale: (a) integrates with the built form of the area; and (b) does not form overdevelopment of the site.	**AO6.1** Buildings have a maximum height of 8.5 metres above ground level.

[25] Provisions focusing specifically on 'out-of-centre' centre activities and other non-industrial development are also provided in the relevant development codes (Part 9).

Performance outcomes	Acceptable outcomes
	AO6.2 The maximum site cover of all buildings is 60% of the total site area.
PO7 Buildings are setback from road frontages to: (a) integrate with the streetscape of the area; and (b) accommodate landscaping between the building and the street; and (c) avoid buildings from being visually overbearing as viewed from the street.	**AO7** Minimum road frontage setbacks are: (a) from arterial roads and sub-arterial roads – 10 metres; and (b) from collector streets and access streets – 6 metres.
PO8 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable, require minimal maintenance, and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
PO9 Development fronting Boundary Road East, Paget presents high quality design and visual amenity outcomes as viewed from Boundary Road East, an important gateway area for the city and region, by: (a) ensuring that development in close proximity to Boundary Road East is not visually overbearing; and (b) providing low intensity uses adjacent to Boundary Road East; and (c) ensuring that development in close proximity to Boundary Road East is not visually overbearing; and (d) providing building activation and articulation along the Boundary Road East frontage; and (e) providing feature landscaping along Boundary Road East.	**AO9** Industrial development provides the following along the Boundary Road East frontage: (a) administrative, training and/or customer service facilities; and (b) activation measures such as pedestrian entrances / doors, windows and balconies; and (c) articulation measures such as building line projections / recessions (minimum depth 500mm), awnings, articulated roof profile, alternating materials and colours; and (d) a minimum 3 metre wide landscaping strip containing feature planting.

Performance outcomes	Acceptable outcomes
Amenity	
PO10 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby sites containing an existing sensitive land use.	No acceptable outcome prescribed.
Environment	
PO11 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

6.2.11 Major centre zone code

6.2.11.1 Application

This code applies to assessing development in the Major centre zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.11.2 Purpose

(1) The purpose of the Major centre zone code is to provide for a mix of uses and activities.

It includes concentrations of higher order retail, commercial, limited offices, residential, administrative and health services, community, cultural and entertainment facilities and other uses capable of servicing a subregion in the planning scheme area.

(2) The local government purpose of the zone code is to provide for a diverse range of centre activities, community activities, multiple dwelling activities and other compatible uses that form compact, vibrant, attractive and pedestrian orientated multi-purpose centres, and activity hubs serving the surrounding sub-regional area. Major centres include:

- (a) Mount Pleasant major centre;
- (b) Rural View major centre; and
- (c) Sarina major centre.

(3) The purpose of the code will be achieved through the following overall outcomes:

- (a) Centre role and function:
  - (i) major centres are:
    - (A) larger and more accessible, diverse and intensely developed than district centres, local centres and neighbourhood centres; and
    - (B) subordinate to the principal centre (Mackay city centre); and
  - (ii) major centres serve the following catchments:
    - (A) Mount Pleasant: Mackay inner and middle northern suburbs (Andergrove, Beaconsfield, Cremorne, Glenella, Mackay Harbour, Mount Pleasant, North Mackay, Richmond (south of Mackay-Habana Road) and Slade Point), and rural communities to the north; and
    - (B) Rural View: Mackay's northern beaches suburbs (Blacks Beach, Bucasia, Dolphin Heads, Eimeo, Richmond (north of Mackay-Habana Road) and Shoal Point); and
    - (C) Sarina: Sarina, Sarina's coastal communities (Alligator Creek, Armstrong Beach, Campwin Beach, Freshwater Point, Grasstree Beach, Hay Point, Sarina Beach) and rural communities to the south; and
  - (iii) the total gross floor area of centre activities is up to:
    - (A) 130,000m^2 in Mount Pleasant major centre; and
    - (B) 60,000m^2 in Rural View major centre; and
    - (C) 30,000m^2 the Sarina major centre; and
  - (iv) major centres are strengthened as important sub-regional activity nodes; and
  - (v) major centres accommodate a mixture of sub-regional, high intensity and complementary small scale services and facilities; and
- (b) Uses:
  - (i) major centres accommodate a diverse range of compatible uses enabling the creation of vibrant and diverse activity nodes providing service, employment, residential and recreation opportunities; and
  - (ii) major centres contain the following types of uses:

(A) centre activities:
- comparison, weekly and convenience services (discount department stores, full-size supermarkets and a full range of specialty stores and personal services); and
- small scale and low intensity offices and professional and service businesses; and
- entertainment and leisure facilities and services; and

(B) community activities: sub-regional community facilities and a full range of local community facilities; and

(C) residential development: medium-high density residential development and short-term accommodation; and

(iii) impacts are managed to minimise potential land use conflicts and provide a high level of amenity for sensitive land uses; and

(c) Infrastructure:

(i) development is efficiently serviced by the full range of urban infrastructure networks; and

(d) Accessibility:

(i) the street network provides high levels of connectivity internally and to surrounding urban neighbourhoods; and

(ii) strong connections are provided between the separate areas of the Mount Pleasant major centre (Mount Pleasant Shopping Centre, Mount Pleasant Plaza, Greenfields, Highway Plaza, North Point Retail, Kay Court, Willets Road and Discovery Lane-Mater Hospital); and

(iii) the pedestrian access network to and within the centre is attractive, convenient, safe and, as much as practical, is protected from sun and rain; and

(iv) footpaths, cycle lanes and end of trip facilities throughout the centre provide a high level of accessibility for pedestrians and cyclists; and

(v) high quality public transport facilities including interchanges are provided at key locations (convenient for users) in major centres to facilitate efficient public transport services to, and through, the centre; and

(vi) arterial roads and sub-arterial roads adjacent to and through major centres facilitate high traffic volumes; and

(vii) other streets within major centres facilitate lower volumes of traffic, safe bicycle movement, safe vehicle access to sites, pedestrian priority crossing points and street parking; and

(e) Built form and the public realm:

(i) built form layout and design is integrated with adjoining and nearby development within the centre; and

(ii) built form and the public realm are characterised by high quality design outcomes and a strong sense of identity by responding to:

(A) the region's tropical climate; and

(B) the major centre's urban and landscape setting; and

(iii) buildings address the public realm by providing active and articulated frontages at a human scale; and

(iv) development is of a higher intensity than the surrounding urban area, but it respects and integrates with the surrounding urban area's established layout, character and visual amenity; and

(v) public realm treatments across each major centre are varied according to the type and/or location of the street or public open space but also have common unifying elements; and

(f) Amenity:

(i) conflicts between sensitive land uses and uses generating amenity impacts are minimised through location, design and/or operation; and

(g) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.11.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.11.3.A – Major centre zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Centre role and function	
PO1 Development in major centres: (a) fulfils, but does not exceed, the needs of the relevant catchment: (i) Mount Pleasant major centre: Andergrove, Beaconsfield, Cremorne, Glenella, Mackay Harbour, Mount Pleasant, North Mackay, Richmond (south of Mackay-Habana Road), Slade Point and rural communities to the north; or (ii) Rural View major centre: Shoal Point, Bucasia, Eimeo, Dolphin Heads, Blacks Beach and Rural View; or (iii) Sarina major centre: Sarina, Alligator Creek, Armstrong Beach, Campwin Beach, Freshwater Point, Grasstree Beach, Hay Point, Sarina Beach and rural communities to the south; and (b) does not compete with or compromise the viability, role or function of other district centres, major centres or the principal centre (Mackay city centre).	**AO1.1** Centre activities do not exceed a total gross floor area of: (a) 0.35 times the area of the site in the Mount Pleasant major centre; or (b) 0.5 times the area of the site in the Rural View major centre; or (c) 0.4 times the area of the site in the Sarina major centre. **AO1.2** Office uses do not exceed: (a) a maximum gross floor area of 500m^2; and (b) a maximum height of 8.5m above ground level (2 storeys). **AO1.3** Development involving a total gross floor area of over 2,000m^2 in Sarina major centre demonstrates that: (a) the development is needed to service the relevant catchment; and (b) the development will not undermine the role, function and viability of other multi-purpose centres.

Performance outcomes	Acceptable outcomes
Uses	
PO2 Major centres accommodate a diverse range of uses enabling the creation of vibrant and diverse activity nodes providing service, employment, residential and recreation opportunities.	**AO2.1** Major centres accommodate a mix of the following uses: (a) centre activities, small scale and low intensity offices, outdoor business activities, hotel and market; and (b) community activities and child care centre; and (c) multiple dwelling activities and short-term accommodation; and (d) recreation activities, major sport, recreation and entertainment facility and park; and (e) service industry, car wash, parking station and service station; and (f) other compatible uses.
	AO2.2 Department stores are not located in major centres.
Infrastructure	
PO3 Development is serviced by all forms of urban infrastructure.	**AO3** Development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
Accessibility	
PO4 Vehicle access points do not compromise: (a) the safety, operational capacity, or efficiency of arterial roads and sub-arterial roads; and (b) pedestrian safety and amenity on key active frontage streets.	**AO4.1** Development does not gain direct vehicular access from[26]: (a) Mackay–Bucasia Road, Malcomson Street, Bruce Highway, Heaths Road or Sams Road in the Mount Pleasant major centre; and (b) Mackay-Bucasia Road and Eimeo Road in the Rural View major centre.
	AO4.2 Development gains vehicular access from: (a) a non-residential side street; or (b) co-ordinated rear access; or (c) a combined access point (1 access shared between two or more sites), rather than gaining direct vehicular access from: • Broad Street and Central Street in Sarina; and • key active frontage streets[27].

[26] Does not apply to existing and approved access points
[27] "Key active frontage streets" are defined in Schedule 1.

Performance outcomes	Acceptable outcomes
Built form and the public realm	
PO5 Built form is integrated with adjoining and nearby development within the centre to provide: (a) co-ordinated layout; and (b) consistent streetscape rhythm.	No acceptable outcome prescribed.
PO6 Building height reflects the intensity and prominence of major centres as sub-regional activity nodes including residential uses but also respects and integrates with surrounding low-rise and low-intensity built form.	**AO6** Building height does not exceed the following maximum building heights: (a) as identified on Figure 6.2.10.3.A – Major centre zone – maximum building heights – Mount Pleasant; and (b) 17 metres above ground level (5 storeys) in the Rural View major centre; and (c) 14 metres (4 storeys) above ground level in the Sarina major centre.
PO7 Key active frontage streets provide (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity; and (d) a safe and efficient environment for pedestrians, cyclists and vehicles.	**AO7.1** Street-orientated development is provided along existing key active frontage streets[27].
	AO7.2 The following is not provided across / adjacent to State controlled roads: (a) formal mid-block pedestrian access (for example - signalised crossing points, raised pedestrian crossings, painted pedestrian crossings and pedestrian refuges); and (b) footpath dining areas within the road reserve.
PO8 Buildings are setback from road frontages to: (a) provide street-orientated development on key active frontage streets; and (b) enable buildings to effectively address and engage with other streets; and (c) provide a human scale streetscape and not be visually overbearing.	**AO8.1** On key active frontage streets: (a) the minimum setback for the podium (maximum height 8.5 metres above ground level (2 storeys)) is 0 metres; and (b) the maximum setback for the podium is 2.5 metres; and (c) the minimum setback for parts of the building above the podium is: (i) 3 metres from the front edge of the podium to the front edge of a balcony; and (ii) 6 metres from the front edge of the podium to the building wall.

Performance outcomes	Acceptable outcomes
	AO8.2 On 'non-key active frontage streets': (a) the minimum setback for the podium (maximum height 8.5 metres above ground level (2 storeys)) is 0 metres; and (b) the maximum setback for the podium is 14 metres; and (c) the minimum setback for parts of the building above the podium is: (i) 3 metres from the front edge of the podium to the front edge of a balcony; and (ii) 6 metres from the front edge of the podium to the building wall.
	AO8.3 The minimum setbacks from rear laneways are as follows: (a) 0 metres where the wall height is 4.5 metres or less above ground level; and (b) 3 metres where the wall height is more than 4.5 metres above ground level.
PO9 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
P10 Development strengthens the centre's sense of place and identity by maintaining and/or creating visual connections with nearby built and landscape elements	**AO10** Development maintains and/or creates views and vistas of the following from roads and other public space areas: (a) Mount Pleasant major centre: Pioneer River, Gooseponds Creek and surrounding hills; and (b) Rural View major centre: McCreadys Creek open space area and surrounding hills; and (c) Sarina major centre: surrounding hills and Plane Creek Mill.

Performance outcomes	Acceptable outcomes
Amenity	
PO11 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO12 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.
Environment	
PO13 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

Figure 6.2.11.3.A – Major centre zone – maximum building heights – Mount Pleasant

6.2.12 Medium density residential zone code

6.2.12.1 Application

This code applies to assessing development in the Medium density residential zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.12.2 Purpose

(1) The purpose of the Medium density residential zone code is to provide for a medium density multiple dwellings supported by community uses and small-scale services and facilities that cater for local residents.

(2) The local government purpose of the zone code is to provide for low-medium and medium intensity residential development within key urban areas at locations which possess one or a combination of the following attributes:

(a) in close proximity to important multi-purpose centres (principal, major, district and certain local centres) and other activity hubs, including:

(i) Mackay city centre (principal centre); and

(ii) Mount Pleasant, Rural View and Sarina major centres; and

(iii) Andergrove, Marian, North Mackay, West Mackay (Fourways and Parkside) and Walkerston district centres; and

(iv) Sarina Beach Road (Sarina), Blacks Beach, Bucasia, Mirani, Celeber Drive (Andergrove) local centres; and

(v) Mackay Base Hospital (West Mackay); and

(b) along important public transport corridors, including: Bridge Road, Glenpark Street, Holland Street, Juliet Street, Malcomson Street and Paradise Street; and

(c) nodes (rather than linear development) in close proximity to high quality amenity and recreation elements, including: Alexandra Street (addressing Mackay Regional Botanic Gardens), Bucasia Beach, Blacks Beach, Dolphin Heads, Glenella, Iluka / Illawong Beaches and Slade Point.

The zone also provides for short-term accommodation and a limited range of small scale, low intensity and compatible non-residential activities.

The zone includes the Low-medium density precinct (precinct no. MD1), General medium density precinct (precinct no. MD2) and Multi-storey medium density precinct (precinct no. MD3).

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Uses:

(i) the predominant form of development within the zone is low-medium and medium density residential development; and

(ii) the zone also accommodates short-term accommodation in the Multi-storey medium density precinct (precinct no. MD3) on sites:

(A) in close proximity to centres or other activity hubs and/or elements of high amenity and recreation value; and

(B) that are prominently located and highly accessible; and

(iii) a limited range of small-scale and low intensity non-residential uses may be appropriate if these uses are:

(A) required to serve the needs of the local area; and

(B) located on prominent, highly accessible sites; and

(C) consistent with the amenity and character of the surrounding urban area; and

(b) Infrastructure:

(i) development is efficiently serviced by the full range of urban infrastructure networks; and

(c) Built form and development intensity:

(i) in the Low-medium density precinct (precinct no. MD1) and General medium density precinct (precinct no. MD2), low rise buildings integrate with the character and amenity of the local area; and

(ii) in the Multi-storey medium density precinct (precinct no. MD3), medium rise buildings reflect the site's strategic location but has a lesser development intensity than buildings in the High density residential zone, Major centre zone and Principal centre zone (Mackay city centre); and

(iii) low-medium density residential development is provided in the Low-medium density precinct (precinct no. MD1) and medium density residential development is provided in the General medium density precinct (precinct no. MD2) and Multi-storey medium density precinct (precinct no. MD3); and

(iv) road frontage setbacks are small enough to enable the development to effectively interact with the street but large enough to accommodate landscaping and avoid buildings being visually overbearing; and

(v) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(d) Amenity:

(i) development does not adversely affect the amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses; and

(e) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.12.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.12.3.A – Medium density residential zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses	
PO1 The zone primarily accommodates low-medium and medium density residential development including: (a) multiple dwelling activities and dwelling houses in the Low-medium density precinct (precinct no. MD1) and the General medium density precinct (precinct no. MD2); and (b) multiple dwelling activities, with the exception of dual occupancy, in the Multi-storey medium density precinct (precinct no. MD3).	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO2 Short-term accommodation is located in the Multi-storey medium density precinct (precinct no. MD3) and has strong visual and physical connection with the nearby: (a) principal centre, major centre, district centre or hospital; and (b) public transport corridor; or (c) beach / coastline or botanic gardens.	No acceptable outcome prescribed.
PO3 Non-residential activities, such as centre activities and community activities, are[28]: (a) required to serve the needs of the local area and do not compromise the viability of: (i) existing or intended uses within a multi-purpose centre; and (ii) similar existing or approved uses in the local area; and (b) of a small scale and are subordinate to the primary residential character of the area; and (c) generate minimal impacts.	No acceptable outcome prescribed.
Infrastructure	
PO4 Development is serviced by all forms of urban infrastructure.	**AO4** Development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; and (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
Built form and development intensity	
PO5 In the Low-medium density precinct (precinct no. MD1), building height and residential density: (a) integrates with the low-rise and low intensity built form of surrounding residential areas; and (b) does not form overdevelopment of the site.	**AO5.1** In the Low-medium density precinct (precinct no. MD1), buildings have a maximum height of 8.5 metres above ground level (2 storeys). **AO5.2** In the Low-medium density precinct (precinct no. MD1): (a) the maximum plot ratio is: (i) 0.6:1 if the site is adjacent to a public transport route, within 200 metres of a multi-purpose centre zone, or within 200 metres of usable open space; or (ii) 0.5:1 if the site does not meet any of the criteria mentioned in (a)(i); and (b) the minimum number of dwellings provided is the equivalent of 1 dwelling per every 500m^2 of site area.

[28] Provisions focusing specifically on 'out-of-centre' non-residential development are also provided in the relevant development codes (part 9).

Performance outcomes	Acceptable outcomes
PO6 In the General medium density precinct (precinct no. MD2), building height and residential density: (a) integrates with the low-rise built form of surrounding residential areas; and (b) integrates with the intended medium density built form of the area; and (c) does not form overdevelopment of the site.	**AO6.1** In the General medium density precinct (precinct no. MD2), buildings have a maximum height of 8.5 metres above ground level (2 storeys). **AO6.2** In the General medium density precinct (precinct no. MD2): (a) the maximum plot ratio is 0.8:1; and (b) the minimum number of dwellings provided is the equivalent of 1 dwelling per every 300m^2 of site area.
PO7 In the Multi-storey medium density precinct (precinct no. MD3), building height and residential density: (a) does not form under-development of the site and utilises the strategic location of the site in close proximity to: (i) the principal centre or a major centre, district centre or hospital; or (ii) public transport corridor; or (iii) beach / coastline or botanic gardens; and (b) integrates with the intended medium intensity built form of the area; and (c) does not: (i) form overdevelopment of the site; and (ii) challenge the primacy of the High density residential zone, Major centre zone and Principal centre zone (Mackay city centre) as the region's most intensely developed precincts.	**AO7.1** In the Multi-storey medium density precinct (precinct no. MD3), buildings have: (a) a maximum height of 17 metres above ground level (5 storeys) on certain sites identified on the following maps: (i) Figure 6.2.12.3.A – Medium density residential zone, Multi-storey medium density precinct (precinct no. MD3) – 17 metre (5 storey) maximum building height area – Shoal Point; (ii) Figure 6.2.12.3.B – Medium density residential zone, Multi-storey medium density precinct (precinct no. MD3) – 17 metre (5 storey) maximum building height areas – Mount Pleasant; and (iii) Figure 6.2.12.3.C – Medium density residential zone, Multi-storey medium density precinct (precinct no. MD3) – 17 metre (5 storey) maximum building height area – Mackay city centre; (iv) Figure 6.2.12.3.D – Medium density residential zone, Multi-storey medium density precinct (precinct no. MD3) – 17 metre (5 storey) maximum building height areas – West Mackay; and (v) Figure 6.2.12.3.E – Medium density residential zone, Multi-storey medium density precinct (precinct no. MD3) – 17 metre (5 storey) maximum building height areas – East Mackay; and (b) a maximum height of 11 metres above ground level (3 storeys) in other areas.

Performance outcomes	Acceptable outcomes
	AO7.2 In the Multi-storey medium density precinct (precinct no. MD3): (a) the maximum plot ratio is: (i) in areas identified by AO7.1 as having a building height of 17 metres above ground level (5 storeys) – 1.5:1; or (ii) in areas identified by AO7.1 as having a building height of 11 metres above ground level (3 storeys) – 1.2:1; and (b) the minimum number of dwellings provided is the equivalent of 1 dwelling per every 200m^2 of site area.
PO8 Buildings are setback from road frontages to: (a) provide for landscaping between the building and the street; and (b) avoid buildings from being visually overbearing as viewed from the street.	**AO8.1** In the Low-medium density precinct (precinct no. MD1) and General medium density precinct (precinct no. MD2), minimum road frontage setbacks are: (a) from arterial roads and sub-arterial roads – 10 metres; and (b) from collector streets – 6 metres; and (c) from access streets: and (i) 6 metres for garages and carports; and (ii) 4.5 metres for other parts of the building; and (d) from rear laneways: (i) 0 metres where the wall height is 3.5 metres or less above ground level; and (ii) 2 metres where the wall height is more than 3.5 metres above ground level.
	AO8.2 In the Multi-storey medium density precinct (precinct no. MD3), minimum road frontage setbacks are: (a) from arterial roads and sub-arterial roads – 10 metres; and (b) from collector streets and access streets – 6 metres; and (c) from rear laneway: (i) 0 metres where the wall height is 3.5 metres or less above ground level; and (ii) 2 metres where the wall height is more than 3.5 metres above ground level.

Performance outcomes	Acceptable outcomes
	Lesser road frontage setbacks may be considered if: • the proposed road frontage setback is within 20% of a road frontage setback on an adjoining lot; and • that part of the building has a maximum height of 4.5 metres (1 storey).
PO9 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable, require minimal maintenance, and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Amenity	
P10 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO11 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.
Environment	
PO12 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

Figure 6.2.12.3.A – Medium density residential zone, Multi-storey medium density precinct (precinct no. MD3) – 17 metre (5 storey) maximum building height area – Shoal Point

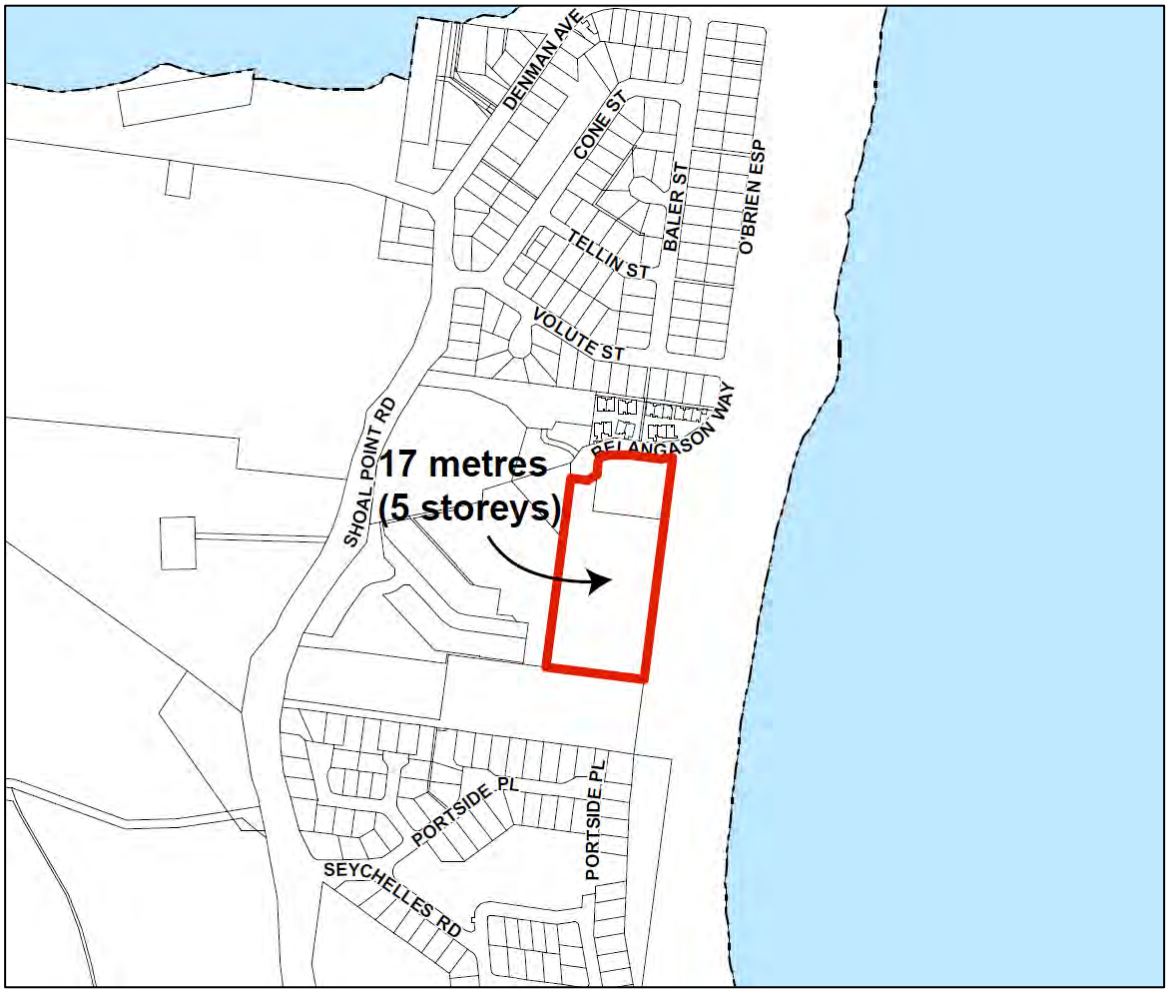


Figure 6.2.12.3.B – Medium density residential zone, Multi-storey medium density precinct (precinct no. MD3) – 17 metre (5 storey) maximum building height areas – Mount Pleasant

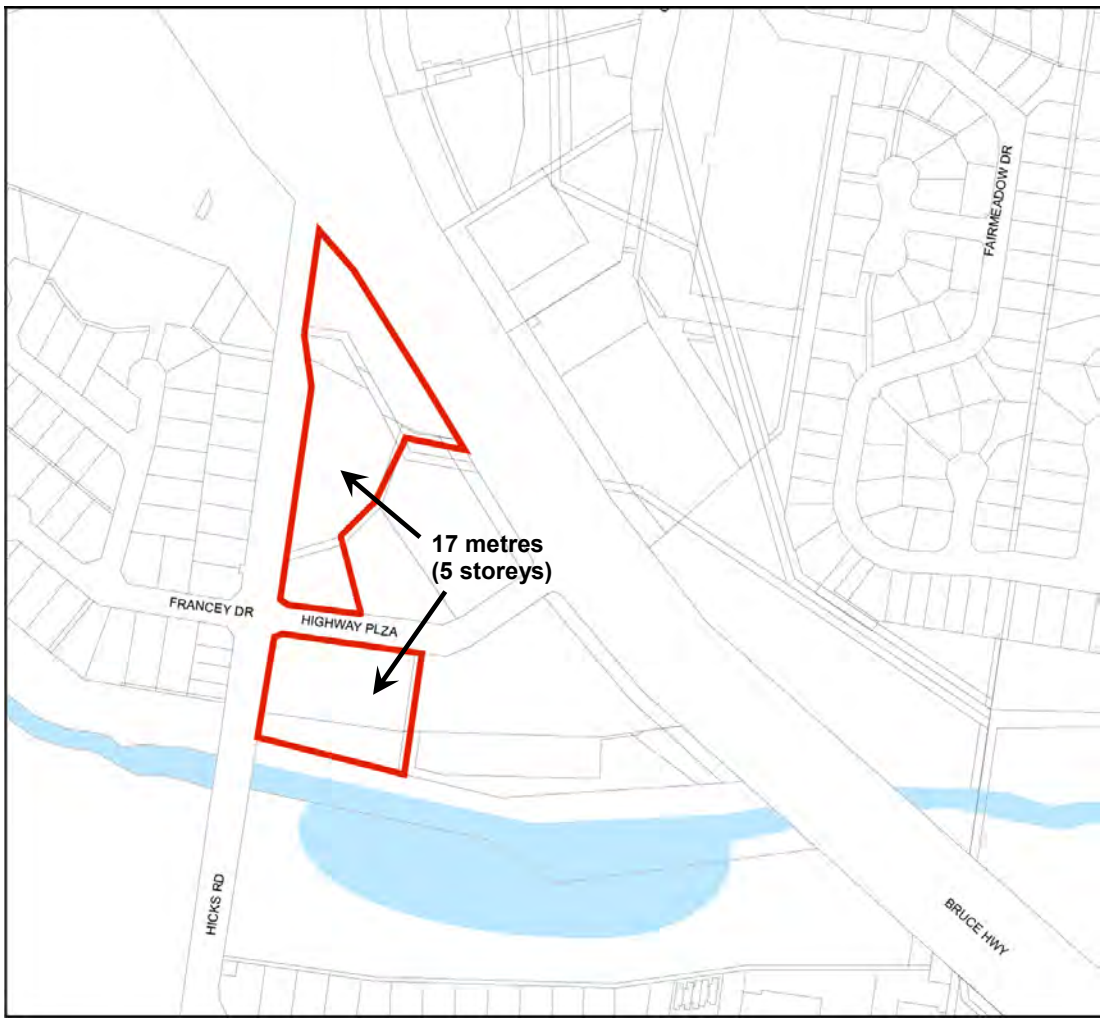


Figure 6.2.12.3.C – Medium density residential zone, Multi-storey medium density precinct (precinct no. MD3) – 17 metre (5 storey) maximum building height area – Mackay city centre

Figure 6.2.12.3.D – Medium density residential zone, Multi-storey medium density precinct (precinct no. MD3) – 17 metre (5 storey) maximum building height areas – West Mackay

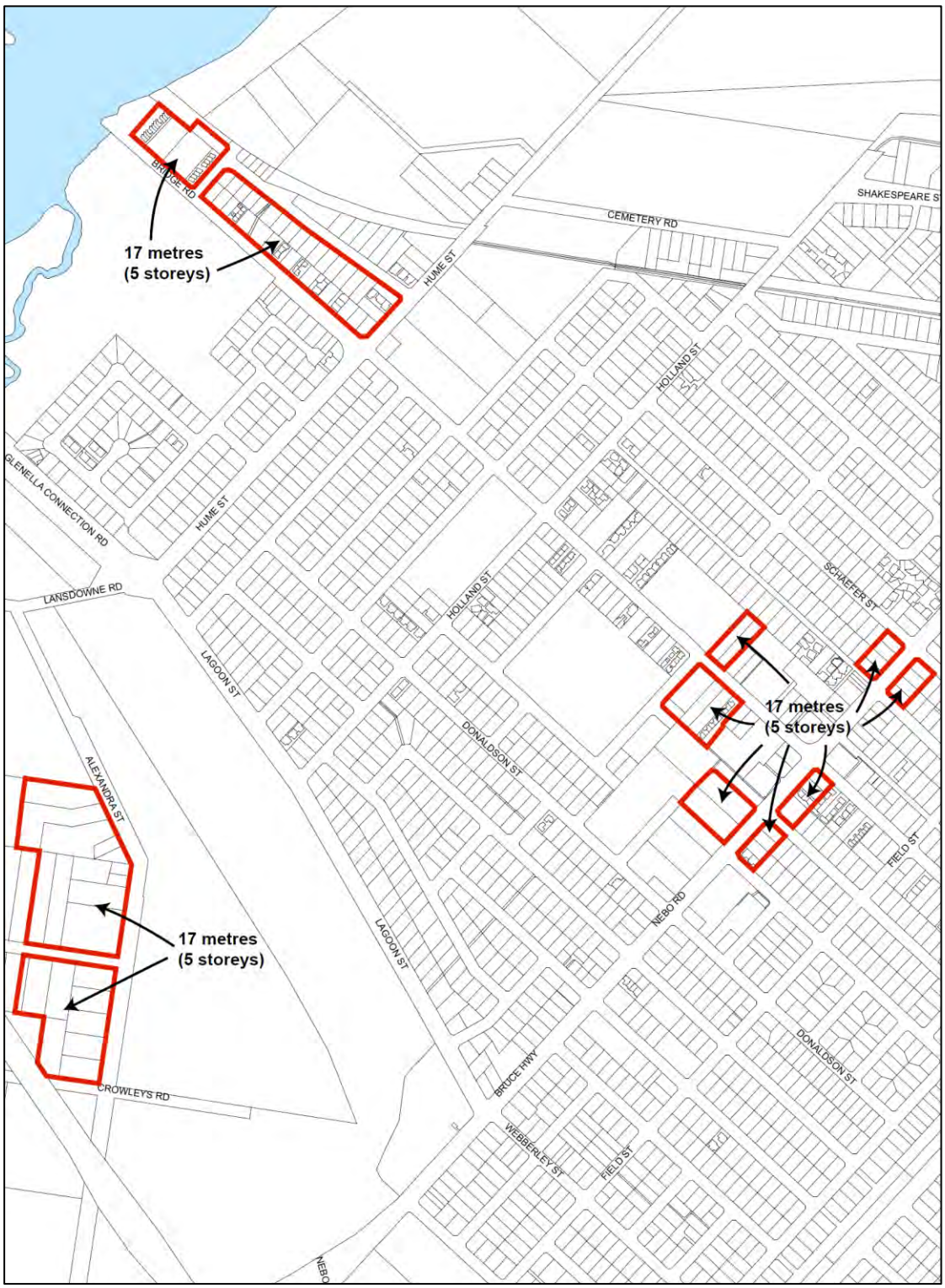


Figure 6.2.12.3.E – Medium density residential zone, Multi-storey medium density precinct (precinct no. MD3) – 17 metre (5 storey) maximum building height areas – East Mackay

6.2.13 Mixed use zone code

6.2.13.1 Application

This code applies to assessing development in the Mixed use zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.13.2 Purpose

(1) The purpose of the Mixed use zone code is to provide for a mix of activities that may include business, retail, residential, tourist accommodation and associated services, service industry and low impact industrial uses.

(2) The local government purpose of the zone code is to provide for:

(a) in the Amenity and convenience precinct (precinct no. MX1), a mix of residential development and small to medium scale, low-impact non-residential uses at strategically important locations:

(i) that require both non-residential and residential development to activate and provide casual surveillance over an adjoining open space area, such as[29] at Anzac Avenue, Marian; and

(ii) where:

(A) it is important that non-residential development maintains public access to areas of high amenity value; and

(B) both non-residential and residential development benefit from the site's proximity to an element of high amenity value,

examples of this include[27] Mango Avenue, Eimeo, Southern Breakwater Access Road, Mackay Harbour, Anzac Avenue, Marian, and between Victoria and River Streets, Mackay city centre; and

(iii) where it is important that a mixture of non-residential and residential uses complement the site's location near a high order centre and provide for a transition between areas with different use and built form characteristics, such as[27] Gordon and Alfred Streets, Mackay city centre and Dutton Street, Walkerston; and

(iv) where it is important that development provides a variety of uses that capitalise upon and support a significant nearby activity node, such as[27] Bridge Road, West Mackay; and

(v) where a range of uses is provided for in order to encourage the retention and re-use of heritage buildings and where it is appropriate to capitalise upon important nearby strategic elements (such as high order recreation nodes and transport corridors), such as Nebo Road, West Mackay; and

(b) in the Fringe commercial precinct (precinct no. MX2):

(i) residential uses and a range of small scale, low intensity and low impact non-residential uses that contributes to achieving, or at least not compromising, the potential for medium density residential development over the following areas in the future:

(A) Malcomson Street, North Mackay; and

(B) Kay Court, Mount Pleasant; and

(C) Boddington Street, Mackay; and

(D) Prospect Street / Turner Street, Mackay,

(ii) consolidate / extend existing development over lots within the Fringe commercial precinct (precinct no. MX2) on Shakespeare Street and Nebo Road, Mackay; and

[29] The areas mentioned as examples in (a), (b), (c) and (d) may also be relevant to other categories. For example, Victoria and River Streets, Mackay city centre is mentioned as an example in (b), but the area is also relevant to (c) and (d).

(iii) a range of non-residential uses that reinforces or complements the prevailing low-impact industry land use pattern over lots within the Fringe commercial precinct (precinct no. MX2) at Sydney Street and Juliet Street, Mackay; and

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Uses:

(i) in the Amenity and convenience precinct (precinct no. MX1):

(A) the predominant form of development within the precinct includes a mixture of:

- small to medium scale non-residential development that:
  - involves centre activities, community activities and other compatible uses; and
  - is compatible with residential development; and
  - does not compete with or compromise the role, function and viability of multi-purpose centres; and
- residential development including multiple dwellings and short-term accommodation; and

(B) non-residential development at Mango Avenue, Eimeo; Southern Breakwater Access Road, Mackay Harbour; Anzac Avenue, Marian; and between Victoria and River Streets, Mackay city centre, includes uses that maintain public access to landmark sites and areas of high amenity value; and

(C) non-residential development at Bridge Road, West Mackay includes local convenience and health care related services and other non-residential uses with synergies to the Mackay Base Hospital; and

(D) residential development at Bridge Road, West Mackay includes short to medium term accommodation for relatives and friends of patients in, or staff of, Mackay Base Hospital; and

(E) residential development between Victoria and River Streets, Mackay city centre includes short-term accommodation to capitalise on the amenity of the Pioneer River and being located within Mackay city centre; and

(F) in order to contain significant non-residential uses within nearby centre zones, residential uses predominate in mixed use developments on sites in the Mackay city centre and at Dutton Street, Walkerston ; and

(ii) in the Fringe commercial precinct (precinct no. MX2):

(A) at Malcomson Street, North Mackay; Kay Court, Mount Pleasant; Boddington Street, Mackay; and Prospect Street / Turner Street, Mackay the predominant form of development is:

- medium density residential development including short-term accommodation; and
- a range of small scale, low intensity and low impact non-residential development that does not compromise the potential for these areas to accommodate medium density residential development in the future; and

(B) at Shakespeare Street and Nebo Road, Mackay, the predominant form of development is:

- outdoor sales and complementary uses; or
- medium density residential

(C) in Sydney Street and Juliet Street, Mackay, the predominant form of development is:

- low-impact industrial development; and
- other low-impact non-sensitive uses; and

(b) Infrastructure:
  (i) development is efficiently serviced by the full range of urban infrastructure networks; and

(c) Accessibility:
  (i) the pedestrian access along streets and within open space areas adjacent to the development is attractive, convenient, safe and, as much as practical, is protected from sun and rain; and
  (ii) footpaths, cycle lanes and end of trip facilities provide a high level of accessibility for pedestrians and cyclists; and
  (iii) high quality public transport facilities including interchanges are provided at key locations (convenient for users); and
  (iv) arterial roads and sub-arterial roads adjoining the site facilitate high traffic volumes; and
  (v) other streets adjoining the site facilitate lower volumes of traffic, safe bicycle movement, safe vehicle access to sites, pedestrian priority crossing points and street parking; and

(d) Built form and public realm:
  (i) in the Amenity and convenience precinct (precinct no. MX1):
    (A) prominent buildings reflect the site's strategic location, but also:
      - integrates with the landscape character of the site and the local area; and
      - respects the built form character and amenity of the local area; and
      - does not form over-development of the site; and
    (B) buildings provide extensive active frontages and covered outdoor seating areas to capitalise upon views of, and effectively address and engage with:
      - the Pioneer River and adjoining open space at Anzac Avenue, Marian and between River and Victoria Streets, Mackay city centre; and
      - ocean, coastline, urban and mountain views from Mango Avenue, Eimeo; and
      - the Marina and adjoining public footpath and open space, as well as beach and ocean views, at Southern Breakwater Access Road, Mackay Harbour; and
    (C) road frontage setbacks are small enough to enable the development to effectively interact with the street but large enough to accommodate landscaping and avoid buildings being visually overbearing; and
    (D) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

  (ii) in the Fringe commercial precinct (precinct no. MX2):
    (A) the size and scale of non-residential buildings at Malcomson Street, North Mackay; Kay Court, Mount Pleasant; Boddington Street, Mackay; and Prospect Street / Turner Street, Mackay is restricted to maintain:
      - the ability for these areas to accommodate medium density residential development in the future; and
      - the role, function and viability of designated multi-purpose centres; and
    (B) buildings integrate with the built form of the area and do not constitute over-development of the site; and
    (C) road frontage setbacks:

- accommodate landscaping; and
- avoid buildings being visually overbearing; and

(D) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(e) Amenity:
  (i) conflicts between sensitive land uses and uses generating amenity impacts are minimised through location, design and/or operation; and

(f) Environment:
  (i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.13.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.13.3.A – Mixed use zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses – Amenity and convenience precinct (precinct no. MX1)	
PO1 The precinct primarily accommodates both of the following in mixed use buildings: (a) non-residential uses including centre activities, community and other uses that are compatible with residential development on the site and on adjoining sites; and (b) residential development including multiple dwellings and/or short-term accommodation.	**AO1** On sites in areas other than those mentioned in PO7 and AO7.1: (a) centre activities, community activities and other compatible non-residential uses occupy a minimum of 20% of the total gross floor area; and (b) multiple dwellings and/or short-term accommodation occupy a minimum of 50% of the total gross floor area.
PO2 Centre activities do not compete with or compromise the role, function and viability of designated multi-purpose centres.	**AO2.1** The maximum gross floor area for tenancies containing centre activities, other than office, is 300m^2.
	AO2.2 The maximum gross floor area for office tenancies is 500m^2.
	AO2.3 Department stores, discount department stores, showrooms and full-sized supermarkets are not provided in the mixed use zone.

Performance outcomes	Acceptable outcomes
PO3 Non-residential uses maintain public access to high amenity value in the Mixed use zone at: (a) Anzac Avenue, Marian – adjoins Pioneer River and open space area; and (b) Mango Avenue, Eimeo – landmark site with ocean, coastline, urban and mountain views; and (c) Southern Breakwater Access Road, Mackay Harbour – landmark site with Marina, beach and ocean views, and adjoins Marina footpath and open space area; and (d) between Victoria and River Streets, Mackay city centre – adjoins Pioneer River.	**AO3** Non-residential uses open to the general public, such as food and drink outlet, hotel, shop and community use, are provided in the Mixed use zone at: (a) Anzac Avenue, Marian; and (b) Mango Avenue, Eimeo; and (c) Southern Breakwater Access Road, Mackay Harbour; and (d) Between Victoria and River Streets, Mackay city centre.
PO4 Non-residential uses in the Mixed use zone at Bridge Road, West Mackay provide local convenience services and establish synergies with the Mackay Base Hospital.	**AO4** Non-residential uses in the Mixed use zone at Bridge Road, West Mackay include: (a) centre activities such as food and drink outlet, shop, health care services and office; and (b) community activities such as community care centre and place of worship; and (c) other uses that provide local convenience services and establish synergies with the Mackay Base Hospital.
PO5 Residential development in the Mixed use zone at Bridge Road, West Mackay provides short to medium term accommodation for relatives and friends of patients in, or staff of, Mackay Base Hospital.	**AO5** Residential development in the Mixed use zone at Bridge Road, West Mackay includes short-term accommodation or rooming accommodation uses.
PO6 Residential development in the Mixed use zone in between Victoria and River Streets, Mackay city centre includes short-term accommodation to capitalise on the amenity of the Pioneer River and being located with Mackay city centre.	**AO6** Residential development in the Mixed use zone in between Victoria and River Streets, Mackay city centre includes short-term accommodation uses.
PO7 In order to contain significant non-residential uses within nearby zones, residential uses predominate in mixed use developments on sites in the Mixed use zone, Amenity and convenience precinct (precinct no. MX1) in Mackay city centre and Walkerston.	**AO7** On sites in the Mixed use zone, Amenity and convenience precinct (precinct no. MX1) in Mackay city centre (Victoria and River Streets area and Gordon and Alfred / Park Streets area) and Dutton Street, Walkerston: (a) centre activities, community activities and other compatible non-residential uses occupy a maximum of 30% of the total gross floor area; and (b) multiple dwellings and/or short-term accommodation occupy a minimum of 70% of the total gross floor area.

Performance outcomes	Acceptable outcomes
PO8 Mixed use developments: (a) provide an effective land use transition between centres and surrounding residential areas; and (b) maintain the character and amenity of surrounding residential areas.	**AO8.1** In the Mackay City Centre, development on the former rail yards site (bounded by Gordon Street, Tennyson Street and Park Street) is in accordance with a masterplan that: (a) ensures non-residential uses are located away from: (i) the eastern part of the former rail yards site; and (ii) Park Street; and (b) provides a publicly accessible north-south bicycle and pedestrian route linking Lawson Street and the former rail corridor south of Park Street and Alfred Street; and (c) transitions in building height from Tennyson Street eastwards to the existing low intensity residential area on Byron Street.
	AO8.2 In Marian, non-residential uses are located away from the eastern part of the area zoned Mixed use.
	AO8.34 In Walkerston, non-residential uses are located away from the northern and western part of the area zoned Mixed use.
Uses – Fringe commercial precinct (precinct no. MX2)	
PO9 The following uses are accommodated at Malcomson Street, North Mackay; Kay Court, Mount Pleasant; Boddington Street, Mackay; Prospect / Turner Street, Mackay; and Shakespeare Street and Nebo Roads, Mackay: (a) multiple dwelling activities, short-term accommodation and other residential uses; and (b) fringe commercial uses such as agricultural supplies store, car wash, centre activities (other than shopping centre), garden centre, hardware and trade supplies, indoor sport and recreation, outdoor sales, parking station, sales office and service industry; and (c) community uses such as child care centre and community activities (other than hospital)	No acceptable outcomes prescribed.

Performance outcomes	Acceptable outcomes
P10 The size and scale of buildings accommodating non-residential uses at Malcomson Street, North Mackay; Kay Court, Mount Pleasant; Boddington Street, Mackay; and Prospect / Turner Street, Mackay: (a) enables potential future re-development for medium density residential uses; and (b) maintains the role, function and viability of designated multi-purpose centres.	**AO10.1** The maximum gross floor area for buildings accommodating non-residential uses at Malcomson Street, North Mackay; Kay Court, Mount Pleasant; Boddington Street, Mackay; and Prospect / Turner Street, Mackay is 200m^2. **AO10.2** The maximum height for buildings accommodating non-residential uses at Malcomson Street, North Mackay; Kay Court, Mount Pleasant; Boddington Street, Mackay; and Prospect / Turner Street, Mackay is 6 metres (1 storey).
P11 The following uses are accommodated in Sydney Street and Juliet Street: (a) low impact industrial development such as hardware and trade supplies, low impact industry, research and technology industry, service industry, transport depot (low-impact) and warehouse; and (b) fringe commercial uses such as agricultural supplies store, car wash, centre activities (other than shopping centre), garden centre, indoor sport and recreation, outdoor sales, parking station, sales office and service station; and (c) community activities (other than child care centre and hospital).	No acceptable outcomes prescribed.
Infrastructure	
PO12 Development is serviced by all forms of urban infrastructure.	**AO12.1** Development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; and (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
Accessibility	
PO13 Vehicle access points do not compromise: (a) the safety, operational capacity, or efficiency of arterial roads and sub-arterial roads; and (b) pedestrian safety and amenity on key active frontage streets.	**AO13.1** Development gains vehicular access from: (a) a non-residential side street; or (b) co-ordinated rear access; or (c) a combined access point (1 access shared between 2 or more sites),

Performance outcomes	Acceptable outcomes
	rather than gaining direct vehicular access from: • Dutton Street, Walkerston; or • Anzac Avenue, Marian; or • the southern road frontage of River Street, Mackay city centre (between Carlyle and Lawson Streets); or • Malcomson Street, North Mackay; or • Bruce Highway, Mount Pleasant; or Juliet Street, Mackay.
Built form and the public realm - general	
PO14 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Built form and the public realm – Amenity and convenience precinct (precinct no. MX1)	
PO15 Built form is integrated with adjoining and nearby mixed use development to provide: (a) co-ordinated layout; and (b) consistent streetscape rhythm.	No acceptable outcome prescribed.
PO16 In multi-storey mixed use buildings: (a) uses on lower floors engage with the street, park and/or public space; and (b) uses on high floors utilise the amenity provided by reduced noise, higher levels of privacy and views	**AO16** In multi-storey mixed use buildings (a) centre activities and/or community activities are provided at ground floor, and if required, floors immediately above ground floor; and (b) multiple dwellings and/or short-term accommodation is provided on floors above the centre activities and/or community activities; and (c) active uses and frontages are located between the street / public space and car parking.

Performance outcomes	Acceptable outcomes
PO17 Building height: (a) reflects the strategic importance of the site and capitalises on nearby high amenity values; and (b) respects, and integrates with, surrounding built form.	**AO17** The maximum height of buildings is: (a) in accordance with the Mackay city centre local plan on sites in the Mixed use zone, Amenity and convenience precinct (precinct no. MX1) in Mackay city centre (between Victoria and River Streets and between Gordon and Alfred / Park Streets); and (b) 17 metres above ground level (5 storeys) in the Mixed use zone, Amenity and convenience precinct (precinct no. MX1) at Southern Breakwater Access Road, Mackay Harbour and Bridge Road, West Mackay; and (c) 11 metres above ground level (3 storeys) in the Mixed use zone, Amenity and convenience precinct (precinct no. MX1) at Mango Avenue, Eimeo; Nebo Road, West Mackay and Dutton Street, Walkerston; and (d) 8.5 metres above ground level (2 storeys) in the mixed use zone at other locations.
PO18 Key active frontage streets are characterised by: (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity.	**AO18** Street-orientated development is provided: (a) along River Street, Mackay city centre (between Carlyle and Lawson Streets); and (b) along Dutton Street, Walkerston.
PO19 Buildings are setback from road frontages to: (a) reflect the character and amenity of the local area; and (b) enable buildings to effectively address and engage with the street; and (c) are large enough to: (i) enable landscaping between the building and the street; and (ii) avoid buildings from being visually overbearing as viewed from the street.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO20 Ground floor centre activities and/or community activities enable the general public to enjoy the high amenity value of: (a) ocean, coastline, urban and mountain views in the mixed use zone at Mango Avenue, Eimeo; and (b) the Pioneer River and adjoining public space in the mixed use zone north of River Street, Mackay city centre; and (c) the Pioneer River and adjoining open space in the mixed use zone at Anzac Avenue, Marian.	**AO20.1** In the Mixed use zone, Amenity and convenience precinct (precinct no. MX1) at Mango Avenue, Eimeo, uses providing access to the general public: (a) are provided at ground level on the highest point, or close to the highest point of the site; and (b) provide large openings and outdoor seating areas orientated to capture direct views to the north (toward Shoal Point and Cape Hillsborough), east (toward the islands and Dolphin Heads) and south/west (toward Mackay and hinterland mountains).
	AO20.2 In the Mixed use zone, Amenity and convenience precinct (precinct no. MX1) at Anzac Avenue, Marian, and north of River Street, Mackay city centre, uses providing access to the general public: (a) are provided at ground level; and (b) provide large openings and outdoor seating areas orientated to capture direct views of the Pioneer River and adjoining public space / open space.
	AO20.3 In the Mixed use zone, Amenity and convenience precinct (precinct no. MX1) at Southern Breakwater Access Road, Mackay Harbour, uses providing access to the general public: (a) are provided at ground level (and higher levels if needed); and (b) provide large openings and outdoor seating areas orientated to capture direct views of the Marina and adjoining public space / open space.
Built form and the public realm – Fringe commercial precinct (precinct no. MX2)	
PO21 Building height and scale: (a) integrates with the built form of the area; and (b) does not form overdevelopment of the site.	**AO21.1** For sites not covered by AO10.2, buildings have a maximum height of 8.5 metres above ground level
	AO21.2 For sites not covered by AO10.1, the maximum: (a) site cover of all buildings is 60% of the total site area; and (b) plot ratio is 1:1.

Performance outcomes	Acceptable outcomes
PO22 Buildings are setback from road frontages to: (a) integrate with the streetscape of the area; and (b) accommodate landscaping between the building and the street; and (c) avoid buildings from being visually overbearing as viewed from the street.	**AO22** Minimum road frontage setbacks are: (a) from arterial roads and sub-arterial roads – 10 metres; and (b) from collector streets and access streets – 6 metres.
Amenity	
PO23 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO24 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.
Environment	
PO25 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

6.2.14 Neighbourhood centre zone code

6.2.14.1 Application

This code applies to assessing development in the Neighbourhood centre zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.14.2 Purpose

(1) The purpose of the Neighbourhood centre zone code is to provide for a small mix of land uses to service residential neighbourhoods.

It includes small-scale convenience shopping, professional offices, community services and other uses that directly support the immediate community.

(2) The local government purpose of the zone code is to provide for small scale centre activities, community activities and other compatible uses to form small multi-purpose centres that are well-designed, accessible and compatible with the amenity and character of the surrounding residential neighbourhood.

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Centre role and function:

(i) neighbourhood centres are subordinate to local centres, district centres, major centres and the principal centre (Mackay city centre); and

(ii) neighbourhood centres serve the day-to-day needs of the residential neighbourhood immediately surrounding the centre and, in some cases, passing traffic along major roads; and

(iii) the total gross floor area of centre activities is up to 750m^2; and

(iv) neighbourhood centres are consolidated as small activity nodes; and

(v) neighbourhood centres accommodate a limited range of compatible uses that create small activity nodes serving the day-to-day needs of the intended catchment; and

(b) Uses:

(i) neighbourhood centres contain the following types of uses:

(A) centre activities: convenience services (convenience stores, limited specialty stores, boutique cafes and personal services); and

(B) service stations: standalone service stations surrounded by residential uses; and

(ii) should the non-residential use/s cease, the neighbourhood centre can be redeveloped for residential purposes that is consistent with the character and amenity of surrounding residential development; and

(iii) impacts are managed to minimise potential land use conflicts and provide a high level of amenity for sensitive land uses; and

(c) Infrastructure:

(i) development is efficiently serviced by the full range of urban infrastructure networks; and

(d) Accessibility:

(i) the street network provides high levels of connectivity internally and to surrounding urban neighbourhoods; and

(ii) the pedestrian access network to and within the centre is attractive, convenient, safe and, as much as practical, is protected from sun and rain; and

(iii) footpaths, cycle lanes and end of trip facilities provide a high level of accessibility for pedestrians and cyclists; and

(iv) arterial roads and sub-arterial roads adjacent to neighbourhood centres facilitate high traffic volumes; and

(e) Built form and public realm:

(i) built form layout and design is integrated with adjoining and nearby development within the centre; and

(ii) built form and the public realm are characterised by high quality design outcomes and a strong sense of identity by responding to:

(A) the region's tropical climate; and

(B) the neighbourhood centre's urban and landscape setting; and

(iii) buildings address the public realm by providing street orientated and articulated frontages at a human scale; and

(iv) development effectively integrates with surrounding urban form; and

(f) Amenity:

(i) development does not adversely affect the amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses; and

(g) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.14.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.14.3.A – Neighbourhood centre zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Centre role, function and uses	
PO1 Development in neighbourhood centres: (a) creates small activity nodes providing convenience retail and other services to the residential neighbourhood immediately surrounding the centre; and (b) fulfils, but does not exceed, the needs of the residential neighbourhood immediately surrounding the neighbourhood centre; and (c) does not compete with or compromise the viability, role or function of local centres, district centres, major centres or the principal centre (Mackay city centre); and (d) integrates with the scale and intensity of development in the surrounding residential neighbourhood; and (e) minimises detrimental impacts on the amenity of the surrounding residential neighbourhood.	**AO1.1** The overall gross floor area for the centre activities throughout the neighbourhood centre (including the total of all existing and proposed gross floor area) does not exceed 750m^2. **AO1.2** Neighbourhood centres accommodate a mix of small scale and low intensity uses, as follows: (a) food and drink outlet, health care services, office, shop, shopping centre and garden centre; and (b) child care centre, club, community care centre, community use, educational establishment, emergency services, place of worship; and (c) park; and (d) service industry, extension to existing car wash and extension to existing service station; and (e) other compatible uses.

Performance outcomes	Acceptable outcomes
	AO1.3 Office uses do not exceed: (a) a maximum gross floor area of 200m^2; and (b) a maximum height of 6m above ground level (1 storey).
	AO1.4 The following centre activities and related uses are not located in neighbourhood centres: (a) new car wash (unless on a site containing an existing service station) (b) food and drink outlet with 'drive-through' facilities; and (c) function facility; and (d) funeral parlour; and (e) hardware and trade supplies; and (f) hotel; and (g) new service station; and (h) shops / shopping centre involving department stores, discount department stores or full-sized supermarkets; and (i) showroom; and (j) theatre; and (k) veterinary services.
PO2 Should the non-residential use/uses cease, the zone primarily accommodates residential development.	**AO2** Should the non-residential use/s cease, the zone accommodates dwelling houses and/or multiple dwelling activities.
Infrastructure	
PO3 Development is serviced by all forms of urban infrastructure.	**AO3** Development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; and (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
Accessibility	
PO4 Vehicle access points do not compromise: (a) the safety, operational capacity, or efficiency of arterial roads and sub-arterial roads; and (b) pedestrian safety and amenity on key active frontage streets.	**AO4** Development gains vehicular access from: (a) a non-residential side street; or (b) co-ordinated rear access; or (c) a combined access point (1 access shared between two or more sites), rather than gaining direct vehicular access from arterial roads and sub-arterial roads.

Performance outcomes	Acceptable outcomes
Built form and the public realm	
PO5 Built form is integrated with adjoining and nearby development within the centre to provide: (a) co-ordinated layout; and (b) consistent streetscape rhythm.	No acceptable outcome prescribed.
PO6 Building height, scale and setbacks respects and integrates with the surrounding residential neighbourhood.	**AO6.1** Building height does not exceed a maximum building height of 8.5 metres above ground level (2 storeys).
	AO6.2 The maximum plot ratio for sites that adjoin land within: (a) the Low density residential zone – 0:6:1; or (b) all other zones – 0.8:1.
PO7 Development provides: (a) active and articulated buildings that define and address the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity; and (d) a safe and efficient environment for pedestrians, cyclists and vehicles.	**AO7.1** Street-orientated development is provided along building frontages that are setback less than 4 metres from street frontages.
	AO7.2 The following is not provided across / adjacent to State controlled roads: (a) formal mid-block pedestrian access (for example - signalised crossing points, raised pedestrian crossings, painted pedestrian crossings and pedestrian refuges); and (b) footpath dining areas within the road reserve.
PO8 Non-residential buildings are setback from road frontages to: (a) provide street-orientated development on key active frontage streets; and (b) enable buildings to effectively address and engage with other streets; and (c) provide a human scale streetscape and not be visually overbearing.	**AO8** Non-residential development is setback from street frontages as follows: (a) the minimum setback is 0 metres; and (b) the maximum setback is 14 metres.
PO9 Residential buildings are setback from road frontages to: (a) contribute to the open, low-intensity character of the surrounding residential area; and (b) accommodate landscaping between the building and the street; and (c) provide privacy for the building; and (d) avoid buildings from being visually overbearing as viewed from the street.	**AO9** For residential development, minimum road frontage setbacks are: (a) from arterial roads and sub-arterial roads – 10 metres; and (b) from collector streets – 6 metres; and (c) from access streets: (i) 6 metres for garages, outbuildings and carports; and (ii) 4.5 metres for other parts of the building.

Performance outcomes	Acceptable outcomes
PO10 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Amenity	
PO11 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO12 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.
Environment	
PO13 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

6.2.15 Open space zone code

6.2.15.1 Application

This code applies to assessing development in the Open space zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.15.2 Purpose

(1) The purpose of the Open space zone code is to provide for informal recreation where the built form is not essential to the enjoyment of the space.

It may provide for local, district and regional scale parks that serve the recreational needs of a wide range of residents and visitors and may include areas for conservation of natural values.

Where required to meet community needs, development may include shelters, amenity facilities, picnic tables, and playgrounds and infrastructure to support safe access and essential management.

(2) The local government purpose of the zone code is to enrich community wellbeing and liveability by providing for a diverse range of recreation activities and environmental functions, and relief from 'built-up' urban areas, in the following types of parks[30].

(a) regional parks: destination parks with high quality embellishments attracting users from throughout the region. Examples include Bluewater Lagoon (Mackay city centre), Mackay Regional Botanic Gardens (West Mackay), Queens Park (East Mackay) and Mulherin Park (Mackay Harbour); and

(b) district parks: designed to provide a wide variety of informal active and passive recreation opportunities for residences within a 1 kilometre radius. Examples include John Breen Park (North Mackay); and

(c) local parks: generally provided in urban areas within a 5 minute walk (400 metres) of most residences. Designed to provide informal active and passive recreation opportunities. Examples include Cuttersfield Estate Park (Ooralea) and Wilson Park (Andergrove); and

(d) linear parks: connect existing and planned open spaces with pedestrian and cycle paths. These parks are particularly encouraged along watercourses and drainage reserves/easements. Drainage systems include wetlands and other water quality improvement facilities. Examples include the Gooseponds corridor and the Evan Street/Paradise Street open space corridor (South Mackay); and

(e) foreshore parks: provide access to the beach and are generally used in conjunction with natural parkland, linear parks and water sensitive urban design principles. Examples include Bucasia Esplanade and Quota Park (South Mackay); and

(f) natural parkland: generally provide limited recreation opportunities but high landscape amenity value and other public or environmental purposes (remnant vegetation, stormwater management, asset protection, buffer zone). Examples include undeveloped open space and coastal wetland areas.

The zone also provides for small-scale buildings and infrastructure that integrate with the visual character and general amenity of the park.

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Uses:

(i) the predominant form of development in the zone is:

(A) park, access and stormwater infrastructure and environmental facilities; or

(B) undeveloped open space; and

[30] Further detail on park types, and the hierarchy of open spaces (regional, district and local parks) is provided in SC6.16 Open space planning scheme policy.

(ii) outdoor sport and recreation uses are limited to irregular / informal activities; and
(iii) where practical, open spaces accommodate multiple recreation activities and environmental functions by:
(A) co-locating a variety of facilities; or
(B) providing robust facilities suitable for shared use; and
(iv) a limited range of low intensity, small scale buildings and infrastructure may be appropriate if these uses:
(A) enhance public enjoyment of the area; and
(B) provide facilities for clubs and community groups that need to be located in the open space; and
(C) enable administration and maintenance; and

(b) Infrastructure:
(i) development is efficiently serviced by urban infrastructure networks or appropriate on-site systems relevant to the use; and

(c) Site requirements and environment:
(i) development maintains and improves high value ecological features and responds to physical constraints of the land; and
(ii) development is designed to incorporate sustainable land management practices such as retention and enhancement of native vegetation and water sensitive design; and

(d) Built form and development intensity:
(i) development is located, designed and operated to maintain:
(A) visually integrate with the open space setting and landscape character of the area; and
(B) maintain the ecological integrity and biological diversity of the area; and

(e) Amenity:
(i) development does not adversely affect the amenity of the open space and adjacent areas and uses, particularly residential uses and other sensitive land uses.

6.2.15.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.15.3.A – Open space zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses	
PO1 The zone primarily accommodates: (a) park, access infrastructure (particularly pedestrian and cycle facilities), stormwater infrastructure, environmental facilities; or (b) undeveloped open space.	No acceptable outcome prescribed.
PO2 Outdoor sport and recreation uses are limited to irregular and/or informal activities.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO3 Buildings, structures and infrastructure are limited to those which: (a) enhance public enjoyment of the area such as picnic shelters, playgrounds, amenities, signage and small scale food and drink outlets, function facilities and information / souvenir / leisure equipment hire shops; and (b) provide small-scale facilities for clubs or community groups that regularly use the open space; and (c) facilitate administrative or maintenance services; and (d) provide local access or utility services.	No acceptable outcome prescribed.
Infrastructure	
PO4 Development is serviced by all forms of urban infrastructure relevant to the use, through connection to: (a) reticulated systems if practically available; or (b) appropriate on-site systems[31].	**AO4** Where relevant to the use, development is connected to: (a) the reticulated water supply infrastructure if available or an appropriate on-site water source[29] and (b) the reticulated sewerage infrastructure if available or an appropriate on-site wastewater disposal system; and (c) stormwater infrastructure where available or an appropriate lawful point of discharge; and (d) electricity and telecommunications infrastructure.
PO5 Stormwater infrastructures is designed to minimise environmental impacts by utilising natural overland flow and water quality and quantity control measures as part of the landscape design.	No acceptable outcome prescribed.
Built form and development intensity	
PO6 Building height and scale: (a) integrates with the open space setting and the prevailing character of the surrounding urban neighbourhood or natural/rural landscape; and (b) does not form over-development of the site.	**AO6.1** Buildings have a maximum height of 6 metres (1 storey) above ground level. **AO6.3** The total site cover of all buildings[32] must not exceed the lesser of: (a) 10% of the total site area; or (b) 200m^2.

[31] The provision of an on-site water source must give consideration to the *Water Act 2000* and, where applicable, the *Water Resource (Pioneer Valley) Plan 2002, Water Resource (Fitzroy Basin) Plan 2011* or *Water Resource (Burdekin Basin) Plan 2007*.

[32] For the purposes of this provision, open structures providing shade / shelter are excluded.

Performance outcomes	Acceptable outcomes
PO7 Buildings are setback from road frontages to: (a) integrate with the open space setting and the prevailing character of the surrounding urban neighbourhood or natural / rural landscape; and (b) accommodate landscaping between the building and the street; and (c) avoid buildings from being visually overbearing as viewed from the street.	**AO7.1** On sites within key urban areas, or adjoining a site within the Township zone, the minimum road frontage setback from any road is 10 metres. Lesser road frontage setbacks may be considered if: (a) the site does not adjoin a site with a residential zone; and (b) the proposed road frontage setback is within 20% of a road frontage setback on an adjoining lot; and (c) that part of the building has a maximum height of 4.5 metres (1 storey).
	AO7.2 On sites in rural areas (not within key urban areas, or not adjoining a site within the Township zone), the minimum road frontage setbacks are: (a) from arterial roads – 20 metres; and (b) from sub-arterial roads, collector streets and access streets – 10 metres.
PO8 Buildings are setback from side and rear boundaries to: (a) contribute to the open space setting; and (b) maintain views, privacy, access to natural light and visual amenity on adjoining sites.	**AO8** The minimum setback for buildings from boundaries adjoining sites within a residential zone is 10 metres.
PO9 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements such as sunshading devices; and (c) materials that are durable and respond to the surrounding natural elements and landscape character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
Environment and site requirements	
PO10 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways, wetlands and coastal areas; and (b) the ecological integrity of other natural features and habitat areas and corridors.	No acceptable outcome prescribed.
PO11 The site layout responds sensitively to on-site and surrounding topography, drainage patterns, vegetation and utility services, such that: (a) earthworks are minimised; and (b) retention of natural drainage lines is maximised; and (c) retention of existing remnant vegetation is maximised; and (d) disruption to existing services is minimised.	No acceptable outcome prescribed.
PO12 Buildings and infrastructure are located in areas that are already cleared or degraded.	
Amenity	
PO13 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO14 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.

6.2.16 Principal centre zone code

6.2.16.1 Application

This code applies to assessing development in the Principal centre zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.16.2 Purpose

(1) The purpose of the Principal centre zone code is to provide for the largest and most diverse mix of uses and activities that forms the core of an urban settlement.

It includes key concentrations of high-order retail, commercial, employment, residential, health services, administrative, community, cultural, recreational and entertainment activities and other uses, capable of servicing the planning scheme area.

(2) The local government purpose of the zone code is to provide for the region's most intensely developed multi-purpose centre and activity hub with the highest number and diversity (type and scale) of centre activities, community activities, high density multiple dwellings and other compatible uses that form a mixed use, vibrant, attractive and pedestrian orientated centre serving the entire region. The principal centre in the region is Mackay city centre ("the City Centre").

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Centre role and function:

(i) the primacy of the City Centre is strengthened as the region's largest and most accessible, diverse and intensely developed multi-purpose centre; and

(ii) The City Centre serves the Mackay region, a wider area including Whitsunday and Isaac regions, and visitors from other areas for business, education, entertainment or recreation purposes; and

(iii) the centre accommodates a mixture of high order, high intensity and complementary small scale services and facilities; and

(b) Centre form:

(i) the centre accommodates several activity and amenity nodes (City core, Caneland Central, Civic precinct, Central Queensland University City campus, Mackay showground and the Pioneer River riverfront) connected by high quality pedestrian linkages; and

(ii) development within the centre effectively integrates with surrounding urban form; and

(c) Uses:

(i) the principal centre (Mackay city centre) accommodates a diverse range of compatible uses enabling the creation of vibrant and diverse activity nodes providing service, business, employment, education, high density residential and recreation opportunities; and

(ii) the principal centre (Mackay city centre) contains the following types of uses:

(A) centre activities:

- full range of comparison, weekly and convenience services (department stores, discount department stores, full-size supermarkets and full range of specialty stores and personal services); and

- regional headquarter offices, Commonwealth and State government agency offices, Local government headquarter offices and professional and service businesses; and
- highly developed entertainment and leisure facilities and services; and

(B) community activities: regional community facilities and a full range of local community facilities; and

(C) major exhibition / event and sport facilities; and

(D) residential development: high density residential development and major short-term accommodation developments; and

(iii) impacts are managed to minimise potential land use conflicts and provide a high level of amenity for sensitive land uses; and

(d) Infrastructure:

(i) development is efficiently serviced by the full range of urban infrastructure networks; and

(e) Accessibility:

(i) the street network provides high levels of connectivity internally and to surrounding urban neighbourhoods; and

(ii) strong connections and a high quality pedestrian environment are provided between the activity and amenity nodes throughout the centre (City Centre activity and amenity nodes include City core, Caneland Central, Civic precinct, Central Queensland University City campus, Mackay showground and the Pioneer River riverfront); and

(iii) the pedestrian access network to and within the centre is attractive, convenient, safe and is protected from sun and rain;

(iv) an extensive network of mid-block access, including laneways:

(A) complements on-street pedestrian pathways to provide a highly permeable pedestrian access network throughout the centre; and

(B) facilitates rear servicing of buildings; and

(v) footpaths, cycle lanes and end of trip facilities throughout the centre provide a high level of accessibility for pedestrians and cyclists; and

(vi) high quality public transport facilities including interchanges are provided at key locations (convenient for users) in the principal centre to facilitate efficient public transport services to, through, and within the centre; and

(vii) Gordon Street (west of Sydney Street), Mangrove Road, Milton Street, River Street (west of Sydney Street), Sydney Street (north of Gordon Street) and Shakespeare Street facilitate high traffic volumes; and

(viii) other streets facilitate lower volumes of traffic, safe bicycle movement, safe vehicle access to sites, pedestrian priority crossing points and street parking; and

(f) Built form and the public realm:

(i) built form layout and design is integrated with adjoining and nearby development within the centre; and

(ii) built form and the public realm are characterised by high quality design outcomes and a strong sense of identity by responding to:

(A) buildings of heritage value, and traditional building and tropical streetscape character; and

(B) the region's tropical climate; and

(C) the City Centre's landscape setting (adjacent to the Pioneer River and with views to nearby hills, distant mountain ranges, the ocean and islands); and

(iii) buildings address the public realm by providing active and articulated frontages at a human scale; and

(iv) the highest buildings are concentrated north of Alfred Street and west of Carlyle Street. Outside of this area, building heights provide a transition from high-rise development to low-rise residential areas to the south and east; and

(v) public realm treatments across the centre are varied according to the type and/or location of the street or public open space but also have common unifying elements that enhances the City Centre's character and identity; and

(vi) laneways within the City Centre provide intimate urban spaces and opportunities for additional active frontages, unique activities (such as art installations) and events; and

(g) Amenity:

(i) conflicts between sensitive land uses and uses generating amenity impacts are minimised through location, design and/or operation; and

(h) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.16.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.16.3.A – Principal centre zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Centre role and function	
PO1 Development in the principal centre (Mackay city centre) fulfils the needs of: (a) the Mackay region; and (b) a wider area including the Whitsunday and Isaac regions; and (c) visitors from other areas for business, education, entertainment or recreation purposes.	No acceptable outcome prescribed.
Uses	
PO2 The principal centre (Mackay city centre) accommodates a diverse range of uses enabling the creation of a vibrant and diverse activity node providing service, employment, residential and recreation opportunities.	**AO2** The principal centre (Mackay city centre) accommodates a mix of the following uses: (a) centre activities, outdoor business activities, hotel and market; and (b) community activities and child care centre; and (c) multiple dwelling activities and short-term accommodation; and (d) recreation activities, major sport, recreation and entertainment facility and park; and (e) service industry, car wash, parking station and service station; and (f) other compatible uses.

Performance outcomes	Acceptable outcomes
Infrastructure	
PO3 Development is serviced by all forms of urban infrastructure.	**AO3** Development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
Accessibility	
PO4 Vehicle access points do not: (a) compromise the safety, operational capacity, or efficiency of arterial roads and sub-arterial roads; and (b) compromise the pedestrian safety and amenity on key active frontage streets; and (c) visually dominate the streetscape.	**AO4.1** Development does not gain direct vehicular access from: (a) Gordon Street – west of Sydney Street; and (b) Sydney Street – north of Gordon Street; and (c) Victoria Street – between Carlyle Street and Milton Street; and (d) Wood Street – between Gordon Street and River Street.
	AO4.2 Development gains vehicular access from: (a) an alternate street; or (b) a rear laneway or other form of co-ordinated rear access; or (c) a combined access point (1 access shared between 2 or more sites), rather than gaining direct vehicular access from a key active frontage street (identified in Figure 7.2.1.3.A – Mackay city centre street frontages).
	AO4.3 Where direct vehicular access to sites is not prevented by AO4.1 and AO4.2, no more than 1 vehicle access is provided to each site.
Built form and the public realm	
PO5 Built form is integrated with adjoining and nearby development within the centre to provide: (a) co-ordinated layout; and (b) consistent streetscape rhythm.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO6 Key active frontage streets[33] provide: (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity; and (d) a safe and efficient environment for pedestrians, cyclists and vehicles.	**AO6.1** Street-orientated development is provided along key active frontage streets[33]. **AO6.2** The following is not provided across / adjacent to State controlled roads: (a) formal mid-block pedestrian access (for example - signalised crossing points, raised pedestrian crossings, painted pedestrian crossings and pedestrian refuges); and (b) footpath dining areas within the road reserve.
PO7 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the City Centre through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
PO8 Development strengthens the centre's sense of place and identity by maintaining and/or creating visual connections with built and landscape elements within and surrounding the centre.	**AO8** Development maintains and/or creates views and vistas of the following from roads and other public space areas: (a) Pioneer River and adjoining open space; and (b) heritage buildings, other prominent buildings and public art; and (c) Mount Bassett, Mount Oscar and other hills in the urban area on the northside of the Pioneer River; and (d) Black Mountain, Mount Blackwood and Mount Jukes and other hills and mountains to the north; and (e) Clarke Range, Connors Range and other hinterland mountains to the west and south.

[33] "Key active frontage streets" are identified in Figure 7.2.1.3.A – Mackay city centre street frontages in the Mackay city centre local plan.

Performance outcomes	Acceptable outcomes
Amenity	
PO9 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO10 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.
Environment	
PO11 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

Note – additional assessment criteria are set out in the Mackay city centre local plan.

6.2.17 Rural zone code

6.2.17.1 Application

This code applies to assessing development in the Rural zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.17.2 Purpose

(1) The purpose of the Rural zone code is to:

- (a) provide for rural uses including cropping, intensive horticulture, intensive animal industries, animal husbandry, animal keeping and other primary production activities; and
- (b) provide opportunities for non-rural uses that are compatible with agriculture, the environment features, and landscape character of the rural area where the uses do not compromise the long-term use of the land for rural purposes; and
- (c) protect or manage significant natural resources and processes to maintain the capacity for primary production.

(2) The local government purpose of the zone code is to provide for a range of rural activities, residential uses that support rural activities and intensive rural activities and other uses that cannot be located in urban areas. The zone also contains undeveloped land providing ecological and habitat value.

The zone does not accommodate development for urban purposes.

The zone includes the Investigation area precinct (precinct no. RU1). The purpose of the Investigation area precinct (precinct no. RU1) is to discourage development that would compromise potential future development for urban purposes.

(3) The purpose of the code will be achieved through the following overall outcomes:

- (a) Uses:
  - (i) the predominant form of development within the zone is rural activities; and
  - (ii) residential uses are limited to those which support the use of land for rural activities; and
  - (iii) the zone also accommodates intensive rural activities, extractive industry (and complementary activities) and other activities requiring a location outside urban areas due to the amount of land required, the significance of impacts generated and/or other reasons, if the development does not:
    - (A) diminish the productive capacity of land for rural activities; and
    - (B) result in adverse impacts on the environment or sensitive land uses; and
    - (C) result in visually obtrusive development that detrimentally impacts on the rural amenity and landscape character of the area; and
  - (iv) a limited range of small scale and low intensity tourism development offering tourism experiences based on rural landscapes, rural activities and/or the natural environment may be appropriate if these uses:
    - (A) are accessible and have a direct relationship with an element of high amenity value within or in close proximity to the site; and
    - (B) integrate with the rural amenity and landscape character of the area; and
    - (C) maintain the productive capacity of land for rural activities; and
    - (D) maintain the ecological integrity of the site and surrounding area and the amenity of sensitive land uses; and
  - (v) development for urban purposes and other uses more appropriately located in urban areas are not located in the Rural zone, including within the Investigation area precinct (precinct no. RU1), and:

(A) the Ooralea investigation area is not sequenced for development before 2026; and
(B) the Richmond and Sarina east investigation areas are not sequenced for development before 2031; and
(C) the Rosella investigation area is not sequenced for development in the life of the scheme; and

(vi) development that would compromise, restrict or detrimentally impact upon potential future development for urban purposes avoids the Investigation area precinct (precinct no. RU1); and

(b) Infrastructure:

(i) development is efficiently serviced by economically efficient urban infrastructure networks or appropriate on-site systems relevant to the use; and

(c) Built form and development intensity:

(i) built form integrates with the rural amenity and landscape character of the local area by being:
(A) low-rise; and
(B) provided at extremely low densities; and
(C) located outside the most productive agricultural land; and

(ii) road frontage setbacks:
(A) contribute to the open, rural amenity and landscape character of the local area; and
(B) accommodate landscaping; and
(C) provide privacy for buildings; and
(D) avoid buildings being visually overbearing; and

(iii) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(d) Amenity:

(i) development contributes to and respects the amenity and landscape character of the area and minimises adverse impacts on adjoining and nearby uses, particularly residential uses and other sensitive land uses; and
(ii) development is located to avoid conflicts between land uses; and

(e) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.17.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.17.3.A – Rural zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses	
PO1 The zone primarily accommodates rural activities.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO2 The zone accommodates small scale residential uses, such as dwelling houses, caretaker's accommodation and rural workers accommodation, which support the use of land for rural activities.	No acceptable outcome prescribed.
PO3 Intensive rural activities, extractive industry (and complementary activities such as concrete batching and asphalt manufacture) and other activities requiring a location outside urban areas due to the amount of land required, the significance of impacts generated and/or other reasons, demonstrate that the development[34]: (a) does not fragment, alienate or otherwise diminish the potential productive capacity of land for rural activities; and (b) maintains the ecological integrity of important natural elements on the site and on surrounding sites; and (c) maintain the amenity of surrounding sensitive land uses through adequate buffering and/or separation; and (d) integrate with the visual amenity of surrounding rural and natural landscapes.	No acceptable outcome prescribed.
PO4 Development for urban purposes and other uses more appropriately located in urban areas are not located in the Rural zone, including within the Investigation area precinct (precinct no. RU1). The Ooralea investigation area is not sequenced for development before 2026. The Richmond and Sarina east investigation areas are not sequenced for development before 2031. The Rosella investigation area is not sequenced for development in the life of this planning scheme.	**AO4** The following uses are not located on land within the Rural zone, including within the Investigation area precinct (precinct no. RU1): (a) centre activities, outdoor business activities and other commercial uses; and (b) community activities and other community uses; and (c) industry activities and other industrial uses; and (d) multiple dwelling activities, non-resident workforce accommodation, short-term accommodation, relocatable home park, tourist park and other residential uses not associated with a rural activity; and (e) recreation activities and other formal recreation uses; and (f) other uses that extensively compromise the rural amenity and landscape character of the area.

[34] Such uses must also comply with the provisions of relevant Development codes (Part 9), the Strategic Framework (Part 3), other relevant sections of the planning scheme and relevant legislation.

Performance outcomes	Acceptable outcomes
PO5 Uses providing tourist accommodation or facilities, such as a farm stay, tourist park, nature based tourism and environment facility: (a) have a direct relationship with an element of high amenity value, such as a watercourse / coastline, area of remnant vegetation or natural landform feature; and (b) are small scale, low intensity and integrate with the visual amenity of the surrounding rural and natural landscapes; and (c) do not fragment, alienate or otherwise diminish the potential productive capacity of land for rural activities; and (d) maintain the amenity of surrounding sensitive land uses.	No acceptable outcome prescribed.
PO6 Intensive rural activities and other development that would compromise, restrict or detrimentally impact upon potential future development for urban purposes avoids the Investigation area precinct (precinct no. RU1).	No acceptable outcome prescribed.
Infrastructure	
PO7 Development is serviced by all forms of urban infrastructure relevant to the use, through connection to: (a) reticulated systems if practically available; or (b) appropriate on-site systems[35].	**AO7** Development is connected to: (a) the reticulated water supply infrastructure if available or an appropriate on-site water source[33]; and (b) the reticulated sewerage infrastructure if available or an appropriate on-site wastewater disposal system; and (c) a sealed road and driveway/s; and (d) stormwater infrastructure where available or an appropriate lawful point of discharge; and (e) electricity and telecommunications infrastructure.
Built form and development intensity	
PO8 Building height and scale: (a) integrates with the integrates with the rural amenity and landscape character of the local area; and (b) does not form overdevelopment of the site.	**AO8.1** Buildings, other than buildings and structures associated with rural activities, have a maximum height of 8.5 metres (2 storeys) above ground level.
	AO8.2 The maximum residential density is the equivalent of 1 dwelling per every 100 hectares of site area[36].

[35] The provision of an on-site water source must give consideration to the *Water Act 2000* and, where applicable, the *Water Resource (Pioneer Valley) Plan 2002, Water Resource (Fitzroy Basin) Plan 2011* or *Water Resource (Burdekin Basin) Plan 2007*.

[36] This provision does not apply to Caretaker's accommodation and Rural workers' accommodation.

Performance outcomes	Acceptable outcomes
PO9 Buildings are setback from road frontages to: (a) contribute to the open, rural amenity and landscape character of the area; and (b) accommodate landscaping between the building and the street; and (c) provide privacy for the building; and (d) avoid buildings from being visually overbearing as viewed from the street.	**AO9** Minimum road frontage setbacks are: (a) from arterial roads – 20 metres; and (b) from sub-arterial roads, collector streets and access streets – 10 metres.
PO10 Buildings are setback from side and rear boundaries to: (a) contribute to the open, rural amenity and landscape character of the area; and (b) maintain views, privacy, access to natural light and visual amenity on the site and on adjoining sites.	**AO10.1** The minimum setback for buildings associated with a non-residential use, from boundaries adjoining sites within a residential zone, is 30 metres. **AO10.2** The minimum setback for other buildings, from boundaries adjoining sites within a residential zone, is 10 metres.
PO11 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable, require minimal maintenance, and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Amenity	
PO12 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO13 Where located in close proximity to rural activities, transport corridors and/or other uses generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	**AO13** Adequate separation distances are provided between sensitive land uses to: (a) protect the amenity and privacy of sensitive land uses; and (b) ensure that continued operation of the impact generating use/s is not constrained.

Performance outcomes	Acceptable outcomes
Environment	
PO14 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

6.2.18 Rural residential zone code

6.2.18.1 Application

This code applies to assessing development in the Rural residential zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.18.2 Purpose

(1) The purpose of the Rural residential zone code is to provide for residential development on large lots where local government infrastructure and services may not be provided on the basis that the intensity of development is generally dispersed.

(2) The local government purpose of the zone code is to provide for low intensity residential development on large semi-rural sites in locations:

(a) outside urban areas, in strategic nodes where:

(i) the land is not agriculturally productive, development responds to land constraints, areas of ecological significance are avoided and access is gained to a sealed road; and

(ii) demand for this form of development exists.

Examples include nodes at: Devereux Creek, Eton, Farleigh-Erakala, Habana, Kinchant Dam, Kuttabul, Sarina, Sarina Beach, The Leap and Victoria Plains; and

(b) within urban areas, where it is intended to retain the character and amenity of large sites. Examples include[37]: Ian Wood Drive and Admiral Drive, Dolphin Heads; Rural View Drive, Rural View; Shuttlewood Drive, Richmond; Apsley Way, Andergrove; and Bernborough Avenue, Ooralea; and

(c) within urban areas, where it is intended to prevent development intensification due to significant land and/or environmental constraints. Examples include[37]: Shepherd Road, Eimeo; Eulbertie Avenue and Florence Street, Eimeo; McColl Street; Wrights Road, Glenella; and Pugsley Street, Walkerston.

The zone also provides for a limited range of small scale, low intensity and compatible agricultural activities.

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Uses:

(i) the predominant form of development within the zone is low intensity residential development such as dwelling houses; and

(ii) a limited range of agricultural activities may be appropriate if these uses are small scale and do not adversely impact the visual or general amenity of the area; and

(iii) development for urban purposes, intensive rural activities and other uses more appropriately located in urban areas or the Rural zone are not located in the Rural residential zone; and

(b) Infrastructure:

(i) development is efficiently serviced by the full range of urban infrastructure networks or, where urban infrastructure is not available, appropriate on-site systems; and

(ii) development outside of the priority infrastructure area must demonstrate that trunk water, sewer, stormwater and road infrastructure required to service the ultimate development in the area and is provided at full cost, including lifecycle cost, to the developer; and

[37] The areas mentioned as examples in (b) and (c) may also be relevant to other categories. For example, Rural View Drive, Rural View is mentioned as an example in (b), but the area is also relevant to (c).

(iii) development is located to avoid safety and operational impacts on important transport corridors and other forms of major infrastructure; and

(c) Built form and development intensity:

(i) built form integrates with the semi-rural amenity and landscape character of the local area by:

(A) being low-rise; and

(B) being provided at very low densities; and

(C) occupying only a small portion of sites; and

(D) avoids environmentally sensitive areas of the site; and

(ii) road frontage setbacks:

(A) contribute to the open, semi-rural amenity and landscape character of the local area; and

(B) accommodate landscaping; and

(C) provide privacy for buildings; and

(D) avoid buildings being visually overbearing; and

(iii) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(d) Amenity:

(i) development does not adversely affect the amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses; and

(ii) development is located to avoid conflicts between land uses; and

(e) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land; and

(ii) development avoids land that is environmentally sensitive or highly constrained.

6.2.18.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.18.3.A – Rural residential zone – assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Agricultural uses	
PO1 Rural activities and wholesale nurseries are of a small scale, generate minimal or no impacts and maintain the rural residential amenity of the area.	**AO1.1** Cropping or wholesale nurseries: (a) are on a site that also contains an existing dwelling house; and (b) do not involve aerial spraying; and (c) do not involve centre pivot irrigation; and (d) are setback a minimum of 10 metres from all boundaries; and (e) buildings or structures (including green-house / netting structures) do not exceed: (i) a maximum area which is lesser of 10% of the total site area or 1,000m^2; and (ii) a maximum height of 4.5 metres.

Performance outcomes	Acceptable outcomes
	AO1.2 Animal husbandry involves a maximum of 1 head of livestock per every 1 hectare of grazing area.
	AO1.3 Buildings associated with animal husbandry have: (a) a maximum height of 4.5 metres above ground level; and (b) a maximum site cover of 150m^2.
For assessable development	
Uses	
PO2 The zone primarily accommodates low intensity residential development such as dwelling houses on large semi-rural sites.	No acceptable outcome prescribed.
PO3 Uses generating impacts detrimental to semi-rural amenity and landscape character of the local area, and therefore more appropriately located in an urban area or the Rural zone are avoided in the Rural residential zone.	**AO3** The following uses are not located on land within the Rural residential zone: (a) centre activities, outdoor business activities and other commercial uses; and (b) community activities and other community uses; and (c) industry activities and other industrial uses; and (d) multiple dwelling activities, non-resident workforce accommodation, short-term accommodation, relocatable home park and tourist park; and (e) recreation activities and other formal recreation uses; and (f) intensive rural activities and other rural uses that generate significant impacts; and (g) major electricity infrastructure, renewable energy facility and substation; and (h) other uses that generate adverse impacts compromising the semi-rural amenity and landscape character of the local area.

Performance outcomes	Acceptable outcomes
Infrastructure	
PO4 Development is serviced by all forms of urban infrastructure relevant to the use, through connection to: (a) reticulated systems if practically available; or (b) appropriate on-site systems[38].	**AO4** Development is connected to: (a) the reticulated water supply infrastructure if available or an appropriate on-site water source[35]; and (b) the reticulated sewerage infrastructure if available or an appropriate on-site wastewater disposal system; and (c) a sealed road and driveway/s; and (d) stormwater infrastructure where available or an appropriate lawful point of discharge; and (e) electricity and telecommunications infrastructure.
PO5 Development outside of the priority infrastructure area must demonstrate that trunk water, sewer, stormwater and road infrastructure required to service the ultimate development in the area and is provided at full cost, including lifecycle cost, to the developer.	No acceptable outcome prescribed.
Built form and development intensity	
PO6 Building height and scale: (a) the integrates with the semi-rural amenity and landscape character of the area; and (b) does not form overdevelopment of the site.	**AO6.1** Buildings, other than buildings referred to in AO1.1 and AO1.3, have a maximum height of 8.5 metres (2 storeys) above ground level.
	AO6.2 The maximum residential density is the equivalent of 1 dwelling per every 1 hectare of site area.
	AO6.3 The total site cover of all buildings must not exceed: (a) for lots with an area less than 2,000m^2 – 40% of the total area of the site (b) for lots with an area between 2,000m^2 and 4,000m^2 – 30% of the total area of the site; or (c) for lots with an area more than 4,000m^2 – the lesser of 20% of the total area of the site or 1,500m^2.

[38] The provision of an on-site water source must give consideration to the *Water Act 2000* and, where applicable, the *Water Resource (Pioneer Valley) Plan 2002, Water Resource (Fitzroy Basin) Plan 2011* or *Water Resource (Burdekin Basin) Plan 2007*.

Performance outcomes	Acceptable outcomes
PO7 Buildings are setback from road frontages to: (a) contribute to the open, semi-rural amenity and landscape character of the area; and (b) accommodate landscaping between the building and the street; and (c) provide privacy for the building; and (d) avoid buildings from being visually overbearing as viewed from the street.	**AO7** Minimum road frontage setbacks are: (a) from arterial roads – 20 metres; and (b) from sub-arterial roads, collector streets and access streets – 10 metres.
PO8 Buildings are setback from side and rear boundaries to: (a) contribute to the open, semi-rural amenity and landscape character of the area; and (b) maintain views, privacy, access to natural light and visual amenity on the site and on adjoining sites.	**AO8.1** The minimum setback for buildings associated with a non-residential use, from boundaries adjoining sites within a residential zone, is 20 metres. **AO8.2** The minimum setback for other buildings, from boundaries adjoining sites within a residential zone, is 10 metres.
PO9 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable, require minimal maintenance, and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Amenity	
PO10 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO11 Where located in close proximity to rural activities, transport corridors and/or other uses generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	**AO11** Adequate separation distances are provided between sensitive land uses to: (a) protect the amenity and privacy of sensitive land uses; and (b) ensure that continued operation of the impact generating use/s is not constrained.

Performance outcomes	Acceptable outcomes
Environment	
PO12 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	**AO12** Development or future development[39] is located: (a) on the least environmentally sensitive and/or constrained part/s of the site; or (b) if the entire site is environmentally sensitive and/or constrained, near street frontages

[39] Location of future development to be guided by buildings envelopes.

6.2.19 Special purpose zone code

6.2.19.1 Application

This code applies to assessing development in the Special purpose zone.

This code does not apply to assessing development to land regulated by planning instruments other than the planning scheme (despite being identified as within the Special purpose zone on the zone maps), including "Strategic port land" at the Port of Mackay and Port of Hay Point, "airport land" at and the "Andergrove Priority Development Area" at Bedford Road, Andergrove[40].

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.19.2 Purpose

(1) The purpose of the Special purpose zone code is to provide for public uses that are owned or operated by government, statutory authority, government owned corporation, local government or private organisation in the course of a public utility undertaking, such as a defence establishments, airports, sea ports, rail lines, railway stations, or the provision of water supply, sewerage, electricity, gas, telecommunications, transport, drainage or other like services.

Development is buffered from encroachment by incompatible uses.

The zone may also provide for special development areas.

(2) The local government purpose of the zone code is to provide for:

(a) utility infrastructure network elements such as:

(i) sewerage treatment plants, pump stations and other network elements; and

(ii) water supply facilities, water treatment plants, water reservoirs and other network elements; and

(iii) high voltage electricity transmission corridors, substations and other network elements; and

(iv) telecommunication exchanges and certain telecommunication transmission facilities; and

(v) refuse management facilities; and

(b) transport infrastructure network elements such as railway corridors and terminals, future roads land designated for road widening.

The Special purpose zone includes the Future road precinct (precinct no. SP1) to specifically identify future roads and land designated for road widening.

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Uses:

(i) the predominant form of development within the zone is utility installation, major electricity infrastructure and substation; and

(ii) buildings and structures are not located within the Future road precinct (precinct no. SP1); and

(iii) on land declared as "Strategic port land" under the *Transport Infrastructure Act 1994*, "Mackay airport land" under the *Airport Assets (Restructuring and Disposal) Act 2008* or "Urban development area" under the *Urban Land Development Authority Act 2007*, development is regulated by a planning instrument other than the planning scheme; and

(b) Infrastructure:

(i) development is efficiently serviced by urban infrastructure networks or appropriate on-site systems relevant to the use; and

[40] Refer to Part 10 for more information on Other Plans over land not regulated by the planning scheme.

(ii) long distance passenger terminals is supported by local public transport facilities and services providing a high level of accessibility; and

(c) Built form:

(i) built structures integrate with the established visual amenity of the surrounding urban neighbourhood and/or natural / rural landscape; and

(ii) road frontage setbacks:

(A) are consistent with other buildings in the surrounding urban neighbourhood or contribute to the open character of natural / rural landscapes; and

(B) accommodate landscaping; and

(C) avoid buildings being visually overbearing; and

(iii) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(d) Amenity:

(i) development does not adversely affect the amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses; and

(e) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.19.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.19.3.A – Special purpose zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses	
PO1 The zone primarily accommodates utility installation, major electricity infrastructure and substation.	No acceptable outcome prescribed.
PO2 Other uses are compatible, and have a direct relationship, with the primary special purpose of the site.	No acceptable outcome prescribed.
PO3 In the Future road precinct (precinct no. SP1): (a) buildings and structures are avoided; (b) any works undertaken: (i) are compatible with the ultimate road design; or (ii) are easily removed.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
Infrastructure	
PO4 Development is serviced by all forms of urban infrastructure relevant to the use, through connection to: (a) reticulated systems if practically available; or (b) appropriate on-site systems[41].	**AO4** Where relevant, development is connected to: (a) the reticulated water supply infrastructure if available or an appropriate on-site water source[36]; and (b) the reticulated sewerage infrastructure if available or an appropriate on-site wastewater disposal system; and (c) stormwater infrastructure where available or an appropriate lawful point of discharge; and (d) electricity and telecommunications infrastructure.
PO5 Convenient, safe and attractive public transport facilities for local services are provided at long distance passenger terminals.	No acceptable outcome prescribed.
Built form	
PO6 The location, scale, design and appearance of buildings and structures: (a) integrates with the built and/or landscape character of surrounding areas; and (b) maintains views and vistas, privacy and visual amenity of residential buildings, other sensitive land uses and publicly accessible buildings on adjoining sites; and (c) provides high quality design outcome where the development is visible from roads and public places.	**AO6.1** Buildings have a maximum height of 2 storeys and 8.5 metres above ground level[42]. **AO6.2** The minimum setback for buildings from any boundary is 10 metres. **AO6.3** Building elevation/s facing, and within 30 metres of a road frontage/s, park or other public space frequented by people, have a maximum unarticulated length of 10 metres to the road frontage/s.
PO7 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable, require minimal maintenance, and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.

41 The provision of an on-site water source must give consideration to the *Water Act 2000* and, where applicable, the *Water Resource (Pioneer Valley) Plan 2002, Water Resource (Fitzroy Basin) Plan 2011* or *Water Resource (Burdekin Basin) Plan 2007*.

42 Provision applies to buildings not structures. As such, the provision does not apply to structures such as bridges/overpasses, sewerage / water treatment plant, dam walls, water reservoirs and electricity / telecommunication infrastructure. The assessment of structure height is guided by PO6.

Performance outcomes	Acceptable outcomes
Amenity	
PO8 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
Environment	
PO9 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

6.2.20 Specialised centre zone code

6.2.20.1 Application

This code applies to assessing development in the Specialised centre zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.20.2 Purpose

(1) The purpose of the Specialised centre zone code provides for one (or more) specialised uses.

(2) The local government purpose of the zone code is to provide for unique and single-purpose centres as follows:

(a) large-format showroom and hardware store developments and outdoor business activities at Richmond and Ooralea; and

(b) standalone tavern development at Marian.

The zone includes the Showrooms and hardware precinct (precinct no. SC1) and the Tavern precinct (precinct no. SC2).

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Centre role, function and uses:

(i) specialised centres have a unique and single-purpose role and function and, therefore, these centres do not compete with or undermine the viability of the principal centre (Mackay city centre), major centres, district centres, local centres and neighbourhood centres; and

(ii) the Showrooms and hardware precinct (precinct no. SC1) specifically accommodates large bulky goods showrooms, hardware stores and outdoor business activities only; and

(iii) development in the Showrooms and hardware precinct (precinct no. SC1) serves the following catchments:

(A) Richmond: Mackay urban area north of the Pioneer River and rural communities to the north;

(B) Ooralea: Mackay urban area south of the Pioneer River, Sarina, Walkerston, Marian, Mirani and communities to the south, south-west and west;

(iv) the scale of the development in the Showrooms and hardware precinct (precinct no. SC1) fulfils, but does not exceed, the needs of the intended catchment; and

(v) the Tavern precinct (precinct no. SC2) specifically accommodates standalone tavern developments (within the use definition of “hotel”) and/or residential uses; and

(b) Infrastructure:

(i) development is efficiently serviced by the full range of urban infrastructure networks; and

(ii) development outside of the priority infrastructure area must demonstrate that trunk water, sewer, stormwater and road infrastructure required to service the ultimate development in the area and is provided at full cost, including lifecycle cost, to the developer; and

(c) Accessibility:

(i) the internal access network is co-ordinated and legible and provides a level of connectivity throughout the centre; and

(ii) the pedestrian access network within the centre is attractive, convenient, safe and is protected from sun and rain; and

(iii) in the Showrooms and hardware precinct (precinct no. SC1), high quality public transport facilities including interchanges are provided at a central location (convenient for users) to facilitate efficient public transport services to, and through, the centre; and
(iv) arterial roads and sub-arterial roads adjacent to the centre facilitate high traffic volumes; and

(d) Built form and public realm:
(i) built form layout and design is integrated throughout the centre;
(ii) development is not visually overbearing as viewed from adjoining and nearby roads and sites; and
(iii) built form provides high quality design outcomes by:
(A) responding to the region's tropical climate; and
(B) providing active and articulated building frontages addressing internal public spaces and adjoining arterial roads; and

(e) Amenity:
(i) conflicts between sensitive land uses and uses generating amenity impacts are minimised through location, design and/or operation; and

(f) Environment:
(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.20.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.20.3.A – Specialised centre zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Centre role, function and uses – Showrooms and hardware precinct (precinct no. SC1)	
PO1 In the Showrooms and hardware precinct (precinct no. SC1), development: (a) is consistent with the unique and single-purpose role and function of the centre as only accommodating large bulky goods showrooms and hardware stores; and (b) does not compete with or compromise the viability, role or function of the principal centre (Mackay city centre), major centres, district centres, local centres or neighbourhood centres.	**AO1.1** The Showrooms and hardware precinct (precinct no. SC1) accommodates the following uses: (a) showroom; and (b) hardware and trade supplies; and (c) outdoor business activities; and (d) utility activities (as required only). **AO1.2** Food and drink outlets in the Showrooms and hardware precinct (precinct no. SC1): (a) are located internally within large bulky goods showrooms or hardware store developments, and do not have an external frontage; and (b) are ancillary and subordinate to the large bulky goods showrooms or hardware store developments; and (c) have the same opening hours as large bulky goods showrooms or hardware store developments.

Performance outcomes	Acceptable outcomes
	AO1.3 The following uses, generally considered suitable in multi-purpose centres, are not located in the Showrooms and hardware precinct (precinct no. SC1): (a) centre activities (other than those mentioned in AO1.1); and (b) community activities and child care centre; and (c) multiple dwelling activities and short-term accommodation; and (d) recreation activities; and (e) service industry, service station and car wash.
PO2 Development in the Showrooms and hardware precinct (precinct no. SC1) fulfils, but does not exceed, the needs of the relevant catchment: (a) Richmond specialised centre: Mackay urban area north of the Pioneer River and rural communities to the north; and (b) Ooralea specialised centre: Mackay urban area south of the Pioneer River, Sarina, Walkerston, Marian, Mirani and communities to the south, south-west and west.	**AO2** Development in the: (a) Richmond specialised centre does not exceed a total gross floor area of 50,000m^2; and (b) Ooralea specialised centre does not exceed a total gross floor area of 25,000m^2.
Centre role, function and uses – Tavern precinct (precinct no. SC2)	
PO3 In the Tavern precinct (precinct no. SC2), development: (a) is consistent with the unique and single-purpose role and function of the centre as only accommodating tavern development; and (b) does not compete with or compromise the viability, role or function of the principal centre (Mackay city centre), major centres, district centres, local centres or neighbourhood centres. (c) integrates with the scale and intensity of development in the surrounding residential neighbourhood; and (d) minimises detrimental impacts on the amenity of the surrounding residential neighbourhood.	**AO3.1** The Tavern precinct (precinct no. SC2) accommodates the following uses: (a) hotel; and (b) market; and (c) utility activities (as required only). **AO3.2** Ancillary uses (such as dining and entertainment facilities) shall be subservient and entirely integrated with the primary hotel use. **AO3.3** The following uses are not located in the Tavern precinct (precinct no. SC2): (a) shop (including large-format liquor stores); and (b) stand-alone food and drink outlets; and (c) nightclub entertainment facility; and (d) major sport, recreation and entertainment facility.

Performance outcomes	Acceptable outcomes
	AO3.4 The following uses, generally considered suitable in multi-purpose centres, are not located in the Tavern precinct (precinct no. SC2): (a) centre activities and outdoor business activities; and (b) community activities and child care centre; and (c) recreation activities; and (d) service industry, service station and car wash.
PO4 The Tavern precinct (precinct no. SC2), development can also accommodate residential development in conjunction with the primary hotel use, or in place of the hotel should this use cease.	**AO4** The Tavern precinct (precinct no. SC2), development can also accommodate dwelling houses and/or multiple dwelling activities.
Infrastructure	
PO5 Development is serviced by all forms of urban infrastructure.	**AO5** Development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; and (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
PO6 Development outside of the priority infrastructure area must demonstrate that trunk water, sewer, stormwater and road infrastructure required to service the ultimate development in the area and is provided at full cost, including lifecycle cost, to the developer.	No acceptable outcome prescribed.
Accessibility	
PO7 Vehicle access points do not comprise the safety, operational capacity, or efficiency of arterial roads.	**AO7** Development does not gain direct vehicular access from: (a) Mackay-Bucasia Road at Richmond specialised centre (Showrooms and hardware precinct (precinct no. SC1)); and (b) Broadsound Road (Bruce Highway) at Ooralea specialised centre (Showrooms and hardware precinct (precinct no. SC1)).
PO8 Internal access ways provide a convenient, legible and co-ordinated access network throughout the centre.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO9 Pedestrian footpaths throughout the centre provide a convenient, attractive, safe pedestrian access network. Pedestrian footpaths are protected from sun and rain by awnings and shade trees.	No acceptable outcome prescribed.
Built form and the public realm	
PO10 Built form is integrated throughout the centre to provide: (a) co-ordinated layout; and (b) consistent streetscape rhythm.	No acceptable outcome prescribed.
PO11 Building form: (a) integrates with the intended low-rise character of the surrounding area; and (b) is not visually overbearing as viewed from adjoining and nearby roads and sites.	**AO11.1** The maximum height for buildings is: (a) for non-residential buildings – 11 metres; or (b) for residential buildings – 8.5 metres above ground level (2 storeys)
	AO11.2 The minimum setback for buildings from road frontage boundaries is: (a) for non-residential buildings – 10 metres; or (b) for residential buildings: (i) 6 metres from arterial roads, sub-arterial roads and collector streets; or (ii) 4.5 metres from access streets.
PO12 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO13 Landscaping: (a) softens the appearance of non-residential buildings as viewed from adjoining and nearby roads; and (b) effectively screens the non-residential buildings as viewed adjoining residential sites.	**AO13.1** Signature trees and feature planting[43] are provided between non-residential buildings and road frontages.
	AO13.2 A minimum 5 metre wide landscaping strip is provided on sites containing non-residential buildings along boundaries adjoining a residential zone. The landscaping strip contains buffer planting generally in accordance with: (a) Standard drawing A3-841 – Buffer planting image corridors; and (b) Standard drawing A3-842 – Buffer planting image corridors – plant schedule.
Amenity	
PO14 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO15 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.
Environment	
PO16 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

[43] "Signature trees and feature plantings" means landscaping that is used to visually soften parts of the building, emphasize parts of the building and/or form an attractive landmark in its own right. It does not include "buffer planting" where landscaping screens development from view.

6.2.21 Sport and recreation zone code

6.2.21.1 Application

This code applies to assessing development in the Sport and recreation zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.21.2 Purpose

(1) The purpose of the Sport and recreation zone code is to provide for a range of organised activities that includes sport, cultural and educational activities where the uses require a level of built infrastructure.

It includes structures, such as clubhouses, gymnasiums, public swimming pools, tennis courts, and other infrastructure to support recreational and sporting activities.

(2) The local government purpose of the zone code is to enrich community wellbeing and liveability by providing for a diverse range of active recreation pursuits in accessible, safe and attractive facilities located at:

- (b) the regional sports node at South Mackay; and
- (c) sub-regional sports nodes at Sarina, Glenella, North Mackay/Andergrove, Northern Beaches and Marian; and
- (d) other sites throughout the region, particularly in urban areas.

(3) The purpose of the code will be achieved through the following overall outcomes:

- (a) Uses:
  - (i) the predominant form of development within the zone is recreation activities and other sport and recreation orientated uses; and
  - (ii) where practical, development accommodates multiple sports and recreation activities by:
    - (A) co-locating a variety of facilities; or
    - (B) providing robust facilities suitable for shared use; and
  - (iii) indoor sport and recreation buildings, clubhouses and other important buildings avoid land that is susceptible to inundation; and

- (b) Infrastructure:
  - (i) development is efficiently serviced by the full range of urban infrastructure networks or, in rural areas where urban infrastructure is not available, appropriate on-site systems; and
  - (ii) regional sport and recreation facilities is supported by public transport facilities and services providing a high level of accessibility; and

- (c) Built form and development intensity:
  - (i) built structures integrate with the established visual amenity of the surrounding urban neighbourhood and/or natural / rural landscape;
  - (ii) road frontage setbacks:
    - (A) are consistent with other buildings in the surrounding urban neighbourhood or contribute to the open character of natural / rural landscapes; and
    - (B) accommodate landscaping; and
    - (C) avoid buildings being visually overbearing; and
  - (iii) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(d) Amenity:
  (i) development does not adversely affect the amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses; and

(e) Environment:
  (i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.21.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.21.3.A – Sport and recreation zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses	
PO1 The zone primarily accommodates recreation activities, club, major sport, recreation and entertainment facility and other sport and recreation uses.	No acceptable outcome prescribed.
PO2 Other uses are compatible, and have a direct relationship, with the primary sport and recreation use on the site.	No acceptable outcome prescribed.
Infrastructure	
PO3 Development is serviced by all forms of urban infrastructure relevant to the use, through connection to: (a) reticulated systems if practically available; or (b) appropriate on-site systems[44].	**AO3.1** If within a key urban area, the development is connected to: (a) reticulated water supply infrastructure; and (b) reticulated sewerage infrastructure; and (c) a sealed road; and (d) stormwater infrastructure; and (e) electricity and telecommunications infrastructure.
	AO3.2 If not within a key urban area, the development is connected to: (a) reticulated water supply infrastructure if available or an appropriate on-site water source; and (b) reticulated sewerage infrastructure if available or an appropriate on-site wastewater disposal system; and (c) a sealed road; and (d) stormwater infrastructure where available or an appropriate lawful point of discharge; and (e) electricity and telecommunications infrastructure.

[44] The provision of an on-site water source must give consideration to the *Water Act 2000* and, where applicable, the *Water Resource (Pioneer Valley) Plan 2002, Water Resource (Fitzroy Basin) Plan 2011* or *Water Resource (Burdekin Basin) Plan 2007*.

Performance outcomes	Acceptable outcomes
PO4 Public transport infrastructure, that enable public transport services to efficiently and safely move large crowds to and from the venue, is provided at major sport, recreation and entertainment facilities including: (a) Stadium Mackay; and (b) Harrup Park Country Club; (c) Mackay Multi-sports stadium; and (d) other regionally significant facilities regularly hosting events that draw large crowds.	No acceptable outcome prescribed.
Built form and development intensity	
PO5 Building height and plot ratio: (a) integrates with the prevailing character of the surrounding urban neighbourhood or natural/rural landscape; and (b) does not form overdevelopment of the site.	**AO5.1** The height of buildings and structures that form part of major sport, recreation and entertainment facilities, do not: (a) detract from the prevailing character of the surrounding urban neighbourhood or natural / rural landscape; and (b) have adverse impacts on the amenity, privacy and access to natural light on any adjoining or nearby site within a residential zone.
	AO5.2 Buildings and structures not referred to in AO5.1 have a maximum height of 8.5 metres above ground level (2 storeys).
	AO5.3 Development has a plot ratio that does not: (a) exceed 0.6:1 where the site adjoins sites within the Medium density residential zone[45]; and (b) exceed 0.5:1 where the site adjoins sites within the Low density residential zone[44]; and (c) exceed 0.3:1 where the site adjoins sites within the Township zone[44]; and (d) detract from the prevailing character of the surrounding urban neighbourhood or natural / rural landscape where the site does not adjoining a site within a zone mentioned in (a), (b) and (c).
PO6 Buildings are setback from road frontages to: (a) integrate with the prevailing character of the surrounding urban neighbourhood or natural / rural landscape; and (b) accommodate landscaping between the building and the street; and (c) avoid buildings from being visually overbearing as viewed from the street.	**AO6.1** On sites within key urban areas, or adjoining a site within the Township zone, the minimum road frontage setback from any road is 10 metres.

[45] Where a site adjoins more than one of the zones mentioned in AO5.1(a), (b) and (c), the relevant maximum plot ratio is the lesser plot ratio.

Performance outcomes	Acceptable outcomes
	AO6.2 On sites in rural areas (not within key urban areas, or not adjoining a site within the Township zone), the minimum road frontage setbacks are: (a) from arterial roads – 20 metres; and (b) from sub-arterial roads, collector streets and access streets – 10 metres.
PO7 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements such as sunshading devices; and (c) materials that are durable and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Amenity	
PO8 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO9 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.
Environment	
PO10 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

6.2.22 Tourism area (major) zone code

6.2.22.1 Application

This code applies to assessing development in the Tourism area (major) zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.22.2 Purpose

(1) The purpose of the Tourism area (major) zone code is to provide for large scale integrated tourist localities or facilities located within urban, rural, environmental or coastal areas.

Development provides for a mix of uses including tourist facilities, tourist attractions, short-term accommodation, retail, business, education, industrial, community purpose, recreation and open space that support the needs of tourists and visitors.

Permanent residential accommodation for management and employed personnel may be appropriate.

(2) The local government purpose of the code is to provide for tourist facilities enabling the region's residents and visitors to experience the region's outstanding landscape character and areas of ecological significance, in high quality, environmentally sensitive and integrated resorts at Brampton Island, Keswick Island, Laguna Quays and Lindeman Island. Tourism and recreational activities at East Point (Mackay Harbour) and Dolphin Heads respects the environmental constraints and established amenity and landscape character of the area and utilises the unique coastal location.

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Uses:

(i) The predominant form of development within the zone is resort complex and complementary leisure and environmental uses; and

(b) Infrastructure:

(i) development is efficiently serviced by the full range of urban infrastructure networks or, where urban infrastructure is not available, appropriate on-site systems; and

(c) Built form:

(i) buildings integrate with the established visual amenity of nearby natural / rural landscapes; and
(ii) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(d) Site requirements and environment:

(i) development maintains and enhances the ecological integrity of environmentally significant features within and adjoining the site, adjoining coastal areas and National Parks and the Great Barrier Reef; and
(ii) development responds to the physical attributes and constraints of the land; and
(iii) development is designed to incorporate sustainable land management practices such as retention and enhancement of native vegetation and water sensitive urban design; and

(e) Amenity:

(i) development does not adversely affect the general and visual amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses.

6.2.22.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.22.3.A – Tourism area (major) zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses	
PO1 The zone primarily accommodates tourist complex, nature based tourism and uses that complement and have a direct relationship with the tourism uses and environmental areas.	No acceptable outcome prescribed.
Infrastructure	
PO2 Development is serviced by all forms of urban infrastructure relevant to the use, through connection to: (a) reticulated systems if practically available; or (b) appropriate on-site systems[46].	**AO2** Development is connected to: (a) the reticulated water supply infrastructure if available or an appropriate on-site water source[45] and (b) the reticulated sewerage infrastructure if available or an appropriate on-site wastewater disposal system; and (c) stormwater infrastructure where available or an appropriate lawful point of discharge; and (d) electricity and telecommunications infrastructure.
PO3 A network of sealed roads and footpaths provides high levels of internal connectivity within tourist facilities.	No acceptable outcome prescribed.
Built form	
PO4 Building location, scale, design and appearance integrates with surrounding natural and/or rural landscapes and is not visually obtrusive as viewed from: (a) public roads and parks; and (b) walking trails or lookouts within a national park; and (c) beaches or the ocean.	No acceptable outcome prescribed.

[46] The provision of an on-site water source must give consideration to the *Water Act 2000* and, where applicable, the *Water Resource (Pioneer Valley) Plan 2002, Water Resource (Fitzroy Basin) Plan 2011* or *Water Resource (Burdekin Basin) Plan 2007*.

Performance outcomes	Acceptable outcomes
PO5 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable, require minimal maintenance, and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Environment and site requirements	
PO6 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways, wetlands and coastal areas; and (b) the ecological integrity of other natural features and habitat areas and corridors.	No acceptable outcome prescribed.
PO7 The site layout responds sensitively to on-site and surrounding topography, drainage patterns, vegetation and utility services, such that: (a) earthworks are minimised; and (b) retention of natural drainage lines is maximised; and (c) retention of existing vegetation is maximised; and (d) disruption to existing services is minimised.	No acceptable outcome prescribed.
Amenity	
PO8 Development of the lake at Dolphin Heads maintains the established landscape character and visual amenity provided by the site.	**AO8** Development of the lake at Dolphin Heads retains: (a) the (western) part of the lake adjoined by residential properties, and the lake: (i) has a minimum total lake surface area of 1.5 hectares; and (ii) is privately owned and maintained; and (b) a view corridor/s to, and / or vistas of, the lake as viewed from Admiral Drive.

Performance outcomes	Acceptable outcomes
PO9 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO10 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.

6.2.23 Township zone code

6.2.23.1 Application

This code applies to assessing development in the Township zone.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

6.2.23.2 Purpose

(1) The purpose of the Township zone code is to provide for small to medium size urban settlements located in a rural or coastal area.

Development provides for a mix of uses including residential, retail, business, education, industrial, community purpose, recreation and open space that support the needs of the local community.

Facilities such as tourist attractions and short-term accommodation may be appropriate.

(2) The local government purpose of the zone code is to provide for low intensity residential development and a range of appropriately located, small scale, low intensity and compatible non-residential activities, in the following small outlying communities:

(a) principal townships: Midge Point, Calen, Seaforth, Farleigh, Finch Hatton, Eton, Sarina Beach and Koumala

(b) secondary townships: Bloomsbury, Saint Helens Beach, Mount Ossa, Kuttabul, Conningsby, Draper's Siding, Pleystowe, Gargett, Pinnacle, North Eton, Bakers Creek, McEwens Beach, Dunnrock, Half Tide Beach and Grasstree (approximately 1.5 kilometres west of Grasstree Beach); and

(c) tourism-orientated townships: Haliday Bay, Eungella, Ball Bay, Salonika Beach, Grasstree Beach, Campwin Beach and Armstrong Beach.

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Uses:

(i) the predominant form of development within the zone is low intensity residential development such as dwelling house; and

(ii) the zone also accommodates tourist accommodation activities such as short-term accommodation and tourist parks, particularly in principal and tourism-orientated townships, on sites:

(A) in close proximity to elements of high amenity and recreation value; and

(B) that are prominently located and highly accessible; and

(iii) a range of small-scale and low intensity non-residential uses may be appropriate if these uses are:

(A) required to serve the needs of the relevant catchment:

- principal townships – township itself and immediate surrounds, nearby secondary and tourism-orientated townships and the broad surrounding rural area; and
- secondary townships and tourism-orientated townships – township itself; and

(B) located on prominent, highly accessible sites; and

(C) consistent with the amenity and character of the surrounding urban area; and

(b) Infrastructure:

(i) development is efficiently serviced by the full range of urban infrastructure networks or, where urban infrastructure is not available, appropriate on-site systems; and

(ii) development outside of the priority infrastructure area must demonstrate that trunk water, sewer, stormwater and road infrastructure required to service the ultimate development in the area and is provided at full cost to the developer; and

(c) Built form and development intensity:

(i) low-rise buildings integrate with the character and amenity of the township and surrounding natural / rural landscapes; and

(ii) residential development is provided at very low densities; and

(iii) road frontage setbacks:

(A) contribute to the open, low-intensity character of the township; and

(B) accommodate landscaping; and

(C) provide privacy for buildings; and

(D) avoid buildings being visually overbearing; and

(iv) development provides high quality design outcomes reinforcing the sense of identity of the local area and region; and

(d) Amenity:

(i) development does not adversely affect the amenity of adjacent areas and uses, particularly residential uses and other sensitive land uses; and

(e) Environment:

(i) development maintains, enhances and responds to high value ecological features and the physical constraints of the land.

6.2.23.3 Assessment criteria

Part A – Criteria for assessable development

Table 6.2.23.3.A – Township zone – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Uses	
PO1 The zone primarily accommodates low intensity residential development such as dwelling house on large sites.	No acceptable outcome prescribed.
PO2 Short-term accommodation and tourist parks are located: (a) in close proximity to elements providing high value amenity and recreation opportunities such as a beach / coastline, watercourse or conservation area; or (b) on an important transport corridor such as a highway.	No acceptable outcome prescribed.
PO3 Existing tourist parks continue to operate as a tourist park or another form of low-intensity development providing accommodation for tourists.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO4 In principal townships, non-residential activities: (a) are required to serve the needs of: (i) the township itself and its immediate surrounds; and (ii) nearby secondary and tourism-orientated townships; and (iii) the broad surrounding rural area; and (b) do not compromise the viability of: (i) existing or intended uses within a multi-purpose centre; and (ii) similar existing or approved uses in the relevant catchment (set out in (a)); and (c) are of a small scale and integrate with the low intensity and primarily residential character of the area; and (d) generate minimal impacts.	**AO4.1** In principal townships, non-residential activities such as centre activities and community activities: (a) fulfil a demonstrated need of the: (i) the township itself and its immediate surrounds; and (ii) nearby secondary and tourism-orientated townships; and (iii) the broad surrounding rural area; and (b) do not compromise the viability of: (i) existing or intended uses within a multi-purpose centre; and (ii) similar existing or approved uses in the relevant catchment (set out in (a)).
	AO4.2 In principal townships, shops have a maximum gross floor area (GFA) of 250m^2 and offer any or a combination of the following: (a) small or medium sized supermarkets / convenience goods; and (b) banking, postal and other agency services; and (c) recreation and visitor-orientated goods; and (d) a limited range of comparison goods.
	AO4.3 In principal townships, low impact industrial activities are small scale and offer the following services: (a) repairing and servicing general motor vehicles, lawn mowers and outboard engines; and (b) repairing and servicing agricultural motor vehicles and associated farming equipment; and (c) agricultural products, supplies and associated hardware; and (d) service station.

Performance outcomes	Acceptable outcomes
PO5 In secondary townships and tourism-orientated townships, non-residential activities: (a) are required to serve the needs of the township itself and its immediate surrounds; and (b) do not compromise the viability of: (i) existing or intended uses within a multi-purpose centre; and (ii) similar existing or approved uses in the relevant catchment (set out in (a)); and (c) are of a small scale and integrate with the low intensity and primarily residential character of the area; and (d) generate minimal impacts.	**AO5.1** In secondary townships, non-residential activities such as centre activities and community activities: (a) fulfil a demonstrated need of the: (i) township itself and its immediate surrounds; and (ii) nearby secondary and tourism-orientated townships; and (iii) broad surrounding rural area; and (b) do not compromise the viability of: (i) existing or intended uses within a multi-purpose centre; and (ii) similar existing or approved uses in the relevant catchment (set out in (a)).
	AO5.2 In secondary and tourism-orientated townships, shops have a maximum gross floor area (GFA) of 150m^2 and offer any or a combination of the following: (a) convenience goods; and (b) banking, postal and other agency services; and (c) recreation and visitor-orientated goods.
	AO5.3 In secondary and tourism orientated townships, low impact industrial activities are small scale and offer the following services: (a) limited repairing and servicing general motor vehicles, lawn mowers and outboard engines; and (b) repairing and servicing agricultural motor vehicles and associated farming equipment; and (c) service station.
PO6 Non-residential activities are located in a cluster to achieve a cohesive town centre.	**AO6** In order to establish a cohesive town centre, centre activities, community activities and other non-residential uses are located: (a) in close proximity to existing centre activities, community activities or other non-residential uses, particularly if these uses are located on the 'main street'; or (b) if there are no existing non-residential uses in the township, on an arterial road, sub-arterial road or collector street in a central location in the township.

Performance outcomes	Acceptable outcomes
PO7 In Farleigh, uses generating negligible impacts provide a land use transition and buffer between Farleigh Sugar Mill and residential uses north of Farleigh State Primary School.	**AO7** In the area bounded by Armstrong Street, Taylor Street, Christoe Street and Farleigh State Primary School: (a) non-sensitive land uses such as agricultural supplies store, bulk landscape supplies, garden centre, low impact industry and shop are provided in the area identified as "transitional uses" on Figure 6.2.23.3.A – Township zone – Transitional and residential uses – Farleigh; and (b) sensitive land uses are not provided in the areas identified as "transitional uses" and "park" on Figure 6.2.23.3.A – Township zone – Transition and residential uses – Farleigh; and (c) outdoor sport and recreation, and park are provided in the area identified as "park" on Figure 6.2.23.3.A – Township zone – Transition and residential uses – Farleigh; and (d) if provided, residential uses such as dwelling house are provided in the area identified as "residential" on Figure 6.2.23.3.A – Township zone – Transitional and residential uses – Farleigh.
Infrastructure	
PO8 Development is serviced by all forms of urban infrastructure relevant to the use, through connection to: (a) reticulated systems if practically available; or (b) appropriate on-site systems[47].	**AO8** Development is connected to: (a) the reticulated water supply infrastructure if available or an appropriate on-site water source[46]; and (b) the reticulated sewerage infrastructure if available or an appropriate on-site wastewater disposal system; and (c) stormwater infrastructure where available or an appropriate lawful point of discharge; and (d) electricity and telecommunications infrastructure.
PO9 Development outside of the priority infrastructure area must demonstrate that trunk water, sewer, stormwater and road infrastructure required to service the ultimate development in the area and is provided at full cost to the developer.	No acceptable outcome prescribed.

[47] The provision of an on-site water source must give consideration to the *Water Act 2000* and, where applicable, the *Water Resource (Pioneer Valley) Plan 2002, Water Resource (Fitzroy Basin) Plan 2011* or *Water Resource (Burdekin Basin) Plan 2007*.

Performance outcomes	Acceptable outcomes
PO10 In Conningsby, Farleigh and Finch Hatton, development: (a) completes the internal road network by providing through connections between existing roads; and (b) provides direct access to properties from the internal road network and not from State controlled roads.	**AO10.1** In Conningsby, development provides a road connection between Starretts Road and Floods Drive.
	AO10.2 In Finch Hatton, development provides a road connection between Bagley Street and Matthew Street.
	AO10.3 In Farleigh, a new public road is provided generally in accordance with the location and alignment of the "New Street" identified in Figure 6.2.23.3.A – Township zone – Transitional and residential uses – Farleigh.
Built form and development intensity	
PO11 Building height, residential density and plot ratio: (a) integrates with the low-rise and low intensity built form of surrounding residential areas; and (b) does not form overdevelopment of the site; and (c) does not result in an increased number and/or intensity of residential uses that are negatively affected by noise, air quality and other amenity impacts generated by Farleigh Sugar Mill.	**AO11.1** Buildings have a maximum height of: (a) 11 metres above ground level (3 storeys) in the area identified in Figure 6.2.23.3.B – Township zone – 11 metre (3 storey) maximum building height areas – Sarina Beach; and (b) 8.5 metres above ground level (2 storeys) in the balance area of Sarina Beach and all other townships.
	AO11.2 The maximum residential density is the equivalent of: (a) 1 dwelling house per every 4,000m^2 of site area in the area at Farleigh identified as "residential" in Figure 6.2.23.3.A – Township zone – Transitional and residential uses – Farleigh; and (b) 1 dwelling per every 1,000m^2 of site area on: (i) Township zoned sites within the balance area (outside the area identified as "residential" in Figure 6.2.23.3.A – Township zone – Transitional and residential uses – Farleigh) at Farleigh; and (ii) Township zoned sites at all other townships.
	AO11.3 In the area identified as "residential" in Figure 6.2.23.3.A – Township zone – Transitional and residential uses – Farleigh, the minimum lot size is 4,000m^2.
	AO11.4 The maximum plot ratio is 0.3:1.

Performance outcomes	Acceptable outcomes
PO12 Buildings are setback from road frontages to: (a) contribute to the open, low-intensity character of the township; and (b) accommodate landscaping between the building and the street; and (c) provide privacy for the building; and (d) avoid buildings from being visually overbearing as viewed from the street.	**AO12** Minimum road frontage setbacks are: (a) from arterial roads and sub-arterial roads – 10 metres; and (b) from collector streets and access streets – 6 metres; and (c) from rear laneways: (i) 0 metres where the wall height is 3.5 metres or less above ground level; and (ii) 2 metres where the wall height is more than 3.5 metres above ground level.
PO13 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements; and (c) materials that are durable, require minimal maintenance, and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.
Amenity	
PO14 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect: (a) adjoining and nearby sites within a residential zone; and (b) adjoining or nearby site containing an existing sensitive land use.	No acceptable outcome prescribed.
PO15 Where located in close proximity to uses and/or transport corridors generating amenity impacts, sensitive land uses are located, designed and operated to mitigate those impacts.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
Environment	
PO16 Development minimises environmental impacts within the subject site and avoids environmental impacts outside the subject site, specifically with regards to: (a) water quality and the ecological and hydrological processes of waterways and wetlands; and (b) the ecological integrity of other habitat areas and corridors; and (c) the ecological integrity of other natural features and elements of high environmental value.	No acceptable outcome prescribed.

Figure 6.2.23.3.A – Township zone – Transitional and residential uses – Farleigh

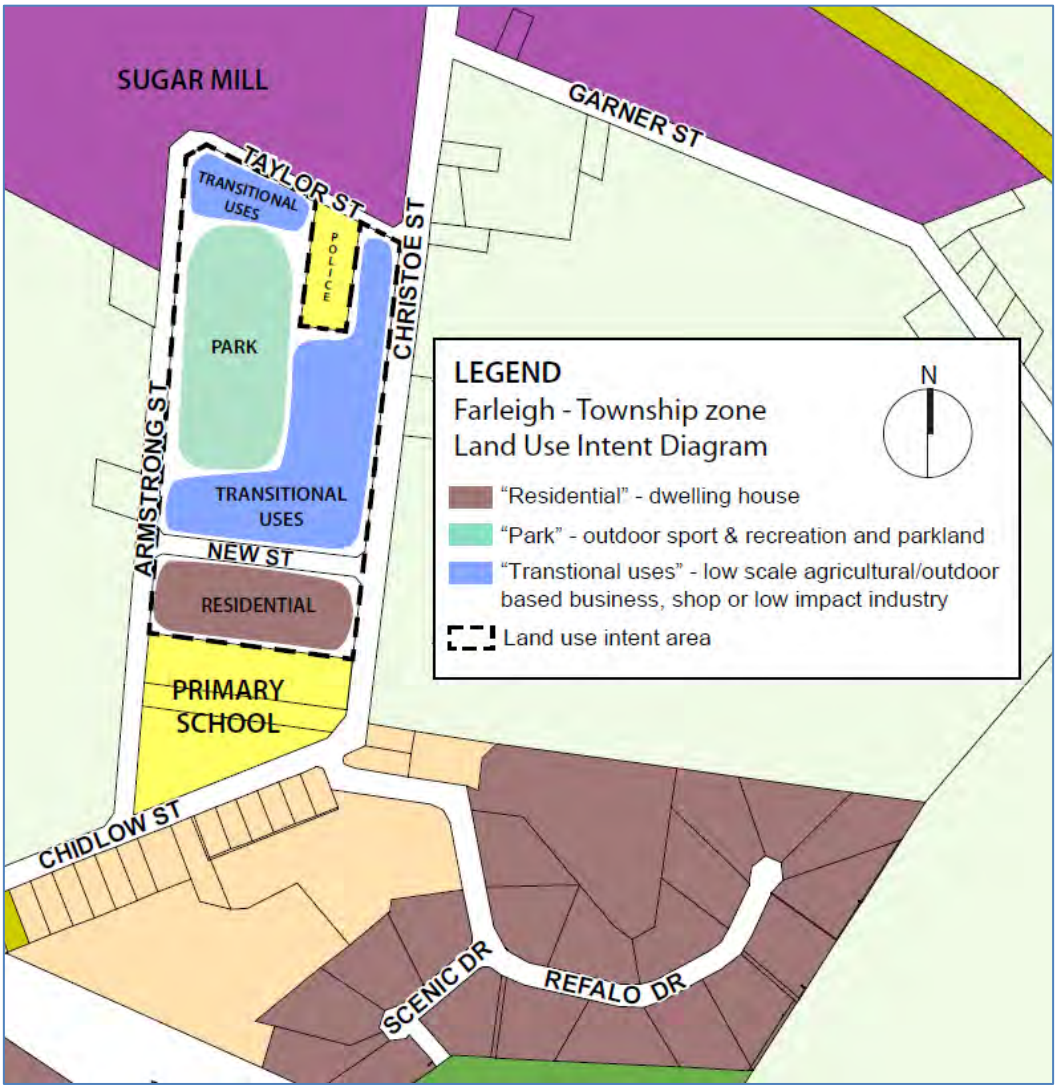


Figure 6.2.23.3.B – Township zone – 11 metre (3 storey) maximum building height areas – Sarina Beach

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Part 7 Local plans

7.1 Preliminary

(1) Local plans address matters at the local or district level and provide more detailed planning for the zones.

(2) Local plans are mapped and included in Schedule 2.

(3) A precinct may be identified for part of a local plan.

(4) The levels of assessment for development in a local plan are in Part 5.

(5) Assessment criteria for local plans are contained in a local plan code.

(6) Each local plan code identifies the following:

- (a) the application of the local plan code;
- (b) the purpose of the local plan code;
- (c) the overall outcomes that achieve the purpose of the local plan code;
- (d) the purpose and overall outcomes for each precinct;
- (e) the performance outcomes that achieve the overall outcomes of the local plan code;
- (f) the acceptable outcomes that achieve the performance outcomes of the local plan code; and
- (g) the performance and acceptable outcomes of a precinct that achieve the overall outcomes of the precinct.

(7) The following are the local plan codes for the planning scheme:

- (a) Mackay city centre local plan code:
  - (i) City core precinct (precinct no. CC1)
  - (ii) City mixed use precinct (precinct no. CC2)
  - (iii) Education mixed use precinct (precinct no. CC3)
  - (iv) Exhibition/events precinct (precinct no. CC4)
  - (v) Civic precinct (precinct no. CC5)
- (b) Marian central local plan code.

7.2 Local plan codes

7.2.1 Mackay city centre local plan code

7.2.1.1 Application

This code applies to assessing development within the Mackay city centre local plan area shown within map Local plan map 38 contained within Schedule 2, and further illustrated in Figures 7.2.1.3.A, 7.2.1.3.B, 7.2.1.3.C, 7.2.1.3.D, 7.2.1.3.E, 7.2.1.3.F, 7.2.1.3.G and 7.2.1.3.H.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

7.2.1.2 Purpose

(1) The purpose of the Mackay city centre ("the City Centre") local plan is to:

- (a) strengthen the role and function of the City Centre as the principal centre for the Mackay Isaac Whitsunday region, accommodating the largest and most diverse mix of high-order retail, commercial, employment, business, high density residential, health services, administrative, community, education, cultural, recreational and entertainment activities; and
- (b) strengthen the character and amenity of Victoria Street as the traditional "main street" and focal point of the City Centre; and
- (c) strengthen, promote and enhance the City Centre's relationship with, and connection to, the Pioneer River; and
- (d) achieve a highly liveable, accessible, connected and integrated City Centre with a strong sense of character and identity, that:
  - (i) maintains a highly connected access network of roads, laneways, pedestrian pathways, cycle routes and public transport that links the City Centre's activity and amenity nodes; and
  - (ii) provides a high standard of built form design that interacts with the adjoining public realm and contributes to the cityscape, riverscape and streetscapes; and
  - (iii) provides an attractive, comfortable, active, safe and responsive public realm that defines street character and activity, and creates a high level of amenity and identity for the City Centre.

(2) The purpose of the code will be achieved through the following overall outcomes:

- (a) The City Centre provides for the largest and most diverse mix of uses and activities. There are 5 precincts within the City Centre, being City core precinct (precinct no. CC1), City mixed use precinct (precinct no. CC2), Education mixed use precinct (precinct no. CC3), Exhibition / events precinct (precinct no. CC4) and Civic precinct (precinct no. CC5). All precincts are characterised by a predominating land use type/s. Development is consistent with and/or complements the predominating use of each precinct:
  - (i) City core precinct (precinct no. CC1) accommodates the broadest mix of commercial, business/administrative, community, high density residential and short-term accommodation activities including:
    - (A) retail, entertainment, community and social services, nightclub entertainment facilities, hotel and restaurant/cafe uses located within podium levels of a building; and
    - (B) office, high density residential and short-term accommodation uses located within levels above the podium of a building; and

(ii) City mixed use precinct (precinct no. CC2) accommodates high density residential, commercial and short-term accommodation activities. High density residential activities support City Centre employment and services, and utilises the uppermost building heights of the City Centre to maximise residential yield and take advantage of the scenic amenity of the Pioneer River. Development on the Caneland Central site orientates towards the street frontage engaging with the streetscape, and forming a connection to the City Centre and the Pioneer River; and

(iii) Education mixed use precinct (precinct no. CC3) accommodates the existing educational institutions of Central Queensland University City campus and Saint Patrick's College, and complementary activities in order to ensure these facilities are strengthened and retained; and

(iv) Exhibition / events precinct (precinct no. CC4) accommodates large scale regional exhibitions, events and sports within the Mackay showground. The relationship between the City Centre and the Mackay showground is strengthened through built form and streetscape/linkage outcomes; and

(v) Civic precinct (precinct no. CC5):

(A) accommodates civic administrative and community activities, and municipal services including the Council Administration building, Artspace regional art gallery, Senior Citizens Hall, Mackay Entertainment and Convention Centre, Jubilee Park and the Memorial pool; and

(B) development complements and visually integrates with the surrounding built environment (buildings, parkland and streetscapes), and respects, maintains and positively contributes to the memorial significance, ceremonial functionality and park setting of Jubilee Park; and

(b) Movement, access and car parking:

(i) the street network accommodates all modes of movement and transport and achieves a high level of internal and external connectivity; and

(ii) the network of existing laneways is maintained to:

(A) function as part of the City Centre's movement network, fabric and finer grained character; and

(B) complement on-street pedestrian pathways to provide a highly permeable, safe and pleasant pedestrian access network throughout the City Centre; and

(C) facilitate rear servicing of and vehicular access to buildings; and

(D) provide opportunities for locating urban infrastructure networks normally located at the rear of properties or on the street; and

(E) provide potential opportunities for temporary activities such as dining, retail, markets and public art where the primary use of the laneway for rear access and servicing is not compromised; and

(iii) the pedestrian access network to and within the City Centre is attractive, convenient, safe and is protected from the sun and rain; and

(iv) footpaths, cycle lanes and end of trip facilities through the City Centre provide a high level of accessibility for pedestrians and cyclists; and

(v) the location and design of vehicular access, refuse collection and service vehicle access to sites does not:

(A) adversely impact on the safe movement of pedestrians and adjacent road traffic; and

(B) fragment the continuous facade and street orientated activity on high pedestrian movement streets, particularly on Victoria Street between Carlyle Street and Milton Street and other key active frontage streets; and

(C) dominate the streetscape; and

(vi) high quality public transport facilities are provided at key locations in the City Centre to facilitate efficient public transport services to, through, and within the City Centre; and

(c) key linkages connecting the City Centre's activity and amenity nodes are strengthened by providing a high quality pedestrian environment. The City Centre's activity and amenity nodes and the key linkages include:

(i) Wood Street and Sydney Street (north of Victoria Street) links the City core precinct (precinct no. CC1) to the Pioneer River frontage; and

(ii) Victoria Street (between Gregory Street and Milton Street) and Peel Street (north of Victoria Street), links the City core precinct (precinct no. CC1) and Caneland Central; and

(iii) Gordon Street / East Gordon Street (between Endeavour Street and Sydney Street) and Victoria Street (between Chain Street and Sydney Street) links the low impact industry zone to the City core precinct (precinct no. CC1); and

(iv) Wellington Street and Nelson Street links the civic precinct (precinct no. CC5), Bluewater Lagoon and the Pioneer River frontage; and

(v) Wood Street and Sydney Street links the Central Queensland University City campus and the City core precinct (precinct no. CC1); and

(vi) Alfred Street (between Macalister Street and Sydney Street) links the civic precinct (precinct no. CC5) and the Central Queensland University City campus; and

(vii) Alfred Street (between Wellington Street and Milton Street) links the civic precinct (precinct no. CC5), in particular the Mackay Entertainment and Convention Centre, and Mackay showground (Exhibition / events precinct (precinct no. CC4)); and

(viii) Gordon Street links the City core precinct (precinct no. CC1), civic precinct, Memorial pool and Mackay showground (Exhibition / events precinct (precinct no. CC4)); and

(ix) River Street links the City core precinct (precinct no. CC1), Bluewater Lagoon and Caneland Central; and

(x) River Street and Pioneer River frontage (east of Bluewater Quay) links the City core precinct (precinct no. CC1), Bluewater Quay and Sandfly Creek walk; and

(xi) Pioneer River frontage (west of Sydney Street) links Bluewater Quay, City core precinct (precinct no. CC1), Bluewater Lagoon, Caneland Park and Caneland Central via the Bluewater Trail; and

(d) Built form - building height:

(i) reflects and reinforces the prominence of the City Centre as the key activity centre of a major regional city in northern Australia; and

(ii) transitions in intensity across the City Centre as follows:

(A) high-rise buildings (building height areas 1 and 2) are located in areas north of Alfred Street and in the vicinity of the Central Queensland University City campus. High-rise buildings utilise the scenic amenity offered by the Pioneer River and further support and intensify existing activity nodes such as the City core precinct (precinct no. CC1), Caneland Central and the Central Queensland University City campus; and

(B) medium-rise buildings (building height area 3) are located in areas south of Alfred Street, including the Mackay showground site, in order to provide a built form transition between high-rise buildings north of Alfred Street and low-rise buildings south of Shakespeare Street; and

(C) low-rise buildings (building height area 4) are located in the low impact industry zone east of Carlyle Street

(iii) the design of high-rise and medium-rise buildings, where located adjacent to the southern and south-eastern edges of the City Centre consider the interface between higher intensity development and low intensity residential built form; and

(iv) retain, respect, not visually dominate, and integrate with buildings that have heritage character and value, particularly where located on sites located in the City core precinct (precinct no. CC1); and

(v) assists in the legibility of the City Centre and contributes positively to the city skyline; and

(e) Building and public realm design:

(i) is characterised by high quality urban design outcomes that complement and visually integrate with adjoining and nearby development to achieve a consistent cityscape and streetscape rhythm; and

(ii) ensures high density residential or short-term accommodation buildings in the City core precinct (precinct no. CC1) incorporate acoustic measures to mitigate noise from restaurants, hotels, bars, nightclub entertainment facilities, and other recreational activities; and

(iii) responds to the tropical climate, and reflects and reinforces the unique urban form, tropical image and sense of identity of the City Centre by:

(A) providing appropriate building setbacks for the various building types; and

(B) considering building materials and finishes, roofscapes, use of windows, balconies and sun control; and

(C) ensuring buildings address the street by providing active, articulated, pedestrian friendly and visually attractive frontages and a human scale; and

(D) providing landscape treatments of a high standard; and

(iv) considers, but does not diminish views into and out of the City Centre and vistas to important city landmarks, prominent and significant heritage buildings and natural landscape settings; and

(v) allows for a mix of active and passive ephemeral activities and events, and limited permanent fixtures such as public art; and

(vi) interacts with and contributes towards an attractive, comfortable, cool, active, safe and responsive public realm that defines and celebrates the unique character and identity of the City Centre; and

(vii) ensures pedestrian footpaths are protected from rain and sun by shade and shelter that is continuous and compatible with existing pedestrian shelter; allows for street trees and other landscaping; is safe, convenient and practical.

7.2.1.3 Assessment criteria

Part A – Criteria for self-assessable and assessable development

Table 7.2.1.3.A – Mackay city centre local plan – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self assessable and assessable development	
Bar, hotel (pub) and nightclub entertainment facility activities	
PO1 Bar, hotel (involving a pub) and nightclub entertainment facility uses are located: (a) within the City core precinct (precinct no. CC1) to: (i) provide a concentration of similar uses and, therefore, a vibrant entertainment node; and (ii) contain potential amenity impacts within one area of the City Centre; and (b) in podium levels of buildings to contain potential amenity impacts or, where uses are small-scale, utilise unique locations such as roof tops.	**AO1** In the City core precinct (precinct no. CC1): (a) hotel (involving a pub) and nightclub entertainment facility is located: (i) on one of the following streets: (A) Victoria Street (between Sydney Street and Gregory Street); or (B) Sydney Street (between Victoria Street and River Street); or (C) Wood Street (between Gordon Street and River Street); and (ii) within the podium level/s and no higher than the second storey (measured from ground level) of a building; and (b) bar is located: (i) on one of the following streets: (A) Victoria Street (between Sydney Street and Gregory Street); or (B) Sydney Street (between Victoria Street and River Street); or (C) Wood Street (between Gordon Street and River Street); and (ii) in either of the following: (A) within the podium level/s of a building; or (B) on a podium roof top or building roof top.
PO2 The operation of bar, hotel (involving a pub) and nightclub entertainment facility uses: (a) do not cause nuisance or inconvenience to adjoining properties; and (b) do not have a detrimental effect, in relation to noise, on the amenity of the streetscape and surrounding area.	**AO2.1** Noise produced by bar, hotel (involving a pub) and nightclub entertainment facility uses are minimised and managed to ensure: (a) speakers and other amplified devices are orientated to face inwards and not project sound towards any openings, streets and public places; and (b) music ceases at close of trade. **AO2.2** Where development includes a gaming lounge/area, poker machines are located away from openings (windows and doors) and are not visible from the street.

Performance outcomes	Acceptable outcomes
PO3 The entrance to: (a) a bar, hotel (involving a pub) or nightclub entertainment facility: (i) is clearly visible from the pedestrian footpath; and (ii) is safely accessible to patrons; and (iii) including the adjoining pedestrian footpath area, is kept and maintained at all times in a clean, sanitary and tidy condition. (b) a nightclub entertainment facility provides adequate separation distance from a neighbouring nightclub entertainment facility entrance that: (i) allows for the orderly and safe queuing of patrons; and (ii) does not obstruct pedestrian movement on the footpath.	**AO3** The entrance to a nightclub entertainment facility is: (a) clearly visible from the pedestrian footpath and safely accessible to patrons with a maximum recess (setback) of 2 metres from the front boundary; and (b) a minimum separation distance of 10 metres from a neighbouring nightclub entertainment facility entrance.
PO4 Bar, hotel (involving a pub) and nightclub entertainment facility uses ensure building facades retain or provide an active frontage to streets.	**AO4** Bar, hotel (involving a pub) and nightclub entertainment facility uses ensure building facades provide an active frontage to streets by: (a) retaining or providing openings such as doors and windows to streets and laneways; and (b) not covering up or removing existing windows and doors.
For assessable development	
Uses	
PO5 The City core precinct (precinct no. CC1) forms the City Centre's boutique retail, business / administrative and leisure / entertainment hub that: (a) provides a high quality pedestrian environment and a vibrant street-orientated character; and (b) is complemented by a range of high density residential and short-term accommodation uses; and (c) does not accommodate land uses which compromise the precinct from achieving (a) and (b).	**AO5.1** The City core precinct (precinct no. CC1) accommodates a mix of the following uses: (a) centre activities, bar, hotel, nightclub entertainment facility and market; and (b) community activities and child care centre; and (c) rooming accommodation, multiple dwellings and short-term accommodation (above podium levels); and (d) major sport, recreation and entertainment facility, where involving convention and exhibition centres or entertainment centres; and (e) recreation activities and park; and (f) parking station; and (g) other compatible uses.

Performance outcomes	Acceptable outcomes
	AO5.2 The following uses are not located within the City core precinct (precinct no. CC1): (a) outdoor business activities; and (b) service industry, car wash and service station; and (c) other uses which compromise the precinct from being the City Centre's boutique retail, business / administrative and leisure / entertainment hub with a high quality pedestrian environment and a vibrant street-orientated character.
PO6 The City mixed use precinct (precinct no. CC2) accommodates high density residential, commercial and short-term accommodation activities that: (a) supports a diverse range of commercial services and facilities, short-term accommodation offerings and high density housing throughout the City Centre; and (b) encourages high density residential development to utilise and take advantage of the: (i) proximity to employment; and (ii) high amenity value provided by the Pioneer River; and (iii) uppermost building heights of the City Centre to maximise residential yield.	**AO6** The City mixed use precinct (precinct no. CC2) accommodates a mix of the following uses: (a) centre activities, hotel and market; and (b) community activities and child care centre; and (c) multiple dwellings and short-term accommodation; and (d) recreation activities and park; and (e) other uses that are compatible.
PO7 The Education mixed use precinct (precinct no. CC3) accommodates: (a) Central Queensland University City campus and Saint Patrick's College; and (b) a limited range of complementary non-residential uses.	**AO7** The Education mixed use precinct (precinct no. CC3) accommodates educational establishment and associated uses, and a limited range of the following uses: (a) centre activities, hotel and market; and (b) community activities and child care centre; and (c) recreation activities and park; and (d) service industry; and (e) other compatible uses.
PO8 The Exhibition / events precinct (precinct no. CC4) accommodates the Mackay showground – a major, predominantly open air facility capable of hosting large-scale exhibitions, performances, sports and other events.	**AO8** The Exhibition / events precinct (precinct no. CC4) accommodates major sport, recreation and entertainment facility and, potentially, a limited range of the following uses: (a) function facility; and (b) club; and (c) community use; and (d) emergency services; and (e) park.

Performance outcomes	Acceptable outcomes
PO9 The Civic precinct (precinct no. CC5) accommodates community and Council facilities including Mackay Entertainment and Convention Centre, Artspace regional art gallery, Senior Citizens Hall, Jubilee Park, Council Administration building and Memorial pool.	**AO9** The Civic precinct (precinct no. CC5) accommodates: (a) community use; and (b) major sport, recreation and entertainment facility; and (c) office; and (d) outdoor sport and recreation; and (e) park; and (f) other compatible uses.
Movement, access and car parking	
PO10 Development on sites adjoining the: • existing key public transport interchange facility located on Gregory Street (between Victoria Street and Gordon Street); or • future proposed key public transport interchange facility located in the vicinity of Victoria Street (west of Peel Street), Peel Street (north or Victoria Street) and Mangrove Road, (identified on Figure 7.2.1.3.B – Mackay city centre local plan – bicycle network and key public transport interchange facilities), is designed to maintain the efficiency, safety and visual amenity of the interchange facilities by: (a) making allowance for the ultimate design of each interchange facility; and (b) providing public amenities (toilets, parent's rooms) and facilities that are designed, located and operated to be: (i) safe and convenient to public transport users; and (ii) accessible to the general public during the operation hours of public transport services; and (c) providing extensive activation measures[1] on ground floor elevations facing the interchange facility; and (d) ensuring that the footpath providing access to the development, and any associated outdoor dining area/s, do not conflict with pedestrian movement, waiting areas and boarding / disembarkment areas associated with the interchange facility.	No acceptable outcome prescribed.

[1] "Activation measures" include pedestrian entrances/doors, large windows and openings.

Performance outcomes	Acceptable outcomes
PO11 Public transport infrastructure, that enable public transport services to efficiently and safely move large crowds to and from the venue, is provided at major sport, recreation and entertainment facilities including: (a) Mackay showground; and (b) Mackay Entertainment and Convention Centre; and (c) other regionally significant major sport, recreation and entertainment facilities regularly hosting events that draw large crowds.	No acceptable outcome prescribed.
PO12 Development includes the provision of adequate, convenient and safe on-site parking for cars and bicycles.	**AO12** Development provides car and bicycle parking in accordance with the parking rates identified in: (a) Table 7.2.1.3.C – Mackay city centre local plan – car and bicycle parking rates; or (b) Table 9.4.2.3.B within 9.4.2 – General development requirements code, where a land use is not included in Table 7.2.1.3.C.
PO13 The bicycle network, including regional bicycle and pedestrian routes: (a) provides a high level of accessibility and allows for safe, direct and convenient movement within, to / from and through the City Centre; and (b) is maintained and/or extended.	**AO13** Development on the former rail yards site (between Tennyson Street, Gordon Street, East Gordon Street, Park Street, Porter Street and Alfred Street) provides a publicly accessible north-south bicycle and pedestrian route: (a) in accordance with Figure 7.2.1.3.B – Mackay city centre local plan – bicycle network and key public transport interchange facilities; and (b) to connect the former rail corridor (south of Alfred Street) with Lawson Street; and (c) to provide a broader connection between the former rail corridor along Paradise Street and Evan Street and the Pioneer River.

Performance outcomes	Acceptable outcomes
PO14 The network of existing laneways is retained and, where practical, enhanced, in order to maintain: (a) pedestrian connectivity throughout the City Centre; and (b) pedestrian safety and amenity on City Centre streets by: (i) reducing the number of driveways across footpaths; and (ii) providing rear service bays for buildings; and (c) increase the diversity of public realm type by providing an intimate urban setting, and therefore add interest to the City Centre; and (d) accommodate a range of underground utility infrastructure services.	**AO14.1** Existing laneways identified in Figure 7.2.1.3.C – Mackay city centre local plan – laneway network: (a) are retained including retention of laneway alignment and width; and (b) provide rear service bays (including commercial deliveries and refuse collection) for adjoining buildings; and (c) provide vehicular access to off-street car parking areas/facilities; and (d) accommodate underground utility infrastructure services where required and practical; and (e) provide for a range of permanent, semi-permanent and temporary uses, activities and events.
	AO14.2 Where a laneway extension or new laneway is proposed: (a) the width of the laneway extension matches the width of the existing laneway; or (b) the width of the new laneway is: (i) no less than 4 metres; and (ii) no greater than 5 metres.
PO15 Development on the Caneland Central site and sites between Mangrove Road, Peel Street and Victoria Street, provide and/or facilitate a safe, convenient, vibrant (active frontages) and comfortable (shaded and weather protection) pedestrian access that provides a strong pedestrian link between Caneland Central and Victoria Street.	**AO15.1** Development expansion of the Caneland Central towards Mangrove Road provides a prominent pedestrian access point that aligns with a planned or existing pedestrian crossing on Mangrove Road.
	AO15.2 Development on sites between Mangrove Road, Peel Street and Victoria Street: (a) provides a prominent pedestrian access point that aligns with a planned or existing pedestrian crossing on Mangrove Road; and (b) facilitates convenient pedestrian between Mangrove Road and Victoria Street through the site.

Performance outcomes	Acceptable outcomes
Built form – building height and internal height	
PO16 Building height: (a) Reflects and reinforces the prominence of the City Centre as the principal centre of a major regional city in northern Australia; and (b) transitions in intensity across the City Centre as follows: (i) high-rise buildings are located in areas north of Alfred Street and in the vicinity of the Central Queensland University City campus and including the Caneland Central site, and: (A) utilise views and amenity provided by the Pioneer River; and (B) further support and intensify key City Centre activity nodes; and (C) recognise Alfred Street as the boundary between high intensity development to the north and medium intensity development to the south; and (D) recognise Carlyle Street as the boundary between high intensity development to the west and low intensity low impact industry development to the east; and (E) retain, respect, integrate and not visually dominate heritage value buildings in the City core precinct (precinct no. CC1); and (ii) medium-rise buildings are provided in areas south of Alfred Street and: (A) provide a built form transition between high rise buildings north of Alfred Street and low intensity residential areas south of Shakespeare Street; and (B) achieve medium intensity development on the Mackay showground site; and (iii) low-rise buildings are provided in the eastern low impact industrial zone of the City Centre; and	**AO16.1** Building height is in accordance with Figure 7.2.1.3.H – Mackay city centre local plan – building heights, and as follows: (a) building height area 1 – maximum height of 49 metres AHD (12+ storeys); and (b) building height area 2 – maximum height of 32 metres (10 storeys) above ground level; and (c) building height area 3 – maximum height of 17 metres (5 storeys) above ground level; and (d) building height area 4 – maximum height of 11 metres (3 storeys) above ground level. **AO16.2** The maximum building height on sites containing a state heritage place – 14 metres (4 storeys) above ground level.

Performance outcomes	Acceptable outcomes
(c) adequately utilises the development potential to: (i) reflect the strategic nature of sites within the City Centre; and (ii) contribute toward maintaining and enhancing the City Centre as the region's primary activity hub; and (d) provides distinctive and iconic design outcomes on prominent sites.	
PO17 Where the building includes a podium, the height of the podium maintains a human scale, high quality pedestrian environment on key active frontage streets, by avoiding development that is visually overbearing as viewed from the street.	**AO17** The maximum height of the podium is: (a) 8.5 metres above ground level (2 storeys) on sites with frontage to a: (i) "key active frontage – city core precinct/Victoria Street"[2]; or (ii) "key active frontage – city centre frame"[2]; and (b) 11 metres above ground level (3 storeys) on sites with "low impact industry frontages".
PO18 The podium levels of buildings contain ceiling heights that: (a) provide a high level of amenity within the building; and (b) enable a variety of activities and uses.	**AO18** Development on sites with frontage to a: • "key active frontage – city core precinct/Victoria Street"; or • "key active frontage – city centre frame"; or • "low impact industry frontage", has minimum floor to ceiling height in accordance with the following: (a) 4 metres on ground floor; and (b) 3.3 metres on the first floor.

[2] As identified in Figure 7.2.1.3.A – Mackay City Centre street frontages.

Performance outcomes	Acceptable outcomes
Built form – setbacks, building massing and length	
PO19 "Key active frontage – city core precinct/Victoria Street": (a) is located throughout the City core (precinct no. CC1) and west along Victoria Street to provide a high quality pedestrian link between the City core precinct (precinct no. CC1) and Caneland Central; and (b) consists of development that: (i) reflects the fine grained and boutique retail character of the City core precinct (precinct no. CC1); and (ii) provides a setback between road frontages and high buildings to maintain: (A) the prominence and character of heritage buildings and traditional streetscapes; and (B) a human scale on key pedestrian-orientated streets; and (iii) is setback from side and rear setbacks to provide privacy, breezes and natural light between high-rise buildings.	**AO19** Development on sites with a "key active frontage – city core precinct/Victoria Street" (as identified in Figure 7.2.1.3.A – Mackay city centre local plan – street frontages) comply with the following: (a) maximum ground floor tenancy street frontage width – 20 metres (large single occupant tenancies such as supermarkets and parking stations are sleeved with smaller tenancies); and (b) minimum setback from the street to tower (part of the building above the podium) elements: (i) to balconies and other articulation elements (such as sunshading devices) – 5 metres; and (ii) to the building wall above the podium – 8 metres; and (c) minimum setback from a laneway to tower elements (balconies or wall) – 3 metres; and (d) minimum setback from side and rear boundaries to tower elements: (i) to balconies, other articulation elements or the building wall up to a height of 20 metres (6 storeys) above ground level – 3 metres; and (ii) to balconies, other articulation elements or the building wall above a height of 20 metres (6 storeys) above ground level – 6 metres; and (e) other elements identified in Figure 7.2.1.3.D – Mackay city centre local plan – building typology 1 – key active frontage street – city core precinct/Victoria Street.
PO20 "Key active frontage – city centre frame": (a) are located on streets that provide an important link between activity and amenity nodes throughout the City Centre; and (b) consists of intense development that: (i) frame, define and overlook streets; and (ii) promotes the active use of the Pioneer River frontage (east of Carlyle Street) and the Bluewater Trail; and (iii) is setback from side and rear setbacks to provide privacy, breezes and natural light between high-rise buildings.	**AO20** Development on sites with a "key active frontage – city centre frame" (as identified in Figure 7.2.1.3.A – Mackay city centre local plan – street frontages) comply with the following: (a) minimum setback from the street to tower (part of the building above the podium) elements: (i) to balconies and other articulation elements (such as sunshading devices) – 0 metres; and (ii) to the building wall above the podium – 3 metres; and (b) minimum setback from a laneway to tower elements (balconies or wall) – 3 metres; and

Performance outcomes	Acceptable outcomes
	(c) minimum setback from side and rear boundaries to tower elements: (i) to balconies, other articulation elements or the building wall up to a height of 20 metres (6 storeys) above ground level – 3 metres; and (ii) to balconies, other articulation elements or the building wall above a height of 20 metres (6 storeys) above ground level – 6 metres; and (d) other elements identified in Figure 7.2.1.3.E – Mackay city centre local plan – building typology 2 – key active frontage street – city centre frame.
PO21 "Secondary active frontages": (a) are located on streets that have lower levels of pedestrian activity or, on residential streets on the outer edges of the City Centre; and (b) consist of development that: (i) is setback from road frontages to provide: (A) an open, low-intensity streetscape; and (B) opportunities for tropical vegetation between the street and the building for shade and privacy; and (ii) is setback from side and rear setbacks to provide privacy, breezes and natural light between buildings.	**AO21** Development on sites with a "secondary active frontage" (as identified in Figure 7.2.1.3.A – Mackay city centre local plan – street frontages) comply with the following: (a) minimum setback from the street: (i) to balconies and other articulation elements (such as sunshading devices) – 3 metres; and (ii) to the building wall above the podium – 6 metres; and (b) minimum setback from a laneway to tower elements (balconies or wall) – 3 metres; and (c) minimum setback from side and rear boundaries: (i) to balconies, other articulation elements or the building wall up to a height of 20 metres (6 storeys) above ground level – 3 metres; and (ii) to balconies, other articulation elements or the building wall above a height of 20 metres (6 storeys) above ground level – 6 metres; and (d) other elements identified in Figure 7.2.1.3.F – Mackay city centre local plan – building typology 3 – secondary active frontage.

Performance outcomes	Acceptable outcomes
PO22 "Low impact industry frontages": (a) are located along Victoria Street, Gordon Street and East Gordon Street east of the City core precinct (precinct no. CC1); and (b) consist of development that provides high quality pedestrian linkages between the City core precinct (precinct no. CC1) and the low impact industry zone, Sandfly Creek area, Queens Park and other areas east of the City Centre.	**AO22** Development on sites with a "low impact industry frontage" (as identified in Figure 7.2.1.3.A – Mackay city centre local plan – street frontages) comply with the following: (a) minimum setback from the street – 0 metres; and (b) minimum setback from side boundaries – 0 metres; and (c) for parts of the building above 5 metres (1 storey), the maximum building depth from the street to the rear of the building – 30 metres; and (d) other elements identified in Figure 7.2.1.3.G – Mackay city centre local plan – building typology 4 – low impact industry frontage.
PO23 Building mass and length of towers (part of the building above the podium) is limited to: (a) contribute toward a diverse and interesting skyline; and (b) avoid excessively bulky towers that: (i) visually dominate the streetscape, city block or that part of the City Centre; and (ii) forms overdevelopment of the site.	**AO23.1** Towers (part of the building above the podium) have a maximum building length in any direction (wall to wall, not including balconies and other articulation elements) of 60 metres. **AO23.2** Towers (part of the building above the podium) have a maximum gross floor area of 1,500m^2 on each storey.
Building and public realm design	
PO24 Development located on key active frontage streets are characterised by: (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity.	**AO24** Building podiums form street orientated development along: • "key active frontage – city core precinct/Victoria Street"[3]; and • "key active frontage – city centre frame"[3]; and • "low impact industry frontage"[3]. Street-orientated development includes: (a) buildings built to, or not more than 2.5 metres from, the street boundary; and (b) active building frontages (pedestrian entrances / doors and full length openings / glazing) for a minimum of 75% of the total frontage length; and (c) a pedestrian footpath with a minimum width of 4 metres along the full length of the frontage; and (d) a footpath awning over the pedestrian footpath along the full length of the frontage; and (e) limited or no vehicle driveways across the pedestrian footpath; and (f) car parking beneath, behind or within the building.

[3] As identified in Figure 7.2.1.3.A – Mackay City Centre street frontages.

Performance outcomes	Acceptable outcomes
PO25 Building design and landscaping: (a) addresses secondary active frontages and public places, and provides interest in building form, materials and expression and is consistent with the intended character of the area; and (b) provides opportunities for overlooking streets and public places; and (c) provides shade and privacy through lush tropical vegetation.	**AO25.1** Development on sites with a: • "secondary active frontage"; or • frontage adjoining public open space or a car park, provide the following: (a) a pedestrian entrance that is visible from the street; and (b) activation measures[4] for a minimum of 60% of the total frontage length; and (c) articulation measures[6] at a maximum spacing of every 10 metres along the frontage; and (d) vegetation between the building and the road frontage boundary in accordance with the landscaping provisions (PO36-38) within Part 9.4.2 – General development requirements code; and (e) shade trees between the road frontage boundary and the kerb in accordance with Planning Scheme Policy SC6.7.
	AO25.2 Buildings on sites adjoining the Pioneer Shire building (Wood Street), Town Hall (Sydney Street), Post Office park (River Street), Bluewater Quay and the Bluewater Trail engage with, address, overlook or activate these public spaces by: (a) locating publicly accessible active uses (indoor and outdoor) such as food and drink, shop, bar or hotel activities at ground level; or (b) providing prominent openings such as doors and windows.
PO26 Buildings with frontage to a laneway are designed to effectively address, activate and provide passive surveillance of the laneway by providing pedestrian entrances, windows and/or other openings at regular intervals.	No acceptable outcome prescribed.

4 "Activation measures" include pedestrian entrances/doors, large windows and openings.

6 "Articulation measures" include building line projections/recessions (minimum depth 500mm), footpath awnings, articulated roof profile, alternating materials and colours

Performance outcomes	Acceptable outcomes
PO27 Development provides a high standard of design that: (a) positively contributes to the image of the City Centre and provides a visually appealing and interesting skyline when viewed from: (i) within the City Centre; and (ii) the Bluewater Trail including the Sandfly Creek walk; and (iii) Forgan Bridge and Ron Camm Bridge (and approaches); and (iv) inner southern suburbs (West Mackay, South Mackay and East Mackay) particularly from Nebo Road, Paradise Street, Juliet Street, East Gordon Street and the Mackay Airport; and (v) inner northern suburbs (Cremorne, North Mackay and Mount Pleasant) particularly from Sams Road, Glenpark Street, Barnes Creek Road, Riverside Drive and the northern bank of the Pioneer River, Mount Oscar lookout, and nearby hills; and (b) assists in the legibility of the City Centre from surrounding areas; and (c) provides an attractive visual backdrop to the Pioneer River.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO28 Development strengthens the City Centre's sense of place and identity by maintaining and/or creating visual connections, views and vistas to built and landscape elements within and surrounding the City Centre, including: (a) Pioneer River and adjoining open space when viewed from Matsuura Drive, River Street, Burns Street, Lawson Street, Tennyson Street, Carlyle Street, Brisbane Street, Wood Street, Macalister Street and Nelson Street; and (b) heritage buildings ("state heritage place" or "local heritage place"), other prominent buildings, public areas and public art, particularly: (i) the following heritage buildings from adjoining and nearby streets: (A) former national bank building, T&G building and Australian hotel located at the intersection of Victoria Street and Wood Street; and (B) court house located on Victoria Street; and (C) police station located on Brisbane Street; and (D) Pioneer Shire building and Masonic Hall located on Wood Street; and (E) Town Hall located on Sydney Street; and (ii) the following heritage streetscapes: (A) on the northern side Victoria Street between Wood and Sydney Streets; and (B) on the eastern side of Wood Street between Gordon and River Streets; and (C) on the western side of Sydney Street between Victoria and River Streets; and (iii) the old customs house and Saint Patrick's church from River Street and the Bluewater Quay; and (iv) Paxton's Warehouse from River Street, Bluewater Quay and Carlisle Street; and (v) Saint Patrick's church from Gregory Street; and (vi) Civic precinct (precinct no. CC5) from Gordon Street and Nelson Street; and	No acceptable outcome prescribed

Performance outcomes	Acceptable outcomes
(c) Mount Bassett, Mount Oscar and other hills in the urban area on the northern side of the Pioneer River when viewed from Matsurra Drive, River Street (eastern section) and open space adjoining the Pioneer River; and (d) Black Mountain, Mount Blackwood and Mount Jukes and other hills and mountains to the north when viewed from Matsurra Drive, River Street (eastern section) and open space adjoining the Pioneer River; and (e) Clarke Range, Connors Range and other hinterland mountains to the west and south when viewed from Alfred Street, Gordon Street, Victoria Street and Shakespeare Street.	
PO29 Development on sites in the area between Carlyle Street, Victoria Street, the River Street boat ramp and the Pioneer River: (a) provide elements that reflect the area's history as a wharf and port precinct; and (b) engages with, addresses, overlooks, but does not visually dominate, the Pioneer River; and (c) provides visual and physical connectivity and integration between the City Centre and the Pioneer River; and (d) maintains the integrity and function of the levee bank.	No acceptable outcome prescribed.
PO30 Development adjoining the Pioneer River, east of Paxton's warehouse: (a) provides publicly accessible boardwalks that provide for: (i) pedestrian movement and comfort; and (ii) visual and physical access to the Pioneer River; and (iii) a range of permanent, semi-permanent and temporary activities; and (b) provides publicly accessible and active uses at boardwalk level that effectively engage with and embrace the boardwalk and the river.	**AO30** Development adjoining the Pioneer River, east of Paxton's warehouse, provides a boardwalk between buildings and the river that: (a) is publicly accessible at all times; and (b) provides a minimum 5 metre wide clear area for pedestrian movement; and (c) provides additional areas: (i) for pedestrian comfort (such as seating, shade structures); and (ii) to experience the Pioneer River (viewing areas, physical access points); and (iii) for a range of permanent, semi-permanent and temporary activities (outdoor dining, markets, performance spaces; and (d) provides publicly accessible and active uses such as food and drink outlet, hotel, bar and shop at boardwalk level; and (e) provides active building frontages (pedestrian entrances/doors and full length openings / glazing) for a minimum of 75% of the total boardwalk frontage length.

Performance outcomes	Acceptable outcomes
PO31 Roofs are designed to: (a) provide high quality design and architectural outcomes; and (b) contribute to an interesting, diverse but coherent skyline; and (c) be accessible and provide opportunities for unique recreation experiences; and (d) minimise the visual impact of mechanical plant.	**AO31.1** Building caps and rooflines contribute to: (a) the architectural quality of the building; and (b) an interesting, diverse but coherent roof forms throughout the City Centre.
	AO31.2 Roof top levels (including podium roof tops) incorporate: (a) open space or recreation facilities for occupants of the building; and/or (b) gardens and vegetation; and/or (c) where appropriate and practical, publicly accessible uses such as food and drink outlet and observation facilities.
PO32 Development reinforces the City Centre's grid street pattern by: (a) orientating buildings toward street frontages to: (i) define streets as important linear public spaces; and (ii) have a physical presence on the street contributing to the streetscape character; and (b) providing high quality and coherent facade design along streets; and (c) emphasising the importance and prominence of street intersections by: (i) providing distinctive landmark design outcomes; and (ii) ensuring that buildings: (A) are of a scale and form appropriate to the intersection; and (B) define, address and engage with the intersection; and (d) contribute to a distinctive and attractive 'sense of arrival' to the City Centre at key intersections.	**AO32.1** Buildings (podium and tower): (a) are orientated toward street frontages; and (b) provide well-articulated facades that address and overlook the street; and (c) building facades: (i) provide visual interest in the streetscape though the inclusion detailed design elements such as balconies, verandahs and shaped parapets; and (ii) have regard to adjoining facade characteristics.
	AO32.2 Buildings adjacent to a street intersection emphasise the prominence of the intersection by: (a) providing a 4 metre by 4 metre corner truncation that is dedicated as road reserve and forms part of the footpath; and (b) incorporating a 45 degree building chamfer, abutting the corner truncation, for the full height of the building; and (c) locating the building podium on the front boundaries of the site; and (d) providing a well-designed facade including: (i) windows and openings; and (ii) pedestrian entrances, particularly at the building chamfer; and (iii) projections and articulation.
	AO32.3 Where above ground infrastructure, service pillar or cabinet is located in the middle of the footpath as a result of a corner truncation, development relocates the above ground infrastructure to the new road boundary.

Performance outcomes	Acceptable outcomes
	AO32.4 Development provides iconic, distinctive and high quality architectural design outcomes on sites adjacent to the following gateway intersections: (a) Gordon Street and Milton Street (particularly the north-eastern corner); and (b) Victoria Street and Milton Street (particularly the north-eastern corner); (c) Shakespeare Street and Milton Street; and (d) Sydney Street and River Street; and (e) Shakespeare Street and Sydney Street.
PO33 Landscaping, street furniture and footpath treatments are provided to the frontage of the development site that: (a) are of a high quality standard; and (b) accord with the adopted landscape, street furniture and footpath standard policy for the City Centre; and (c) reflect and reinforce the tropical image of the City Centre; and (d) extend from the street into the building foyers, onto podiums and balconies and includes tropical elements such as arbours.	No acceptable outcome prescribed.

Table 7.2.1.3.B – Mackay city centre local plan – car and bicycle parking rates

Note: Parking requirements must be calculated to one decimal place. Where the decimal place is equal to or greater than 0.1 the number is rounded up. For example:
(i) *Total = 12.5 (**round up** to 13); or*
(ii) *Total = 15.1 (**round up** to 16).*

Use	Car parking rate	Bicycle parking rate
Mackay city centre local plan area		
• Adult store • Food and drink outlet • Health care services • Office • Shop • Showroom • Theatre	1 space per 50m^2 of gross floor area.	1 space per 250m^2 of gross floor area.
• Community use	1 space per 50m^2 of gross floor area.	1 space per 200m^2 of gross floor area.
• Agricultural supplies store • Hardware and trade supplies • Nightclub entertainment facility • Veterinary services	1 space per 50m^2 of gross floor area.	No bicycle parking rate specified.
Function facility	1 space per 50m^2 of gross floor area or 0.4 spaces per patron[8] whichever is the greater.	No bicycle parking rate specified.
Funeral parlour	• 1 space per 50m^2 of gross floor area; • 1 space per 6 chapel seats.	No bicycle parking rate specified.
Garden centre	• 1 space per 50m² of gross floor area of sales area; • 1 space per 200m² of nursery site area.	No bicycle parking rate specified.
Hotel	• 1 space per 50m^2 of licensed area; and • 0.5 spaces per accommodation unit; and • for a serviced unit containing kitchen and/or laundry facilities: (i) 1 space per unit containing 1 bedroom; or (ii) 1.5 spaces per unit containing 2 or more bedrooms. *Note: In the case of a development that includes "dual key" units, each individual keyed unit is counted as one unit for the purposes of calculating car parking spaces ("dual key" means adjoining units that can function as 2 or more separate rooming units*	1 space per 100m^2 of licensed area.

[8] "Patron" includes any person who attends the facility for an event. Therefore, patrons can include spectators, delegates, sporting competitors, performers, officials, employees and other types of participants.

Use	Car parking rate	Bicycle parking rate
	or can be joined together to form larger unit).	
Low impact industry	• 1 space per 50m^2 of gross floor area; • 1 heavy vehicle space per 2,000m^2.	1 space per 250m^2 of gross floor area.
Multiple dwelling	• 1 space per unit containing 1 or 2 bedrooms; or • 1.5 spaces per unit containing 3 or more bedrooms.	1 space per unit
Service station	• 4 spaces per service bay; • 1 space per 50m^2 of gross floor area.	1 space per 250m^2 of gross floor area.
Shopping centre	• 1 space per 50m^2 of gross floor area.	1 space per 250m^2 of gross floor area.
Short-term accommodation	• 0.5 spaces per employee (FTE); and • 0.5 spaces per accommodation unit; or • for a serviced unit containing kitchen and/or laundry facilities: (i) 1 space per unit containing 1 or 2 bedrooms; or (ii) 1.5 spaces per unit containing 3 or more bedrooms. *Note: In the case of a development that includes "dual key" units, each individual keyed unit is counted as one unit for the purposes of calculating car parking spaces ("dual key" means adjoining units that can function as 2 or more separate rooming units or can be joined together to form larger unit).*	No bicycle parking rate specified.
All other uses not mentioned in Table 7.2.1.3.B		
All other uses not mentioned in Table 7.2.1.3.B	Refer to Table 9.4.2.3.B within 9.4.2 – General development requirements code	Refer to Table 9.4.2.3.B within 9.4.2 – General development requirements code

Figure 7.2.1.3.A– Mackay city centre local plan - street frontages

Figure 7.2.1.3.B– Mackay city centre local plan – bicycle network and key public transport interchange facilities

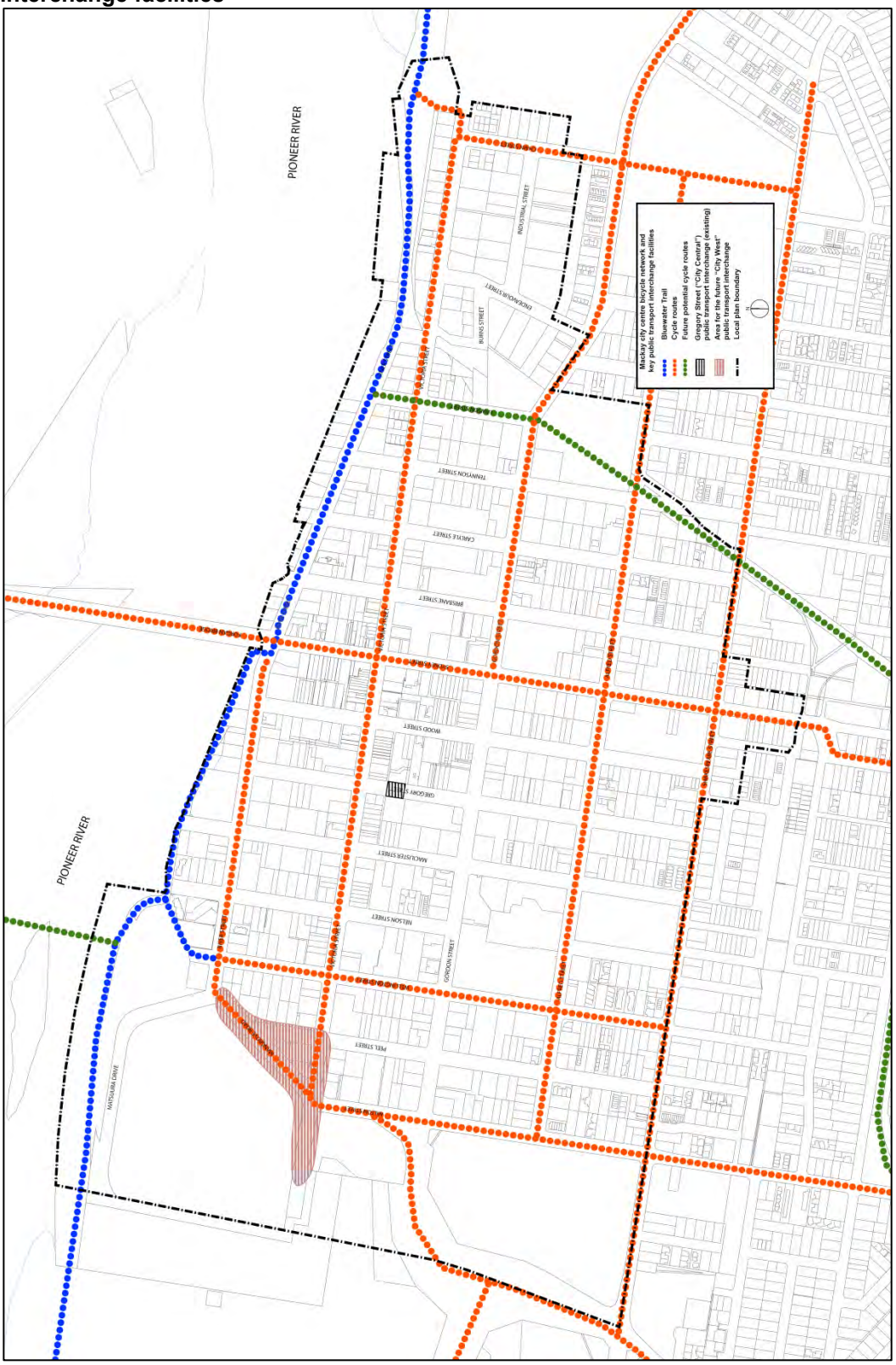


Figure 7.2.1.3.C – Mackay city centre local plan – laneway network

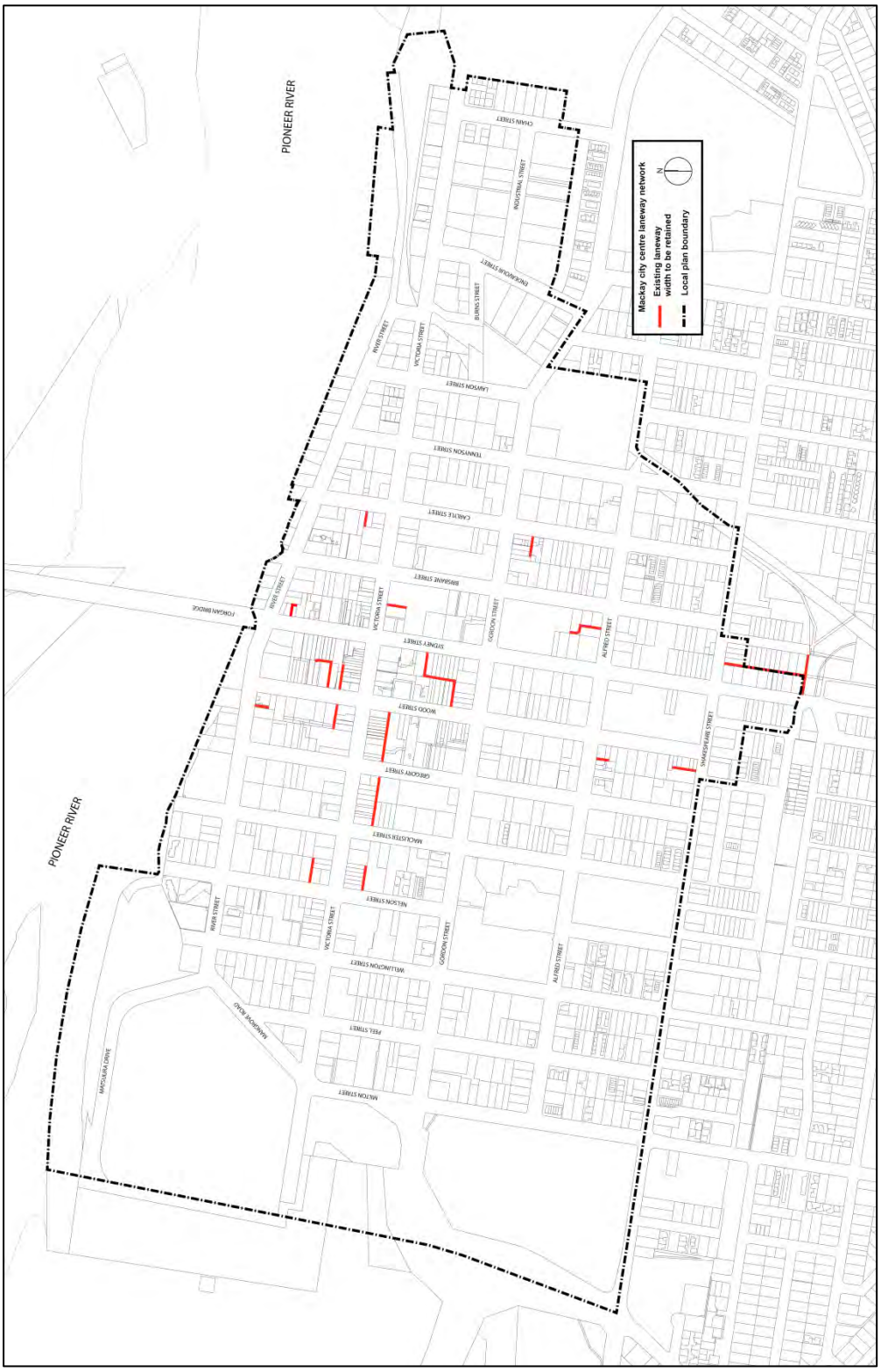


Figure 7.2.1.3.D – Mackay city centre local plan – building typology 1 – key active frontage – city core precinct / Victoria Street

Figure 7.2.1.3.E – Mackay city centre local plan – building typology 2 – key active frontage – city centre frame

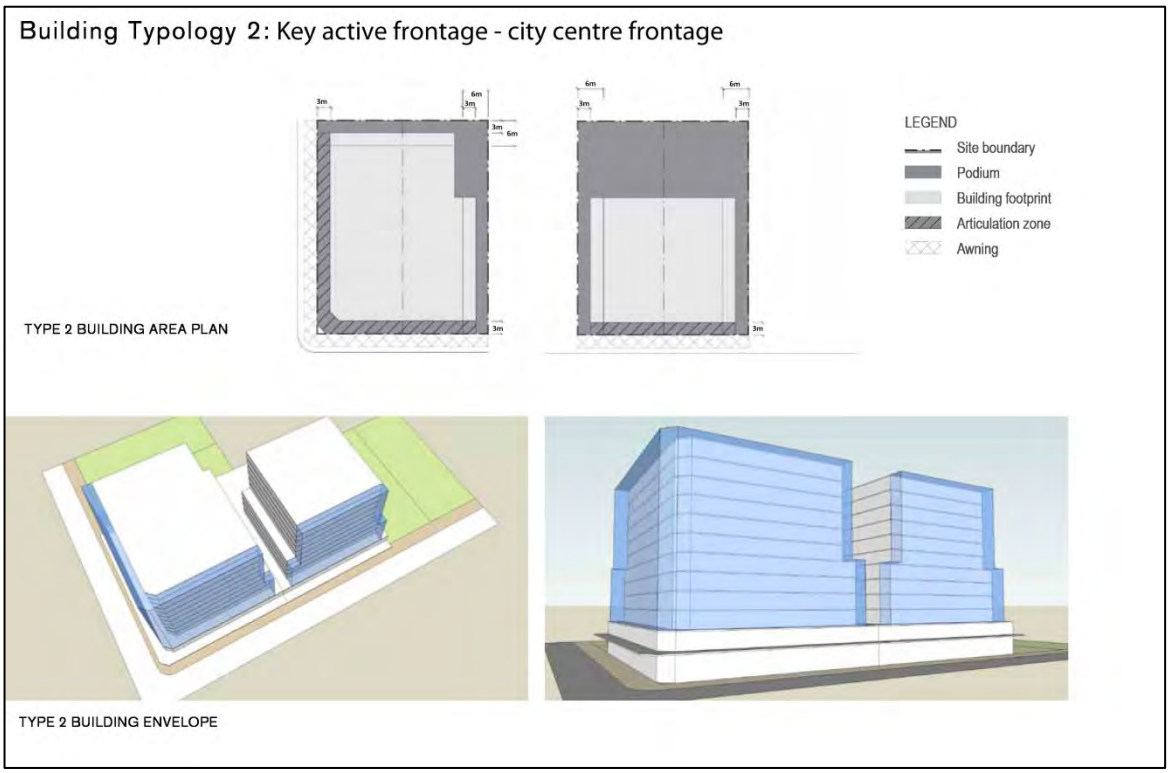


Figure 7.2.1.3.F – Mackay city centre local plan – building typology 3 – secondary active frontage

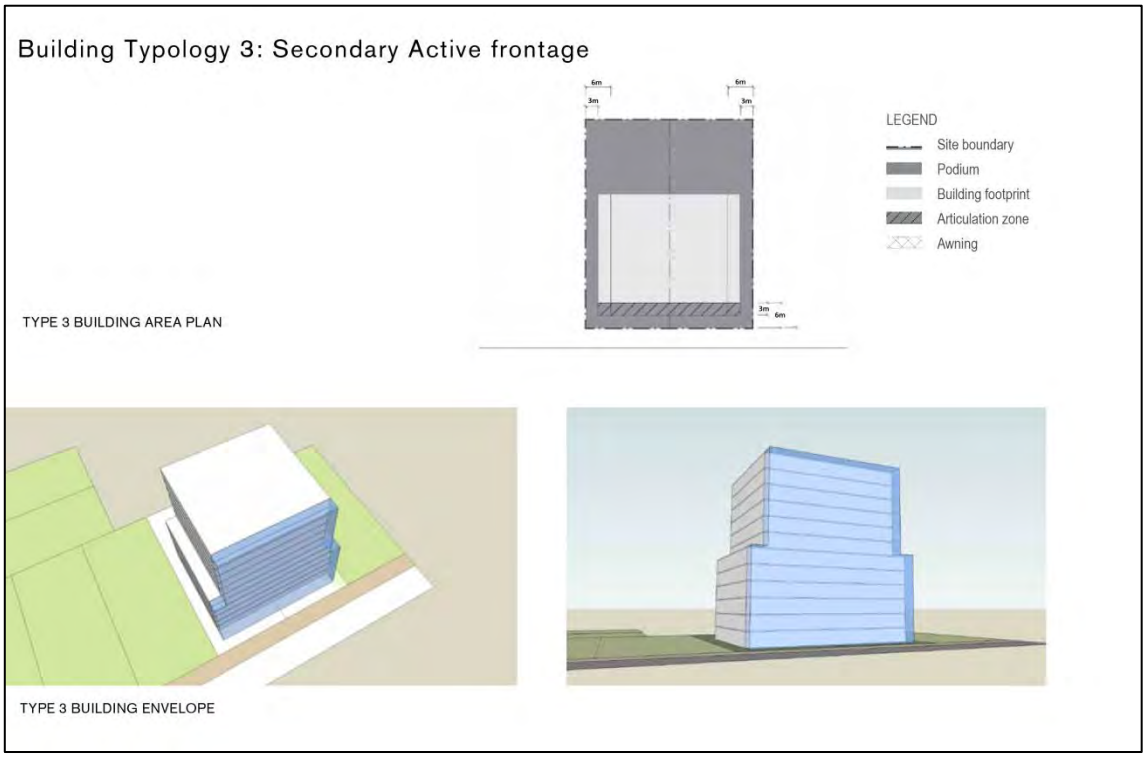


Figure 7.2.1.3.G – Mackay city centre local plan – building typology 4 – low impact industry frontage

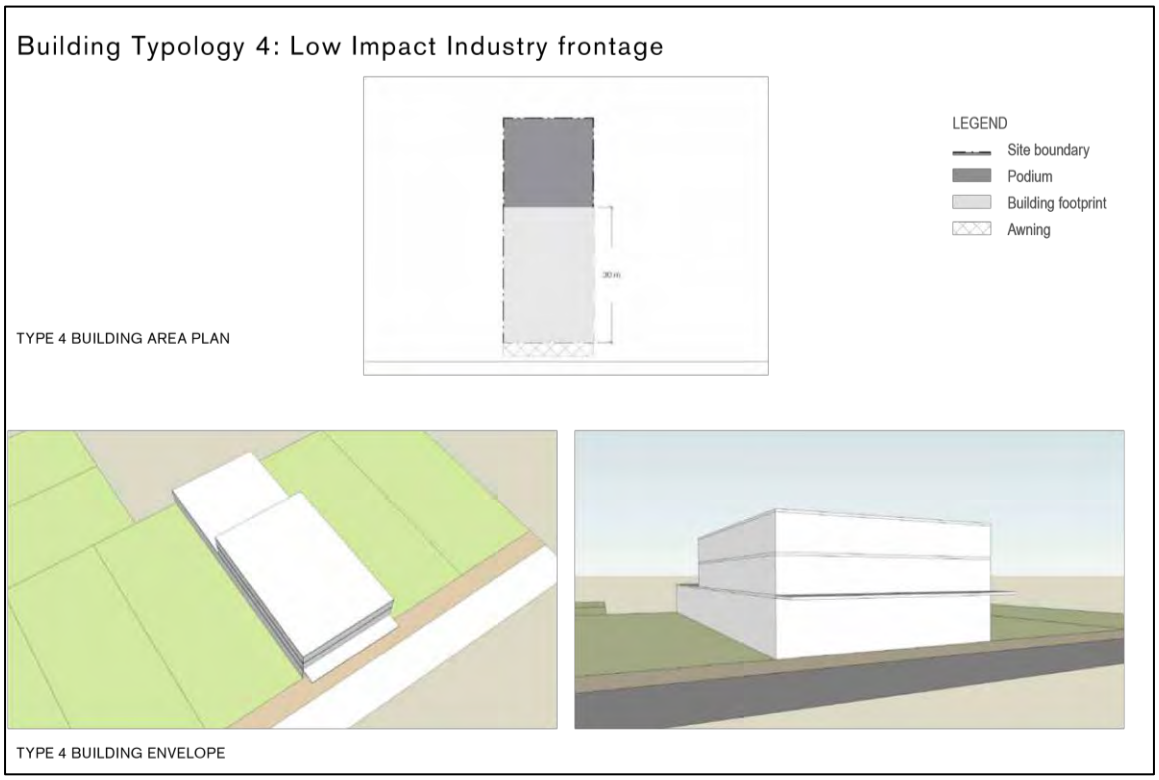
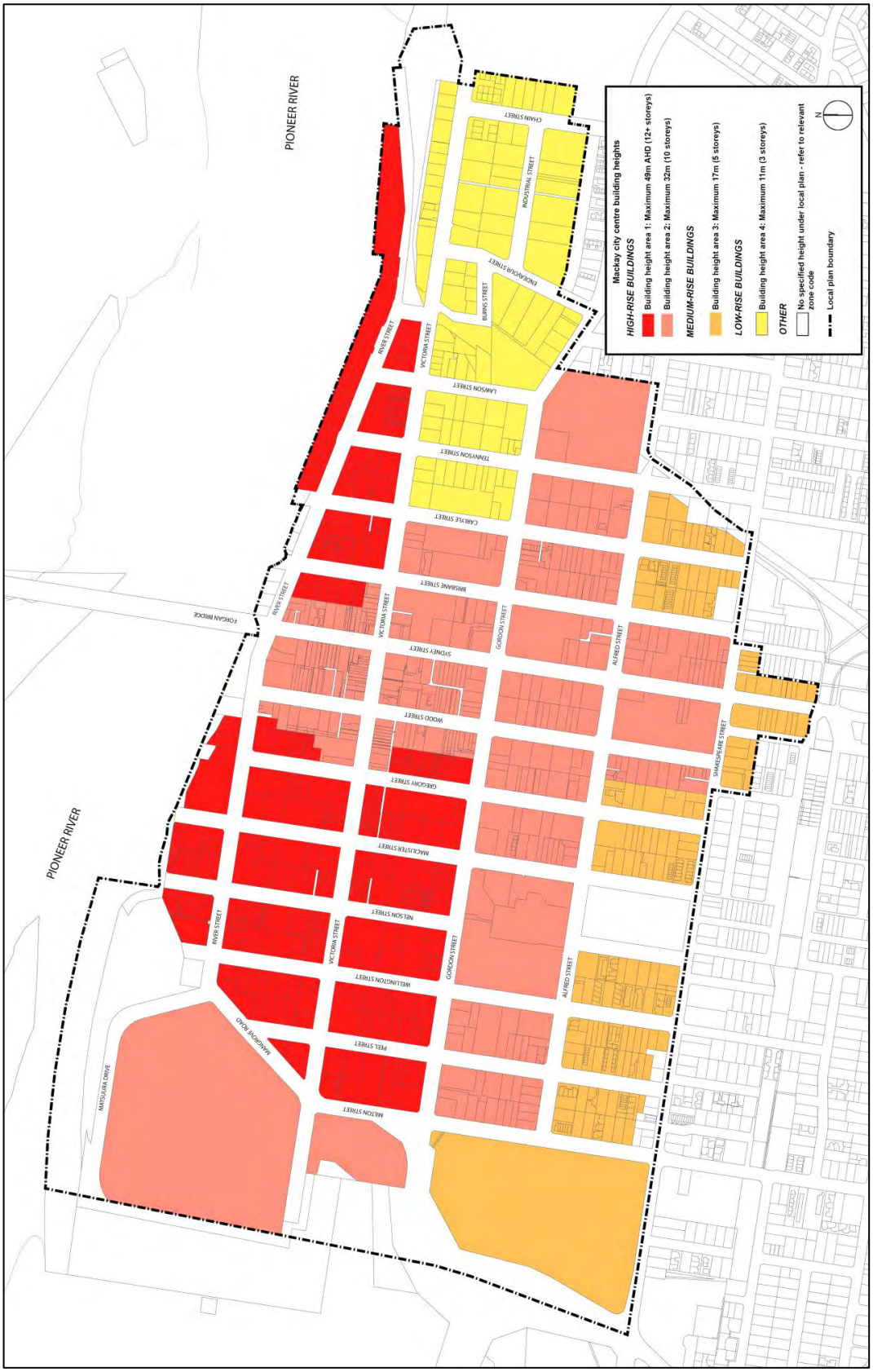


Figure 7.2.1.3.H – Mackay city centre local plan – building heights



7.2.2 Marian central local plan code

7.2.2.1 Application

This code applies to assessing development within the Marian central local plan area shown within Local plan map MC-1 contained within Schedule 2, and further illustrated in Figure 7.2.2.3.A.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

7.2.2.2 Purpose

(1) The purpose of the Marian Central local plan is to provide for cohesive urban form that:

- (a) unites urban areas to the east and west of the local plan area; and
- (b) includes an accessible, attractive and vibrant district centre; and
- (c) is characterised by strong visual and physical connections with the Pioneer River.

(2) The purpose of the code will be achieved through the following overall outcomes:

- (a) Marian district centre ('the district centre") is an accessible, attractive and vibrant community focal point that has:
  - (i) high levels of pedestrian amenity; and
  - (ii) a strong presence of street-orientated design; and
  - (iii) a strong visual and physical connection with the Pioneer River; and
- (b) the riverfront parkland north of the district centre enables the community to engage with and utilise the Pioneer River. The riverfront park forms a focal point for the community; and
- (c) a significant multi-purpose sub-regional sports facility, in an accessible central location south or south-west of the district centre, serves the needs of Marian and the wider Pioneer Valley community; and
- (d) the vehicular and pedestrian / bicycle access network provides for a high level of connectivity within and through the local plan area; and
- (e) appropriately located and well-designed higher density residential development utilises strategic land and increases the housing product diversity in the urban area.

7.2.2.3 Assessment criteria

Part A – Criteria for assessable development

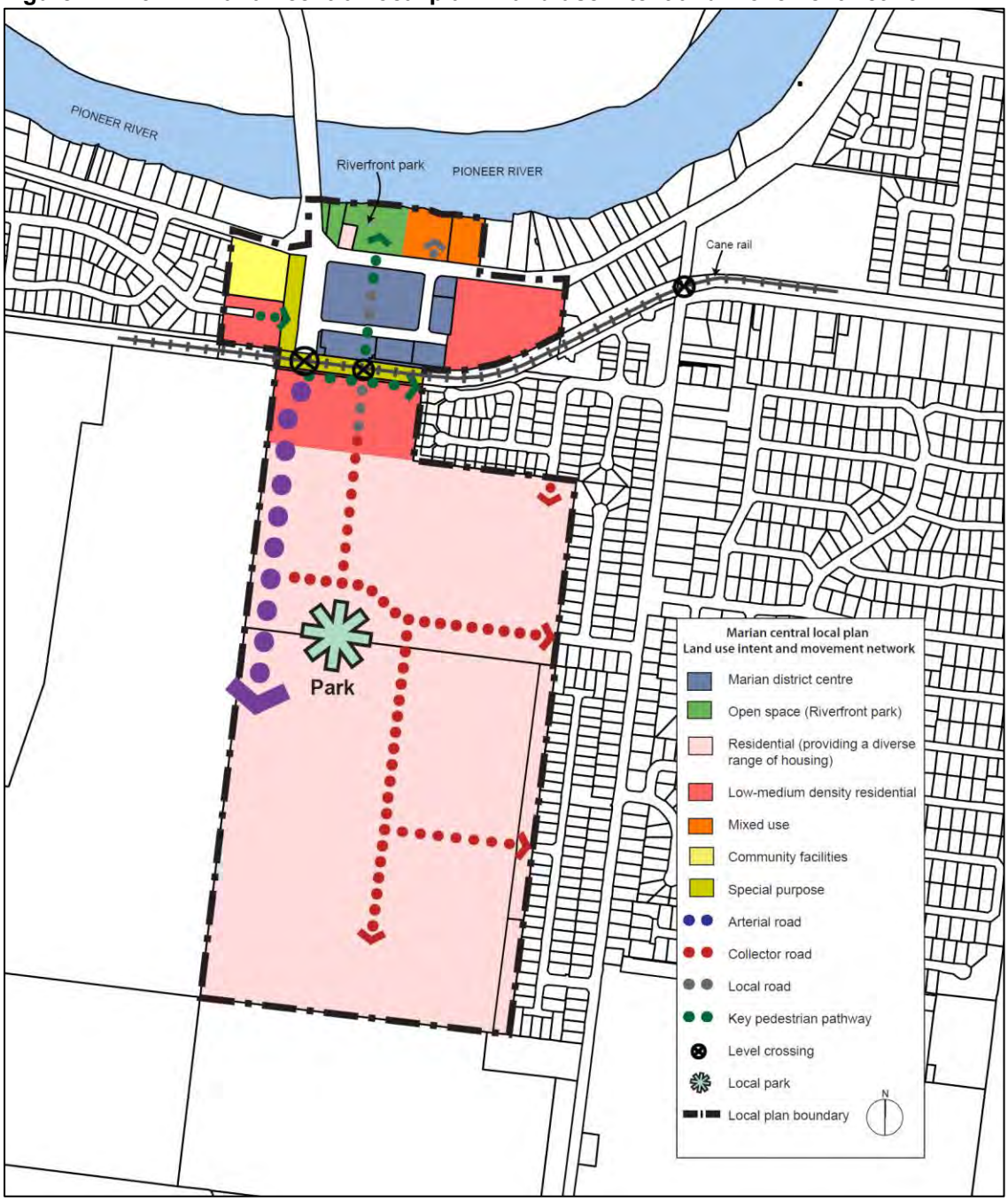
Table 7.2.2.3.A – Marian central local plan – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Marian district centre	
PO1 The district centre is characterised by: (a) built form that defines and addresses streets to contribute toward a vibrant, street-orientated character; and (b) high levels of pedestrian and vehicular connectivity with areas surrounding the centre; and (c) conveniently located public transport facilities serving efficient bus routes; and (d) attractive gateway elements defining the extent of the precinct.	**AO1** The district centre is characterised by: (a) a main street ("Duffy Court") that forms the focus of the centre and is adjoined by street orientated development; and (b) buildings that address, but do not necessarily adjoin the Anzac Avenue, Bissett Street and Hadley Street frontages; and (c) safe, convenient and attractive pedestrian access throughout the centre; and (d) a high level of connectivity to adjoining southern and eastern urban areas; and (e) public transport facilities at a central and prominent location within the centre. (f) articulated built form, active frontages and landscaping at the intersections of: (i) Anzac Avenue and Hadley Street; and (ii) David Price Way and Bissett Street.
Access network	
PO2 New roadways provide a high level of connectivity within and through the local plan area by: (a) providing for co-ordinated access across development sites; and (b) connecting with the existing road network.	**AO2** Arterial roads, collector streets, local streets, and level crossings of the cane railway are co-ordinated across development sites and provided generally in accordance with Figure 7.2.2.3.A – Marian central local plan – land use intent and movement network.
PO3 Active transport (walking and cycling) throughout the Marian Central local plan area is encouraged through the provision of safe, direct and attractive pedestrian and bicycle linkages between residential areas and important service, community and recreation nodes.	**AO3** Pedestrian and cycle paths are provided generally in accordance with Figure 7.2.2.3.A – Marian central local plan – land use intent and movement network and provide linkages between: (a) the riverfront park and the district centre; and (b) the district centre and the residential area to the south; and (c) the district centre and Grosskreutz Avenue along the southern side of the rail corridor that facilitates a direct link between the residential area south of the district centre and Marian State Primary School; and (d) Blackmur Street and the district centre.

Performance outcomes	Acceptable outcomes
PO4 Physical connectivity and common streetscape elements provide a strong sense of connection and identity between the new riverfront park, the district centre and the residential area south of the district centre	**AO4.1** Strong pedestrian and cycle connectivity between the riverfront park and residential area south of the district centre is provided by way of a north-south linkage that provides: (a) direct pedestrian access across Anzac Avenue between the new riverfront park and the northern end of the district centre; and (b) pedestrian facilities at the cane tramline level crossing; and (c) footpaths on both sides of the north-south collector street south of the district centre.
	AO4.2 Common landscaping (plant species) and street furniture elements are used and provided: (a) in the riverfront park; and (b) throughout the district centre; and (c) along the north-south collector road south of the district centre; and (d) in the park south of the district centre.
Higher density residential development	
PO5 Higher density residential development is provided in the area south of the district centre to: (a) efficiently utilise this strategically important land; and (b) take advantage of the land's convenience and amenity; and (c) increase the diversity of housing product available in the Marian central local plan area.	**AO5** In accordance with Figure 7.2.2.3.A – Marian central local plan – land use intent and movement network, Low-medium density residential development: (a) is provided in the area immediately south of the district centre; and (b) is interspersed throughout low density residential development on land further south.
Open space	
PO6 Centrally located and connected parkland: (a) contributes towards a strong sense of identity; and (b) provides unique recreation opportunities and visual and physical access to the riverfront.	**AO6.1** A riverfront park is provided between Anzac Avenue and the Pioneer River in accordance with Figure 7.2.2.3.A – Marian central local plan – land use intent and movement network.
	AO6.2 A park south of the district centre is provided in accordance with Figure 7.2.2.3.A – Marian central – land use intent and movement network.
PO7 A multi-purpose sub-regional sports facility (sports fields and associated facilities serving Marian and other areas in the Pioneer Valley) is provided on useable land and in a centralised location in close proximity to the district centre.	**AO7.1** A sub-regional sports facility is provided south, in accordance with the identified park on Figure 7.2.2.3.A – Marian central local plan – land use intent and movement network, or south-west of, and in close proximity to, the district centre.

Performance outcomes	Acceptable outcomes
	AO7.2 The sub-regional sports facility has: (a) a minimum area of 8 hectares; or (b) an area and dimensions suitable for accommodating: (i) 2 x full sized ovals (suitable for accommodating Cricket and Australian Rules Football); and (ii) 2 x full sized rectangular fields (suitable for accommodating Rugby League, Rugby Union and Soccer); and (iii) 4 x courts (suitable for accommodating Netball, Basketball and other court-based sports); and (iv) 1 x multi-use clubhouse and change room facilities; and (v) interspersed spectator and passive recreation areas and appropriate separation areas between facilities; and (vi) an adequate amount of car parking.
	AO7.3 The sub-regional sports facility is provided on well-drained land that is not subject to regular or prolonged periods of inundation.

Figure 7.2.2.3.A – Marian central local plan – land use intent and movement network



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Part 8 Overlays

8.1 Preliminary

(1) Overlays identify areas in the planning scheme that reflect state and local level interests and have one or more of the following characteristics:

(a) there is a particular sensitivity to the effects of development;

(b) there is a particular constraint on land use or development outcomes;

(c) there is the presence of valuable resources; and

(d) there are particular opportunities for development.

(2) Overlays are mapped and included in Schedule 2.

(3) The changed levels of assessment, if applicable, for development affected by an overlay are in Part 5.

(4) Some overlays may be included for information purposes only. This should not result in a change to the level of assessment or any additional assessment criteria.

(5) Assessment criteria for an overlay may be contained in one or more of the following:

(a) a map for an overlay

(b) a code for an overlay

(c) a zone code

(d) a local plan code; or

(e) a development code

(6) Where development is proposed on premises partly affected by an overlay, the assessment criteria for the overlay only relates to the part of the premises affected by the overlay.

(7) The overlays for the planning scheme are:

(a) Acid sulfate soils overlay

(b) Agricultural land overlay

(c) Airport environs overlay

(d) Biodiversity overlay

(e) Bushfire hazard overlay

(f) Extractive resources and high impact activities overlay

(g) Flood and coastal hazards overlay

(h) Heritage and neighbourhood character overlay

(i) Landscape character and image corridor overlay

(j) Landslide hazard overlay

(k) Regional infrastructure overlay

(l) Residential density overlay (overlay involves map for the purpose of changing level of assessment only, and therefore no overlay code is provided in Part 8)

(m) Road hierarchy overlay (overlay involves map for information purposes only and therefore no overlay code is provided in Part 8); and

(n) Transport noise corridor overlay (overlay involves map for information purposes only and therefore no overlay code is provided in Part 8).

(8) The following are the overlay codes for the planning scheme:

(a) Acid sulfate soils overlay code
(b) Agricultural land overlay code
(c) Airport environs overlay code
(d) Biodiversity overlay code
(e) Bushfire hazard overlay code
(f) Extractive resources and high impact activities overlay code
(g) Flood and coastal hazards overlay code
(h) Heritage and neighbourhood character overlay code
(i) Landscape character and image corridor overlay code
(j) Landslide hazard overlay code; and
(k) Regional infrastructure overlay.

8.2 Overlay codes

8.2.1 Acid sulfate soils overlay code

8.2.1.1 Application

This code applies to assessing development within the acid sulfate soils overlay.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

8.2.1.2 Purpose

(1) The purpose of the acid sulfate soils overlay code is to ensure that development in areas known to contain, or potentially containing acid sulfate soils, avoids the disturbance of acid sulfate soils or minimises the release of acid and metal contaminants.

(2) The purpose of the code will be achieved through the following overall outcomes:

- (a) development in areas known to contain, or potentially containing acid sulfate soils, avoids disturbance or implements appropriate investigation and management techniques to minimise the release of acid and metal contaminants to:
  - (i) maintain ecological quality of the natural environment, particularly water quality; and
  - (ii) protect human health and wellbeing; and
  - (iii) minimise adverse effects on the built environment, particularly corrodible assets on the site and on surrounding sites.

8.2.1.3 Assessment criteria

Part A – Criteria for Assessable development

Table 8.2.1.3.A – Acid sulfate soils overlay – assessable development

Performance outcomes	Acceptable outcomes
Assessable development	
PO1 Development in areas known to contain, or potentially containing acid sulfate soils, implements appropriate investigation and management techniques to: (a) maintain the ecological quality, particularly the water quality within the subject site and on surrounding sites; and (b) prevent the accelerated corrosion of built structures such as buildings, roads, bridges and utility infrastructure.	**AO1.1** An Acid Sulfate Soils Investigation Report in accordance with the following is provided: (a) prepared by a suitably qualified person; and (b) prepared in accordance with the *Queensland Sampling Guidelines* and soil analysis according to the *Laboratory Methods Guidelines* or *Australian Standard AS4969*; and (c) demonstrates: (i) the sampling and technical analysis procedures adopted in the investigation; and (ii) details on the water table; and (iii) the location, area, depth and volume of acid sulfate soil to be disturbed; and (iv) the maximum existing and potential acidity of identified acid sulfate soils.

Performance outcomes	Acceptable outcomes
	AO1.2 Where the Acid Sulfate Soils Investigation Report finds that the development will disturb acid sulfate soils, the development complies with an Acid Sulfate Soils Environmental Management Plan that: (a) is prepared by a suitably qualified person; and (b) is prepared in accordance with the *Queensland Sampling* Guidelines and soil analysis according to the *Laboratory Methods Guidelines* or *Australian Standards AS4969.*; and (c) demonstrates: (i) the proposed method of treating / managing disturbed acid sulfate soils and surface drainage waters from areas containing disturbed acid sulfate soil; and (ii) the proposed method of maintaining water table levels in and adjacent to disturbed areas, or management of acid sulfate soils if the water table is lowered below the acid sulfate soils layer.
	AO1.3 The disturbance of acid sulfate soils avoids the release of acid and metal contaminants by: (a) neutralising acidity and maintaining water quality at more than 5.5pH; and (b) preventing the release of surface or groundwater flows containing acid and metal contaminants into the environment.

8.2.2 Agricultural land overlay code

8.2.2.1 Application

This code applies to assessing development within the agricultural land overlay.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

8.2.2.2 Purpose

(1) The purpose of the agricultural land overlay is to ensure development on or near agricultural land[1] maintains the productive capacity of the land for agricultural purposes.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) development that fragments, alienates or diminishes the productive capacity of agricultural land for agricultural purposes is avoided; and

(b) agricultural activities on agricultural land is protected and promoted; and

(c) the full productive capacity of agricultural land for agricultural purposes is not compromised by the location of sensitive land uses that will prevent or constrain current or future farming operations.

8.2.2.3 Assessment criteria

Part A – Criteria for assessable development

Table 8.2.2.3.A – Agricultural land overlay – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Development on agricultural land	
PO1 Development utilises or maintains the productive capacity of agricultural land for agricultural purposes, unless: (a) an overriding need in the public interest is demonstrated; and (b) no alternate sites (not on agricultural land) are available.	**AO1.1** Agricultural land accommodates the following agricultural activities and uses that are ancillary, support or complement agricultural land: (a) animal husbandry; and (b) cropping; and (c) intensive animal industry; and (d) intensive horticulture; and (e) major electricity infrastructure; and (f) out-building/s associated with an agricultural activity; and (g) rural industry; and (h) small-scale residential uses including dwelling house, dwelling unit, caretaker's accommodation and rural workers' accommodation; and (i) utility installation other than a mail depot, sewerage treatment plant, waste (refuse) management facility or water treatment plant.

[1] "Agricultural land" is a collective term for all land identified as "Agricultural land class A and B" and "Locally Important Agricultural Areas" on the Agricultural land overlay mapping

Performance outcomes	Acceptable outcomes
	AO1.2 Development for uses not mentioned in AO1.1: (a) is located outside areas identified as Agricultural land class A and B and Locally important agricultural areas; or (b) does not result in over 2,000m^2 of land being taken out of agricultural production and: (i) occupies the same location as a previous non-agricultural use and/or co-locates with existing buildings; or (ii) is located on the least agriculturally productive part/s of the site[2]; or (iii) is not setback more than: (A) 24 metres from an arterial road; and (B) 12 metres from a sub-arterial road, collector street or access street.
PO2 Development manages potential sources of contamination by avoiding: (a) adverse affects on the physical and chemical properties of the soil; and (b) contamination of the soil that would restrict cropping options by inhibiting crop emergence and/or growth; and (c) heavy metal contamination of the soil.	No acceptable outcome prescribed.
PO3 Soil and topographic conditions are rehabilitated to the previous condition upon the cessation of a temporary use on good quality agricultural land.	No acceptable outcome prescribed.
PO4 Long-cycle cropping[3] does not fragment, alienate, result in the loss of or diminish the productive capacity of the sugar industry.	**AO4** Long-cycle cropping is not located in a Locally important agricultural area unless: (a) an overriding community need for the development is demonstrated; and (b) no alternate sites (not on Locally important agricultural area) are available; and (c) It is demonstrated that the use will not compromise the viability of local sugar industry infrastructure (e.g. Cane rail, sugar mills).

[2] "Least agriculturally productive part of the site" means land not identified as agricultural land or land encumbered by site constraints such as poor soil, terrain, accessibility and other factors inhibiting agricultural capacity.

[3] "Long-cycle cropping" means cropping that has a harvesting frequency of 8 years or more – for example, Cropping where involving forestry for wood production.

Performance outcomes	Acceptable outcomes
PO5 New lots created through boundary realignment: (a) maintain or improve the agricultural capacity of agricultural land; and (b) do not fragment, alienate or diminish the productive capacity of agricultural land; and (c) increase potential conflict between agricultural and non-agricultural uses.	**AO5** Boundary re-alignments maintain the productive capacity of agricultural land by: (a) resulting in a lesser number of lots; or (b) separating: (i) agriculturally productive and non-agriculturally productive land; or (ii) different land uses; or (iii) infrastructure; or (c) resolving an encroachment issue/s.
Separation distances for sensitive land uses	
PO6 Separation and/or buffering between sensitive land uses and agricultural land: (a) minimises potential land use conflicts; and (b) provides a high level of amenity for sensitive land uses.	**AO6** Sensitive land uses are separated from agricultural land by a buffer with a minimum width of 40 metres[4].

[4] Buffers may be publically owned (roads, parks, drains) or privately owned (subject to an appropriate building envelope / line) land and may include measures (such as vegetation and fences) to mitigate potential impacts from agricultural activities.

8.2.3 Airport environs overlay code

8.2.3.1 Application

This code applies to assessing development within the airport environs overlay.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

8.2.3.2 Purpose

(1) The purpose of the airport environs overlay code is to:

(a) ensure development maintains the safety, efficiency and operational integrity of Mackay Airport and associated aviation facilities; and

(b) minimise safety risks and maintain the amenity of development in close proximity to Mackay Airport.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) safety risks for aircraft approaching and departing from Mackay Airport are minimised through ensuring that:

(i) development and associated activities is limited and avoids increasing public safety risks within the airport public safety areas; and

(ii) inappropriate development such as buildings, structures and other obstructions avoid being located within close proximity to aviation facilities to maintain and not compromise their operation; and

(iii) development and associated activities do not create incompatible intrusions, or compromise aircraft safety, in operational airspace; and

(iv) development does not generate air emissions, attract wildlife and include inappropriate lighting that compromises aircraft safety; and

(b) development in close proximity to Mackay Airport is compatible with forecast levels of aircraft noise within the 20 ANEF contour and greater.

8.2.3.3 Assessment criteria

Part A – Criteria for assessable development

Table 8.2.3.3.A – Airport environs overlay – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Protection of aviation facilities	
PO1 Development does not interfere with the function of aviation facilities[5].	**AO1.1** Development located within the building restriction area for an aviation facility does not create: (a) permanent or temporary physical obstructions in the line of sight between antennas;

[5] Development should be referred to Airservices Australia for assessment if it is located within aviation facility "Building restriction area – zone A". SPP Guideline – Strategic airports and aviation facilities provides guidance on meeting the outcomes.

Performance outcomes	Acceptable outcomes
	(b) an electrical or electromagnetic field that will interfere with signals transmitted by the facility; and (c) reflective surfaces that could deflect or interfere with signals transmitted by the facility.
	AO1.2 Development located within the building restriction area for an aviation facility is designed and constructed to mitigate adverse impacts on the function of the facility.
Public safety area	
PO2 The following development is avoided within the public safety area to maintain and not compromise the safety and operational efficiency of the airport: (a) uses that increase the number of residents, employees or people participating in recreation activities, other than intensification within, and provided for by, the Medium density residential zone and Low density residential zone; and (b) uses involving the manufacture or bulk storage of hazardous (explosive or noxious) or flammable material.	No acceptable outcome prescribed.
Australian Noise Exposure Forecast (ANEF) contours	
PO3 Sensitive land uses and uses supported by on-site employees within the ANEF contours are appropriately located and designed to prevent adverse impacts from aircraft noise to achieve a high level of amenity.	**AO3.1** Development within the 20-40 ANEF contour is designed and constructed to attenuate aircraft noise by achieving the following indoor design sound levels: (a) for caretaker's accommodation, community residence, dual occupancy, dwelling house, dwelling unit, multiple dwelling activities and residential care facility: (i) 50 db for sleeping areas; and (ii) 55 db for other habitable areas; and (b) 50 db for child care centres and community activities; and (c) 55 db for centre activities, hotel, outdoor business activities and short term accommodation; and (d)75 db for hardware and trade supplies, low impact industry, research and technology industry, service industry and service station.

Performance outcomes	Acceptable outcomes
	AO3.2 Development accords with *AS2021 Acoustics – Aircraft Noise Intrusion – Building Siting and Construction.*
Operational airspace - Obstacle limitation surface	
PO4 Development does not obstruct the operational airspace or interfere with the safe and efficient operation of Mackay Airport.	**AO4.1** Development, associated equipment used during construction (such as cranes) and landscaping (at maturity) does not exceed the obstacle limitation surface height[6].
	AO4.2 Development involving transient aviation activities not directly associated with Mackay Airport, such as parachuting, hot air ballooning and hang-gliding; do not occur within the airport's operational airspace including above or below the obstacle limitation surface.
Operational airspace – Lighting and reflective surfaces	
PO5 Development within the lighting management area does not include external lighting (fixing, operation, strength and direction of any lighting) or reflective surfaces where such fixtures could distract and confuse pilots and increase the risk of an aircraft incident.	**AO5.1** Development within the lighting management area avoids: (a) straight parallel lines of lighting of a length between 500 metres and 1,000 metres; and (b) the fixing of external upwards-facing lighting and other bright light sources; (c) flare plumes; and (d) reflective surfaces; and (e) flashing, laser and sodium lights.
	AO5.2 External lighting is designed in accordance with CASA guideline, "*Lighting in the vicinity of aerodrome: Advice to lighting designers".*
Operational airspace - Emissions	
PO6 Emissions do not significantly increase air turbulence, reduce visibility or compromise the operation of aircraft engines in Mackay Airport's operational airspace.	**AO6.1** Development within the wildlife hazard buffer zone – 13 kilometres, does not emit gaseous plumes at a velocity exceeding 4.3 metres per second.

[6] Any building (including construction equipment), structure or landscaping (whether temporary or permanent) that exceeds the obstacle limitation surface is referred to the airport operator and Civil Aviation Safety Authority (CASA) and complies with any CASA directives.

Performance outcomes	Acceptable outcomes
	AO6.2 Development within the wildlife hazard buffer zone – 13 kilometres that emits smoke, dust, ash, steam or gaseous plumes exceeding 4.3 metres per second, is designed and constructed to mitigate adverse impacts of emissions upon operational airspace by maintaining: (a) visibility for aircraft pilots and air traffic control officers; and (b) safe operation of aircraft engines and other equipment.
Operational airspace - wildlife hazard	
PO7 Development does not compromise safe aircraft movement by attracting birds and bats within operational airspace.	**AO7.1** Development involving the following are not located within the wildlife hazard buffer zone – 3 kilometres: (a) food handling or food processing that is an industrial activity; and (b) animal husbandry and other uses involving stock handling or slaughtering, stables, pig production, or wildlife keeping outside enclosures; and (c) aquaculture involving any fish growing areas or handling, processing, packing or storage that is not fully contained within an enclosed building; and (d) cropping involving fruit tree or turf production; and (e) intensive animal industries involving pig production; (f) other uses involving waste; and management operations or food production; (g) tourist attraction where involving a zoo; and (h) lakes, ponds or other types of development involving permanent bodies of water.
	AO7.2 Adequate measures preventing the attraction of birds and bats into operational airspace are implemented where uses mentioned in AO7.1 are located within the wildlife hazard buffer zone - 8 kilometres. These measures include: (a) providing contained refuse storage; and (b) outdoor areas are kept in a clean state (free from waste) at all times; and (c) no outdoor stockpiles of waste.
	AO7.3 Development involving the disposal of putrescible waste does not occur within the wildlife hazard buffer zone - 13 kilometres.

8.2.4 Biodiversity overlay code

8.2.4.1 Application

This code applies to assessing development within the Biodiversity overlay.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

8.2.4.2 Purpose

(1) The purpose of the biodiversity overlay code is to ensure that development maintains the ecological integrity of significant vegetation and wildlife habitat areas, natural waterways and natural wetlands.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) the ecological integrity and functionality of environmentally significant vegetation and wildlife habitat areas, waterways and wetlands is maintained by ensuring that development:

(i) retains elements of ecological importance; and

(ii) effectively mitigates potential environmental, amenity, hydrologic and access impacts; and

(b) where relevant, the ecological integrity and functionality of environmentally significant vegetation and wildlife habitat areas, waterways and wetlands is improved through rehabilitation measures and enhancing regional ecological connectivity.

8.2.4.3 Assessment criteria

Part A – Criteria for assessable development

Table 8.2.4.3A – Biodiversity overlay – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
PO1 Development is located, designed and operated to maintain ecological integrity and functionality within, adjoining and near the site by: (a) retaining high value vegetation and habitat areas, waterways and wetlands; and (b) mitigating environmental and amenity impacts; and (c) maintaining stormwater and hydrologic characteristics; and (d) managing access for vehicles, pedestrians, domestic animals native fauna and fish passages; and (e) rehabilitating degraded areas and improving regional ecological connectivity by providing habitat linkages between areas of ecological significance.	**AO1.1** Development avoids areas of ecological significance as follows: (a) reconfiguration of lots does not increase the number of lots encroaching environmentally significant vegetation and wildlife habitat areas and waterways and wetlands; and (b) buildings and constructed outdoor parking, recreation or storage areas avoid environmentally significant vegetation and wildlife habitat areas and waterways and wetlands.

Performance outcomes	Acceptable outcomes
	AO1.2 Development avoids being located within the following specified distances: (a) 200 metres of a wetland outside an urban area; or (b) 50 metres of a wetland within an urban area; or (c) 50 metres of a waterway.
	AO1.3 If compliance with AO1.1 and/or AO1.2 cannot be achieved and it is demonstrated that: • there is an overriding community need for the development in social, economic or ecological terms; and • the development: – cannot be reasonably located elsewhere; or – is entirely reliant being located within environmentally significant vegetation and wildlife habitat areas or waterway and wetland, the development is located, designed and operated to ensure minimal environmental impacts by: (a) locating development within areas of the least ecological significance (e.g. already cleared areas); and (b) ensuring remaining area/s of ecological significance within the site are retained and protected; and (c) management of the following to maintain natural ecological values within, adjoining and near the site: (i) potential noise, light (glare and artificial light), air quality (emissions, dust, odour) is waste (wastewater, refuse) impacts; and (ii) stormwater and hydrology: (A) flow paths and water levels; and (B) storage capacity and duration; and (C) volume, concentration, velocity and quality of discharge; and (D) water salinity; and (iii) restricting access within and through the site by vehicles, pedestrians and domestic animals as necessary; and (iv) providing for unrestricted access for native fauna within and through the site, or restricting access to avoid potential safety / nuisance issues as necessary; and

Performance outcomes	Acceptable outcomes
	(d) improving the ecological function of areas within the site though the: (i) rehabilitation of degraded areas; and/or (ii) provision of new linkage/s between areas of ecological significance.
PO2 Development avoids land degradation within, and in close proximity to, waterways and wetlands through: (a) mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion, or scaling; and (b) loss or modification of chemical, physical or biological properties or functions of soils.	**AO2.1** Earthworks are not carried out within waterways and wetlands.
	AO2.2 In waterway and wetland buffer areas, modified land gradients do not exceed the following: (a) very stable soils – no gradient specified; or (b) stable soils – 32%; or (c) unstable soils – 10%; or (d) very unstable soils – 1%.

8.2.5 Bushfire hazard overlay code

8.2.5.1 Application

This code applies to assessing development within the bushfire hazard overlay.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

Notes:

1. For the purposes of Part 3, Section 12 of the *Building Regulation 2006*, land identified within the bushfire hazard areas (very high, high and medium), and within 100m of a bushfire hazard area on the Bushfire hazard overlay map are 'designated bushfire prone areas'. Relevant sections of the Building Code of Australia and AS3959 (2009) "*Construction of Buildings in Bushfire-prone Areas*" apply to development within the 'designated bushfire prone areas' identified on the Bushfire overlay map.

2. Bushfire hazard overlay mapping in Schedule 2: Overlay Maps, should be read in conjunction with a detailed site-specific assessment to determine the actual level of potential bushfire hazard on a given site.

8.2.5.2 Purpose

(1) The purpose of the bushfire hazard overlay code is to ensure that development in areas subject to bushfire hazard is located and designed to minimise the risk of harm to people and property.

(2) The purpose of the code will be achieved through the following overall outcomes:

- (a) development in bushfire hazard areas is located and designed so that:
  - (i) damage from bushfire events is minimised; and
  - (ii) it avoids areas with a very high, high and medium risk bushfire hazard; and
  - (iii) accessibility and equipment is provided for fire fighting vehicles; and
  - (iv) safe evacuation during bushfire events can be facilitated; and
- (b) public safety and the environment are not adversely affected by the inappropriate storage of hazardous materials.

8.2.5.3 Assessment criteria

Part A – Criteria for assessable development

Table 8.2.5.3.A – Bushfire hazard overlay – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
PO1 The safety of people and property are maintained by: (a) avoiding development in bushfire hazard areas; or (b) assessing and mitigating the risk of people living or working in bushfire hazard areas; and (c) mitigating the risk of bushfire through: (i) siting of buildings; and (ii) providing adequate access for fire-fighting / other emergency vehicles and safe evacuation; and (iii) providing an adequate and accessible water supply system for fire-fighting purposes.	**AO1.1** Development, excluding dwelling houses, in a very high, high and/or medium bushfire hazard area, is supported by a Bushfire Management Plan.
	AO1.2 Buildings and structures are located: (a) to avoid areas of very high, high and medium bushfire hazard; and (b) in the area of the site with the lowest bushfire risk; and (c) to achieve a minimum setback from hazardous vegetation of 20 metres; and (d) so that elements least susceptible to fire are closest to the bushfire hazard.
	AO1.3 For buildings and structures with a gross floor area greater than 50m^2, each lot: (a) incorporates a water supply system that has sufficient flow and pressure characteristics for fire-fighting purposes at all times (minimum pressure flow of 10 litres a second at 200KPA), or (b) incorporates an onsite storage system with a minimum capacity of 5,000 litres (e.g. tank or swimming pool).
	AO1.4 Where a water supply system is used, it: (i) contains, as far as practically possible, components that are fire proof or on combustible; and (ii) is fitted with male camlock fire brigade tank fittings; and (iii) connected to a constructed public road by a driveway with a maximum gradient of 12.5% and a minimum width of 6 metres (to be accessible to fire fighting vehicles); and (iv) within 6 metres of a fire fighting vehicle parking area that: (i) is level; and (ii) has a minimum area of 60m^2; and

Performance outcomes	Acceptable outcomes
	(v) is connected to a pump that is independent of mains electricity supply; and (vi) is located external to, and a reasonable distance from, buildings[7]; and (vii) is located to ensure safe and efficient access during a fire event.
PO2 Development maintains the safety of people and property by including firebreaks that provide: (a) setbacks between buildings / structures and hazardous vegetation; and (b) access for fire-fighting/other emergency vehicles.	**AO2.1** Development in bushfire hazard areas resulting in multiple buildings, structures and/or lots provide either of the following firebreaks: (a) a perimeter road that: (i) separates all buildings, structures and/or lots from bushfire hazard areas; and (ii) provides or forms part of a minimum cleared width between bushfire hazard areas and buildings / structures of 20 metres; and (iii) includes a constructed public road with a minimum carriageway width of 6 metres; and (iv) is constructed to an all-weather standard in accordance with the Engineering design guidelines; (b) fire maintenance trails that: (i) separates all buildings, structures and/or lots from bushfire hazard areas; and (ii) provides or forms part of a minimum cleared width between bushfire hazard areas and buildings / structures of 20 metres; and (iii) has a minimum formed trail width of 4 metres; and (iv) has a maximum gradient of 12.5%; and (v) has vehicular access points at each end (not a dead end); and (vi) provide passing bays and turning areas (no more than a 3-point turn) for medium rigid vehicles; and (vii) are constructed and maintained to be accessible and driveable for fire fighting vehicles at all times, prevent erosion (i.e. erosion control devices) and provide adequate drainage; and (viii) are provided within publicly owned land or an access easement in favour of Council and the Queensland Fire and Rescue Service.

[7] The water supply system must be accessible in the event of a fire within a building or structure.

Performance outcomes	Acceptable outcomes
PO3 Community infrastructure, including community activities and child care centres, are only located in a bushfire hazard area where: (a) the function and role of the use necessitates its location; and (b) there are no suitable alternative sites in a low bushfire hazard area; and (c) the use is able to function effectively during and immediately after bushfire events.	**AO3** Community infrastructure, including community activities and child care centres: (a) are not located on land identified as very high, high or medium bushfire hazard areas; or (b) do not involve any new building work other than a minor extension (20m^2 of Gross Floor Area) to an existing building; or (c) are designed to function effectively during and immediately after bushfire events.
PO4 Public safely and the environment are not adversely affected by potential impacts of a bushfire over land containing hazardous materials manufactured or stored in bulk.	**AO4** Development involving the manufacture or storage of hazardous materials in bulk is supported by a Bushfire Management Plan.
PO5 Reconfigured lots provide adequate opportunity for evacuation.	**AO5** Reconfigured lots: (a) are not long and narrow in shape; or (b) do not include rear / battleaxe lots.
PO6 Reconfigured lots in bushfire hazard areas provide a building envelope that is: (a) adequately separated from bushfire hazard area; and (b) large enough to accommodate a dwelling house, outdoor recreation area and on site wastewater treatment system (where not connected to a reticulated sewerage network).	**AO6** In areas zoned Rural and Rural residential, building envelopes are identified: (a) to separate the location of future buildings from bushfire hazard areas in accordance with the separation distances required by AO1.2 and AO2.1; and (b) with a minimum area of 1,000m^2 and minimum dimension of 18 metres.
PO7 Roads enable the following during bushfire events: (a) safe evacuation of residents, employees and other people within bushfire hazard areas; and (b) access for fire fighting vehicles.	**AO7.1** Cul-de-sacs / non-through roads are not provided in bushfire hazard areas unless the cul-de-sac is provided within an alternative access linking the cul-de-sac to other through roads. **AO7.2** Roads have a maximum gradient of 12.5%.

8.2.6 Extractive resources and high impact activities overlay code

8.2.6.1 Application

This code applies to assessing development within the extractive resources and high impact activities overlay.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

8.2.6.2 Purpose

(1) The purpose of the extractive resources and high impact activities overlay code is to minimise potential conflicts between existing and future significant extractive resource areas and high impact activities and sensitive land uses.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) the operation and full productive capacity of significant existing extractive industries including KRA transport routes is not compromised by the location of sensitive land uses that prevents or severely constrains the current extraction of resources; and

(b) realisation of the full productive capacity of potential extractive resource areas is not compromised by the location of sensitive land uses; and

(c) the operation of existing and future high impact activities is not compromised by the nearby location of sensitive land uses; and

(d) adverse impacts from extractive industries and high impact activities on sensitive land uses are avoided.

8.2.6.3 Assessment criteria

Part A – Criteria for assessable development

Table 8.2.6.3.A – Extractive resources and high impact activities overlay – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Key resource areas	
PO1 Sensitive land uses and reconfiguration of a lot that facilitate sensitive land uses, are not: (a) located where the economic benefits of winning resources may be curtailed or restricted; and (b) located where they are adversely affected by the following impacts generated by Key Resource Area (KRA) processing areas and transport routes: (i) ground vibration; and (ii) noise; and (iii) odour; and (iv) dust; and (v) visual; and (vi) vehicular access and safety.	**AO1.1** Sensitive land uses and reconfiguration of a lot that facilitate sensitive land uses are located outside KRA processing areas, KRA separation areas and KRA transport routes as identified on the *Extractive resources and high impact activities overlay map*. **AO1.2** If compliance with AO1.1 cannot be achieved, development located within a KRA processing area or KRA separation area: (a) is a development commitment; or

Performance outcomes	Acceptable outcomes
	(b) demonstrates: (i) an overriding community benefit in social, economic or ecological terms that outweighs the community benefit of maintaining the long-term availability of the extractive resource; and (ii) cannot be reasonably located elsewhere
	AO1.3 If compliance with AO1.1 cannot be achieved, development located within a KRA processing area or KRA separation area incorporates design, orientation and construction measures that mitigate the potential adverse effects from existing or future extraction and processing of extractive materials by: (a) locating buildings and structures the greatest distance practicable from the resource / processing area; and (b) designing buildings so the areas where people live, work and congregate (habitable rooms) are furthermost, and orientated away, from the resource / processing area; and (c) minimising openings in walls closest to these effects; and (d) providing mechanical ventilation to living areas sensitive to these effects; and (e) using appropriate construction insulation and glazing materials.
	AO1.4 Development with direct vehicular access to an identified KRA transport route does not adversely affect the safe and efficient operation of vehicles transporting extractive materials.

Performance outcomes	Acceptable outcomes
High impact activities	
PO2 Sensitive land uses, and reconfiguration of a lot that facilitate sensitive land uses, are not located where they are adversely affected by the following impacts generated by the high impact activity: (a) noise; and (b) odour; and (c) emissions/dust; and (d) visual; and (e) lighting. The community and economic benefits associated with the operation of infrastructure or high impact industrial activities are not compromised or curtailed by sensitive land uses.	**AO2.1** Sensitive land uses and reconfiguration of a lot that facilitate sensitive land uses are located outside the high impact activity and high impact activity buffer areas as identified on the *Extractive resources and high impact activities overlay map*. The buffer areas for high impact activities are based on the following: (a) sewerage treatment plant serving less than 50,000 EP: 500 metres from the property boundary or from the demonstrated operational extent of the sewerage treatment plant area; and (b) sewerage treatment plant serving 50,000 EP or more: subject to demonstration of impacts; and (c) waste management centre (for example Paget): 500 metres from the property boundary; and (d) general waste facility (landfill) (for example Hogans Pocket): 1,000 metres from the property boundary; and (e) general waste transfer facility (for example Bloomsbury, Eungella, Gargett, Hay Point, Kolijo, Koumala, Otterburn (Mirani), Sarina and Seaforth): 500 metres from the property boundary; and (f) ex-landfill site (for example Bayersville): 500 metres from the property boundary; and (g) green waste facility (for example Bucasia and Walkerston): 500 metres from the property boundary; and (h) sugar mill: 1,500 metres from the property boundary or from the demonstrated operational extent of the sugar mill area; and (i) sugar wastewater ponds: 1,500 metres from the property boundary; and (j) abattoir and/or slaughter yard: 1,500 metres from the property boundary; and (k) Paget industrial area: 500 metres from the High impact industry zone and (l) Port of Mackay and Port of Hay Point: 1,500 metres from the extent of strategic port land; and (m) poultry farms: 300 metres from the areas subject to poultry farming activities; and (n) piggeries: 300 metres from areas subject to piggery activities; and (o) feedlots: 300 metres from areas subject to feed lotting.

Performance outcomes	Acceptable outcomes
	AO2.2 Where a sensitive land use/s locates within a high impact activity or high impact activity buffer associated with uses other than the Paget industrial area and Racecourse Mill site/s, the following mitigating design measures are provided to minimise potential impacts on human health, amenity and wellbeing: (a) the sensitive land use is designed to ensure that: (i) the indoor noise objectives set out in the *Environmental Protection (Noise) Policy 2008* are met[8]; and (ii) the air quality objectives in the *Environmental Protection (Air) Policy 2008*, and any relevant national or international standard (for example, the World Health Organisation Guidelines for Air Quality 2000) are met[3]; and (b) design measures include: (i) landscaping; and (ii) screening; and (iii) setting back sensitive land uses from existing and future industrial noise sources; and (iv) orientating buildings so that bedrooms face away from existing and future industrial noise sources; and (v) positioning the development on the windward side (prevailing south-east tradewinds) of the high impact activity; (vi) positioning the development on the site at the furthermost point from the high impact activity; and (vii) barriers, mounds and fences.
PO3 The current and future productivity and operational efficiency of Racecourse Mill, co-generation plant, refinery, other future diversification projects and associated infrastructure is protected from, and not compromised by, the encroachment of sensitive land uses and reconfiguration of a lot that facilitates sensitive land uses.	**AO3.1** Sensitive land uses, and reconfiguration of a lot that facilitates sensitive land uses or incompatible non-residential development, do not locate within the 1,500 metre buffer area of the Racecourse Mill.

[8] An air and/or noise impact assessment should correspond with the scale and level of impact that a sensitive land use may be exposed to. Refer to the SPP (Appendix G) to see the relevant acoustic and air quality objectives. An air and/or noise impact assessment can be prepared by a suitably qualified professional to demonstrate compliance with acceptable outcome AO2.2.

Performance outcomes	Acceptable outcomes
Non-KRA quarries	
PO4 Sensitive land uses and reconfiguration of a lot that facilitate sensitive land uses, are not: (a) located where winning resources may be curtailed or restricted. (b) located where they are adversely affected by the following impacts generated by non-KRA processing areas and transport routes: (i) ground vibration; and (ii) noise; and (iii) odour; and (iv) dust; and (v) visual; and (vi) vehicular access and safety.	**AO4.1** Sensitive land uses and reconfiguration of a lot that facilitate sensitive land uses are not located within the following distances from non-KRA quarry: (a) 1000 metres from quarries where the extractive resource is rock; and (b) 200 metres from quarries where the extractive resource is any other material (e.g. sand, clay, gravel and soil).

8.2.7 Flood and coastal hazards overlay code

8.2.7.1 Application

This code applies to assessing development within the flood and coastal hazards overlay.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

8.2.7.2 Purpose

(1) The purpose of the flood and coastal hazards overlay code is to ensure that development in areas subject to inundation in riverine and local flood events (defined flood level – DFE) and/or located in coastal hazard area, is planned, designed and constructed to minimise risk of hazards to people and property.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) development in flood and coastal hazard areas:
  (i) is avoided due to the nature of the use or the severity of the hazard; and
  (ii) achieves acceptable ground levels and floor levels so that damage from flood events is minimised; and
  (iii) minimises exposure of communities to the risk of adverse flood and coastal hazard impacts; and
  (iv) is designed to protect communities, infrastructure and coastal ecosystems from adverse flood and coastal hazard impacts, whilst not unduly burdening disaster management plans; and
  (v) minimises removal of natural process that mitigate risks associated with flood and coastal hazards; and

(b) development involving important community activities and essential utility services maintain their function during flood and coastal hazard events; and

(c) development in flood and coastal hazard areas is located and designed so that it does not worsen impacts on surrounding sites; and

(d) public safety and the environment are not adversely affected by the inappropriate storage of hazardous materials.

8.2.7.3 Assessment criteria

Part A – Criteria for assessable development

Table 8.2.7.3.A – Flood and coastal hazards overlay – self assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development - Flood hazard and Storm-tide inundation areas	
Minimum floor level for habitable rooms	
PO1 Habitable rooms in, and essential infrastructure such as electricity supply, telecommunications and water supply servicing, dual occupancies, dwelling houses and dwelling units have acceptable levels of flood immunity.	**AO1.1** The minimum floor level for habitable rooms (new buildings and extensions to existing buildings) in dual occupancies, dwelling houses and dwelling units is the highest of the following: (a) 300mm above the DFE[9]; or (b) 300mm above the DSTE[10] relevant to the subject site; or (c) the minimum floor level, as follows: (i) Mackay urban area – RL 5.4m AHD; or (ii) Midge Point – RL 5.0m AHD; or (iii) Seaforth, Haliday Bay, Ball Bay, Louisa Creek, Half Tide Beach, Salonika Beach, Grasstree Beach, Sarina Beach, Freshwater Point and Armstrong Beach – RL 5.3m AHD; or (d) in addition to (c) above, an additional 600mm is provided for higher wave effects and run up in the foreshore area (the foreshore area shall be taken as extending inland for a minimum of 100 metres from the higher of toe of the frontal dune or Highest astronomical tide): or (e) 225mm above natural ground level; or (f) 300mm above the greater of top of the kerb level or the crown of the adjacent bitumen road.
	AO1.2 The following is located above the DFE and DSTE: (a) electrical switch gear and motors; and (b) telecommunication connections; and (c) water supply pipeline air valves.

[9] "DFE" – defined flood event – is the 1% AEP flood event plus climate change factor. The DFE is derived from adopted studies regarding riverine and local flood events. Where a site is covered by more than one study, the highest flood level is the DFE.

[10] "DSTE" – defined storm tide event

Performance outcomes	Acceptable outcomes
PO2 Development maintains: (a) the flood characteristics and storage capacity of the subject site; and (b) a high level of visual amenity as viewed from the street and adjoining and nearby properties.	**AO2.1** Where the minimum floor level prescribed by AO1.1 is more than 1 metre above ground level, freestanding structures on poles are provided rather than 'slab on ground' construction and/or filling under the building footprint[11].
	AO2.2 Development does not involve: (a) any physical alteration of a watercourse; and (b) net filling exceeding 50 cubic metres.
For assessable development - Flood hazard and Storm-tide inundation areas	
Location of uses and minimum floor/ground levels	
PO3 Development is appropriately located, or has appropriate floor levels, so as not to provide an unacceptable risk to people and property.	**AO3.1** The minimum floor level of buildings (new buildings and extensions to existing buildings) associated with the following uses: • air services • adult store • agricultural supplies store • brothel • caretaker's accommodation[12] • centre activities • club • child care centre • community care centre • community use • correctional facility • crematorium • educational establishment • home based business[13] • hotel • industry activities not referred to in AO3.4 • major sport, recreation and entertainment facility • multiple dwelling[15] • motor sport facility • nightclub entertainment facility • non-resident workforce accommodation[15] • outdoor business activities • place of worship • resort complex[15] • retirement facility[15] • rooming accommodation • rural industry • rural worker's accommodation • short term accommodation[15]

[11] The building footprint is the actual area at natural ground level covered by the building or buildings.
[12] The minimum floor level applies to habitable rooms only.
[13] The minimum floor level applies to new buildings or extensions to existing buildings. The provision does not apply to a proposed use in an existing building.

Performance outcomes	Acceptable outcomes
	• sales office • service station • tourist attraction • winery, is the highest of the following: (a) 300mm above the DFE[14]; or (b) 300mm above the DSTE[15] relevant to the subject site; or (c) the minimum floor level, as follows: (i) Mackay urban area – RL 5.4m AHD; or (ii) Midge Point – RL 5.0m AHD; or (iii) Seaforth, Haliday Bay, Ball Bay, Louisa Creek, Half Tide Beach, Salonika Beach, Grasstree Beach, Sarina Beach, Freshwater Point and Armstrong Beach – RL 5.3m AHD; or (d) in addition to (c) above, an additional 600mm is provided for higher wave effects and run up in the foreshore area (the foreshore area shall be taken as extending inland for a minimum of 100 metres from the higher of toe of the frontal dune or Highest astronomical tide): or (e) 225mm above natural ground level; and (f) 300mm above the greater of top of the kerb level or the crown of the adjacent bitumen road.
	AO3.2 The following uses are not located within an "area affected by 1% AEP flood event": (a) tourist park; and (b) relocatable home park.
	AO3.3 Hardstand and outdoor activity/storage areas associated with industry activities are constructed to a minimum height of the 2% AEP flood event, provided compliance with AO8.1 and AO8.2 is demonstrated.
	AO3.4 For regional fuel storage facilities and warehouses involving the storage of food, the minimum tank / building floor level is 300mm above the 0.2% AEP flood event.

[14] "DFE" – defined flood event – is the 1% AEP flood event level plus climate change factor. The DFE is derived from adopted studies regarding riverine and local flood events. Where a site is covered by more than one study, the DFE is the highest level.

[15] "DSTE" – defined storm tide event.

Performance outcomes	Acceptable outcomes
PO4 Essential community infrastructure, facilities and services that provide services vital to the wellbeing of the community are located to avoid flood hazard areas to ensure these facilities and services are able to maintain operation during and immediately after flood events.	**AO4.1** The following uses are not located within an "area affected by 1% AEP flood event" or an "area affected by 0.2% AEP flood event": (a) emergency services involving ambulance stations and disaster management facilities; and (b) hospitals; and (c) power stations.
	AO4.2 The following uses are not located within an "area affected by 1% AEP flood event" or on land inundated by 0.5% AEP flood event: (a) community residence; and (b) emergency services not referred to in AO4.1(a); and (c) residential care facility; and (d) utility installations involving water and sewerage treatment plants; and (e) stores of valuable records or items of historic or cultural significance (e.g. archives, museums, galleries, libraries).
	AO4.3 Substations: (a) are not located on land inundated by a 0.5% AEP flood event; or (b) are designed so that sensitive electrical equipment (such as transformers, control cabinets, neutral earth reactors and switch gear) is located above the 0.5% AEP flood level.
	AO4.4 The following uses have direct access to low risk evacuation routes: (a) community residence; and (b) emergency services; and (c) hospitals; and (d) residential care facility; and (e) substations; and (f) utility installations involving water and sewerage treatment plants. Low risk evacuation routes have the following characteristics: • maximum length of any single section of evacuation route covered by flood water in a DFE / DSTE: less than 200 metres; and • maximum flood depth in a DFE / DSTE: less than 0.3 metres; and • maximum flood velocity in a DFE / DSTE: less than 0.4 metres per second.

Performance outcomes	Acceptable outcomes
	AO4.5 If acceptable outcomes AO4.1, AO4.2, AO4.3 or AO4.4 above cannot be achieved, it is demonstrated that: (a) the use will be fully operational during and immediately after the relevant AEP flood event; and (b) emergency services involving ambulance stations and disaster management facilities and hospitals provide an emergency rescue area above the relevant AEP flood event.
Building heights	
PO5 Buildings in flood hazard and storm tide inundation areas: (a) utilise a usable extent of building height above flood levels; and (b) integrate with the built form character of the surrounding area; and (c) does not form overdevelopment of the site.	**AO5.1** Building heights above ground level in flood hazard and storm tide inundation areas do not exceed the maximum building height set by the relevant zone code plus the highest of the following: (a) DFE; or (b) DSTE relevant to the subject site; or (c) the relevant level as follows: (i) within the Mackay urban area – RL 5.0m AHD; or (ii) Midge Point – RL 4.6m AHD; or (iii) Seaforth, Haliday Bay, Ball Bay, Louisa Creek, Half Tide Beach, Salonika Beach, Grasstree Beach, Sarina Beach, Freshwater Point and Armstrong Beach – RL 4.9m AHD
General and specific design requirements	
PO6 Development in the Bakers Creek (including Walkerston urban area) and Gooseponds Creek catchments is avoided where the inundation characteristics in a DFE or DSTE are as follows: (a) floodwater depth of higher than 1.2 metres above natural ground level; or (b) floodwater velocity of higher than 2 metres per second.	No acceptable outcome prescribed.
PO7 Development must not directly, indirectly or cumulatively result in increased adverse flood impacts on sites upstream, downstream or in general vicinity of the subject site.	**AO7.1** Development complies with development criteria set out in any applicable floodplain management plan/s.

Performance outcomes	Acceptable outcomes
	AO7.2 Where development is located in a flood hazard area, a hydraulic and hydrology report, prepared by a RPEQ (using the flood mapping methodology developed by QCCCE) demonstrates that the development: (a) maintains the flood storage capacity on the subject site; and (b) does not increase the volume, velocity, concentration or flow path alignment of stormwater flow across sites upstream, downstream or in the general vicinity of the subject site; and (c) does not increase stormwater ponding on sites upstream, downstream or in the general vicinity of the subject site.
PO8 Development must not provide obstructions to the free passage of water through a property.	No acceptable outcome prescribed.
PO9 Infrastructure facilitating essential services such as on-site electricity, gas, water supply, sewerage and telecommunications maintain their functions during a DFE.	**AO9.1** Any components of infrastructure that are likely to fail to function or may result in contamination when inundated by flood waters (e.g. electrical switch gear and motors, water supply pipeline air valves) are: (a) located above the DFE; or (b) designed and constructed to exclude floodwater intrusion and infiltration.
	AO9.2 Infrastructure is designed and constructed to resist hydrostatic and hydrodynamic forces as a result of inundation by the DFE.
PO10 Earthworks must not directly, indirectly or cumulatively result in increased adverse flood impacts on sites upstream, downstream or in general vicinity of the subject site.	**AO10.1** With the exception of filling that is directly associated with (primarily beneath) building work[16]: (a) the ground level of reconfigured lots and development sites remains unchanged; or (b) maintains net floodplain storage on the subject site and does not worsen flood impacts (depth, duration, direction, velocity, concentration) on surrounding sites.

[16] The building footprint is the actual area at natural ground level covered by the building or buildings.

Performance outcomes	Acceptable outcomes
Hazardous materials	
PO11 Public safety and the environment are not adversely affected by the detrimental impacts of floodwater on hazardous materials manufactured or stored in bulk.	**AO11.1** The manufacture, storage or handling of hazardous materials: (a) is undertaken a minimum of 300mm above the DFE flood level; or (b) in buildings or areas that are designed to prevent the intrusion of floodwater.
Reconfiguring a lot	
PO12 The ground level of reconfigured lots provides an acceptable level of flood immunity.	**AO12.1** The minimum finished ground level for new residential lots in the Emerging communities zone or on land outside the urban footprint is the higher of: (a) at or above the DFE; or (b) at or above the DSTE; or: (c) the minimum ground level, as follows: (i) within the Mackay urban area – RL 5.0m AHD; or (ii) Seaforth, Haliday Bay and Ball Bay, Louisa Creek, Half Tide Beach, Salonika Beach, Grasstree Beach, Sarina Beach, Freshwater Point and Armstrong Beach – RL 4.9m AHD; or (iii) Midge Point – RL 4.6m AHD; or (d) the minimum level necessary to comply with AO8.1 and AO8.2.
	AO12.2 New lots in the Rural zone and Rural residential zone include building envelope at or above the DFE, with a minimum area of 1,000m^2.
PO13 Evacuation routes enable residents of emerging residential neighbourhoods and residential development outside the urban footprint to evacuate flood hazard and storm tide inundation areas during flood events.	**AO13** Development complies with the following: (a) residential lots in the Emerging community zone have direct frontage to a low risk evacuation route; and (b) public roads and driveways providing access to residential building envelopes in the rural and rural residential zone (required by AO11.2) are low risk evacuation routes. Low risk evacuation routes have the following characteristics: • maximum length of any single section of evacuation route covered by flood water in a DFE / DSTE: less than 200 metres; and • maximum flood depth in a DFE / DSTE: less than 0.3 metres; and • maximum flood velocity in a DFE / DSTE: less than 0.4 metres per second.

For assessable development – Erosion prone areas	
PO14 Development is located, designed and operated to minimise risks to and impacts on people and property from coastal erosion.	**AO14.1** Development avoids erosion prone areas.
	AO14.2 If compliance with AO13.1 cannot be achieved and it is demonstrated that the development: • is essential community infrastructure; or • cannot be reasonably located elsewhere; or • is entirely reliant on being located within the erosion prone area; or • is temporary, readily relocatable or able to be abandoned, the following is achieved: (a) locate built structures as far landward as practical and, as a minimum, landward of the alignment of adjacent habitable buildings; and (b) a report by a RPEQ demonstrates that the development: (i) is not at risk from coastal erosion; and (ii) does not increase the risk from coastal erosion on adjoining and nearby sites; and (c) impacts on people and property from coastal erosion will be mitigated through appropriate location, design, construction and operating standards; and (d) the development does not result in detrimental environmental impacts on the site and on adjoining and nearby sites.

8.2.8 Heritage and neighbourhood character overlay code

8.2.8.1 Application

This code applies to assessing development within the heritage and neighbourhood character overlay.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

8.2.8.2 Purpose

(1) The purpose of the heritage and neighbourhood character overlay code is to maintain the heritage value of:

(a) sites containing a local heritage place; and

(b) the traditional building character of neighbourhood character areas.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) the heritage value of sites containing a local heritage place is maintained through adaptive reuse and sensitive new development;

(b) new development on sites containing a local heritage place and adjoining sites maintain the heritage value and visual prominence of heritage elements; and

(c) new development within neighbourhood character areas is sympathetic to the traditional building character of the area prior to 1950 including cottages, bungalows and Queenslanders featuring:

(i) high set or low stumps; and

(ii) pitched, iron sheeted roofs; and

(iii) stucco; and

(iv) timber construction (weather board, cladding and the like); and

(v) verandahs; and

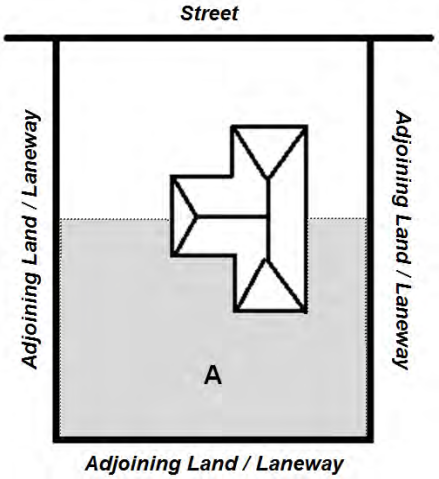
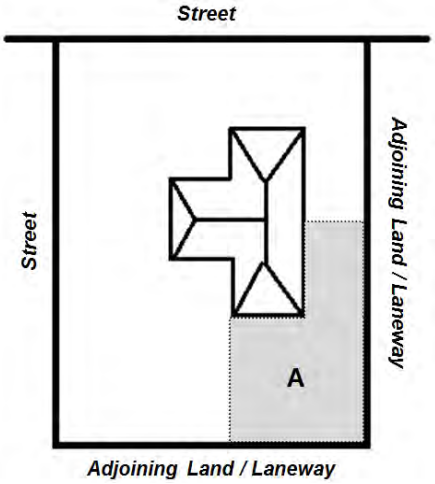
(d) demolition of local heritage places is avoided.

8.2.8.3 Assessment criteria

Part A – Criteria for assessable development

Table 8.2.8.3.A – Heritage and neighbourhood character overlay – assessable development

Performance outcomes	Acceptable outcomes
For self-assessable development	
Extensions to dwelling houses and carports in neighbourhood character areas	
PO1 Extensions to dwelling houses within neighbourhood character areas are located and designed to integrate with the traditional building character of the dwelling house and streetscape.	**AO1.1** Extensions to dwelling houses have a minimum setback that is half way between the front and rear faces of the dwelling house (identified as "Area A" in Figure 8.2.8.3.A and Figure 8.2.8.3.B – minimum setback for extensions to dwelling houses and carports in neighbourhood character areas).

Performance outcomes	Acceptable outcomes
	Figure 8.2.8.3.A – minimum setback for extensions to dwelling houses and carports in neighbourhood character areas  **Figure 8.2.8.3.B – minimum setback for extensions to dwelling houses and carports in neighbourhood character areas** 
	AO1.2 Extensions to dwelling houses are equal or lower in height than the existing dwelling house.

Performance outcomes	Acceptable outcomes
PO2 Carports within neighbourhood character areas are visually integrated and subservient to the traditional building character of the dwelling house and streetscape.	**AO2.1** Open carports: (a) have a minimum setback that is half way between the front and rear faces of the dwelling house (identified as "Area A" in Figure 8.2.8.3.A and Figure 8.2.8.3.B – minimum setback for extensions to dwelling houses and carports in neighbourhood character areas); or (b) comply with the following: (i) the width of the carport does not exceed the lesser of 7 metres of 50% of the width of the street frontage; and (ii) the carport remains an open structure – no doors or walls are applied; and (iii) the roof pitch is within 10° of the roof pitch of the dwelling house; and (iv) the carport is lower in height than the dwelling house.
For assessable development	
Heritage places and adjoining sites	
PO3 Development on sites containing a local heritage place maintains heritage value through: (a) sensitive adaptive reuse of buildings; and (b) the continued retention and maintenance of heritage value elements; and (c) maintaining the setting of heritage value elements.	**AO3.1** Development on sites containing a local heritage place is consistent with a Conservation Management Plan, prepared by a suitably qualified heritage professional in accordance with the Australian ICOMOS Charter for Places of Cultural Heritage Significance, that: (a) identifies the significance, location and condition of heritage value elements; and (b) identifies measures to conserve heritage value elements; and (c) demonstrates that development will: (i) not compromise heritage value elements; and (ii) not impede or diminish views of heritage value elements from streets and other public places.
PO4 Development on sites containing a local heritage place: (a) is sympathetic with the character and appearance of heritage value elements; and (b) provide a sensitive visual distinction between heritage value elements and new work; and (c) maintain the visual prominence and views of heritage value elements from streets and other public places; and (d) utility services have minimal visual or other impacts on heritage value elements.	**AO4.1** Development on sites containing a local heritage place: (a) is consistent with, or sympathetic to, heritage value elements in relation to the following: (i) building height; and (ii) building bulk, scale and shape; and (iii) setbacks and siting; and (iv) horizontal and vertical articulation; and (v) roof lines and eaves; and (vi) building openings; and

Performance outcomes	Acceptable outcomes
	(vii) orientation; and (viii) materials, footings and architectural detailing; and (ix) open space and landscaping features; and (x) access and on-site parking; and (b) does not impede or diminish views of heritage value elements from streets and other public places; and (c) does not overshadow or dominate heritage value elements; and (d) mechanical plant and other utility services are screened from view from streets, public places and from building windows and balconies.
PO5 Development on sites adjoining a local heritage place: (a) is sympathetic to, but does not replicate or imitate, the character and appearance of adjoining heritage value elements; and (b) maintain the visual prominence and views of heritage value elements from streets and other public places; and (c) utility services have minimal visual or other impacts on heritage value elements.	**AO5** Development on sites adjoining a local heritage place: (a) is sympathetic to adjoining heritage value elements in relation to the following: (i) building height; and (ii) building bulk, scale and shape; and (iii) setbacks and siting; and (iv) horizontal and vertical articulation; and (v) roof lines and eaves; and (vi) building openings; and (vii) orientation; and (viii) materials and footings; and (ix) open space and landscaping features; and (x) access and on-site parking; and (b) is sympathetic to, but does not replicate or imitate detailed architectural elements of adjoining heritage value elements; and (c) does not impede or diminish views of adjoining heritage value elements from streets and other public places; and (d) does not overshadow or dominate heritage value elements; and (e) mechanical plant and other utility services are screened from view from streets, public places and from building windows and balconies.

Performance outcomes	Acceptable outcomes
PO6 The partial demolition or removal of heritage value elements on sites containing a local heritage place is undertaken such that there is no loss of heritage value by maintaining: (a) historical, economic or social themes, of importance to the region or local area, which are displayed on the heritage character place; and (b) the aesthetic merit, design characteristics or construction techniques of importance to the region or local area; and (c) the visual prominence of heritage value elements as notable regional and/or local landmarks; and (d) the importance of heritage value elements in relation to the visual character and amenity of the local streetscape.	No acceptable outcome prescribed.
PO7 The total demolition or removal of heritage value elements on sites containing a local heritage place is avoided. However, a demolition proposal may be warranted if a report prepared by a suitably qualified heritage professional in accordance with the Australian ICOMOS Charter for Places of Cultural Heritage Significance: (a) documents the heritage value of the site; and (b) demonstrates that unique circumstances warrant demolition or removal; and (c) demonstrates the building is no longer structurally sound and not reasonable capable of being made structurally sound; and (d) indicates that measures emphasising the heritage value of the site will be incorporated into the new development.	No acceptable outcome prescribed.
PO8 The full or partial demolition or modification of the following iconic heritage facades in Mackay city centre is avoided on the: (a) northern side Victoria Street between Wood and Sydney Streets; and (b) eastern side of Wood Street between Gordon and River Streets; and (c) western side of Sydney Street between Victoria and River Streets.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
Neighbourhood character areas	
PO9 The form, scale, materials, design and setbacks of buildings in neighbourhood character areas complement the prevailing traditional building character prior to 1950 including cottages, bungalows and Queenslanders featuring: (a) high set or low stumps; and (b) pitched, iron sheeted roofs; and (c) stucco; and (d) timber construction (weather board, cladding and the like); and (e) verandahs.	**AO9.1** Roof form consists of a minimum: (a) 1 gable facing the street; and (b) pitch of 25°.
	AO9.2 External materials consist of the following: (a) roof: (i) corrugated metal roof sheeting and quad or half round guttering; and (b) walls: (i) wall cladding (such as timber cladding or fibro panels), particularly on upper levels; and (ii) where masonry is used, it is rendered and/or painted and used in conjunction with sections of wall cladding and other lightweight materials/elements; and (iii) timber framed construction for verandahs, stairs and balustrade, particularly on the street elevation/s.
	AO9.3 The following is provided on the street elevation of the building: (a) windows and a door/s that are visible from the street; and (b) wall lengths in excess of 10 metres are articulated by verandahs, wall offsets (minimum 500mm depth) or bay windows.
	AO9.4 The front setback of the building/s is within 1.5 metres of an existing building fronting the same street on an adjoining lot.
	AO9.5 Out-buildings (garages, storage buildings and other ancillary buildings) are: (a) recessed a minimum of 1 metre behind the front face of the building or verandah; and (b) in keeping with the design and materials of the main building in terms of: (i) roof design, pitch and materials; and (ii) external wall materials.

8.2.9 Landscape character and image corridor overlay code

8.2.9.1 Application

This code applies to assessing development within the landscape character and image corridor overlay.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

8.2.9.2 Purpose

(1) The purpose of the landscape character and image corridor overlay code is to maintain and enhance the visual amenity of the region provided by landscape character areas and experienced from image corridors.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) development in landscape character areas is sensitively located and designed so that landscape character attributes are maintained; and

(b) development adjacent to image corridors enhances the region's visual amenity by providing high quality built form and landscaping outcomes.

8.2.9.3 Assessment criteria

Part A – Criteria for assessable development

Table 8.2.9.3.A – Landscape character and image corridor overlay – assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Landscape character	
PO1 Development integrates with and maintains the qualities and values of the landscape character areas and is not visually obtrusive.	**AO1.1** Buildings and structures have a maximum height of: (a) 8.5 metres (2 storeys) above ground level; or (b) 10 metres (2 storeys) above ground level if the site is also within the landslide hazard overlay.
	AO1.2 Buildings and structures have external walls and roofing that are finished with: (a) non-reflective materials; and (b) subdued colours such as dark blues, dark greens, dark greys, ochres, olives, or natural / stained timbers.
	AO1.3 Development retains existing native vegetation, where practical.

Performance outcomes	Acceptable outcomes
	AO1.4 Roads, driveways and pathways on hills and mountains follow natural contours and are aligned across the slope, rather than a direct path up the slope.
	AO1.5 Excavation or filling under the canopy of existing vegetation to be retained on the site, does not affect an area exceeding $^1/_3$ of the total area covered by the canopy of any tree.
	AO1.6 Excavation or filling areas are rehabilitated immediately on completion with: (a) re-grading and draining of disturbed surfaces to form even profiles; and (b) spreading topsoil suitable for planting; and (c) dense plantings of endemic native plant species.
PO2 The dominance of the natural character of the coast is to be maintained or enhanced when viewed from the foreshore unless the development is: (a) within ports or airport/s; or (b) within a maritime development area or aquaculture development area; or (c) for minor public marine development or private marine access structures.	**AO2.1** Vegetation is provided to visually screen built structures and hard surfaces (such as sealed roads and car parking areas and other paved areas) from view from the foreshore.
PO3 Development is to maximise opportunities to maintain and/or enhance natural scenic amenity values through the maintenance and restoration of vegetated buffers between development and coastal waters where practicable, unless the development is: (a) within ports or airport/s; or (b) within a maritime development area or aquaculture development area, or (c) for minor public marine development; or (d) a private marine access structure within an artificial waterway.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO4 Reconfigured lots in landscape character areas maintain the natural visual character of areas supporting vegetation and hills, mountains and ridgelines.	**AO4** Reconfigured lots comply with the following: (a) boundaries are sensitive to vegetation and seek to minimise disturbance; and (b) areas of remnant vegetation are protected from clearing by legal means such as easements, common property or covenants; and (c) building envelopes are located to: (i) be as close as practical to the front of the site or in an existing cleared area; and (ii) minimise excavation or filling; and (iii) minimise the loss of native vegetation , particularly native vegetation; and (iv) avoid ridgelines, hilltops and other visually prominent locations; and (d) access to the building envelope is as close as possible to the front of the lot or an existing cleared route.
Image corridors	
PO5 Development adjacent to image corridors provides high quality visual amenity through active and articulation building frontages and landscaping.	**AO5.1** Building frontages facing image corridors include: (a) activation measures such as pedestrian entrances / doors, windows and balconies; and (b) articulation measures such as building line projections/recessions (minimum depth 500mm), awnings, articulated roof profile, alternating materials and colours.
	AO5.2 Sections of building frontages facing image corridors that do not include activation measures and articulation measures mentioned by AO5.1, do not exceed 15 metres in length.
	AO5.3 For centre activities, the total length of activation measures along building frontages facing image corridors is not less than 60% of the total frontage length.
	AO5.4 Industrial activities provide administrative, training and/or customer service facilities closest to, and addressing, the image corridor.

Performance outcomes	Acceptable outcomes
	AO5.5 A minimum 5 metre wide landscaping strip containing the following is provided along the full frontage of the image corridor: (a) for sensitive land uses and industrial development (including ROLs that will facilitate future sensitive land uses or industrial development) and other types of development that benefit from or require visual screening – buffer planting in accordance with: (i) Standard drawing A3-841 – Buffer planting image corridors; and (ii) Standard drawing A3-842 – Buffer planting image corridors – plant schedule; or (b) for commercial development and other types of development that benefits from exposure or does not require visual screening – signature trees and feature planting[17] is provided along the image corridor frontage.
	AO5.6 Chain wire fencing is: (a) not provided within 3 metres of an image corridor frontage; and (b) visually filtered, as viewed from the image corridor, by landscaping.
PO6 Car parking does not visually dominate image corridor frontages.	**AO6** Car parking areas are provided: (a) between the building and the image corridor frontage where not involving no more than 2 rows of car parking; or (b) within or under buildings or between the building and boundaries other than the image corridor frontage.
PO7 Advertising devices are discreetly located and designed to maintain the visual amenity of image corridors.	**AO7** Advertising devices: (a) are not located within the landscaping strip; and (b) do not include neon lights or animated elements.

[17] "Signature trees and feature plantings" means landscaping that is used to visually soften parts of the development, emphasize parts of the development and/or form an attractive landmark in its own right. It does not include "buffer planting" where landscaping screens development from view.

8.2.10 Landslide hazard overlay code

8.2.10.1 Application

This code applies to assessing development within the landslide hazard overlay.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

8.2.10.2 Purpose

(1) The purpose of the landslide hazard overlay code is to ensure that development:

(a) on steep land is responsive to site constraints and limited to those areas where risk is low;

(b) on steep land is adequately protected from landslide hazard and does not increase the extent or severity of landslide hazard risk; and

(c) maintains the safety of people, property and hazardous materials (manufactured or stored in bulk) from the risk of landslide.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) development on steep land is avoided or located and designed so that the level of landslide hazard risk is minimised; and

(b) development does not result in increased landslide hazard risk for adjoining and nearby sites; and

(c) reconfigured lots on steep land provide a usable and accessible building envelope.

8.2.10.3 Assessment criteria

Part A – Criteria for self assessable and assessable development

Table 8.2.10.3.A – Landslide hazard – self assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Geotechnical certification	
PO1 Development on steep land (with a slope of 15% or greater) is avoided unless it can be demonstrated the development area, and land immediately surrounding the development area, is adequately protected from landslide hazard.	**AO1.1** Development, including driveways: (a) is located on land that is demonstrated to have an existing natural or approved and constructed slope of 15% or less; or (b) complies with a geotechnical design report that: (i) demonstrates that the development, and areas surrounding the development, will have a "low" level of landslide risk in accordance with "Landslide Risk Management – Australian Geomechanics Journal"; and

Performance outcomes	Acceptable outcomes
	(ii) ensures the long term stability of the development site; and (iii) ensures the development will not be adversely affected by landslide activity originating on sloping land above the development site; and (iv) is prepared by a suitably qualified geotechnical professional; and (v) includes certification of the civil / structural design by a RPEQ.
	AO1.2 If a geotechnical design report is required in accordance with AO1.1(b), the risk level in relation to landslide affecting the development, and area surrounding the development, is certified as "low" at the completion of the development: (a) by a suitably qualified geotechnical professional; and (b) in accordance with "Landslide Risk Management – Australian Geomechanics Journal".
	AO1.3 Where AO1.1 and AO1.2 is considered irrelevant, provide sound site specific evidence demonstrating that: (a) the development site does not contain a landslide hazard area (i.e. slope analysis plan and/or report); or (b) on-site works certified by an RPEQ (i.e. as constructed plans) have removed the development site from the mapped landslide hazard area (i.e. slope is less than 15%).
For assessable development	
Minimisation of landslide hazard	
PO2 Development on steep land incorporates measures to minimise landslide risk level for the development site and for areas immediately surrounding the development site without significantly altering the characteristics of the land.	**AO2.1** Development is located on the least steep part of the subject site.
	AO2.2 Existing vegetation is retained on land with a slope of 15% or greater.

Performance outcomes	Acceptable outcomes
	AO2.3 Paths, driveways and roads: (a) are designed to: (i) follow natural contours and have the minimum length necessary; and (ii) minimise the number of crossings of water courses and drainage lines; and (b) be sealed with asphalt, concrete or another type of hardstand where traversing a slope greater than 10%; and (c) do not traverse land with a slope exceeding 25%.
	AO2.4 Earthworks do not: (a) change the ground level more than 1 metre from pre-development ground level at any point; (b) occur within 1.5 metres of any property boundary; and (c) result in retaining walls located within 3 metres of a property boundary, other than where retaining walls are less than 1 metre in height on a continuous vertical plane; (d) result in benching or retaining walls that exceed a height of more than 1.5 metres.
	AO2.5 In relation to stormwater management, development does not increase: (a) the volume, velocity, concentration or flow path alignment of stormwater flow across the subject site, or on sites upstream, downstream or in the general vicinity of the subject site; and (b) stormwater ponding on sites upstream, downstream or in the general vicinity of the subject site.
PO3 The manufacture or storage of hazardous material in bulk is not located on land, or in the immediate surrounds of land, with a slope in excess of 15%.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO4 Community infrastructure, including community activities and child care centres, are only located on land with a slope of 15% or greater where: (a) the function and role of the use necessitates its location; and (b) there are no suitable alternative sites not on steep land; and (c) the use is able to function effectively during and immediately after landslide events.	**AO4.1** Community infrastructure, including community activities and child care centres: (a) are not located on land with a slope of 15% or greater; or (b) does not involve: (i) new building work other than an addition to an existing building; and (ii) vegetation clearing; and (iii) altering ground levels or stormwater conditions; or (c) includes measures that ensure: (i) the long term stability of the site; and (ii) access to the site will not be impeded by a landslide event; and (iii) the community infrastructure will not be adversely affected by landslides originating on sloping land above the site.
PO5 Buildings in landslide hazard areas: (a) utilise a usable extent of building height; and (b) integrate with the built form character of the surrounding area; and (c) do not form overdevelopment of the site.	**AO5** Building heights above ground level in landslide hazard areas do not exceed the maximum building height set by the relevant zone code plus 1.5 metres.
Reconfiguring a lot	
PO6 Reconfigured lots in urban areas: (a) have a low level of landslide risk; and (b) does not increase the landslide hazard risk for adjoining and nearby sites	**AO6** Reconfigured lots in urban areas: (a) are demonstrated to have a low level of landslide risk in accordance with AO1.1 and AO1.2; and (b) provides any retaining walls at a maximum height of 1.5 metres.
PO7 Reconfigured lots in the rural and rural residential zone provide a building envelope that: (a) is large enough to accommodate a dwelling house, outdoor recreation area, water supply/storage, and on site wastewater treatment system (where not connected to Council's reticulated sewerage network); (b) is adequately protected from landslide hazard and does not increase the landslide risk for adjoining and nearby sites; and (c) gains access from a driveway that does not increase the risk level of landslide hazard and is safe for vehicles to use.	**AO7.1** Reconfigured lots, in the rural and rural residential zone intended to accommodate a future dwelling house, provide a building envelope: (a) with a minimum area of 1,000m^2; (b) with a minimum dimension of 18 metres; and (c) on land with a slope less than 15%; and (d) is demonstrated to have a low level of landslide risk in accordance with AO1.1 and AO1.2; and (e) provides any benching or retaining walls at a maximum height of 1.5 metres.

Performance outcomes	Acceptable outcomes
	AO7.2 The building envelope required by AO7.1 is connected to a constructed public road by a driveway or road that complies with AO2.3.

8.2.11 Regional infrastructure overlay code

8.2.11.1 Application

This code applies to assessing development within the regional infrastructure overlay.

When using this code, reference should be made to section 1.5 and where applicable, section 1.6 located in Part 1.

8.2.11.2 Purpose

(1) The purpose of the regional infrastructure overlay code is to maintain the operational efficiency and reliability of infrastructure, public safety and a high level of amenity for adjoining and nearby sensitive land uses.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) development maintains the economic integrity, operational efficiency and reliability of infrastructure by avoiding incompatible development in close proximity to infrastructure elements and corridors of regional significance; and

(b) development within, adjoining and near regional infrastructure elements and corridors maintains public safety; and

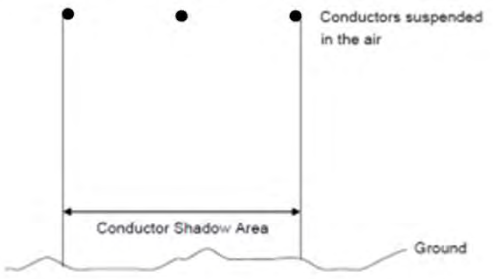
(c) adjoining and nearby sensitive land uses are located, orientated and designed to achieve high levels and visual and general amenity.

8.2.11.3 Assessment criteria

Part A – Criteria for assessable development

Table 8.2.11.3.A – Regional infrastructure overlay – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Regional electricity infrastructure	
PO1 Reconfigured lots maintain (a) the operational efficiency and utility of the electricity infrastructure; and (b) legal and practical access to the electricity infrastructure for maintenance	**AO1.1** Reconfiguration of lots does not increase the number of lots affected by a major electricity infrastructure easement.
	AO1.2 Reconfiguration of lots ensures that: (a) major electricity infrastructure site or easement has frontage and practical access to a constructed public road; and (b) where necessary, fences and locked gates are provided to prevent access to the major electricity infrastructure site or easement.

Performance outcomes	Acceptable outcomes
PO2 Development adjoining or near major electricity infrastructure corridors and substations is located and designed to maintain: (a) the operational efficiency and reliability of the electricity infrastructure; and (b) human health by minimising exposure to electromagnetic fields.	**AO2.1** Building envelopes[18], buildings, built structures (including sheds, roofed garden structures, swimming pools and light/flag poles) are not located within[19]: (a) sites and easements containing major electricity infrastructure; and (b) 20 metres of a major electricity infrastructure tower or structure foundation; and (c) 5 metres of the conductor shadow area (the area between the outside conductors of a transmission line (at rest), vertically projected to the ground (refer to Figure 8.2.11.3.A – buffer area for major electricity infrastructure easements); and **Figure 8.2.11.3.A – buffer area for major electricity infrastructure easements**  (d) 10 metres of a site containing an existing or future substation.
PO3 Pedestrian / cycle pathways, seating areas, landscaping and other development facilitating low intensity recreation uses is encouraged within major electricity infrastructure corridors if designed to maintain: (a) operational efficiency and reliability of the electricity infrastructure; and (b) public safety.	**AO3.1** Landscaping and built structures (e.g. public toilets and roofed picnic shelters) is not located within: (a) sites and easements containing major electricity infrastructure if the vegetation can grow to a height of over 3.5 metres; and (b) within 20 metres of a major electricity infrastructure tower or structure foundation; and (c) within 5 metres of the conductor shadow area – refer to the figure below AO2.1.

[18] The identification of building envelopes is relevant to reconfiguration of lots where the lots created are entirely or mostly land identified as Regional electricity infrastructure and/or Proximate to regional electricity infrastructure associated with major electricity infrastructure (high voltage transmission line corridor).

[19] The relevant service provider may also require or request (through application referral) additional separation requirements, including (but not necessarily limited to) compliance with *Schedules 4 and 5* of the *Electrical Safety Regulations 2002*.

Performance outcomes	Acceptable outcomes
Railway infrastructure	
PO4 Sensitive land uses adjoining or near railway infrastructure is located and designed to maintain: (a) a high level of amenity for the sensitive land use through the mitigation of noise, visual and other impacts from the railway infrastructure; and (b) the operational efficiency of the railway infrastructure.	**AO4.1** Sensitive land uses and reconfiguration of a lot that facilitate sensitive land uses are located to avoid land identified as "railway infrastructure" and/or "proximate to railway infrastructure". The identification of land proximate to railway infrastructure is based on the following: (a) Goonyella branch railway from Jilalan to Hay Point and associated branch lines: 600 metres; or (b) North Coast railway, Port of Mackay branch railway and associated branch lines: 100 metres; or (c) Cane railways, sidings and level crossings: 100 metres.
	AO4.2 If compliance with AO4.1 cannot be achieved and it is demonstrated that: • there is an overriding community need for the development in social, economic or ecological terms; and • the development cannot be reasonably located elsewhere, the development is located, designed and operated to minimise acoustic, visual and other impacts from the railway infrastructure on the sensitive land use by: (a) locating habitable buildings and structures the greatest distance practicable from the railway infrastructure; and (b) open plan living areas, habitable rooms, prominent building openings / windows and principle recreation areas are orientated away from the railway infrastructure; and (c) minimising openings in walls closest to the railway infrastructure; and (d) using appropriate construction insulation and glazing materials; and (e) providing acoustic fencing and landscape buffers as necessary.
Regional irrigation area	
PO5 Development maintains: (a) the operational efficiency of regional irrigation infrastructure; and (b) public safety	**AO5.1** Development within the "regional irrigation area" does not compromise the operational efficiency or viability or irrigation infrastructure.

Performance outcomes	Acceptable outcomes
	AO5.2 Development avoids land used for regional irrigation infrastructure (including irrigation channels, irrigation channel weirs and major irrigation pump stations), and is completely independent and physically separated from the infrastructure.
	AO5.3 Development does not rely upon shared access, access which conflicts with the regional irrigation infrastructure, or access that is likely to create a nuisance, inconvenience or safety risk
	AO5.4 Where it is demonstrated that compliance with AO5.2 and AO5.3 cannot be reasonably achieved, the development involves fencing, lockable gates and signage to restrict access by unauthorised persons.

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Part 9 Development codes

9.1 Preliminary

(1) Development codes are codes for assessment where identified as an applicable code in Part 5.

(2) Statewide codes are included in all Queensland planning schemes.

(3) Use codes and other development codes are specific to each planning scheme area.

(4) The following are the statewide codes for the planning scheme:

- (a) Community residence code;
- (b) Forestry for wood production code;
- (c) Reconfiguring a lot (subdividing one lot into two lots) and associated operational work code.

(5) The following are the use codes for the planning scheme:

- (a) Caretaker's accommodation, dwelling unit and rural workers accommodation code
- (b) Centre activities code
- (c) Child care centre code
- (d) Community activities code
- (e) Dual occupancy compliance assessment code
- (f) Dwelling house code
- (g) Extractive industry code
- (h) Home based business code
- (i) Industry activities code
- (j) Intensive rural activities code
- (k) Market and roadside stall code
- (l) Multiple dwelling activities code
- (m) Outdoor business activities code
- (n) Parking station code
- (o) Recreation activities code
- (p) Sales office code
- (q) Service station and car wash code
- (r) Ship-sourced pollutants reception facilities in marinas code
- (s) Short-term accommodation code
- (t) Telecommunications facility code
- (u) Tourist park and relocatable home park code

(6) The following are the other development codes for the planning scheme:

- (a) General development requirements code
- (b) Healthy waters code
- (c) Reconfiguring a lot code

9.2 Statewide codes

9.2.1 Community residence code

(1) The purpose of the community residence code is for assessing a material change of use for a community residence.

Table 9.2.1.1 – Community residence for self-assessable development only

Acceptable outcomes	
AO1	The maximum number of residents is seven.
AO2	One support worker is permitted to reside on the premises at any time.
AO3	The maximum number of support workers attending any daytime activity shall not exceed seven people over a 24 hour period.
AO4	Resident and visitor parking is provided on site for a minimum of two vehicles. One vehicle space must be dedicated for parking for support services.

9.2.2 Forestry for wood production code

9.2.2.1 Application

This code applies to assessing a material change of use for development involving cropping (where involving forestry for wood production) within the Rural zone.

9.2.2.2 Purpose

(1) The purpose of the code is to ensure forestry for wood production is assessed with equal regard to other forms of cropping, to guarantee long-term harvest and minimise impacts.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) the use is appropriately located and setback from areas of environmental interest and existing infrastructure; and

(b) the impacts on adjoining land uses are minimised; and

(c) the risk of fire is minimised; and

(d) expected harvest cycles, volumes, timescales and haulage routes, plus proposed wildfire management and the location of supportive infrastructure are known by the local government, where development is assessable.

9.2.2.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.2.2.1 – Forestry for wood production code – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Setbacks	
PO1 The establishment of the forest for wood production is located to minimise impacts (such as shading and falling trees) on infrastructure and areas of environmental interest.	**AO1.1** The establishment of the forest for wood production is setback from existing infrastructure and areas of environmental interest in accordance with Table 9.2.2.2—Forestry for wood production setback distances.
	AO1.2 No cultivation and planting for wood production is to occur in the setback areas identified in Table 9.2.2.2. Road and track establishment and maintenance can occur.
	AO1.3 Self-propagated seedlings (wildlings) generated from the forest for wood production are eradicated from the setback areas identified in Table 9.2.2.2.

Performance outcomes	Acceptable outcomes
Impacts on soil structure, fertility and stability	
PO2 The impacts of the forest for wood production on soil structure, fertility and stability are minimised through appropriate management of the site.	**AO2.1** The establishment and maintenance (including associated tracks and roads) of the forest for wood production utilises one or more of the following methods: • mechanical strip cultivation on the contour, spot cultivation or manual cultivation is used for establishment on slopes greater than 10% and less than 25%; • either spot cultivation or manual cultivation is used for establishment on slopes equal to or greater than 25%; • tracks and roads are established away from natural drainage features and areas that are subject to erosion and landslips.
	AO2.2 Any part of a track or road established and maintained as part of the forest for wood production is appropriately drained and adopts the following measures: • establish and maintain a stable surface; • drain the track or road with crossfall drainage (preferably with a slope greater than 4%) or by shaping the track or road to a crown so that water drains to both of its sides; • establish and maintain drainage structures to convey water away from the track or road formation (for example, crossdrains, mitre drains, turnouts and diversion drains or relief culverts).
	AO2.3 Drainage water from tracks and roads established and maintained as part of the forest for wood production is directed away from exposed soils, unstable areas, and towards undisturbed ground and areas with stable surfaces.
Fire risk	
PO3 The risk of fire to adjoining premises and infrastructure is minimised through the provision of firebreaks and fire tracks and roads.	**AO3.1** Firebreaks are established and maintained: • between the forest for wood production, adjoining premises and existing infrastructure; • at a minimum width from the base of the outside trees in accordance with Table 9.2.2.3—Forestry for wood production firebreak distances; • are free flammable material that is greater than 1 metre high; • to be accessible and trafficable for fire suppression vehicles.

Performance outcomes	Acceptable outcomes
	AO3.2 Fire access tracks and roads are established and maintained: • to a minimum width of 4 metres; • that are accessible; • that ensure no part of a plantation is more than 250 metres from a fire access track or road.
For assessable development	
Cropping harvest, haulage and wildlife management	
PO4 Local government are informed of the expected cropping harvest cycles, volumes, timescales and haulage routes, plus propose wildfire management and location of supportive infrastructure.	**AO4** When the forest for wood production area is greater than 10 hectares a management report is attached to the development application that contains the following information: • expected harvest cycles and estimated harvest timescale; • an estimated haulage route plan identifying likely local streets for transporting the harvest to the primary destination/s; • proposed methods and supporting infrastructure location for managing wild fire (including an area map of the property location, adjacent roads and tracks, property entrances, location of fire access tracks and turnarounds on the property and location of water points in the area).

Table 9.2.2.2 – Forestry for wood production setback distances

Aspect	Distance (measured from the base of the tree)
Areas of environmental interest	
Top of a defining bank of streams (gully, creek or river) that are represented on the 1:100 000 topographic map series in accordance with the stream order classification system	Stream order 1 to 2: 5 metres; or Stream order 3 to 5: 10 metres; or Stream order 6: 20 metres.
State-owned protected areas and forest reserves under the *Nature Conservation Act 1992*	10 metres
Protected vegetation under the *Vegetation Management Act 1999*	10 metres
Infrastructure	
Dwellings	100 metres or such distance that ensures the dwelling is consistent with the requirements of AS3959-2009 and the Building Code of Australia
Machinery sheds	25 metres or 1.5 times the maximum anticipated height of the tree at harvest, whichever is the greater
Transmission lines and above-ground pipelines (excluding infrastructure servicing only the farm) not subject to an easement	25 metres or 1.5 times the maximum anticipated height of the tree at harvest, whichever is the greater

Table 9.2.2.3 – Forestry for wood production firebreak distances

Firebreaks	
Forestry for wood production activities less than 40 hectares	7 metres
Forestry for wood production of 40 hectares to 100 hectares	10 metres
Forestry for wood production greater than 100 hectares	20 metres, or a 10 metre break that is free of flammable material that is greater than 1 metre high followed by a 10 metre fuel reduction area where forestry for wood production trees are pruned up to a minimum height of 5 metres, commencing once trees are greater than 10 metres in height

9.2.3 Reconfiguring a lot (subdividing one lot into two lots) and associated operational work code

(1) The purpose of the Reconfiguring a lot (subdividing one lot into two lots) and associated operational work code is for assessing requests for compliance assessment for development for reconfiguring a lot that requires compliance assessment as prescribed in Part 5, section 5.4 under Table 5.4.2 – Prescribed level of assessment: reconfiguring a lot.

Note – development subject to compliance assessment must be able to achieve compliance with the compliance outcomes for a compliance permit to be issued.

Note – if compliance with the code is not possible, the development cannot be considered for compliance assessment and a development application for assessable development must be made to the local government as outlined in Schedule 18 of the regulation.

Table 9.2.3.1 – Reconfiguring a lot (subdividing one lot into two lots) and associated operational work requiring compliance assessment

Compliance outcomes	
Lot Design	
CO1	Each lot is to comply with the following frontage requirements: • the frontage requirements in Table 9.4.3.3.B in the Reconfiguring a lot code.
CO2	There are no building envelope requirements for reconfiguring a lot (subdividing one into two lots) and associated operational work.
CO3	Any rear lot is to comply with the following: • only one rear lot is provided behind each standard lot; and • no more than two rear lot access strips directly adjoin each other; and • no more than two rear lots gain access from the head of a cul-de-sac.
CO4	The reconfiguration ensures that any existing buildings and structures are setback to any new property boundary as follows: • in accordance with boundary setback requirements under relevant codes in the planning scheme **or** • in relation to a reconfiguration within a residential zone, where no boundary setbacks are prescribed under a relevant local planning instrument, any existing buildings and structures are setback to any new property boundary in accordance with boundary setback requirements under the *Queensland Development Code.*
CO5	The reconfiguration enables any proposed buildings and structures to comply with boundary setback requirements as follows: • under relevant codes in the planning scheme **or** • in relation to a reconfiguration within a residential zone, where no boundary setbacks are prescribed under a relevant local planning instrument, any proposed buildings and structures can comply with boundary setback requirements under the *Queensland Development Code*.
CO6	The reconfiguration enables proposed buildings and structures to avoid easements, such as easements for trunk sewer lines No new lots are created where proposed buildings and structures cannot be constructed due to existing or planned underground or above ground infrastructure.

Compliance outcomes	
CO7	No new lots are created on land subject to flooding up to and including the Defined Flood Event (DFE) as identified under a relevant local planning instrument, or an Annual Exceedance Probability (AEP) of 1%, whichever results in the highest level above Australian Height Datum (AHD). **or** Where a DFE is not identified under a relevant local planning instrument, no new lots are created on land subject to flooding up to and including an Annual Exceedance Probability (AEP) of 1%, whichever results in the highest level above AHD.
CO8	If the land is located within a Designated Bushfire Prone Area, the reconfiguration does not involve premises identified as being greater than low risk.
CO9	No new lots are created where the existing slope of the land is 15% or greater.
Infrastructure	
CO10	For premises within a reticulated water area, each lot is connected to the sewerage service. **or** For premises located outside a reticulated water area, each lot is provided with an alternate potable water supply source (e.g. rainwater, bore water), with a minimum storage capacity in accordance with a relevant local planning instrument.
CO11	For premises within a sewered area[1], each lot is connected to the sewerage service **or** For premises outside a sewered area, each lot provides for an effluent treatment and disposal system in accordance with a relevant local planning instrument.
CO12	Each lot is connected to an electricity supply network where required under a relevant local planning instrument.
CO13	Each lot is connected to a telecommunications network where required under a relevant local planning instrument.
CO14	Infrastructure (water supply, sewerage, roads, stormwater quality and quantity, recreational parks, land only for community purposes) is designed and constructed in accordance with any requirements under a relevant local planning instrument to service the lots.
Access	
CO15	Each lot has lawful, safe and practical access to the existing road network via: • direct road frontage; or • an access strip (for a rear lot); or • an access easement, where provided for in a relevant local planning instrument.

[1] Sewered area is defined in the *Plumbing and Drainage Act 2002* and means a service area for a sewerage service under the *Water Supply (Safety and Reliability) Act 2008*.

Compliance outcomes	
CO16	Where access to a lot is proposed via an access strip or easement, the access strip or easement has a minimum width of: (a) 5 metres in a residential zone; or (b) 8 metres in an industrial zone. **and** Is designed and constructed in accordance with any requirements under a relevant local planning instrument.
CO17	The maximum length of an access strip or easement is 50 metres.
CO18	The gradient of an access strip or easement does not exceed any maximum grade prescribed under a relevant local planning instrument.
CO19	A driveway crossover to each lot is designed and constructed in accordance with any requirements under a relevant local planning instrument.
Stormwater	
CO20	Onsite erosion and the release of sediment or sediment-laden stormwater from the premises is minimised at all times including during construction and complies with the requirements of a relevant local planning instrument. **or** A Sediment and Erosion Control Plan complies with the draft *Urban Stormwater – Queensland Best Practice Environmental Management Guidelines* (BPEM Guidelines).
CO21	Filling or excavation on the premises does not exceed a maximum of one metre vertical change in natural ground level at any point.
CO22	Filling or excavation does not cause ponding on the premises or adjoining land in accordance with a relevant local planning instrument.

9.3 Use codes

9.3.1 Caretaker's accommodation, dwelling unit and rural workers accommodation code

9.3.1.1 Application

This code applies to assessing material change of use for caretaker's accommodation, dwelling unit and rural workers accommodation.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.1.2 Purpose

(1) The purpose of the Caretaker's accommodation, dwelling unit and rural workers accommodation code is to ensure these uses integrate with the character and amenity of the local area, provide a high quality living environment for residents and support / maintain the operation of the primary use on the subject site.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) caretaker's accommodation and rural workers accommodation assists in the operation of, and is subservient to, the primary use on the subject site; and

(b) caretaker's accommodation, dwelling units and rural workers accommodation are highly liveable for residents by including adequate car parking and recreation area and providing high levels of privacy and general amenity.

9.3.1.3 Assessment criteria

Part A – Criteria for self-assessable and assessable development

Table 9.3.1.3.A – Caretaker's accommodation, dwelling unit and rural workers accommodation code – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Caretaker's accommodation and rural workers accommodation	
PO1 Caretaker's accommodation or rural workers accommodation is provided to fulfil a genuine need for a caretaker on the subject site.	**AO1.1** Caretaker's accommodation or rural workers accommodation is occupied by a caretaker employed to provide management, maintenance, security or other services supporting an activity on the same site.

Performance outcomes	Acceptable outcomes
	AO1.2 The activity attended to by the caretaker or rural worker: (a) is well established and operational; and (b) cannot be attended to by: (i) residents of the primary dwelling house on the subject site; or (ii) an employee residing off-site; and (c) requires a caretaker's or rural worker's: (i) full-time presence on the subject site; or (ii) after hours presence on the subject site.
PO2 Caretaker's accommodation or rural workers accommodation: (a) are physically and visually subservient to the primary use on the subject site; and (b) integrate with the prevailing character of the surrounding urban neighbourhood or natural / rural landscape.	**AO2.1** No more than 1 caretaker's accommodation or rural workers accommodation is provided on the subject site[2].
	AO2.2 Caretaker's accommodation or rural workers accommodation has a maximum gross floor area of 200m^2.
	AO2.3 Unless wholly contained within an existing building, caretaker's accommodation or rural workers accommodation comply with the acceptable outcomes of the relevant zone code regarding: (a) maximum building height; and (b) road frontage setbacks.
PO3 Caretaker's accommodation or rural workers accommodation provides adequate and convenient on-site car parking.	**AO3** Car parking dedicated to the caretaker's accommodation or rural workers accommodation is provided: (a) on the subject site and within 20 metres of an entrance to the accommodation building; and (b) in accordance with Table 9.4.1.3.B in the General development requirements code.

[2] For the purposes of clarity, a site can accommodate either a caretaker's accommodation or a rural workers accommodation, but not both.

Performance outcomes	Acceptable outcomes
PO4 Caretaker's accommodation or rural workers accommodation provides residents with a high level of amenity through the provision of adequate usable open space and measures providing for privacy.	**AO4.1** Where the habitable rooms of a caretaker's accommodation or rural workers accommodation is located entirely or partly on ground floor, a private, ground floor recreation area is provided and complies with the following: (a) minimum area of 35m^2 and a minimum dimension of 4 metres; and (b) located at the side or rear of the residence and directly accessible from a living room; and (c) maximum gradient of 1:10; and (d) surrounded by 1.8 metre high visual screen except where located in the Rural zone where fencing is not required.
	AO4.2 Where the habitable rooms of a caretaker's accommodation or rural workers accommodation is located entirely above ground floor, a private balcony is provided and complies with the following: (a) minimum area of 15m^2 and a minimum dimension of 3 metres; and (b) located at the side or rear of the residence and directly accessible from a living room.
	AO4.3 On sites within a key urban area or Township zone, the private open space for the caretaker's accommodation or rural workers accommodation is separated from: (a) the activity attended to by the caretaker or rural worker with a building wall or minimum 1.8 metre high visual screen fence; and (b) adjoining lots with a minimum 1.8 metre high visual screen fence.
Dwelling unit	
PO5 Dwelling units integrate with the prevailing character of the surrounding urban neighbourhood or natural / rural landscape.	**AO5** Unless wholly contained within an existing building, the dwelling unit complies with the acceptable outcomes of the relevant zone code regarding: (a) maximum building height; and (b) road frontage setbacks.

Performance outcomes	Acceptable outcomes
PO6 Dwelling units provide adequate and convenient on-site car parking.	**AO6** Car parking dedicated to the dwelling unit is provided: (a) on the subject site and within 20 metres of an entrance to the dwelling unit; and (b) in accordance with Table 9.4.1.3.B in the General development requirements code.
PO7 Dwelling units provide residents with adequate usable open space.	**AO7** The dwelling unit includes a private balcony that complies with the following: (a) minimum area of 15m^2 and a minimum dimension of 3 metres; and (b) located at the side or rear of the residence and directly accessible from a living room.

9.3.2 Centre activities code

9.3.2.1 Application

This code applies to assessing material change of use for centre activities.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.2.2 Purpose

(1) The purpose of the Centre activities code is to ensure that centre activities contribute toward the intended role and function of centres, provide high quality design and amenity outcomes.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) centre activities are located on highly accessible sites in designated centres unless special circumstances (local need and location attributes) justify small scale activities outside designated centres; and

(b) the intensity of the development contributes toward achieving the overall intended role and function of the centre; and

(c) development is integrated with development on adjoining sites in order to achieve a cohesive centre; and

(d) development provides high quality design outcomes at a human scale, and addresses and interacts with the street particularly along existing centre main streets and main streets in new centres; and

(e) development maintains a high level of amenity for adjoining residential properties; and

(f) development includes the provision of safe and efficient vehicle and pedestrian access and adequate car parking; and

(g) large scale developments provide for efficient, safe and convenient public transport facilities.

9.3.2.3 Assessment criteria

Part A – Criteria for self-assessable and assessable development

Table 9.3.2.3.A – Centre activities code – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Centre activities in an existing building	
PO1 Centre activities seeking to occupy an existing building in a multi-purpose centre, Mixed use zone or residential zone maintain: (a) adequate on-site car parking and vehicle access areas; and (b) adequate on-site landscaping areas; and (c) adequate activation measures on the street frontage/s; and (d) the scale and intensity of the previous use.	**AO1.1** Where a centre activity seeks to occupy: • an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use in the Principal centre zone; or • an existing / approved building that has been previously, or is approved to be occupied by a centre activity in a multi-purpose centre (other than Principal centre), mixed use zone or residential zone,

Performance outcomes	Acceptable outcomes
	the following is maintained: (a) all on-site car parks and vehicle access ways that were approved or operated with the previous use; and (b) all on-site landscaping areas that were approved or operated with the previous use; and (c) all activation measures[3] on the street frontage/s that were approved or operated with the previous use.
	AO1.2 If the previous use occupied part of a building only, the proposed use: (a) occupies the same part of the building as the previous use; and (b) occupies the same or less gross floor area, within the existing building, as the previous use.
	AO1.3 Any external extensions to the existing building constitute minor building work.
PO2 Food and drink outlets maintain the established amenity of the surrounding residential neighbourhood.	**AO2.1** Food and drink outlets occupying an existing building in the Neighbourhood centre zone comply with one of the following: (a) hours of operation are within 7am to 7pm; or (b) the total gross floor area of the centre is not less than 400m^2; or (c) the site fronts either an arterial road or sub-arterial road.
	AO2.2 Food and drink outlets occupying an existing building in a residential zone comply with one of the following: (a) hours of operation are within 7am to 7pm; or (b) the site fronts either an arterial road or sub-arterial road.

[3] "Activation measures" include pedestrian entrances / doors, large windows and openings.

Performance outcomes	Acceptable outcomes
For assessable development	
Location and need	
PO3 Centre activities are located within a centre zone unless: (a) a strong local need will be fulfilled; and (b) the viability of designated centres will not be compromised; and (c) they are located: (i) in close proximity to existing centre activities or outside of the walkable catchment of a multi-purpose centre; and (ii) on transport routes providing easy and safe access to the site; and (iii) to minimise potential impacts to adjoining and nearby properties within a residential zone and existing sensitive land uses.	**AO3.1** Centre activities are located within a centre zone. **AO3.2** Centre activities outside a centre zone: (a) fulfil a demonstrated local need of residents and/or employees within walking distance[4]; and (b) do not compromise the viability of: (i) nearby centre activities, particularly centre activities within designated multi-purpose centres; and (ii) future centre activities within a planned multi-purpose centre[5]; and (c) are located: (i) either: (A) within a building previously used for centre activities; or (B) adjacent or opposite to existing centre activities; or (C) not within 800 metres of a designated multi-purpose centre or existing centre activities; and (ii) on sub-arterial roads or collector streets; and (iii) on a public transport route; and (iv) on sites large enough to mitigate potential impacts on adjoining and nearby properties within a residential zone and/or containing a sensitive land use; and (v) only at ground level.
Development intensity	
PO4 Centre activities outside a centre zone provide small scale and low intensity convenience services for the local area that: (a) integrate with the character and amenity of the local area; and (b) do not compete with or compromise role, function and viability of multi-purpose centres.	**AO4** Centre activities outside a centre zone: (a) include individual tenancies with a gross floor area of 150m^2 or less; and (b) do not result in the combined total gross floor area of centre activities on the site, on adjoining sites and on opposite sites, exceeding 1,000m^2 [6]; and (c) include individual tenancies with a street frontage length of 15 metres or less; and

4 "Walking distance" generally means within a 400 metre radius, however, it can be extended to as much as an 800 metre radius if the extended area is not already serviced by a similar existing use.

5 Planned multi-purpose centre means a centre required by the Emerging community zone code (precinct specific provisions) or a Local plan.

6 Where the combined total gross floor area of a single development or co-located developments exceeds 1,000m^2, assessment of the suitability of a new local centre must be carried out against the Strategic Framework (Part 3 of the planning scheme).

Performance outcomes	Acceptable outcomes
	(d) provide local convenience services; (e) where the site is within or adjoins a residential zone, centre activities operate within the hours of: (i) 7am – 8pm Monday to Thursday; and (ii) 7am – 9pm Friday and Saturday; and (iii) 8am – 8pm Sunday; and (f) do not require to be serviced by vehicles larger than a "Small Rigid Vehicle" as defined in *Australian Standard AS2890.2–2002*.
Site layout and building design in multi-purpose centres	
PO5 Built form is integrated with adjoining and nearby development within the centre to provide: (a) co-ordinated layout; and (b) consistent streetscape rhythm.	**AO5.1** Development is consistent with: (a) any applicable local plan; or (b) a centre concept plan.
	AO5.2 Centre concept plans identify the following across the site and nearby sites: (a) building envelopes identifying: (i) street orientated development along key active frontage streets and other appropriate locations; or (ii) an integrated layout where street-orientated development is not required or proposed; and (b) vehicular access and parking identifying: (i) co-ordinated rear access and parking areas where street orientated development is required or proposed; or (ii) integrated access and parking areas where street-orientated development is not required or proposed; and (c) pedestrian access network throughout the centre including mid-block pedestrian accesses.

Performance outcomes	Acceptable outcomes
PO6 Development adjacent to key active frontage streets[7] are characterised by: (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity.	**AO6** Street orientated development is provided along key active frontage streets. Street-orientated development includes: (a) buildings built to, or not more than 2.5 metres from, the street boundary; and (b) active building frontages (pedestrian entrances / doors and full length openings / glazing) for a minimum of 75% of the total frontage length; and (c) a pedestrian footpath with a minimum width of 4 metres along the full length of the frontage; and (d) a footpath awning over the pedestrian footpath along the full length of the frontage; and (e) limited or no vehicle driveways across the pedestrian footpath; and (f) car parking beneath, behind or within the building.
PO7 Development in new centres includes the creation of key active frontage streets that are characterised by: (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity.	**AO7** Street-orientated development (in accordance with AO6.1(a)–(f)) is provided along new key active frontage streets in the following centres: (a) Rural View major centre; and (b) Blacks Beach local centre; and (c) Andergrove Lakes local centre; and (d) Shoal Point local centre.
PO8 Development maintains the safety and efficiency of vehicle, bicycle and pedestrian movement on State controlled roads.	**AO8** The following is not provided across / adjacent to State controlled roads: (a) formal mid-block pedestrian access (for example - signalised crossing points, raised pedestrian crossings, painted pedestrian crossings and pedestrian refuges); and (b) footpath dining areas within the road reserve.
PO9 High rise buildings contribute to the open air character and human scale of centre streetscapes by: (a) restricting the height of development built to the road frontage boundary; (b) ensuring higher levels do not form overbearing development as viewed from the street.	**AO9.1** Where built to, or close to the road frontage boundary, podiums have a maximum height of 8.5 metres above ground level (2 storeys). **AO9.2** Floor levels above podiums are setback from the roadside edge of the podium a minimum of: (a) 3 metres to the edge of balconies and other lightweight articulation elements; and (b) 6 metres to building walls.

[7] "Key active frontage streets" are defined in Schedule 1.

Performance outcomes	Acceptable outcomes
PO10 Building design: (a) addresses 'non key active frontage streets' and public places and provides interest in building form, materials and expression and is consistent with the intended character of the area; and (b) provides opportunities for overlooking streets and public places.	**AO10.1** Building frontages facing 'non key active frontage streets', car parks, parkland and other public spaces include: (a) a pedestrian entrance that is visible from the street; and (b) activation measures[8] for a minimum of: (i) 60% of the total frontage length in the Major centre zone, District centre zone or Local centre zone; or (ii) 50% of the total frontage length in the Specialised centre zone, Showrooms and hardware precinct (precinct no SC1); and (c) articulation measures[9] at a maximum spacing of every: (i) 10 metres along the frontage in the Major centre zone, District centre zone or Local centre zone; or (ii) 20 metres along the frontage in the Specialised centre zone, Showrooms and hardware precinct (precinct no. SC1); and (d) trees that provide shade over the footpath within the road reserve.
PO11 Development: (a) effectively addresses and interacts with 'non key active frontage streets'; and (b) efficiently utilises sites within centres; and (c) maintains the amenity of adjoining residential sites where adjoining land within a residential zone.	**AO11.1** The maximum setback from 'non-key active frontage street' frontages is 14 metres. **AO11.2** The minimum setback for buildings from side and rear boundaries is: (a) 0 metres where the site adjoins a non-residential zone; and (b) the greater of 3 metres, or half the height of the building wall (ground level to eaves or ground level to top of the wall if no eaves) facing residential properties, where the site adjoins a residential zone.
PO12 Roof design provides high quality visual amenity outcomes and positively contributes, and integrates with, the roofscape of the centre.	**AO12.1** Building caps and rooftops contribute to: (a) the architectural quality of the building; and (b) a visually diverse but cohesive roofscape throughout the centre.

[8] "Activation measures" include pedestrian entrances / doors, large windows and openings.

[9] "Articulation measures" include building line projections / recessions (minimum depth 500mm), footpath awnings, articulated roof profile, alternating materials and colours.

Performance outcomes	Acceptable outcomes
	AO12.2 Service structures, lift motor rooms, central air conditioning plant and other mechanical plant are: (a) designed as an architectural feature of the building; or (b) adequately screened from view and not visible from the street, adjoining properties and public places.
PO13 The lower floors of buildings contain ceiling heights that: (a) provide a high level of amenity within the building; and (b) enable a variety of activities and uses.	**AO13** Sites with frontage to a key active frontage street and: • within the Major centre zone; or • within the District centre zone at North Mackay or West Mackay (Fourways), provide minimum floor to ceiling heights in accordance with the following: (a) 3.3 metres on ground floor; and (b) 3 metres on the first floor.
PO14 Building entrances maintain efficient pedestrian movement on footpaths and add visual interest at ground level.	**AO14** Building entrances provide: (a) a recessed pedestrian entrance into the building; and (b) shopfront display areas on either side of the building entrance.
Site layout and building design in areas other than multi-purpose centres	
PO15 Building design: (a) addresses streets and public places and provides interest in building form, materials and expression, and is consistent with the intended character of the area; and (b) provides opportunities for overlooking streets and public places.	**AO15** Building frontages facing streets, parkland and other public spaces include: (a) a pedestrian entrance that is visible from the street; and (b) activation measures[10] for a minimum of 60% of the total frontage length; and (c) articulation measures[11] at a maximum spacing of every 10 metres along the frontage.

[10] "Activation measures" include pedestrian entrances / doors, large windows and openings.

[11] "Articulation measures" include building line projections / recessions (minimum depth 500mm), awnings, articulated roof profile, alternating materials and colours.

Performance outcomes	Acceptable outcomes
PO16 Development: (a) efficiently utilises sites; or (b) maintains the amenity of adjoining residential sites where adjoining land within a residential zone.	**AO16** The minimum setback for buildings from side and rear boundaries is: (a) 0 metres where the site adjoins a non-residential zone or a site containing an existing non-residential use; or (b) the greater of 3 metres, or half the height of the building wall (ground level to eaves or ground level to top of the wall if no eaves) facing residential properties, where the site adjoins a residential zone.
Access and parking facilities	
PO17 Development includes the provision of adequate, convenient and safe on-site parking for cars and bicycles.	**AO17** Car and bicycle parking facilities, dedicated to customers, employees or other visitors of the development is provided: (a) on the site in a convenient and safe location/s; and (b) in accordance with Table 9.4.1.3.B in the General development requirements code.
PO18 Large scale shopping centre development provide for: (a) efficient public transport to and through the site; and (b) convenient, safe and legible pedestrian access between the public transport interchange and: (i) shopping centre entrance/s; and (ii) external sites.	**AO18** Public transport route and interchange facilities for buses and taxis are provided in shopping centres with a gross floor area of over 10,000m^2 in accordance with the following: (a) the efficiency of the public transport service is maintained by providing a route that has: (i) minimal deviation from the external route; and (ii) minimal travel distance within the site; and (iii) safe and efficient entry / exit points to the site; and (b) the route avoids car parking aisles; and (c) the interchange is located in close proximity to a significant pedestrian entrance/s to the shopping centre; and (d) the interchange is connected to the shopping centre entrance/s and external sites by pedestrian footpaths; and (e) clear signage of an appropriate size provides: (i) direction to the interchange; and (ii) information on public transport services.
PO19 Mid-block accesses enhance pedestrian connectivity throughout the centre.	**AO19** Arcades, plazas and other mid-block accesses are provided to increase pedestrian connectivity by providing links between streets and other important elements of the pedestrian network.

9.3.3 Child care centre code

9.3.3.1 Application

This code applies to assessing material change of use for child care centre.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.3.2 Purpose

(1) The purpose of the Child care centre code is to ensure that child care centre uses are appropriately located, provide high quality design outcomes, maintain the amenity and character of the surrounding area and provide safe and adequate access for vehicles and pedestrians.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) child care centres are located on highly accessible sites within or close to centres, neighbourhood activity hubs or compatible land uses; and

(b) development provides high quality design outcomes at a human scale, and addresses and interacts with the street particularly along existing centre main streets and main streets in new centres; and

(c) development includes the provision of safe and efficient vehicle and pedestrian access and adequate car parking.

9.3.3.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.3.3.3.A – Child care centre code – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Site location and characteristics	
PO1 The child care centre is located: (a) either: (i) within or in close proximity to multi-purpose centres or other neighbourhood activity hubs; or (ii) within a residential area on sites that are highly accessible but not impacted by noise, air emission and safety issues associated with highly trafficked roads; and (b) to not introduce non-residential traffic on local residential streets (access streets); and (c) to not be impacted by noise, air emission and safety issues associated with high impact industry uses.	**AO1.1** The child care centre is located: (a) within a multi-purpose centre or within 200 metres of a multi-purpose centre, existing centre activity or existing community activity; or (b) within a residential zone on a site that adjoins: (i) a sub-arterial road or collector street; and (ii) a public transport route. **AO1.2** The child care centre is located a minimum of: (a) 500 metres from properties within the High impact industry zone; and (b) 500 metres from an existing high impact industry use; and (c) 1,500 metres from an existing special industry use.

Performance outcomes	Acceptable outcomes
PO2 The size, dimensions and slope of the site provide sufficient usable area to accommodate all buildings, structures, play areas, access, servicing and parking areas, landscaping and buffers associated with / required for the use.	**AO2** The site has a: (a) minimum area of 2,000m^2; and (b) minimum frontage of 40 metres; and (c) slope that does not exceed 10%.
Site layout and building design	
PO3 Where the site has a frontage to a key active frontage street[12], the layout and built form of the child care centre: (a) is consistent with the intended character of the streetscape; and (b) provides high quality pedestrian amenity for pedestrians walking along the main street.	No acceptable outcome prescribed.
PO4 Child care centres are setback from road frontages to integrate with the built form of the surrounding area.	**AO4** Where the site does not have frontage to a road identified as an "existing main street" or a "new centre main street" in Schedule 1, the minimum setback from road frontage boundaries is: (a) 10 metres from an arterial road or sub-arterial road; and (b) 6 metres from a collector street or access street; and (c) 0 metres from a rear laneway.
PO5 Building design: (a) addresses streets and public places and provides interest in building form, materials and expression, and is consistent with the intended character of the area; and (b) provides opportunities for overlooking streets and public places.	**AO5** Building elevations facing road frontages, parkland and other public spaces include: (a) a pedestrian entrance that is visible from the street; and (b) activation measures[13] for a minimum of: (i) 60% of the total frontage length in the Major centre zone, District centre zone or Local centre zone; or (ii) 50% of the total frontage length in other zones; and (c) articulation measures[14] at a maximum spacing of every: (i) 10 metres along the frontage in the Major centre zone, District centre zone or Local centre zone; or (ii) 15 metres along the frontage in other zones.

[12] "Key active frontage streets" are defined in Schedule 1.
[13] "Activation measures" include pedestrian entrances / doors, large windows and openings.
[14] "Articulation measures" include building line projections / recessions (minimum depth 500mm), awnings, articulated roof profile, alternating materials and colours.

Performance outcomes	Acceptable outcomes
PO6 Where open areas are provided between buildings and road frontages, landscaping: (a) provides shade for pedestrians in the adjoining road reserve; and (b) softens the appearance of the development as viewed from the road.	**AO6** Where open areas are provided between buildings and road frontages, the following is provided: (a) regularly spaced shade trees within the road reserve adjacent to the site; and (b) a minimum 2 metre wide landscaping strip containing signature trees and feature planting[15] is provided within the site along the full length of the road frontage.
Access and parking facilities	
PO7 Development includes the provision of adequate, convenient and safe on-site parking for cars and bicycles.	**AO7.1** Car and bicycle parking facilities, dedicated to clients, employees and other visitors of the development is provided: (a) on the site in a convenient and safe location/s; and (b) in accordance with Table 9.4.1.3.B in the General development requirements code.
PO8 Vehicle access and car parking areas enables the safe drop-off and collection of children by minimising potential conflicts between pedestrians and vehicles.	**AO8.1** Access into and egress from the site is provided separately to enable a one-way vehicle circulation system.
	AO8.2 Passenger set down and pick areas: (a) are located adjacent to a main entrance of the child care centre; and (b) are wide enough for a child to be lifted from either side of the vehicle, without danger from moving vehicles; and (c) are one-way and enable vehicles to stand nose to tail and freely exit the set down area.
	AO8.3 Passenger set down areas and parking spaces are located so that children are not required to cross vehicular access ways to reach the building.

[15] "Signature trees and feature plantings" means landscaping that is used to visually soften parts of the development, emphasize parts of the development and/or form an attractive landmark in its own right. It does not include "buffer planting" where landscaping screens development from view.

9.3.4 Community activities code

9.3.4.1 Application

This code applies to assessing material change of use for community activities.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.4.2 Purpose

(1) The purpose of the community activities code is to ensure that community activities are appropriately located, provide high quality design outcomes and maintain the amenity and character of the surrounding area.

(2) The purpose of the code will be achieved through the following overall outcomes:
- (a) community activities are located on highly accessible sites in the Community facilities zone or multi-purpose centres unless special circumstances (such as local need and location attributes) justify activities in other areas; and
- (b) development provides high quality design outcomes at a human scale, and addresses and interacts with the street particularly along existing centre main streets and main streets in new centres; and
- (c) development maintains a high level of amenity for adjoining residential properties; and
- (d) development includes the provision of safe and efficient vehicle and pedestrian access and adequate car parking.

9.3.4.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.3.4.3.A – Community activities code – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
PO1 Community activities seeking to occupy an existing building in the Community facilities zone, a multi-purpose centre or a residential zone, maintain: (a) adequate on-site car parking and vehicle access areas; and (b) adequate on-site landscaping areas; and (c) adequate activation measures on the street frontage/s; and (d) the scale and intensity of the previous use.	**AO1.1** Where a community activity seeks to occupy an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use in multi-purpose centres, residential zones or the Community facilities zone, the following is maintained: (a) all on-site car parks and vehicle access ways that were approved or operated with the previous use; and (b) all on-site landscaping areas that were approved or operated with the previous use; and (c) all activation measures[16] on the street frontage/s that were approved or operated with the previous use.

[16] "Activation measures" include pedestrian entrances / doors, large windows and openings.

Performance outcomes	Acceptable outcomes
	AO1.2 If the previous use occupied part of a building only, the proposed use: (a) occupies the same part of the building as the previous use; and (b) occupies the same or less gross floor area, within the existing building, as the previous use.
	AO1.3 Any external extensions to the existing building constitute minor building work.
For assessable development	
Location and need	
PO2 Community activities are located within the Community facilities zone or a multi-purpose centre unless: (a) a strong local need will be fulfilled; and (b) the viability of designated centres will not be compromised; and (c) they are appropriately located.	**AO2.1** Community activities are located within the Community facilities zone or a multi-purpose centre.
	AO2.2 Community activities outside the Community facilities zone or a multi-purpose centre: (a) fulfil a demonstrated need of residents within the local catchment; and (b) are located: (i) either: (A) within a building previously used for community activities or centre activities; or (B) adjacent or opposite to existing community activities or centre activities; or (C) not within 800 metres of existing community activities or centre activities; and (ii) on sub-arterial roads or collector streets; and (iii) on a public transport route; and (iv) on sites large enough to mitigate potential impacts on adjoining and nearby properties within a residential zone and existing sensitive land uses; and (v) only at ground level.

Performance outcomes	Acceptable outcomes
Site layout and building design	
PO3 In multi-purpose centres, development adjacent to key active frontage streets[17] is characterised by: (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity.	**AO3** In multi-purpose centres, street orientated development is provided along key active frontage streets. Street-orientated development includes: (a) buildings built to, or not more than 2.5 metres from, the street boundary; and (b) active building frontages (pedestrian entrances / doors and full length openings / glazing) for a minimum of 75% of the total frontage length; and (c) a pedestrian footpath with a minimum width of 4 metres along the full length of the frontage; and (d) a footpath awning over the pedestrian footpath along the full length of the frontage; and (e) limited or no vehicle driveways across the pedestrian footpath; and (f) car parking beneath, behind or within the building.
PO4 Development in new centres includes the creation of key active frontage streets that are characterised by: (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity.	**AO4** Street-orientated development (in accordance with AO3 (a)–(f)) is provided along new key active frontage streets in the following centres: (a) Rural View major centre; and (b) Blacks Beach local centre; and (c) Andergrove Lakes local centre; and (d) Shoal Point local centre.
PO5 Development maintains the safety and efficiency of vehicle, bicycle and pedestrian movement on State controlled roads.	**AO5** The following is not provided across / adjacent to State controlled roads: (a) formal mid-block pedestrian access (for example - signalised crossing points, raised pedestrian crossings, painted pedestrian crossings and pedestrian refuges); and (b) footpath dining areas within the road reserve.

[17] "Key active frontage streets" are defined in Schedule 1.

Performance outcomes	Acceptable outcomes
PO6 Building design: (a) addresses 'non key active frontage streets' and public places and provides interest in building form, materials and expression and is consistent with the intended character of the area; and (b) provides opportunities for overlooking streets and public places.	**AO6** Building frontages facing 'non key active frontage streets', parkland and other public spaces include: (a) a pedestrian entrance that is visible from the street; and (b) activation measures[18] for a minimum of 60% of the total frontage length; and (c) articulation measures[19] at a maximum spacing of every 10 metres along the frontage; and (d) trees that provide shade over the footpath within the road reserve.
PO7 Development integrates with the amenity and character of the local area.	**AO7.1** In multi-purpose centres, development is setback from 'non key active frontage streets' in accordance with either of the following: (a) within 20% of the road frontage setback to an existing building on an adjoining site; or (b) in accordance with the minimum road frontage requirements set out in the relevant zone code.
	AO7.2 Where a front setback is provided, a minimum 2 metre wide landscaping strip is provided along the full length of all road frontages.
PO8 Development: (a) efficiently utilises sites within centres; or (b) maintains the amenity of adjoining residential sites where adjoining land within a residential zone.	**AO8** The minimum setback for buildings from side and rear boundaries is: (a) 0 metres where the site adjoins a non-residential zone; and (b) the greater of 3 metres, or half the height of the building wall (ground level to eaves or ground level to top of the wall if no eaves) facing residential properties, where the site adjoins a residential zone.
PO9 In multi-purpose centres, the lower floors of buildings contain ceiling heights that: (a) provide a high level of amenity within the building; and (b) enable a variety of activities and uses.	**AO9** Sites with a frontage to a key active frontage street and: • within the Major centre zone; or • within the District centre zone at North Mackay or West Mackay (Fourways and Parkside), provide minimum floor to ceiling heights in accordance with the following of: (a) 3.3 metres on ground floor; and (b) 3 metres on the first floor.

[18] "Activation measures" include pedestrian entrances / doors, large windows and openings.
[19] "Articulation measures" include building line projections / recessions (minimum depth 500mm), footpath awnings, articulated roof profile, alternating materials and colours.

Performance outcomes	Acceptable outcomes
Access and parking facilities	
PO10 Development includes the provision of adequate, convenient and safe on-site parking for cars and bicycles.	**AO10** Car and bicycle parking facilities, dedicated to customers / clients, employees and other visitors of the development is provided: (a) on the site in a convenient and safe location/s; and (b) in accordance with Table 9.4.1.3.B in the General development requirements code.

9.3.5 Dual occupancy compliance assessment code

9.3.5.1 Application

This code applies to assessing a material change of use for dual occupancy where compliance assessment.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.5.2 Purpose

(1) The purpose of the Dual occupancy compliance assessment code is to provide a streamlined assessment process for dual occupancy developments that are appropriately located, designed and serviced by infrastructure.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) the subject site does not gain access from a major road and provides adequate area frontage width for development; and

(b) the dual occupancy is designed:
- (i) to not form overdevelopment of the subject site; and
- (ii) so that car accommodation does not dominate the appearance of the development as viewed from the street; and
- (iii) to integrate with the built form of the area and maintain a high level of amenity for adjoining lots; and
- (iv) to provide adequate and usable outdoor recreation area for residents; and
- (v) to maintain the operational and structural efficiency of public utility infrastructure; and

(c) the dual occupancy is serviced by all forms of urban infrastructure.

9.3.5.3 Assessment criteria

Part A – Criteria for development requiring compliance assessment

Table 9.3.5.3.A – Dual occupancy compliance assessment code – development requiring compliance assessment

Compliance outcomes	
CO1	Where located in the Low density residential zone or Emerging community zone, there are no more than 3 dual occupancies (existing or approved) in a row fronting the same street.
CO2	The subject site gains access from one of the following: (a) collector street; or (b) access street.
CO3	The subject site has a minimum area of: (a) 800m^2 where located in the Emerging community zone or Low density residential zone; or (b) 600m^2 where located in the Medium density residential zone – Low-medium density precinct (precinct no. MD1); or (c) 400m^2 where located in the Medium density residential zone – General medium density precinct (precinct no. MD2).
CO4	The subject site has a minimum road frontage of 20 metres.

Compliance outcomes	
CO5	The dual occupancy does not exceed a plot ratio of: (a) in the Emerging community zone or Low density residential zone: (i) 0.6:1 if the subject site is located: (A) adjacent to a public transport route; or (B) within 200 metres of a centre zone (not including specialised centre zone); or (C) within 200 metres of public open space; or (ii) 0.5:1 if the subject site does not meet one of the location criteria mentioned in CO4(a)(i)A–C above; or (b) 0.6:1 in the Medium density residential zone – Low-medium density precinct (precinct no. MD1); or (c) 0.8:1 in the Medium density residential zone – General medium density precinct (precinct no. MD2).
CO6	The dual occupancy has a maximum height of 8.5 metres above ground level (2 storeys).
CO7	The minimum setback from road frontage boundaries is: (a) from collector streets – 6 metres; or (b) from access streets – 6 metres to the garage and 4.5 metres to other parts of the dual occupancy.
CO8	The minimum setbacks from side and rear setbacks is: (a) 1.5 metres for walls with a height of 4.5 metres or less; (b) 2 metres for walls with a height of over 4.5 metres.
CO9	Built to boundary walls: (a) have a maximum height of 3.5 metres unless matching an existing or simultaneously constructed wall on the adjoining property; (b) have a maximum length of the lesser of 12 metres or 50% of the length of that boundary unless matching an existing or simultaneously constructed wall on the adjoining property; (c) are maintenance free.
CO10	Each dwelling is provided with a minimum of 2 car parking spaces on the subject site, 1 of which is covered (total for the development – minimum of 4 car parking spaces on the subject site, 2 of which are covered).
CO11	The total width of garages and carports facing the street elevation, does not exceed 50% of the length of the road frontage.
CO12	The garage is recessed behind other parts of the dual occupancy building or a verandah / balcony a minimum of: (a) 1.5 metres if facing a collector street frontage; or (b) 1 metre if facing an access street. This provision is not applicable to garages facing a rear laneway[20] frontage.
CO13	The dual occupancy provides an entrance that faces, and is visible from, the street.
CO14	Outdoor recreation (private open space) area for each dwelling: (a) has a minimum area of 16m^2 with a minimum dimension of 4 metres; (b) is directly accessible from a living or dining room; (c) does not have a slope greater than 1 in 20 (5%).

[20] Rear laneways run between the rear of properties (both sides) that also have a frontage to an access street, collector street, sub-arterial road or arterial road. Rear laneways generally provide vehicular access and utility services to properties.

Compliance outcomes	
CO15	The subject site is connected to the following in accordance with relevant standards set by Council / the relevant agency : (a) reticulated water supply infrastructure; (b) reticulated sewerage infrastructure; (c) a sealed road; (d) a lawful point of discharge and any stormwater infrastructure adjacent to the subject site; (e) electricity and telecommunications infrastructure.
CO16	The driveways are clear of all of the following elements in the road reserve: (a) utility infrastructure (for example gully pits, manholes, power poles, street lights); (b) street furniture (bus stops, bollards); (c) street trees.

Note – please check for overlays that affect the subject site and the relevant overlay assessment tables as this may increase the level of assessment for a dual occupancy from compliance to code assessment or impact assessment.

9.3.6 Dwelling house code

9.3.6.1 Application

This code applies to assessing material change of use for dwelling house.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.6.2 Purpose

(1) The purpose of the Dwelling house code is to ensure that dwelling houses, secondary dwellings, outbuildings and other ancillary structures maintain a high level of amenity within the site and as viewed from adjoining and nearby sites and roads.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) dwelling houses and ancillary structures:

(i) integrate with surrounding built form; and

(ii) maintain the visual amenity and privacy of adjoining lots; and

(iii) maintain views from adjoining and surrounding lots; and

(iv) do not constitute over-development of the lot; and

(b) dwelling houses in areas affected by flooding are designed to reduce damage from flood events; and

(c) the height, location and size of outbuildings is limited to ensure that they do not form overbearing development as viewed from adjoining and nearby lots and roads; and

(d) secondary dwellings are subordinate to the primary dwelling house; and

(e) adequate car parking is provided.

9.3.6.3 Assessment criteria

Part A – Criteria for self-assessable and assessable development

Table 9.3.6.3.A – Dwelling house code – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Road frontage setback	
PO1 Dwelling houses, secondary dwellings, outbuildings and other ancillary structures are setback from road frontages to: (a) integrate with the built form of the surrounding area; and	**AO1.1** Dwelling houses, secondary dwellings, out-buildings and other ancillary structures are setback from the primary road frontage in accordance with the minimum setbacks identified in the relevant zone code.

Performance outcomes	Acceptable outcomes
(b) ensure that car accommodation is setback to: (i) enable a car to be parked in the driveway without encroaching into the road reserve; and (ii) not dominate the appearance of the site as viewed from the street; and (c) enhance residential amenity by providing separation between habitable rooms and adjoining roads; and provide opportunities for landscaping.	**AO1.2** On corner lots in key urban areas and the Township zone, the minimum secondary road frontage setback for the dwelling house (not including garages, outbuildings and carport) is 3 metres.
	AO1.3 An open carport may be set back less than the minimum setbacks identified in AO1.1 provided that: (a) the setback is from a collector street or access street; and (b) the maximum width of the carport is the lesser of 6 metres or 50% of the frontage (measured from the inside of the outermost supporting posts) ; and (c) supporting posts are setback a minimum of 1 metre from the road frontage.
	AO1.4 The following ancillary structures may be set back less than the minimum setbacks required by AO1.1: (a) unroofed landings, entry porches, steps or ramps with a maximum height of 1 metre above ground level; or (b) shade devices attached to a dwelling house or dwelling unit such as screens, sunblinds and sunhoods over windows and doors; or (c) minor outdoor recreation / garden structures such as pergolas, gatehouses and arches; or (d) utilities such as above ground rainwater tanks (not more than 1.5 metres high and with a footprint of not more than 4m^2), aerials, electricity and gas meters[21].
Side and rear setbacks – Rural zone and Rural residential zone	
PO2 Dwelling houses, secondary dwellings, outbuildings and other ancillary structures are setback from side and rear boundaries to: (a) maintain visual amenity to be consistent with rural and semi-rural landscapes, on the site and on adjoining sites; and	**AO2.1** On sites with an area of 1 hectare or greater in the Rural zone, the minimum setback from side and rear boundaries for the primary dwelling house and any secondary dwelling is 10 metres[22].

[21] Higher or larger rainwater tanks must be setback in accordance with AO1.1.
[22] This provision does not apply to outbuildings and other ancillary structures that do not contain habitable rooms.

Performance outcomes	Acceptable outcomes
(b) maintain privacy and general amenity normally expected in rural and semi-rural areas, on the site and on adjoining sites; and (c) provide separation between dwelling houses, secondary dwellings and the following on adjoining lots: (i) existing or potential agricultural activities; and (ii) bushfire hazard areas; and (iii) environmentally sensitive areas.	**AO2.2** On sites with an area of 5,000m^2 or greater in the Rural residential zone, the minimum setback from side and rear boundaries for dwelling houses, secondary dwellings, outbuildings and other ancillary structures is: (a) 10 metres from boundaries adjoining land within the Rural zone; and (b) 5 metres from boundaries adjoining land within the Rural residential zone and other zones.
Floor levels in areas affected by flooding	
PO3 Premises subject to risk of inundation or damage through flood are provided with immunity to that risk in order to reduce potential property damage and to ensure public safety.	**AO3.1** Development complies with the following: (a) is located on land that is not subject to inundation during a DFE[23]; or (b) the minimum floor level for habitable rooms (new buildings and extensions to existing buildings) is the highest of the following: (i) 300mm above the DFE; or (ii) 300mm above the DSTE[24] relevant to the subject site; or (iii) the minimum floor level, as follows: (A) Mackay urban area – RL 5.4m AHD; or (B) Midge Point – RL 5.0m AHD; or (C) Seaforth, Haliday Bay, Ball Bay, Louisa Creek, Half Tide Beach, Salonika Beach, Grasstree Beach, Sarina Beach, Freshwater Point and Armstrong Beach – RL 5.3m AHD; or (iv) in addition to (iii) above, an additional 600mm is provided for higher wave effects and run up in the foreshore area (the foreshore area shall be taken as extending inland for a minimum of 100 metres from the higher of toe of the frontal dune or Highest astronomical tide): or (v) 225mm above natural ground level; or (vi) 300mm above the greater of top of the kerb level or the crown of the adjacent bitumen road.

[23] "DFE" – defined flood event – is the 1% AEP flood event plus climate change factor. The DFE is derived from adopted studies regarding riverine and local flood events. Where a site is covered by more than one study, the highest flood level is the DFE.

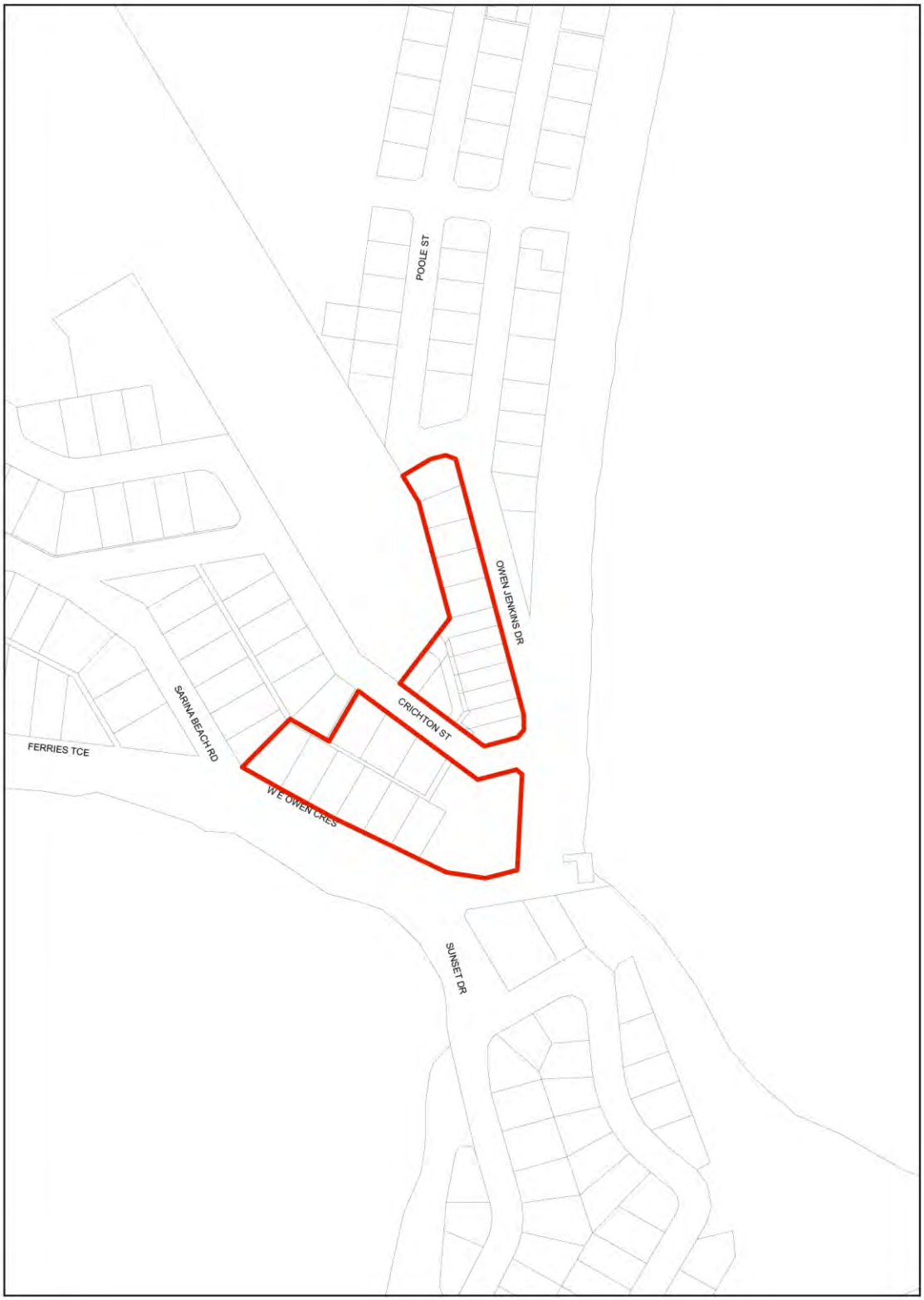
[24] "DSTE" – defined storm tide event

Performance outcomes	Acceptable outcomes
Building height and site cover	
PO4 Dwelling houses: (a) integrate with surrounding built form; (b) maintain views and access to natural light for adjoining and nearby lots.	**AO4.1** Dwelling houses have a maximum height of: (a) 11 metres above ground level (3 storeys) in the areas identified on: (i) Figure 9.3.6.3.A – 11 metre (3 storey) maximum building height areas – Mackay Harbour; or (ii) Figure 9.3.6.3.B – 11 metre (3 storey) maximum building height areas – Sarina Beach; or (b) 8.5 metres above ground level in other locations.
PO5 Dwelling houses within areas affected by flooding or the landslide hazard overlay: (a) utilise a usable extent of building height; and (b) integrate with the built form character of the surrounding area; and (c) do not form overdevelopment of the site.	**AO5.1** In areas affected by flooding, the height of dwelling houses above ground level does not exceed the maximum building height set by AO4.1 plus the highest of the following: (a) DFE; or (b) DSTE relevant to the subject site; or (c) the relevant level as follows: (i) within the Mackay urban area – RL 5.0m AHD; or (ii) Midge Point – RL 4.6m AHD; or (iii) Seaforth, Haliday Bay, Ball Bay, Louisa Creek, Half Tide Beach, Salonika Beach, Grasstree Beach, Sarina Beach, Freshwater Point and Armstrong Beach – RL 4.9m AHD.
	AO5.2 In areas covered by the landslide hazard overlay, dwelling houses have a maximum height of 10 metres.
PO6 Development: (a) maintains an adequate and usable outdoor recreation area; and (b) does not constitute over-development of the subject site; and (c) maintains a high level of amenity and privacy for adjoining lots.	**AO6** Dwelling houses, outbuildings and other ancillary structures do not exceed: (a) 50% site cover on lots with an area of 400m^2 or more; or (b) 60% site cover on lots with an area of less than and 400m^2 and more than 250m^2; or (c) 75% site cover on lots with 250m^2 or less.

Performance outcomes	Acceptable outcomes
Outbuildings	
PO7 Outbuildings are located and designed to: (a) not form a dominant feature in the streetscape; and (b) be physically and visually subordinate to the dwelling house; and (c) not result in over-development of the lot; and (d) maintain views, access to natural light and a high level of visual amenity for adjoining lots.	**AO7.1** In the Rural residential zone, the site cover of outbuildings does not exceed 200m^2.
	AO7.2 Outbuildings are setback from street frontages in accordance with the minimum setbacks identified in the relevant zone code.
	AO7.3 Outbuildings accord with the following maximum heights: (a) eaves: (i) on lots with an area of 400m^2 or more – 3.5 metres above ground level; or (ii) on lots with an area of less than 400m^2 – 2.4 metres above ground level; and (b) roof apex: (i) on lots with an area of 400m^2 or more – 4.5 metres above ground level; or (ii) on lots with an area of less than 400m^2 – 2.7 metres above ground level.
Secondary dwellings	
PO8 The secondary dwelling is subordinate to the primary dwelling house.	**AO8.1** No more than 1 secondary dwelling is provided per lot.
	AO8.2 The secondary dwelling has a maximum gross floor area of 60m^2 and contains no more than 1: (a) bedroom; (b) combined living / dining area; (c) kitchen; (d) bathroom / toilet.
Car parking and garage width	
PO9 The number of car parks provided on the lot is adequate to the needs of residents.	**AO9** Car parking is provided in accordance with Table 9.4.1.3.B in the General development requirements code.
PO10 Enclosed garages: (a) are visually integrated with the dwelling house and the streetscape; and (b) do not dominate the appearance of the site as viewed from the street.	**AO10** The width of enclosed garages does not exceed the lesser of: (a) 7 metres; or (b) 50% of the total width of road frontage.

Figure 9.3.6.3.A – Dwelling house code – 11 metre (3 storey) maximum building height areas – Mackay Harbour

Figure 9.3.6.3.B – Dwelling house code – 11 metre (3 storey) maximum building height areas – Sarina Beach



9.3.7 Extractive industry code

9.3.7.1 Application

This code applies to assessing material change of use for extractive industry code.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.7.2 Purpose

(1) The purpose of the extractive industry code is to ensure that extractive industry uses fulfil a need by utilising resources to the optimum extent while also maintaining high levels of public safety, amenity and ecological integrity.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) extractive industries fulfil a demonstrated need; and

(b) extractive industries are located, designed and operated to maintain public safety, general amenity and landscape character of the surrounding area; and

(c) external haulage routes operate efficiently but do not compromise:
(i) the amenity of areas containing concentrations of sensitive land uses; and
(ii) the condition of the roads; and

(d) a high standard of water quality is achieved within and downstream of the subject site through the implementation of appropriate water management techniques; and

(e) rehabilitation works during and upon cessation of the extractive industry use results in the previous environmental attributes and usability of the land being restored and/or improved.

9.3.7.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.3.7.3.A – Extractive industry code – assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Need	
PO1 The extractive industry fulfils a demonstrated need for the resource in development projects in the region.	**AO1** The need for an extractive industry is demonstrated through a report which details the: (a) type of resource to be extracted and the nature of its use in development projects in the region; and (b) proposed rate of extraction; and (c) market demand for the resource.

Performance outcomes	Acceptable outcomes
Public safety and amenity	
PO2 The extractive industry is located and operated to maintain public safety and minimise potential noise, dust, vibration and visual amenity impacts on nearby publically accessible areas and sensitive land uses.	**AO2.1** Extractive industry operation areas are located in accordance with the following: (a) where the extractive industry involves blasting, minimum distance of 1,000 metres from: (i) sensitive land uses; and (ii) public roads; and (iii) driveways on adjoining and nearby properties; or (b) for other extractive industries, minimum distance of 400 metres from sensitive land uses.
	AO2.2 Extractive industry operation areas are not located within 40 metres of any boundary.
	AO2.3 Extractive industry operation areas are screened from view from public roads, other publicly accessible areas and sensitive land uses by one or a combination of the following: (a) natural topographic features such as ridgelines; or (b) a densely planted vegetation buffer, consisting of existing or new native species, with a minimum width of 20 metres; or (c) method of working the operation area.
	AO2.4 Vibrations generated by the extractive industry are managed within acceptable levels as outlined within the *Environmental Protection (Noise) Policy 2008*.
	AO2.5 Air pollution including dust generated by the extractive industry is managed within acceptable levels as outlined within the *Environmental Protection (Air) Policy 2008*.
	AO2.6 Blasting operations are limited to the hours of 9:00 a.m. to 5:00 p.m. Monday to Friday.
	AO2.7 Other extractive industry operations are limited to within the hours of 6:00 a.m. to 6:00 p.m. Monday to Saturday.

Performance outcomes	Acceptable outcomes
PO3 Public safety is maintained by: (a) preventing public access to operations areas; and (b) raising public awareness on operations.	**AO3.1** In order to prevent unauthorised or accidental public entry, the following is provided: (a) security fencing with a minimum height of 2 metres around the part of the site occupied by the extractive industry operations area/s; and (b) lockable security gates at access points with a minimum height of 2 metres.
	AO3.2 Signs that inform and warn the public of operations and safety hazards, and prohibit unauthorised access, are installed on the: (a) public road adjoining the subject site; and (b) gates / fencing surrounding the operations area.
PO4 The location, extent, design, operation and staging of the extractive industry has regard to visual amenity and important landscape character elements.	**AO4** The extractive industry maintains the natural profile of hill / mountain summits and ridgelines that are important to the visual amenity and landscape character of the region.
Haulage routes	
PO5 External haulage route/s servicing the extractive industry: (a) are provided on a road/s of a standard sufficient to carry the type and volume of vehicles associated with the use; and (b) avoids residential and township areas and other sensitive environments; and (c) are maintained and managed at all times to: (i) ensure roads remain safe, trafficable and operational; and (ii) minimise impacts from dust and noise to nearby sensitive land uses.	No acceptable outcome prescribed.
PO6 Extractive industry haulage vehicles do not diminish the condition of public roads.	**AO6** Where vehicles carrying extractive resources impact on public roads, ameliorative works are undertaken to maintain the condition of the roads.
Stormwater drainage	
PO7 Stormwater drainage systems on the subject site are designed, constructed and maintained to: (a) minimise and control erosion; and (b) prevent pollution of groundwater and surface water; and (c) provide opportunities to conserve and re-use water on the site.	**AO7.1** Banks and channels are constructed to divert stormwater runoff away from disturbed areas susceptible to erosion.
	AO7.2 Drainage basins are provided as required to detain stormwater runoff from disturbed areas to allow settlement of sediments.

Performance outcomes	Acceptable outcomes
	AO7.3 Bunding, treatment and disposal provisions are made for industrial wastes.
	AO7.4 Water quality improvement techniques and devices are developed and maintained at discharge points and, if necessary, throughout the site.
Rehabilitation works	
PO8 Rehabilitation works during, and at the cessation of the extractive industry use, restore the environmental values and/or useability of the subject site.	**AO8.1** Rehabilitation works during, and at the cessation of the extractive industry use, are provided in accordance with a rehabilitation management plan.
	AO8.2 The rehabilitation management plan details: (a) progressive / staged rehabilitation works; and (b) clean-up works (including areas of possible soil or water contamination); and (c) works required to ensure landform and soil profiles are stable and in a usable condition; and (d) revegetation using native plant species; and (e) monitoring for all aspects of the operations impacting on the environment.
	AO8.3 A bond for the performance of rehabilitation works is provided.

9.3.8 Home based business code

9.3.8.1 Application

This code applies to assessing material change of use for home based business.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.8.2 Purpose

(1) The purpose of the Home based business code is to ensure that home based business uses integrate with the character, amenity and primary use of the site, adjoining sites and local area.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) home based businesses maintain the character, amenity and safety of the site, adjoining sites and the local area; and

(b) home based businesses integrate with, and are sub-ordinate to, the primary land use intent of the site and local area; and

(c) home based businesses do not compromise the role and function of, or compete with, designated centres and other business / employment hubs; and

(d) adequate vehicle parking is provided on-site.

9.3.8.3 Assessment criteria

Part A – Criteria for self-assessable and assessable development

Table 9.3.8.3.A – Home based business code – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Location, scale and operations	
PO1 Home based business uses have a location, scale and operations that: (a) maintain the character and amenity of the site, adjoining sites and the local area; and (b) integrate with, and are sub-ordinate to, the primary land use intent of the site and local area; and (c) not compromise the role and function of, or compete with, designated centres and other business / employment hubs.	**AO1.1** If the use includes signage that is visible from an adjoining or nearby street or public land, the subject site is not within 50 metres of another site containing a home based business with signage that is visible from adjoining or nearby streets or public land.

Performance outcomes	Acceptable outcomes
	AO1.2 Home based business uses, other than bed and breakfast, comply with the following: (a) uses involving visiting customers / clients and loading / unloading activities, operate within the hours of: (i) 7.00am to 7.00pm, Monday to Saturday; and (ii) 9.00am to 5.00pm, Sunday and public holidays; and (b) the use involves the employment of no more than 2 employees that do not live in the principle dwelling house; and (c) the gross floor area (including storage areas) does not exceed the lesser of: (i) 25% of the total floor area of the principle dwelling house; or (ii) 10% of the site area; or (iii) $60m^2$; and (d) the use is wholly contained within the dwelling house or ancillary outbuilding on the site; and (e) the use does not generate more than: (i) 6 customers / clients on any single day (by appointment); and (ii) 2 customers / clients present on site at any one time; and (f) the use does not involve: (i) direct retail activity or the hiring of goods on / from the site; and (ii) industrial activities; and (iii) service industry activities.

Performance outcomes	Acceptable outcomes
	AO1.3 Home based business involving bed and breakfast use comply with the following: (a) the use is wholly contained within the principle dwelling house on the site; and (b) sites have a minimum area of: (i) 600m^2 if within a residential zone other than the Township zone or Rural residential zone; or (ii) 1,000m^2 it within the Township zone; or (iii) 1 hectare if within the Rural zone or Rural residential zone; and (c) does not contain more than: (i) 2 guest bedrooms if within a residential zone other than the Rural residential zone; or (ii) 4 guest bedrooms if within the Rural zone or Rural residential zone; and (d) with regards to employees that do not live in the principle dwelling house: (i) no non-resident employees are associated with the use if within a residential zone other than the Rural residential zone; or (ii) no more than 2 employees are associated with the use if within the Rural zone or Rural residential zone; and (e) the maximum continuous period of stay for any guest is 4 weeks.
	AO1.4 The use involves no more than 1 commercial vehicle that is no larger than a small rigid vehicle as defined under *Australian Standard AS2890.2–2002*, for the daily operation of the business.
	AO1.5 The use does not involve outdoor storage of any material associated with the use.
Amenity and safety	
PO2 The operation of the use does not generate noise, light, vibration, odour, dust or air emission impacts evident at the boundary of the site that are more than what would otherwise be normally generated by the dwelling house.	No acceptable outcome prescribed.
PO3 The use maintains high levels of safety for adjoining sites.	**AO3** The use does not store chemicals, gases or other hazardous materials in volumes greater than would otherwise be normally used and stored for the dwelling house.

Performance outcomes	Acceptable outcomes
Vehicle parking	
PO4 Development includes the provision of adequate, convenient and safe on-site car parking.	**AO4** Sealed (bitumen, concrete or paving) car parking facilities, dedicated to customers / clients, employees and other visitors of the development is provided: (a) on the site in a convenient and safe location/s; and (b) in accordance with Table 9.4.1.3.B in the General development requirements code.
Signage and display of goods	
PO5 Signage effectively advertises the name and nature of the business but is discreet and subordinate to the primary intended character, amenity and land use of the site and local area.	**AO5.1** Any signage associated with home based business uses, other than bed and breakfast, includes a single non-illuminated sign that: (a) does not exceed 0.3 m^2 in area; and (b) has a maximum height of 1.5 metres; and (c) is situated below the roof line of the building to which it is attached; and (d) displays only the name, occupation and contact details of the business; and (e) is located wholly within the site or securely attached to the front fence facing the road.
	AO5.2 Any signage associated with home based business uses involving bed and breakfast , includes a single sign that: (a) does not exceed: (i) 0.3m^2 in area if within a residential zone; or (ii) 2m^2 in area where located in a Rural residential zone or Rural zone; and (b) displays only the street number, name, occupation and contact details of the business; and (c) if illuminated, the sign: (i) utilises only 1 incandescent globe not more than 60 watts if within a residential zone; or (ii) utilises only 1 incandescent globe not more than 100 watts if within the Rural zone; and (d) if illuminated, the sign is switched off between 9.00pm and 6.00am.
PO6 The display of goods does not compromise the intended character and visual amenity of the site and local area.	**AO6** The use does not involve the display of goods that is visible from the adjoining road, including but not limited to, the display of goods: (a) in any window; or (b) on the footpath; or (c) on or attached to any building; or (d) in the garage or driveway; or (e) within the front setback of the building.

9.3.9 Industry activities code

9.3.9.1 Application

This code applies to assessing material change of use for industry activities.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.9.2 Purpose

(1) The purpose of the industry activities code is to ensure that industry activities operate efficiently, maintain the amenity of nearby sensitive land uses and provide a high quality visual amenity within the site and as viewed from adjoining roads.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) industry activities operate efficiently on large usable sites, and in locations that do not compromise the amenity of nearby residential development and other sensitive land uses; and

(b) industry activities have a site layout and building design that:
  (i) provides high quality design outcomes and does not constitute overdevelopment of the site; and
  (ii) effectively addresses and engages with the street; and
  (iii) includes landscaping to soften the appearance of the development and enhance the visual amenity of the local area; and
  (iv) is consistent with intended streetscape outcomes where located in a centre main street; and

(c) areas used for the manufacture, storage, use or disposal of hazardous materials and chemicals, dangerous goods and flammable or combustible substances are located and designed to maintain public safety and the environment; and

(d) access points, vehicle manoeuvring areas, queuing areas, service areas and parking spaces are safe and adequate for the type and number of vehicles accessing the development.

9.3.9.3 Assessment criteria

Part A – Criteria for self-assessable and assessable development

Table 9.3.9.3.A – Industry activities code – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Service industry in existing buildings in multi-purpose centres[25]	
PO1 Service industry seeking to occupy existing buildings in centre zones maintain: (a) on-site car parking and vehicle access areas; and (b) on-site landscaping areas; and (c) activation measures on the street frontage/s; and (d) the scale and intensity of the previous use.	**AO1.1** Where service industry seeks to occupy an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use in a multi-purpose centre, the following is maintained: (a) all on-site car parks and vehicle access ways that were approved or operated with the previous use; and

[25] PO1 and AO1.1 only apply to, and are the only provisions relevant to, service industry uses seeking to use existing buildings in the District centre zone, Local centre zone, Major centre zone or Principal centre zone.

Performance outcomes	Acceptable outcomes
	(b) all on-site landscaping areas that were approved or operated with the previous use; and (c) all activation measures[26] on the street frontage/s that were approved or operated with the previous use.
	AO1.2 If the previous use occupied part of a building only, the proposed use: (a) occupies the same part of the building as the previous use; and (b) occupies the same or less gross floor area, within the existing building, as the previous use.
	AO1.3 Any external extensions to the existing building constitute minor building work.
Low impact industry, research and technology industry, service industry or warehouse in the Low impact industry zone	
PO2 Low impact industry uses seeking to occupy an existing building in the Low impact industry zone maintain: (a) adequate on-site car parking and vehicle access areas; and (b) adequate on-site landscaping areas; and (c) adequate activation measures on the street frontage/s; and (d) the amenity and privacy of adjoining residential properties; and (e) the scale and intensity of the previous use.	**AO2.1** Where low impact industry, research and technology industry, service industry or warehouse seeks to occupy an existing / approved building that has been previously, or is approved to be, occupied by a non-residential use in the Low impact industry zone, the following is maintained: (a) all on-site car parks and vehicle access ways that were approved or operated with the previous use; and (b) all on-site landscaping areas that were approved or operated with the previous use; and (c) all activation measures[28] on the street frontage/s that were approved or operated with the previous use.
	AO2.2 Elevations facing an adjoining residential zone do not include new openings in the building or existing openings with an increased size.
	AO2.3 Any extensions to the existing building constitute minor building work.

[26] "Activation measures" include pedestrian entrances / doors, large windows and openings.

Performance outcomes	Acceptable outcomes
For assessable development	
Location	
PO3 Higher impact industrial development is located and designed to minimise noise, odour, dust, air emission, light or vibration impacts affecting adjoining or nearby properties within a residential zone and existing sensitive land uses.	**AO3** Higher impact industrial development is separated from land within residential zones, the Rural zone, Investigation area precinct (precinct no. RU1)(other than the Investigation area precinct identified at Rosella) and existing sensitive land uses as per the following minimum separation distances: (a) special industry - 1,500 metres; and (b) high impact industry - 500 metres; and (c) medium impact industry - 250 metres.
Site characteristics	
PO4 The site has sufficient area and dimensions to accommodate the building/s, parking area, service vehicle areas, storage areas, and landscaping necessary for the operation of the use.	**AO4.1** The site has a minimum area of: (a) 3,500m^2 in the High impact industry zone; and (b) 2,500m^2 in other zones.
	AO4.2 The site has a minimum frontage of: (a) 35 metres in the High impact industry zone; and (b) 30 metres in other zones.
Site layout, setbacks and building design	
PO5 Landscaping areas throughout the site enhance the visual amenity of the site by providing relief from areas containing built structures, hardstands and open work / storage areas.	**AO5.1** The site has a minimum landscaping area of: (a) for sites fronting an arterial road or sub-arterial road – 10% of the total area of the site; and (b) for other sites – 7.5% of the total area of the site.
	AO5.2 Landscaping strips are provided along road frontage in accordance with the following: (a) minimum width 5 metres adjoining an arterial road or sub-arterial road; and (b) minimum width 2 metres adjoining other roads.
PO6 Development comprises appropriate site cover, gross floor area and front setbacks so as not to form overbearing development as viewed from adjoining roads.	**AO6.1** Buildings have a: (a) maximum site cover of 60% of the total area of the site; and (b) maximum gross floor area not greater than the total area of the site.

Performance outcomes	Acceptable outcomes
	AO6.2 Development is setback from non-main street road frontages in accordance with the following: (a) minimum setback 10 metres from an arterial road or sub-arterial road; and (b) minimum setback 6 metres from other roads.
Site layout, setbacks and building design	
PO7 On elevations facing road frontages and other public spaces frequented by people, buildings: (a) provide high quality design outcomes including activation and articulation elements; and (b) effectively address and engage with the road frontages and other public spaces; and (c) provide a visually appealing and human scale pedestrian entrance that is protected from harsh weather.	**AO7.1** Where applicable, ancillary office space and, sales area, of each building is sited on, and orientated towards, the primary street frontage.
	AO7.2 The main pedestrian entry to the building: (a) is visible and easily identifiable from the street and visitor car parking spaces; and (b) incorporate sun and rain shelter elements such as overhangs or awnings on buildings, that are a minimum of 900mm wide from the building face to the outermost projection; and (c) is adjoined by landscaping.
	AO7.3 Building elevations facing road frontages, parkland and other public spaces frequented by people include: (a) activation measures[27] for a minimum of 40% of the total frontage length; and (b) articulation measures[28] at a maximum spacing of every 15 metres along the frontage.
PO8 Buildings provide high quality design outcomes and elements that emphasise the sense of identity for the local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements such as sunshading devices; and (c) materials that are durable, have low reflectivity and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.

[27] "Activation measures" include pedestrian entrances / doors, large windows and openings.

[28] "Articulation measures" include building line projections / recessions (minimum depth 500mm), awnings, articulated roof profile, alternating materials and colours.

Performance outcomes	Acceptable outcomes
Site layout, setbacks and building design	
PO9 Outdoor utility, storage and service areas do not detract from the visual appearance of the development as viewed from the street.	**AO9.1** Outdoor utility areas, storage (including bin storage), rainwater tanks and servicing areas are screened from view from roads by one or a combination of the following: (a) 1.8 metre high visual screen fence; and (b) 2 metre wide landscape strip, containing buffer planting[29].
	AO9.2 Outdoor utility areas, storage (including bin storage) and service areas are sealed and drained.
Site layout, setbacks and building design – sites on a key active frontage street	
PO10 Development adjacent to key active frontage streets are characterised by: (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity.	**AO10.1** Street orientated development is provided along key active frontage streets. Street-orientated development includes: (a) buildings built to, or not more than 2.5 metres from, the street boundary; and (b) active building frontages (pedestrian entrances / doors and full length openings / glazing) for a minimum of 75% of the total frontage length; and (c) a pedestrian footpath with a minimum width of 4 metres along the full length of the frontage; and (d) a footpath awning over the pedestrian footpath along the full length of the frontage; and (e) limited or no vehicle driveways across the pedestrian footpath; and (f) car parking and outdoor work, storage and service areas at the rear of the building.
PO11 Buildings adjoining key active frontage streets provide high quality design outcomes and elements that emphasise the sense of identity for the centre and local area and the region through the use of: (a) articulated building lines, wall profiles and roof profiles; and (b) detailed articulation elements such as sunshading devices; and (c) materials that are durable, have low reflectivity and respond to the surrounding landscape character and built character; and (d) building design and landscaping that responds to and celebrates the region's tropical climate.	No acceptable outcome prescribed.

[29] "Buffer planting" means planting that provides effective visual screening and is in accordance with Council standard drawings A3-841 B and A3-842 A.

Performance outcomes	Acceptable outcomes
Access, internal circulation and parking facilities	
PO12 Vehicular access to the development: (a) is adequate and safe; and (b) does not detrimentally impact upon the safety, capacity or efficiency of the road or street system.	**AO12.1** Vehicle access points are located as far away as practical from: (a) road intersections; and (b) vehicle access points on adjoining sites (unless combined access can be achieved); and (c) a road curve, crest or other element unduly reducing line of sight along the road.
PO13 Development includes the provision of adequate, convenient and safe on-site parking for cars and bicycles.	**AO13** Sealed car and bicycle parking facilities (including end of trip facilities), dedicated to customers / clients, employees and other visitors of the development is provided: (a) on the site in a convenient and safe location/s; and (b) in accordance with Table 9.4.1.3.B in the General development requirements code.
PO14 External areas associated with industrial uses have appropriate surface treatment to prevent impacts from dust, sediment run off, inadequate drainage, and can cater for expected all-weather vehicle mass and number of movements.	**AO14** External areas accommodating: • open, semi open or covered work spaces; or • equipment or parts stacking and rotation areas; or • delivery loading and unloading; or • vehicle circulation areas, provide constructed and drained hardstand surfaces in keeping with the scale and intensity of the activity. The surface shall be: (a) concrete; or (b) asphalt; or (c) bitumen seal.
Environmental impacts	
PO15 Industrial uses apply best practice standards to mitigate potential environmental impacts.	**AO15** Development complies with the performance outcomes of any relevant State Government guideline or code or practice, including Motor vehicle workshop operations code of practice dated 27 June 2014.

Performance outcomes	Acceptable outcomes
Hazardous materials, chemicals and contaminants	
PO16 Areas where hazardous materials and chemicals or potentially contaminating substances are manufactured, stored, used or disposed are located away from residential zones and existing sensitive land uses, and designed to: (a) prevent spills from leaving the site; and (b) provide protection from stormwater inundation; and (c) maintain or improve the stormwater flow and flood characteristics of the local area.	**AO16.1** Areas where hazardous materials and chemicals or potentially contaminating substances are manufactured, stored, used or disposed are: (a) located: (i) a minimum of 300mm above the DFE[30]; or (ii) within a bunded area that: (A) includes bund walls with a minimum height of 300mm above the DFE or the DSTE (whichever is greater); and (B) prevents intrusion of flood waters; and (C) does not increase the volume, velocity, concentration or flow path alignment of stormwater flow across sites upstream, downstream or in general vicinity of the subject site; and (D) does not increase stormwater ponding on sites upstream, downstream or in general vicinity of the subject site; and (b) sealed with hardstand (bitumen or concrete) and roofed; and (c) designed so that: (i) spills are bunded and retained on site for removal and disposal by an approved means; and (ii) roof water is piped away from the area; and (d) bulk tanks are anchored so they cannot float if submerged or inundated by water.
	AO16.2 Development where hazardous materials or potentially contaminating substances are manufactured, stored or used, are located a minimum of 1,500 metres from a residential zone or an existing sensitive land use.
Fencing and access gates	
PO17 Fencing is located and designed to maintain the visual amenity of the site as viewed from adjoining roads.	**AO17.1** If required, fencing is provided in line with the front setback of the building line rather than along the road frontage boundary.
	AO17.2 If it is demonstrated that achieving AO17.1 is impractical given the circumstances of the use or the site, landscaping is provided between the fencing and the road frontage boundary.

[30] "DFE" – defined flood event – is the 1% AEP flood event plus climate change factor. The DFE is derived from adopted studies regarding riverine and local flood events. Where a site is covered by more than one study, the highest level forms the DFE.

Performance outcomes	Acceptable outcomes
	AO17.3 Fencing provided between the road frontage boundary and the building (including fencing in line with the front setback of the building), complies with the following: (a) maximum height 2 metres; and (b) consists of high quality materials such as open mesh, powder coated chain wire or galvanised steel; and (c) is coloured black or a similarly dark colour.
PO18 Vehicular access to the development does not detrimentally impact upon the safety, capacity or efficiency of the adjoining pedestrian / bicycle pathway and road.	**AO18** Access gates across driveways are located so that vehicles stand wholly on site while the gate is being opened or closed.

9.3.10 Intensive rural activities code

9.3.10.1 Application

This code applies to assessing material change of use for intensive rural activities.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.10.2 Purpose

(1) The purpose of the intensive rural activities code is to ensure that intensive animal industries are accommodated in the Rural zone with minimal impact on surrounding sensitive land uses and the visual amenity of the area.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) intensive animal activities are setback from roads, boundaries and sensitive land uses to reduce potential impacts on the visual and general amenity of the area; and

(b) animals are provided with adequate food, water, shelter and a 24 hour on-site manager; and

(c) intensive animal activities are not located in low lying areas, catchment areas, near waterbodies or bores and are designed to manage stormwater flows to ensure waste does not affect water quality; and

(d) to reduce biosecurity risks, poultry farms are not located in clusters.

9.3.10.3 Assessment criteria

Part A – Criteria for self-assessable and assessable development

Table 9.3.10.3.A – Intensive rural activities code – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Stables and wildlife refuges in the rural zone	
PO1 Stables or wildlife refuges in the Rural zone maintain the character and amenity of adjoining and nearby sites and the surrounding area.	**AO1.1** Stables or wildlife refuges in the Rural zone are not located within 20 metres of any site boundaries.
For assessable development	
Animal keeping and intensive animal industry	
PO2 Buildings, structures, enclosures and other activity and storage areas associated with intensive animal activities are setback from road frontage boundaries, other boundaries and sensitive land uses to protect: (a) the amenity of existing and future residences and other sensitive land uses having regard to:	**AO2.1** Buildings, structures, enclosures, activity and storage areas and areas for effluent treatment and disposal associated with: • poultry farms (between 21 and 100 poultry birds); and • intensive horticulture; and • kennels; and • catteries; and • aviaries,

Performance outcomes	Acceptable outcomes
Animal keeping and intensive animal industry	
(i) noise; and (ii) odour, particulate matter or other air emission; and (iii) water contamination; and (iv) dust; and (v) visual impact; and (b) the ecological integrity of natural habitat areas on the site and surrounding sites; and (c) the visual amenity of the area when viewed from public roads.	are setback: (a) 20 metres from all site boundaries; and (b) 50 metres from sensitive land uses; and (c) 50 metres from boundaries adjoining a residential zone; and (d) from watercourses: (i) 50m from surveyed bank of intermittent water course; and (ii) 100m from surveyed bank of a permanent water course water supply well, bore and/or dam.
	AO2.2 Buildings, structures, enclosures, activity and storage areas and areas for effluent treatment and disposal associated with: • poultry farms (more than 100 poultry birds); and • piggeries; and • feedlots, stockyards and dairying activities, are setback: (a) from road boundaries: (i) 200 metres from road frontage boundaries where the road carries more than 50 vehicles per day; and (ii) 100 metres from road frontage boundaries where the road carries 50 or less vehicles per day; and (b) 100 metres from all other non-road frontage boundaries adjoining a property in the Rural zone; and (c) 300 metres from sensitive land uses; and (d) 300 metres from boundaries adjoining a residential zone; and (e) from watercourses: (i) 50 metres from surveyed bank of intermittent water course; and (ii) 100 metres from surveyed bank of a permanent water course water supply well, bore and/or dam.
PO3 Adequate separation distances between poultry farms enable implementation of appropriate bio-security measures.	**AO3** The minimum separation distance between new poultry farms and existing poultry farms are: (a) 5,000 metres between a poultry breeding facility and a poultry production farm; and (b) 1,000 metres between poultry production farms.

Performance outcomes	Acceptable outcomes
PO4 Animal keeping activities involving kennels or catteries are located, designed, constructed and operated such that: (a) animals are securely housed and supervised; and (b) premises are easily maintained; and (c) the use does not cause an amenity nuisance beyond the site boundaries.	**AO4.1** Buildings containing animals are fenced to a minimum height of 1.8 metres and designed to prevent escape of animals by climbing, jumping or digging.
	AO4.2 Buildings containing animals are constructed with impervious reinforced concrete floors, gravity drained to the effluent collection / treatment point.
	AO4.3 Exterior walls of buildings containing animals are constructed of sound absorbent material being brick, concrete, masonry or other similar material.
	AO4.4 Animals are generally kept in secure enclosures and are inside buildings or structures between the hours of 6.00pm and 7.00am.
	AO4.5 An on-site manager, responsible for animal supervision, building maintenance and general operation of the use, is on the premises at all times.
PO5 An adequate supply of water and animal feed is provided on the premises in a safe and secure manner.	**AO5.1** Water supply and storage facilities are located on-site and provide water suitable (quality and quantity) for: (a) consumption by the animals; and (b) maintenance of the premises.
	AO5.2 A back-up water supply must be maintained which has a minimum of two days water supply available at all times for emergency use.
PO6 Buildings, structures, enclosures, activity and storage areas and areas for effluent treatment and disposal must be located, designed and constructed to prevent.	**AO6** Buildings, structures, enclosures, activity and storage areas and areas for effluent treatment and disposal: (a) are not located within a site subject to inundation in a 1% AEP flood event; and (b) are not located within or near overland flow paths; and (c) have an appropriate floor level to avoid inundation; and (d) are protected from potential inundation by bunding and/or channelling if necessary.

Performance outcomes	Acceptable outcomes
Intensive horticulture	
PO7 Development integrates with the visual amenity of the surrounding rural landscape by considering: (a) the location and design of buildings, structures and outdoor operation areas; and (b) the size of buildings and structures; and (c) the potential use of vegetation for visual screening; and (d) views of the development from nearby properties, roads and other public places.	No acceptable outcome is prescribed.
PO8 Activities involving the use of compost materials, especially mushroom growing substrate used by mushroom farms: (a) are undertaken predominantly within an enclosed structures; and (b) employ measures to maintain air quality and minimise odour impacts on the site and on adjoining and nearby sites.	No acceptable outcome is prescribed.
Aquaculture	
PO9 Separation distances to nearby sensitive land uses and the area of the site are large enough to effectively mitigate any potential environmental and amenity impacts.	**AO9.1** For uses involving a recirculating tank based system with an area of 50m^2 or less or ponds or above ground tanks with a total surface area or 5ha or less: (a) the fish growing area and any ancillary operations areas are a minimum of 100 metres or more from an existing sensitive land use on an adjoining or nearby site; and (b) the site is large to mitigate impacts to adjoining and nearby properties and public roads.
	AO9.2 For uses involving a recirculating tank based system with an area of more than 50m^2 or ponds or above ground tanks with a total surface area of more than 5ha: (a) the fish growing area and any ancillary operations areas are a minimum of 300 metres or more from an existing sensitive land use on an adjoining or nearby site; and (b) the site has a minimum area of 16 hectares.

Performance outcomes	Acceptable outcomes
PO10 Development effectively mitigates potential environmental and amenity impacts generated by the development, particularly with regard to: (a) water quality including groundwater; and (b) odour; and (c) air quality; and (d) noise; and (e) dust; and (f) visual impact; and (g) traffic generation.	**AO10.1** Ponds are lined to prevent groundwater contamination.
	AO10.2 Bund walls or levees are constructed around ponds to contain runoff.
PO11 Development avoids agricultural land and locally important agricultural areas.	No acceptable outcome is prescribed.
PO12 Buildings, structures or enclosures have setbacks to road frontages, site boundaries and adjacent dwellings to protect: (a) the amenity of nearby residents; and (b) the visual amenity and character of the locality when viewed from public roads and adjoining and nearby sites.	**AO12.1** Buildings, structures, enclosures (except for administration purposes) and activities associated with the use are set back a minimum of: (a) 20 metres from any road frontage, side or rear boundary; and (b) 100 metres from an existing dwelling.
	AO12.2 A landscape strip comprising buffer planting[31] with a minimum width of 5 metres is provided between the use and adjoining roads and properties.
General provisions	
PO13 Vehicle access points and driveways are located, designed and constructed to enable safe and efficient access to the development.	**AO13.1** Vehicle access points to the site are not located: (a) within 50 metres of an intersection of roads; and (b) within 10 metres of a nearby vehicle access point; and (c) in close proximity of a road curve, crest or other element unduly reducing line of sight along the road.
	AO13.2 Access gates across driveways are located so that vehicles stand wholly on site while the gate is being opened or closed.
	AO13.3 Vehicle access points and driveways are located to minimise noise and dust impacts on neighbouring sensitive land uses.

[31] "Buffer planting" means planting that provides effective visual screening and is in accordance with Council standard drawings A3-841 B and A3-842 A.

Performance outcomes	Acceptable outcomes
	AO13.4 Driveways are designed and constructed: (a) to safely and efficiently accommodate the number and type of vehicles accessing the development; and (b) with appropriate materials to minimise: (i) dust nuisance to nearby sensitive land uses; and (ii) potential erosion issues.
PO14 A vegetated buffer is provided to screen buildings, structures, enclosures and activity and storage areas from view from residential zones, sensitive land uses and public roads.	**AO14** A vegetated buffer[32] is provided where development is visible from road frontages, other boundaries and sensitive land uses.

[32] "Buffer planting" means planting that provides effective visual screening and is in accordance with Council standard drawings A3-841 B and A3-842 A.

9.3.11 Market and roadside stall code

9.3.11.1 Application

This code applies to assessing material change of use for market and roadside stall.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.11.2 Purpose

(1) The purpose of the Market and roadside stall code is to ensure that market and roadside stall uses perform an appropriate role and function, are highly accessible and integrate with the amenity of the surrounding area.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) market and roadside stall uses complement, rather than compete with, existing centres by:

(i) operating infrequently; or

(ii) being of a small scale; or

(iii) offering unique products for sale; and

(b) market and roadside stall uses provide safe, convenient and adequate access and integrate with the established visual and general amenity of the surrounding area.

9.3.11.3 Assessment criteria

Part A – Criteria for self-assessable and assessable development

Table 9.3.11.3.A – Market and roadside stall code – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Market	
PO1 Markets operate on a regular but infrequent basis, so as not to compromise the viability of centre activities in centres and townships.	**AO1** The market does not operate more frequently than two days per week (whether the operating days are successive or separate).
PO2 Markets provide, or have access to, adequate and convenient car parking.	**AO2** The number of car parks available for use[33] is consistent with that required by Table 9.4.1.3.B in the General development requirements code. Car parking may be provided: (a) on-site; or (b) in public off-street car parks within 200 metres of the markets; or (c) on-street car parks, not including arterial roads, within 200 metres of the markets.

[33] "Available for use" means that where the market co-locates with an existing use and requires the use of common parking facilities, or where the market requires the use of public car parks:

- adequate car parking capacity is provided for the market and other uses serviced by the car parking, if the market and other uses operate concurrently, or
- the market operates when other uses serviced by the car parking are not operating.

Performance outcomes	Acceptable outcomes
PO3 Markets avoid creating adverse amenity impacts for adjoining properties and maintain the visual and general amenity of the area.	**AO3.1** Permanent and temporary structures, active outdoor use area, car parking areas and access ways and storage areas are set back a minimum of 6 metres from any boundary adjoining a property within a residential zone.
	AO3.2 Where within 50 metres of a property within a residential zone, the market operates within the hours of 6:30am to 6:30pm.
PO4 Markets provide convenient and clearly signed public toilet facilities.	**AO4.1** Public toilets are provided within the area of the market or within 200 metres of the market.
	AO4.2 Signage is provided throughout the market area to identify the location of public toilet facilities.
PO5 Markets are designed to provide for: (a) comfortable pedestrian movement; and (b) emergency vehicle access.	**AO5.1** Pedestrian movement aisles within the market area have a minimum width of 2 metres.
	AO5.2 A clear movement path with a minimum width of 3 metres is provided through or around the market to enable emergency vehicle access.
Roadside stall	
PO6 Roadside stalls: (a) sell goods produced in the local area to passing motorists; and (b) do not compromise the viability of centre activities in centres and townships; and (c) are of a small-scale and low intensity.	**AO6.1** The roadside stall sells goods produced on the subject site and/or on properties within 500 metres of the subject site.
	AO6.2 The area used for the display and sale of goods is no larger than 50m^2.
	AO6.3 The roadside stall is within 30 metres of, and is directly visible from, an adjoining road.
PO7 Roadside stalls provide: (a) adequate and convenient on-site car parking; and (b) safe access to the adjoining road.	**AO7.1** Car parking is provided: (a) on the subject site (not within the road reserve); and (b) adjacent to the roadside stall; and (c) in accordance with Table 9.4.1.3.B in the General development requirements code.
	AO7.2 Vehicular access from the road to the car parking area is gained by an existing invert crossing or access point.

Performance outcomes	Acceptable outcomes
PO8 The roadside stall avoids creating adverse amenity impacts for adjoining properties and maintains the visual and general amenity of the area.	**AO8.1** Permanent and temporary structures, active outdoor use area, car parking areas and access ways and storage areas are set back a minimum of 10 metres of side and rear boundaries.
	AO8.2 Permanent and temporary structures have a maximum height of 4.5 metres above ground level.
	AO8.3 The roadside stall operates within the hours of 7:00am to 5:00pm.

9.3.12 Multiple dwelling activities code

9.3.12.1 Application

This code applies to assessing material change of use for multiple dwelling activities.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.12.2 Purpose

(1) The purpose of the Multiple dwelling activities code is to ensure that multiple dwelling activities achieve relevant residential density objectives and provide high quality design and amenity outcomes.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) multiple dwelling activities are provided at strategic locations with high levels of convenience, liveability and accessibility such as in close proximity to centres, public transport corridors and/or high quality open space/amenity elements; and

(b) multiple dwelling activities do not overdevelop sites, but also, do not form an underutilisation of sites considered strategically important for higher density residential development; and

(c) development provides high quality design outcomes through:
  (i) buildings that are highly articulated; and
  (ii) buildings that address and interact with roads and other public spaces; and
  (iii) the establishment of tropical landscaping; and

(d) development maintains a high level of amenity for adjoining residential properties; and

(e) development includes the provision of safe and efficient vehicle and pedestrian access and adequate car parking; and

(f) development provides adequate private and communal recreation areas; and

(g) common property and private open space areas are designed and operated to be safe and secure for residents and visitors; and

(h) affordable and adaptable housing is encouraged.

9.3.12.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.3.12.3.A – Multiple dwelling activities code – assessable development

Performance outcomes	Acceptable outcomes
Assessable development	
Site characteristics	
PO1 Multiple dwelling activities are provided in close proximity to: (a) centres and other key activity nodes; or (b) public transport services; or (c) recreation opportunities.	**AO1** Development involving 1 dwelling per every 500m^2 or less of site area, are located within one or a combination of the following: (a) Medium density residential zone, High density residential zone, Mixed use zone or multi-purpose centre zone; or (b) 1.5 kilometres of the Principal centre zone; or (c) 800 metres of a Major centre zone or District centre zone; or (d) 800 metres of the Central Queensland University Ooralea campus, Base Hospital or Mater Hospital; or (e) 400 metres of a Local centre zone; or (f) 200 metres of an existing centre activity or community activity; or (g) 200 metres of a public transport route or usable open space.
PO2 The site is able to efficiently accommodate multiple dwelling activities while also maintaining a high level of amenity for the site and adjoining sites.	**AO2** The area and frontage width of the site is consistent with the minimum area and frontage requirements set out in Table 9.3.12.3.B.
PO3 Multiple dwelling activities requiring access to an arterial road or sub-arterial road reduces the number of access points on these roads.	**AO3** The minimum site area for sites adjoining and gaining access from an arterial road or sub-arterial road is 2,000m^2. For the purpose of clarity, this provision overrides AO2 and Table 9.3.12.3.B.
Side and rear setbacks	
PO4 Development is setback from side and rear boundaries to: (a) provide opportunities for landscaping and recreation areas on the site between the building and boundaries; and (b) maintain reasonable access to sunlight and breezes for adjoining sites, and do not form overbearing development.	**AO4** Buildings are setback from side and rear boundaries in accordance with the following: (a) in multi-purpose centres: (i) 0 metres to the podium (maximum height 8.5 metres above ground level (2 storeys)); and (ii) above the podium: (A) up to 6 storeys – 3 metres to the edge of a balcony, 6 metres to the building wall; and (B) above 6 storeys – 6 metres; and

Performance outcomes	Acceptable outcomes
	(b) in other zones: (i) from boundaries adjoining a Low density residential zone: (A) a minimum of 1.5 metres where walls have a height of 4.5 metres above ground level; and (B) a minimum of 2 metres where walls have a height of 7.5 metres above ground level; and (C) a minimum of 6 metres where the building height is up to 11 metres (3 storeys) (D) a minimum of 15 metres where the building height is up to 17 metres (5 storeys) (ii) from boundaries not adjoining a Low density residential zone: (A) a minimum of 1.5 metres where walls have a height of 4.5 metres above ground level; and (B) a minimum of 2 metres where walls have a height of 7.5 metres above ground level; and (C) a minimum of 2.5 metres where the building height is up to 14 metres (4 storeys); and (D) a minimum of 3.5 metres where the building height is up to 17 metres (5 storeys); and (E) a minimum of 6 metres where the building height is over 17 metres (more than 5 storeys).
PO5 Built-to-boundary walls maintain reasonable access to sunlight and breezes for adjoining site, and do not form overbearing development.	**AO5** Built to boundary walls: (a) have a maximum height of 3.5 metres unless matching an existing or simultaneously constructed wall on the adjoining property; and (b) have a maximum length of the lesser of 12 metres or 50% of the length of that boundary unless matching an existing or simultaneously constructed wall on the adjoining property; and (c) are maintenance free.

Performance outcomes	Acceptable outcomes
Site layout and building design	
PO6 Development provides high quality design outcomes through the use of measures to: (a) reduce the bulk of the building/s; and (b) create diversity and richness in building form and finishes; and (c) ensure that the building/s address and interact with roads and other public spaces.	**AO6.1** For buildings or sections of buildings with a height of 3 storeys or more, building length is not more than 60 metres in any direction.
	AO6.2 The building bulk is reduced by a combination of activation measures[34] and articulation measures[35], particularly: (a) on elevations facing roads or public open space; and (b) where located in a cluster of 3 or more adjoining sites (fronting the same street) containing multiple dwelling activities.
	AO6.3 Sections of building frontages that do not include activation measures[34] and articulation measures[35] do not exceed: (a) 10 metres in length on building elevations facing road and public open space frontages; and (b) 15 metres in length on building elevations facing other frontages.
	AO6.4 A pedestrian entrance/s to the building is clearly visible from road frontages.
PO7 Roof design provides high quality visual amenity outcomes and positively contributes, and integrates with, the roofscape of the area.	**AO7.1** Roofs include pitches, gables, skillions or other features.
	AO7.2 Building caps and rooftops contribute to: (a) the architectural quality of the building; and (b) a visually diverse but cohesive roofscape throughout the centre.
	AO7.3 Service structures, lift motor rooms, central air conditioning plant and other mechanical plant are: (a) designed as an architectural feature of the building; or (b) adequately screened from view and not visible from the street, adjoining properties and public places.

[34] "Activation measures" include pedestrian entrances / doors, large windows and balconies.
[35] "Articulation measures" include building line projections / recessions (minimum depth 500mm), footpath awnings, articulated roof profile, alternating materials and colours.

Performance outcomes	Acceptable outcomes
PO8 In multi-purpose centres, development along key active frontage streets[36] is characterised by active and articulated buildings defining and addressing the street, a vibrant street-orientated atmosphere and high quality pedestrian amenity.	**AO8** On key active frontage streets, street orientated development is provided on the ground level of the building. Street-orientated development includes: (a) buildings built to, or not more than 2.5 metres from, the street boundary; and (b) active building frontages (pedestrian entrances / doors and full length openings / glazing) for a minimum of 75% of the total frontage length; and (c) a pedestrian footpath with a minimum width of 4 metres along the full length of the frontage; and (d) a footpath awning over the pedestrian footpath along the full length of the frontage; and (e) limited or no vehicle driveways across the pedestrian footpath; and (f) car parking beneath or behind the building.
PO9 Enclosed and open car parking areas: (a) are visually integrated with the development and the streetscape; and (b) do not form a visually prominent feature of the development as viewed from the street or adjoining sites.	**AO9.1** One or a combination of the following is provided between car parking and driveway areas and road frontage boundaries or boundaries adjoining properties within a residential zone: (a) active building frontages or buildings containing habitable rooms; or (b) landscaping strips with a minimum width of 2 metres; or (c) acoustic barrier fencing.
	AO9.2 Enclosed car parking areas are recessed a minimum of 1.5 metres behind the front face of: (a) buildings containing habitable rooms habitable rooms; or (b) a verandah / balcony.
	AO9.3 Basement car parking facilities, that are visible from adjoining roads, are no more than 1 metre above ground level at any point.
PO10 Mail boxes are: (a) of a useable size; and (b) suitably located for convenient access and use.	**AO10** Development provides mail boxes: (a) in close proximity to the entry of each dwelling for individual ground level dwelling units; or (b) in a mail box structure adjacent to the major pedestrian entrance of a unit complex.

[36] "Key active frontage streets" are defined in Schedule 1.

Performance outcomes	Acceptable outcomes
Access and car parking	
PO11 Vehicular access to arterial roads and sub-arterial roads is avoided unless no other options are available and the access: (a) reduces the number of access point on the road; and (b) maintains the safety and efficiency of the road; and (c) provides safe and efficient access to the site.	**AO11.1** Vehicular access to arterial roads and sub-arterial roads is avoided in favour of access to a collector or access street (side, rear or internal streets). Where no such option is available, it is demonstrated that: (a) a single access point on the arterial road or sub-arterial road combines existing or potential access points; and (b) does not compromise the safety or efficiency of the arterial road or sub-arterial road; and (c) provides safe and efficient access for residents of and visitors to the development.
PO12 Development includes the provision of adequate and convenient on-site car parking.	**AO12** Car parking dedicated to residents of, and visitors to the multiple dwelling activity is provided: (a) on the site in a convenient location/s; and (b) in accordance with Table 9.4.1.3.B in the General development requirements code.
PO13 Access within the site is safe, efficient and accessible.	**AO13** Internal vehicle access and layout is provided to: (a) discourage speeding; and (b) provide safe and efficient access and parking on sealed surfaces; and (c) enable a B99 vehicle[37] to access and leave the site in forward gear after performing no more than a 3-point turn.
Recreation areas, landscaping and fencing	
PO14 Development includes the provision of adequate communal and private open space and recreation areas.	**AO14.1** Each dwelling located wholly or partly on ground floor is provided with private ground level open space that: (a) has a minimum area of: (i) for a 1 bedroom dwelling – 20m^2; or (ii) for a 2 bedroom dwelling – 30m^2; or (iii) for a dwelling with 3 or more bedrooms – 40m^2; and (b) has a minimum dimension of 3 metres; and (c) includes a principal area that: (i) has a minimum area of 16m^2; and (ii) has a minimum dimension of 4 metres; and (iii) directly adjoins a living area of the dwelling; and (iv) is not used to accommodate plant or utility equipment (such as air-conditioning units, hot water systems, rainwater tanks and bins); and (v) has a slope less than 1 in 20 (5%).

[37] "B99 vehicle" as defined by *Australian Standard AS/NZS2890.1–2004*.

Performance outcomes	Acceptable outcomes
	AO14.2 Each dwelling located wholly above ground floor is provided with private balcony that: (a) has a minimum area[38] of 8m^2; and (b) has a minimum dimension of 2.5 metres; and (c) directly adjoins a living area of the dwelling[39].
	AO14.3 Development comprising 15 or more dwellings provides communal open space in accordance with the following: (a) minimum area is the greater of: (i) 10m^2 per dwelling; or (ii) 15% of the site area; and (b) minimum dimension of 3 metres; and (c) includes outdoor recreation area, landscaping or indoor recreation facilities.
PO15 Fences and walls along road frontage boundaries and boundaries adjacent to public open space: (a) enable casual surveillance from the building to the road or public open space; and (b) provide a physical delineation between public and private property; and (c) provide visual interest and are compatible with the streetscape.	**AO15.1** Fences and walls along road frontage boundaries and boundaries adjacent to public open space have a maximum height of: (a) 1.2 metres above ground level is solid; and (b) 1.5 metres above ground level if the fence is a minimum of 50% transparent.
	AO15.2 Solid front fences and walls may be provided adjacent to arterial roads, sub-arterial roads and collector streets if the fence or wall: (a) screens a dwelling's principal area of private open space; and (b) is setback a minimum of 1 metre from the road frontage boundary with landscaping provided between the road frontage boundary and the fence; and (c) does not exceed a height of 1.8 metres above ground level; and (d) does not extend along the road frontage boundary more than 75% of the total length of the boundary.
	AO15.3 Fences do not exceed 10 metres in length without articulation or detailing to provide visual interest.

[38] Balcony area required to accommodate plant or utility equipment (such as air-conditioning units and hot water systems) do not count toward meeting the minimum area.

[39] Balcony areas adjoining other rooms (such as bedrooms) may be provided, but these must be in addition to the minimum requirements set out in AO14.2.

Performance outcomes	Acceptable outcomes
Security, safety and privacy	
PO16 Development is designed to provide high levels of security and safety through the use of: (a) elements to delineate private and communal spaces; and (b) elements providing the casual surveillance of public spaces adjoining the site and communal spaces within the site; and (c) adequate lighting in communal spaces.	**AO16.1** Private and communal open space is physically delineated to clearly identify ownership.
	AO16.2 Buildings are designed to overlook: (a) roads and public open space adjoining the site; and (b) common property (including access-ways, car parking areas and open space / recreation areas) on the site.
	AO16.3 Pedestrian and vehicular access-ways, car parking areas and building entries are: (a) clearly defined; and (b) well-lit at night; and (c) overlooked by buildings and/or public roads; and (d) provide direct and convenient access.
PO17 Development maintains a high level of privacy between dwellings and for dwellings on adjoining sites.	**AO17.1** Habitable room windows: (a) are: (i) offset so that they do not directly face habitable room windows or private open space of a dwelling on the site or on an adjoining site; or (ii) located a minimum of 9 metres from habitable room windows or private open space of a dwelling on the site or on an adjoining site, if they cannot be offset; or (b) are designed and/or treated in accordance with either of the following where (a)(i) or (a)(ii) above cannot be met: (i) a 1.8 metre high visual screen fence is provided where the habitable room windows are at ground level; or (ii) translucent glazing is used; or (iii) sill heights are a minimum height of 1.5 metres above ground level; or (iv) screening devices according with the following are used: (A) fixed and permanently attached to the building; and (B) solid and translucent or perforated with a maximum of 50% openings; and (C) visually complements the development.

Performance outcomes	Acceptable outcomes
Affordable and adaptable housing	
PO18 Low cost housing is encouraged through development incentives subject to maintaining local amenity.	**AO18.1** Development involving the provision of low cost, special needs or aged care accommodation for a minimum period of 10 years by government agencies, charitable agencies or through the National Rental Affordability Scheme (NRAS), may seek a relaxation of[40]: (a) the plot ratio requirements set out in the relevant zone code subject to demonstration that the proposed plot ratio does not: (i) constitute overdevelopment of the site; and (ii) adversely affect the amenity of the area; and (b) the on-site car parking requirements set by AO12 subject to demonstration that proposed car parking numbers are adequate to the use.
PO19 Development is designed to meet the needs of aged or disabled persons by incorporating adaptable dwellings.	**AO19.1** Retirement facility, and other developments designed to accommodate aged or disabled persons, provide a minimum of 50% of dwellings as adaptable dwellings designed and constructed in accordance with *Australian Standard AS4299*.
	AO19.2 Other multiple dwelling activities involving 10 or more dwellings provide a minimum of 10% of dwellings as adaptable dwellings designed and constructed in accordance with *Australian Standard AS4299*.

[40] Other provisions in the Multiple dwelling activities code and other relevant sections of the planning scheme remain relevant to this form of the development.

Table 9.3.12.3.B – Multiple dwelling activities code – minimum site area and frontage width

Minimum site area	Minimum frontage width
High density residential zone	
1,500m^2	25 metres
Emerging community zone	
In accordance with an approved development framework plan	In accordance with an approved development framework plan
Low density residential zone	
• Dual occupancy – 800m^2 • Multiple dwelling – 1,200m^2	20 metres
Medium density residential zone – Low-medium density precinct (precinct no. MD1)	
• Dual occupancy – 600m^2 • Multiple dwelling – 900m^2	15 metres
Medium density residential zone – General medium density precinct (precinct no. MD2)	
• Dual occupancy – 400m^2 • Multiple dwelling – 600m^2	15 metres
Medium density residential zone – Multi-storey medium density precinct (precinct no. MD3)	
1,000m^2	20 metres
Rural zone	
100 hectares per dwelling	NA
Rural residential zone	
1 hectare per dwelling	NA
Township zone	
• Dual occupancy – 2,000m^2 • Multiple dwelling – 3,000m^2	40 metres

9.3.13 Outdoor business activities code

9.3.13.1 Application

This code applies to assessing material change of use for outdoor business activities.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.13.2 Purpose

(1) The purpose of the Outdoor business activities code is to ensure that outdoor business activities are appropriately located, provide high quality design outcomes and have an efficient layout.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) outdoor business activities are located and designed to not compromise the intended character and amenity, and role and function of:

(i) centres; and
(ii) residential areas; and
(iii) high impact industry areas; and
(iv) rural and other non-urban areas; and

(b) the overall layout, building design and landscaping:

(i) is visually appealing and contributes toward achieving the intended character of the surrounding area; and
(ii) maintains the amenity of adjoining properties, especially properties containing, or zoned to contain sensitive land uses; and

(c) development includes the provision of safe and efficient vehicle and pedestrian access and adequate car parking.

9.3.13.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.3.13.3.A – Outdoor business activities code – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Site location and characteristics	
PO1 Outdoor business activities are located and designed to not compromise the intended character and amenity, role and function of: (a) centres; and (b) residential areas; and (c) high impact industry areas; and (d) rural and other non-urban areas.	**AO1** Outdoor business activities are located in accordance with the following: (a) where involving outdoor sales – within the Low impact industry zone, Major centre zone or Specialised centre zone - Showrooms and hardware precinct (precinct no. SC1); and (b) where involving garden centre – within the Major centre zone, District centre zone, Local Centre zone, Neighbourhood centre zone, Mixed use zone - Fringe commercial precinct (precinct no. MX2), Specialised centre zone - Showrooms and hardware precinct (precinct no. SC1) or Township zone; and

Performance outcomes	Acceptable outcomes
	(c) where involving bulk landscape supplies – within the Specialised centre zone - Showrooms and hardware precinct (precinct no. SC1) or other location demonstrated to be appropriate.
PO2 The site has sufficient area and dimensions to accommodate all buildings, structures, access, serving and parking areas, landscaping and buffers associated with/required for the use.	**AO2.1** The site has a minimum area of: (a) where garden centre or outdoor sales – 1,500m^2; or (b) where bulk landscape supplies – 2,500m^2.
	AO2.2 The site has a minimum frontage of: (a) 40 metres where the site has 1 road frontage; (b) 35 metres on at least 1 of the road frontages where the site has more than 1 road frontage.
Scale, layout and design	
PO3 Where the site has a frontage to road identified as an "existing main street" in Schedule 1, the layout and built form of the outdoor business activity: (a) is consistent with the intended character of the streetscape; and (b) provides high quality pedestrian amenity for pedestrians walking along the main street.	No acceptable outcome prescribed.
PO4 Building design: (a) addresses "non-key active frontage streets" and public places and provides interest in building form, materials and expression, and is consistent with the intended character of the area; and (b) provides opportunities for overlooking streets and public places.	**AO4.1** Building elevations facing road frontages, parkland and other public spaces include: (a) a pedestrian entrance that is visible from the street; (b) activation measures[41] for a minimum of: (i) 60% of the total frontage length in the Major centre zone, District centre zone, Local centre zone or Neighbourhood centre zone; or (ii) 50% of the total frontage length in the Specialised centre zone, Showrooms and hardware precinct (precinct no. SC1); (c) articulation measures[42] at a maximum spacing of every: (i) 10 metres along the frontage in the Major centre zone, District centre zone, Local centre zone or Neighbourhood centre zone;

[41] "Activation measures" include pedestrian entrances / doors, large windows and openings.
[42] "Articulation measures" include building line projections / recessions (minimum depth 500mm), awnings, articulated roof profile, alternating materials and colours.

Performance outcomes	Acceptable outcomes
	(ii) 20 metres along the frontage in the Specialised centre zone, Showrooms and hardware precinct (precinct no. SC1); and (d) trees that provide shade over the footpath within the road reserve.
PO5 Where open areas are provided between buildings and road frontages, landscaping: (a) provides shade for pedestrians in the adjoining road reserve; and (b) softens the appearance of the development as viewed from the road.	**AO5** Where open areas are provided between buildings and road frontages, the following is provided: (a) regularly spaced shade trees within the road reserve adjacent to the site; and (b) a minimum 2 metre wide landscaping strip containing signature trees and feature planting[43] is provided within the site along the full length of the road frontage.
Access and parking facilities	
PO6 Development includes the provision of adequate, convenient and safe on-site parking for cars and bicycles.	**AO6** Car and bicycle parking facilities, dedicated to customers, employees and other visitors of the development is provided: (a) on the site in a convenient and safe location/s; and (b) in accordance with Table 9.4.1.3.B in the General development requirements code.

[43] "Signature trees and feature plantings" means landscaping that is used to visually soften parts of the development, emphasize parts of the development and/or form an attractive landmark in its own right. It does not include "buffer planting" where landscaping screens development from view.

9.3.14 Parking station code

9.3.14.1 Application

This code applies to assessing material change of use for parking station.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.14.2 Purpose

(1) The purpose of the Parking station code is to ensure that parking station uses provide high quality design outcomes and safe and efficient vehicle access.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) parking stations in centres contribute toward achieving intended streetscape character and pedestrian amenity; and

(b) parking stations in other locations maintain the visual amenity of the local area; and

(c) vehicle access points are located and designed to provide for safe vehicle access, maintain efficient traffic flows and not compromise visual and pedestrian amenity.

9.3.14.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.3.14.3.A – Parking station code – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Site layout and building design	
PO1 Enclosed parking stations on key active frontage streets contribute to the intended streetscape character by providing: (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity.	**AO1** For enclosed parking stations (within a building), where the site fronts a key active frontage street[44]: (a) at ground level, active uses such as centre activities and community activities are provided on the street frontage in front of the car parking building/s that effectively screens the car park building/s; and (b) street orientated development adjoins the street at ground level. Street orientated development includes: (i) buildings built to, or not more than 2.5 metres from, the street boundary; and (ii) active building frontages (pedestrian entrances / doors and full length openings / glazing) for a minimum of 75% of the total frontage length; and (iii) a pedestrian footpath with a minimum width of 4 metres along the full length of the frontage; and

[44] "Key active frontage streets" are defined in Schedule 1.

Performance outcomes	Acceptable outcomes
	(iv) a footpath awning over the pedestrian footpath along the full length of the frontage; and (v) limited vehicle driveways across the pedestrian footpath; and (vi) car parking behind active frontages; and (c) above ground level, commercial tenancies or other habitable rooms address street frontages, with the car parking area located behind.
PO2 Development maintains the safety and efficiency of vehicle, bicycle and pedestrian movement on State controlled roads.	**AO2** The following is not provided across / adjacent to State controlled roads: (a) formal mid-block pedestrian access (for example - signalised crossing points, raised pedestrian crossings, painted pedestrian crossings and pedestrian refuges); and (b) footpath dining areas within the road reserve.
PO3 Enclosed parking station building facades facing non-key frontage streets provide high quality design through the application of activation and articulation measures.	**AO3** For enclosed parking stations (within a building), where the site does not front a key active frontage street: (a) a prominent pedestrian entrance that is visible from the street; and (b) articulation measures[45] at a maximum spacing of every 10 metres along the frontage.
PO4 Unenclosed parking stations maintain the visual amenity of the local area.	**AO4** Unenclosed parking stations (not within a building): (a) are not visible from a key active frontage street; and (b) provide a minimum 5 metre wide landscape strip containing buffer planting[46] for the full length of all road frontages; and (c) are provided with shade trees throughout the car park at the rate of 1 tree per 6 car parking spaces.

[45] "Articulation measures" include building line projections / recessions (minimum depth 500mm), awnings, articulated roof profile, alternating materials and screening devices.

[46] "Buffer planting" means planting that provides effective visual screening and is in accordance with Council standard drawings A3-841 B and A3-842 A.

Performance outcomes	Acceptable outcomes
Vehicle access	
PO5 Vehicular access to the parking station: (a) is adequate and safe; and (b) does not dominate the frontage of the site and compromise pedestrian access along the road; and (c) does not detrimentally impact upon the safety, capacity or efficiency of the road or street system.	**AO5** Vehicle access crossings: (a) have a width between 7.5 metres and 10 metres; and (b) are located a minimum of 10 metres from: (i) other vehicle crossings; and (ii) a road intersection.

9.3.15 Recreation activities code

9.3.15.1 Application

This code applies to assessing material change of use for recreation activities.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.15.2 Purpose

(1) The purpose of the Recreation activities code is to ensure that recreation activities efficiently facilitate recreation uses and integrate with the character and amenity of the local area.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) recreation activities are located, designed and operated to:
  (i) integrate with the built and/or landscape character of the local area; and
  (ii) maintain the amenity of nearby residential development and sensitive land uses; and

(b) provide high quality building design and landscape outcomes; and'

(c) recreation activities are highly accessible and access points, circulation areas and parking / service areas are safe and adequate for the number and type of transport modes accessing the development.

9.3.15.3 Assessment criteria

Part A – Criteria for self-assessable and assessable development

Table 9.3.15.3.A – Recreation activities code – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Indoor sport and recreation in existing buildings in centres and townships[47]	
PO1 Indoor sport and recreation seeking to occupy an existing building in a centre or Township zone, maintain: (a) adequate on-site car parking and vehicle access areas; and (b) adequate on-site landscaping areas; and (c) adequate activation measures on the street frontage/s; and (d) the scale and intensity of the previous use.	**AO1.1** Where indoor sport and recreation seeks to occupy: • an existing / approved building that has been previously, or is approved to be occupied by a non-residential use in the multi-purpose centres (other than neighbourhood centre) or the Mixed use zone, Fringe commercial precinct (precinct no. MX2); or • an existing / approved building that has been previously, or is approved to be occupied by a recreation activity in the Township zone;

[47] PO1 and AO1.1 only apply to, and are the only provisions relevant to, indoor sport and recreation uses seeking to use existing buildings in centres and townships.

Performance outcomes	Acceptable outcomes
	the following is maintained: (a) all on-site car parks and vehicle access ways that were approved or operated with the previous use; and (b) all on-site landscaping areas that were approved or operated with the previous use; and (c) all activation measures[48] on the street frontage/s that were approved or operated with the previous use.
	AO1.2 If the previous use occupied part of a building only, the proposed use: (a) occupies the same part of the building as the previous use; and (b) occupies the same or less gross floor area, within the existing building, as the previous use.
	AO1.3 Any external extensions to the existing building constitute minor building work.
Building height and setbacks	
PO2 The scale and location of buildings and structures: (a) integrates with the built and/or landscape character of surrounding areas; and (b) maintains the privacy and visual amenity of, and access to natural light and ventilation for, adjoining residential development.	**AO2.1** Buildings have a maximum height of: (a) 10 metres above ground level in the Sport and recreation zone, centre zones or industry zones; and (b) 8.5 metres above ground level in other zones.
	AO2.2 Buildings and other ancillary structures are setback from road frontages: (a) in accordance with AO6.1 if the site fronts a key active frontage street[49]; or (b) otherwise, a minimum of 10 metres.
	AO2.3 Where adjoining properties within a residential zone, the minimum setback for buildings and other ancillary structures from the relevant boundaries is the greater of 5 metres or half the height of the building or structure at that point.

[48] "Activation measures" include pedestrian entrances / doors, large windows and openings.
[49] "Key active frontage streets" are defined in Schedule 1.

Performance outcomes	Acceptable outcomes
Access and car parking	
PO3 Recreation activities: (a) are highly accessible but do not compromise the efficiency or safety of arterial roads; and (b) do not introduce non-residential traffic on local residential streets (access streets).	**AO3.1** Extensions to existing indoor sport and recreation and outdoor sport and recreation uses only gain access from existing access points.
	AO3.2 New indoor sport and recreation and outdoor sport and recreation uses gain access from a sub-arterial road or collector street[50].
PO4 Development includes the provision of adequate, convenient and safe on-site parking for cars and bicycles.	**AO4** Car and bicycle parking facilities, dedicated to customers, sport participants, spectators, employees and other visitors of the development is provided: (a) on the site in a convenient and safe location/s[50]; and (b) in accordance with Table 9.4.1.3.B in the General development requirements code.
Amenity	
PO5 Recreation activities maintain the amenity of adjoining and nearby properties within a residential zone and existing sensitive land uses through the application of: (a) limited hours of operation; and (b) measures to minimise undue glare or lighting overspill; and (c) measures providing for visual and physical separation of incompatible uses.	**AO5.1** Where within 100 metres of a residential zone or sensitive land use, recreation activities operate within the following times: (a) for indoor sport and recreation – between 6:00am and 11:00pm; and (b) for outdoor sport and recreation – between 6:00am and 10:00pm.
	AO5.2 Where the site adjoins a residential zone, or a site containing an existing residential or accommodation use, outdoor lighting: (a) does not exceed 8.0 lux at 1.5 metres beyond the side and rear boundaries of the site; and (b) is directed downwards and shielded, rather than directed at the adjoining residential zone or sensitive land use; and (c) accords with AS4282 – Control and effects of outdoor lighting in terms of its technical parameters, design, installation, operation and maintenance; and (d) does not operate later than: (i) 10:00pm on Sunday – Thursday nights; and (ii) 11:00pm on Friday and Saturday nights.

[50] AO3.2 and AO4.1(a) are relevant to assessable development only.

Performance outcomes	Acceptable outcomes
	AO5.3 Where adjoining properties within a residential zone or containing a sensitive use, recreation activities comply with the following: (a) a landscape strip, containing buffer planting[51], with a minimum width of 3 metres, is provided along the full length of boundary with the residential zone; and (b) 1.8 metre high solid screen fence is provided along the full length of boundary with the residential zone or sensitive land use; and (c) refuse bins are not stored within 5 metres of the boundary with the residential zone or sensitive land use; and (d) any refuse bin storage area within 10 metres of the common boundary must be located within a fully enclosed bin storage structure.
For assessable development	
Building design	
PO6 Development involving buildings adjacent to key active frontage streets are characterised by: (a) active and articulated buildings defining and addressing the street; and (b) a vibrant street-orientated atmosphere; and (c) high quality pedestrian amenity.	**AO6.1** Buildings adjacent to key active frontage streets form street-orientated development. Street-orientated development includes: (a) buildings built to, or not more than 2.5 metres from, the street boundary; and (b) active building frontages (pedestrian entrances / doors and full length openings / glazing) for a minimum of 75% of the total frontage length; and (c) a pedestrian footpath with a minimum width of 4 metres along the full length of the frontage; and (d) a footpath awning over the pedestrian footpath along the full length of the frontage; and (e) limited or no vehicle driveways across the pedestrian footpath; and (f) car parking beneath, behind or within the building.
PO7 Development maintains the safety and efficiency of vehicle, bicycle and pedestrian movement on State controlled roads.	**AO7** The following is not provided across / adjacent to State controlled roads: (a) formal mid-block pedestrian access (for example - signalised crossing points, raised pedestrian crossings, painted pedestrian crossings and pedestrian refuges); and (b) footpath dining areas within the road reserve.

[51] "Buffer planting" means planting that provides effective visual screening and is in accordance with Council standard drawings A3-841 B and A3-842 A.

Performance outcomes	Acceptable outcomes
PO8 Building design: (a) addresses "non-key active frontage streets" and public places and provides interest in building form, materials and expression and is consistent with the intended character of the area; and (b) provides opportunities for overlooking streets and public places.	**AO8** Building frontages facing "non-key active frontage streets", parkland or other public spaces include: (a) a pedestrian entrance that is visible from the street; and (b) activation measures[52] for a minimum of 50% of the total frontage length; and (c) articulation measures[53] at a maximum spacing of every 20 metres along the frontage; and (d) trees that provide shade over the footpath within the road reserve.

[52] "Activation measures" include pedestrian entrances / doors, large windows and openings.
[53] "Articulation measures" include building line projections / recessions (minimum depth 500mm), footpath awnings, articulated roof profile, alternating materials and colours.

9.3.16 Sales office code

9.3.16.1 Application

This code applies to assessing material change of use for sales office.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.16.2 Purpose

(1) The purpose of the Sales office code is to ensure that sales offices provide temporary sales and display facilities that are accessible and maintain the amenity of the surrounding area.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) sales offices provide sales and display facilities for a limited period of time; and

(b) built form associated with sales offices integrate into the established or intended future character of the surrounding area; and

(c) sales offices maintain the amenity of the surrounding area.

9.3.16.3 Assessment criteria

Part A – Criteria for self-assessable and assessable development

Table 9.3.16.3.A – Sales office code – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
PO1 The sales office operates for a limited period of time to assist with the sale of: (a) a particular residential, commercial or industrial development; or (b) a builder's services; or (c) tickets if the building/s can be won as a prize.	**AO1** The use is limited in its duration to a period not greater than: (a) 4 years where the use is for the purpose of displaying land or building/s for sale as part of a residential, industrial or commercial development; or (b) 6 months where the use is for the purpose of displaying land or a building/s that can be won as a prize.
PO2 Sales office buildings are located and designed to integrate with the established or intended character of the surrounding area.	**AO2.1** Building heights accord with the following: (a) permanent structures have a maximum height of 8.5 metres above ground level; and (b) temporary structures have a maximum height of 4.5 metres above ground level.
	AO2.2 Sales offices are setback from the primary road frontage in accordance with the minimum setbacks identified in the relevant zone code

Performance outcomes	Acceptable outcomes
	AO2.3 Display dwellings are designed to be on-sold as a dwelling house upon the cessation of the use as a sales office.
	AO2.4 Relocatable buildings and structures are removed from the subject site within 1 month of the cessation of the use as a sales office.
PO3 The sales office provides adequate and convenient car parking.	**AO3** Car parking is provided within 100 metres of the sales office and in accordance with Table 9.4.1.3.B in the General development requirements code.
PO4 The sales office avoids creating adverse amenity impacts for adjoining properties and maintains the visual and general amenity of the area.	**AO4.1** The sales office operates within the hours of: (a) 7:00am to 6:00pm Monday to Saturday; and (b) 9:00am to 6:00pm Sunday.
	AO4.2 The use does not involve the outdoor storage of any material or equipment associated with the use.
	AO4.3 Where the subject site adjoins a property within a residential zone, visual screen fencing is provided along common boundaries at a height of 1.8 metres, tapering to a height of 1.2 metres within 6 metres of road boundaries.
	AO4.4 Light emanating from any source complies with *Australian Standard AS4282 Control of the Obtrusive Effects of Outdoor Lighting.*
	AO4.5 Where provided, outdoor lighting accords with *Australian Standard AS/NZS 1158.1.1 Road lighting – Vehicular Traffic (Category V) Lighting – Performance and Installation Design Requirements.*

9.3.17 Service station and car wash code

9.3.17.1 Application

This code applies to assessing material change of use for service station and car wash.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.17.2 Purpose

(1) The purpose of the Service station and car wash code is to ensure that service station and car wash uses are appropriately located and highly accessible, have an efficient layout, maintain the amenity and character of the surrounding area and maintain public health and safety.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) service station and car wash uses are located on prominent, highly accessible sites, and in locations that do not compromise residential amenity; and

(b) service station and car wash layout and building design:
  (i) is visually appealing and contributes toward achieving the intended character of the surrounding area; and
  (ii) maintains the amenity of adjoining properties, especially properties containing, or zoned to contain sensitive land uses; and

(c) access points, vehicle manoeuvring areas, queuing areas, service areas and parking spaces are safe and adequate for the type and number of vehicles accessing the service station; and

(d) service station and car wash uses are located, designed and operated to minimise:
  (i) risks to public health and safety associated with the storage of combustible liquids; and
  (ii) environmental impacts.

9.3.17.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.3.17.3.A – Service station and car wash code – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Site location and characteristics	
PO1 Service station and car wash uses are located: (a) on prominent, highly accessible sites; and (b) on sites that do not compromise the character and amenity of residential neighbourhoods.	**AO1.1** Development is located: (a) on an arterial road or sub-arterial road; and (b) not more than 100 metres from the intersection of 2 or more roads; and (c) in an industrial zone, multi-purpose centre zone or Township zone.
PO2 The site has sufficient area and dimensions to accommodate all buildings, structures, access, servicing and parking areas, landscaping and buffers associated with / required for the use.	**AO2.1** The site has a minimum area of: (a) 1,500m^2 for service station; or (b) 1,000m^2 for car wash; or (c) 2,000m^2 for combined service station and car wash.

Performance outcomes	Acceptable outcomes
	AO2.2 The site has a minimum frontage of: (a) 40 metres where the site has 1 road frontage; or (b) 35 metres on at least 1 of the road frontages where the site has more than 1 road frontage.
Scale, layout and design	
PO3 Ancillary shop and food and drink outlet facilities are subordinate to the primary service station use and do not compromise the role and function of designated centres and existing centre activities.	**AO3** The gross floor area of the ancillary shop and food and drink outlet does not exceed 150m^2.
PO4 Where the site has frontage to a road identified as a key active frontage street[54], the layout and built form of the service station: (a) is consistent with the intended character of the streetscape; and (b) provides high quality pedestrian amenity for pedestrians walking along the main street.	No acceptable outcome prescribed.
PO5 Building design: (a) addresses 'non key active frontage streets' and public places and provides interest in building form, materials and expression and is consistent with the intended character of the area; and (b) provides opportunities for overlooking streets and public places.	**AO5.1** Building elevations facing road frontages, parkland or other public spaces include: (a) a pedestrian entrance that is visible from the street; and (b) activation measures[55] for a minimum of: (i) 60% of the total frontage length in the Major centre zone, District centre zone or Local centre zone; and (ii) 50% of the total frontage length in other zones; and (c) articulation measures[56] at a maximum spacing of every: (i) 10 metres along the frontage in the Major centre zone, District centre zone or Local centre zone; or (ii) 15 metres along the frontage in other zones and (d) trees that provide shade over the footpath within the road reserve

[54] "Key active frontage streets" are defined in Schedule 1.
[55] "Activation measures" include pedestrian entrances / doors, large windows and openings.
[56] "Articulation measures" include building line projections / recessions (minimum depth 500mm), awnings, articulated roof profile, alternating materials and colours.

Performance outcomes	Acceptable outcomes
PO6 Buildings, structures and activities associated with the use are located, designed and operated to maintain public safety and a high level of amenity for adjoining and nearby properties within a residential zone and existing sensitive land uses.	**AO6** The following minimum setbacks are provided: (a) for a building or structure (including car wash facilities): (i) from a road boundary, other than roads identified as "existing main streets" in Schedule 1 – 15 metres; and (ii) side and rear boundary setbacks: (A) from side and rear boundaries adjoining sites within a residential zone, Open space zone or Sports and recreation zone or sites containing an existing sensitive land use – 6 metres; or (B) from other side and rear boundaries – 0 metres; and (b) for fuel pumps, from all boundaries – 10 metres; and (c) for air hose / water facilities, from all boundaries – 3 metres.
PO7 Where open areas are provided between buildings and road frontages, landscaping: (a) provides shade for pedestrians in the adjoining road reserve; and (b) softens the appearance of the development as viewed from the road.	**AO7** Where open areas are provided between buildings and road frontages, the following is provided: (a) regularly spaced shade trees within the road reserve adjacent to the site; and (b) a minimum 2 metre wide landscaping strip containing signature trees and feature planting[57] is provided within the site along the full length of the road frontage.
Accessibility	
PO8 Vehicles using, waiting to use or servicing the development do not: (a) interfere with vehicle, bicycle and pedestrian movement on adjoining roads; and (b) require vehicle parking on adjoining roads.	**AO8.1** The following minimum on-site queuing spaces, clear of any access or manoeuvring area, are provided: (a) for fuel pumps: (i) 2 vehicle spaces behind each bowser; or (ii) 2 vehicle spaces behind the outside bowers where there are 3 or more bowsers in a line; and (b) for each car wash bay: (i) 3 vehicle spaces behind the entry point; and (ii) 1 vehicle space in front of the exit point (for finishing the car wash).

[57] "Signature trees and feature plantings" means landscaping that is used to visually soften parts of the development, emphasize parts of the development and/or form an attractive landmark in its own right. It does not include "buffer planting" where landscaping screens development from view.

Performance outcomes	Acceptable outcomes
	AO8.2 Car parking and vehicle manoeuvring areas is provided in accordance with Table 9.4.1.3.B in the General development requirements code.
	AO8.3 All inlets to bulk fuel storage tanks are situated so that fuel delivery vehicles stand wholly within the site when unloading fuel.
PO9 Vehicular access to the site: (a) is adequate and safe; and (b) does not dominate the frontage of the site and compromise pedestrian access along the road; and (c) does not detrimentally impact upon the safety, capacity or efficiency of the road or street system.	**AO9.1** Development provides a minimum of 2 vehicle access crossings that: (a) have a width between 7.5 metres and 10 metres; and (b) are located a minimum of 10 metres from: (i) other vehicle crossings; and (ii) a road intersection.
	AO9.2 Deceleration and acceleration lanes are provided on the adjoining road (within the road reserve) to provide for safe ingress into and egress from the site.
Public health and safety	
PO10 The service station and/or car wash is located, designed and operated (including effective emergency response measures) to maintain a high level of public health and safety within the site and on nearby sites.	**AO10** The design and layout of a service station accords with: (a) *Australian Standard AS1940 Storage and Handling of Flammable and Combustible Liquids*; and (b) *Australia Standard AS/NZS1596 Storage and Handling of LP Gas* where LP Gas is supplied on site.
PO11 The bulk storage, enclosure areas and access arrangements for all fuels are such that the general public and service providers are protected from any dangers resulting from the storage.	No acceptable outcome prescribed.

9.3.18 Ship-sourced pollutants reception facilities in marinas code

9.3.18.1 Application

This code applies to assessing a material change of use for port services and landings located outside strategic port land, core port land or State development areas that involve six or more berths.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.18.2 Purpose

(1) The purpose of the Ship-sourced pollutants reception facilities in marinas code is to ensure development facilitates the installation, maintenance and availability of reception facilities for ship-sourced pollutants to prevent marine pollution.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) port services and landings are located, designed and operated to provide appropriate waste management facilities to:

(i) minimise impacts on the marine environments; and
(ii) minimise risks to public health and safety.

9.3.18.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.3.18.3.A – Ship-sourced pollutants reception facilities in marinas code – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Site location and characteristics	
PO1 Port services and landing developments provide facilities for the handling and disposal of ship-sourced pollutants.	**AO1.1** Development shall comply with the following: (a) common user facilities for the handling and disposal of ship-sourced pollutants including oil, garbage and sewage are provided at a suitable location; and (b) facilities shall be designed and operated to ensure the risk of spillage from operations is minimised; and (c) appropriate equipment to contain and remove spillages is stored in a convenient position near the facility and is available for immediate use; and (d) boats visiting the facility are able to use the ship-sourced pollutant reception facilities *Note: refer to Australian and New Zealand Environment and Conservation Council (ANZECC), 1997, Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand.*

Performance outcomes	Acceptable outcomes
	AO1.2 Where practical, the pollutant reception facility is connected to sewerage or other waste reception infrastructure. *Note: Reception facilities require compliance assessment under the Plumbing and Drainage Act 2002. The plumbing compliance assessment process will ensure that the proposed facilities address 'peak load'.*

9.3.19 Short-term accommodation code

9.3.19.1 Application

This code applies to assessing material change of use for short-term accommodation.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.19.2 Purpose

(1) The purpose of the Short-term accommodation code is to ensure that short-term accommodation uses are appropriately located and highly accessible, provide high quality design outcomes and maintain the amenity of adjoining residential properties.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) short-term accommodation is provided at strategic activity and/or amenity locations on highly accessible sites; and

(b) development is sited and designed to:
  (i) achieve the intended character of the locality; and
  (ii) provide a safe and secure environment for guests and other visitors; and
  (iii) maintain a high level of amenity and privacy for adjoining residential properties; and

(c) development includes the provision of safe and efficient vehicle and pedestrian access and adequate car parking; and

(d) development provides adequate communal recreation and other facilities; and

(e) common property and private open space areas are designed and operated to be safe and secure for residents and visitors.

9.3.19.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.3.19.3.A – Short-term accommodation code – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Site characteristics	
PO1 Short-term accommodation developments are located on highly accessible sites: (a) within or near centres or other key activity nodes; or (b) near areas with high amenity value.	**AO1.1** The site is located within one of the following zones: (a) a multi-purpose centre or Mixed use zone; or (b) High density residential zone or Medium density residential zone – Multi-storey medium density precinct (precinct no. MD3); or (c) Township zone; or (d) Rural zone if involving a farm stay.

Performance outcomes	Acceptable outcomes
PO2 The site is able to efficiently accommodate the short-term accommodation development while also maintaining a high level of amenity for the site and adjoining sites.	**AO2** The site has a minimum area of 2,000m^2 and a minimum frontage of 30 metres.
Side and rear setbacks	
PO3 Development is setback from side and rear boundaries to: (a) provide opportunities for landscaping and recreation areas on the site between the building and boundaries; and (b) maintain reasonable access to sunlight and breezes for adjoining sites, and do not form overbearing development.	**AO3** Buildings are setback from side and rear boundaries in accordance with the following: (a) in multi-purpose centres: (i) 0 metres to the podium (maximum height 8.5 metres above ground level (2 storeys)); and (ii) above the podium: (A) up to 6 storeys – 3 metres to the edge of a balcony, 6 metres to the building wall; and (B) above 6 storeys – 6 metres (b) in other zones: (i) from boundaries adjoining a Low density residential zone: (A) a minimum of 1.5 metres where walls have a height of 4.5 metres above ground level; and (B) a minimum of 2 metres where walls have a height of 7.5 metres above ground level; and (C) a minimum of 6 metres where the building height is up to 11 metres (3 storeys); and (D) a minimum of 15 metres where the building height is up to 17 metres (5 storeys); and (ii) from boundaries not adjoining a Low density residential zone: (A) a minimum of 1.5 metres where walls have a height of 4.5 metres above ground level; and (B) a minimum of 2 metres where walls have a height of 7.5 metres above ground level; and (C) a minimum of 2.5 metres where the building height is up to 14 metres (4 storeys); and (D) a minimum of 3.5 metres where the building height is up to 17 metres (5 storeys); and (E) a minimum of 6 metres where the building height is over 17 metres (more than 5 storeys).

Performance outcomes	Acceptable outcomes
PO4 Built-to-boundary walls maintain reasonable access to sunlight and breezes for adjoining site, and do not form overbearing development.	**AO4** Built to boundary walls: (a) have a maximum height of 3.5 metres unless matching an existing or simultaneously constructed wall on the adjoining property; and (b) have a maximum length of the lesser of 12 metres or 50% of the length of that boundary unless matching an existing or simultaneously constructed wall on the adjoining property; and (c) are maintenance free.
PO5 The development maintains the acoustic and visual privacy of adjoining properties zoned residential.	**AO5.1** Elements of the short-term accommodation use are setback from boundaries adjoining properties within a residential zone in accordance with the following: (a) food and drink outlet – 6 metres; and (b) car parking and vehicle access areas – 3 metres; and (c) outdoor communal recreation areas – 3 metres.
	AO5.2 Acoustic barriers and landscaping is provided within the setbacks required by AO5.1.
Building design	
PO6 Development provides high quality design outcomes through the use of measures to: (a) reduce the bulk of the building/s; and (b) create diversity and richness in building form and finishes; and (c) ensure that the building/s address and interact with roads and other public spaces.	**AO6.1** For buildings or sections of buildings with a height of 3 storeys or more, building length is no more than 60 metres in any direction.
	AO6.2 The building bulk is reduced by a combination of activation measures[58] and articulation measures[59], particularly on elevations facing roads or public open space.
	AO6.3 Sections of building frontages that do not include activation measures[34] and articulation measures[35] do not exceed: (a) 10 metres in length on building elevations facing road or public open space frontages; and (b) 15 metres in length on building elevations facing other frontages.

[58] "Activation measures" include pedestrian entrances / doors, large windows and balconies.
[59] "Articulation measures" include building line projections / recessions (minimum depth 500mm), awnings, articulated roof profile, alternating materials and colours.

Performance outcomes	Acceptable outcomes
	AO6.4 A pedestrian entrance/s to the building is clearly visible from road frontages.
	AO6.5 Roofs include pitches, gables, skillions or other features.
PO7 In centres, key active frontage streets are characterised by active and articulated buildings defining and addressing the street, a vibrant street-orientated atmosphere and high quality pedestrian amenity.	**AO7** On key active frontage streets, street orientated development is provided on the ground level of the building. Street-orientated development includes: (a) buildings built to, or not more than 2.5 metres from, the street boundary; and (b) active building frontages (pedestrian entrances / doors and full length openings / glazing) for a minimum of 75% of the total frontage length; and (c) a pedestrian footpath with a minimum width of 4 metres along the full length of the frontage; and (d) a footpath awning over the pedestrian footpath along the full length of the frontage; and (e) limited or no vehicle driveways across the pedestrian footpath; and (f) car parking beneath or behind the building.
PO8 Development maintains the safety and efficiency of vehicle, bicycle and pedestrian movement on State controlled roads.	**AO8** The following is not provided across / adjacent to State controlled roads: (a) formal mid-block pedestrian access (for example - signalised crossing points, raised pedestrian crossings, painted pedestrian crossings and pedestrian refuges); and (b) footpath dining areas within the road reserve.
PO9 Enclosed and open car parking areas: (a) are visually integrated with the development and the streetscape; and (b) do not form a visually prominent feature of the development as viewed from the street or adjoining sites.	**AO9.1** One or a combination of the following is provided between car parking and driveway areas and road frontage boundaries or boundaries adjoining properties within a residential zone: (a) active building frontages or buildings containing habitable rooms; and (b) landscaping strips with a minimum width of 2 metres; and (c) acoustic barrier fencing.

Performance outcomes	Acceptable outcomes
	AO9.2 Enclosed car parking areas are recessed a minimum of 1.5 metres behind the front face of: (a) buildings containing habitable rooms habitable rooms; and (b) a verandah / balcony.
	AO9.3 Basement car parking facilities, that are visible from adjoining roads, are no more than 1 metre above ground level at any point.
Access and car parking	
PO10 Vehicular access to arterial roads and sub-arterial roads is avoided unless no other options are available and the access: (a) reduces the number of access point on the road; and (b) maintains the safety and efficiency of the road; and (c) provides safe and efficient access to the site.	**AO10.1** Vehicular access to arterial roads and sub-arterial roads is avoided in favour of access to a collector street or access street (side, rear or internal streets). Where no such option is available, it is demonstrated that: (a) a single access point on the arterial road or sub-arterial road combines existing or potential access points; and (b) does not compromise the safety or efficiency of the arterial road or sub-arterial road; and (c) provides safe and efficient access for residents of and visitors to the development.
PO11 Development includes the provision of adequate, convenient and safe on-site vehicle parking.	**AO11.1** Car parking dedicated to guests and other visitors to the development is provided: (a) on the site in a convenient location/s; and (b) in accordance with Table 9.4.1.3.B in the General development requirements code.
PO12 Access within the site is safe, efficient and accessible.	**AO12.1** Internal vehicle access and layout is provided to: (a) discourage speeding; and (b) provide safe and efficient access and parking on sealed surfaces; and (c) enable a B99 vehicle[60] to access and leave the site in forward gear after performing no more than a 3-point turn.

[60] "B99 vehicle" as defined by *Australian Standard AS/NZS2890.1–2004*.

Performance outcomes	Acceptable outcomes
Recreation and other facilities	
PO13 Development includes the provision of adequate communal recreation areas.	**AO13** Communal recreation area must be provided on site in accordance with the following: (a) minimum area – the greater of 10m^2 per accommodation unit / room or 30% of the site area; and (b) a principal recreation area: (i) occupies a minimum of 50% of the total recreation area; and (ii) has a minimum dimension of 4 metres.
PO14 Short-term accommodation developments provide adequate laundry facilities for guests.	**AO14** The following laundry facilities are provided within accommodation units / rooms or in a communal area: (a) washing machines; and (b) clotheslines and/or clothes drying machines; and (c) irons and ironing boards.
PO15 The usability and amenity of private open space areas is not compromised by utility services.	**AO15** Development must not locate plant and equipment providing utility services such air-conditioning units and hot water systems on balconies.
Security, safety and privacy	
PO16 Development is designed to provide high levels of security and safety through the use of: (a) elements providing the casual surveillance of public spaces adjoining the site and communal spaces within the site; and (b) adequate lighting in communal spaces.	**AO16.1** Buildings are designed to overlook: (a) roads and public open space adjoining the site; and (b) communal areas (including access-ways, car parking areas and open space / recreation areas) on the site.
	AO16.2 Pedestrian and vehicular access-ways, car parking areas and building entries are: (a) clearly defined; and (b) well-lit at night; and (c) overlooked by buildings and/or public roads; and (d) provide direct and convenient access.

Performance outcomes	Acceptable outcomes
PO17 Development maintains a high level of privacy between accommodation rooms and for dwellings on adjoining sites.	**AO17** Habitable room windows: (a) are located: (i) a minimum of 9 metres from a habitable room window or private open space of a dwelling on the site or on an adjoining site; or (ii) to not have a direct view to habitable room window or private open space of a dwelling on the site or on an adjoining site; or (b) are designed and/or treated in accordance with either of the following where (a)(i) or (a)(ii) above cannot be met: (i) translucent glazing is used; or (ii) sill heights are a minimum height of 1.5 metres above ground level; or (iii) screening devices according with the following are used: (A) fixed and permanently attached to the building; and (B) solid and translucent or perforated with a maximum of 50% openings; and (C) visually complements the development.

9.3.20 Telecommunications facility code

9.3.20.1 Application

This code applies to assessing material change of use for telecommunications facility.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.20.2 Purpose

(1) The purpose of the Telecommunications facility code is to ensure that telecommunications facilities are located, designed and operated to visually integrate with the surrounding area and maintain high levels of amenity and public safety.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) Telecommunications facilities are located and designed to:
  (i) visually integrate with the built form and landscape character of the surrounding area; and
  (ii) avoid amenity impacts on adjoining and nearby sensitive land uses; and

(b) Telecommunications facilities minimise adverse impacts to public health and safety by managing electromagnetic emissions and restricting access.

9.3.20.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.3.20.3.A – Telecommunications facility code – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Location and setbacks	
PO1 Telecommunications facilities are located to minimise visual and other amenity impacts on adjoining properties and roads and the surrounding area.	**AO1.1** Telecommunications buildings, structures and towers are: (a) co-located with existing telecommunications facilities; or (b) on top of buildings in the Mixed use zone, centre zones or zones unlikely to contain sensitive land uses; or (c) otherwise located and designed to minimise visual impacts as viewed from nearby properties, roads and other publicly accessible land.
	AO1.2 Where the telecommunications facility is a free-standing structure on natural ground, the facility is not located within 50 metres of an existing sensitive land use or property within a residential zone.

Performance outcomes	Acceptable outcomes
	AO1.3 Telecommunications facilities are setback in accordance with the following: (a) free-standing towers are setback from boundaries adjoining properties within a residential zone or sites containing child care centres or educational establishments as follows: (i) 20 metres where the height of the tower is more than 20 metres; and (ii) 10 metres where the height of the tower is 20 metres or less; and (b) free standing towers are setback: (i) 20 metres from boundaries adjoining arterial roads or sub-arterial roads; and (ii) 10 metres from boundaries adjoining collector streets or access streets.
Visual and general amenity	
PO2 Telecommunications facilities visually integrate with surrounding built form and landscape character.	**AO2.1** The maximum height of telecommunication structures and towers is: (a) in the Principal centre zone – 30 metres above ground level where a freestanding structure or 49 metres AHD when placed on top of a building; and (b) in residential zones – 22m metres above ground level to the uppermost point including when placed on top of a building. (c) in other zones – 30m metres above ground level to the uppermost point including when placed on top of a building.
	AO2.2 Buildings, structures, towers and fencing associated with the telecommunication facility are: (a) finished with materials that are sympathetic to the surrounding built form and landscape character; and (b) finished with non-reflective subdued colours such as shades of dark blue, dark green, dark grey, ochre or olive.
	AO2.3 Landscaping strips are provided along: (a) all street frontages – minimum width 2 metres; and (b) all boundaries adjoining properties within a residential zone or sites containing child care centres or educational establishments – minimum width 3 metres

Performance outcomes	Acceptable outcomes
PO3 Telecommunication facilities provide for the co-location of future facilities.	**AO3** Telecommunication facilities, particularly towers, provide capacity for future service upgrades and the co-location of other telecommunication facilities.
PO4 Telecommunications facilities maintain a high level of amenity for adjoining and nearby properties within a residential zone or existing sensitive land uses.	**AO4.1** Potential noise sources, such as mechanical plant and air-conditioning units, are appropriately screened and orientated away from adjoining and nearby properties within a residential zone or existing sensitive land uses.
Public safety	
PO5 Development is established, operated and maintained to minimise the risk to public health and safety.	**AO5.1** Development is designed and operated to restrict electromagnetic emissions (EME) in accordance with: (a) *Radiocommunications (Electromagnetic radiation – Human Exposure) Standard 2003*; and (b) *Radio Protection Standard for Maximum Exposure Levels to Radiofrequency Fields – 3KHz to 300GHz*, or, the relevant Australian Standard for EME in place at the time the development application is made.
PO6 Public safety is maintained by: (a) preventing public access to operations areas; and (b) raising public awareness on operations.	**AO6.1** In order to prevent unauthorised or accidental public entry, the following is provided: (a) security fencing with a minimum height of 2 metres around the part of the site occupied by the telecommunications facility; and (b) lockable security gates at access points with a minimum height of 2 metres.
	AO6.2 Signs that inform and warn the public of operations and safety hazards, and prohibit unauthorised access, are installed on the: (a) public road adjoining the telecommunication facility; and (b) gates / fencing surrounding the telecommunication facility.
PO7 Legal, practical and safe access is provided to the telecommunications facility for maintenance and other authorised purposes.	**AO7.1** Access to the facility is provided as follows: (a) by permanent legal right where location is on a lease hold parcel without road frontage; and (b) in a safe location off the existing network in accordance with the Engineering design guidelines.

9.3.21 Tourist park and relocatable home park code

9.3.21.1 Application

This code applies to assessing material change of use for tourist park and relocatable home park.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.3.21.2 Purpose

(1) The purpose of the Tourist park and relocatable home park code is to ensure that tourist park and relocatable home park uses are appropriately located, provide a high quality accommodation experience for residents and guests and maintain the amenity of the surrounding area.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) tourist parks and relocatable home parks are located on large, highly accessible sites that are not subject to environmental hazards or do not contain highly valuable ecological elements; and

(b) the overall development and individual buildings are located and designed to provide high quality design outcomes and high levels of amenity within the site and on adjoining sites; and

(c) a range of clean, convenient and adequate on-site services and facilities contribute toward a high quality accommodation experience; and

(d) a safe, efficient and legible access for vehicles, bicycles and pedestrians is provided to, and within, the site; and

(e) landscaping along site boundaries contributes to the visual and general amenity of the site and the local area.

9.3.21.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.3.21.3.A – Tourist park and relocatable home park code – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Site characteristics	
PO1 Convenience goods and other services and facilities are within walking distance of relocatable home parks.	**AO1** Relocatable home parks are located: (a) within 400 metres of a multi-purpose centre[61] and adjacent to a public transport route; or (b) within 400 metres of a Township zone.

[61] "Multi-purpose centre" includes District centre zone, Local centre zone, Major centre zone and Principal centre zone. The Specialised centre zone is not a multi-purpose centre zone.

Performance outcomes	Acceptable outcomes
PO2 The site has adequate area and dimensions to accommodate all elements associated with the use.	**AO2** The site complies with the following: (a) minimum site area – 2 hectares; and (b) minimum frontage – 40 metres; and (c) average slope of less than 15%.
PO3 Tourist parks and relocatable home parks activities: (a) are highly accessible but do not compromise the efficiency or safety of arterial roads; and (b) do not increase traffic on local residential streets (access streets).	**AO3** The site gains access from a sub-arterial road or collector street.
PO4 The development: (a) avoids environmental hazards; and (b) maintains the ecological integrity of the local area; and (c) integrates with the landscape character of the area.	**AO4** Tourist parks and relocatable home parks avoid areas: (a) subject to inundation: (i) in a 1% AEP flood event; and (ii) from an overland flow path; or (b) identified as "high risk bushfire area" or "medium risk bushfire area"; or (c) within 500 metres of properties within the High impact industry zone; or (d) containing remnant vegetation; or (e) within 100 metres of ridgelines, erosion prone land, watercourses and wetlands.
Site layout, setbacks and building design	
PO5 Open spaces throughout the development provide recreation opportunities and enhance the visual amenity of the site by providing relief from areas containing built structures.	**AO5** A minimum of 10% of the site is provided as communal open space and recreation areas[62] throughout the site.
PO6 Development maintains the amenity and character of the surrounding area.	**AO6** Buildings and accommodation sites have the following minimum setbacks: (a) from dedicated (external / public) road frontage boundaries: (i) 10 metres from an arterial road or sub-arterial road; and (ii) 6 metres from a collector street or access street; and (b) from other site boundaries – 5 metres.
PO7 Accommodation sites provide: (a) an adequate usable area for intended permanent and/or relocatable buildings and setbacks; and (b) private open space for long term residents.	**AO7.1** In tourist parks, accommodation sites provide the following: (a) minimum area – 130m^2; and (b) minimum frontage to an internal road – 10 metres.

[62] "Communal open space and recreation areas" does not include landscape buffers, internal roads or parking areas or private open space on accommodation sites.

Performance outcomes	Acceptable outcomes
	AO7.2 In relocatable home parks, accommodation sites accord with the following: (a) minimum area – 200m^2; and (b) minimum frontage to an internal road – 10 metres; and (c) minimum area of private open space provided – 30m^2 with a minimum dimension of 3 metres.
PO8 Permanent and relocatable buildings and structures are setback from internal roads and the other boundaries of accommodation sites to ensure that: (a) a high level of visual amenity is provided through avoiding the over-development; and (b) a reasonable level of privacy is provided between buildings and structures; and (c) all buildings and structures have access to natural breezes and sunlight.	**AO8.1** In tourist parks, caravans, cabins and tents are setback: (a) a minimum of 2 metres from the adjoining internal road; and (b) a minimum of 3 metres from any permanent or relocatable buildings or structures on an adjoining individual accommodation site.
	AO8.2 In relocatable home parks, permanent and relocatable buildings or structures are setback: (a) a minimum of 3 metres from the adjoining internal road; and (b) a minimum of 1.5 metres from the side and rear boundaries of the accommodation site; and (c) a minimum of 3 metres from any permanent or relocatable buildings or structures on an adjoining individual accommodation site.
PO9 Casual surveillance from buildings and lighting contribute toward the safety of communal open space and recreation areas and access ways.	**AO9.1** Buildings and structures provide windows, pedestrian entrances and verandahs on elevations facing communal open space and recreation areas and access ways.
	AO9.2 Adequate lighting is provided along access ways and in communal areas in accordance with *Australian Standard AS/NZS1158.6*.

Performance outcomes	Acceptable outcomes
On-site facilities and services	
PO10 The development provides a high quality accommodation experience through the provision of clean, convenient and adequate ablution, laundry, cooking, dining, recreation and storage facilities.	**AO10** The following facilities are provided in a central location/s and are adequate to the number of guests / residents in the development: (a) toilet, shower and change facilities; and (b) washing machines, clotheslines and/or clothes drying machines, irons and ironing boards; and (c) covered cooking and eating area (including food preparation area, barbeques, tables, seats and dishwashing facilities); and (d) indoor recreation building (including television, games, lounges and meeting facilities); and (e) secure storage facilities.
PO11 Convenience goods are available within walking distance of accommodation sites.	**AO11** If the tourist park is not located within 400 metres of a multi-purpose centre[63] or Township zone, a kiosk selling convenience goods is provided on-site.
PO12 Adequate fire fighting facilities are provided throughout the site in convenient and easily accessible locations.	No acceptable outcome prescribed.
PO13 Wayfinding devices contribute toward the legibility of the development.	**AO13** Directional and information signage is provided at the entrance to, and throughout, the development.
AO14 Tourist parks provide adequate sullage waste disposal facilities that maintains (a) human health and safety on the subject site and in the local area; and (b) ecological integrity of the local area.	**AO14** Liquid waste disposal points: (a) are provided within 10 metres of caravan sites; and (b) consists of a water stand pipe, in an impervious paved area (minimum dimensions of 1 metre x 1 metre), graded to a central drain connected to a wastewater disposal network or system.

[63] "Multi-purpose centre" includes District centre zone, Local centre zone, Major centre zone and Principal centre zone. The Specialised centre zone is not a multi-purpose centre zone.

Performance outcomes	Acceptable outcomes
Access and parking facilities	
PO15 Vehicular access to the development: (a) is adequate and safe; and (b) does not detrimentally impact upon the safety, capacity or efficiency of the road or street system.	**AO15** Vehicle access points: (a) are not located within: (i) 50 metres of an intersection of roads; and (ii) 10 metres of a nearby vehicle access point; and (b) have a minimum carriageway width of: (i) 7 metres for two-way entrance / exit points; and (ii) 7 metres for one-way entrance points; and (iii) 5 metres for one-way exit points; and (c) are sealed (bitumen or concrete).
PO16 The internal road system provides a safe, legible and convenient access network that: (a) facilitates movement by a range of vehicle types and sizes; and (b) integrates with low-speed, pedestrian orientated nature of the development.	**AO16** Internal roads: (a) are sealed (bitumen or concrete); and (b) have a minimum carriageway width of: (i) 6 metres for two-way roads; and (ii) 4 metres for one way roads or cul-de-sacs; and (c) provide emergency vehicles with direct access to every site; and (d) include traffic calming devices at regular intervals.
PO17 Development includes the provision of adequate, convenient and safe on-site car parking.	**AO17** Car parking facilities, dedicated to residents, guests, employees and other visitors of the development is provided: (a) on the site in a convenient and safe location/s; and (b) in accordance with Table 9.4.1.3.B in the General development requirements code.
PO18 Safe and convenient pedestrian access facilities are provided throughout the development between accommodation areas and important facilities.	**AO18** Sealed (bitumen or concrete) pedestrian pathways: (a) provide connections to, and between, the kiosk / reception area, communal facilities and recreation areas; and (b) have a minimum width of 1.2 metres.
Landscaping	
PO19 Landscaping treatments along road frontage boundaries provide high quality visual amenity as viewed from the adjoining roads and the site.	**AO19** A landscape strip with a minimum width of 3 metres is provided along all road frontage boundaries.

Performance outcomes	Acceptable outcomes
PO20 Landscaping and fencing is provided along side and rear boundaries to: (a) provide physical and visual delineation between adjoining land uses; and (b) maintain a high level on the subject site and on adjoining sites.	**AO20** The following is provided along side and rear boundaries: (a) 1.8 metre visual screen fence and a 3 metre landscape buffer where site boundaries adjoin properties in an urban residential zone[64], Community facilities zone or Sport and recreation zone; and (b) 1.8 metre visual screen fence and a 5 metre landscape buffer where boundaries adjoin properties in an industry zone, multi-purpose centre[65], Specialised centre zone or Special purpose zone; and (c) a 5 metre landscape buffer where boundaries adjoin properties in a Rural zone or Rural residential zone.

64 "Urban residential zone" means Emerging community zone, High density residential zone, Low density residential zone, Medium density residential zone, Mixed use zone, Tourism area (major) zone and Township zone.

65 "Multi-purpose centre" includes District centre zone, Local centre zone, Major centre zone and Principal centre zone. The Specialised centre zone is not a multi-purpose centre zone.

9.4 Other development codes

9.4.1 General development requirements code

9.4.1.1 Application

This code applies to assessing development that is identified for code assessment or impact assessment.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.4.1.2 Purpose

(1) The purpose of the General development requirements code is to provide general requirements regarding infrastructure, amenity, safety and environmental standards for assessable development.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) development is efficiently serviced by utility and access infrastructure; and

(b) the integrity and efficiency of existing utility and access infrastructure systems is maintained; and

(c) development provides adequate on-site vehicular access and adequate parking and servicing facilities for vehicles and parking facilities for bicycles; and

(d) development maintains the amenity of the surrounding area; and

(e) sensitive land uses in close proximity to activities generating amenity impacts are located and designed to mitigate the impacts; and

(f) development is protected from inundation by floodwaters, and does not exacerbate flood impacts on other properties in the surrounding area; and

(g) earthworks maintain public safety, environment quality and a high level of visual amenity; and

(h) landscaping enhances the tropical character, visual amenity, environmental quality and microclimate of sites and streetscapes; and

(i) works in public streets enhance the pedestrian amenity, visual amenity and general usability of streets; and

(j) development is designed to reduce opportunities for antisocial and criminal behaviour.

9.4.1.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.4.1.3.A – General development requirements code – assessable development

Performance outcomes	Acceptable outcomes
Assessable development	
Utility infrastructure and services	
PO1 Development is consistent with the priority infrastructure plan and efficiently serviced by: (a) reticulated water supply and wastewater disposal infrastructure within the PIA boundaries; or (b) where reticulated services are unavailable, developer-funded on-site systems that maintain public health and ecological integrity (including achieving water sensitive urban design principles) of the site and its surrounds[66].	**AO1.1** Development is: (a) connected to Council's reticulated water supply network, including the installation of easily accessed water meters, in accordance with SC6.15 Engineering design guidelines – Water supply design planning scheme policy; or (b) if connection to Council's reticulated water supply network is not possible, a potable on-site water supply is provided in accordance with the Engineering design guidelines planning scheme policy.
	AO1.2 Development is: (a) connected to Council's reticulated wastewater network in accordance with SC6.10 Engineering design guidelines – sewerage system design planning scheme policy; or (b) if connection to Council's reticulated wastewater network is not possible, an on-site wastewater disposal system is provided in accordance with: (i) for systems serving 20 or less people – *Environmental Protection (Water) Policy 1997 and the On Site Sewerage Code (NR&M July 2002)* and *Australian Standard AS/NZS1547*; or (ii) for systems serving more than 20 people – an appropriate system that does not result in direct or cumulative adverse public health and environmental impacts within and outside the site.

[66] The provision of an on-site water source must give consideration to the *Water Act 2000* and, where applicable, the *Water Resource (Pioneer Valley) Plan 2002, Water Resource (Fitzroy Basin) Plan 2011* or *Water Resource (Burdekin Basin) Plan 2007*.

Performance outcomes	Acceptable outcomes
PO2 In urban areas, major elements of the stormwater drainage network is designed and constructed with the capacity to control stormwater flows under normal and minor system blockage conditions for the defined flood event applicable to drainage so that: (a) floodways are restricted to areas where there is no damage to property or hazards for motorists; and (b) runoff is directed to a lawful point of discharge through competently designed and constructed outlet works.	**AO2** Stormwater infrastructure accords with the design requirements of: (a) SC6.12 Engineering design guidelines – stormwater drainage system planning scheme policy; and (b) SC6.14 Engineering design guidelines – subsurface drainage design planning scheme policy.
PO3 Drainage works are planned and designed to ensure that adjoining land and existing upstream and downstream drainage systems are not adversely affected by development, taking into account: (a) water sensitive urban design (WSUD) principles such as: (i) protect natural systems; and (ii) enhance natural waterway systems within urban development using natural channel design principles; and (iii) detention of stormwater instead of rapid conveyance; and (iv) minimise impervious areas; and (v) utilisation of stormwater to conserve potable water; and (vi) integrate stormwater treatment into the landscape; and (vii) water efficient landscaping; and (viii) protection of water related environmental values; and (b) need for a stormwater system that can be economically maintained for the life of the system; and (c) safety of pedestrians and vehicles; and (d) location of discharge; and (e) construction of buildings, structures or paving up to site boundaries which avoid blocking or concentrating natural flow paths[67]; and (f) fauna movement is provided for through bridges and culverts.	**AO3** Stormwater infrastructure is provided in accordance with the requirements of: (a) SC6.12 Engineering design guidelines – stormwater drainage system planning scheme policy; and (b) SC6.14 Engineering design guidelines – subsurface drainage design planning scheme policy.

[67] Guidance on the design and construction of drainage systems is provided by the *Queensland Urban Drainage Manual 1994.*

Performance outcomes	Acceptable outcomes
PO4 Premises are connected to electricity services.	**AO4** The development is connected to electricity infrastructure in accordance with the standards of the relevant regulatory authority.
PO5 Premises are connected to telecommunications services.	**AO5** The development is connected to telecommunications infrastructure in accordance with the standards of the relevant regulatory authority.
PO6 Provision is made for future telecommunications services (such as fibre optic cable).	No acceptable outcome prescribed.
PO7 Provision is made for fire hydrants in identifiable and accessible locations.	**AO7** In urban areas, fire hydrants are provided and designed in accordance with the following: (a) hydrants are located at intervals of no more than: (i) 120 metres on a residential street and common access ways within common property in community title; or (ii) 90 metres on a commercial or industrial street and access ways; and (b) a hydrant is located: (i) at each intersection; and (ii) in a suitable and identifiable location; and (c) on an access road, designed appropriately for safe passage of emergency vehicles; and (d) in accordance with SC6.15 Engineering design guidelines – water supply design.
PO8 Street lighting and signs are provided to ensure the safety of both vehicles and pedestrians, and to facilitate access and movement.[68]	**AO8** Street lighting and signage comply with the requirements of SC6.5 Engineering design guidelines – geometric road design planning scheme policy.

[68] '*Australian Standards and Manual for Uniform Traffic Control Devices*' provides guidance in relation to these matters.

Performance outcomes	Acceptable outcomes
PO9 Development provides a refuse management system that: (a) has sufficient capacity to store the refuse generated by the development; and (b) maintains a high level of amenity on the site and on adjoining sites; and (c) provides for efficient collection.	**AO9.1** Where the site is serviced by Council's refuse collection service, the development: (a) provides refuse bins to service the development: (i) for multiple dwelling activities with 10 or less dwellings: (A) one 240 litre general refuse bin per dwelling unit or a bulk general refuse bin; and (B) an appropriate number of 240 litre refuse bins for recyclable material; or (ii) for multiple dwelling activities with more than 11 dwellings: (A) an appropriate number of bulk general refuse bins; and (B) an appropriate number of 240 litre refuse bins for recyclable material; or (iii) for other development: (A) an appropriate number of 240 litre bins or bulk refuse bins for general refuse; and (B) an appropriate number of 240 litre refuse bins for recyclable material; and (b) provides a refuse bin storage area/s that: (i) is conveniently located and easily accessed; and (ii) where servicing a multiple dwelling activity, not more than 50 metres from any dwelling; and (iii) within reach of a hose; and (iv) is located or enclosed so that the bins are visually screened from view from roads, communal and private open space on the site and adjoining sites; and (c) provides a refuse bin collection area: (i) at an appropriate kerbside location[69]; or (ii) on the site if it has an area of over 2,000m^2 and a bulk refuse bin/s are to be used. On-site refuse bin collection areas are located to provide:

[69] The maximum number and size of refuse bins for kerbside collection will depend on the circumstances of the site (safe and efficient access for a Council refuse truck and amenity considerations) and will be determined by Council's Waste Services program.

Performance outcomes	Acceptable outcomes
	(A) an adequate manoeuvring area to enable a Council refuse truck to enter the site in forward gear, service the bins, and leave the site in forward gear after performing no more than a 3-point turn; and (B) adequate vertical clearance to enable a Council refuse truck to service (empty) the bins; and (d) enables easy movement of the refuse bins from the refuse bin storage area to the refuse bin collection area.
	AO9.2 Where the site is not serviced by Council's refuse collection service, the development complies with a refuse management plan that identifies: (a) the number and size of refuse bins required to service the development; and (b) an appropriately located refuse bin storage area that is screened from view from roads and adjoining sites; and (c) an appropriately located refuse bin collection area (if relevant); and (d) the means by which refuse will be transported to a Council refuse management facility.
Access infrastructure and parking facilities	
PO10 Development generating a significant numbers of vehicle trips can be accessed on an all-weather road that does not create dust nuisance.	No acceptable outcome prescribed.
PO11 All proposed road pavement surfaces: (a) are of a quality and durability suitable to the intended traffic volumes and loads; and (b) provide all-weather access; and (c) allow the discharge of rainfall; and (d) provide the safe passage of vehicles and pedestrians; and (e) provide a reasonable, comfortable riding quality.	**AO11** Roads are provided in accordance with: (a) SC6.5 Engineering design guidelines – geometric road design planning scheme policy; and (b) SC6.8 Engineering design guidelines – pavement design planning scheme policy.

Performance outcomes	Acceptable outcomes
PO12 In key urban areas, and where a water sensitive urban design measures are not practical, kerb and channelling is provided to a satisfactory standard and constructed to: (a) prevent edge fretting; and (b) perform required drainage functions; and (c) provide the appropriate level of control for vehicle movement; and (d) allow ready access to abutting properties at suitable locations; and (e) contribute to the desired streetscape character of the locality.	**AO12** In key urban areas, and where water sensitive urban design measures are not practical, premises are provided with kerb and channel in accordance with: (a) SC6.5 Engineering design guidelines – geometric road design planning scheme policy; and (b) SC6.8 Engineering design guidelines – pavement design planning scheme policy.
PO13 Vehicular access to arterial roads and sub-arterial roads is avoided unless no other options are available and the access: (a) reduces the number of access points on the road; and (b) maintains the safety and efficiency of the road; and (c) provides safe and efficient access to the site.	**AO13** Vehicular access to arterial roads and sub-arterial roads is avoided in favour of access to a collector street or access street (side, rear or internal streets). Where no such option is available, it is demonstrated that: (a) a single access point on the arterial road or sub-arterial road combines existing or potential access points; and (b) does not compromise the safety or efficiency of the arterial road or sub-arterial road; and (c) provides safe and efficient access for residents, customers, employees and other visitors to the development.
PO14 Access to and within the site is safe, efficient and is constructed to a standard that is appropriate to the location of the site, nature and scale of the use and adjoining uses.	**AO14.1** Access points: (a) provide convenient access to the site and maintain the safety and efficiency of the road; and (b) are located as far as practical from intersections; and (c) for non-residential uses are not located within 3 metres of an adjoining site within a residential zone.
	AO14.2 Vehicle access areas (internal driveways, access aisles, manoeuvring areas, car parks and service bays) accord with the following: (a) the relevant sized vehicle (as defined by Table 9.4.1.3.B) can enter and leave the site after performing no more than a 3-point turn; and (b) in key urban areas and townships, vehicle access areas:

Performance outcomes	Acceptable outcomes
	(i) discourage speeding through layout design and the use of speed humps and/or other traffic calming devices; and (ii) are designed and constructed in accordance with all relevant sections of *Australian Standard AS/NZS2890*; and (c) in other areas, vehicle access areas are located, designed and constructed to minimise dust impacts on adjoining and nearby sites and minimise erosion.
	AO14.3 Where vehicle access is controlled by a gate, the gate is located so that queued vehicles standing while the gate is opened are wholly within the site.
PO15 Development includes the provision of adequate and convenient and safe on-site car and bicycle parking.	**AO15** Car and bicycle parking facilities (including end of trip facilities where applicable), dedicated to residents, customers, employees or other visitors of the development is provided: (a) on the site in a convenient and safe location/s; and (b) in accordance with Table 9.4.1.3.B.
PO16 Development provides end of trip facilities for people engaging in active transport (bicycle and pedestrian): (a) to meet the needs of users and promote active modes of travel; (b) at convenient, easily identifiable, safe locations; (c) in locations that do not obstruct vehicular, bicycle or pedestrian movement paths.	**AO16.1** Bicycle parking facilities are: (a) located within view of staff, customers or passing foot traffic; and (b) easily accessible by users; and (c) well-lit; and (d) sheltered from the sun and rain; and (e) close to public transport; and (f) signed to indicate the nearest public phone and places of safety; and (g) well-maintained at all times; and (h) designed and constructed in accordance with *Australian Standard AS/NZS2890.3–1993*.
	AO16.2 Development provides cycling and pedestrian end of trip facilities, in accordance with the requirements of the Queensland Development Code, that include: (a) secure bicycle parking and storage racks; (b) storage lockers; and (c) shower, change room and toilet facilities.

Performance outcomes	Acceptable outcomes
PO17 Pedestrian accesses to buildings: (a) do not obstruct pedestrian movement, or form physical clutter, on public footpaths; (b) are not visually overbearing, or form visual clutter, in the streetscape; (c) safe, efficient and convenient wheelchair access.	**AO17.1** Steps, escalators, ramps and lifts are: (a) located wholly within the site; and (b) setback a minimum of 1.5 metres from the front boundary.
	AO17.2 Where a pedestrian access ramp exceeds the lesser of 15 metres or 60% of the site frontage: (a) a wheel chair accessible elevator is provided; or (b) a graduated foyer/lobby entrance is provided; or (c) shared pedestrian access facilities are provided with an adjoining site.
Amenity	
PO18 The acoustic amenity, privacy and liveability of residential areas and sensitive land uses is maintained by ensuring that: (a) noise generating development in close proximity to existing and/or future sensitive land uses is located, designed and operated to minimise acoustic impacts on the sensitive land use; and (b) sensitive land uses in close proximity to existing and/or future noise generating uses are located and designed to ensure minimal acoustic impacts on the sensitive land use.	**AO18.1** Development is located, designed and operated to achieve the following noise levels when measured from: • for proposed sensitive land uses: habitable rooms (assuming open windows) nearest the noise source; and • for proposed noise generating development: – within the nearest habitable room (assuming open windows) of adjoining / nearby sensitive land uses; and – 2 metres beyond the boundary of the site and 1.5 metres above ground level, where the adjoining site is undeveloped and in a residential zone or intended to accommodate a sensitive land use: (a) background (L90) + 5dB(A) for variable noise between the hours of 7:00 am to 10:00 pm; and (b) background (L90) + 3dB(A) for variable noise between the hours of 10:00 pm and 7:00 am; and (c) background (L90) for continuous noise sources (measured at the facade of the sensitive use between 7:00 am and 10:00 pm and within habitable rooms assuming open windows from 10:00 pm – 7:00 am); and (d) maximum limit LAmax 45dB(A); and

Performance outcomes	Acceptable outcomes
	(e) the acoustic quality objectives (internal noise criterion) for the particular use identified in the Environmental Protection (Noise) Policy 2008 or, if not listed, the internal sound level design criterion contained in *Australian Standard AS/NZS2107 Acoustics – Recommended design sound levels and reverberation times for building interiors*.
	AO18.2 Where the sensitive land use is within or adjoining entertainment venues utilising amplified music, measures mitigating the impacts of low frequency noise (particularly between 31.5Hz and 125Hz) are provided.
PO19 Where located in close proximity to an operational railway corridor, sensitive land uses mitigate amenity impacts and maintains the operational integrity of the rail corridors.	**AO19** No acceptable outcome prescribed.
PO20 Sensitive land uses are adequately buffered from rural and agricultural activities.	**AO20** New sensitive land uses are separated from rural and agricultural activities a minimum distance of: (a) 300 metres, or 40 metres if including a vegetated buffer, where involving chemical spray drift; or (b) 500 metres, where involving intermittent odour; or (c) 60 metres, or 15 metres if including a vegetated buffer, where involving intermittent noise during the day; or (d) 1000 metres, or 250 metres if including a vegetated buffer, where involving intermittent noise during the night; or (e) 500 metres, or 120 metres if including a vegetated buffer, where involving long term noise during the day; or (f) 1000 metres, where involving long term noise during the night; or (g) 150 metres, or 40 metres if including a vegetated buffer, where involving dust, smoke and ash.

Performance outcomes	Acceptable outcomes
PO21 Utility services attached to buildings do not adversely impact on the acoustic or visual amenity of the surrounding area.	**AO21.1** Utility services attached to buildings, including air conditioning units, hot water systems, refrigeration units and other forms of mechanical ventilation or extraction systems, are: (a) located as far from sensitive land uses, road frontage boundaries and public open spaces as practical; and (b) acoustically shielded and visually screened so as not to be audible or visible from adjoining and nearby sites, public open spaces and roads.
	AO21.2 Service structures, lift motor rooms and other utility plant: (a) are located and designed to not be visible from adjoining and nearby sites, streets and public places; or (b) designed to be an architectural feature of the building, if visible from adjoining and nearby sites, streets and public places.
PO22 Vibration from the development does not affect the amenity of surrounding land uses.	**AO22** The development does not result in vibration impacts outside of the development site.
PO23 Development maintains the air quality of the area through the effective management of air emissions and the minimisation of heat and odour releases.	**AO23** Development that is likely to generate emissions such as air pollutants, heat and odours incorporate: (a) physical measures for removing pollutants from emissions prior to discharge to the atmosphere; and (b) physical measures for reducing the temperature gradient between emissions and the atmosphere prior to discharge; and (c) operational systems, including monitoring systems for major industry and major infrastructure, which maintain emissions within *ANZECC guideline standards*.

Performance outcomes	Acceptable outcomes
PO24 Lighting is designed in a manner to ensure ongoing amenity and safety whilst ensuring surrounding areas are protected from undue glare or lighting overspill.	**AO24** Where the site adjoins a residential zone, or a site containing an existing residential or accommodation use, outdoor lighting: (a) does not exceed 8.0 lux at 1.5 metres beyond the side and rear boundaries of the site; and (b) is directed downwards and shielded, rather than directed at the adjoining residential or accommodation zone or use; and (c) all lights, apart from security lighting, are switched off not longer than 1 hour after the cessation of daily operations; and (d) accords with *Australian Standard AS4282 – Control and effects of outdoor lighting* in terms of its technical parameters, design, installation, operation and maintenance.
PO25 Non-residential development maintains the visual and general amenity of adjoining residential areas.	**AO25** Non-residential development[70] adjoining properties within a residential zone, comply with the following: (a) buildings containing non-residential uses: (i) are setback the greater of 3 metres or half the height of the building wall (ground level to eaves or ground level to top of the wall if no eaves) facing residential properties; and (ii) provide minimal building openings, and no service / delivery openings, facing the adjoining residential zone; and (b) landscape strips, containing buffer planting[71], is provided along the full length of boundary with the residential zone in accordance with the following widths: (i) where the non-residential use involves industry activities or service station – 4.5 metres; and (ii) for other non-residential uses – 3 metres; (c) 1.8 metre high solid screen fence is provided along the full length of boundary with the residential zone; and (d) refuse bins are not stored within 5 metres of the boundary with the residential zone; and (e) any refuse bin storage area within 10 metres of the common boundary must be located within a fully enclosed bin storage structure.

[70] This provision does not apply to the following non-residential uses: child care centre, home based business, market, nature based tourism, park, roadside stall, sales office.

[71] "Buffer planting" means planting that provides effective visual screening and is in accordance with Council standard drawings A3-841 B and A3-842 A.

Performance outcomes	Acceptable outcomes
PO26 Residential development mitigates existing and / or potential future visual and general amenity impacts from adjoining non-residential sites.	**AO26** Where a new sensitive land use/s in a residential zone adjoins a site within a centre zone, industry zone, Special purpose zone or Community facilities zone: (a) open plan living areas, habitable rooms, prominent building openings / windows and principle recreation areas are orientated away from the boundary with the non-residential zone; and (b) landscape strips with a minimum width of 2 metres and containing buffer planting[72], is provided along the full length of boundary with the non-residential zone; and (c) 1.8 metre high solid screen fence is provided along the full length of boundary with the residential zone.
PO27 Multi-storey buildings and high structures are designed to maintain a reasonable level of access to sunlight to adjoining public open spaces and residential areas.	**AO27** Buildings or structures with a height of over 8.5 metres above ground level (2 storeys), do not cast a shadow/s, between 9:30am and 2:30pm on the 21st June, over: (a) private open space areas, communal open space areas and living room windows in residential development on adjoining or nearby sites; and (b) more than 25% of the total area of an adjoining or nearby site within the residential zone; and (c) more than 25% of the total area of adjoining or nearby public open space.
PO28 Buildings do not incorporate glass or surfaces that are likely to reflect the sun that has the potential to cause nuisance, discomfort or hazard to any part of the city and adjoining urban areas.	**AO28** Any reflective glass material, metallic shade structures or other surface has: (a) a level of light reflectivity that does not exceed 20%; and (b) a level of heat transmission of not less than 20%.
Flooding	
PO29 Premises subject to risk of inundation or damage through flood are provided with immunity to that risk in order to reduce potential property damage and to ensure public safety.	**AO29.1** Development complies with the following: (a) is located on land that is not subject to inundation during a DFE[73]; or

[72] "Buffer planting" means planting that provides effective visual screening and is in accordance with Council standard drawings A3-841 B and A3-842 A.

[73] "DFE" – defined flood event – is the 1% AEP flood event plus climate change factor. The DFE is derived from adopted studies regarding riverine and local flood events. Where a site is covered by more than one study, the highest flood level is the DFE.

Performance outcomes	Acceptable outcomes
	(b) the minimum floor level for habitable rooms (new buildings and extensions to existing buildings) is the highest of the following: (i) 300mm above the DFE; or (ii) 300mm above the DSTE[74] relevant to the subject site; or (iii) the minimum floor level, as follows: (A) Mackay urban area – RL 5.4m AHD; or (B) Midge Point – RL 5.0m AHD; or (C) Seaforth, Haliday Bay, Ball Bay, Louiia Creek, Half Tide Beach, Salonika Beach, Grasstree Beach, Sarina Beach, Freshwater Point and Armstrong Beach – RL 5.3m AHD; or (iv) in addition to (iii) above, an additional 600mm is provided for higher wave effects and run up in the foreshore area (the foreshore area shall be taken as extending inland for a minimum of 100 metres from the higher of toe of the frontal dune or Highest astronomical tide); or (v) 225mm above natural ground level; or (vi) 300mm above the greater of top of the kerb level or the crown of the adjacent bitumen road.
	AO29.2 The minimum finished ground level for new residential lots in the Emerging communities zone or on land outside the urban footprint is the higher of: (a) at or above the DFE; or (b) at or above the DSTE or (c) the minimum ground level, as follows: (i) within the Mackay urban area – RL 5.0m AHD; or (ii) Midge Point – RL 4.6m AHD; or (iii) Seaforth, Haliday Bay, Ball Bay, Louisa Creek, Half Tide Beach, Salonika Beach, Grasstree Beach, Sarina Beach, Freshwater Point and Armstrong Beach – RL 4.9m AHD.
	AO29.3 New lots in the Rural zone and Rural residential zone include a building envelope at or above the DFE, with a minimum area of 1,000m^2.

[74] "DSTE" – defined storm tide event

Performance outcomes	Acceptable outcomes
	AO29.4 Development complies with the following: (a) residential lots in the Emerging community zone have direct frontage to a low risk evacuation route; and (b) public roads and driveways providing access to residential building envelopes in the Rural zone and Rural residential zone (required by AO29.3) are low risk evacuation routes. Low risk evacuation routes have the following characteristics: • maximum length of any single section of evacuation route covered by flood water in a DFE / DSTE – less than 200 metres; and • maximum flood depth in a DFE / DSTE – less than 0.3 metres; and • maximum flood velocity in a DFE / DSTE – less than 0.4 metres per second.
	AO29.5 For development involving temporary or moveable residential structures (e.g. tourist park and non-resident workforce accommodation) and non-residential development: (a) buildings are located and designed so that floor levels (except areas used for car parking) are at or above the DFE flood level; or (b) there is at least one evacuation route that remains passable for emergency evacuations during all floods up to and including the DFE; or (c) the premises are located in an area where there is sufficient flood warning time to enable safe evacuation; or (d) a safe refuge is available for people within the development site.
PO30 There is no increase in the number of people living or working on a flood prone site, except where the premises are occupied on a short-term or intermittent basis.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO31 Development does not result in adverse impacts for the safety of people or the capacity to use land within a floodplain and does not involve: (a) any physical alteration to a watercourse; and (b) net filling of 50 cubic metres; and (c) the proposed works either: (i) avoid any reductions of on-site flood storage capacity and contain within the subject site any changes in depth / duration / velocity in flood waters of all floods up to and including the DFE; or (ii) do not change the flood characteristics at the DFE outside the subject site in ways that result in: (A) loss of flood storage; and (B) loss of / changes to overland flow paths; and (C) acceleration or retardation of flows; and (D) any reduction of flood warning times elsewhere on the floodplain.	No acceptable outcome prescribed.
PO32 Electricity infrastructure is located and designed to be as resilient as practicable during and after flood events.	**AO32.1** Minor electricity infrastructure servicing buildings is located above the DFE.
	AO32.2 Where compliance with AO32.1 cannot practically be achieved, the following must be provided with minor electricity infrastructure: (a) an emergency connection point (on the customer owned switchboard) located above the DFE to allow for electricity to be supplied after the flood event; and (b) where development includes a basement below the DFE, a cut-off switch above the DFE is provided so that power can be turned off to areas below the DFE; and (c) clear access between an adjoining road and the transformer must be maintained at all times; and (d) plant rooms containing minor electricity infrastructure must be designed to restrict, as much as possible, the flow of water into the room during a DFE[75].

[75] It is accepted that it is generally not possible to entirely proof basements below the DFE.

Performance outcomes	Acceptable outcomes
PO33 Areas where hazardous materials or potentially contaminating substances are manufactured, stored or used are located and designed to: (a) prevent spills from leaving the site; and (b) be protected from stormwater inundation; and (c) maintain or improve the stormwater flow and flood characteristics of the local area.	**AO33** Areas where hazardous materials or potentially contaminating substances are manufactured, stored or used are: (a) located: (i) a minimum of 300mm above the DFE[76]; or (ii) within a bunded area that: (A) includes bund walls with a minimum height of 300mm above the DFE or the DSTE (whichever is greater); and (B) prevents intrusion of flood waters; and (C) does not increase the volume, velocity, concentration or flow path alignment of stormwater flow across sites upstream, downstream or in general vicinity of the subject site; and (D) does not increase stormwater ponding on sites upstream, downstream or in general vicinity of the subject site; and (b) sealed with hardstand (bitumen or concrete) and roofed; and (c) designed so that: (i) spills are bunded and retained on site for removal and disposal by an approved means; and (ii) roof water is piped away from the area.
Earthworks	
PO34 Earthworks are undertaken in a manner that: (a) produces stable landforms and structures; and (b) maintains natural landforms; and (c) minimises height of retaining walls and batter faces; and (d) does not unduly impact on the amenity or privacy for occupants of the site or on adjoining land; and (e) does not unduly impact on the amenity of the streetscape.	**AO34.1** Earthworks comply with: (a) SC6.11 Engineering design guidelines–site regrading planning scheme policy; and (b) *Australian Standard AS/NZS 3798 – Guidelines on earthworks for commercial and residential development*. **AO34.2** Retaining walls are certified as stable by a Registered Professional Engineer of Queensland. **AO34.3** The extent of filling or excavation with a depth of 200mm, does not exceed 40% of the site.

[76] "DFE" – defined flood event – is the 1% AEP flood event plus climate change factor. The DFE is derived from adopted studies regarding riverine and local flood events. Where a site is covered by more than one study, the highest level forms the DFE.

Performance outcomes	Acceptable outcomes
	AO34.4 Excavating or filling is no greater than 1 metre and height or depth and the combined height of retaining walls and fences does not exceed 2 metres.
	AO34.5 Soil to be used for filling if stockpiled for more than 1 month is stabilised and grassed.
	AO34.6 Retaining walls are set back from any boundary and are stepped or terraced so that landscaping can soften the visual impact.
PO35 Earthworks do not: (a) result in the contamination of land or water, and avoids risk to people and property; and (b) create or worsen any flooding or drainage problems on the site or on adjoining, nearby and other sites through: (i) ponding; and (ii) increase in flow direction; and (iii) increase in flow volumes, velocity or concentration; and (c) prevent or create difficult access to a site; and (d) generate a dust nuisance or erosion and sedimentation issues.	**AO35.1** Earthworks comply with: (a) SC6.11 Engineering design guidelines – site regrading planning scheme policy; and (b) SC6.12 Engineering design guidelines – stormwater drainage design planning scheme policy.
Landscaping	
PO36 Development is provided with adequate and suitable landscaping and screening on the site which: (a) reinforces the tropical character of the region; and (b) provides an attractive streetscape appearance; and (c) creates a pleasant microclimate on the subject site; and (d) provides for privacy and amenity on the site and on adjoining sites; and (e) reduces stormwater runoff; and (f) contributes to ecological linkages and biodiversity.	**AO36.1** Landscaping accords with: (a) SC6.7 Engineering design guidelines – landscape planning scheme policy; and (b) an approved landscape plan.
	AO36.2 Landscaping is designed and established to: (a) an appropriate scale relative to both the road reserve width and to the size and nature of the development; and (b) incorporate remnant vegetation and use endemic species where possible; and (c) provide summer shade and shelter for pedestrian comfort and energy efficiency of buildings; and (d) maximise areas suitable for on-site infiltration of stormwater; and (e) allow for pedestrian and vehicle safety; and

Performance outcomes	Acceptable outcomes
	(f) generate a cohesive and distinct visual character for the streetscape and local area; and (g) thrive in the tropical climate; and (h) minimise irrigation requirements through appropriate plant selection, mulching and water efficient irrigation systems.
PO37 Landscaping visually softens and lowers the glare and heat generated by extensive areas of hardstand.	**AO37** In open car parking areas (not within buildings or covered by shade structures), shade trees are provided between car parks at a rate of 1 shade tree per every 6 car parks.
PO38 Vegetation identified on the Mackay Significant Tree Register is retained to maintain the landscape and streetscape character provided by significant trees.	**AO38** With regards to vegetation listed on the Mackay Significant Tree Register, development : (a) does not damage the roots, trunk or branches of significant vegetation, unless under the direction of an appropriate vegetation management plan; and (b) maintains the visual prominence of, and views to, significant trees from streets and other public places.
Elements in public roads – awnings and street furniture	
PO39 Where required or proposed, footpath awnings (attached or detached): (a) provide high quality pedestrian amenity and visual amenity; and (b) integrate with existing adjoining structures and public realm character; and (c) do not diminish the significant character and value of heritage buildings; and (d) are durable; and (e) do not provide unnecessary obstructions or safety risks in the streetscape.	**AO39** Where required or proposed, footpath awnings: (a) are designed to be consistent with, and make a positive visual contribution to, the streetscape; and (b) have a height from the footpath to the underside of the awning that is: (i) between 3 metres and 4 metres; or (ii) the same or similar to an existing adjoining awning; and (c) are setback a minimum of 300mm from the kerb; and (d) the awning width complies with either of the following: (i) if the distance between the site boundary and the kerb is less than 3.3 metres, the awning extends from the site boundary to 300mm from the kerb; or (ii) if the distance between the site boundary and the kerb is 3.3 metres or more, the awning extends at least 3 metres from the property boundary; and (e) extend for the full length of the road frontage/s; and (f) have a continuous lining or soffit; and

Performance outcomes	Acceptable outcomes
	(g) is constructed of non-combustible materials; and (h) is constructed of weather proof materials and drained to avoid water dripping onto or flowing over the footpath; and (i) is constructed of materials that are durable, easily maintained, do not easily stain, discolour or deteriorate; and (j) has a fascia depth of not more than 600mm; and (k) is of a cantilever design without structural support posts; and (l) where necessary, incorporate street lighting into the design; and (m) provide under awning lighting to illuminate the footpath at night; and (n) if posts are proposed, they are non-load bearing and ornamental to match the existing or intended character of the building or streetscape.
PO40 Streetscape elements are located and designed to reinforce the sense of identity, character and usability of the area.	**AO40** Footpath widths and materials, street furniture (including seats, bollards, grates, grills, screens and fences, bicycle racks, flag poles, banners, bins, telephone booths and drinking fountains), street trees and other landscaping elements: (a) complies with the Engineering design guidelines SC6.7 - Landscape planning scheme policy; and (b) are coordinated with other elements of the streetscape to achieve: (i) visual cohesion and richness without being cluttered; and (ii) clear movement paths and sight lines along footpaths and roads.
Crime prevention through environmental design	
PO41 Premises provide opportunities for informal surveillance of streets, pedestrian and bicycle routes, public open spaces and car parks.	**AO41** Development provides: (a) pedestrian entrances and windows on all levels including ground level that overlook streets, pedestrian and bicycle routes, public open spaces and car parks; and (b) open or translucent fencing (such as pool-style fencing) along boundaries that adjoin existing or proposed useable open space; and (c) no blank building facade is presented to frontages facing streets, pedestrian and bicycle routes, public open spaces and car parks.

Performance outcomes	Acceptable outcomes
PO42 Buildings and street addresses in urban areas are easily identified.	No acceptable outcome prescribed.
PO43 Visibility is provided into stairwells, elevators, car parks, lobby entrances and bicycle parking facilities.	No acceptable outcome prescribed.
PO44 Premises and their surrounds do not include: (a) 'blind' corners (including on stairs, in corridors or other situations where movement can be predicted); and (b) sudden changes of grade on pathways which reduces sightlines; and (c) concealment spots (unless they can be secured after hours); and (d) pedestrian tunnels, excepting that where unimpeded sightlines or the absence of concealment points cannot be reasonably achieved, equipment (such as security mirrors) and good lighting is provided to enhance visibility; and (e) potential concealment areas (i.e. dead-end alleys) are restricted or locked after hours; and (f) where a concealment spot is unavoidable, there are aids to visibility such as convex mirrors and good secure lighting; and (g) concealment spots such as: (i) dark areas adjacent to a main / designated pedestrian routes; and (ii) private dead-end laneways; and (iii) indentation in fencing or walls; and (iv) gaps in the streets such as entrances to interior courtyards and recessed doorways; and (v) areas that are isolated after dark are not located on the premises.	No acceptable outcome prescribed.
PO45 Building entrances: (a) are clearly defined; and (b) are well-lit and face the street; and (c) do not create concealment spots; and (d) provide clear sightlines from the building foyer so that occupants can see outside before leaving the building; and (e) have lobbies visible from the exterior; and (f) have staff entrances, if separate, which are well-lit and maximise opportunities for informal surveillance and for clear sightlines.	No acceptable outcome prescribed.

Performance outcomes	Acceptable outcomes
PO46 Landscaping is designed and maintained to provide informal surveillance and clear sight lines on access ways and to other public spaces.	**AO46** Vulnerable premises[77] provide landscaping designed to promote safety including: (a) planting which does not obscure doors and windows overlooking public spaces and isolated areas; and (b) shrubbery and low-level planting associated with footpaths which does not exceed 0.5 metres in height where abutting pavements; and (c) trees in vulnerable settings which do not have branches below 1.5 metres; and (d) hard landscaping elements such as low fencing and walls (below 1.2 metres) which guide pedestrians and vehicles along designated paths.
PO47 The design of premises provides for unimpeded sightlines, particularly along pedestrian and bicycle routes.	**AO47** All barriers (including landscaping features) along pedestrian and bicycle routes are visually permeable (i.e. can be easily seen through to reduce concealment points).
PO48 Car parking areas are: (a) designed to optimise informal surveillance and illumination, and to minimise unlawful access; and (b) well-lit to enable visibility of all external edges and routes providing access to the car park; and (c) designed to minimise instances of large numbers of cars being co-located (over 100 cars in a single block). If more than 100 cars, more than one entry / exit point is provided so that the car park does not become an entrapment area.	No acceptable outcome prescribed.

[77] "Vulnerable Premises" means:
- activities such as (but not limited to) licensed premises (including taverns, hotels, entertainment venues, licensed clubs, off-premises bottle shops and nightclubs), large entertainment and recreational venues, large institutional uses (e.g. tertiary campuses, hospitals), schools, car parks (50 spaces and greater), public toilets, telephone booths and automatic teller machines;
- premises of agencies used in maintaining social order including police stations, security firms, offices of members of parliament;
- any activity that generates people movement or use at times when there are less than normal business hour levels of formal and/or informal surveillance;
- any activity operating at night-time (after 9:00pm) or over a 24 hour period (eg. automatic teller machines, service stations, institutions or tertiary educational facilities);
- any large scale development considered to have wide ranging safety implications such as (but not limited to) major shopping centres.

Performance outcomes	Acceptable outcomes
PO49 Underpasses and overpasses are designed and located to reduce opportunities for crime, so that: (a) pedestrians are able to see what is in an underpass or tunnel and at the end of it before entering; and (b) signs at each end of an underpass indicate where it leads and an alternative route to use at night.	No acceptable outcome prescribed.
PO50 Underpasses are wide enough to accommodate both pedestrian and cycle traffic.	**AO50** Underpass width complies with the provisions of AUSTROADS Guide to Traffic Engineering Practice Part 14- Bicycles.
PO51 The design and location of laneways and alleyways promotes community safety.	**AO51.1** Laneways are straight and have more than one entrance.
	AO51.2 Unnecessary access to buildings from laneways is avoided.
PO52 Buildings contribute positively to the enhancement of public safety and security.	**AO52.1** Ramps and elevator entrances are located in areas which are not isolated.
	AO52.2 Lifts are located within a secure entrance, and incorporate graffiti and vandal-resistant measures (i.e. a fully glazed and enclosed vestibule area at the exit to the lifts).
	AO52.3 Loading and storage areas are well-lit or can be locked after hours.
	AO52.4 Parking spaces are allocated near the building entry for employees working after hours.
	AO52.5 Enclosed or underground car parks can only be accessed from inside the building or through a security system.

Performance outcomes	Acceptable outcomes
	AO52.6 All windows, particular those at street level are secure, without creating a 'fortress-like' appearance (i.e. avoid solid roller shutters or bars).
PO53 Lighting is provided which: (a) increases safety and security in and around the site; and (b) considers vegetation, in both its existing and mature forms, or other elements that may have the potential to block out light; and (c) illuminates inset spaces, access / egress routes car parking areas and signage; and (d) supports visibility for pedestrians, as well as road users.	**AO53.1** Security lighting is consistent with *Australian Standard AS4282 The Control of Obtrusive Effects of Outdoor Lighting*.
	AO53.2 Lighting of pedestrian and bicycle movement routes, public spaces and outdoor signage in public spaces is consistent with *Australian Standard AS/NZS1158 Public Lighting Code*.

Table 9.4.1.3.B – General development requirements code – minimum relevant vehicle size and car and bicycle parking rates

Note: Parking requirements must be calculated to one decimal place. Where the decimal place is equal to or greater than 0.1 the number is rounded up. For example:
(i) Total = 12.5 (round up to 13); or
(ii) Total = 15.1 (round up to 16).

Note: Relevant vehicle size is taken from Australian Standard AS/NZS2890 and are defined / abbreviated as follows:
(i) B99 – Vehicles with physical dimensions at the 99.8th percentile of all cars, utes, light vans and 4 wheel drive vehicles
(ii) SRV – Small rigid vehicle
(iii) HRV – Heavy rigid vehicle
(iv) AV – Articulated vehicle

Use	Car parking rate	Relevant vehicle size	Bicycle parking rate
All sites other than sites within the Mackay city centre local plan area			
Adult store	1 space per 25m^2 of gross floor area.	• Car parks – B99 • Service area – demonstration of required vehicle	1 space per 250m^2 of gross floor area.
Agricultural supplies store	1 space per 25m^2 of gross floor area.	• Car parks – B99 • Service area/s – HRV	Not applicable.
Air services	Sufficient spaces are provided to accommodate the amount of vehicular traffic likely to be generated by the use.	• Car parks – B99 • Service area/s – HRV	Not applicable.
Animal husbandry	• 1 space per employee – full time equivalent (FTE); • provision for unloading and loading of goods including livestock within the site.	AV	Not applicable.
Animal keeping	• 1 space per employee (FTE); • 1 space for every 10 animals able to be accommodated on the premises (minimum of 2 spaces).	• Car parks – B99 • Service area/s – SRV	Not applicable.
Aquaculture	• 1 space per employee (FTE); • provision for loading and unloading of goods within the site.	AV	Not applicable.

Use	Car parking rate	Relevant vehicle size	Bicycle parking rate
Brothel	Sufficient spaces are provided to accommodate the amount of vehicular traffic likely to be generated by the use.	B99	No bicycle parking rate specified.
Bulk landscape supplies	1 space per 400m² of site area.	• Car parks – B99 • Service area/s – HRV	No bicycle parking rate specified.
Car wash	1 space per 100m^2 of gross floor area.	B99	No bicycle parking rate specified.
Caretaker's accommodation	1 covered space.	B99	Not applicable.
Cemetery	30 visitor spaces	• Car parks – B99 • Service area/s – SRV	No bicycle parking rate specified.
Child care centre	• 1 space per employee (FTE); • 1 space per 10 children able to be accommodated.	B99	1 space per 250m^2 of gross floor area.
Club	1 space per 50m^2 of gross floor area.	• Car parks – B99 • Service area – demonstration of required vehicle	1 space per 200m^2 of gross floor area.
Community care centre	• 1 space per employee (FTE); • 3 visitor spaces.	B99	No bicycle parking rate specified.
Community residence	• 2 spaces(including 1 space for resident support services).	B99	No bicycle parking rate specified.
Community use	1 space per 50m^2 of gross floor area.	B99	1 space per 200m^2 of gross floor area.
Correctional facility	Sufficient spaces are provided to accommodate the amount of vehicular traffic likely to be generated by the use.	• Car parks – B99 • Service area – demonstration of required vehicle	No bicycle parking rate specified.
Crematorium	• 1 space per employee (FTE); • 1 space for every 3 people able to be accommodated in the funeral chapel, parlour or columbarium.	• Car parks – B99 • Service area/s – SRV	No bicycle parking rate specified.

Use	Car parking rate	Relevant vehicle size	Bicycle parking rate
Dual occupancy	2 spaces per dwelling unit (of which 1 space must be covered). Spaces may be in tandem for each dwelling unit.	B99	Not applicable.
Dwelling house	2 spaces (of which 1 space must be covered). Spaces may be in tandem.	B99	Not applicable.
Dwelling unit	• 1 space per unit containing 1 or 2 bedrooms; or • 2 spaces per unit containing 3 or more bedrooms.	B99	Not applicable.
Educational establishment	• where involving a primary or secondary school: (i) 1 space per 10 students; and (ii) 1 space per employee (FTE); • where involving tertiary education: (i) 1 space per 5students; and (ii) 0.5 spaces per employee (FTE).	• Car parks – B99 • Service area/s – HRV	• where involving a primary or secondary school, 1 space per 10 students; • where involving tertiary education, 1 space per 25 students.
Emergency services	• 1 space per employee (FTE) per shift; • 3 visitor spaces.	• Car parks – B99 • Service area/s – demonstration of required vehicle	No bicycle parking rate specified.
Extractive industry	• 1 space per employee (FTE); • 2 visitor spaces.	AV	No bicycle parking rate specified.
Food and drink outlet	• where located in a major centre, district centre or local centre – 1 space per 20m^2 of gross floor area; or • where not located within a centre – 1 space per 15m^2 of gross floor area.	• Car parks – B99 • Service area/s – SRV	1 space per 250m^2 of gross floor area.

Use	Car parking rate	Relevant vehicle size	Bicycle parking rate
Function facility	1 space per 20m^2 of gross floor area or 0.4 spaces per patron[78] whichever is the greater.	• Car parks – B99 • Service area/s – SRV	No bicycle parking rate specified.
Funeral parlour	• 1 space per 20m^2 of gross floor area; • 1 space per 3 chapel seats.	• Car parks – B99 • Service area/s – SRV	No bicycle parking rate specified.
Garden centre	• 1 space per 25m² of gross floor area of sales area; • 1 space per 200m² of nursery site area.	• Car parks – B99 • Service area/s – SRV	No bicycle parking rate specified.
Hardware and trade supplies	1 space per 25m^2 of gross floor area.	• Car parks – B99 • Service area/s – HRV	No bicycle parking rate specified.
Health care services	1 space per 20m^2 of gross floor area.	B99	1 space per 250m^2 of gross floor area.
High impact industry	• 1 space per 100m^2 of gross floor area; • 1 heavy vehicle space per 5,500m^2 of total use area	• Car parks – B99 • Service area/s – AV	No bicycle parking rate specified.
Home based business	• Where involving a uses that does not involve visitation by customers / clients, 1 space[79]; • where involving a home based business other than bed and breakfast accommodation or farm stay, 2 spaces[79]; • where involving bed and breakfast accommodation or farm stay, 1 space per guest bedroom[79].	B99	Not applicable.

[78] "Patron" includes any person who attends the facility for an event. Therefore, patrons can include spectators, delegates, sporting competitors, performers, officials, employees and other types of participants.

[79] The car parks required for home based business are in addition to car parks associated with the principal dwelling house.

Use	Car parking rate	Relevant vehicle size	Bicycle parking rate
Hospital	• 0.25 spaces per bed; • 1 space per employee (FTE) per shift; • 1 emergency vehicle space per 50 beds.	• Car parks – B99 • Service area/s – demonstration of required vehicle	No bicycle parking rate specified.
Hotel	• 1 space per 25m^2 of licensed area; • 1 space per accommodation unit for the first 40 units and then 1 space per 2 accommodation units for the remainder; or • for a serviced unit containing kitchen and/or laundry facilities: (i) 1 space per unit containing 1 bedroom; or (ii) 1.5 spaces per unit containing 2 or more bedrooms. *Note: In the case of a development that includes "dual key" units, each individual keyed unit is counted as one unit for the purposes of calculating car parking spaces ("dual key" means adjoining units that can function as 2 or more separate rooming units or can be joined together to form larger unit).*	• Car parks – B99 • Service area/s – SRV	1 space per 250m^2 of gross floor area of licensed area.

Use	Car parking rate	Relevant vehicle size	Bicycle parking rate
Indoor sport and recreation	• Generally: (a) 1 space per 15m^2; (b) 1 space per employee (FTE) (c) 1 bus space; • Where involving: (a) bowling alley, 4 spaces per lane.	• Car parks – B99 • Service area/s – demonstration of required vehicle	1 space per 250m^2 of gross floor area.
Intensive animal industry	• 1 space per employee (FTE); • provision for loading and unloading of goods / livestock.	• Car parks – B99 • Service area/s – demonstration of required vehicle	Not applicable.
Intensive horticulture	• 1 space per employee (FTE); • provision for loading and unloading of goods.	• Car parks – B99 • Service area/s – demonstration of required vehicle	Not applicable.
Low impact industry	• 1 space per 25m^2 of gross floor area; • 1 heavy vehicle space per 2,000m^2 of total use area.	• Car parks – B99 • Service area/s – HRV	1 space per 250m^2 of gross floor area.
Major sport, recreation and entertainment facility	Sufficient spaces are provided to accommodate the amount of vehicular traffic likely to be generated by the use.	• Car parks – B99 • Service area/s – demonstration of required vehicle	No bicycle parking rate specified.
Marine industry	• 1 space per employee (FTE); • 1 visitor space for each activity on the premises (minimum of 5 spaces); • 1 space per 400m^2 gross floor area of warehouse space; • provision for loading and unloading of goods.	• Car parks – B99 • Service area/s – demonstration of required vehicle	No bicycle parking rate specified.
Market	8 spaces per 100m^2 of stall area.	• Car parks – B99 • Service area/s – SRV	No bicycle parking rate specified.

Use	Car parking rate	Relevant vehicle size	Bicycle parking rate
Medium impact industry	• 1 space per 100m^2 of gross floor area; • 1 heavy vehicle space per 2,000m^2 of total use area.	• Car parks – B99 • Service area/s – HRV	No bicycle parking rate specified.
Motor sport facility	Sufficient spaces are provided to accommodate the amount of vehicular traffic likely to be generated by the use.	• Car parks – B99 • Service area/s – demonstration of required vehicle	No bicycle parking rate specified.
Multiple dwelling	• 1 space per unit containing 1 or 2 bedrooms; or • 1.5 spaces per unit containing 3 or more bedrooms; • 0.2 visitor spaces per unit.	B99	1 space per unit.
Nightclub entertainment facility	1 space per 25m^2 of gross floor area.	• Car parks – B99 • Service area/s – SRV	No bicycle parking rate specified.
Non-resident workforce accommodation	1 space per unit.	B99	No bicycle parking rate specified.
Office	1 space per 30m^2 of gross floor area.	B99	1 space per 250m^2 of gross floor area.
Outdoor sales	1 space per 400m^2 of site area.	• Car parks – B99 • Service area/s – AV	No bicycle parking rate specified.
Outdoor sport and recreation	Sufficient spaces are provided to accommodate the amount of vehicular traffic likely to be generated by the use.	• Car parks – B99 • Service area/s – demonstration of required vehicle	No bicycle parking rate specified.
Place of worship	1 space per 6 seats.	B99	No bicycle parking rate specified.

Use	Car parking rate	Relevant vehicle size	Bicycle parking rate
Port services	• Where involving a marina: (a) 1 space per employee (FTE); (b) 1 space for each wet berth; (c) spaces for ancillary activities at rates equivalent to that required for the type of use specified in this table; (d) provision for loading and unloading of goods.	• Car parks – B99 • Service area/s – demonstration of required vehicle	No bicycle parking rate specified.
Relocatable home park	• 1 space per relocatable home; • 0.25 visitor spaces per relocatable home.	B99	No bicycle parking rate specified.
Renewable energy facility	Sufficient spaces are provided to accommodate the amount of vehicular traffic likely to be generated by the use.	HRV	No bicycle parking rate specified.
Research and technology industry	• 1 space per 25m^2 of gross floor area; • 1 heavy vehicle space per 2,000m^2 of total use area.	• Car parks – B99 • Service area/s – HRV	No bicycle parking rate specified.
Residential care facility	• 1 space per 6 nursing home beds; • 1 visitor space per 4 nursing home beds; • 1 bus parking area/emergency vehicle parking / drop off area (located to provide optimum access to all units/beds).	• Car parks – B99 • Service area/s – SRV	No bicycle parking rate specified.

Use	Car parking rate	Relevant vehicle size	Bicycle parking rate
Resort complex	• where located on the mainland: • 0.5 spaces per employee (FTE); • 1 space per accommodation unit for the first 30 units and then 1 space per 2 accommodation units for the remainder. *Note: In the case of a development that includes "dual key" units, each individual keyed unit is counted as one unit for the purposes of calculating car parking spaces ("dual key" means adjoining units that can function as 2 or more separate rooming units or can be joined together to form larger unit).*	• Car parks – B99 • Service area/s – demonstration of required vehicle	No bicycle parking rate specified.
Retirement facility	• 0.25 spaces per rooming accommodation type rooming unit; • 1 covered space per self-contained unit; • 0.25 visitor spaces per rooming unit or self-contained unit; • 1 bus parking area / emergency vehicle parking/drop off area (located to provide optimum access to all units/beds).	• Car parks – B99 • Service area/s – SRV	No bicycle parking rate specified.
Roadside stall	Minimum of 3 spaces.	B99	No bicycle parking rate specified.

Use	Car parking rate	Relevant vehicle size	Bicycle parking rate
Rooming accommodation	• 0.5 spaces per unit; • 0.25 visitor spaces per unit; • 1 space for an on-site manager (if applicable).	B99	No bicycle parking rate specified.
Rural industry	• 1 space per employee (FTE); • 2 visitor spaces; • provision for loading and unloading of goods.	• Car parks – B99 • Service area/s – demonstration of required vehicle	No bicycle parking rate specified.
Rural workers accommodation	1 covered space.	B99	Not applicable.
Sales office	• 1 space per employee (FTE); • 2 visitor spaces per sales office / display dwelling.	B99	No bicycle parking rate specified.
Service industry	1 space per 25m^2 of gross floor area.	• Car parks – B99 • Service area/s – SRV	1 space per 250m^2 of gross floor area.
Service station	• 1 space per 25m^2 of gross floor area for the shop/food and drink outlet component; • 4 spaces per car repair bay if containing a car repair workshop.	• Car parks – B99 • Service area/s – AV	1 space per 250m^2 of gross floor area.
Shop	• where located in a major centre, district centre or local centre – 1 space per 20m^2 of gross floor area. • where not located within a centre – 1 space per 15m^2 of gross floor area.	• Car parks – B99 • Service area/s – demonstration of required vehicle	1 space per 250m^2 of gross floor area.
Shopping centre	1 space per 20m^2 of gross floor area.	• Car parks – B99 • Service area/s – demonstration of required vehicle	1 space per 250m^2 of gross floor area.

Use	Car parking rate	Relevant vehicle size	Bicycle parking rate
Short-term accommodation	• 0.5 spaces per employee (FTE); and • 1 space per accommodation unit for the first 40 units and then 1 space per 2 accommodation units for the remainder; or • for a serviced unit containing kitchen and/or laundry facilities: (iii) 1 space per unit containing 1 or 2 bedrooms; or (iv) 1.5 spaces per unit containing 3 or more bedrooms. *Note: In the case of a development that includes "dual key" units, each individual keyed unit is counted as one unit for the purposes of calculating car parking spaces ("dual key" means adjoining units that can function as 2 or more separate rooming units or can be joined together to form larger unit).*	• Car parks – B99 • Service area/s – SRV	No bicycle parking rate specified.
Showroom	1 space per 40m^2 of gross floor area.	• Car parks – B99 • Service area/s – AV	1 space per 250m^2 of gross floor area.
Special industry	• 1 space per 100m^2 of gross floor area; • 1 heavy vehicle space per 2,000m^2 of total use area.	• Car parks – B99 • Service area/s – AV	No bicycle parking rate specified.
Substation	1 space per 25m^2 of gross floor area.	• Car parks – B99 • Service area/s – demonstration of required vehicle	Not applicable.

Use	Car parking rate	Relevant vehicle size	Bicycle parking rate
Telecommunications facility	1 space.	• Car parks – B99 • Service area/s – demonstration of required vehicle	Not applicable.
Theatre	1 space per 25m² of gross floor area.	• Car parks – B99 • Service area/s – SRV	1 space per 250m^2 of gross floor area.
Tourist attraction	Sufficient spaces are provided to accommodate the amount of vehicular traffic likely to be generated by the use.	• Car parks – B99 • Service area/s – demonstration of required vehicle	No bicycle parking rate specified.
Tourist park	• 1 space per caravan site, campsite or holiday cabin; • 0.25 visitor spaces per caravan site or campsite or holiday cabin (to be located near kiosk/reception area).	• Minimum area – 14m^2 • Minimum dimensions – 3 metres x 5.5 metres • Minimum turning radius – 5.7 metres	No bicycle parking rate specified.
Transport depot	• 1 space per employee (FTE); • 1 space per 100m^2 of gross floor area; • 1 visitor space per 15m^2 gross floor area of office space (minimum of 2 spaces).	• Car parks – B99 • Service area/s – AV	No bicycle parking rate specified.
Veterinary services	1 space per 25m^2 of gross floor area.	• Car parks – B99 • Other area/s – SRV	No bicycle parking rate specified.
Warehouse	• 1 space per 100m^2 of gross floor area; • 1 heavy vehicle space per 2,000m^2 of total use area.	• Car parks – B99 • Other area/s – HRV	No bicycle parking rate specified.
Wholesale nursery	1 space per 100m² of site area.	• Car parks – B99 • Other area/s – HRV	No bicycle parking rate specified.
All sites within the Mackay city centre local plan area			
Certain uses	Refer to 7.2 Mackay city centre local plan	Refer to 7.2 Mackay city centre local plan	Refer to 7.2 Mackay city centre local plan

9.4.2 Healthy waters code

9.4.2.1 Application

This code applies to assessing the following types of development:

(1) For stormwater management and management of new or expanded non-tidal artificial waterways, the policy applies to development that is:

(a) material change of use for urban purposes that involves a land area greater than 2,500m^2 that:

(i) will result in an impervious area greater than 25% of the net developable area,; or
(ii) will result in 6 or more dwellings; or

(b) reconfiguring a lot for urban purposes that involves a land area greater than 2,500m2 and will result in 6 or more lots or that provides for 6 or more dwellings; or

(c) operational work for urban purposes that involve disturbing more than 2,500m2 of land.

(2) For waste water management (other than contaminated stormwater and sewage), the policy applies to development that is industrial or commercial development that is:

(a) a material change of use for urban purposes involving waste water discharge; or

(b) reconfiguring a lot for urban purposes involving waste water discharge; or

(c) operational works for urban purposes involving waste water discharge.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.4.2.2 Purpose

(1) The purpose of the Healthy waters code is to ensure that development including community infrastructure is planned, designed, constructed and operated to manage stormwater and waste water in ways that help protect the water environmental values specified in the *Environmental Protection (Water) Policy 2009* (EP water policy).

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) impacts arising from altered stormwater quality and flow are avoided or minimised by providing for development and construction activities in accordance with acceptable design objectives; and

(b) development impacts of waste water other than contaminated stormwater are avoided or minimised; and

(c) development impacts arising from the creation or expansion of non-tidal constructed lakes are avoided or minimised.

9.4.2.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.4.2.3.A – Healthy waters code – assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Urban stormwater management	
PO1 The development is compatible with the land use constraints of the site for achieving stormwater design objectives.	**AO1.1** The nature, design, and stormwater management of the development is in accordance with design objectives stated in SC6.6 Engineering design guideline – healthy waters planning scheme policy.
	AO1.2 A site stormwater quality management plan (SQMP) is provided and demonstrates the following: (a) consistency with any local area stormwater water management planning; and (b) achievable stormwater quality treatment measures reflecting land use constraints, such as soil type, landscape features (including landform), nutrient hazardous areas, acid sulfate soil, and rainfall erosivity.
PO2 The entry of contaminants into, and transport of contaminants, in stormwater is avoided or minimised.	**AO2.1** The following is demonstrated: (a) stormwater management measures to achieve relevant design objectives outlined in SC6.6 Engineering design guideline – healthy waters planning scheme policy; and (b) management of nutrients of concern and acid sulfate soils.
	AO2.2 The site SQMP: (a) accounts for development type, construction phase, local landscape, climatic conditions and design objectives in accordance with the guideline; and (b) is consistent with the Queensland Acid Sulfate Soil Technical Manual.

Performance outcomes	Acceptable outcomes
PO3 Construction activities for the development avoid or minimise adverse impacts on stormwater quality.	**AO3.1** An erosion and sediment control plan (ESCP) is provided and demonstrates the following: (a) consistency with SC6.6 Engineering design guideline – healthy waters planning scheme policy; and (b) the release of sediment laden stormwater is avoided in a DFE[80]; and (c) the release of sediment laden stormwater is minimised when the DFE is exceeded by addressing design objectives[81] in SC6.6 Engineering design guideline – healthy waters planning scheme policy, for: (i) drainage control; and (ii) erosion control; and (iii) sediment control; and (iv) water quality outcomes.
	AO3.2 Either of the following is demonstrated: (a) Erosion and sediment control practices (ESCP) including any proprietary erosion and sediment control products[82] are designed, installed, constructed, operated, monitored and maintained, and any other erosion and sediment control practices are carried out, in accordance with local conditions and appropriate recommendations from a suitably qualified person; or (b) ESCP demonstrate how stormwater quality will be managed in accordance with an acceptable regional or local guideline so that target contaminants are treated to a design objective at least equivalent to AO3.1.
PO4 Construction and operation activities for the development avoid or minimise changes to waterway hydrology from adverse impacts of altered stormwater quality and flow.	**AO4.1** Development incorporates stormwater flow control measures to achieve at least the design objectives set out in SC6.6 Engineering design guideline – healthy waters planning scheme policy.
	AO4.2 Both the construction and operational phases for the development comply with advice and the design objectives in SC6.6 Engineering design guideline – healthy waters planning scheme policy including management of frequent flows, peak flows, and construction phase hydrological impacts.

80 "DFE" – defined flood event – is the 1% AEP flood event plus climate change factor.

81 Addressing the design objectives may include enhancing the achievement of some objectives if achievement of other objectives is impractical.

82 Such as SQID (stormwater quality intervention device) and flocculation products.

Performance outcomes	Acceptable outcomes
Point source waste water management (other than contaminated stormwater and sewage)	
PO5 Development does not discharge waste water to a waterway or external to the site unless demonstrated to be best practice environmental management for that site.	**AO5.1** A waste water management plan (WWMP) prepared by a suitably qualified person is provided and accounts for the following: (a) waste water type; and (b) climatic conditions; and (c) water quality objectives; and (d) best practice environmental management.
	AO5.2 The WWMP demonstrates that waste water will be managed in accordance with a waste management hierarchy that: (a) avoids waste water discharge to waterways; or (b) if waste water discharge to waterways cannot practicably be avoided, minimises waste water discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water and groundwater.
PO6 Any treatment and disposal of waste water to a waterway maintains the water quality of receiving waters and ecological values of the area.	**AO6** The WWMP accounts for the following: (a) the applicable water quality objectives for the receiving waters; and (b) adverse impact on ecosystem health or receiving waters; and (c) in waters mapped as being of high ecological value, the adverse impacts of such releases and their offset[83].
PO7 Waste water discharge to a waterway from nutrient hazardous areas or acid sulfate soil areas is managed in a way that maintains ecological processes, riparian vegetation, waterway integrity, and downstream ecosystem health.	**AO7.1** Waste water discharge to waterways is managed to avoid or minimise the release of nutrients of concern so as to minimise the occurrence, frequency and intensity of coastal algal blooms.
	AO7.2 Development in coastal catchments avoids, or minimises and appropriately manages soil disturbance or altering natural hydrology in nutrient hazardous areas and acid sulfate soil areas by complying with the management advice in the Implementing Policies and Plans for Managing Nutrients of Concern for Coastal Algal Blooms in Queensland and associated technical guideline.

[83] Consistent with the principles of the Queensland Government's Environmental Offsets Policy and agency advice in Waste water discharge to aquatic environments. See section 5 of the guideline.

Performance outcomes	Acceptable outcomes
	AO7.3 Development in coastal catchments: (a) avoids lowering groundwater levels where potential or actual acid sulfate soils are present; and (b) manages waste waters so that: (i) the pH of any waste water discharged is maintained between 6.5 and 8.5 to avoid mobilisation of acid, iron, aluminium, and metals[84]; and (ii) holding times of neutralised waste waters ensures the flocculation and removal of any dissolved iron prior to release; and (iii) visible iron floc is not present in any discharge; and (iv) precipitated iron floc is contained and disposed of; and (v) waste water and precipitates that cannot be contained and treated for discharge on site are removed and disposed of through trade waste or another lawful method.
Constructed lakes	
PO8 The constructed lake is not designed only for stormwater flow management or stormwater quality management.	**AO8.1** The constructed lake is designed in accordance with SC6.3 Engineering design guideline – constructed lakes planning scheme policy.
	AO8.2 The constructed lake has an end use purpose that is: (a) one or a combination of the following: (i) amenity including aesthetics, landscaping, and recreation; and (ii) flood management; and (iii) stormwater harvesting as part of an integrated water cycle management plan; and (iv) aquatic habitat; and (b) designed and operated in a way that protects water environmental values.
PO9 The constructed lake is located in a way that is compatible with the land use constraints of the site for protecting water environmental values in existing natural waterways.	**AO9.1** Constructed lakes are located: (a) outside natural wetlands and any associated buffer areas; and (b) to avoid disturbing soils or sediments; and (c) to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazardous areas.

[84] Except where natural pH is below this range. In such cases, release of untreated wastewater may be inappropriate due to naturally acidic waters, different forms of acidity and presence of dissolved metals in waste waters.

Performance outcomes	Acceptable outcomes
	AO9.2 Where relevant: (a) environmental values in downstream waterways are protected; and (b) any groundwater recharge areas are not affected; and (c) the location of the constructed lake incorporates low lying areas of a catchment connected to an existing waterway; and (d) any existing areas of ponded water are included.
PO10 The constructed lake is located in a way that is compatible with existing tidal waterways.	**AO10** Where the constructed lake is located adjacent to, or connected to, a tidal waterway by means of a weir, lock, pumping system or similar: (a) there is sufficient flushing or a tidal range of >0.3 metres; and (b) any tidal flow alteration does not adversely impact on the tidal waterway; and (c) there is no introduction of salt water into freshwater environments.
PO11 The construction phase for the constructed lake is compatible with protecting water environmental values in existing natural waterways.	**AO11** Erosion and sediment control measures are incorporated during construction to achieve design objectives set out in SC6.6 Engineering design guideline – healthy waters planning scheme policy.
PO12 Stormwater overflows from the waterway provide for the achievement of water quality objectives in existing natural waterways.	**AO12** Stormwater run-off that may enter the constructed lake is pre-treated in accordance with the guideline design objectives, water quality objectives of local waterways, and any relevant local area stormwater management plan.
PO13 The constructed lake is designed, managed and operated by suitably qualified persons.	**AO13.1** The design of a constructed lake complies with SC7.2 Engineering design guideline – constructed lakes planning scheme policy.
	AO13.2 In order to achieve water quality objectives in and downstream of the waterway, the constructed lake is designed, constructed and managed under the responsibility of a suitably qualified Registered Professional Engineer of Queensland (RPEQ) with specific experience in establishing and managing constructed lakes.
PO14 The constructed lake is managed and operated in ways that demonstrate achievement of water quality objectives in natural waterways.	**AO14.1** Monitoring and maintenance programs adaptively manage water quality in the waterway to achieve relevant water quality objectives downstream of the waterway.

Performance outcomes	Acceptable outcomes
	AO14.2 Aquatic weeds are managed in ways that achieve a low percentage of coverage of the water surface area (less than 10%). Pests and vectors (such as mosquitoes) are managed such as by avoiding stagnant water areas, providing for native fish predators, and, if necessary, other best practices for monitoring and treating pests.
	AO14.3 The constructed lake is managed and operated by a responsible entity[85] under agreement for the life of the lake. The responsible entity is to implement a deed of agreement for the management and operation of the waterway that: (a) identifies the waterway; and (b) states a period of responsibility for the entity for the management and operation of the waterway; and (c) states a process for any transfer of responsibility for the waterway; and (d) states required actions under the agreement for monitoring of the water quality of the waterway and receiving waters; and (e) states required actions under the agreement for maintaining the waterway to achieve the outcomes of this policy and any relevant approval conditions of the development; and (f) identifies funding sources for the above including bonds, headworks charges or levies.

[85] Responsible entity means that there is a clear chain of management responsibility.

9.4.3 Reconfiguring a lot code

9.4.3.1 Application

This code applies to assessing reconfiguring a lot development other than reconfiguring a lot development to which the statewide code – Reconfiguring a lot (subdividing one into two lots) and associated operational work code applies.

When using this code, reference should be made to section 5.3.2 and, where applicable, section 5.3.3 located in Part 5.

9.4.3.2 Purpose

(1) The purpose of the Reconfiguring a lot code is to ensure that reconfiguring a lot development provides:

- (a) diverse, accessible, sustainable and liveable residential neighbourhoods; and
- (b) accessible and efficiently serviced industrial areas; and
- (c) lots with high levels of usability and amenity for the intended use.

(2) The purpose of the code will be achieved through the following overall outcomes:

- (a) reconfigured lots creating new residential neighbourhoods, or extending / infilling existing residential neighbourhoods:
  - (i) enable a diversity of land uses and dwelling products; and
  - (ii) provide high levels of connectivity for vehicles, public transport, cyclists and pedestrians; and
  - (iii) physically and visually integrate with surrounding neighbourhoods; and
  - (iv) provide an integrated network of open space corridors and areas; and
  - (v) provide high quality amenity and a strong sense of identity; and
- (b) reconfigured lots creating new industrial areas, or extending / infilling existing industrial areas provide:
  - (i) a connective access network suitable for industrial traffic; and
  - (ii) highly usable lots suitable for a range of industrial uses; and
- (c) lots are efficiently serviced by all forms of infrastructure including trunk infrastructure; and
- (d) lots are accessible, have a size and dimensions appropriate to the intended use, maintain the amenity of adjoining lots and the surrounding area and enhance the functionality of adjoining roads and existing buildings.

9.4.3.3 Assessment criteria

Part A – Criteria for assessable development

Table 9.4.3.3.A – Reconfiguring a lot code – assessable development

Performance outcomes	Acceptable outcomes
Assessable development	
Neighbourhood design and access network – residential neighbourhoods	
PO1 The reconfigured lots achieve the outcomes sought by detailed planning over the site.	**AO1** The reconfigured lots achieve / provide for the outcomes sought by: (a) the relevant zone code; and (b) any relevant local plan; and (c) any approved development framework plan; and (d) road hierarchy overlay; and (e) Council's Open space planning scheme policy; and (f) trunk infrastructure in accordance with the priority infrastructure plan.
PO2 Reconfiguring a lot primarily for the purpose of facilitating residential development within the Emerging community zone or Low density residential zone: (a) where involving medium to large scale development (developments creating 15 or more additional lots), neighbourhoods characterised by the following are created: (i) a diversity of uses that are compatible with residential development, in order to promote neighbourhood self-containment for local functions; and (ii) a diversity of types of residential development including a good proportion of lots at higher densities, or lots intended to facilitate higher density residential development; and (iii) an access network that provides high levels of connectivity, public transport access and walkability; and (iv) integration with surrounding neighbourhoods; and (v) an integrated network of open space corridors and areas; and (vi) a high level of visual and general amenity and a strong sense of identity; or	**AO2.1** Local centres, neighbourhood centres and community activities (particularly educational establishments, emergency services, child care centres and community uses) are provided: (a) generally in accordance with the location identified in a relevant local plan and/or approved development framework plan; and (b) on a sub-arterial road or collector street at a central point in the neighbourhood. **AO2.2** Reconfiguration of a lot developments within the Emerging community zone or Low density residential zone utilise land identified for urban development efficiently and achieve lot diversity through: (a) provision of a diverse mix of lot types; and (b) for developments involving the creation of 5 or more additional lots, a net dwelling density[86] of 12 dwellings per hectare is provided; and (c) for developments involving the creation of 50 or more additional lots a minimum of 15 percent of future dwellings at a higher density is provided for (through the creation of residential lots with an area of 500m^2 or less or the identification of sites for multiple dwelling activities / dual occupancies).

[86] "Net dwelling density" is defined in Schedule 1.

Performance outcomes	Acceptable outcomes
(b) where involving a smaller scale neighbourhood extension or infill development (developments creating 14 or less additional lots), the development: (i) achieves the characteristics listed in (a); or (ii) contributes towards achieving the characteristics listed in (a) over the surrounding area; and (c) ensures cul-de-sacs provide connectivity and permeability, particularly for pedestrian and cycling movement, within neighbourhoods and do not create dead-ends within neighbourhoods.	**AO2.3** Where provided, higher density residential development is located within one or a combination of the following: (a) 1.5 kilometres of land zoned Principal centre; or (b) 800 metres of land zoned Major centre or District centre; or (c) 800 metres of the CQ University campus, Base Hospital or Mater Hospital; or (d) 400 metres of land zoned Local centre; or (e) 200 metres of an existing centre activity of community activity; or (f) 200 metres of an existing public transport route or usable open space.
	AO2.4 The street network: (a) is based on a legible hierarchical pattern that promotes ease of orientation, way-finding and movement for vehicles, cyclists and pedestrians; and (b) includes a centralised and efficient public transport route/s through the site; and (c) responds to topography and minimise the need for earthworks; and (d) aligns with vistas to prominent natural or built form landmarks within, or visible from the site; and (e) adjoins open space corridors and areas; and (f) avoids areas of ecological significance.
	AO2.5 The alignment of public transport routes are designed so that 90% of lots are within 400 metres of a public transport route.
	AO2.6 New roads connect with discontinued roads adjoining the site.
	AO2.7 Street lengths between intersections ('T' intersections, 4-way intersections or other types of intersections) do not extend for more than 200 metres.
	AO2.8 Streets are designed in accordance with: (a) SC6.5 Engineering design guidelines – geometric road design planning scheme policy; and (b) SC6.8 Engineering design guidelines – pavement design planning scheme policy; and (c) Council's standard cross sections.

Performance outcomes	Acceptable outcomes
	AO2.9 Cul-de-sacs are only provided if they comply with the following: (a) provide connectivity, particularly for pedestrian and cycling movement, within the neighbourhood; and (b) at the end of the cul-de-sac, connections with a direct line of sight are provided to the through-streets for pedestrians and cyclists; and (c) maximum cul-de-sac length is 150 metres; and (d) the end of the cul-de-sac is visible from its entrance.
	AO2.10 In reconfiguration of a lot developments involving the creation of more than 50 additional lots, the majority of lots with an area of less than 300m^2 have a primary road frontage and frontage to a rear laneway. The rear laneway: (a) is provided as a through road, not a cul-de-sac; and (b) provides vehicle access to residential lots.
	AO2.11 A network of pedestrian and bicycle routes: (a) is provided along streets in accordance with Council's standard road cross-sections; and (b) is provided along open space corridors; and (c) connects key focal points in the local area such as centres, community activities, public transport interchanges and open spaces; and (d) provides linkages to important focal points beyond the local area, and contributes toward the provision of regional pedestrian and bicycle routes.
	AO2.12 Open space corridors and areas are provided: (a) in accordance with Council's SC6.16 Open space planning scheme policy; and (b) to ensure natural drainage lines are protected in public ownership.

Performance outcomes	Acceptable outcomes
Access network – industrial areas	
PO3 Reconfiguring a lot primarily for the purpose of facilitating industrial development provide: (a) an access network: (i) with high levels of connectivity within the site and external to the site; and (ii) that is suitable for use by heavy and general vehicles; and (b) regular shaped lots with an area and dimensions suitable for the intended industrial use.	**AO3.1** The street network: (a) is based on a legible hierarchical pattern; and (b) facilitates a centralised and efficient public transport route/s.
	AO3.2 New roads connect with discontinued roads adjoining the site.
	AO3.3 Streets are designed in accordance with: (a) SC6.5 Engineering design guidelines – geometric road design planning scheme policy; and (b) SC6.8 Engineering design guidelines – pavement design planning scheme policy; and (c) Council's standard cross sections.
	AO3.4 Cul-de-sacs are avoided in industrial areas.
	AO3.5 A network of pedestrian and bicycle routes are provided along streets throughout the industrial area in accordance with Council's standard cross sections.
Infrastructure services	
PO4 Reconfigured lots are serviced by all forms of infrastructure: (a) in an economically efficient manner; and (b) with minimal environmental impacts.	No acceptable outcome prescribed.
PO5 Reticulated utility infrastructure is provided along public roads, public reserves and other forms of publicly owned land, rather than within privately owned lots.	No acceptable outcome prescribed.
PO6 Development provides for: (a) underground electricity services in greenfield estates; or (b) a transition to underground electricity services in areas currently serviced by overhead electricity services.	**AO6.1** Development in the Emerging community zone is serviced by underground electricity services.
	AO6.2 Development in areas currently serviced by overhead electricity infrastructure involving the creation of a new public road/s, provide underground electricity services to the new lots.

Performance outcomes	Acceptable outcomes
Lot design	
PO7 Lots gain direct access by having a frontage/s to: (a) a constructed public road; or (b) common property, created through community management statement, which provides access to a constructed public road.	**AO7.1** Lots, other than lots created through a community management statement or building format plan of survey: (a) have a frontage/s, and therefore direct access, to a constructed public road; and (b) do not gain access by an access easement or other access arrangement.
	AO7.2 Lots created through a community management statement have a frontage to: (a) to a constructed public road; or (b) common property which provides access to a constructed public road.
PO8 Each lot complies with the following elements identified in Table 9.4.3.3.B: (a) minimum lot size; and (b) maximum average lot size; and (c) maximum lot size; and (d) minimum frontage width.	No acceptable outcome prescribed.
PO9 Lots intended for publicly accessible open space and/or sport and recreation facilities are located and designed to: (a) be highly accessible and a centralised focal point of the surrounding neighbourhood; and (b) maximise casual surveillance into the area; and (c) minimise the boundaries that adjoin private property.	**AO9** Lots intended for publicly accessible open space and/or sport and recreation facilities is adjoined by a public road: (a) for not less than 50% of the total perimeter length (total of all boundaries); and (b) along at least two sides of the lot.
PO10 Rear residential lots[87]: (a) are limited to instances where they are necessary; and (b) contain a usable area that is suitable to accommodate the amenity of the area; and (c) provide adequate access to the usable area; and (d) maintains a high level of amenity for the lot, adjoining lots and the surrounding area.	**AO10.1** Reconfiguration proposals creating rear residential lots: (a) are necessitated by the intent to retain an existing building; and (b) do not create more than 1 rear residential lot.
	AO10.2 The minimum area of the rear residential lot, excluding the access strip, complies with the relevant lot size provisions set out in Table 9.4.3.3.B.

[87] Rear residential lots (also known as "battle-axe lots") comprise a primary area and an 'access strip'. Generally the access strip is the lot's only street frontage.

Performance outcomes	Acceptable outcomes
	AO10.3 The access strip has: (a) direct frontage to a constructed public road; and (b) a minimum width of 5 metres.
	AO10.4 Landscaping strips, with a minimum width of 1 metre, are provided along both sides of the access strip.
PO11 Irregular shaped lots contain a usable area that: (a) is suitable to accommodate the intended use; and (b) enables the intended use to maintain the amenity of the surrounding area.	**AO11** Each irregular shaped lot contains a rectangular shaped developable area that complies with the following elements identified in Table 9.4.3.3.C: (a) minimum area; and (b) minimum dimension.
PO12 Reconfigured lots containing an existing building/s: (a) avoid inappropriate boundary encroachment across the building; and (b) maintain appropriate setbacks, site cover and open space; and (c) maintains access; and (d) retains the building's services on the same lot.	**AO12** Reconfigured lots containing an existing building must: (a) avoid the alignment of boundaries through an existing building, unless the boundary aligns with the common wall between attached, but independently constructed, buildings; and (b) comply with the relevant sections of the planning scheme and/or building legislation regarding: (i) setbacks; and (ii) site cover; and (iii) open space requirements; and (c) not compromise, restrict or prevent access between the building and constructed public road; and (d) not divorce the building from its car parking or other services required to be within the same lot.
PO13 Corner lots dedicate chord truncations to enhance the safety and functionality of the intersection for vehicles, cyclists and pedestrians.	**AO13** Reconfigured lots involving a corner lot, result in the dedication of corner truncations in accordance with the following: (a) where the intersecting roads are an arterial road and/or sub-arterial road: (i) in accordance with the future requirements of the particular intersection (identified on upgrade plans or demonstrated in a report submitted with the application); or (ii) otherwise, a $10m^{x3}$ chord truncation; or (b) where the intersection includes a collector street or access street – $6m^{x3}$ chord truncation.

Performance outcomes	Acceptable outcomes
PO14 Lots created through a community management statement or building format plan of survey, provide for appropriate density and/or other development outcomes.	**AO14** Lots created through a community management statement or building format plan of survey reflect an existing or approved development.
PO15 Lots created through boundary realignment (not resulting in an additional number of lots) are: (a) usable for development and integrate with the character and amenity of the surrounding area; (b) achieve one or a combination of the following: (i) improved utility of the lot; or (ii) boundary reflects natural features, infrastructure corridors or easements; or (iii) separation of uses or buildings; or (iv) resolution of boundary encroachment issues.	**AO15.1** Lots created through the realignment of a boundary or boundaries (not resulting in an additional number of lots) achieve the relevant lot size and frontage width as identified in Table 9.4.3.3.B.
	AO15.2 Lots created through the realignment of a boundary or boundaries (not resulting in an additional number of lots) achieve one or a combination of the following: (a) the utility and efficiency of the lot/s for the intended use is improved; or (b) the alignment of reconfigured boundary/ies reflects: (i) natural features such as watercourses, ridgelines or environmentally significant areas; or (ii) infrastructure corridors such as roads and electricity transmission lines; or (iii) easements; or (c) different uses or buildings are separated; or (d) boundary encroachment issues, where a house, structure or driveway / access way is built over a boundary line, are resolved.
	AO15.3 Boundary realignments on land within the Rural zone do not create: (a) any lots equal to or greater than 200ha, unless all resultant lots have an area equal to or greater than 100ha; and (b) lots that straddle a road reserve.

Performance outcomes	Acceptable outcomes
PO16 Where on-site wastewater treatment is required, the following is considered and addressed: (a) the number of existing on-site domestic water treatment plant systems in the locality; and (b) the soil type, land slope, hydrology and hydrogeology of the site and the locality; and (c) the proximity of the proposed system to surface waters and ground water; and (d) rainfall and other climatic conditions; and (e) the cumulative effect of the proposed and existing systems in the locality on water quality; and (f) any relevant ground water protection plan.	No acceptable outcome prescribed.

Table 9.4.3.3.B – Reconfiguring a lot code – lot size and frontage requirements

Minimum lot size	Maximum average lot size	Maximum lot size	Minimum frontage width
Emerging community zone and Industry investigation zone			
• in accordance with an approved development framework plan • 100 hectares if not in accordance with an approved development framework plan	• in accordance with an approved development framework plan • NA if not in accordance with an approved development framework plan	• in accordance with an approved development framework plan • NA if not in accordance with an approved development framework plan	• in accordance with an approved development framework plan • NA if not in accordance with an approved development framework plan
High density residential zone			
1,500m^2	NA	NA	25 metres
High impact industry			
3,500m^2	NA	NA	35 metres
Low density residential zone			
400m^2	• for development creating 5 or more lots – 600m^2; or • for development creating 4 or less lots – NA	NA	10 metres
Low impact industry zone			
2,500m^2	NA	NA	30 metres
Medium density residential zone – Low-medium density precinct (precinct no. MD1)			
• 300m^2 if the lot will be occupied by a dwelling house • 600m^2 if the lot will be occupied by a dual occupancy • 300m^2 per dwelling if the lot will be occupied by a multiple dwelling	NA	• 500m^2 if the lot will be occupied by a dwelling house • 1,000m^2 if the lot will be occupied by a dual occupancy • 500m^2 per dwelling if the lot will be occupied by a multiple dwelling	• 10 metres if the lot will be occupied by a dwelling house • 15 metres if the lot will be occupied by a dual occupancy or multiple dwelling

Minimum lot size	Maximum average lot size	Maximum lot size	Minimum frontage width
Medium density residential zone – General medium density precinct (precinct no. MD2)			
• 200m^2 if the lot will be occupied by a dwelling house • 400m^2 if the lot will be occupied by a dual occupancy • 200m^2 per dwelling if the lot will be occupied by a multiple dwelling	NA	• 300m^2 if the lot will be occupied by a dwelling house • 600m^2 if the lot will be occupied by a dual occupancy • 300m^2 per dwelling if the lot will be occupied by a multiple dwelling	• 5 metres if the lot will be occupied by a dwelling house • 15 metres if the lot will be occupied by a dual occupancy or multiple dwelling
Medium density residential zone – Multi-storey medium density precinct (precinct no. MD3)			
1,000m^2	NA	NA	20 metres
Mixed use zone – Amenity and convenience precinct (precinct no. MX1)			
1,500m^2	NA	NA	25 metres
Rural zone			
100 hectares	NA	NA	NA
Rural residential zone			
1 hectare	NA	NA	60 metres
Township zone			
1,000m^2	NA	NA	20 metres
Community facilities zone, Conservation zone, District centre zone, Local centre zone, Major centre zone, Mixed use zone - Fringe commercial precinct (precinct no. MX2), Neighbourhood centre zone, Open space zone, Principal centre zone, Special purpose zone, Specialised centre zone, Sport and recreation zone, Tourism area (major) zone			
NA - subject to requirements of intended use			

Table 9.4.3.3.C – Reconfiguring a lot code – size and dimension requirements for rectangles within irregular shaped lots

Minimum area of rectangle within lot	Minimum dimension of rectangle within lot
Emerging community zone and Industry investigation zone	
1 hectare	100 metres
High density residential zone	
1,100m^2	20 metres
High impact industry	
1,500m^2	30 metres
Low density residential zone	
250m^2	10 metres
Low impact industry zone	
1,000m^2	25 metres
Medium density residential zone – Low-medium density precinct (precinct no. MD1)	
• 250m^2 if the lot will be occupied by a dwelling house • 300m^2 if the lot will be occupied by a dual occupancy • 450m^2 per dwelling if the lot will be occupied by a multiple dwelling	• 10 metres if the lot will be occupied by a dwelling house • 15 metres if the lot will be occupied by a dual occupancy or multiple dwelling
Medium density residential zone – General medium density precinct (precinct no. MD2)	
• 170m^2 if the lot will be occupied by a dwelling house • 300m^2 if the lot will be occupied by a dual occupancy • 450m^2 per dwelling if the lot will be occupied by a multiple dwelling	• 5 metres if the lot will be occupied by a dwelling house • 15 metres if the lot will be occupied by a dual occupancy or multiple dwelling
Medium density residential zone – Multi-storey medium density precinct (precinct no. MD3)	
750m^2	16 metres
Rural zone	
1 hectare	100 metres
Rural residential zone	
4,000m^2	40 metres
Township zone	
800m^2	18 metres
Community facilities zone, Conservation zone, District centre zone, Local centre zone, Major centre zone, Open space zone, Principal centre zone, Special purpose zone, Specialised centre zone, Sport and recreation zone, Tourist accommodation zone	
NA - subject to requirements of intended use	

Part 10 Other plans

10.1 Land use plans under the Transport Infrastructure Act 1994

There are two sea ports within the Mackay Region local government area that contain Strategic Port Land as defined by the *Transport Infrastructure Act 1994*. These are:

- Port of Mackay
- Port of Hay Point

The relevant port authority in control of both of these ports is North Queensland Bulk Ports Corporation (NQBPC).

Section 285 of the *Transport Infrastructure Act 1994* requires NQBPC to prepare a land use plan to facilitate management and assessment of development on Strategic Port Land. The land use plan must be approved by the Minister of Transport prior to gazettal.

The Port of Mackay Land Use Plan is dated November 2009.

The Port of Hay Point Land Use Plan is dated April 2010 (approved by the Minister for Transport on the 5th July 2010).

Schedule SC2.3 of this planning scheme identifies strategic port land at the Port of Mackay and Port of Hay Point as within the "special purpose zone". However, development on strategic port land is beyond the jurisdiction of the Mackay Region Planning Scheme. Development on strategic port land is assessed against the relevant port land use plan, with NQBPC being the assessment manager.

10.2 Land use plan under the Airport Assets (Restructuring and Disposal) Act 2008

Section 35 of the *Airport Assets (Restructuring and Disposal) Act 2008* requires the Airport Lessee to prepare a land use plan over land at Mackay Airport defined in Schedule 1 as "airport land". North Queensland Airports is the Airport Lessee for Mackay Airport.

The land use plan must be approved by the Planning Minister prior to gazettal.

The Mackay Airport Land Use Plan is dated August 2014.

Schedule SC2.3 of this planning scheme identifies airport land as within the "special purpose zone". However, development on airport land is beyond the jurisdiction of the Mackay Region Planning Scheme. Development on airport land is assessed against the Mackay Airport Land Use Plan, with North Queensland Airports being the assessment manager.

10.3 Priority Development Area under the Economic Development Act 2012

Under the *Economic Development Act 2012*, there is one declared Priority Development Area within the Mackay Region local government area - Andergrove Priority Development Area (Woodlands residential estate).

Chapter 3, Part 3 of the *Economic Development Act 2012* requires the preparation of development schemes for priority development areas.

Development of the Woodlands residential estate is carried out in accordance with the development scheme for the Andergrove Priority Development Area.

Schedule SC2.3 of this planning scheme identifies the Andergrove Priority Development Area as within the “special purpose zone”. However, development on this land is beyond the jurisdiction of the Mackay Region Planning Scheme. Development on this land is assessed against the development scheme for the Andergrove Priority Development Area, with Economic Development Queensland being the assessment manager.

Schedule 1 Definitions

SC1.1 Use definitions

(1) Use definitions have a particular meaning for the purpose of the planning scheme.

(2) Any use not listed in table SC1.1.2 column 1 is an undefined use.

Note – development comprising a combination of defined uses is not considered to be an undefined use.

(3) A use listed in table SC1.1.2 column 1 has the meaning set out beside that term in column 2.

(4) The use definitions listed here are the definitions used in this planning scheme.

(5) Column 3 of table SC1.1.2 identifies examples of the types of activities that are consistent with the use identified in column 1.

(6) Column 4 of table SC1.1.2 identifies examples of activities that are not consistent with the use identified in column 1.

(7) Columns 3 and 4 of table SC1.1.2 are not exhaustive lists.

(8) Uses listed in table SC1.1.2 columns 3 and 4 that are not listed in column 1, do not form part of the definition.

Table SC1.1.1 – Index of use definitions

- Adult store
- Agricultural supplies store
- Air services
- Animal husbandry
- Animal keeping
- Aquaculture
- Bar
- Brothel
- Bulk landscape supplies
- Car wash
- Caretaker's accommodation
- Cemetery
- Child care centre
- Club
- Community care centre
- Community residence
- Community use
- Crematorium
- Cropping
- Detention facility
- Dual occupancy
- Dwelling house
- Dwelling unit
- Educational establishment
- Emergency services
- Environment facility
- Extractive industry
- Food and drink outlet
- Function facility
- Funeral parlour
- Garden centre
- Hardware and trade supplies
- Health care services
- High impact industry
- Home based business
- Hospital
- Hotel
- Indoor sport and recreation
- Intensive animal industry
- Intensive horticulture
- Landing
- Low impact industry
- Major electricity infrastructure
- Major sport, recreation and entertainment facility
- Marine industry
- Market
- Medium impact industry
- Motor sport facility
- Multiple dwelling
- Nature based tourism
- Nightclub entertainment facility
- Non-resident workforce accommodation
- Office
- Outdoor sales
- Outdoor sport and recreation
- Outstation
- Park
- Parking station
- Permanent plantation
- Place of worship
- Port services
- Relocatable home park
- Renewable energy facility
- Research and technology industry
- Residential care facility
- Resort complex
- Retirement facility
- Roadside stall
- Rooming accommodation
- Rural industry
- Rural workers' accommodation
- Sales office
- Service industry
- Service station
- Shop
- Shopping centre
- Short-term accommodation
- Showroom

• Special industry • Substation • Telecommunications facility • Theatre	• Tourist attraction • Tourist park • Transport depot • Utility installation	• Veterinary services • Warehouse • Wholesale nursery • Winery

Table SC1.1.2 – Use definitions

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Adult store	Premises used as a shop where the primary purpose is for the display or sale of sexually explicit materials, products and devices associated with or used in a sexual practice or activity.	Sex shop	Shop, newsagent, registered pharmacist, video hire, where the primary use of these are concerned with: • the sale, display or hire of printed or recorded matter (not of a sexually explicit nature); or • the sale or display of underwear or lingerie; or • the sale or display of an article or thing primarily concerned with or used in association with a medically recognised purpose.
Agricultural supplies store	Premises used for the sale of agricultural products and supplies including agricultural chemicals and fertilisers, seeds, bulk veterinary supplies, farm clothing, saddlery, animal feed and irrigation materials.		Bulk landscape supplies, garden centre, outdoor sales wholesale nursery
Air services	Premises used for any of the following: • the arrival and departure of aircraft; • the housing, servicing, refuelling, maintenance and repair of aircraft; • the assembly and dispersal of passengers or goods on or from an aircraft; • any ancillary activities directly serving the needs of passengers and visitors to the use; • associated training and education facilities; • aviation facilities.	Airport, airstrip, helipad, public or private airfield	

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Animal husbandry	Premises used for production of animals or animal products on either native or improved pastures or vegetation. The use includes ancillary yards, stables and temporary holding facilities and the repair and servicing of machinery.	Cattle studs, grazing of livestock, non-feedlot dairying [1]	Animal keeping, intensive animal industry, aquaculture, feedlots, piggeries
Animal keeping	Premises used for boarding, breeding or training of animals. The use may include ancillary temporary or permanent holding facilities on the same site and ancillary repair and servicing of machinery.	Aviaries, catteries, kennels, stables, wildlife refuge	Aquaculture, cattle studs, domestic pets, feedlots, grazing of livestock, non-feedlot dairying, piggeries, poultry meat and egg production, animal husbandry
Aquaculture	Premises used for the cultivation of aquatic animals or plants in a confined area that may require the provision of food either mechanically or by hand.	Pond farms, tank systems, hatcheries, raceway system, rack and line systems, sea cages	Intensive animal industry
Bar	Premises used primarily to sell liquor for consumption on the premises and that provides for a maximum capacity to seat sixty persons at any one time. The use may include ancillary sale of food for consumption on the premises and entertainment activities		Club, hotel, nightclub entertainment facility, tavern
Brothel	Premises made available for prostitution by two or more prostitutes at the premises.		Adult store, club, nightclub entertainment facility, shop
Bulk landscape supplies	Premises used for bulk storage and sale of landscaping and gardening supplies which may include soil, gravel, potting mix and mulch, where the majority of materials sold from the premises are not in pre-packaged form.		Garden centre, outdoor sales, wholesale nursery

[1] Bee-keeping / apiary activities are defined as Animal husbandry where it does not meet the criteria set out in the relevant Local Law. Bee-keeping / apiary activities are not relevant to the planning scheme where it meets the criteria set out in the relevant Local Law.

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Car wash	Premises primarily used for commercially cleaning motor vehicles by an automatic or partly automatic process.		Service station
Caretaker's accommodation	A dwelling provided for a caretaker of a non-residential use on the same premises.		Dwelling house
Cemetery	Premises used for interment of bodies or ashes after death.	Burial ground, crypt, columbarium, lawn cemetery, pet cemetery, mausoleum	Crematorium, funeral parlour
Child care centre	Premises used for minding, education and care, but not residence, of children.	Crèche, early childhood centre, kindergarten, outside hours school care	Educational establishment, home based child care, family day care
Club	Premises used by persons associated for social, literary, political, sporting, athletic or other similar purposes for social interaction or entertainment. The use may include the ancillary preparation and service of food and drink.	Club house, guide and scout clubs, surf lifesaving club, RSL, bowls club	Hotel, nightclub entertainment facility, place of worship, theatre
Community care centre	Premises used to provide social support where no accommodation is provided. Medical care may be provided but is ancillary to the primary use.	Disability support services, drop in centre, respite centre, integrated Indigenous support centre	Childcare centre, family day care, home based child care, health care services, residential care facility
Community residence	Any dwelling used for accommodation for a maximum of six persons who require assistance or support with daily living needs, share communal spaces and who may be unrelated. The use may include a resident support worker engaged or employed in the management of the residence.	Hospice	Dwelling house, dwelling unit, rooming accommodation, residential care facility, short-term accommodation

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Community use	Premises used for providing artistic, social or cultural facilities and community support services to the public and may include the ancillary preparation and provision of food and drink.	Art gallery, community centre, community hall, library, museum	Cinema, club, hotel, nightclub entertainment facility, place of worship
Crematorium	Premises used for the cremation or aquamation of bodies.		Cemetery
Cropping	Premises used for growing plants or plant material for commercial purposes where dependent on the cultivation of soil. The use includes harvesting and the storage and packing of produce and plants grown on the site and the ancillary repair and servicing of machinery used on the site.	Fruit, nut, vegetable and grain production, forestry for wood production, fodder and pasture production, plant fibre production, sugar cane growing, vineyard	Permanent plantations, intensive horticulture, rural industry
Detention facility	Premises used for the confinement of persons committed by a process of law.	Prison, detention centre	
Dual occupancy	Premises containing two dwellings, each for a separate household, and consisting of: • a single lot, where neither dwelling is a secondary dwelling or • two lots sharing common property where one dwelling is located on each lot.	Duplex, two dwellings on a single lot (whether or not attached), two dwellings within one single community title scheme under the *Body Corporate and Community Management Act 1997*, two dwellings within the one body corporate to which the *Building Units and Group Title Act 1980* continues to apply	Dwelling house, multiple dwelling

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Dwelling house	A residential use of premises for one household that contains a single dwelling. The use includes out-buildings and works normally associated with a dwelling and may include a secondary dwelling.		Caretaker's accommodation, dual occupancy, rooming accommodation, short-term accommodation, student accommodation, multiple dwelling
Dwelling unit	A single dwelling within a premises containing non-residential use(s).	'Shop-top' apartment	Caretaker's accommodation, dwelling house
Educational establishment	Premises used for training and instruction designed to impart knowledge and develop skills. The use may include outside hours school care for students or on-site student accommodation.	Pre-preparatory, preparatory and primary school, secondary school, special education, college, university, technical institute, outdoor education centres	Childcare centre, home based child care, family day care
Emergency services	Premises used by government bodies or community organisations to provide essential emergency services or disaster management services including management support facilities for the protection of persons, property and the environment.	State emergency service facility, ambulance station, rural fire brigade, auxiliary fire and rescue station, urban fire and rescue station, police station, emergency management support facility, evacuation centres.	Community use, hospital, residential care facility
Environment facility	Facilities used for the conservation, interpretation and appreciation of areas of environmental, cultural or heritage value.	Nature-based attractions, walking tracks, seating, shelters, boardwalks, observation decks, bird hides	
Extractive industry	Premises used for the extraction and/or processing of extractive resources and associated activities, including their transportation to market.	Quarry	

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Food and drink outlet	Premises used for preparation and sale of food and drink to the public for consumption on or off the site. The use may include the ancillary sale of liquor for consumption on site.	Bistro, café, coffee shop, drive-through facility, kiosk, milk bar, restaurant, snack bar, take-away, tea room	Bar, club, hotel, shop, theatre, nightclub entertainment facility
Function facility	Premises used for conducting receptions or functions that may include the preparation and provision of food and liquor for consumption on site.	Conference centre, reception centre	Community use, hotel
Funeral parlour	Premises used to arrange and conduct funerals, memorial services and the like, but do not include burial or cremation. The use includes a mortuary and the storage and preparation of bodies for burial or cremation.		Cemetery, crematorium, place of worship
Garden centre	Premises used primarily for the sale of plants and may include sale of gardening and landscape products and supplies where these are sold mainly in pre-packaged form. The use may include an ancillary food and drink outlet.	Retail plant nursery	Bulk landscape supplies, wholesale nursery, outdoor sales
Hardware and trade supplies	Premises used for the sale, display or hire of hardware and trade supplies including household fixtures, timber, tools, paint, wallpaper, plumbing supplies and the like.		Shop, showroom, outdoor sales and warehouse
Health care services	Premises for medical, paramedical, alternative therapies and general health care and treatment of persons that involves no overnight accommodation.	Dental clinics, medical centres, natural medicine practices, nursing services, physiotherapy clinic	Community care centre, hospital

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
High impact industry	Premises used for industrial activities that include the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products and have one or more of the following attributes: • potential for significant impacts on sensitive land uses due to offsite emissions including aerosol, fume, particle, smoke, odour and noise, • potential for significant offsite impacts in the event of fire, explosion or toxic release, • generates high traffic flows in the context of the locality or the road network, • generates a significant demand on the local infrastructure network, • the use may involve night time and outdoor activities, • onsite controls are required for emissions and dangerous goods risks.	Abattoirs, concrete batching plant, boiler making and engineering and metal foundry. Note—additional examples may be shown in SC1.1.2 industry thresholds.	Tanneries, rendering plants, oil refineries, waste incineration, manufacturing or storing explosives, power plants, manufacturing fertilisers, service industry, low impact industry, medium impact industry, special industry
Home based business	A dwelling used for a business activity where subordinate to the residential use.	Bed and breakfast, home office, home based childcare	Hobby, office, shop, warehouse, transport depot
Hospital	Premises used for medical or surgical care or treatment of patients whether or not involving overnight accommodation. The use may include ancillary accommodation for employees and ancillary activities directly serving the needs of patients and visitors.		Health care services, residential care facility
Hotel	Premises used primarily to sell liquor for consumption. The use may include short-term accommodation, dining and entertainment activities and facilities.	Pub, tavern	Nightclub entertainment facility

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Indoor sport and recreation	Premises used for leisure, sport or recreation conducted wholly or mainly indoors.	Amusement parlour, bowling alley, gymnasium, squash courts, enclosed tennis courts	Cinema, hotel, nightclub entertainment facility, theatre
Intensive animal industry	Premises used for the intensive production of animals or animal products in an enclosure that requires the provision of food and water either mechanically or by hand. The use includes the ancillary storage and packing of feed and produce. Note – Intensive animal industry uses may also require environmental licensing from other authorities.	Feedlots, piggeries, poultry and egg production	Animal husbandry, aquaculture, drought feeding, milking sheds, shearing sheds, weaning pens
Intensive horticulture	Premises used for the intensive production of plants or plant material on imported media and located within a building or structure or where outdoors, artificial lights or containers are used. The use includes the storage and packing of produce and plants grown on the subject site.	Greenhouse and shade house plant production, hydroponic farms, mushroom farms	Wholesale nursery
Landing	A structure for mooring, launching, storage and retrieval of vessels where passengers embark and disembark.	Boat ramp, jetty, pontoon	Marina

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Low impact industry	Premises used for industrial activities that include the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products and have one or more of the following attributes: • negligible impacts on sensitive land uses due to offsite emissions including aerosol, fume, particle, smoke, odour and noise, • minimal traffic generation and heavy-vehicle usage, • demands imposed upon the local infrastructure network consistent with surrounding uses, • the use generally operates during the day (e.g. 7am to 6pm), • offsite impacts from storage of dangerous goods are negligible, • the use is primarily undertaken indoors.	Repairing motor vehicles, fitting and turning workshop Note—additional examples may be shown in SC1.1.2 industry thresholds	Panel beating, spray painting or surface coating, tyre recycling, drum re-conditioning, wooden and laminated product manufacturing, service industry, medium impact industry, high impact industry, special industry
Major electricity infrastructure	All aspects of development for either the transmission grid or electricity supply networks as defined under the *Electricity Act 1994.* The use may include ancillary telecommunication facilities.	Powerlines greater than 66kV	Minor electricity infrastructure, substation
Major sport, recreation and entertainment facility	Premises with large scale built facilities designed to cater for large scale events including major sporting, recreation, conference and entertainment events.	Convention and exhibition centres, entertainment centres, sports stadiums, horse racing	Indoor sport and recreation, local sporting field, motor sport, park, outdoor sport and recreation

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Marine industry	Premises used for waterfront based marine industries involved in any activity relating to the manufacturing, storage, repair or servicing of vessels and maritime infrastructure. The use may include the provision of fuel and disposal of waste.	Boat building, boat storage, dry dock	Marina
Market	Premises used for the sale of goods to the public on a regular basis, where goods are primarily sold from temporary structures such as stalls, booths or trestle tables. The use may include entertainment provided for the enjoyment of customers.	Flea market, farmers market, car boot sales	Shop, roadside stall
Medium impact industry	Premises used for industrial activities that include the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products and have one or more of the following attributes: • potential for noticeable impacts on sensitive land uses due to offsite emissions including aerosol, fume, particle, smoke, odour and noise, • potential for noticeable offsite impacts in the event of fire, explosion or toxic release; • generates high traffic flows in the context of the locality or the road network, • generates an elevated demand on the local infrastructure network, • onsite controls are required for emissions and dangerous goods risks, • the use is primarily undertaken indoors, • evening or night activities are undertaken indoors and not outdoors.	Spray painting and surface coating, transport depot, wooden and laminated product manufacturing (including cabinet making, joining, timber truss making or wood working) Note—additional examples may be shown in SC1.1.2 industry thresholds	Concrete batching, tyre manufacturing and retreading, metal recovery (involving a fragmentiser), textile manufacture, chemically treating timber and plastic product manufacture, service industry, low impact industry, high impact industry, special industry

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Motor sport facility	Premises used for organised or recreational motor sports whether on or off-road, which may include permanent, temporary or informal provision for spectators and other supporting uses.	Go-karting, lawn mower race tracks, trail bike parks, 4WD and all terrain parks, motocross tracks, off road motorcycle facility, motorcycle or car race tracks	Major sport, recreation and entertainment facility, outdoor sport and recreation
Multiple dwelling	Premises that contain three or more dwellings for separate households.	Apartments, flats, units, townhouses, row housing, triplex	Rooming accommodation, dual occupancy, duplex, granny flat, residential care facility, retirement facility
Nature-based tourism	The use of land or premises for a tourism activity, including tourist and visitor short-term accommodation, that is intended for the conservation, interpretation and appreciation of areas of environmental, cultural or heritage value, local ecosystem, and attributes of the natural environment. Nature-based tourism activities typically: • maintain a nature based focus or product; • promote environmental awareness, education and conservation; • carry out sustainable practices.	Environmentally responsible accommodation facilities including lodges, cabins, huts and tented camps	Environment facility
Nightclub entertainment facility	Premises used to provide entertainment which may include cabaret, dancing and music. The use generally includes the sale of liquor and food for consumption on site.		Club, hotel, tavern, pub, indoor sport and recreation, theatre, concert hall

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Non-resident workforce accommodation	Premises used to provide accommodation for non-resident workers. The use may include provision of recreational and entertainment facilities for the exclusive use of residents and their visitors.	Contractor's camp, construction camp, single person's quarters, temporary workers' accommodation	Relocatable home park, short-term accommodation, tourist park.
Office	Premises used for an administrative, secretarial or management service or the practice of a profession, where no goods or materials are made, sold or hired and where the principal activity provides for one or more of the following: • business or professional advice; • service of goods that are not physically on the premises; • office based administrative functions of an organisation.	Bank, real estate agent, administration building	Home-based business, shop, outdoor sales
Outdoor sales	Premises used for the display, sale, hire or lease of products where the use is conducted wholly or predominantly outdoors and may include construction, industrial or farm plant and equipment, vehicles, boats and caravans. The use may include ancillary repair or servicing activities and sale or fitting of accessories.	Agricultural machinery sales yard, motor vehicles sales yard	Bulk landscape supplies, market
Outdoor sport and recreation	Premises used for a recreation or sport activity that is carried on outside a building and requires areas of open space and may include ancillary works necessary for safety and sustainability. The use may include ancillary food and drink outlet(s) and the provision of ancillary facilities or amenities conducted indoors such as changing rooms and storage facilities.	Driving range, golf course, swimming pool, tennis courts, football ground, cricket oval	Major sport, recreation and entertainment facility, motor sport, park, community use

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Outstation	Premises used for cultural and/or recreational activities undertaken by Aboriginal and Torres Strait Island people. The use provides for intermittent short stay and/or long term camping. The use may involve permanent low scale built infrastructure.	Indigenous camp site	Dwelling house, rooming accommodation, multiple dwelling, relocatable home park, short term accommodation, tourist park
Park	Premises accessible to the public generally for free sport, recreation and leisure and may be used for community events or other community activities. Facilities may include children's playground equipment, informal sports fields and ancillary vehicle parking and other public conveniences.	Urban common	Tourist attraction, outdoor sport and recreation
Parking station	Premises used for parking vehicles where the parking is not ancillary to another use.	Car park, 'park and ride', bicycle parking	
Permanent plantation	Premises used for growing plants not intended to be harvested.	Permanent plantations for carbon sequestration, biodiversity or natural resource management	Forestry for wood production, biofuel production
Place of worship	Premises used by an organised group for worship and religious activities. The use may include ancillary facilities for social, educational activities and associated charitable activities.	Church, chapel, mosque, synagogue, temple	Community use, child care centre, funeral parlour, crematorium

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Port services	Premises used for the following: • the arrival and departure of vessels; • the movement of passengers or goods on or off vessels; • any ancillary activities directly serving the needs of passengers and visitors or the housing, servicing, maintenance and repair of vessels.	Marina, ferry terminal	Landing
Relocatable home Park	Premises used for relocatable dwellings (whether they are permanently located or not) that provides long-term residential accommodation. The use may include a manager's residence and office, ancillary food and drink outlet, kiosk, amenity buildings and the provision of recreation facilities for the exclusive use of residents.		Tourist park
Renewable energy facility	Premises used for the generation of electricity or energy from renewable (naturally reoccurring) sources.	Solar farm, wind farm, tidal power	Wind turbine or solar panels supplying energy to domestic or rural activities on the same site
Research and technology industry	Premises used for innovative and emerging technological industries involved in research design, manufacture, assembly, testing, maintenance and storage of machinery, equipment and components. The use may include emerging industries such as energy, aerospace, and biotechnology.	Aeronautical engineering, computer component manufacturing, medical laboratories, computer server facility	
Residential care facility	A residential use of premises for supervised accommodation where the use includes medical and other support facilities for residents who cannot live independently and require regular nursing or personal care.	Convalescent home, nursing home	Community residence, dwelling house, dual occupancy, hospital, multiple dwelling, retirement facility

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Resort complex	Premises used for tourist and visitor short-term accommodation that include integrated leisure facilities including: • restaurants and bars; • meeting and function facilities; • sporting and fitness facilities; • staff accommodation; • transport facilities directly associated with the tourist facility such as ferry terminal and air services.	Island resort	
Retirement facility	A residential use of premises for an integrated community and specifically built and designed for older people. The use includes independent living units and may include serviced units where residents require some support with health care and daily living needs. The use may also include a manager's residence and office, food and drink outlet, amenity buildings, communal facilities and accommodation for staff.	Retirement village	Residential care facility
Roadside stall	Premises used for the roadside display and sale of goods in rural areas.	Produce stall	Market

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Rooming Accommodation	Premises used for the accommodation of one or more households where each resident: • has a right to occupy one or more rooms; • does not have a right to occupy the whole of the premises in which the rooms are situated; • may be provided with separate facilities for private use • may share communal facilities or communal space with one or more of the other residents. It may include: • rooms not in the same building on site; • provision of a food or other service; • on site management or staff and associated accommodation. Facilities includes furniture and equipment as defined in the *Residential Tenancies and Rooming Accommodation Act 2008*.	Boarding house, hostel, monastery, off-site student accommodation	Hospice, community residence, dwelling house, short term accommodation, multiple dwelling
Rural industry	Premises used for storage, processing and packaging of products from a rural use. The use includes processing, packaging and sale of products produced as a result of a rural use where these activities are ancillary to a rural use on or adjacent to the site.	Packing shed	Intensive animal husbandry, intensive horticulture, roadside stall, wholesale nursery, winery, abattoir, agricultural supply store

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Rural workers accommodation	Any premises used as quarters for staff employed in the use of land for rural purposes, such as agriculture, intensive animal husbandry and forestry, conducted on a lot in the same ownership whether or not such quarters are self-contained.	Farm workers accommodation	Short-term accommodation building, caretaker's accommodation, dual occupancy, dwelling house, nature or rural based tourist accommodation, non-resident workers accommodation, multiple dwellings
Sales office	The temporary use of premises for displaying a land parcel or buildings that can be built for sale or can be won as a prize. The use may include a caravan or relocatable dwelling or structure.	Display dwelling	Bank, office
Service industry	Premises used for industrial activities that have no external air, noise or odour emissions from the site and can be suitably located with other non-industrial uses	Audio visual equipment repair, film processing bicycle repairs, clock and watch repairs, computer repairs, dry cleaning, hand engraving, jewellery making, laundromat, locksmith, picture framing, shoe repairs, tailor	Small engine mechanical repair workshop, cabinet making, shop fitting, sign writing, tyre depot, low impact industry, medium impact high impact industry, special industry
Service station	Premises used for the sale of fuel including petrol, liquid petroleum gas, automotive distillate and alternative fuels. The use may include, where ancillary, a shop, food and drink outlet, maintenance, repair servicing and washing of vehicles, the hire of trailers, and supply of compressed air.		Car wash

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Shop	Premises used for the display, sale or hire of goods or the provision of personal services or betting to the public.	Hairdresser, liquor store, department store, discount department store, discount variety stores, betting agencies, supermarket, corner store	Adult store, sex shop, food and drink outlet, coffee shop, showroom, market
Shopping centre	Premises comprising two or more individual tenancies that is comprised primarily of shops, and that function as an integrated complex.		
Short-term accommodation	Premises used to provide short-term accommodation for tourists or travellers for a temporary period of time (typically not exceeding three consecutive months) and may be self-contained. The use may include a manager's residence and office and the provision of recreation facilities for the exclusive use of visitors.	Motel, backpackers accomodation, cabins, serviced apartments, hotel, farm stay	Hostel, rooming accommodation, tourist park
Showroom	Premises used primarily for the sale of goods of a related product line that are of a size, shape or weight that requires: • a large area for handling, display or storage; • direct vehicle access to the building by members of the public for loading and unloading items purchased or hired.	Bulky goods sales, motor vehicles sales showroom, bulk stationary supplies	Food and drink outlet, shop, outdoor sales

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Special industry	Premises used for industrial activities that include the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products and have one or more of the following attributes: • potential for extreme impacts on sensitive land uses due to offsite emissions including aerosol, fume, particle, smoke, odour and noise, • potential for offsite impacts in the event of fire, explosion or toxic release, • onsite controls are required for emissions and dangerous goods risks, • the use generally involves night time and outdoor activities, • the use may involve the storage and handling of large volumes of dangerous goods, • requires significant separation from non-industrial uses.	Tanneries, rendering plants, oil refineries, waste incineration, manufacturing or storing explosives, power plants, manufacturing fertilisers. Note—additional examples may be shown in SC1.1.2 industry thresholds	Low impact industry, medium impact industry, high impact industry, service industry
Substation	Premises forming part of a transmission grid or supply network under the *Electricity Act 1994*, and used for: • converting or transforming electrical energy from one voltage to another; or • regulating voltage in an electrical circuit; or • controlling electrical circuits; or • switching electrical current between circuits; or • a switchyard; or • communication facilities for "operating works" as defined under the *Electricity Act 1994* or for workforce operational and safety communications.	Substations, switching yards	Major electricity infrastructure, minor electricity infrastructure

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Telecommun-ications facility	Premises used for systems that carry communications and signals by means of radio, including guided or unguided electromagnetic energy, whether such facility is manned or remotely controlled.	Telecommun-ication tower, broadcasting station, television station	Aviation facility, "low-impact telecommunications facility" as defined under the *Telecommunications Act 1997*
Theatre	Premises used for presenting movies, live entertainment or music to the public and may include provision of food and liquor for consumption on the site. The use may include the production of film or music, including associated ancillary facilities, which are associated with production, such as sound stages, wardrobe and laundry facilities, makeup facilities, set construction workshops, editing and post production facilities.	Cinema, movie house, concert hall, dance hall, film studio, music recording studio	Community hall, hotel, indoor sport and recreation facility, temporary film studio
Tourist attraction	Premises used for providing on-site entertainment, recreation or similar facilities for the general public. The use may include provision of food and drink for consumption on site.	Theme park, zoo	Hotel, major sport, recreation and entertainment facility, nightclub entertainment facility
Tourist park	Premises used to provide for accommodation in caravans, self-contained cabins, tents and similar structures for the public for short term holiday purposes. The use may include, where ancillary, a manager's residence and office, kiosk, amenity buildings, food and drink outlet, or the provision of recreation facilities for the use of occupants of the tourist park and their visitors, and accommodation for staff.	Camping ground, caravan park, holiday cabins	Relocatable home park, tourist attraction, short-term accommodation, non-resident workforce accommodation

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Transport depot	Premises used for the storage, for commercial or public purposes, of more than one motor vehicle. The use includes premises for the storage of taxis, buses, trucks, heavy machinery and uses of a like nature. The term may include the ancillary servicing, repair and cleaning of vehicles stored on the premises.	Contractor's depot, bus depot, truck yard, heavy machinery yard	Home based business, warehouse, low impact industry, service industry
Utility installation	Premises used to provide the public with the following services: • supply or treatment of water, hydraulic power or gas; or • sewerage, drainage or stormwater services; or • transport services including road, rail or water; or • waste management facilities; or • network infrastructure. The use includes maintenance and storage depots and other facilities for the operation of the use.	Sewerage treatment plant, mail depot, pumping station, water treatment plant	Telecommunications tower, major electricity infrastructure, minor electricity infrastructure, substation, renewable energy facility, transport depot
Veterinary services	Premises used for veterinary care, surgery and treatment of animals that may include provision for the short-term accommodation of the animals on the premises.		Animal keeping
Warehouse	Premises used for the storage and distribution of goods, whether or not in a building, including self-storage facilities or storage yards. The use may include sale of goods by wholesale where ancillary to storage. The use does not include retail sales from the premises or industrial uses.	Self-storage sheds	Hardware and trade supplies, outdoor sales, showroom, shop

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Wholesale nursery	Premises used for the sale of plants, but not to the general public, where the plants are grown on or adjacent to the site. The use may include sale of gardening materials where these are ancillary to the primary use.		Bulk landscape supplies, garden centre
Winery	Premises used for manufacturing of wine, which may include the sale of wine manufactured on site.		Rural industry

SC1.1.1 Defined activity groups

(1) Defined uses listed in SC1.1.2 are able to be clustered into activity groups.

(2) An activity group listed in column 1 clusters the defined uses listed in column 2.

(3) An activity group is able to be referenced in Part 5.

(4) The activity groups listed here are the defined activity groups for the purpose of the planning scheme.

Table SC1.1.1.1 – Index of defined activity groups

• Centre activities • Community activities • Industry activities	• Intensive rural activities • Multiple dwelling activities • Outdoor business activities	• Recreation activities • Rural activities • Utility activities

Table SC1.1.1.2 – Defined activity groups

Column 1 Activity group	Column 2 Uses
Centre activities	• Bar • Food and drink outlet • Function facility • Funeral parlour • Hardware and trade supplies[2] • Health care services • Office • Shop • Shopping centre • Showroom • Theatre • Veterinary services
Community activities	• Club • Community care centre • Community use • Educational establishment • Emergency services • Hospital • Place of worship
Industry activities	• Hardware and trade supplies[3] • High impact industry • Low impact industry • Marine industry • Medium impact industry • Research and technology industry

[2] "Hardware and trade supplies" is considered a centre activity if it contains a retail shop open to the general public

[3] "Hardware and trade supplies" is considered an industry activity if it does not contain a retail shop open to the general public – that is, it only involves the sale of trade supplies to tradespersons only.

Column 1 Activity group	Column 2 Uses
	• Service industry • Special industry • Transport depot • Warehouse
Intensive rural activities	• Animal keeping • Aquaculture • Intensive animal industry • Intensive horticulture
Multiple dwelling activities	• Dual occupancy • Multiple dwelling • Residential care facility • Retirement facility • Rooming accommodation
Outdoor business activities	• Bulk landscape supplies • Garden centre • Outdoor sales
Recreation activities	• Indoor sport and recreation • Outdoor sport and recreation
Rural activities	• Animal husbandry • Cropping • Permanent plantations
Utility activities	• Major electricity infrastructure • Renewable energy facility • Substation • Utility installation

SC1.1.2 Industry thresholds

(1) The industry thresholds listed below are to be used in conjunction with the defined uses listed in SC1.1.2 – low impact industry, medium impact industry, high impact industry and special industry.

Table SC1.1.2.1 – Industry thresholds

Use	Additional examples include
Low impact industry	(1) Repairing and servicing motor vehicles, including mechanical components, radiators, electrical components, wheel alignments, exhausts, tyres, suspension or air conditioning. Not including spray painting; (2) Repairing and servicing lawn mowers and outboard engines; (3) Fitting and turning workshop; (4) Assembling or fabricating products from sheet metal or welding steel. Producing less than 10 tonnes a year. Not including spray painting; (5) Assembling wood products not involving cutting, routing, sanding or spray painting; (6) Dismantling automotive or mechanical equipment, not including debonding brake or clutch components; (7) Service station not including above ground tanks of class 2.1 (flammable gasses) or class 3 (flammable liquids) dangerous goods greater than 16kL; Note—class 2.1 and class 3 dangerous goods are defined in the Australian Dangerous Goods Code. (8) Dangerous goods location not including the storage of toxic gases.
Medium impact industry	(1) Metal foundry producing less than 10 tonnes of metal castings per annum; (2) Boiler making or engineering works producing less than 10 000 tonnes of metal product per annum; (3) Large dangerous goods location not including the storage of toxic gases; (4) Abrasive blasting facility using less than 10 tonnes of abrasive material per annum; (5) Enamelling workshop using less than 15 000 litres of enamel per annum; (6) Galvanising works using less than 100 tonnes of zinc per annum; (7) Anodising or electroplating workshop where tank area is less than 400 square metres; (8) Powder coating workshop using less than 500 tonnes of coating per annum; (9) Spray painting workshop (including spray painting vehicles, plant, equipment or boats) using less than 20 000 litres of paint per annum; (10) Scrap metal yard (not including a fragmentiser), dismantling automotive or mechanical equipment including debonding brake or clutch components; (11) Manufacturing clay or ceramic products including bricks, tiles, pipes and pottery goods, less than 200 tonnes per annum; (12) Processing, smoking, drying, curing, milling, bottling or canning food, beverages or pet food, less than 200 tonnes per annum;

Use	Additional examples include
	(13) Vegetable oil or oilseed processing in works with a design production capacity of less than 1000 tonnes per annum; (14) Manufacturing wooden products including cabinet making, joinery, wood working, producing less than 500 tonnes per annum; (15) Manufacturing medium density fibreboard, chipboard, particle board, plywood, laminated board or wood veneer products, less than 250 tonnes per annum; (16) Sawmilling, wood chipping and kiln drying timber and logs, producing less than 500 tonnes per annum; (17) Recycling and reprocessing batteries; (18) Repairing or maintaining boats; (19) Manufacturing substrate for mushroom growing; (20) Manufacturing or processing plaster, producing less than 5000 tonnes per annum; (21) Recycling or reprocessing tyres including retreading; (22) Printing advertising material, magazines, newspapers, packaging and stationery; (23) Transport depot, distribution centre, contractors depot and storage yard; (24) Manufacturing fibreglass, foam plastic, composite plastic or rigid fibre-reinforced plastic or plastic products, less than 5 tonnes per annum (except fibreglass boats, tanks and swimming pools); (25) Manufacturing PET, PETE, polypropylene and polystyrene plastic or plastic products, less than 10 000 tonnes per annum; (26) Reconditioning metal or plastic drums; (27) Glass fibre manufacture less than 200 tonnes per annum; (28) Manufacturing glass or glass products, where not glass fibre, less than 250 tonnes per annum.
High impact industry	(1) Metal foundry producing 10 tonnes or greater of metal castings per annum; (2) Boiler making or engineering works producing 10 000 tonnes or greater of metal product per annum; (3) Major hazard facility for the storage and distribution of dangerous goods not involving manufacturing processes; (4) Scrap metal yard including a fragmentiser; (5) Manufacturing clay or ceramic products including bricks, tiles, pipes and pottery goods, greater than 200 tonnes per annum; (6) Processing, smoking, drying, curing, milling, bottling or canning food, beverages or pet food, greater than 200 tonnes per annum; (7) Vegetable oil or oilseed processing in works with a design production capacity of greater than 1 000 tonnes per annum; (8) Manufacturing wooden products including cabinet making, joinery, wood working, producing greater than 500 tonnes per annum; (9) Manufacturing medium density fibreboard, chipboard, particle board, plywood, laminated board or wood veneer products, 250 tonnes or greater per annum; (10) Sawmilling, wood chipping and kiln drying timber and logs, producing greater than 500 tonnes per annum;

Use	Additional examples include
	(11) Manufacturing or processing plaster, producing greater than 5000 tonnes per annum; (12) Enamelling workshop using 15 000 litres or greater of enamel per annum; (13) Galvanising works using 100 tonnes or greater of zinc per annum; (14) Anodising or electroplating workshop where tank area is 400 square metres or greater; (15) Powder coating workshop using 500 tonnes or greater of coating per annum; (16) Spray painting workshop (including spray painting vehicles, plant, equipment or boats) using 20 000 litres or greater of paint per annum; (17) Concrete batching and producing concrete products; (18) Treating timber for preservation using chemicals including copper, chromium, arsenic, borax and creosote; (19) Manufacturing soil conditioners by receiving, blending, storing, processing, drying or composting organic material or organic waste, including animal manures, sewage, septic sludges and domestic waste; (20) Manufacturing fibreglass pools, tanks and boats; (21) Manufacturing, fibreglass, foam plastic, composite plastic or rigid fibre-reinforced plastic or plastic products, 5 tonnes or greater per annum (except fibreglass boats, tanks and swimming pools); (22) Manufacturing PET, PETE, polypropylene and polystyrene plastic or plastic products, 10 000 tonnes or greater per annum; (23) Manufacturing tyres, asbestos products, asphalt, cement; glass or glass fibre, mineral wool or ceramic fibre; (24) Abattoir; (25) Recycling chemicals, oils or solvents; (26) Waste disposal facility (other than waste incinerator); (27) Recycling, storing or reprocessing regulated waste; (28) Manufacturing batteries; (29) Manufacturing wooden products including cabinet making, joinery, wood working, producing greater than 500 tonnes per annum; (30) Abrasive blasting facility using 10 tonnes or greater of abrasive material per annum; (31) Crematoria; (32) Glass fibre manufacture producing 200 tonnes or greater per annum; (33) Manufacturing glass or glass products, where not glass fibre, less than 250 tonnes per annum.

Use	Additional examples include
Special industry	(1) Oil refining or processing; (2) Producing, refining or processing gas or fuel gas; (3) Distilling alcohol in works producing greater than 2500 litres per annum; (4) Power station; (5) Producing, quenching, cutting, crushing or grading coke; (6) Waste incinerator; (7) Sugar milling or refining; (8) Pulp or paper manufacturing; (9) Tobacco processing; (10) Tannery or works for curing animal skins, hides or finishing leather; (11) Textile manufacturing, including carpet manufacturing, wool scouring or carbonising, cotton milling, or textile bleaching, dyeing or finishing; (12) Rendering plant; (13) Manufacturing chemicals, poisons and explosives; (14) Manufacturing fertilisers involving ammonia; (15) Manufacturing polyvinyl chloride plastic.

SC1.2 Administrative definitions

(1) Administrative definitions assist with the interpretation of the planning scheme but do not have a meaning in relation to a use.

(2) A term listed in table SC1.2.2 column 1 has the meaning set out beside that term in column 2 under the heading.

(3) The administrative definitions listed here are the definitions for the purpose of the planning scheme.

Table SC1.2.1 – Index of administrative definitions

- Acid sulfate soils
- Adaptation strategy
- Adjoining premises
- Advertising device
- Affordable housing
- Agricultural land
- Algal blooms
- Annual exceedance probability (AEP)
- Aquaculture development area (ADA)
- Average height datum (AHD)
- Average width
- Base date
- Basement
- Boundary clearance
- Building height
- Capital dredging
- Climate change
- Coast
- Coastal activities
- Coastal building line
- Coastal catchment
- Coastal-dependent development
- Coastal erosion
- Coastal hazard
- Coastal hazard area
- Coastal hazard impact
- Coastal hazard risk
- Coastal landforms
- Coastal management district (CMD)
- Coastal protection work
- Coastal resources
- Coastal waters
- Coastal wetlands
- Coastal zone
- Coastline
- Commonwealth Great Barrier Reef Marine Park
- Contaminant
- Contaminated stormwater
- Defined flood event (DFE)
- Defined storm-tide event (DSTE)
- Demand unit
- Demonstrated need
- Design objectives
- Development
- Development footprint
- Development commitment
- Domestic activity
- Domestic outbuilding
- Dugong protection areas
- Dwelling
- Ecological corridor
- Ecological values
- Ecologically sustainable development
- Ecosystem
- Environmental offsets
- Environmental values
- Erosion control structures
- Erosion prone area
- Footpath awning
- GIS Multi Criteria Analysis Methodology
- Gross floor area
- Ground level
- Groundwater
- Habitable room
- Hazardous material
- Hazardous material in bulk
- High coastal hazard area
- High density residential
- Higher density (residential development)
- Highest astronomical tide (HAT)
- Home based childcare
- Household
- Hydrodynamic forces
- Hydrological regime
- Hydrostatic forces
- Industrial zone
- Iron floc
- Key active frontage streets
- Key urban area
- Low density residential development
- Low-medium density residential development
- Maritime development area
- Matters of State Ecological Significance
- Medium density residential development
- Minor building work
- Minor building work – industry activities
- Minor electricity infrastructure
- Minor marine development
- Minor public marine development
- Multi-purpose centre
- Multi-storey medium density residential development

• Net developable area • Net dwelling density • Netserv plan • Non-resident workers • Non-tidal artificial waterway • Nutrient hazardous areas • Nutrients of concern • Outermost projection • Overriding need in the public interest • Patron • Physical coastal processes • Planning assumptions • Plot ratio • Primary road frontage • Projection area(s) • Recommended storm-tide event level (RSTEL)	• Residential zone • Risk (natural hazard) • Secondary dwelling • Secondary road frontage • Sediment • Sensitive land use • Service catchment • Setback • Site • Site cover • State development area • Storey • Storm-tide • Storm-tide inundation area • Stormwater quality management plan • Streetscape rhythm • Suitably qualified person	• Temporary, readily relocatable or able to be abandoned (development) • Temporary use • Ultimate development • Urban purposes • Urban stormwater quality management plan • Urban zone • Usable open space • Waste water • Waste water management plan • Waters • Watercourse • Water quality objectives • Wetland fauna • Wetland protection area

Table SC1.2.2 – Administrative definitions

Column 1 Term	Column 2 Definition
Acid sulfate soils	Soil or sediment containing highly acidic soil horizons or layers from the oxidation of iron sulfides (actual acid sulfate soils) and/or soil or sediment containing iron sulfides or other sulfidic material that has not been exposed to air and oxidised (potential acid sulfate soils). The term 'acid sulfate soil' generally includes both actual and potential acid sulfate soils. Actual and potential acid sulfate soils are often found in the same soil profile, with actual acid sulfate soils generally overlying potential acid sulfate soil horizons. Pollutants associated with the disturbance of acid sulfate soils and groundwaters include acid, aluminium, heavy metals and metalloids such as arsenic.
Adaptation strategy	A strategy that includes an assessment of options to mitigate existing and projected coastal hazard impacts on coastal communities in high hazard areas that is prepared to inform a local government planning scheme. Options may include retreat, avoidance, and defence, taking into account long-term social, financial and environmental factors.
Adjoining premises	Premises that share all or part of a measurable common boundary. A common boundary may be a single point such as a corner point.
Advertising device	Any permanent structure, device, sign or the like intended for advertising purposes. It includes any framework, supporting structure or building feature that is provided exclusively or mainly as part of the advertisement.
Affordable housing	Housing that is appropriate to the needs of households with low to moderate incomes.
Agricultural land	Is a collective term for mapped Agricultural Land Class (ALC) A and B, Important Agricultural Areas (IAA) and Locally Important Agricultural Areas (LIAA)
Algal blooms	Means a bloom of algae in coastal or estuarine waters. Note – as defined in State Planning Policy July 2014
Annual exceedance probability (AEP)	The likelihood of occurrence of a flood or storm tide inundation event of a given size or larger in any one year, usually expressed as a percentage. For example, if an event has an AEP of 1%, it means that there is a 1% risk (i.e. a likelihood of 1 in 100) of this event occurring in any one year. A 1% AEP event should not be interpreted as only occurring once in 100 years. Note – definition from State Planning Policy – State interest guideline for Natural hazards, risk and resilience (August 2014).
Aquaculture development area	A specific area where it has been demonstrated to the satisfaction of the Department of Environment and Resource Management that the area is suitable for identification as an aquaculture development area in accordance with the aquaculture development area methodology.
Australian height datum (AHD)	The survey height datum adopted by the National Mapping Council as the datum to which all vertical control for mapping is to be referred. 0.0 metres AHD approximates mean sea level.

Column 1 Term	Column 2 Definition
Average width	In regard to a lot, the distance between the midpoints of the side boundaries of the lot.
Base date	The date from which a local government has estimated its projected infrastructure demands and costs.
Basement	A space that is situated between one floor level and the floor level next below where no part of the space projects more than one metre above ground level.
Boundary clearance	The shortest distance from the outermost projection of a structural part of the building or structure to the property boundary, including: • if the projection is a roof and there is a fascia – the outside face of the fascia; or • if the projection is a roof and there is no fascia – the roof structure. The term does not include rainwater fittings or ornamental or architectural attachments.
Building height	If specified: (a) in metres, the vertical distance between the ground level and the highest point of the building roof (apex) or parapet at any point, but not including load bearing antenna, aerial, chimney, flagpole or the like, or (b) in storeys, the number of storeys above ground level, or (c) in both metres and storeys, both (a) and (b) apply.
Capital dredging	New dredging for navigation, to enlarge existing channels, ports, marinas and boat harbours. It also includes excavation to create trenches for pipes, cables, and immersed tube tunnels, to remove material unsuitable for foundations and to remove overburden or aggregate.
Climate change	A change in the state of the global climate induced by anthropogenic change to the atmospheric content of greenhouse gases and that persists for an extended period, typically decades or longer.
Coast	As defined under the *Coastal Protection and Management Act 1995*.
Coastal activities	Development activities within coastal waters.
Coastal building line	As defined under the *Coastal Protection and Management Act 1995.*
Coastal catchment	The catchment of a waterway that flows to the coast—excludes coastal catchments that drain to a dam or similar substantive structure that restricts downstream flow.

Column 1 Term	Column 2 Definition
Coastal-dependent development	(a) means development that in order to function must be located in tidal waters or be able to access tidal water, (b) may include, but is not limited to: (i) industrial and commercial facilities such as ports, harbours and navigation channels and facilities, aquaculture involving marine species, desalination plants, tidal generators, erosion control structures and beach nourishment; (ii) tourism facilities for marine (boating) purposes; (iii) community facilities and sporting facilities which require access to tidal water in order to function, such as surf clubs, marine rescue, rowing and sailing clubs; or (iv) co-located residential and tourist uses that are part of an integrated development proposal (e.g. mixed use development) incorporating a marina, if these uses are located land ward of the marina and appropriately protected from natural hazards; but (c) does not include: (i) residential development as the primary use; (ii) waste management facilities, such as landfills, sewerage treatment plants; or (iii) transport infrastructure, other than for access to the coast. Note—definition from State Planning Policy July 2014
Coastal erosion	The wearing away of land or the removal of beach or dune sediments by wave or wind action.
Coastal hazard	As defined under the *Coastal Protection and Management Act 1995*.
Coastal hazard area	means an area affected by a coastal hazard, including: • a storm tide inundation area; • an erosion prone area; and/or any other area identified by a local government as an area affected by a coastal hazard, based on a fit for purpose coastal hazard study, and contained within that local government's planning scheme. Note – definition from State Planning Policy – State interest guideline for Natural hazards, risk and resilience (August 2014).
Coastal hazard impact	The impact resulting from one or more of the following: (a) coastal erosion within an erosion prone area that is also within the coastal management district; (b) a defined storm-tide event; (c) the permanent inundation of land due to a sea-level rise of 0.8 metres by 2100 (relative to 1990).
Coastal hazard risk	Exposure to the chance of injury or loss from a coastal hazard impact.
Coastal landforms	The physical features of the earth's surface on the coast such as beaches and coastal dunes, coastal plains, river mouths, river banks and cliffs.

Column 1 Term	Column 2 Definition
Coastal management district (CMD)	As defined under the *Coastal Protection and Management Act 1995*.
Coastal protection work	Any permanent or periodic work undertaken primarily to deliberately alter physical coastal processes such as sediment transport, to manage the effects of coastal hazards.
Coastal resources	As defined under the *Coastal Protection and Management Act 1995*.
Coastal waters	As defined under the *Coastal Protection and Management Act 1995*.
Coastal wetlands	As defined under the *Coastal Protection and Management Act 1995*.
Coastal zone	As defined under the *Coastal Protection and Management Act 1995*.
Coastline	The interim coastline for regional coastal management plans published by the Environmental Protection Agency on 5 June 2006.
Commonwealth Great Barrier Reef Marine Park	Commonwealth Great Barrier Reef Marine Park: the Great Barrier Reef Marine Park established in the *Great Barrier Reef Marine Park Act 1975* (Commonwealth).
Contaminant	means one or more of the prescribed water contaminants listed in schedule 9 of the Environmental Protection Regulation 2008. Note – as defined in State Planning Policy July 2014
Contaminated stormwater	Stormwater that contains a contaminant. Note – as defined in State Planning Policy July 2014
Defined flood event	The event (measured in terms of likelihood of reoccurrence) and associated inundation level adopted to manage the development of a particular area. The defined flood event is the 1% AEP flood event plus climate change factor, unless otherwise indicated for essential community service infrastructure.
Defined storm-tide event (DSTE)	The event (measured in terms of likelihood of reoccurrence) and associated inundation level adopted to manage the development of a particular area. The defined storm-tide event is the 1% AEP storm-tide plus climate change factor, unless otherwise indicated for essential community service infrastructure.
Demand unit	Demand units provide a standard of unit measurement to express demand on a trunk infrastructure network.
Demonstrated need	(For coastal protection work) Means evidence has been provided including arguments and reasoning to prove the case.

Column 1 Term	Column 2 Definition
Design objectives	Quantifiable objectives for temporary and permanent water management infrastructure. They reflect achievable and tested regionally specific designs for planning and development to ensure water sensitive urban design (WSUD) is implemented in a regionally consistent way to help achieve water quality objectives (WQOs) in receiving waterways. • for stormwater management, the typical design objectives include rainfall capture, peak discharge limits, and minimum reductions in contaminant loads for nutrients, gross pollutants, and total suspended solids. • for erosion and sediment control, the typical design objectives include drainage control, erosion control, sediment control, and water quality outcomes such as total suspended solids, and turbidity. Note – recommended minimum stormwater design objectives are shown in Chapter 2 of the 'Urban Stormwater Quality Planning Guideline' (2010).
Development	Any of the following: • carrying out building work; • carrying out plumbing or drainage work; • carrying out operational work; • reconfiguring a lot; • making a material change of use of premises. Note—definition from the *Sustainable Planning Act 2009*. Each term in this definition is further defined in the *Sustainable Planning Act 2009*.
Development footprint	The location and extent of all development proposed on a site. This includes all buildings and structures, open space, all associated facilities, landscaping, on-site stormwater drainage, on-site wastewater treatment, all areas of disturbance, on-site parking, access and manoeuvring areas.

Column 1 Term	Column 2 Definition
Development commitment	Any of the following: • as of the date of commencement of this policy, development with a valid preliminary approval; or • development that arises from and is necessary to give effect to a valid development approval • development that is: - consistent with the regional plan or any applicable state planning regulatory provision; or - explicitly anticipated by and consistent with the relevant zone (or equivalent), all applicable codes, and any other requirements of the planning scheme or other local planning instrument • development that is located within a state development area and is consistent with the development scheme prepared for the state development area • development consistent with a designation for community infrastructure made before this policy commenced • for development that is government supported transport infrastructure[4], development that is consistent with a government approval to construct given before the date of commencement of the planning scheme. Note – A development commitment does not include circumstances where the planning scheme makes the principle of the use subject to further planning or environmental assessment.
Domestic activity	Means the use of premises for a residential purpose and associated activities comprising any one or more of the following— (a) a single residential dwelling on an existing lot; (b) home based business employing no more than two non-resident people; or (c) relatives accommodation (e.g. granny flat).
Domestic outbuilding	A Class 10a building, as defined in the Building Code of Australia, that is ancillary to a residential use on the same premises and is limited to non-habitable buildings for the purpose of a shed, garage and carport.
Dugong protection areas	As described under the *Fisheries Regulation 2008*.
Dwelling	A building or part of a building used or capable of being used as a self-contained residence that must include the following: • food preparation facilities; • a bath or shower; • a toilet and wash basin; • clothes washing facilities. This term includes outbuildings, structures and works normally associated with a dwelling.

[4] Government supported transport infrastructure has the meaning given in Schedule 6 of the *Transport Infrastructure Act 1994*.

Column 1 Term	Column 2 Definition
Ecological corridor	An area of land (typically vegetated), or water, including areas above and below ground, that is capable of providing fauna habitat in its own right, and/or has the potential to do so, while allowing fauna to move to and between other habitats.
Ecological values	The intrinsic natural qualities, characteristics or worth attributable to an ecosystem.
Ecologically sustainable development	As defined under the *Coastal Protection and Management Act 1995*.
Ecosystem	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.
Environmental offsets	An activity undertaken to counterbalance a significant residual impact of a prescribed activity on a prescribed environmental matter. Note – Further information on how to apply offsets is available in the Queensland Government Environmental Offsets Policy 2008 Note – as defined in *Environmental Offsets Act 2014*.
Environmental values	As defined in section 9 of the *Environmental Protection Act 1994*: • a quality or physical characteristic of the environment that is conducive to ecological health or public amenity or safety, or • another quality of the environment identified and declared to be an environmental value under an environmental protection policy or regulation. The Environmental Protection (Water) Policy 2009 states the environmental values of waters.
Erosion control structures	Structures designed to protect land or to permanently alter sediment transport processes and include structures such as seawalls or revetments (rock walls), groynes, artificial reefs, and breakwaters.
Erosion prone area	As defined under the *Coastal Protection and Management Act 1995*.
Footpath awning	A solid weather proof structure over the pedestrian footpath that is either attached or detached to a building. The awning is of a cantilever design and does not include canvas structures, shade sails and umbrellas.
GIS Multi Criteria Analysis Methodology	Refers to a methodology commissioned by the Department of Transport and Main Roads on behalf of boating infrastructure delivery agencies.

Column 1 Term	Column 2 Definition
Gross floor area	The total floor area of all storeys of the building (measured from the outside of the external walls or the centre of a common wall), other than areas used for the following: (a) building services, plant and equipment; (b) access between levels; (c) ground floor public lobby; (d) a mall; (e) the parking, loading or manoeuvring of motor vehicles; (f) unenclosed private balconies whether roofed or not.
Ground level	The level of the natural ground, or, where the level of the natural ground has been changed, the level as lawfully changed.
Groundwater	Subartesian water or artesian water.
Habitable room	A room used for normal domestic activities, and: • includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom; but • excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes-drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods. Note—definition from the *Building Code of Australia*.
Hazardous material	A substance with potential to cause harm to persons, property or the environment because of 1 or more of the following— • the chemical properties of the substance; • the physical properties of the substance; • the biological properties of the substance. Without limiting the first paragraph, all dangerous goods, combustible liquids and chemicals are hazardous materials. Note—definition from the *Dangerous Goods Safety Management Act 2001*.
Hazardous material in bulk	Hazardous materials as defined in the *Dangerous Goods Safety Management Act 2001* (except that radioactive substances and infectious substances are excluded) in quantities that: • would be equivalent to or exceed the minimum quantities set out to determine a Large Dangerous Goods Location in the *Dangerous Goods Safety Management Regulation*; or • would require a licence for a magazine for the storage of an explosive under the *Explosives Regulation 1955*.

Column 1 Term	Column 2 Definition
High coastal hazard area	Includes one or more of the following: (a) the part of the erosion prone area that is within the coastal management district (b) land that is projected to be permanently inundated due to 0.8 metre sea-level rise relative to 1990 (c) the part of the storm-tide inundation area that is projected to be temporarily inundated to a depth of one metre or more during a defined storm-tide event (refer to the coastal hazards guideline).
High density residential development	Residential development involving: • maximum plot ratio (maximum density) – 2.5:1 • minimum number of dwellings provided (minimum density) - equivalent of 1 dwelling per every 75m^2 of site area; • maximum building height – if in the High density residential zone – 32 metres above ground level (10 storeys); or if in building height area 1 in the Mackay city centre local plan – 49 metres AHD • typical building form – medium-rise apartments, high-rise apartment
Higher density (residential development)	Means residential densities higher than low density, that is – low-medium, medium, medium-high and high density residential development. Therefore, higher density residential development means dwellings occupy not more than 500m^2 of site area.
Highest astronomical tide (HAT)	The highest sea level which can be predicted to occur under average meteorological conditions and any combination of astronomical conditions.
Home based childcare	Means part of a dwelling being used for the minding and care of two or more children, for a day or part of a day, for fee or reward by a person residing in the dwelling. The activity accords with the *Child Care (Family Day Care) Regulation 1991*.
Household	An individual or a group of two or more related or unrelated people who reside in the dwelling, with the common intention to live together on a long term basis and who make common provision for food or other essentials for living.
Hydrodynamic forces	The force exerted on its surroundings by a moving body of water (for example force exerted on a structure by waves).

Column 1 Term	Column 2 Definition
Hydrological regime	The surface and groundwater flows of water into and out of a wetland, and its associated natural wetting and drying cycle, over an appropriate temporal scale. It includes: • Peak flows, • Volume of flows • Duration of flows • Frequency of flows • Seasonality of flows • Water depth (seasonal average) • Wetting and drying cycle
Hydrostatic forces	The force exerted on its surroundings by a body of water at rest (for example force exerted on a dam wall).
Industrial zone	Includes high impact industry zone, low impact industry zone and industry investigation zone.
Iron floc	Particulate deposits of iron (ferric) compounds which under oxygenated conditions clump together to form a 'coat' on water surfaces and can often give water a rust brown appearance resulting in staining of pipes and structures. A common way to remove iron from waters is to neutralise and aerate to allow the iron floc to precipitate and settle out of solution.
Key active frontage streets	Streets within centres, often the 'main street', where it is considered important that new development maintains / creates a street-orientated built form character and high quality pedestrian environment. The following are key active frontage streets: • Mackay city centre: refer to Figure 7.2.1.3.A – Mackay city centre street frontages in the Mackay city centre local plan • Rural View major centre: new north-south key active frontage street required within Northern Beaches Central shopping centre (both sides) • Sarina major centre: - Broad Street (western side between Venton Street and Railway Square and eastern side between Johnson Street and Brewers Road); and - Central Street (both sides between Brandon Street and Broad Street) • West Mackay district centre (Fourways): - Nebo Road (both sides between Bridge Road and Milne Lane / Adrian Street); and - Bridge Road (both sides for the full extent of the district centre zone) • Marian district centre: Duffy Court

Column 1 Term	Column 2 Definition
	• North Mackay district centre: - Evans Avenue (north-eastern side between Canberra Street and Palmer Street and south-western side between Hodder Street and Sams Road); and - Palmer Street (both sides between Evans Avenue and Grendon Street); and - Grendon Street (both sides between Palmer Street and Evans Avenue) • Walkerston district centre: Dutton Street (northern side between Bold Street and Centenary Park and southern side between Bold Street and St John's Catholic Primary School (to, not including) • Andergrove Lakes (strategic) local centre: new key active frontage street required within the centre • Blacks Beach (strategic) local centre: new key active frontage street required within the centre • Mirani (strategic) local centre: - Alexandra Street (northern side between Augusta Street and Mirani Police Station) - Victoria Street (southern side between Augusta Street and up to (not including) the Immaculate Conception Church • Shoal Point (strategic) local centre: new key active frontage street required within the centre • Evan Street (existing) local centre (South Mackay): Evan Street (both sides for the full extent of the local centre zone) • Martins Corner (existing) local centre (Mackay): Shakespeare Street (northern side for the full extent of the local centre zone) • Moore Street (existing) local centre (Mackay): - Shakespeare Street (both sides for the full extent of the local centre zone) - Moore Street (eastern side for the full extent of the local centre zone) - Wentford Street (eastern side for the full extent of the local centre zone) • Ungerer Street (existing) local centre (North Mackay): Ungerer Street (southern side for the full extent of the local centre zone)
Key urban area	Includes land identified as "urban area" and "industrial" in Mackay, Sarina, Walkerston, Marian and Mirani on the Strategic Framework mapping - Schedule 2.
Low density residential development	Residential development involving: • lot size – not less than 400m^2 • maximum plot ratio – 0.5:1 • maximum building height – 8.5 metres above ground level (2 storeys) • typical building form: detached dwellings

Column 1 Term	Column 2 Definition
Low-medium density residential development	Residential development involving: • maximum plot ratio – 0.6:1 if the site is adjacent to a public transport route, within 200 metres of a multi-purpose centre zone, or within 200 metres of usable open space, or 0.5:1 in other locations • minimum number of dwellings provided (minimum density) – equivalent of 1 dwelling per every 500m^2 • maximum building height – 8.5 metres above ground level (2 storeys) • typical building form – detached dwellings, semi-detached dwellings, attached dwellings
Maritime development area	A specific area where it has been demonstrated to the satisfaction of the Department of Environment and Resource Management that the area is suitable for identification as a maritime development area in accordance with the maritime development area methodology.
Matters of State Environmental Significance (MSES)	Means the following natural values and areas: • protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* • marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004* • areas within declared fish habitat areas that are management A areas or management B areas under the *Fisheries Regulation 2008* • threatened wildlife under the *Nature Conservation Act 1992* and special least concern animal under the *Nature Conservation (Wildlife) Regulation 2006* • regulated vegetation under the *Vegetation Management Act 1999* that is: - Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems - Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems - Category R areas on the regulated vegetation management map - areas of essential habitat on the essential habitat map for wildlife prescribed as 'endangered wildlife' or 'vulnerable wildlife' under the *Nature Conservation Act 1992* - regional ecosystems that intersect with watercourses identified on the vegetation management watercourse map - regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map • high preservation areas of wild river areas under the *Wild Rivers Act 2005* • wetlands in a wetland protection area or wetlands of high ecological significance shown on the Map of Referable Wetlands under the *Environmental Protection Regulation 2008* • wetlands and watercourses in high ecological value waters as defined in the Environmental Protection (Water) Policy 2009, schedule 2 • legally secured offset areas. Note – definition from State Planning Policy July 2014

Column 1 Term	Column 2 Definition
Medium density residential development	Residential development involving: • maximum plot ratio (maximum density) – 0.8:1 • minimum number of dwellings provided (minimum density) – equivalent of 1 dwelling per every 200m^2 • maximum building height – 8.5 metres above ground level (2 storeys) • typical building form – semi-detached dwellings, attached dwellings
Minor building work	An alteration, addition or extension to an existing building(s) which results in an increase in the gross floor area of the building(s) of less than 5% of the gross floor area of the existing building(s) or 50m^2, whichever is the lesser.
Minor building work – industry activities	An alteration, addition or extension to an existing building occupied by an industry activity, where the floor area is less than 10% of the building or 200m^2, whichever is the lesser.
Minor electricity infrastructure	All aspects of development for an electricity supply network as defined under the *Electricity Act 1994*, (or for private electricity works that form an extension of, or provide service connections to properties from the network), if the network operates at standard voltages up to and including 66kV.) This includes: • augmentations/upgrades to existing powerlines where the voltage of the infrastructure does not increase; • augmentations to existing substations (including communication facilities for controlling works as defined under the *Electricity Act 1994*) where the voltage of the infrastructure does not increase, and where they are located on an existing substation lot.
Minor marine development	Minor public marine development and private marine access structures.
Minor public marine development	Maritime facilities such as boat ramps, pontoons, slipways, wharves and jetties that serve a public purpose. To remove any doubt, a new navigation channel is not minor public marine development.
Multi-purpose centre	Includes the Principal centre zone, Major centre zone, District centre zone, Local centre zone and Neighbourhood centre zone. The Specialised centre zone is not a multi-purpose centre.

Column 1 Term	Column 2 Definition
Multi-storey medium density	Residential development involving: • maximum plot ratio (maximum density) – 1.5:1 in areas identified for 5 storey development and 1.2:1 in areas identified for 3 storey development • minimum number of dwellings provided (minimum density) – equivalent of 1 dwelling per every 200m^2 • maximum building height – 17 metres above ground level (5 storeys) in certain areas and 11 metres above ground level (3 storeys) in certain areas (refer to Medium density residential zone) • typical building form – low-rise apartments
Net developable area	The area of land available for development. It does not include land that cannot be developed due to constraints such as acid sulfate soils, conservation land, flood affected land or steep slope. Note – for the purpose of a local government infrastructure plan, net developable area is usually measured in hectares, net developable hectares (net dev ha).
Net dwelling density	The measure of housing density expressed as dwellings or lots per hectare, calculated by adding the area of residential lots and the area of local streets and parks, and then dividing by the number of dwellings or residential lots created. Note – definition from Mackay, Isaac and Whitsunday Regional Plan 2012
Netserv plan	A distributor retailer's plan about its water and wastewater networks and provision of water service and wastewater service pursuant to section 99BJ of the *South East Queensland (Distributor retailer Restructure) Water Act 2009.*
Non-resident workers	Workers who reside in areas for extended periods when employed on projects directly associated with resource extraction, major industry, major infrastructure or rural uses, but have a permanent place of residence in another area. This includes workers engaged in fly-in/fly-out or drive-in/drive-out arrangements.
Non-tidal artificial waterway	Includes access channels, constructed urban lakes or other bodies of water that are designed to be: • permanent bodies of open water • fringed with hard edges or emergent macrophytes • indirectly connected to tidal water (by a lock or weir or other system) or • artificial lakes (generally land locked without a direct connection to tidal waterways). For the purposes of the policy, non-tidal artificial waterways do not include waterbodies used only for aquaculture or agricultural activities.

Column 1 Term	Column 2 Definition
Nutrient hazardous areas	Areas containing appreciable levels of nutrients of concern that may contribute to increased occurrence, frequency or intensity of coastal algal blooms (particularly nitrogen, phosphorus, iron and organic matter). Hazard maps are used to spatially represent nutrient hazardous areas vulnerable to the supply and potential export of nutrients of concern for coastal algal blooms. Course-scale maps are regionally based and used to indicate nutrient hazardous areas where more detailed mapping is needed. Detailed hazard maps are more locally based and produced at a scale suitable for inclusion into local government planning instruments. Areas may have any of the following features: • soil or vegetation types that are naturally conducive to high concentrations of nitrogen, phosphorus, iron and/or organic matter (for example, wetlands, marine and alluvial sediments) or where management activities or land use contribute to intensification or mobilisation of these nutrients of concern (for example, disturbance of acid sulfate soils) • site conditions (for example, water logging and anaerobic conditions, perched groundwater tables) that promote formation of nutrients into bioavailable form • location in close proximity to waterways or with site conditions that readily promote transport of nutrients to waterways or groundwater (for example, highly transmissive, permeable soils such as Podosols). Where local government areas have not been mapped for the above features the information requirements for development assessment should investigate the development site for the risk of mobilisation of nutrients of concern. See Implementing Policies and Plans for Managing Nutrients of Concern for Coastal Algal Blooms in Queensland for further details.
Nutrients of concern	Nutrients or other trace elements that can enhance the growth of algae and include nitrogen, phosphorus, iron or organic matter (dissolved organic carbon). These elements have been shown to increase the severity of *Lyngbya majuscula* (cyanobacterium) blooms. See Nutrient hazardous areas.
Outermost projection	The outermost projection of any part of a building or structure including, in the case of a roof, the outside face of the fascia, or the roof structure where there is no fascia, or attached sunhoods or the like, but does not include retractable blinds, fixed screens, rainwater fittings, or ornamental attachments.

Column 1 Term	Column 2 Definition
Overriding need in the public interest	Factors for determining overriding need in the public interest: • the overall social, economic and environmental benefits of the development outweigh: – any detrimental effect upon the natural values of the land and adjacent areas; – any conflicts it has with the policy outcome of the relevant SPP where applicable. • the development cannot be located elsewhere so as to avoid conflicting with the policy outcome of the relevant SPP where applicable. The following do not establish an overriding need in the public interest: • uses with relatively few location-based requirements • interests in, or options over the land • availability or ownership of land.
Patron	Means any person who attends the facility for a major event. Therefore, patrons can include spectators, delegates, sporting competitors, performers, officials, employees and other types of participants.
Physical coastal processes	Natural processes of the coast including sediment transport; fluctuations in the location and form of the foreshore, dune systems and associated ecosystems; tides; changes in sea level and coastal hazards (for example, storm-tide), ecological processes (for example, migration of plant and animal species) and the natural water cycle (for example, coastal wetlands' role in nutrient filtration and flood mitigation).
Planning assumptions	Assumptions about the type, scale, location and timing of future growth.
Plot ratio	The ratio of gross floor area to the area of the site.
Primary road frontage	On sites with 1 road frontage only, the primary road frontage is the road frontage. On corner sites (sites with 2 road frontages), the primary road frontage is: • is the shorter of the two road frontages; or • where the 2 road frontages are the same length, the frontage that buildings on adjoining and nearby sites primarily address (front door, letter box and mailing address).
Projection area(s)	Area or areas within a local government area for which a local government carries out demand growth projections.
Recommended storm-tide event (RSTE)	The storm-tide event that would correlate with the recommended storm-tide event level for particular types of essential community service infrastructure.

Column 1 Term	Column 2 Definition
Residential zone	Includes emerging community zone, high density residential zone, low density residential zone, medium density residential zone, mixed use zone, rural residential zone, tourism area (major) zone and township zone.
Risk (natural hazards)	A concept used to describe the likelihood of harmful consequences arising from the interaction of hazards, community and the environment.
Secondary dwelling	A dwelling used in conjunction with, and subordinate to, a dwelling house on the same lot. A secondary dwelling may be constructed under a dwelling house, be attached to a dwelling house or be free standing.
Secondary road frontage	On corner sites (sites with 2 road frontages), the secondary road frontage: • is the longer of the two road frontages; or • where the 2 road frontages are the same length, the frontage that buildings on adjoining and nearby sites do not primarily address (front door, letter box and mailing address).
Sediment	Solids (typically sand, silt, clay, mud, and other particulate matter) that are transported by water. Sediment is considered to be a 'contaminant' as defined in schedule 9 of the Environmental Protection Regulation 2008 (made under the *Environmental Protection Act 1994)*.
Sensitive land use	Means a use that is: caretakers accommodation, child care centre, community care centre, community residence, detention facility, dual occupancy, dwelling house, dwelling unit, educational establishment, health care services, hospital, hotel, multiple dwelling, non-residential workforce accommodation, relocatable home park, residential care facility, resort complex, retirement facility, rooming accommodation, rural workers accommodation, short-term accommodation, tourist park. Note—definition from SPP July 2014
Service catchment	An area serviced by an infrastructure network is made up of one or more service catchments. Service catchments are determined by the network type and how it has been designed to operate and provide service to the urban areas. Note – for example: • stormwater network service catchments can be delineated to align with watershed boundaries; • open space network service catchment can be determined using local government accessibility standards; • water network service catchment can be established as the area serviced by a particular reservoir.

Column 1 Term	Column 2 Definition
Setback	For a building or structure, the shortest distance measured horizontally from the outer most projection of a building or structure to the vertical projection of the boundary of the lot. Editor's note – Section 1.7.1 provides that for the purpose of determining compliance with an assessment criteria for site cover and setback, development is deemed to comply with the assessment criteria if the development exceeds the assessment criteria only by reason of the inclusion of an outermost projection which is part of a building or structure that is: • an eave of a roof; or • a sunhood or the like attached to the wall of a building or structure to provide shade or shelter to the wall.
Site	Any land on which development is carried out or is proposed to be carried out whether such land comprises the whole or part of one lot or more than one lot if each of such lots is contiguous.
Site cover	The proportion of the site covered by a building(s), structure(s) attached to the building(s) and carport(s), calculated to the outer most projections of the building(s) and is expressed as a percentage. The term does not include: (a) any structure or part thereof included in a landscaped open space area such as a gazebo or shade structure (b) basement car parking areas located wholly below ground level (c) eaves and sun shading devices
State development area	As defined under the *State Development and Public Works Organisation Act 1971* means a part of the State or of an area over which the State claims jurisdiction, delineated on a plan, and declared under the Act to be a State development area.
Storey	A space that is situated between one floor level and the floor level next above, or if there is no floor above, the ceiling or roof above, but not a space that contains only: • a lift shaft, stairway or meter room • a bathroom, shower room laundry, water closet, or other sanitary compartment • or a combination of the above; A mezzanine is a storey. A roofed structure on or part of a rooftop that does not solely accommodate building plan and equipment is a storey. A basement is not a storey.
Storm-tide	The temporary elevation of coastal water by a storm surge combined with the normally occurring astronomical tide.

Column 1 Term	Column 2 Definition
Storm tide inundation area	Means a medium or high storm tide inundation area shown on the SPP interactive mapping system. Note – as defined in State Planning Policy July 2014
Stormwater quality management plan	A plan for a local area that assists local councils and other catchment managers to recognise the impacts of activities, to develop management strategies, and to integrate stormwater management systems in rural and urban areas. Note – A site SQMP may only apply to a specific development site. An urban stormwater quality management plan (USQM) for a local area may be a component of the SQMP (see urban stormwater quality management plan).
Streetscape rhythm	A general term to describe the continuity of fundamental built-form elements along a street including building height, bulk, setbacks, orientation and alignment.
Suitably qualified person	One (or more) of the following: • for urban stormwater quality and flow management—a person with relevant tertiary qualifications or equivalent, including a registered practising engineer of Queensland (RPEQ) (civil engineering, environmental engineering). Such persons may be responsible for a site stormwater quality management plan (site SQMP) • for erosion and sediment control—a person who is a certified practising soil scientist (CPSS) or certified professional in erosion and sediment control (CPESC), or an RPEQ (or equivalent) with experience and training in soil science and erosion and sediment control. Such persons may be responsible for erosion and sediment control plans (ESCP) • for wastewater management—a person with appropriate tertiary qualifications or equivalent such as an RPEQ with experience in environmental engineering or environmental scientist (or similar) incorporating waste water management. Such persons may be responsible for a site waste water management plan for the design, operation or construction of a development • for management of non-tidal artificial waterways—a person with tertiary qualifications or equivalent such as an RPEQ (environmental engineering) or environmental scientist (or similar) and experience in incorporating waterway management. Such persons may be responsible for a waterway management plan for the design, operation or construction of a development with artificial waterways • for coastal algal blooms—a person with tertiary qualifications (that is, science) or equivalent and experience in planning and managing for soil nutrients, water quality, hydrology and acid sulfate soils (for example, certified practising soil scientist or certified environmental practitioner) • for acid sulfate soils—a person with tertiary qualifications (that is, science) or equivalent and experience in planning and managing for soils and acid sulfate soils (for example, certified practising soil scientist).

Column 1 Term	Column 2 Definition
Temporary, readily relocatable or able to be abandoned	Means a land use or structure that if threatened by adverse coastal hazard impacts will be relocated, or discontinued and removed rather than protected from the impacts because: • it is not anticipated to remain in place for more than 10 years and/or is capable of being disassembled and/or easily removed; and • there will be negligible adverse economic or social consequences associated with its relocation, or from it being discontinued or removed. It includes, but is not limited to, temporary accommodation such as tents or demountable buildings, picnic areas and associated picnic tables and barbeques, market or stall venues, surf life-saving observation towers, equipment sheds, recreation reserves, or walking and biking trails.
Temporary use	A use that is impermanent and may be irregular or infrequent that does not require the construction of a permanent building or the installation of permanent infrastructure or services.
Ultimate development	The realistic extent of development anticipated to be achieved when a site (or projection area or infrastructure service catchment) is fully developed.
Urban purposes	For the purposes of local government infrastructure plans, urban purpose includes residential (other than rural residential), retail, commercial, industrial, community and government related purposes.
Urban stormwater quality management plan	A plan made as the urban stormwater component of a total water cycle management plan (TWCMP) for a local area and in accordance with the department's TWCMP Guideline and Urban Stormwater Quality Planning Guideline. An USQMP is a requirement under section 21 of the EP water policy as part of a TWCMP. Note – In other cases, an USQMP developed only for a particular site, may be a component of the Stormwater Quality Management plan (see definition above).
Urban zone	Urban zone includes Community facilities zone, District centre zone, Emerging community zone, High density residential zone, High impact industry zone, Industry investigation zone, Local centre zone, Low density residential zone, Low impact industry zone, Major centre zone, Medium density residential zone, Mixed use zone, Principal centre zone, Specialised centre zone, Sport and recreation zone, and Township zone.
Usable open space	Usable open space includes: • regional parks, local parks, linear parks, foreshore parks and natural parks (as defined by the Council's Open space planning scheme policy) that are publicly accessible, regularly maintained and have developed facilities such as picnic areas and footpaths; • publicly accessible beaches.

Column 1 Term	Column 2 Definition
Waste water	Means aqueous waste, and includes contaminated stormwater. Note – as defined in Environmental Protection (Water) Policy 2009 – Schedule 2
Waste water management plan	A plan typically submitted with a development assessment application detailing the waste water management system and design for a proposed development (sometimes known as 'site based management plan'). They sometimes also contain an erosion and sediment control plan for the construction phase of the development. They are also a way of detailing any offset arrangements that may be employed.
Waters	Means estuarine, coastal and marine waters to the limit of Queensland waters as defined under the *Acts Interpretation Act 1954.* Waters includes the bed and banks of waters (see section 21 of the *Water Act 2000* for non-tidal water*;* see section 9 of the *Land Act 1994* for tidal water). Note – Waters may include the whole or any part of surface water or groundwater, such as river, stream, lagoon, swamp, wetland, unconfined surface water or natural or artificial watercourse, lake or dam.
Watercourse	As defined under the *Sustainable Planning Regulation 2009*.
Water quality objectives (WQOs)	means the numerical concentration limits, mass or volume limits per unit of time or narrative statements of indicators established for waters to enhance or protect the environmental values for those waters set out in: • the Environmental Protection (Water) Policy 2009, schedule 1 for water mentioned in the policy, or • otherwise – the Queensland Water Quality Guidelines 2009. Note – as defined in State Planning Policy July 2014
Wetland fauna	Species that have adapted to living in wetlands and are dependent on them for: • All of their life cycle • A major part of their life • For critical stages of their life cycle, such as breeding and larval development.
Wetland protection area	An area shown as a wetland protection area on the map of referable wetlands.

Schedule 2 Mapping

SC2.1 Map index

The table below lists any strategic framework, zoning, local plan and overlay maps applicable to the planning scheme area.

Editor's note—mapping for the PIP is contained within Schedule 3 of the planning scheme.

Table SC2.1.1 – Map index

Map number	Map title	Gazettal date
Strategic framework maps		
NA	Grid index for Mackay region planning scheme – strategic framework map	<insert gazettal date>
NA	Rural strategic framework maps – 1–7	<insert gazettal date>
NA	Urban strategic framework – map of Mackay	<insert gazettal date>
NA	Urban Strategic framework maps – 1–9	<insert gazettal date>
Zone maps		
NA	Grid index for Mackay region planning scheme zone maps	<insert gazettal date>
NA	Planning zone maps – 1–82	<insert gazettal date>
Local plan maps		
NA	Local plan map 38 (Mackay city centre local plan area)	<insert gazettal date>
NA	Local plan maps 60 – 62 (Marian central local plan area)	<insert gazettal date>
Overlay maps		
Acid sulfate soils overlay		
NA	Grid index – Acid sulfate soils overlay	<insert gazettal date>
AS-1, AS-2, AS-5 to AS-10, AS-12 to AS-26, AS-28 to AS-54, AS-64, AS-65 and AS-68 to AS-82.	Acid sulfate soils overlay	<insert gazettal date>
Airport environs overlay – aviation facilities		
NA	Grid index for Mackay region planning scheme overlay maps – airport environs overlay	<insert gazettal date>
AE-AF-1, AE-AF-4, AE-AF-5, AE-AF-37, AE-AF-38, AE-AF-41, AE-AF-42, AE-AF-44 and AE-AF-45	Airport environs overlay – Aviation facilities	<insert gazettal date>
Airport environs overlay – wildlife hazard buffers, Australian Noise Exposure Forecast (ANEF) contours and lighting management		
NA	Grid index – Airport environs overlay	<insert gazettal date>
AE-WN-5, AE-WN-22, AE-WN-23, AE-	Airport environs overlay – wildlife hazard buffers, Australian Noise Exposure Forecast	<insert gazettal date>

Map number	Map title	Gazettal date
WN-27, AE-WN-29 to AE-WN-53, AE-WN-63, AE-WN-65, AE-WN-69 and AE-WN-70	(ANEF) contours and lighting management	
Airport environs overlay – obstacle limitation surface (OLS) contours, public safety area and airport runway		
NA	Grid index – Airport environs overlay	<insert gazettal date>
AE-OL-5, AE-OL-29, AE-OL-33 to AE-OL-50 and AE-OL-53	Airport environs overlay – obstacle limitation surface contours, public safety area and airport runway	<insert gazettal date>
Bushfire hazard overlay		
NA	Grid index – Bushfire hazard overlay	<insert gazettal date>
BH-1 to BH-82	Bushfire hazard overlay	<insert gazettal date>
Extractive resources and high impact activities overlay		
NA	Grid index – Extractive resources and high impact activities overlay	<insert gazettal date>
EH-1, EH-2, EH-4, EH-5, EH-7, EH-11, EH-14, EH-15, EH-17, EH-20, EH-22, EH-24, EH-26 to EH-33, EH-35 to EH-37, EH-40, EH-41, EH-43, EH-44, EH-46, EH-47, EH-49, EH-50, EH-55, EH-58 to , EH-65, EH-67 to EH-74, EH-77 to EH-80 and EH-82	Extractive resources and high impact activities overlay	<insert gazettal date>
Flood and coastal hazards overlay – flood hazards		
NA	Grid index – Flood hazard	<insert gazettal date>
FC-FH-5, FC-FH-25, FC-FH-26, FC-FH-29 to FC-FH-50, FC-FH-59 to FC-FH-61, FC-FH-63 to FC-FH-65.	Flood hazard overlay	<insert gazettal date>
Flood and coastal hazards overlay – coastal hazards		
NA	Grid index – Coastal hazard	<insert gazettal date>
FC-CH-1 to FC-CH-3, FC-CH-5 to FC-CH-10, FC-CH-12, FC-CH-15 to FC-CH-26, FC-CH-30 to FC-CH-32, FC-CH-34 to FC-CH-39, FC-CH-41, FC-CH-42, FC-CH-44 to FC-CH-54, FC-CH-68 to FC-CH-76, FC-CH-78, FC-CH-80, FC-CH-81	Coastal hazard overlay	<insert gazettal date>

Map number	Map title	Gazettal date
Agricultural land overlay – Agricultural land class A & B		
NA	Grid index – Agricultural land overlay – Agricultural land class A & B	<insert gazettal date>
AL-AB-1, AL-AB-2, AL-AB-4, AL-AB-5, AL-AB-7 to AL-AB-11, AL-AB-13 to AL-AB-18, AL-AB-20, AL-AB-22 to AL-AB-31, AL-AB-33, AL-AB-34, AL-AB-37, AL-AB-38, AL-AB-40, AL-AB-41, AL-AB-43 to AL-AB-47, AL-AB-49 to AL-AB-54, AL-AB-56 to AL-AB-70, AL-AB-72 to AL-AB-82	Agricultural land overlay – Agricultural land class A & B	<insert gazettal date>
Agricultural land overlay – Locally important agricultural land (LIAA)		
NA	Grid index – Agricultural land overlay – Locally important agricultural land (LIAA)	<insert gazettal date>
AL-AI-1, AL-AI-2, AL-AI-4, AL-AI-5, AL-AI-7, AL-AI-13, AL-AI-14, AL-AI-16 to AL-AI-18, AL-AI-22 to AL-AI-25, AL-AI-27 to AL-AI-30, AL-AI-33, AL-AI-34, AL-AI-37, AL-AI-38, AL-AI-40, AL-AI-41, AL-AI-43 to AL-AI-47, AL-AI-49 to AL-AI-54, AL-AI-56 to AL-AI-69, AL-AI-75 to AL-AI-88 and AL-AI-82	Agricultural land overlay – Locally important agricultural land (LIAA)	<insert gazettal date>
Biodiversity overlay – Environmentally significant vegetation and wildlife habitat areas		
NA	Grid index – Biodiversity overlay – Environmental significant vegetation and wildlife habitat areas	<insert gazettal date>
BD-SV-1 to BD-SV-82	Biodiversity overlay maps – Environmentally significant vegetation and wildlife habitats	<insert gazettal date>
Biodiversity overlay – Waterways and wetlands		
NA	Grid index – Biodiversity overlay – Waterways and wetlands	<insert gazettal date>
BD-WW-1 to BD-WW-82	Biodiversity overlay – Waterways and wetlands	<insert gazettal date>
Heritage and neighbourhood character overlay		
NA	Grid index – Heritage and neighbourhood character overlay	<insert gazettal date>
HN-1 to HN-5, HN-7, HN-21, HN-24, HN-37, HN-38, HN-40,	Heritage and neighbourhood character overlay	<insert gazettal date>

Map number	Map title	Gazettal date
HN-41, HN-56, HN-59, HN-64, HN-80 and HN-82.		
Landscape character and image corridor overlay		
NA	Grid index – Landscape character and image corridor overlay	<insert gazettal date>
LC-1 to LC-82	Landscape character and image corridor overlay	<insert gazettal date>
Landslide hazard overlay		
NA	Grid index – Landslide hazard overlay	<insert gazettal date>
LH-1 to LH-82	Landslide hazard overlay	<insert gazettal date>
Regional infrastructure overlay		
NA	Grid index – Regional infrastructure overlay maps	<insert gazettal date>
RI-1, RI-2, RI-4, RI-5, RI-7, RI-11, RI-13, RI-14, RI-17, RI-18, RI-20, RI-22, RI-24, RI-27 to RI-38, RI-40, RI-41, RI-43, RI-44, RI-46, RI-47, RI-49, RI-50 to RI-52, RI-54, RI-56 to RI-67, RI-71 to RI-74, RI-77 to RI-80, and RI-82	Regional infrastructure overlay maps	<insert gazettal date>
Residential density overlay		
NA	Grid index – Residential density overlay	<insert gazettal date>
RD-5, RD-19, RD-20, RD-22 to RD-24, RD-34, RD-36 to RD-43	Residential density overlay	<insert gazettal date>
Road hierarchy overlay		
NA	Grid index – Road hierarchy overlay	<insert gazettal date>
RH-1, RH-2, RH-4, RH-5 and RH-7 to RH-82	Road hierarchy overlay	<insert gazettal date>

Map number	Map title	Gazettal date
Transport noise corridor overlay		
NA	Grid index – Transport noise corridor overlay	<insert gazettal date>
TN-1, TN-2, TN-4, TN-5, TN-7, TN-11, TN-13 to TN-15, TN-17, TN-18, TN-20 to TN-24, TN-26 to TN-28, TN-30 TN-35, TN-37, TN-38, TN-40, TN-41, TN-43, TN-46, TN-49, TN-51, TN-55 to TN-67, TN-71 to TN-73, TN-76 to TN-80 and TN-82	Transport noise corridor overlay	<insert gazettal date>

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SC2.2 Strategic plan maps

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SC2.3 Zone maps

SC2.3.1 Zone precinct index

The table below lists all zone precincts applicable to the planning scheme area.

Table SC2.3.1 – Zone precinct index

Precinct number	Precinct name	Relevant zone
EC1	Alexandra Street precinct	Emerging community zone
EC2	Andergrove lakes precinct	Emerging community zone
EC3	Mirani precinct	Emerging community zone
EC4	Northern Beaches south precinct	Emerging community zone
EC5	Ooralea precinct	Emerging community zone
EC6	Sarina north precinct	Emerging community zone
EC7	Shoal Point – Bucasia precinct	Emerging community zone
EC8	Walkerston precinct	Emerging community zone
HI1	Sugar mill precinct	High impact industry zone
HI2	Air quality management precinct	High impact industry zone
II1	Boundary Road East precinct	Industry investigation zone
II2	Cowleys Road precinct	Industry investigation zone
II3	Glenella precinct	Industry investigation zone
II4	Marian precinct	Industry investigation zone
II5	Paget south precinct	Industry investigation zone
II6	Sarina precinct	Industry investigation zone
MD1	Low-medium density precinct	Medium density residential zone
MD2	General medium density precinct	Medium density residential zone
MD3	Multi-storey medium density precinct	Medium density residential zone
MX1	Amenity and convenience precinct	Mixed use zone
MX2	Fringe commercial precinct	Mixed use zone
RU1	Investigation area precinct	Rural zone
SP1	Future road precinct	Special purpose zone
SC1	Showrooms and hardware precinct	Specialised centre
SC2	Tavern precinct	Specialised centre

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SC2.4 Local plan maps

SC2.4.1 Local plan precinct index

The table below lists all local plan precincts applicable to the planning scheme area.

Table SC2.4.1 – Local plan precinct index

Precinct number	Precinct name	Relevant local plan
CC1	City core precinct	Mackay city centre local plan
CC2	City mixed use precinct	Mackay city centre local plan
CC3	Education mixed use precinct	Mackay city centre local plan
CC4	Exhibition/events precinct	Mackay city centre local plan
CC5	Civic precinct	Mackay city centre local plan

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SC2.5 Overlay maps

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Schedule 3 Priority infrastructure plan mapping and support material

SC3.1 Map index

The table below lists all strategic plan, zoning, local plan and overlay maps applicable to the planning scheme area.

Table SC3.1.1 – Map index

Map number	Map title	Gazettal date
PIP maps		
PI - PA - 1 to PI - PA - 9	Priority infrastructure area	<insert gazettal date>
PI - WS - 1 to PI - WS - 9	Water infrastructure	<insert gazettal date>
PI - WW - 1 to PI - WW - 9	Sewerage infrastructure	<insert gazettal date>
PI - ST - 1 to PI - ST - 9	Stormwater infrastructure	<insert gazettal date>
PI - TR - 1 to PI - TR - 9	Transport infrastructure	<insert gazettal date>
PI - PK - 1 to PI - PK - 9	Parks infrastructure	<insert gazettal date>

Editor's note—mapping not related to the PIP is contained within Schedule 2 of the planning scheme.

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SC3.2 Priority infrastructure area

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SC3.3 Water infrastructure

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SC3.4 Sewerage infrastructure

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SC3.5 Stormwater infrastructure

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SC3.6 Transport infrastructure

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SC3.7 Parks infrastructure

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Schedule 4 Notations required under the *Sustainable Planning Act 2009*

SC4.1 Notation of decisions affecting the planning scheme under section 391 of the Act

Table SC4.1.1 – Notation of decisions under section 391 of the Act

Date of decision	Location (real property description)	Decision type	File reference

Editor's note – this schedule should include:

- approvals that conflict with the planning scheme;
- development approvals under section 242 of the Act that vary the effect of the scheme;
- decisions agreeing to a superseded planning scheme request.

SC4.2 Notation of resolution(s) under Chapter 8, Part 2, Division 1 of the Act

Table SC4.2.1 – Notation of resolutions under Chapter 8, Part 2, Division 1 of the Act

Date of resolution	Date of effect	Details	Contact information

Editor's note – this schedule should provide information about the adopted infrastructure charges for the local government and where a copy of the adopted charges can be obtained, including a link to the local government website where a copy of the infrastructure charges resolution can be viewed or downloaded.

SC4.3 Notation of registration for urban encroachment provisions under section 680ZE of the Act

Table SC4.3.1 – Notation of decisions under section 680ZE of the Act

Date of resolution	Date of effect	Details	Contact information

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Schedule 5 Land designated for community infrastructure

Editors note -

This Schedule is to be used as a guide only for planning purposes.

While every care is taken to ensure the accuracy of this product Mackay Regional Council makes no representations or warranties about the accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) or all expenses, losses, damages (including indirect or consequential damage) and costs you may incur as a result of this product being inaccurate or incomplete in any way or for any reason.

Table SC5.1 – Land designated for community infrastructure

Date of designation	Real property description	Street address	Type of community infrastructure
25/08/2000	Lot 174 on CP894725	67 Victoria Street, Mackay Brisbane, Victoria and Sydney Streets, Mackay (now known as 57 Victoria Street, Mackay)	(s) any other facility not mentioned in paragraphs (a) to (r) and intended primarily to accommodate government functions
19/12/2003	Lot 3 on SP129626 (now known as Lot 3 on SP244491)	4 Holts Road, Beaconsfield (now known as 49 Beaconsfield Road, Beaconsfield)	g) emergency services facilities
02/07/2004	Lot 3 on SP151924 (now known as Lot 9 on SP170026)	Cnr Mackay-Eimeo Deviation Road and Carl Street, North Mackay	(s) any other facility not mentioned in paragraphs (a) to (r) and intended primarily to accommodate government functions
16/07/2004	Lot 9 on SP150408 Lot 10 on SP150408 (now known as Lot 9 on SP159554)	Off Garget Mia Mia Road, Gargett	(g) emergency services facilities
27/05/2005	Lot 1 on SP176480	3 Transport Avenue, Paget	(g) emergency services facilities
17/11/2006	Lot 11 on SP109888 Lot 1020 on C124171 Lot 12 on K124329 Lot 54 on K124329 Lot 1049 on C124594 Lot 664 on K124817 Lot 1009 on FTY1286	Various addresses	(k) operating works under the Electricity Act 1994

Date of designation	Real property description	Street address	Type of community infrastructure
	Lot 15 on SP157763 Lot 5 on SP167646 Lot 866 on FTY1698 Lot 907 on FTY1834 Lot 696 on OL264 Lot 44 on CI3793 Lot 67 on CI3976 Lot 46 on CI4532 Lot 3 on RP703922 Lot 6 on RP703924 Lot 5 on RP703930 Lot 2 on RP718636 Lot 1 on RP728837 Lot 5 on RP730037 Lot 8 on RP730037 Lot 11 on RP730286 Lot 2 on RP735778 Lot 1 on RP735778 Lot 2 on RP736165 Lot 4 on RP736165 Lot 3 on RP736165 Lot 1 on RP736165 Lot 3 on RP736166 Lot 3 on RP736171 Lot 2 on RP739219 Lot 1 on RP739219 Lot 9 on RP739219 Lot 8 on RP739219 Lot 7 on RP739219 Lot 6 on RP739219 Lot 5 on RP739219 Lot 4 on RP739219 Lot 2 on RP739730 Lot 4 on RP740028 Lot 3 on RP740028 Lot 3 on RP740736 Lot 7 on RP740978 Lot 3 on RP740556 Lot 1 on RP812643 Lot 11 on CP858319 Lot 9 on CP858319 Lot 4 on RP858320 Lot 3 on RP858320 Lot 3 on RP886920 Lot 7 on RP899726		

Date of designation	Real property description	Street address	Type of community infrastructure
	Lot 6 on RP899726 Lot 12 on RP906797 Lot 6 on RP909270		
05/04/2007	Lot 1 on RP729350	92211 Bruce Highway, Alligator Creek	(k) operating works under the Electricity Act 1994
30/07/2008	Lot 3 on RP729350 Lot 2 on RP734244 Lot 411 on CI2185 Lot 2 on RP727941 Lot 68 on CI1603 Lot 1 on RP720547 Lot 2 on RP714898 Lot 2 on RP727918 Lot 74 on CI2639 Lot 8 on RP734897 Lot 3 on SP176548 Lot 3 on SP176548 Lot 4 on RP894736 Lot 12 on RP849147 Lot 1 on RP741060 Lot 11 on SP177205 Lot 17 on RP896821 Lot 7 on RP742355 Lot 19 on RP896822 Lot 7 on RP906312 Lot 44 on SP187032	Various addresses	(k) operating works under the Electricity Act 1994
13/02/2009	Lot 81 on SP202066	Lot 81 Glenella-Richmond Road, Glenella	(k) operating works under the Electricity Act 1994
08/05/2009	Lot 13 on SP105572 Lot 12 on SP105572 Lot 21 on RP747916 Lot 22 on SP100849 Lot 4 on SP100849 Lot 22 on SP100849 Lot 5 on SP100853 Lot 20 on SP130207 Lot 2 on SP100854 Lot 6 on SP100854 Lot 1 on SP100855 Lot 3 on RP704214 Lot 2 on RP704214 Lot 3 on RP714333	Various addresses	(k) operating works under the Electricity Act 1994

Date of designation	Real property description	Street address	Type of community infrastructure
	Lot 2 on RP721791 Lot 200 on CP866497 Lot 69 on K103149 Lot 3 on RP742181 Lot 2 on RP702634 Lot 4 on RP893247 Lot 1 on RP741880 Lot 1 on CI3064 Lot 2 on RP881163 Lot 5 on RP881163 Lot 1 on RP713708 Lot 13 on SP124841 Lot 1 on RP716948 Lot 3 on RP741503 Lot 12 on SP178743 Lot 17 on SP120249 Lot 1 on RP882367 Lot 12 on SP178743 Lot 2 on RP744282 Lot 1 on RP735474 Lot 2 on RP744282 Lot 1 on RP735474 Lot 2 on RP744625 Lot 2 on RP724636 Lot 1 on CI2118 Lot 4 on SP159721 Lot 2 on RP886035 Lot 1 on RP716241 Lot 2 on RP716241		
04/09/2009	Lot 108 on SP126416 (now known as Lot 128 on SP264916)	475 Bridge Road, West Mackay	h) hospitals and associated institutions (r) storage and works depots and the like including administrative facilities associated with the provision or maintenance of the community infrastructure mentioned in paragraphs (a) to (q)

Date of designation	Real property description	Street address	Type of community infrastructure
11/02/2011	Lot 254 on K1244 Lot 255 on K1244 Lot 473 on CI810987 Lot 474 on CI810987 (now known as Lots 1, 2 and 3 on SP228232)	149, 171 and193 Boundary Road, Ooralea	(e) community and cultural facilities, including child-care facilities, community centres, meeting halls, galleries and libraries (g) educational facilities.
09/12/2011	Lot 8 on W19024 Lot 9 on W19024	21-23 Dutton Street, Walkerston	(7) emergency services
14/01/2012	Lot 6 on SP151924 (now Lot 16 on SP253343)	30-70 Rosewood Drive, Rural View	(4) community and cultural
02/11/2012	Lot 508 on CP864633	221 Bedford Road, Andergrove	(4) community and cultural
08/03/2013	Lot 1 on SP221679 Lot 2 on SP221679 Lot 3 on SP221679 Lot 1 on RP704750 Lot 9 on RP749853 Lot 61 on SP244247 Lot 2 on CP854468 Lot 8 on RP904457	Various addresses, Racecourse	(k) operating works under the Electricity Act 1994
16/08/2013	Lot 232 on SP107829	137 Anzac Avenue, Marian	(4) community and cultural
06/09/2013	Lot 4 on CP889518	5427 Bruce Highway, Calen	(4) community and cultural
27/06/2014	Lot 85 on CI2218 Lot 86 on CI2640	2 Augusta Street and 3 Alice Street, Mirani	(4) community and cultural

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Schedule 6 Planning scheme policies

SC6.1 Planning scheme policy index

The table below lists all the planning scheme policies applicable to the planning scheme area.

Table SC6.1.1 – Planning scheme policy index

(1) SC6.2 – Engineering design guideline – bushfire protection
(2) SC6.3 – Engineering design guideline – constructed lakes
(3) SC6.4 – Engineering design guideline – cycleway and pathway design
(4) SC6.5 – Engineering design guideline – geometric road design (urban and rural)
(5) SC6.6 – Engineering design guideline – healthy waters
(6) SC6.7 – Engineering design guideline – landscape
(7) SC6.8 – Engineering design guideline – pavement design
(8) SC6.9 – Engineering design guideline – quality assurance requirements for design
(9) SC6.10 – Engineering design guideline – sewerage system design
(10) SC6.11 – Engineering design guideline – site regrading
(11) SC6.12 – Engineering design guideline – stormwater drainage design
(12) SC6.13 – Engineering design guideline – structures / bridge design
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(14) SC6.15 – Engineering design guideline – water supply design
(15) SC6.16 – Open space

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SC6.2 Engineering design guideline – bushfire protection

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SC6.2.1 Scope and general

SC6.2.1.1 Scope

This section sets out the Guidelines developed specifically for the design of bushfire protection facilities to protect life and property and bring a fire to a halt.

The guideline contains procedures for the design of fire protection facilities. Designs shall satisfy requirements of the Council and Guidelines as provided by the Queensland Fire Service – Rural Fire Brigade.

SC6.2.1.2 Objectives

This Guideline aims to outline the requirements that will minimise bushfire hazard in developments. The requirements are particularly pertinent to rural developments but should be an integral part of urbanised development as well. The principles outlined are to be incorporated at an early stage of development design and form an integral part of the approved development.

SC6.2.1.3 Reference and source documents

(a) Council guidelines:
  (i) C501 – Bushfire protection (perimeter tracks)

(b) Queensland legislation and state planning instruments:
  (i) *Queensland Fire and Rescue Act 1996*
  (ii) *Sustainable Planning Act 2009*
  (iii) State Planning Policy 1/03 – Mitigating the adverse impact of flood, bushfire and landslide

(c) Queensland government authorities:
  (i) Queensland Fire Service
  (ii) Rural Fire Brigade
  (iii) Queensland Department of Envision and Heritage Protection

(d) Other:
  (i) New South Wales Department of Bushfire Services (now Rural Fire Service for Bushfire protection) (1991) *A guide for land use planners, fire authorities, developers and home owners*
  (ii) California Department of Forestry (1980) *Fire safety guides for residential development*
  (iii) Insurance Council of Australia (1981) *Bushfire safety in urban fringe areas*
  (iv) Luke, R.H. *Before the fires start*

SC6.2.2 Design criteria

SC6.2.2.1 General

Where a subdivision will abut unimproved timber in a bushfire prone area (as classified by Council), perimeter tracks are to be located immediately between the created allotment and the bushland within a minimum cleared width of 6 metres, a minimum vertical clearance from any obstruction of 4 metres and a minimum formed width of 4 metres. Such roads shall be adequately drained to provide all weather access for fire fighting vehicles.

The perimeter track shall be contained within a 20 metre wide reservation or easement that borders those allotments abutting the bushfire prone area. Such a reserve shall serve as a

basis for fire protection measures to be undertaken and will not be considered as part of the public reserve dedication applicable to the subdivision.

Access shall be provided from the above described reservation from the local road system at regular intervals in a system of 'loops'.

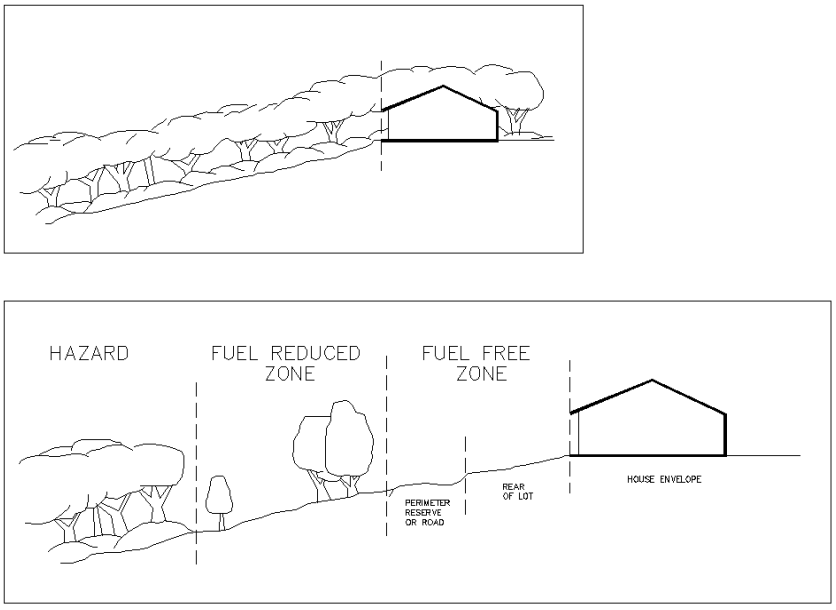
For those subdivisions receiving reticulated water, fire hydrants shall be situated at appropriate intervals or near where potential fire hazard areas exist as determined by Council.

Fire protection zones access tracks and perimeter tracks shall be clearly indicated on the subdivision plan. Erosion control features and revegetation requirements shall also be indicated in the subdivision plan.

SC6.2.2.2 Fire protection zones

The provision of Fire Protection Zones (FPZs) shall occur as part of the development of the subdivision pattern. Each individual allotment shall have adequate space for the main building (usually a dwelling), an area of open space (front, back or side yard) and the FPZ (which may include part of the yard area and/or neighbouring properties). Figure D10.1 illustrates a typical FPZ.

Figure SC6.2.2.2.A – Fire protection zones



FPZs shall be required for any development fronting a bush fire hazard area, whether a single dwelling, a group of isolated dwellings or an urban subdivision. They act as a buffer zone between the development and the fuel.

The primary purpose of FPZs is to ensure that a progressive reduction of fuel occurs between the bush fire hazard and any combustible structures within the development.

Apart from its primary purpose the FPZ serves a number of other important purposes, dependent upon local fire fighting policy. The FPZ shall be designed to:

(a) Maximise the separation distance between high intensity fire and any structure, thereby reducing the radiation and direct flame contact;

(b) Provide an area where embers can fall with minimal opportunity to create further fire outbreaks';

(c) Provide a safe access to a structure for fire fighters by reducing the heat level from the main fire;

(d) Provide a safe retreat for fire fighters; and

(e) Provide a clear control line from which to begin back burning or hazard reduction operations.

Safety requirements sometimes dictate that fires are fought from the property itself rather than along the perimeter track.

The FPZ incorporates up to three separate components:

(a) Fuel Reduced Zone (FRZ); and

(b) Fuel Free Zone (FFZ) incorporating:
  (i) a perimeter road or reserve (which incorporates an access track); and
  (ii) a set-back (currently defined by minimum lot depths), which is usually part of the allotment.

SC6.2.2.3 Fuel reduced zones

The Fuel reduced zone (FRZ) is located adjacent to the hazard.

Originally, it would have been part of the bush fire hazard but has become an area where the fuel loadings are reduced through thinning of vegetation, mechanical clearing, hazard reduction burning or location of suitable developments such as playing fields or car parks (provided it is wide enough).

Fuel loadings within the FRZ shall be kept to a level where the fire intensity expected will not impact on adjacent developments. In the absence of any policy to the contrary, 8 tonnes per hectare of total fuel is commonly used.

The FRZ should always be part of the development so that dedication of land or monetary contribution ensures that the cost of fire protection is met by the Developer, not by the general community.

For slopes greater than 20 degrees, the environmental consequences of ground clearing (erosion) may not be acceptable. Developments abutting such slopes shall avoid both the ridge and the slope.

SC6.2.2.4 Fuel free zones

The fuel free zone is located adjacent to, or is part of, the development and comprises a perimeter road and a set-back.

(a) Perimeter road:

  (i) The perimeter road or access trail lies between the FRZ and the boundary of the allotments.

  (ii) The concept of a perimeter road requires that one side of the road has no fuel. Perimeter roads are not fire trails in the same sense as used in fire fighting operations. Their main purpose relates to reduction of radiation and provision of

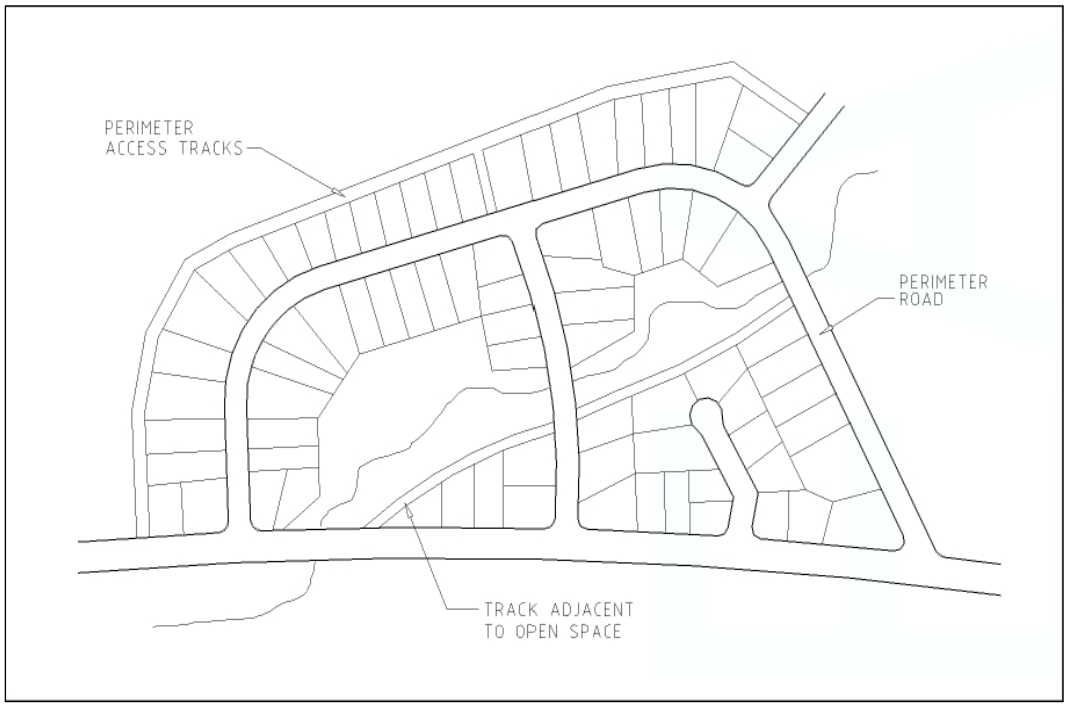
access. Without a fuel source on the other side, perimeter roads can however prove very effective fire trails.

(iii) The form that the perimeter road or track takes will depend on local policy in regard to both road construction and fire fighting. In many instances, a perimeter reserve will be preferred due to cost. The reserve should be a minimum of 20 metres wide, with a 6 metre wide access track and passing bays 20 metres long by 3 metres wide about every 200 metres.

(iv) In designing for a perimeter road or track, the distance required may not seem very great. Given that the probability of fire jumping a fire trail increases as the width decreases, then areas where the highest intensity fires are likely should have fire trails of greatest width.

(v) Perimeter roads can be less economic than roads which service two frontages unless some innovative designs are incorporated into the subdivision. Figure 2 illustrates perimeter roads and perimeter tracks.

Figure SC6.2.2.4.A – Perimeter ring road track



(vi) Perimeter roads that do not require clearing or maintenance (compared to tracks), can be cheapest in the long term. Ultimately the decision between a road or track depends on the local Council's subdivision and bush fire fighting policies.

(vii) Tracks shall be constructed to Council requirements.

(b) Set-back:

(i) Part of the allotment can be used as a section of the buffer by setting a minimum lot depth and rear setback. This can ensure that sufficient room (30 – 35 metres) is available to allow for erection of a dwelling that does not encroach upon the rear of the allotment.

(ii) The policy previously required a minimum of 40 metre lot depth in order to be consistent with the average minimum lot depth in bushland residential developments. Based on the requirement to maximise the distance between hazard and structures on reasonable grounds (*as developed above*) and a 30 metre wide building envelope which includes the surrounding yard, there is no justification for a 40 metre minimum lot depth in some instances.

SC6.2.2.5 Modifications of fuel reduced and fuel free zones

Modifications to the width of either the FRZ or the FFZ shall only be made with the written approval of Council and based on an examination of the particular cases rather than according to any formula.

Modifications would need to take account of adjacent or proposed development. Some difficulties arise where new development abuts existing development that is a fire hazard because of the nature of its usage (eg forests, parks etc). The general principle is that fire protection should be shared by both users which may require a certain level of negotiation outside the planning system.

Even without an extensive area of fuel outside the FRZ, intense fires can develop if the FRZ has not been hazard-reduced and if the fire begins as a line ignition from spotting embers. Under adverse conditions fires moving up a slope may not be slowed by the presence of rocky outcrops and ledges, even though the continuity of the fuel bed may be broken.

SC6.2.2.6 Internal access from subdivision roads

The provision of adequate internal access is also controlled by subdivision design. Subdivision roads shall incorporate the following features:

(a) width, vertical clearances and any dips and crests which allow the two way movement of fire fighting appliances;

(b) construction standards of roads and any bridges which allow for the carrying of fully loaded fire appliances (28 tonnes or 8 tonnes per axle);

(c) curves which have a minimum inner radius of 12 metres and are minimal in number;

(d) maximum grades which do not exceed 12.5% (1:8) and preferably not more than 10% (1:10);

(e) clearly signposted roads;

(f) exclude cul-de-sacs, except where a perimeter road isolates the development from hazardous vegetation or the cul-de-sac is provided with an alternative access linking the cul-de-sac to other through roads;

(g) the head of any cul-de-sac incorporates a minimum turning circle of 12.5 metres diameter; and

(h) a road network which connects regularly to any access tracks.

SC6.2.2.7 Staging works

When considering the rate of development, planners shall provide for initial development to occur on the hazard perimeter of the development. A line of dwellings will tend to minimise the threat to the entire subdivision by limiting the hazard interface.

Scattered developments on the other hand, will allow a continuous network of fuel to threaten individual buildings until development is substantially underway.

For similar reasons, new developments should be 'tacked' onto old developments to minimise the hazard perimeter.

It is important that much of the bush fire protection is incorporated into the design of the development, rather than into individual allotments.

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SC6.3 Engineering design guideline – constructed lakes

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SC6.3.1 Scope and general

SC6.3.1.1 Scope

This document sets out guidelines for the design of constructed lakes proposed within the Mackay region.

A well-designed and sustainable lake system can add substantial value to the urban landscape. Lakes are primarily created for their visual amenity however they can also provide wildlife habitat and allow the community to understand, experience and engage with the water cycle.

However, experience throughout Queensland has identified numerous problems with the sustainability of lake systems. The use of lakes as stormwater treatment systems, poor water inflows, long residence times, lower abundance of emergent macrophytes and inadequate mixing (stratification) have resulted in lake systems experiencing algal blooms and becoming weed infested. In many cases, the burden of rectifying these lakes systems and satisfying community expectations has been incurred by Councils. As a consequence Mackay Regional Council does not encourage the creation of constructed lakes in urban settings.

Whilst constructed lakes are not encouraged, Council will consider the application of a lake where it can be demonstrated the lake system is sustainable in terms of supporting the intended end uses, is appropriately managed and has minimal adverse impacts on surrounding environments.

SC6.3.1.2 Objective

To ensure that lake systems in the Mackay region are designed to ensure long term sustainability as landscape assets.

SC6.3.1.3 General

A suitably qualified Registered Professional Engineer Queensland (RPEQ) with specific water sensitive urban design and lake design experience, must undertake or oversee all aspects of the constructed lake design. The design must comply with all relevant requirements of:

(a) this Guideline;

(b) the Healthy Waters Code (9.4.3) within the Mackay Region Planning Scheme;

(c) reference and source Documents listed in Section 1.5;

(d) any Development Approval conditions relevant to the design; and

(e) any specific relevant and reasonable request provided by Council in writing.

The RPEQ shall sign all plans associated with the lake, certifying that the design complies with this section.

SC6.3.1.4 Terminology

Table SC6.3.1.4.A – Terminology used in SC6.3 – Engineering design guideline – constructed lakes

Term	Definition
Constructed lake	An artificial body of permanent open water that is generally land locked without a direct connection to tidal waterways with either an edge that may be fringed with emergent macrophytes or a hard edge. While submerged macrophytes may occur throughout the water column, the dominant feature is open water.
Constructed wetland	Characteristically shallow (on average 0.3m) aquatic environments that support a range of aquatic vegetation across the majority of the waterbody area. The inlet zone of a constructed wetland may, for instance, resemble a pond, but the dominant feature of the system is the macrophyte zone, containing emergent marsh, rush and reed vegetation that requires or can withstand wetting and drying cycles. The structure of constructed wetland systems means they can remove pollutants from stormwater runoff through enhanced sedimentation, fine filtration and biological uptake (refer *WSUD Technical Design Guidelines for SEQ* for details).
Lake catchment	An area of land bounded by natural features such as hills, from which all runoff flows into a lake.
Environmental values (EVs)	Qualities or characteristics of a waterway that support healthy ecosystems and the communities livelihoods and lifestyle. Environmental Values are determined by community preference and reasonable judgement.
Natural design concept	A design which integrates well with the catchment hydrology and ecology, but also integrates well with the local community and the values the community place on their waterways/lakes etc.
Receiving water	A water body that may receive runoff from the catchment under consideration, and has some environmental value of beneficial use. Natural wetlands are included in the definition of receiving waters, but constructed wetlands that have been built primarily for the purpose of stormwater (or wastewater) treatment, are not.
Sediment	Solids (typically sand, silt, clay, mud and other particulate matter) that are transported by water. Sediment is considered to be a 'contaminant' as defined in schedule 9 of the Environmental Protection Regulation 2008 (made under the *Environmental Protection Act 1994*).

Term	Definition
Stormwater	Surface water runoff following a rain event (including piped flows).
Stormwater quality improvement devices (SQIDs)	Devices used to improve the health of our waterways. SQIDs work by reducing the amounts of pollutants that enter stormwater and waterways. Types of SQIDs include trash racks, gross pollutant traps, constructed wetlands, gully pit baskets.
Water quality indicators	A water quality indicator is an indicator for an environmental value, and is a property that can be measured in a quantitative way (eg. pH, temperature).
Water quality modelling	A technique used to make predictions about the quality of water in waterways. Water quality modelling encompasses pollutant export modelling via models such as MUSIC and AQUALM, which predicts the pollutant loads being discharged from a given area.
Water quality objectives (WQOs)	Measurable goals for the quality of receiving waters to ensure the Environmental Values are protected.
Water sensitive urban design (WSUD)	A relatively new concept in regional Queensland, dealing with the 'interactions between the urban built form (including urban landscapes) and the urban water cycle as defined by the three urban water streams being potable water, wastewater and stormwater' (Engineers Australia 2003).
Waterway	Any element of a river, creek, stream, gully or drainage channel, including the bed and banks. This term includes waterways indicated on the Planning Scheme Maps.

SC6.3.1.5 Reference and source documents

(a) Council guidelines and specifications:
- (i) SC6.7 – Engineering design guideline – landscape
- (ii) SC6.12 – Engineering design guideline – stormwater drainage design
- (iii) Stormwater quality management plan for Mackay 2006
- (iv) Social and recreational plans and studies

(b) Queensland legislation:
- (i) *Environmental Protection Act 1994*
- (ii) Environmental Protection Regulation 1998
- (iii) Environmental Protection (Water) Policy 1997
- (iv) *Sustainable Planning Act 2009*
- (v) State Planning Policy
- (vi) *Coastal Protection and Management Act 1995*
- (vii) Coastal Protection and Management Regulation 2003
- (viii) *Fisheries Act 1994*
- (ix) *Water Act 2000*
- (x) *Soil Conservation Act 1986*
- (xi) *Vegetation Management Act 1999*
- (xii) *Local Government Act 1993*

(c) Queensland authorities:
  (i) Queensland Department of Natural Resources and Mines:
    (A) Dam Safety Management Guidelines (2002)
    (B) Soil Management Guidelines in *Queensland Acid Sulfate Soil* Technical Manual (2002)

(d) Other:
  (i) ANZECC (2000) *Australian Water Quality Guideline for Fresh and Marine Waters*
  (ii) Australian Standard AS/NZS 4360:2004 Risk management
  (iii) Brisbane City Council (2001) *Sediment Basin Design Guidelines*
  (iv) Brisbane City Council (2002) *Stormwater outlets in parks and waterways*
  (v) Brisbane City Council (2000) *Natural channel design guidelines*
  (vi) Brisbane City Council (2003) *Guidelines for pollutant export modelling in Brisbane, version 7 - draft*
  (vii) Brisbane City Council (2000) *Water quality management guidelines*
  (viii) Brisbane City Council (2006) *Water sensitive urban design engineering guidelines: stormwater 2006*
  (ix) Cullen, E., Taylor, S., Leinster, S. and Eadie, M, *Design and management responses to address common constructed urban lake sustainability issues*
  (x) Burge, K., and Breen, P.F (2006) *Detention time design criteria to reduce the risk of excessive algal growth in constructed waterbodies, Proceeding from 7th International Conference on Urban Drainage Modelling*
  (xi) Engineers Australia (2006) *Australian runoff quality*
  (xii) Healthy Waterways (2006) *WSUD technical design guidelines for South East Queensland*
  (xiii) Institution of Engineers Australia, Queensland division (1996) *Soil erosion and sediment control – Engineering guidelines for Queensland construction sites*
  (xiv) Lawrence, I., and Breen, P., *Design guidelines – stormwater pollution control ponds and wetlands for the cooperative research centre for freshwater ecology*
  (xv) Melbourne Water (2005) *Constructed Shallow Lake Systems, Design Guidelines for Developers, Version 2*
  (xvi) Melbourne Water (2005) *WSUD engineering procedures*

SC6.3.2 Planning and concept design submission

SC6.3.2.1 General

Developments proposing small constructed lakes need to demonstrate that the lakes will be;

(a) consistent with the area's social and recreational masterplans;

(b) sustainable;

(c) appropriately managed; and

(d) have minimal adverse impacts on surrounding environments.

A primary consideration for constructed lakes is that the lakes proposed "mimic nature". Constructed lakes should be located in low lying areas of the catchment that are (or have been) connected to a waterway and have (or had) areas of ponded water such as billabongs/lagoons.

SC6.3.2.2 Concept design

A Constructed Lake Concept Design Report must be submitted to Council at Reconfiguration of Lot (ROL) or Material Change of Use (MCU) stage for consideration of a lake. The report must address the elements detailed below in Table SC6.3.2.2.A.

Further details on information required for these reports are contained in SC6.3.4 and Appendices A, B and C of this planning scheme policy.

Table SC6.3.2.2.A – Elements of a constructed lake concept design report

Report element	Details
Design intent	The primary intent for the lake is to be identified eg visual amenity, recreation, win excavated material etc.
Legislative requirements	The legislative requirements for construction of a lake are to be detailed. This should include the approvals required and responses following discussions with relevant authorities.
Amenity – aesthetics and landscaping	The lake is to be designed to blend into the surrounding environment and enhance aesthetics. Landscape plans, prepared by a suitably qualified landscape architect/ designer are to be provided detailing plant species, planting densities and setbacks. Stormwater outlet structures are to blend into surrounds or are to be obscured from view e.g. located underneath observation deck.
Recreation	The link between the lake and recreational master plans for the area are to be detailed e.g. footpaths, cycleways, parkland and structures, play equipment etc.
Lake functional design	Information on how the lake will operate addressing the following issues which are critical to the health of a lake: (a) quality of inflows ; (b) sustaining water levels; (c) organic carbon loads; (d) flushing of lake; and (e) mixing of lake.
Risk assessment	A risk management assessment of the lake and surrounds is to be undertaken to identify risks and establish measures to control the risks. Reference should be made to *AS/NZS 4360:2004 Risk Management*. The detailed management, maintenance and operation plans required in the Detailed Design Report would address the risks identified in this assessment.
Monitoring	A monitoring program outline that will build a better understanding of the constructed lake behaviour and to refine lake management (where required).
Maintenance	The activities required to maintain acceptable lake performance measured against primary intent and water quality. Maintenance including routine and corrective maintenance are to be identified and costed. This is to include identification of stakeholders roles, responsibilities and liabilities.
Economic	Life cycle costing of the lake and surrounds (life cycle of 50 years) and comparison to similar non-lake recreational areas.
Plans	An overall layout plan (A3 size plan minimum) detailing proposed: (a) lake area; (b) stormwater catchment area;

Report element	Details
Design intent	The primary intent for the lake is to be identified eg visual amenity, recreation, win excavated material etc.
Legislative requirements	The legislative requirements for construction of a lake are to be detailed. This should include the approvals required and responses following discussions with relevant authorities.
Amenity – aesthetics and landscaping	The lake is to be designed to blend into the surrounding environment and enhance aesthetics. Landscape plans, prepared by a suitably qualified landscape architect/ designer are to be provided detailing plant species, planting densities and setbacks. Stormwater outlet structures are to blend into surrounds or are to be obscured from view e.g. located underneath observation deck.
Recreation	The link between the lake and recreational master plans for the area are to be detailed e.g. footpaths, cycleways, parkland and structures, play equipment etc.
Lake functional design	Information on how the lake will operate addressing the following issues which are critical to the health of a lake: (a) quality of inflows ; (b) sustaining water levels; (c) organic carbon loads; (d) flushing of lake; and (e) mixing of lake.
Risk assessment	A risk management assessment of the lake and surrounds is to be undertaken to identify risks and establish measures to control the risks. Reference should be made to *AS/NZS 4360:2004 Risk Management*. The detailed management, maintenance and operation plans required in the Detailed Design Report would address the risks identified in this assessment.
Monitoring	A monitoring program outline that will build a better understanding of the constructed lake behaviour and to refine lake management (where required).
Maintenance	The activities required to maintain acceptable lake performance measured against primary intent and water quality. Maintenance including routine and corrective maintenance are to be identified and costed. This is to include identification of stakeholders roles, responsibilities and liabilities.
Economic	Life cycle costing of the lake and surrounds (life cycle of 50 years) and comparison to similar non-lake recreational areas.
	(c) stormwater quality improvement devices (SQIDs) and other stormwater quality best management practices; (d) road and lot layout; (e) setbacks and landscaping;

Report element	Details
Design intent	The primary intent for the lake is to be identified eg visual amenity, recreation, win excavated material etc.
Legislative requirements	The legislative requirements for construction of a lake are to be detailed. This should include the approvals required and responses following discussions with relevant authorities.
Amenity – aesthetics and landscaping	The lake is to be designed to blend into the surrounding environment and enhance aesthetics. Landscape plans, prepared by a suitably qualified landscape architect/ designer are to be provided detailing plant species, planting densities and setbacks. Stormwater outlet structures are to blend into surrounds or are to be obscured from view e.g. located underneath observation deck.
Recreation	The link between the lake and recreational master plans for the area are to be detailed e.g. footpaths, cycleways, parkland and structures, play equipment etc.
Lake functional design	Information on how the lake will operate addressing the following issues which are critical to the health of a lake: (a) quality of inflows ; (b) sustaining water levels; (c) organic carbon loads; (d) flushing of lake; and (e) mixing of lake.
Risk assessment	A risk management assessment of the lake and surrounds is to be undertaken to identify risks and establish measures to control the risks. Reference should be made to *AS/NZS 4360:2004 Risk Management*. The detailed management, maintenance and operation plans required in the Detailed Design Report would address the risks identified in this assessment.
Monitoring	A monitoring program outline that will build a better understanding of the constructed lake behaviour and to refine lake management (where required).
Maintenance	The activities required to maintain acceptable lake performance measured against primary intent and water quality. Maintenance including routine and corrective maintenance are to be identified and costed. This is to include identification of stakeholders roles, responsibilities and liabilities.
Economic	Life cycle costing of the lake and surrounds (life cycle of 50 years) and comparison to similar non-lake recreational areas.
	(f) carparking; (g) footpath and cycleway network including connection onto existing or future paths; (h) proposed buffer to adjacent lots from both normal and maximum

Report element	Details
Design intent	The primary intent for the lake is to be identified eg visual amenity, recreation, win excavated material etc.
Legislative requirements	The legislative requirements for construction of a lake are to be detailed. This should include the approvals required and responses following discussions with relevant authorities.
Amenity – aesthetics and landscaping	The lake is to be designed to blend into the surrounding environment and enhance aesthetics. Landscape plans, prepared by a suitably qualified landscape architect/ designer are to be provided detailing plant species, planting densities and setbacks. Stormwater outlet structures are to blend into surrounds or are to be obscured from view e.g. located underneath observation deck.
Recreation	The link between the lake and recreational master plans for the area are to be detailed e.g. footpaths, cycleways, parkland and structures, play equipment etc.
Lake functional design	Information on how the lake will operate addressing the following issues which are critical to the health of a lake: (a) quality of inflows ; (b) sustaining water levels; (c) organic carbon loads; (d) flushing of lake; and (e) mixing of lake.
Risk assessment	A risk management assessment of the lake and surrounds is to be undertaken to identify risks and establish measures to control the risks. Reference should be made to *AS/NZS 4360:2004 Risk Management*. The detailed management, maintenance and operation plans required in the Detailed Design Report would address the risks identified in this assessment.
Monitoring	A monitoring program outline that will build a better understanding of the constructed lake behaviour and to refine lake management (where required).
Maintenance	The activities required to maintain acceptable lake performance measured against primary intent and water quality. Maintenance including routine and corrective maintenance are to be identified and costed. This is to include identification of stakeholders roles, responsibilities and liabilities.
Economic	Life cycle costing of the lake and surrounds (life cycle of 50 years) and comparison to similar non-lake recreational areas.
	water levels (indicative); and (i) outfall details. Typical lake cross section detailing:

Report element	Details
Design intent	The primary intent for the lake is to be identified eg visual amenity, recreation, win excavated material etc.
Legislative requirements	The legislative requirements for construction of a lake are to be detailed. This should include the approvals required and responses following discussions with relevant authorities.
Amenity – aesthetics and landscaping	The lake is to be designed to blend into the surrounding environment and enhance aesthetics. Landscape plans, prepared by a suitably qualified landscape architect/ designer are to be provided detailing plant species, planting densities and setbacks. Stormwater outlet structures are to blend into surrounds or are to be obscured from view e.g. located underneath observation deck.
Recreation	The link between the lake and recreational master plans for the area are to be detailed e.g. footpaths, cycleways, parkland and structures, play equipment etc.
Lake functional design	Information on how the lake will operate addressing the following issues which are critical to the health of a lake: (a) quality of inflows ; (b) sustaining water levels; (c) organic carbon loads; (d) flushing of lake; and (e) mixing of lake.
Risk assessment	A risk management assessment of the lake and surrounds is to be undertaken to identify risks and establish measures to control the risks. Reference should be made to *AS/NZS 4360:2004 Risk Management*. The detailed management, maintenance and operation plans required in the Detailed Design Report would address the risks identified in this assessment.
Monitoring	A monitoring program outline that will build a better understanding of the constructed lake behaviour and to refine lake management (where required).
Maintenance	The activities required to maintain acceptable lake performance measured against primary intent and water quality. Maintenance including routine and corrective maintenance are to be identified and costed. This is to include identification of stakeholders roles, responsibilities and liabilities.
Economic	Life cycle costing of the lake and surrounds (life cycle of 50 years) and comparison to similar non-lake recreational areas.
	(a) natural surface levels; (b) proposed lake water levels (normal and during major storm events) and base levels; (c) groundwater levels;

Report element	Details
Design intent	The primary intent for the lake is to be identified eg visual amenity, recreation, win excavated material etc.
Legislative requirements	The legislative requirements for construction of a lake are to be detailed. This should include the approvals required and responses following discussions with relevant authorities.
Amenity – aesthetics and landscaping	The lake is to be designed to blend into the surrounding environment and enhance aesthetics. Landscape plans, prepared by a suitably qualified landscape architect/ designer are to be provided detailing plant species, planting densities and setbacks. Stormwater outlet structures are to blend into surrounds or are to be obscured from view e.g. located underneath observation deck.
Recreation	The link between the lake and recreational master plans for the area are to be detailed e.g. footpaths, cycleways, parkland and structures, play equipment etc.
Lake functional design	Information on how the lake will operate addressing the following issues which are critical to the health of a lake: (a) quality of inflows ; (b) sustaining water levels; (c) organic carbon loads; (d) flushing of lake; and (e) mixing of lake.
Risk assessment	A risk management assessment of the lake and surrounds is to be undertaken to identify risks and establish measures to control the risks. Reference should be made to *AS/NZS 4360:2004 Risk Management*. The detailed management, maintenance and operation plans required in the Detailed Design Report would address the risks identified in this assessment.
Monitoring	A monitoring program outline that will build a better understanding of the constructed lake behaviour and to refine lake management (where required).
Maintenance	The activities required to maintain acceptable lake performance measured against primary intent and water quality. Maintenance including routine and corrective maintenance are to be identified and costed. This is to include identification of stakeholders roles, responsibilities and liabilities.
Economic	Life cycle costing of the lake and surrounds (life cycle of 50 years) and comparison to similar non-lake recreational areas.
	(d) edge treatments; and (e) nearby levels eg floors, roads, property boundaries.

SC6.3.3 Detailed design, construction and maintenance submission

SC6.3.3.1 Detailed design

A Constructed Lake Detailed Design Report must be submitted to Council as part of the detailed engineering design documentation following approval of the concepts from Council and other relevant Government Departments. The report will be required as part of an operational works application.

A Constructed Lake Detail Design Report must include, as a minimum:

(a) an update of the Constructed Lake Concept Design Report (refer to Table 1 for sections);

(b) detail design drawings (including landscape drawings and species lists); and

(c) detailed management, maintenance and operation plans on the following:
- (i) hydraulic manipulation
- (ii) algal management
- (iii) aquatic flora and fauna management (including fish)
- (iv) monitoring program
- (v) maintain plans
- (vi) community awareness
- (vii) landscaping and revegetation.

SC6.3.3.2 Construction

No site works shall commence prior to approval of the detailed design documents submitted to Council. All works are to be undertaken in accordance with the approved Detail Design Drawings.

Implementation of the approved works during construction must be supervised by personnel with appropriate qualifications.

The design documents shall have provisions included to monitor, review and modify management practices to correct any deficiencies encountered during construction.

SC6.3.3.3 Maintenance

Maintenance plans are to be provided at the Detail Design Stage and modified where required if there are any changes during construction.

Council will accept the lake as an asset:

(a) five (5) years after the sealing of plans for the last stage of development within the lake's stormwater catchment; and

(b) when the lake meets performance requirements as detailed in the Constructed Lake Detail Design Report.

A hand-over meeting must occur between the developer (or representative), previously responsible maintenance personnel and Council Officers.

Council is under no obligation to accept responsibility of the asset if the lake is not complying with the performance requirements detailed in the Constructed Lake Detail Design Report.

SC6.3.4 Design considerations

SC6.3.4.1 General

The design of constructed lakes shall address a number of issues including the following (as a minimum):

(a) design intent;

(b) legislative requirements;

(c) amenity (public usage, safety, aesthetics and landscaping);

(d) lake functional design;

(e) risk management;

(f) monitoring;

(g) maintenance;

(h) cost; and

(i) drawings and documentation.

SC6.3.4.2 Design intent

The intended purpose of the proposed constructed lake must be clearly defined. As stated earlier, Council will not accept stormwater quality improvement as an intended end use. Intended uses may include any or all of the following:

(a) Amenity;

(b) Stormwater harvesting (storage and reuse of treated stormwater) – if the lake is to be used for storage of treated stormwater for recycling the intended uses for the recycled water must also be stated (e.g. garden watering, toilet flushing);

(c) Flood management – lakes often form part of a flood retarding system and design requirements are generally associated with hydraulic structures for flow conveyance and flood attenuation. Flood design issues are not specifically covered in this document but it is expected appropriate hydraulic assessment is undertaken and presented in a Flood/Hydraulic Report; and

(d) Fill Requirements – if the lake is to provide for filling purposes within the adjacent development this must be stated, together with the volume of fill gained from the lake.

The design intent statement must also include the following:

(a) Location and configuration in relation to the development layout; and

(b) Location and configuration in relation to existing vegetation or receiving aquatic environment. Council will not approve the creation of a constructed lake if it involves the removal of significant vegetation or the disturbance of a natural waterway (the categorisation of a natural waterway is at the discretion of Council). The lake is not to be created along the alignment of a natural waterway; it must be created off-line. The basis for this is to minimise the disturbance to the passage of aquatic fauna and fish along waterways. If an in-stream structure, such as a weir, is required to divert stream flows into an off-line lake system then the Designer must demonstrate how the design of the in-

stream structure accommodates passage for aquatic fauna (e.g. fish) and allows for stream base flows to bypass the lake; and

(c) Landscape embellishments including pathways, boardwalks, viewing platforms, interpretative signs etc.

SC6.3.4.3 Legislative requirements

The design of a lake must consider legislative requirements such as those required under the following Acts:

(a) *Sustainable Planning Act 2009*

(b) *Water Act 2000*

(c) *Environmental Protection Act 1994*

(d) *Fisheries Act 1994*

(e) *Vegetation Management Act 1999*

(f) *Coastal Protection and Management Act 1995*

(g) *Local Government Act 2009*

Note: The above list is not exhaustive and applicable acts will need to be identified for each proposed lake.

Approvals required and details of discussions with relevant authorities are to be provided.

SC6.3.4.4 Recreation

The link between the lake and Council's or the Development's recreational master plans for the area are to be detailed e.g. footpaths, cycleways, parkland and structures, play equipment etc.

SC6.3.4.5 Setbacks

The minimum setback between the top water level of the lake and lot boundary is 15 metres. Drainage Reserve widths for all trunk drain paths and buffer between the constructed lake and adjacent lots shall generally conform to those defined in planning scheme policy SC6.12 – Engineering design guidelines – stormwater drainage design.

SC6.3.4.6 Amenity – visual and landscaping

The design is to ensure that the lake blends into the surrounding environment and the aesthetics are to be enhanced. Details of how this is to be achieved are to be provided. Note that Stormwater outlet structures are to blend into surrounds or are to be obscured from view e.g. located underneath observation deck.

Landscape plans, prepared by a suitably qualified landscape architect/ designer are to be provided and detail plant species, planting densities and setbacks which comply with Council's guidelines.

SC6.3.4.7 Lake functional design

Refer to Appendices A and B for information requirements regarding the functional design of constructed lakes.

SC6.3.4.8 Risk management

A risk management assessment of the lake and surrounds is to be undertaken to identify risks and establish measures to control the risks. Reference should be made to *AS/NZS 4360:2004 Risk Management*. The detailed management, maintenance and operation plans required in the Detailed Design Report would address the risks identified in this assessment.

SC6.3.4.9 Monitoring

To ensure long-term sustainability of lake systems, ongoing monitoring is required to provide a basis for undertaking remedial and adaptive management activities. Monitoring must be performed on a routine basis and include a range of biological, physical and chemical parameters. Further guidance in this regard is provided in the Lake Design Process section.

SC6.3.4.10 Maintenance

Poor maintenance and operation will invariably lead to poor water quality and it is expected that the lake system is designed to consider maintenance requirements (eg. access) and that a comprehensive maintenance plan is also established. All maintenance and operation issues must be identified and fully costed within the maintenance plan to ensure that Council and the developer understand roles, responsibilities and liabilities.

The maintenance plan must be closely linked to the monitoring to ensure maintenance responses can be guided by monitoring results. It is anticipated a preliminary maintenance plan and associated costs will be provided to Council and approved as part of the Material Change of Use (MCU) or Reconfiguring a Lot (ROL) application with the details of the maintenance plan resolved by the lodgement of the Operational Works application.

SC6.3.4.11 Cost

The life cycle costs of the proposed lake are to be determined for a life cycle of 50 years. This is to include the sum of all expenses associated with the project including acquisition, installation, operation, maintenance, refurbishment, discarding and disposal costs. The aim is to calculate a dollar value of the project to demonstrate the financial sustainability of the proposal. The issue of 'who pays' as part of the life cycle also needs to be included. For example, the lake will be the responsibility of the Developer until:

(a) five (5) years after the sealing of plans for the last stage of development within the lake's stormwater catchment; and

(b) the Lake meets performance requirements as detailed in the Constructed Lake Detail Design Report.

The life cycle costs of the lake and surrounds are to be compared to a similar parkland area which does not contain a lake to compare the costs and benefits of a lake. *Note: Mechanical equipment may require special consideration eg. provision of spare equipment, bonds etc.*

SC6.3.4.12 Drawings and documentation

All drawings and documentation being submitted to Council for approval shall conform to the requirements of Council's Engineering Design Guideline D20 Drawings and Documentation Guidelines.

Failure to comply with Council's Engineering Design Guideline D20 Drawings and Documentation Guidelines may result in the drawings and/or documentation being returned to the Designer without consideration by Council.

SC6.3.A Appendix A – Constructed lake design consideration[1]

SC6.3.A.1 Introduction

The behaviour of constructed lakes is dictated by a complex interaction of factors as illustrated in Figure SC6.3.A.1.A. Poor health in urban lakes is generally caused by the following factors:

(a) lack of appropriate inflow to sustain lake water level;

(b) poor water quality of inflows;

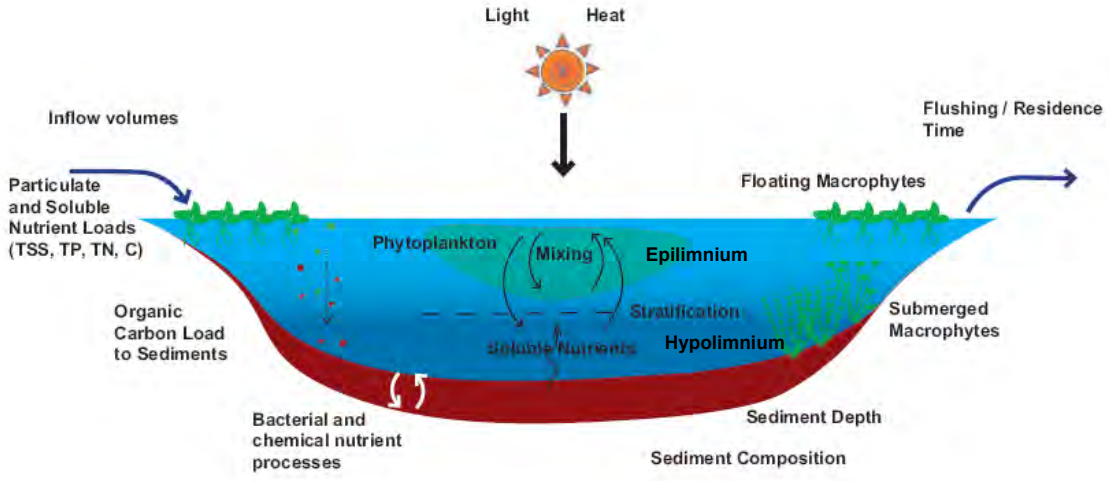
(c) high organic carbon loads;

(d) infrequent flushing of lake (long residence time); and

(e) inappropriate mixing (stratification) leading to low levels of dissolved oxygen.

Generally, in urban lake systems which are exhibiting poor lake health, most of these causal factors are evident. As such, for a constructed lake to be sustainable, the Designer must devise management initiatives to address all the five factors. This section provides an overview of the key design issues that must be considered when conceptualising and designing constructed lakes to ensure its long-term sustainability.

Excessive blue-green algal growth is the largest threat to the health of lake and therefore the emphasis of the design process detailed in this Guideline is the management of factors leading to blue-green algal blooms.



SC6.3.A.2 Catchment hydrology and water level

The ability of the catchment to provide sufficient water to maintain adequate water levels in the lake for both aesthetic and aquatic plant health reasons is a critical design consideration. Water level variation in lakes (and wetlands) is a natural characteristic that in many cases is an important element in the sustainability of the systems. However, if the water level variation is large and for long periods of time then there is a risk to aquatic plant health and also a reduced aesthetic amenity. In response to these water level risks the following objectives have been set for constructed lakes in Mackay Region:

[1] This appendix and Figure SC6.3.A.1.A is authored by Ecological Engineering.

(a) Limit the periodic (yearly) water level variation to 0.3-0.4 m below normal water level. This variation can be appropriately managed in terms of amenity by planting to the banks of the lake with a range of littoral to deep marsh aquatic plants that can tolerate this degree of water level variation.

(b) Limit infrequent (1 in 5yrs or less frequent) water level variation to 0.5 m below normal water level. Long periods of significant drying have the potential to create difficult conditions for the aquatic plants, even plants that are suited to a level of drying. Additionally this level of variation will be readily noticed by visitors to the lake thus reducing the amenity of the system.

(c) Ensure severe water level drawdown (i.e. > 0.5m below normal water level) does not occur more than once every 20 years (on average).

To assess the interaction between catchment hydrology (flows entering the lake) and lake water level variation, the Designer must undertake water balance assessment. The assessment will establish a water balance model to consider seasonal rainfall and evaporation, catchment characteristics and lake configuration.

Where the proposed lake application does not meet the water level objectives, Council will not support the creation of the lake unless suitable water 'top up' can be provided or appropriate wetting of aquatic plants is provided during severe water level draw down. Note that potable water is not to be used to 'top up' the lake.

SC6.3.A.3 Soil and groundwater

There are a range of site and soil conditions which influence constructed lake design. To define the site's capability to support a permanent waterbody, a 'Site and Soil Evaluation' must be undertaken in accordance with AS/NZS 1547:2000 Clause 4.1.3. The evaluation should provide the following:

(a) soil type;

(b) hydraulic conductivity (must be measured in accordance with Australian Standard AS/NZS 1547:2000 Appendix 4.1F);

(c) presence of soil salinity (where applicable), dispersivity and potential acid sulfate;

(d) presence of rock shale;

(e) slope of terrain (%); and

(f) groundwater details (depth, quality and values).

Where the in-situ soil type is found to be dispersive, appropriate control will be required. This may involve placing topsoil (or non-dispersive soil) throughout the base of the lake to control the potential release of dispersive soil to the water column.

Lakes proposed within areas that are mapped by Council as having Potential Acid Sulfate Soils will need to have a detailed Acid Sulfate Soil Management Plan prepared and submitted to Council for Approval.

Council will not approve a pond or lake design that adversely affects the local groundwater. The Designer must provide evidence to show that the constructed lake design does not have any negative interaction with local groundwater taking into consideration the likely seasonal fluctuations in the groundwater table.

Basin lining, compaction of pond sides and base and potential for infiltration to groundwater may need to be considered. Similarly, the potential for groundwater flow into the ponds should also be addressed.

Any approval will be based on whether groundwater needs to be protected from water intrusion and the height of the pond in relation to surrounding land and the water table.

SC6.3.A.4 Water quality

Water quality problems in constructed lakes are frequently linked to high concentrations of nutrients, particularly nitrogen and phosphorus, which support the growth of nuisance aquatic weeds and algae. Organic carbon, discussed in more detail later, is also a major contributor to poor water quality. In urban catchments, nutrients and organic carbon are predominately delivered directly to lakes in stormwater runoff. Stormwater contains both dissolved and particulate inorganic and organic nutrients, with dissolved inorganic nutrients being most readily available to phytoplankton.

Suspended solids in stormwater offer a substantial nutrient source, as nutrients readily adsorb to the surface of fine sediments. These solids are often deposited on the bottom of the lake through physical sedimentation and can act as large reservoirs of nutrients and under the appropriate physico-chemical conditions, can release soluble nutrients into the water column (*Melbourne Water 2005*).

To minimise the accumulation of nutrients in lakes systems, Mackay Regional Council consider constructed lakes as receiving waterbodies and as such require stormwater inflows to the lakes to be pre-treated in accordance with Council's Stormwater Quality Objectives (ref *Stormwater Quality Management Plan for Mackay*).

The Designer must provide documented evidence and MUSIC modelling to demonstrate the level of stormwater treatment proposed is sufficient to comply with Council's WQO's prior to stormwater entering the lake.

SC6.3.A.5 Organic carbon load

While large loads of organic carbon (e.g. leaf litter) can be delivered to lakes in stormwater runoff, a significant source of carbon can come from floating aquatic vegetation growing within the lakes. Prolific floating plant growth can provide a continuous supply of carbon to the lake sediments where it decomposes. The process of organic matter decomposition can deplete available oxygen in the water column creating reducing conditions that lead to the release of sediment bound nutrients. Thick layers of accumulated organic material on the lake beds in low oxygen conditions can result in almost inexhaustible supplies of nutrients to the water column, such that a cycle of algal blooms may develop irrespective of the quality of inflowing water.

Release of nutrients from lake sediments occurs through the following process. Under aerobic conditions, benthic microbes feed on decomposing organic material at the bottom of the lake. Their population growth is determined by the amount of organic material available. When large populations develop they can deplete the oxygen in the water column and sediments (through respiration), with the potential to create anaerobic (reducing) conditions.

If organic material remains after the oxygen has been used up, further microbial growth leads to chemically reducing conditions which may release nutrients (ammonium and soluble reactive phosphorus) back into the water column in a highly bio-available form (*Lawrence and Breen 1998*). Phosphate is usually bound to iron coatings on the surface of mineral particles. However, in the absence of oxygen, bacteria can dissolve the iron coating which releases phosphate back to the water column.

To minimise the accumulation of organic carbon and the release of nutrients from lake sediments, floating plants should be avoided and submerged plants and/or emergent plants encouraged. Floating plants provide a highly bio-available carbon source. This is because the foliage of floating plants is largely supported by the water column and therefore their tissues tend to be soft and non-fibrous.

When floating plant material drops to the lake bottom it provides a highly bio-available carbon source as soft tissues are more easily and quickly decomposed by bacteria than fibrous or 'woody' plant material. Emergent macrophytes have fibrous foliage and therefore do not offer a readily available carbon source.

Floating attached plants such as waterlilies typically grow from shallower lake edges and then extend in towards the centre of the waterbody by producing new plants from stolons. They typically grow in water up to 1.5m deep but under ideal conditions can extend from shallower areas into water up to 3 metres deep (*Sainty and Jacobs 2003*).

Floating attached plants can be disadvantaged by creating lake edge profiles that encourage more manageable and beneficial emergent macrophyte species. An example of a desirable lake edge profile is one that has a shallow (< 0.5m) 'bench' (planted with emergent macrophytes) which then steeply grades into water of >1.5m deep. These edges when planted with emergent macrophytes inhibit the establishment of floating attached plants, provide a public 'safety barrier' to the open water zone and provide aeration of the sediments.

Figure SC6.3.A.5.A – Examples of a desirable lake edge treatment – Coomera Waters Billabong Parklands[2]

Free floating plants such as *Salvinia molesta* are more difficult to manage as water depth is not a limiting factor. Maintaining low nutrient levels can avoid large infestations of floating plants. Active management through floating plant harvesting together with community education, to prevent the distribution of problematic plants from fish ponds and alike, can also help to avoid large infestations. To ensure the lake can be accessed by mechanical weed harvesters, the depth in the open water zones should be greater than 1m.

Submerged plants are beneficial as they provide oxygen to the lake sediments and reduce nutrients available to floating plant and phytoplankton growth. Submerged plants, like all plants, require light to grow and therefore they can be encouraged by ensuring maximum lake depths do not exceed 3m, by preventing the proliferation of floating plants (as discussed above) which block light penetration and by treating stormwater inputs to prevent turbid waters and to reduce nutrient concentrations (to avoid excessive floating plant and phytoplankton growth).

[2] Source – Ecological Engineering.

SC6.3.A.6 Vegetation specification

Planting for constructed lakes may consist of up to three vegetation types:

(a) Macrophyte planting consisting of ephemeral marsh, shallow marsh, marsh and deep marsh (from 0.5 m below to 0.2 m above design water level);

(b) embankment (littoral) vegetation (greater than 0.2 m above design water level); and

(c) terrestrial plants, including existing vegetation, adjacent to the embankment edge.

The following sections provide general guidance in relation to the macrophyte planting and embankment planting. Consultation with Council in relation to plant species must occur and only native species will be accepted. Importantly, a suitable layer of topsoil (200-300mm) must be placed along all lake edges which are to be planted and where the in-situ soil testing finds dispersive soils along throughout the base of the lake. Topsoil must meet the requirements of AS4419 and be relatively low in nutrients and organic carbon (e.g. a 'native plant' topsoil mix).

Macrophyte Planting (from 0.5 m below to 0.2 m above design water level)

Guidance on selecting suitable plant species and cultivars that deliver the desired objectives for lakes must occur in consultation with Council. Macrophyte planting will predominantly consist of emergent macrophytes to provide a soft natural edge to the lake and provide a dense buffer between the open water in the lake and publicly accessible open space to discourage contact with the water.

Often the most effective way to meet public safety objectives is to provide macrophyte planting to suitable densities (6-10 plants per square metre). When selecting suitable species it is important to also note the ability of some species to be highly self-sustaining. Macrophytes that distribute themselves by producing large quantities of seed material are great for colonizing and minimizing costs of replacements. However, problematic species, such as *Typha spp*. will not be accepted so consultation with Council is essential.

Submerged plants can also be established within the lake as they assist in maintaining good water quality, thus reducing risk of water quality related problems.

Embankment (Littoral) Vegetation (greater than 0.2 m above design water level) and Parkland Vegetation

Between the macrophyte planting and the top of the embankment, establishment of trees, shrubs and groundcovers can occur in consideration of the following:

(a) Selecting groundcovers, particularly for slopes greater than 1 in 3, with matting or rhizomataceous root systems to assist in binding the soil surface during the establishment phase. Example species include *Imperata cylindrica* (only if naturally occurring), *Lomandra sp.* and *Cyndodacton sp*;

(b) Preventing macrophyte plants from being shaded out by minimising tree densities at the water's edge and choosing species such as Melaleuca that allow sunlight to penetrate the tree canopy; and

(c) Locating vegetation to allow views of the lake and its surrounds whilst discouraging the public from accessing the water body.

(d) Adjacent parkland vegetation may be of a similar species to the embankments littoral vegetation and layout to visually integrate the waterbody with its surrounds. Alternatively, vegetation of contrasting species and/ or layout may be selected to highlight the water body as a feature within the landscape.

SC6.3.A.7 Mixing and dissolving oxygen

The depth of surface water regularly mixed by wind stirring influences the dissolved oxygen availability and the location of the thermocline[3]. In deep and poorly mixed water bodies thermal stratification can develop where a colder deoxygenated bottom layer creates reducing conditions which can release sediment-bound nutrients into the water column.

Stratification can be influenced by the fetch (the area over which the wind blows) and direction of prevailing winds. Winds blowing along the long axis of a lake will have greater mixing capacity than winds that blow along the short axis of an elongated lake. Large mats of floating aquatic plants can also reduce wind-induced mixing of lake waters and limit oxygen diffusion into the water column.

The risk of permanent stratification increases significantly for waterbodies greater than 3 metres deep. In Queensland, shallow lakes (i.e. lakes ≤ 3m deep) can be expected to stratify temporarily on a regular basis. If stratification does occur in shallow lakes it is expected to the regularly broken down and mixed through processes such as temperature-density mixing, wind mixing and flushing.

To avoid the propensity for stratification, constructed lake design should accommodate the following:

(a) Depths should be limited to 1.5m to 3m (maximum).

(b) The base of the lake created as a flat bottom to promote even wind mixing, thus breaking down any diurnal stratification, and avoid deep shallow pockets which may become stagnant and anaerobic.

(c) Where possible, align the lake along prevailing winds to maximise fetch length and the associated mixing.

SC6.3.A.8 Residence time (and algal growth)

The ability of the lake system to provide for a healthy ecosystem is largely determined by the residence time of water in the lake. Excessive blue-green algal growth is the largest threat to the health of a lake. The exponential rate of algal growth under unlimited conditions means that algal populations can rapidly reach levels where they become a risk to public health. The rate of algal growth is a function of available nutrients, light, temperature and hydrologic conditions.

When nutrients are available in sufficient quantities, which need only be low concentrations, then managing residence times is critical to managing the risks of algal blooms. This is because algal biomass can be regulated by the rate at which cells are removed from the lake by flushing (refer to the following references regarding residence times *WSUD Engineering Procedures: Stormwater, Chapter 10 Ponds and Lakes (Melbourne Water, 2004) and Burge and Breen (2006*) for more detail).

Extending the residence time greatly increases the risk of algal blooms due to the exponential rate of algal growth under unlimited conditions.

Considering the climatic conditions of Mackay, the critical time of year for algal growth in lake systems is during the late autumn, winter and early spring months. The dry conditions (low rainfall) which prevail during these times lead to long residence times within waterbodies and although temperatures are at their lowest during this period, they are still high enough for algal growth.

The increased number of clear days during winter also allows good light penetration into the water column. Due to the more frequent rainfall pattern in summer, there is greater flushing of

[3] The boundary between warmer surface waters (epilimnion) and colder deeper waters (hypolimnion) in a body of water. Identified by a rapid decrease in temperature with depth.

lakes and hence shorter residence times and a reduced risk of algal blooms. This risk is however heightened during summer drought conditions.

In order to manage the potential for algal blooms within the constructed lakes during these critical periods the hydraulic residence time of the lake must be suitably low enough to flush algal from the lake prior to populations reaching bloom levels. The maximum residence time for lakes in Queensland has been established as 20 days to minimise the risk of blue-green algal blooms. This residence time was established by considering the maximum algal growth rates of common cyanobacteria species determined under non-limiting growth conditions.

This Guideline does not outline the basis for this residence time but the Designer is referred to the Melbourne Water WSUD Guidelines (2005) and Burge and Breen (*Ecological Engineering 2006*) for further information.

The residence time objective for constructed lakes in Mackay reads as follows:

> *The 20 percentile residence time (detention time) for the constructed lake should not exceed 20 days. Where two or more lakes are linked together in a series, the 20 day maximum residence time applies to the total volume of water in all lakes in the series.*

The 20% exceedance is considered an acceptable risk to compensate for the occurrence of all other risk factors being favourable for algal growth. The 20% exceedance of a specific detention time objective does not indicate that a bloom will occur, just that detention time (for a given temperature range) is long enough for exponential growth to achieve a bloom alert level of 15,000 – 50,000 cells/mL if all other risk factors were favourable.

Initial water balance testing, using the climatic conditions at Mackay, has confirmed this 20 days residence time is difficult to achieve when relying on catchment stormwater flows only. For constructed lakes that have a surface area greater than 0.2% of the catchment area, stormwater inflows during the dry season (Autumn, Winter and Spring) are not appropriately large enough to "flush" lakes in accordance with the residence time objective thus creating an unacceptably high risk of algal growth and bloom. Considering this, the introduction of mechanical recirculation is required.

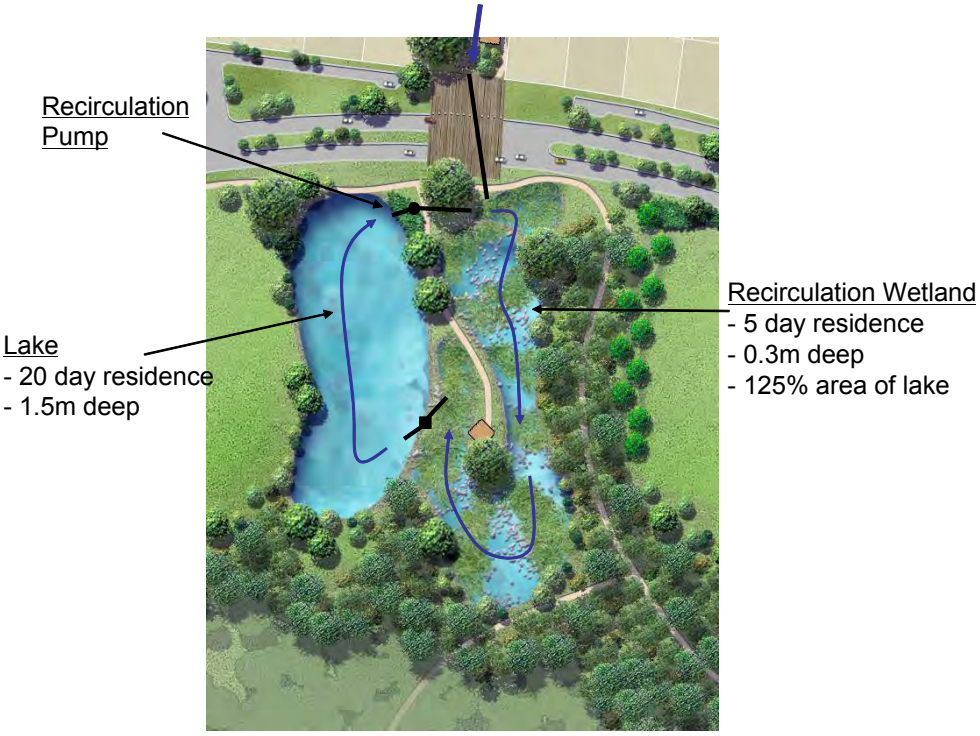
Where water quality monitoring of the constructed lake indicates degraded water quality or a high risk for algal bloom, a recirculation pump will be activated to pass lake water through a wetland system to limit the growth of algae (by creating a competitive environment) and reduce nutrient levels in the water column (refer Figure 4 for conceptual illustration). The wetland should be designed to ensure a permanent pool that extends over the majority of the wetland area. The pump rate and wetland system should be sized to provide the following:

(a) 20 day residence time in the constructed lake; and

(b) 5 day continuous residence time within the wetland (for continuous treatment of lake waters).

Appendix SC6.3.B provides the calculations required to establish the size of the recirculation. For conceptual design purposes, the general rule when creating a lake in Mackay is that the wetland recirculation area needs to be 1 to 1.25 times the lake surface area.

Figure SC6.3.A.8.A – Constructed lake recirculation strategy[4]



SC6.3.A.9 Safety

The Designer must demonstrate how public safety will be managed. Details of constructed lake edge profiles, proposed controlled access points (i.e. viewing platforms, boardwalks) and signage are to be provided.

Dense littoral/embankment planting around the lake will deter public access to the open water and create a barrier to improve public safety. Careful selection of plant species (e.g. tall, dense or "spiky" species) and planting layouts can also improve safety as well as preventing damage to the littoral vegetation by trampling.

The standard principles of informal surveillance, exclusion of places of concealment and open visible areas apply to the landscape design of lakes. Where planting may create places of concealment or hinder informal surveillance, groundcovers and shrubs should not generally exceed 1 metre in height. Landscape design is to comply with crime prevention through environmental design (CPTED) principles.

SC6.3.A.10 Vector control

To reduce the risk of high numbers of mosquitoes, there are a number of design features that can be considered. Not all of these will be feasible in any one situation, but they include (WSUD Technical Design Guidelines for SEQ):

(a) Providing access for mosquito predators, such as fish and predatory insects, to all parts of the water body (avoid stagnant isolated areas of water).

(b) Providing a deep sump of permanent water within the wetland (for long dry periods or for when water levels are artificially lowered) so that mosquito predators can seek refuge and maintain a presence in the wetland.

[4] Source – EDAW.

(c) Wave action from wind over open water will discourage mosquito egg laying and disrupt the ability of larvae to breathe.

(d) Providing sufficient gross pollutant control at the inlet such that human derived litter does not accumulate and provide breeding habitat.

(e) Providing ready access for field operators to monitor and treat mosquito larvae.

(f) Ensuring maintenance procedures do not result in wheel rut and other localised depressions that create isolated pools when water levels fall.

(g) Ensuring overflow channels don't have depressions that will hold water after a storm event.

(h) Water weeds such as Water Hyacinth and Salvinia can provide a breeding medium for some mosquito species whose larvae attach to these plants under water. These weeds should be removed immediately if encountered.

Each case has to be considered on its own merits. It may be possible that a well established constructed lake will have no significant mosquito breeding associated with it; however, changes in climatic and vegetation conditions could change that situation rapidly. Maintaining awareness for mosquito problems and regular monitoring for mosquito activity should be considered as a component of the management of these sites. Effective and environmentally sound control products are available for control of mosquito larvae in these situations.

SC6.3.A.11 Bird population control

Large water bird populations can cause a wide range of problems in urban environments including:

(a) noise generated by nesting colonies;

(b) aesthetic and odour impacts of droppings in nesting/roosting and resting areas;

(c) poor lake water quality due to nutrient loading from droppings;

(d) a disease reservoir for potential human pathogenic organisms such as Salmonella;

(e) disturbance to humans because of foraging behaviour around recreational and picnic areas;

(f) aircraft bird-strike risk; and

(g) reduction of local biodiversity through damage to native vegetation as a result of nesting and roosting activity (particularly by Ibis).

To avoid large water bird populations, particularly of nuisance species such as Ibis, the following design features should be considered:

(a) densely vegetate lake edges with emergent macrophytes to a depth of 0.5m (to inhibit access to shallow water for feeding);

(b) island features in lakes should be avoided because they provide a secure environment for nuisance species such as Ibis, increase potential feeding and roosting habitat and can be hard to access and maintain;

(c) the inclusion of large, non-roosting trees (such as a range of Eucalyptus spp.) can reduce the attractiveness of lawn areas (for resting and feeding habitat) by reducing surveillance and comfort distances;

(d) terrestrial vegetation immediately behind the littoral vegetation should not be species that would support a breeding or roosting colony of Ibis (e.g. some Melaleuca species);

(e) actively discourage the feeding of water birds with appropriate signage and community education (consultation with Council required); and

(d) provide garbage bins with lids in picnic areas to prevent scavenging.

SC6.3.B Appendix B – Constructed lake functional design process[5]

SC6.3.B.1 Introduction

The following sections outline acceptable key design steps associated with the functional concept and detail design of constructed lakes in Mackay.

SC6.3.B.2 Design steps

Step 1 – Establish design intent

The proponent must clearly describe the intended purpose of the proposed constructed lake. As stated earlier, Council will not accept stormwater quality improvement as an intended end use. Intended uses may include any or all of the following:

(a) amenity;

(b) stormwater harvesting (storage and reuse of treated stormwater) - if the lake is to be used for storage of treated stormwater for recycling the intended uses for the recycled water must also be stated (e.g. garden watering, toilet flushing);

(c) flood management - lakes often form part of a flood retarding system and design requirements are generally associated with hydraulic structures for flow conveyance and flood attenuation. Flood design issues are not specifically covered in this document but it is expected appropriate hydraulic assessment is undertaken and presented in a Flood/Hydraulic Report (see step 13); and

(d) fill Requirements - if the lake is to provide for filling purposes within the adjacent development this must be stated and the volume of fill gained from the lake must be stated.

The design intent statement must also include the following:

(a) location and configuration in relation to the development layout;

(b) location and configuration in relation to existing vegetation or receiving aquatic environment. Council will not approve the creation of a constructed lake if it involves the removal of significant vegetation or the disturbance of a natural waterway (the categorisation of a natural waterway is at the discretion of Council). The lake is not to be created along the alignment of a natural waterway; it must be created off-line. The basis for this is to minimise the disturbance to the passage of aquatic fauna and fish along waterways. If an in-stream structure, such as a weir, is required to divert stream flows into an off-line pond or lake system then the proponent must demonstrate how the design of the in-stream structure accommodates passage for aquatic fauna (e.g. fish) and allows for stream base flows to bypass the lake; and

(c) landscape embellishments including pathways, boardwalks, viewing platforms, interpretative signs etc.

[5] This appendix is authored by Ecological Engineering.

Step 2 – Site, soil and groundwater evaluation

There are a range of site and soil conditions which influence constructed lake design. To define the site's capability to support a permanent waterbody, a 'Site and Soil Evaluation' must be undertaken in accordance with AS/NZS 1547:2000 Clause 4.1.3. The evaluation should provide the following:

(a) soil type;

(b) hydraulic conductivity (must be measured in accordance with AS/NZS 1547:2000 Appendix 4.1F);

(c) presence of soil salinity (where applicable), dispersivity and potential acid sulfate;

(d) presence of rock shale;

(e) slope of terrain (%); and

(f) groundwater details (depth, quality and values).

Where the in-situ soil type is found to be dispersive, appropriate control will be required. This may involve placing topsoil (or non-dispersive soil) throughout the base of the lake to control the potential release of dispersive soil to the water column.

In relation to groundwater, Council will not accept a pond or lake design that impacts on the local groundwater. The proponent must provide evidence to show that the constructed lake design does not have any negative interaction with local groundwater taking into consideration the likely seasonal fluctuations in the groundwater table. Basin lining, compaction of pond sides and base and potential for infiltration to groundwater may need to be considered where required.

Lakes proposed within areas that are mapped by Council as having potential acid sulphate soils (PASS) will need to have a detailed Acid Sulphate Soil Management Plan prepared and submitted to Council for approval.

Step 3 – Delineate catchment

The catchment draining to the constructed lake dictates the sustainable maximum size of the lake and therefore must be identified and delineated on appropriate plans and mapping for Council review. Existing and proposed trunk drainage must also be identified along with likely percentage imperviousness.

Step 4 – Pre-treatment design

As outlined above, Council considers constructed lakes as receiving waterbodies and as such requires stormwater inflows to be pre-treated in accordance with Council's Stormwater Quality Objectives (ref Stormwater Quality Management Plan for Mackay). The proponent must provide documented evidence to show the level of stormwater pre-treatment proposed is sufficient to comply with Council's WQO's (i.e. Site Based Stormwater Management Plan).

In all cases, MUSIC modelling is required to demonstrate the level of stormwater pre-treatment provided by the proposed stormwater treatment train. MUSIC modelling shall be undertaken in accordance with GCCC (2006) and BCC (2003).

Step 5 – Confirm need for pump recirculation and wetland (residence time)

As presented in the Residence Time (& Algal Growth) section above, the climatic conditions in Mackay mean lake residence times are above sustainable levels (greater than 20 days) regularly throughout any given year. Therefore, it is expected most lake applications within Mackay will require pump recirculation through a constructed wetland and this must be stated by the proponent.

In situations where the proposed lake is very small in relation to its catchment (i.e. where a lake area is <0.2% of the catchment area), there may be appropriate flows entering the constructed lake to ensure the 20%ile residence time (detention time) for the constructed lake should not exceed 20 days is achieved. To test this case the proponent must generate cumulative probability distribution curves of lake residence time through water balance modelling. Probability distribution curves must be generated for both the whole climate record (50 years minimum) and for the winter-spring periods only (June to November periods only for the 50 years minimum). For further guidance in relation to the generation of these curves please contact Council.

Step 6 – Define maximum lake and wetland area (water level variation)

The proponent must provide to Council evidence of the ability of the catchment to provide sufficient water to maintain adequate water levels in the lake and associated recirculation wetland. If there is insufficient catchment to provide the inflows required to sustain lake levels, prolonged periods of low water levels could result in reduced aesthetic values and potential aquatic plant die-off. To assess the interaction between catchment hydrology (flows entering the lake) and lake water level, the proponent must undertake water balance modelling and assessment to consider the following:

(a) seasonal rainfall and evaporation (pan) for Mackay – minimum of 40 years simulation using relevant climate data. Where evaporation information is not available then the following can be adopted;

(b) catchment characteristics including area and percentage impervious; and

(c) lake area and wetland area – as illustrated in Figure SC6.3.A.8.A, constructed lake systems in Mackay are to consist of an open water area (lake) and a recirculation wetland (see steps 10 and 11). The water balance assessment must consider evaporative losses from both these waterbodies.

The MUSIC modelling software can be used to establish daily stormwater flows into the lake system and a spreadsheet used to define lake interactions including overflows, evaporative losses, direct rainfall to the lake surface and resulting water level variation. Two scenarios must be modelled:

(a) lake and wetland (no recirculation); and

(b) lake and wetland (recirculation).

The maximum constructed lake and wetland area is defined by the following objectives:

(a) Limiting the periodic (yearly) water level variation to 0.3 – 0.4 metres below normal water level. This variation can be appropriately managed in terms of amenity by planting to the banks of the lake with a range of littoral to deep marsh aquatic plants that can tolerate this degree of water level variation.

(b) Limiting infrequent (1 in 5yrs or less frequent) water level variation to 0.5 m below normal water level. Long periods of significant drying have the potential to create difficult conditions for the aquatic plants, even plants that are suited to a level of drying. Additionally this level of variation will be readily noticed by visitors to the lake thus reducing the amenity of the system.

(c) Ensuring severe water level drawdown (i.e. > 0.5m below normal water level) does not occur more than once every 20 years (on average).

To assist in the conceptual design of lake systems in Mackay the design curve below has been established based on the process described above. Please refer to 'Discussion of Water Level Variation Document' for details. Water balance testing indicates that lakes in Mackay can sustain a water level with the recirculation through the wetland is not operating. However, lake water levels drop when the recirculation in activated due to the requirement to "fill" the wetland. The 'Discussion of Water Level Variation Document' quantifies this drop. Considering the recirculation is not meant to be operating permanently but rather only during times of very poor water quality (i.e. algal blooms) the issue of low water levels is not considered a major concern because they will be experienced irregularly and in times when other amenity issues have a higher priority (i.e. algal blooms).

Please note, this assessment approach described above is considered to be conservative because it does not account for groundwater interactions and urban water leakages to the lake which both act to preserve water level (i.e. add water to the lake).

Step 7 – Select final lake area

The final lake area must be selected considering the design intent (step 1), the site and soil characteristics (step 2) and its relationship with the development layout and receiving environment. The lake must allocate appropriate area for the recirculation wetland (see step 10) and the total lake and wetland area must not be greater than the maximum area defined in step 6.

Step 8 – Confirm lake depth

The depth of the lake must be within to 1.5m to 3m. This depth is sufficiently deep to reduce the presence of emergent vegetation and floating attached vegetation (e.g.lillies) that would detract from the desired open water aesthetic and is shallow enough to reduce the likelihood of thermal stratification.

Importantly the deeper the lake, the larger the lake volume and therefore the larger the recirculation wetland volume required to provide for appropriate recirculation (see steps 9 and 10).

Step 9 – Size recirculation pump rate

The recirculation pump should be designed to ensure the lake volume is 'flushed' every twenty days (i.e. lake residence time of 20 days):

(a) recirculation pump rate (m3/day) = lake volume (m^3) / 20 (days); or

(b) recirculation pump rate (L/s) = lake volume (L) / 20 (days) / 24 (hours) / 3600.

A preliminary estimate of lake volume can be calculated by simply multiplying the lake area by its depth (1.5m). Further refinement of the lake volume is recommended by accounting for edge batters (refer step 14) which can occur through preliminary earthworks modelling (ACAD/12D).

Step 10 – Establish recirculation wetland depth and area

In order limit the growth of algae (by creating a competitive environment) and reduce nutrient levels in the water column, recirculated lake waters are to be delivered via the recirculation pump (step 9) into a constructed wetland. The wetland should be designed to ensure a vegetated permanent pool that extends over the majority of the wetland area. This requires appropriate wetland depths (average 0.3m) to support a range of emergent macrophytes ranging from shallow marsh (0-0.2m), marsh (0.2-0.35m) and deep marsh (0.35-0.5m) species. The wetland volume needs to provide for 5 days of continuous treatment:

(a) wetland Area (m^2) = 5 days X recirculation pump rate (m^3/day) / average wetland depth (0.3m); and

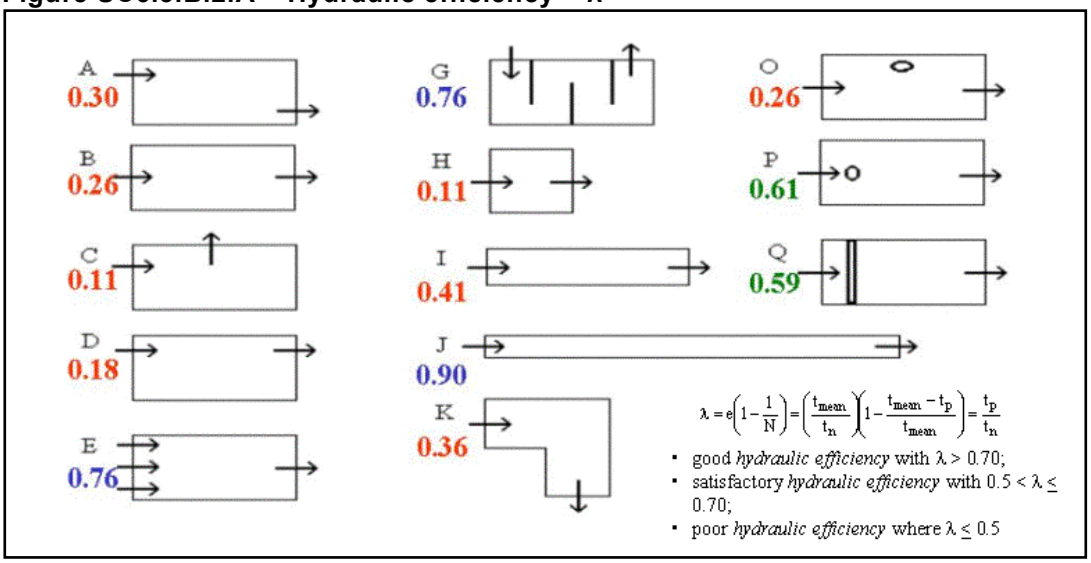
(b) treated waters from the wetland must be discharged back into the lake at the opposite end of the abstraction point to avoid short-circuiting of treated flows through the lake.

Step 11 – Establish land (and wetland) configuration

To optimise hydraulic efficiency, i.e. reduce short circuits and dead zones, it is desirable to adopt a high length to width ratio and to avoid zones of water stagnation. The ratio of length to width varies depending on the size of the system and the site characteristics while inlet and outlet conditions as well as the general shape of the pond can influence the presences and extent of water stagnation zones. To simplify the design and earthworks, smaller systems tend to have length to width ratios at the lower end of the range. This can often lead to poor hydrodynamic conditions.

Persson et al (1999) used the term hydraulic efficiency to define the expected hydrodynamic characteristics for a range of configurations of stormwater detention systems. Engineers Australia (2003) present expected hydraulic efficiencies of detention systems for a range of notional shapes, aspect ratios and inlet/outlet placements within stormwater detention systems and recommends that such systems should not have a λ value of less than 0.5 and should be designed to promote hydraulic efficiencies greater than 0.7 (see Figure SC6.3.B.2.A).

Figure SC6.3.B.2.A – Hydraulic efficiency – λ[6]



6 Hydraulic efficiency – λ – is a measure of flow hydrodynamic conditions in constructed wetlands and ponds. Range is from 0 to 1, with 1 representing the best hydrodynamic conditions for stormwater treatment (Persson et al., 1999).

Considering the above, the following must be applied to lakes and associated recirculation wetland systems:

(a) lake:
  (i) inlet and outlet located at opposite ends of lake; and
  (ii) lake configuration to achieve a λ value of 0.3 or greater (minimum length to width ration of 3L : 1W)

(b) wetland:
  (i) inlet and outlet located at opposite ends of recirculation wetland
  (ii) wetland configuration to achieve a λ value of 0.5 or greater (minimum length to width ration of 5L : 1W)

Additionally, the shape of the lake and wetland must avoid poorly mixed stagnant water zones. Factors such as wind and current mixing are important to preventing stagnant and stratified water and lake shape has a role in encouraging these exchange and mixing processes to occur. The shape of lakes and wetlands should avoid alcoves, convolutions and narrow branches of water that extend out from the main body of water.

For illustration purposes, Figure SC6.3.B.2.A above presents an appropriate lake and wetland configuration.

Step 12 – Flood routing design

The proponent must provide to Council evidence that the proposed lake design will not have an adverse impact on flooding. The provision of a high-flow route through or around the lake is standard design practice to ensure flood flows can be safely conveyed either by the use of a spillway or ensuring that the embankment is designed to withstand overtopping. Where the lake system is to provide flood storage, this must be specifically stated in the Design Intent (step 1) and

Hydrologic and hydraulic modelling shall be undertaken in accordance with MCC requirements and QUDM requirements to demonstrate there will be no flooding impacts or define flood storage requirements. This issue requires specialised design input which is not discussed in this document.

Step 13 – Design inlet and outlet structures

The movement of water through the lake is controlled by the inlet and outlet structures. As outlined in step 11, the inlet and outlet structures must be located at the far ends of the lake promote lake mixing and turnover and reduce short circuits and dead zones.

Inlet

Discharge of stormwater into the open waterbody of a lake may be via a vegetated inlet zone or direct input. In both cases it will be necessary to ensure that inflow energy is adequately dissipated so as not to cause localised scour in the vicinity of the pipe outfall. Design of stormwater pipe outfall structures are common hydraulic engineering practice and the designer is referred to relevant Council standards, QUDM and Road Drainage Design Manual (Main Roads, 2002) in this regard. Design calculations and design drawings must be provided to Council as part of the OWA.

Outlet

The outlet structure of a lake can be configured in many ways and is dependent on the specified operation of the system during periods of high inflows. Lakes may form part of a flood retarding basin in which case the outlet structure consist of two components, i.e. outlet pit and outlet culvert. The computation of the required outlet culvert is an essential element of the retarding basin design and will be based on flood routing computation as outlined in QUDM and ARR. The main function of the overflow pit is to maintain the desired permanent pool level and to provide a means of connecting the maintenance pipe (discussed below) to the outlet culvert. Design considerations of the outlet pit include the following:

(a) ensure that the crest of the pit is set at the permanent pool level of the lake or pond;

(b) ensuring that the dimension of the pit provides discharge capacity that is greater than the discharge capacity of the outlet culvert or pipe; and

(c) protection against clogging by debris.

The dimension of an outlet pit must be determined in accordance with QUDM.

Maintenance Drain

The lake should be able to be drained or partially drained for maintenance with manual operation. A suitable design flow rate is one which can draw down the permanent pool within seven days although, depending on the volume of the lake, this may not be realistic.

The orifice discharge equation is considered suitable for sizing the maintenance drain (without blockage factor) on the assumption that the system will operate under inlet control.

If the local topography does not allow the draining of the lake via gravity, then this must be stated by the proponent and appropriate allowance for pumping provided (both through adequate access and maintenance costs).

Step 14 – Design lake edges and batters

Batter slopes on approaches and immediately under the water line have to be configured with consideration of public safety. Both hard and soft edge profiles can be applied to compliment the landscape of the surrounding area of a pond or lake. A soft edge profile will involve a gentle slope to the water edge and extending below the water line before the batter slope steepens into deeper areas.

The following general guidelines for soft edges are provided for vertical (V) to horizontal (H) side slope ratios:

(a) maximum macrophyte planted safety shelf slopes between 1V:8H and 1V:15H for 2 to 3m from the edge of the water body;

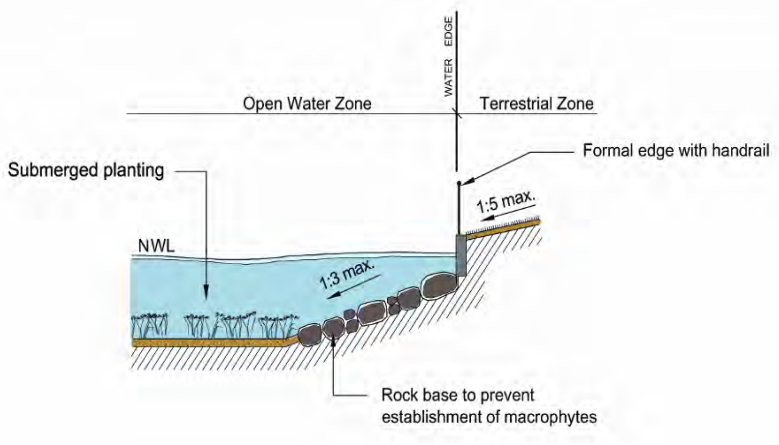
(b) from the edge of the planted safety shelf, maximise deep water side slopes, preferably to 1V:1H, to prevent the spread of macrophytes and the growth of lilies (soil tests may be required to determine the steepest stable batters and if the slopes require stabilisation (e.g. rock)); and

(c) safety shelves should also be constructed to depth of no more than 0.5m.

Figure 6 shows a hard edge profile, using a vertical wall, and has an associated handrail for public safety. This edge profile uses rock to line the bottom of the pond to extend the 'open water' aesthetic to the edge of the lake. If fences are used consider styles suitable for parkland and urban/suburban contexts.

Both conceptual and detailed drawings submitted as part of the MCU/ROL and OW applications to Council are to clearly identify the application of soft and hard lake edge profiles with the detailed drawings providing detailed lake topography and cross sections.

Figure SC6.3.B.2.B – Illustration of hard edge treatment for open waterbodies[7]



Step 15 – Vegetation specification

Planting for constructed lakes may consist of up to three vegetation types:

(a) Macrophyte planting consisting of ephemeral marsh, shallow marsh, marsh and deep marsh (from 0.5 m below to 0.2 m above design water level);

(b) embankment (littoral) vegetation (greater than 0.2 m above design water level); and

(c) terrestrial plants, including existing vegetation, adjacent to the embankment edge.

The following sections provide general guidance in relation to the macrophyte planting and embankment planting. Consultation with Council in relation to plant species must occur and only native species will be accepted. Importantly a suitable layer of topsoil (200-300mm) must be placed along all lake edges which are to be planted and where the in-situ soil testing finds dispersive soils (STEP 1) along throughout the base of the lake. Topsoil must meet the requirements of AS4419 and be relatively low in nutrients and organic carbon (eg. 'native plant' topsoil mix).

Macrophyte Planting (from 1.0 m below to 0.2 m above design water level)

Guidance on selecting suitable plant species and cultivars that deliver the desired objectives for lakes must occur in consultation with Council. Macrophyte planting will predominantly consist of emergent macrophytes to provide a soft natural edge to the lake and provide a dense buffer between the open water in the lake and publicly accessible open space to discourage contact with the water.

Often the most effective way to meet those objectives with the macrophyte planting to suitable densities (6-10 plants per square metre) and within designed depth zones. When selecting suitable species it is important to also note the ability of some species to be highly self-sustaining. Macrophytes that distribute themselves by producing large quantities of seed material are great for colonizing and minimizing costs of replacements.

Submerged plants can also be established within the lake as they assist in maintaining good water quality, thus reducing risk of water quality related problems.

[7] Source – GbLA, 2004

Embankment (Littoral) Vegetation (greater than 0.2 m above design water level) and Parkland Vegetation

Between the macrophyte planting and the top of the embankment, establishment of trees, shrubs and groundcovers can occur in consideration of the following:

(a) Selecting groundcovers, particularly for slopes greater than 1 in 3, with matting or rhizomataceous root systems to assist in binding the soil surface during the establishment phase. Example species include *Imperata cylindrica* (only if occurring naturally), *Lomandra sp*. and *Cyndodacton sp*.

(b) Preventing macrophyte plants from being shaded out by minimising tree densities at the water's edge and choosing species such as Melaleuca that allow sunlight to penetrate the tree canopy.

(c) Locating vegetation to allow views of the lake and its surrounds whilst discouraging the public from accessing the water body.

Adjacent parkland vegetation may be of a similar species to the embankments littoral vegetation and layout to visually integrate the sedimentation basin with its surrounds. Alternatively, vegetation of contrasting species and/ or layout may be selected to highlight the water body as a feature within the landscape.

Step 16 – Monitoring programme

Ongoing monitoring is required to ensure the lake performs in accordance with the design intent and is sustainable over the long term. The monitoring programme will also guide corrective actions, adaptive management responses and maintenance requirements. A Lake Monitoring Plan must be documented and submitted to Council as part of the MCU/ROL and refined as part of the OW applications to Council. The monitoring programme must make allowance for the recommendations provided in the "Monitoring Requirements" section below.

Step 17 – Maintenance plan

All maintenance and operation issues should be identified and fully costed within a Maintenance Plan to ensure that Council and the developer understand roles, responsibilities and liabilities. The maintenance plan must be closely linked to the monitoring to ensure maintenance responses can be guided by monitoring results. It is anticipated a preliminary maintenance plan and associated costs will be provided to Council and approved as part of the Material Change of Use or Reconfiguring a Lot application with the details of the maintenance plan resolved during Operational Works. The Maintenance Plan must make allowance for the recommendations provided in the "Maintenance Requirements" section below.

Consideration must be given to ease of access to the proposed lake system for cleaning and maintenance purposes, in particular the inlet, outlet and pump recirculation structures. Consideration should also be given to the logistics of draining the proposed lake (refer Maintenance Drain discussion in step 13).

SC6.3.B.3 Landscape integration

Lakes can play a significant role in creating a community landscapes and urban ecology. The proponent must refer to the relevant "Landscape Design Notes" provided in Chapter 4 Sediment Basins and Chapter 6 Constructed Wetlands of the WSUD Technical Design Guidelines for SEQ for guidance.

SC6.3.B.4 Monitoring requirements

A Lake Monitoring Plan must be documented and submitted to Council as part of the MCU/ROL application and refined as part of the OW applications to Council. The following sub-sections provide a summary of Council's requirements in relation to monitoring by defining a schedule, reporting and corrective actions.

Monitoring schedule

Purpose: To provide an ongoing record of water quality in the lake, assess the ecological health of the lake and provide a basis for undertaking remedial and adaptive management activities where required.

Methodology: In-situ monitoring with multiprobe for some parameters and samples collected and analysed by laboratory for others (see below for details).

Frequency: Monthly.

Period: Ongoing.

Location: As required

Parameters (in-situ): pH, turbidity, DO, temperature and EC at 0.5m depth intervals from surface to bed of lake.

Parameters (samples for lab): Faecal coliforms, chlorophyll-a, TSS, TN, NH3, TP.

Target Values: Target values that are considered appropriate for the lake are listed in the table below.

Table SC6.3.B.4.A – Target Values for Lake Water Quality

Constituent	Target value or range
pH	6.5 to 8.5
DO	> 80% saturation
Chlorophyll-a	< 10ug/L
Faecal coliforms	< 1000 organisms/100mL

Where monitoring indicates chlorophyll-a or faecal coliform concentrations above the target values the corrective actions presented in the following sub-sections will be initiated.

Reporting

The water quality monitoring results are to be summarised in results sheets. Copies of the results sheets are to be kept on site and made available to Council local and state government officers upon request. Quarterly reports are to be submitted to Council and this should be done within one month of the completion of the last monitoring event in the quarter. These reports will incorporate the raw results, a summary of climatic data for the local area during the monitoring period, a results summary, and a discussion of whether there were any instances where the target values were not met. If there were any such instances, a discussion of the corrective actions that were implemented must be included.

Corrective actions and adaptive management (lake)

If there are instances where the water quality monitoring results do not meet the target values listed in Table 1, corrective actions are to be implemented as soon as possible. The only exception to the immediate implementation of corrective actions is if it can be demonstrated that the source of 'pollution' is not as a result of the development, or any activities associated with the development. Further investigations are also to be initiated if problems are reported by the Contractor, Council or EPA (i.e. odour, fish kills). Corrective actions are to include, as a minimum:

(a) Investigate the cause of the water quality problem and develop a strategy to address the problem and to ensure that the problem does not recur. This may require consultation with the designers of the stormwater treatment strategy and/or other environmental consultants;

(b) Where possible, minimise the propagation of the problem by preventing discharge from the water body where the incident has occurred. For example, if the incident is confined to the lake, take measures to prevent this water from discharging to the receiving environment (i.e. temporarily block outlet);

(c) Inspect all stormwater treatment elements in the catchment that feeds to the water body experiencing the water quality problems. Determine whether any of these elements require remedial maintenance; and

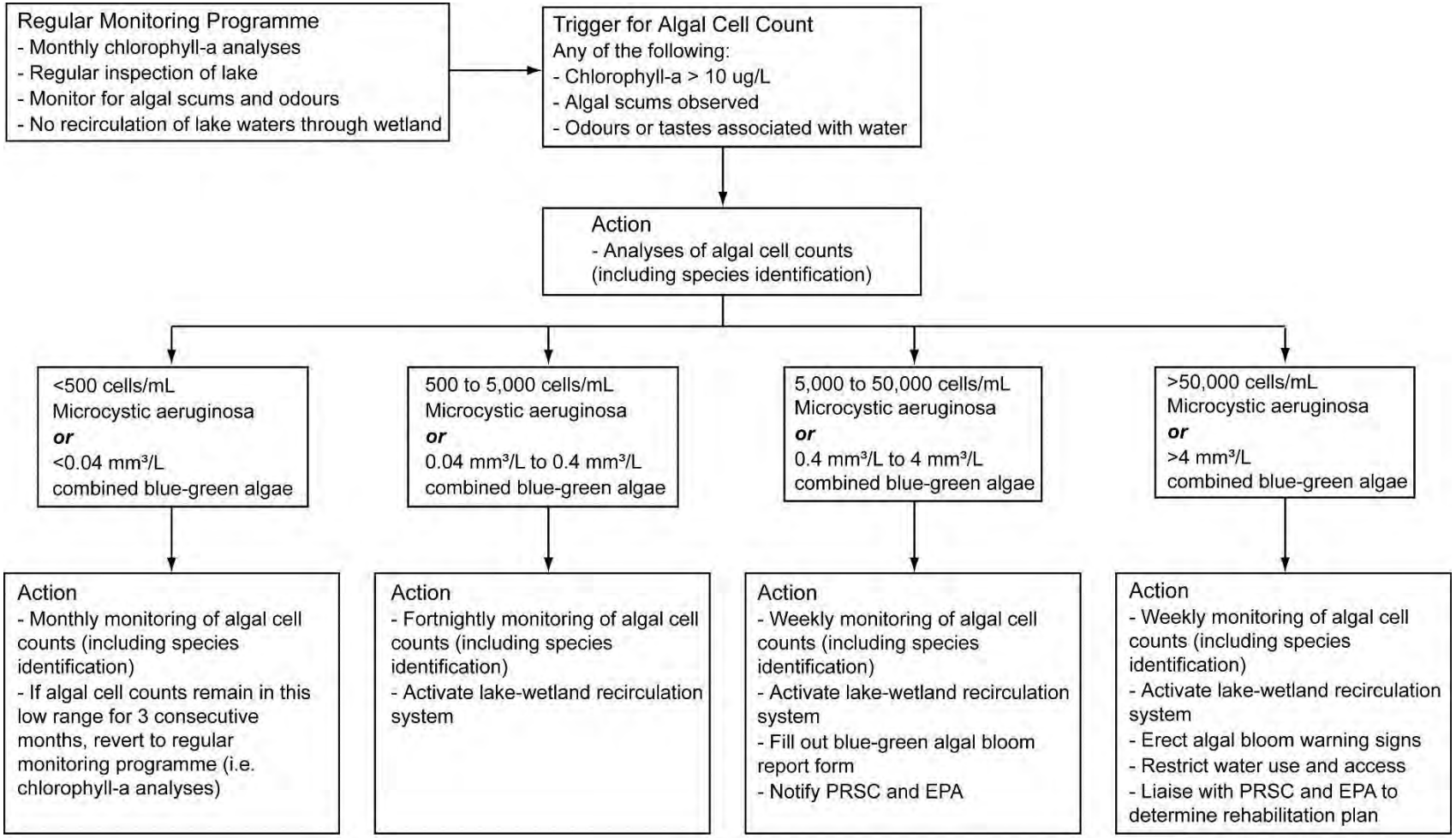
(d) Other corrective actions that are deemed appropriate responses to the specific incident should also be implemented.

Corrective actions that respond to problems identified as part of the water quality monitoring may take the form of remedial maintenance activities.

Adaptive management of algal bloom risk

Algal/phytoplankton cell density is an important water quality parameter because it has both human and ecological health implications. The target value for chlorophyll-a listed in Table 1 is 10 ug/L. The adaptive management approach outlined in Figure SC6.3.B.4.A overleaf is to be implemented in the event that elevated chlorophyll-a levels (>10 ug/L) are recorded in the lake. This will primarily involve recirculation of lake waters through the adjacent constructed wetland. In the event of an algal bloom (i.e. phytoplankton cell density > 50,000 cells/mL), it will be necessary to formulate a rehabilitation plan for the lake.

Figure SC6.3.B.4.A – Algal bloom management strategy for lake

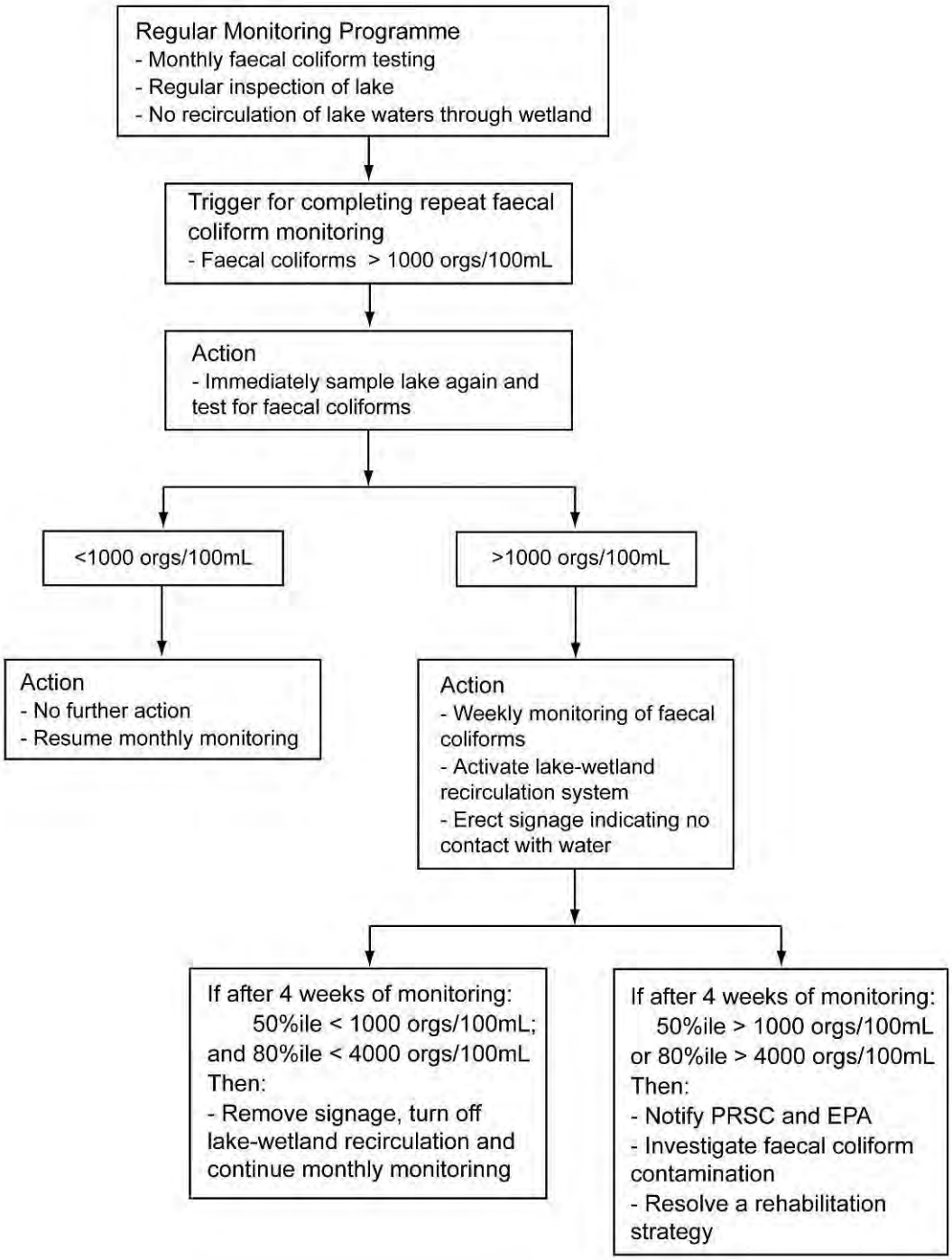


Source – Ecological Engineering and NHMRC (2005)

Adaptive management of faecal pollution

The target value for faecal coliforms listed in Table SC6.3.B.4.A is 1000 organisms/100mL. The following adaptive management approach should be implemented in the event that elevated faecal coliforms (>1000 organisms/100mL) are recorded in the lake.

Figure SC6.3.B.4.B – Adaptive Management Strategy for Faecal Pollution of Lake



Source – Ecological Engineering and ANZECC

SC6.3.B.5 Inspection and maintenance requirements

Constructed lake systems require ongoing inspection and maintenance to ensure they establish and operate in accordance with the design intent. Potential problems associated with WSUD infrastructure as a result of poor maintenance include:

(a) decreased aesthetic amenity;

(b) reduced functional performance;

(c) public health and safety risks; and

(d) decreased habitat diversity (dominance of exotic weeds).

Importantly, the most intensive period of maintenance is during the plant establishment period (initial one to two years) when weed removal and some replanting may be required. The most intensive period of maintenance is during plant establishment period (first two years) when weed removal and replanting may be required. It is also the time when large loads of sediments could impact on plant growth, particularly in developing catchments with poor building controls. Debris removal is an ongoing maintenance function. If not removed, debris can block inlets or outlets, and can be unsightly if in a visible location. Inspection and removal of debris should be done regularly.

Typical maintenance of constructed lake systems will involve:

(a) routine inspection of the lake to identify any damage to vegetation, scouring, litter and debris build up or excessive mosquitoes

(b) routine inspection of inlet and outlet points to identify any areas of scour, litter build up and blockages

(c) removal of litter and debris

(d) removal and management of invasive weeds

(e) repair to lake profile to prevent the formation of isolated pools

(f) regular watering of littoral vegetation during plant establishment

(g) water level control during plant establishment

(h) replacement of plants that have died (from any cause) with plants of equivalent size and species as detailed in the planting schedule

(i) vegetation pest monitoring and control.

Inspections are recommended following large storm events to check for scour and damage. All maintenance activities must be specified in a maintenance plan (and associated maintenance inspection forms) to be developed as part of the design procedure (Step 16). Maintenance personnel and asset managers will use this plan to ensure the wetlands continue to function as designed. To ensure maintenance activities are appropriate for the lake over time, maintenance plans should be updated a minimum of every three years. The maintenance plans and forms must address the following:

(a) inspection frequency;

(b) maintenance frequency;

(c) data collection/ storage requirements (i.e. during inspections);

(d) detailed clean-out procedures (main element of the plans) including:
  (i) equipment needs
  (ii) maintenance techniques
  (iii) occupational health and safety
  (iv) public safety
  (v) environmental management considerations
  (vi) disposal requirements (of material removed)
  (vii) access issues
  (viii) stakeholder notification requirements
  (ix) data collection requirements (if any); and

(e) design details.

An approved maintenance plan is required prior to asset transfer to Council and communication with Council is required regarding these details. Importantly an estimate of ongoing costs for maintenance must be provided to Council as part of the MCU/RoL prior to approval of the lake to ensure Council understand the maintenance obligations following asset handover.

SC6.3.C Appendix C – Water level variation[8]

SC6.3.C.1 Objectives

In response to water level risks the following objectives have been set for lakes in Mackay:

(a) Limit the periodic (yearly) water level variation to 0.3-0.4 m below normal water level. This variation can be appropriately managed in terms of amenity by planting to the banks of the lake with a range of littoral to deep marsh aquatic plants that can tolerate this degree of water level variation.

(b) Limit infrequent (1 in 5yrs or less frequent) water level variation to 0.5 m below normal water level. Long periods of significant drying have the potential to create difficult conditions for the aquatic plants, even plants that are suited to a level of drying. Additionally this level of variation will be readily noticed by visitors to the lake thus reducing the amenity of the system.

(c) Ensure severe water level drawdown (i.e. > 0.5m below normal water level) does not occur more than once every 20 years (on average).

Please note, potable water is not to be used to 'top up' lakes.

SC6.3.C.2 Water level variation

Figure 6.3.C.2.5.A (below) shows how the frequency of occurrence of water level drawdown changes with increasing lake area. The implications of these results with regard to the criteria presented above are:

(a) Water level drawdown of 0.3 – 0.4m does not occur more frequently than once a year (on average) for all lake sizes assessed;

(b) Water level drawdown of 0.4 – 0.5m does not occur more frequently than once every 5 years (on average) as long as the lake area is restricted to 1.5% of the contributing catchment area; and

(c) Water level drawdown of greater than 0.5m does not occur more frequently than once every 20 years (on average) as long as the lake area is restricted to 1.9% of the contributing catchment area.

Therefore, to satisfy the criteria developed for lakes in Mackay, a lake area needs to be sized at 1.5% (2% maximum) of the contributing catchment area (or less).

Please note, this assessment is seen to be conservative because it does not account for groundwater interactions and urban water leakages to the lake which both act to preserve water level (i.e. add water to the lake).

SC6.3.C.3 Water level variation with recirculation

The analysis is complicated by the fact that, in order to meet ecological objectives, every lake needs to be accompanied by a wetland sized at 1 to 1.25 times the lake area. When water quality monitoring of the lake indicates there is an algal bloom risk, waters will be recirculated through the wetland. The consequence being that when the recirculation system is active, the wetland is maintained at normal water level by the recirculation regime, so any reduction in the combined volume of the lake/wetland (i.e. due to evaporation) is reflected in drawdown of the lake water level.

[8] This appendix is authored by Ecological Engineering.

Figure 6.3.C.2.5.B (below) shows the frequency of occurrence of water level drawdown when the wetland recirculation system is activated. In this instance, it is not possible to meet the water level objectives outlined above. Water level drawdown of 0.3 – 0.4m generally occurs every 6 – 12 months, while more severe water level drawdown of greater than 0.4m occurs every 1 – 2 years.

Figure 6.3.C.2.5.C (below) shows a time series of water level drawdown for a lake sized at 1.5% of the contributing catchment area (without recirculation). This represents the size of lake that is deemed appropriate for Mackay based on an analysis of the curves presented in Figure 6.3.C.2.5.A.

Figure 6.3.C.2.5.D shows a time series of water level drawdown for a lake sized at 0.75% of the contributing catchment area, accompanied by a recirculation wetland of the same surface area. The combined surface area is the same as for the lake in Figure 6.3.C.2.5.C (i.e. 1.5% of contributing catchment). The dramatic effect of wetland recirculation on the water level drawdown in the lake is evident.

SC6.3.C.4 Design responses to sever water level drawdown

Figure 6.3.C.2.5.E shows a potential solution to the severe water level drawdown presented in Figure 6.3.C.2.5.D. In this instance, the lake is topped up with excess stormwater stored in an underground storage. The required size of the storage is equivalent to 0.5m multiplied by the surface area of the lake (i.e. one third of the lake volume) which represents a relatively large cost item.

Other potential design responses to the water level drawdown presented in 6.3.C.2.5.D (below) include:

(a) Partitioning the recirculation wetland. The recirculation wetland is sized to ensure adequate recirculation of the total lake volume. However, as the water level in the lake drops, the volume of water in the lake also decreases. As such, it is not necessary to use the entire wetland for recirculation. The benefit of partitioning the wetland is that there is less area available for evaporation.

(b) Creating part of the lake as a wetland edge. In order to preserve the macrophytes around the perimeter of the lake, it seems appropriate to create a wetland edge that can retain water via pumping from the lake. A low level bund would need to be created between the wetland edge and the lake open water to hold water in the wetland while the lake water level is low.

(c) Utilising 'hard' edges to the lake e.g. concrete walls. To mask the potentially large water level variation and creation open water and certain locations for amenity purposes, hard edges can be created.

SC6.3.C.5 Water level variation figures

Figure SC6.3.C.5.A – Frequency of drawdown of lake water level (without wetland recirculation)

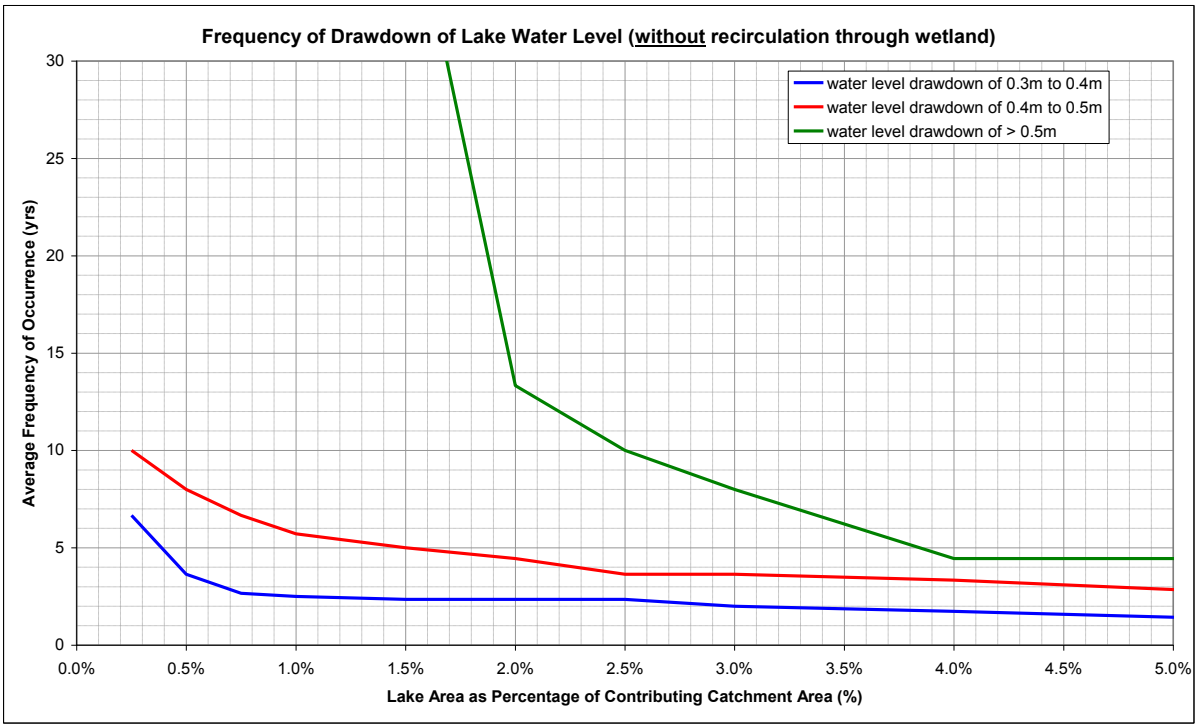


Figure SC6.3.C.5.B – Frequency of drawdown of lake water level (with wetland recirculation)

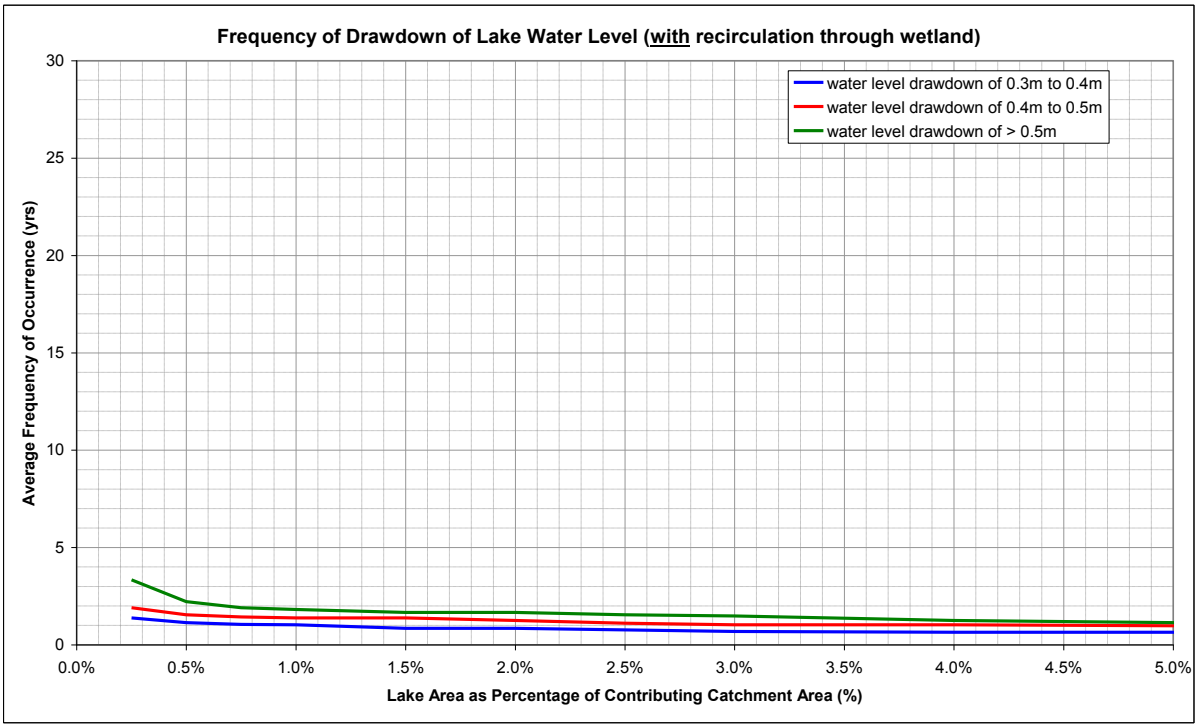


Figure SC6.3.C.5.C – Time series of drawdown of lake water level (without recirculation)

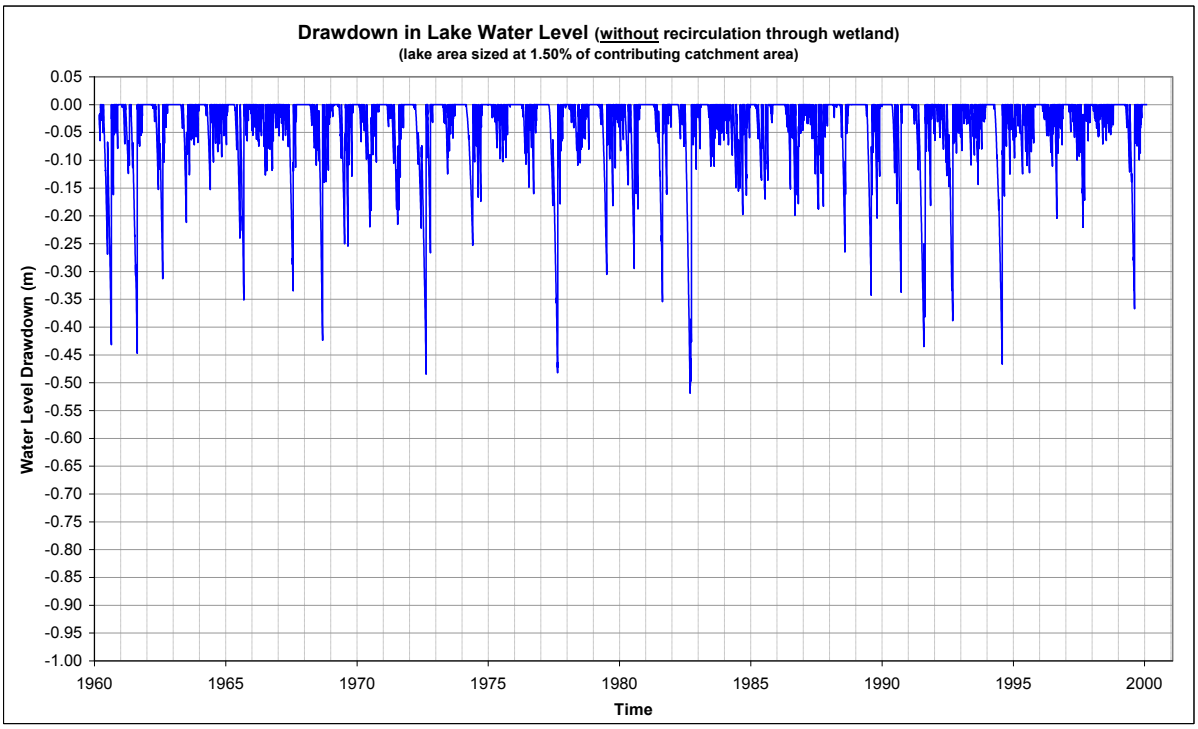


Figure SC6.3.C.5.D – Time series of drawdown of lake water level (with recirculation)

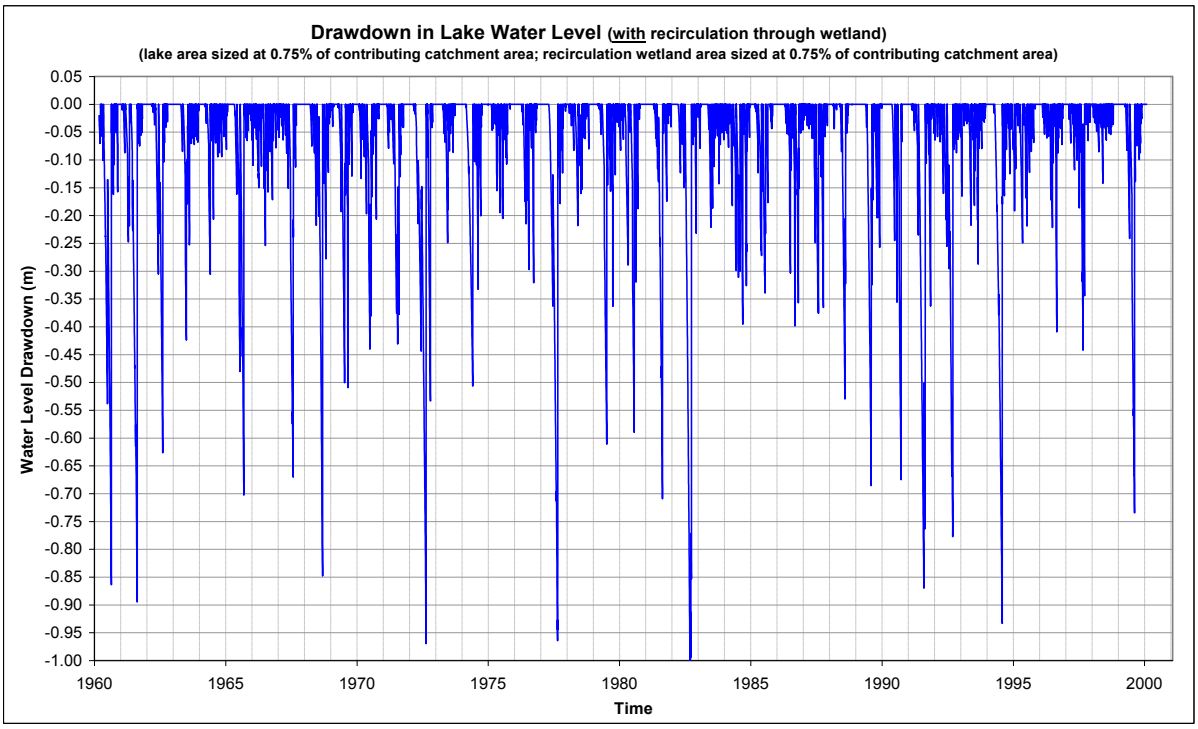
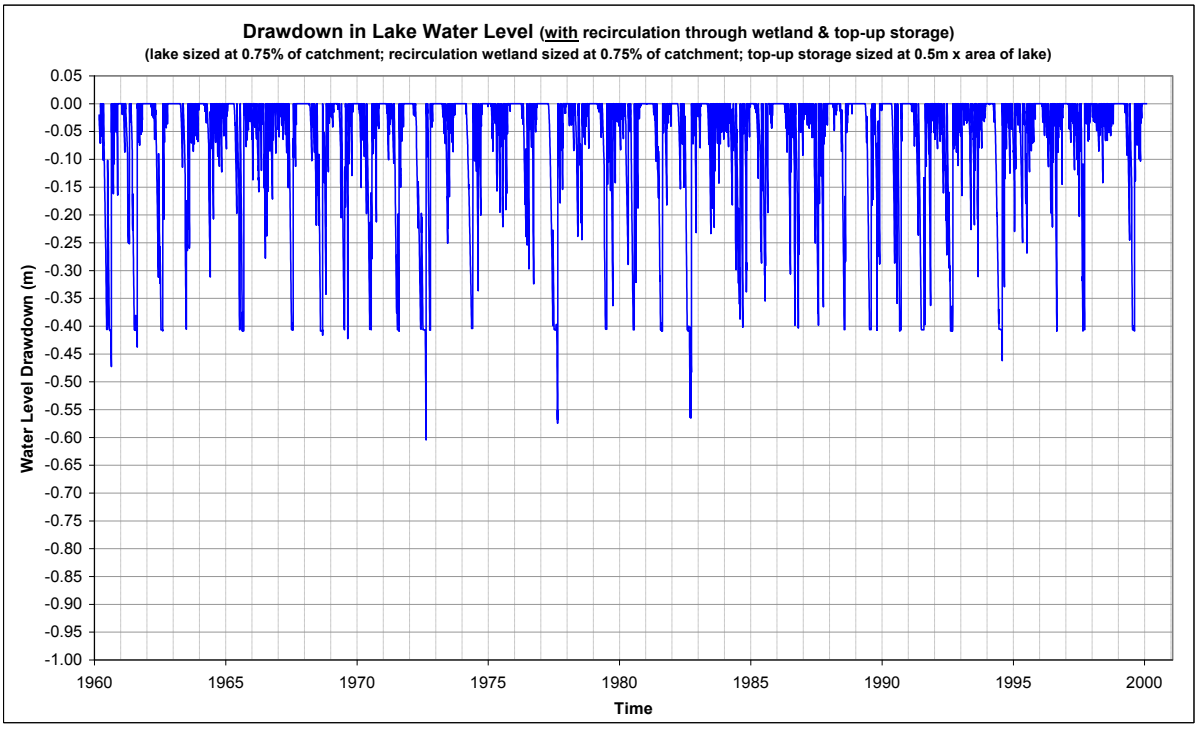


Figure SC6.3.C.5.E – Time series of drawdown of lake water level (with wetland recirculation and top-up storage)



SC6.4 Engineering design guideline – cycleway and pathway design

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SC6.4.1 Scope and general

SC6.4.1.1 Scope

This Guideline sets out requirements to be used in the design of various types of cycleways and pathways.

All relevant design principles contained in the AustRoads Guide referenced below must be integrated in the design of cycleways, pathways and associated infrastructure. This Guideline serves as a companion document to the AustRoads Guide extended to incorporate basic requirements for pathways.

SC6.4.1.2 Objectives

This Guideline aims to set standards and document requirements related to the provision of cycleways and pathways that encourage pedestrian activities and cycling for transportation and recreational purposes.

Cycleways and pathways are to be safe and convenient and shall maintain a satisfactory level of service for all pathway users including users with disabilities and limited mobility.

SC6.4.1.3 Referenced documents

(a) Council guidelines and specifications:
- (i) SC6.5 – Engineering design guideline – geometric road design (urban and rural)
- (ii) Road hierarchy overlay
- (iii) Council's bike plan
- (iv) Standard drawings – various

(b) Australian Standards:
- (i) AS1742.10 – Manual of uniform traffic control devices – pedestrian control and protection
- (ii) AS 2156.1 – Walking tracks, classification and signage
- (iii) AS2156.2 – Walking tracks infrastructure design
- (iv) AS2890.3 – Parking facilities – bicycle parking facilities
- (v) AS1428 – Design for access and mobility

(c) other:
- (i) Engineers Australia, Queensland division (1995) *Institute of Municipal Engineering Standards Australia*
- (ii) Institute of Municipal Engineering Australia, Queensland division (1993) *Queensland streets – design guidelines for subdivisional streetworks*
- (iii) Austroads (2008) *Guide to traffic engineering practice (Part 13 Pedestrians and Part 14 Bicycles)*
- (iv) NAASRA (now AustRoads)(1988) *Planning and designing for bicycles – technical report*
- (v) Australian Government (2004) *Disability standards for accessible public transport guidelines*
- (vi) Queensland Department of Transport and Main Roads (2011) *Queensland cycle strategy 2011 - 2021*
- (vii) Queensland Department of Transport and Main Roads (2005) *Easy steps resource package*
- (viii) Queensland Transport *Cycle Notes*

SC6.4.1.4 Consultation

The Designer must consult with Council, the Developer's Landscape Architect and any relevant authorities prior to and during the preparation of cycleway and pathway network design.

SC6.4.1.5 Design

A suitable qualified and experienced professional engineer (RPEQ) shall oversee all aspects of the footpath and cycleway design. The design shall comply with all relevant requirements of:

(a) this planning scheme policy;

(b) all reference and source documents listed in section 1.3;

(c) any development approval conditions relevant to the design; and

(d) any specific relevant and reasonable request provided by Council in writing.

The RPEQ shall sign all plans associated with the project, certifying that the design complies with this section.

In designing any new paths, the designer shall take into account the existing and proposed network. Prior to presenting to Council the extent and nature of the proposed works, the designer shall take into account relevant requirement contained in SC6.5 – Engineering design guideline – geometric road design (urban and rural).

Where required in Council's Road Hierarchy Plan or Council's Bicycle Plan the designer shall provide for the inclusion of the appropriate cycleway or pathway. In making decisions about the extent or location of either the cycleway or the pathway network, the designer shall also consider the location of the existing and proposed network.

It is Council's intention to provide long-term connectivity between existing cycleways and pathways and extend the linkage of both paths. This will be included in Council's works and required by developments where required to conform to this aim.

Where access places are to form part of a pedestrian or bicycle network, access links should provide suitable connectivity with adjoining access places or open space systems to ensure such pedestrian and bicycle network are functionally efficient. The minimum width of land that provides pedestrian or bicycle linkage is 15 metres.

The Designer must be familiar with cycleway geometric design requirements in terms of:

(a) width

(b) grade

(c) stopping sight distance

(d) change in grade

(e) horizontal curvature

(f) crossfall and drainage

(g) superelevation

(h) sight distance on horizontal curves

(i) appropriate treatments at the road / path interface

The Designer shall incorporate all the requirements for disability access as appropriate for pathway design in accordance with any Council Policy on access and mobility.

SC6.4.1.6 Cycleway and pathway types

Cycleways can be provided on road and off road. Council's Bike Plan and Road Hierarchy detail descriptions, warrants, widths, pavement marking etc for the majority of these cycelways. Common alternative cycleway types include:

(a) on road:
  (i) shared parking / bicycle lanes
  (ii) wide kerbside lanes
  (iii) shared traffic lanes
  (iv) exclusive bicycle lane
  (v) sealed shoulder
  (vi) bicycle awareness zone

(b) off road:
  (i) shared use bicycle / pedestrian pathway
  (ii) separated pathway
  (ii) exclusive cycleway

The AustRoad Guide provides advice on the suitability of pavement conditions, drainage pit grates etc for on road cycelways.

Common pathway types include:

(a) exclusive pedestrian pathways ("no bicycle" zones); and

(b) shared use bicycle / pedestrian pathways.

By definition, pedestrian pathways are "off road" in that pedestrian facilities routinely designed adjacent to roadways are termed footpaths and are designed to meet criteria outlined in Council's Road Hierarchy Plan and typically related to road cross section detailing.

Pathways by comparison diverge from road alignment either within the road reserve or across land reserves. Pathways can be provided in conjunction with overland floodways or retention basins.

SC6.4.1.7 Provisions for cycleways and pathways at structures

Designers shall consider the best way to provide for the uninterrupted movement of cyclists and pedestrians at proposed and existing structures wherever possible. Structures include bridges and underpasses over rivers, roads or railways. The reference and source documents provide information on:

(a) acceptable widths and clearances

(b) types of cycleways and pathways

(c) handrails and barrier fences

(d) bicycle bridges

(e) approach ramps

SC6.4.1.8 Signage and pavement marking

The designer shall provide appropriate signposting design for cycleways and pathways. Signs and pavement marking will provide for safe and convenient use of the facility. The signs and pavement marking will comply with the Queensland MUTCD.

SC6.4.1.9 End of journey facilities

Consideration must be given to the design of adequate facilities at common destinations of cyclists and pedestrians so as to encourage cycleway and pathway usage.
Such facilities could include:

(a) seats

(b) standby areas

(c) secure bicycle parking

(d) picnic facilities

(e) drinking fountains

Bicycle parking installation design should meet appropriate criteria discussed in the AustRoads Guide and be fabricated to meet AS 2890.3.

SC6.4.1.10 Minimum design standards

Notwithstanding the Reference and Source Documents referred to this Guideline the following minimum standards as shown in Table D9.1 are to be complied with for off-road paths.

Table SC6.4.1.10.A – Minimum design standards

	Cycleway	Pathway	Shared Use Pathway
Path Width	2.5m	1.5m[1] 1.2m[2]	2.0m (absolute) 2.5m (preferred)[3] 2.5m[4]
Formation Width	3.5m	2.0m	3.0m 4.0m[4]
Cross-fall minimum (Preferred) maximum	1:50 1:40	1:50 1:40	1:50 1:40

The maximum longitudinal grade of any off-road cycleway shall comply with the relevant Australian Standard.

The designer shall ensure that design details for all cycleways and pathways comply with the requirements detailed in Council's relevant standard drawing.

1 Full width concrete path to be provided in defined areas within the Mackay city centre (refer to Council's standard drawing)
2 With prior approval only and required to match existing paths widths
3 For off-road shared paths within road reserves. Where the 2.5m wide shared pathway is to be located within a "new" road reserve and the Designer cannot satisfy adequate clearances for all users of the proposed pathway (as well as cater for the location and clearances from street trees, light poles and other similar obstructions to pathway users), the Designer shall increase the road reserve/verge width to satisfy all road user and design requirements. The absolute minimum width of 2m is only to be considered for construction in existing road reserves where it is not possible to widen the road verge.
4 For shared paths within park and drainage reserves.

The wearing surface of all cycelways and pathways shall be concrete. Where the designer wants to propose an alternative treatment, they shall seek and obtain separate prior approval.
Documentation

SC6.4.1.11 Documentation

The following listing outlines Council's minimum requirements for presentation of cycleway and/or pathway designs.

(a) plans for all cycelways / pathways

(b) the cycleway plan sheet may be incorporated into the road plan where clarity permits

(c) longitudinal Sections will be required for all off-road cycleways where grades exceed 4%

(d) cross Sections are to be provided and transition tables will be required where cross falls vary or superelevation is provided

A typical cross section will be detailed to indicate pavement materials and layer depths

All drawings and documentation to be submitted to Council for approval shall conform to the requirements of Council's *Drawings and Documentation Guidelines*. A copy of these Guidelines will be made available upon request.

Failure to comply with Council's *Drawings and Documentation Guidelines* may result in the drawings and/or documentation being returned to the designer without consideration by Council.

SC6.4.1.12 Special requirements

Accessibility

All pedestrian and shared paths shall include tactile indicators in accordance with AS 1428.4 design for Access and Mobility – Tactile Indicators.

All cycleways and pathways that lead to, or join, an existing or proposed public transport facility (such as a bus stop or taxi rank) shall comply with the Federal legislative requirements detailed in Disability Standards for Accessible Public Transport Guidelines 2004.

Lighting

All cycleways and pathways shall be lit to the lighting category determined from AS/NZS1158.3 "Pedestrian area (Category P) lighting". Minimum requirements shall be Category P4 with the desirable level being Category P2.

Light fittings to be used shall be as specified in Council's Landscape Style Manual.

SC6.5 Engineering design guideline – geometric road design (urban and rural)

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SC6.5.1 Scope and general

SC6.5.1.1 Scope

This section sets out the guidelines developed specifically for the design of roadwork's and street network within Mackay Region using principles of street design to ensure safety and improved amenity and to reduce pedestrian/vehicular conflicts.

The framework for any new urban network shall include the land use/road hierarchy relationship and shall generally comply with the performance criteria outlined in Council's Road Hierarchy.

The Designer shall prepare a road hierarchy for the proposed development and determine the vehicle speed that is deemed acceptable for each section of every road, based on Table C1 or Table C2 (as appropriate) of Council's Road Hierarchy, refer to Appendix A. The concept of designing to regulatory street speeds is contrary to the principles of subdivision road design.

The Designer must integrate all relevant design principles into the development of the road network. A careful balance is required between maximising amenity, safety and convenience considerations and those related to the drivers' perception of driving practice.

This Guideline shall be read in conjunction with the reference and source documents listed in Section 1.3.

The works "street" and "road" are interchangeable throughout all parts of this Guideline, unless specifically defined.

For the purpose of this Guideline the definition of terms used to define the components of the road reserve shall be in accordance with AS 1348.1 and AMCORD.

Table SC6.5.1.1.A – Terms from AS1348.1 and AMCORD

Term	Definition
Terms from AS1348.1	
Carriageway	That portion of the road or bridge devoted particularly to the use of vehicles, inclusive of shoulders and auxiliary lanes.
Footpath	The paved section of a pathway (verge).
Pathway	A public way reserved for the movement of pedestrians and of manually propelled vehicles (AMCORD verge).
Pavement	That portion of a carriageway placed above the subgrade for the support of, and to form a running surface for, vehicular traffic.
Shoulder	That portion of the carriageway beyond the traffic lanes and contiguous and flush with the surface of the pavement.
Terms from AMCORD	
Carriageway	That portion of the road or bridge devoted particularly to the use of vehicles, inclusive of shoulders and auxiliary lanes.

SC6.5.1.2 Objectives

The provision of a road system within a subdivision is to be designed so as to achieve the following aims:

(a) Provide convenient and safe access to all allotments for vehicles, pedestrians and cyclists.

(b) Provide safe, logical and hierarchical transport linkages with the existing street system.

(c) Provide appropriate access for buses, emergency and service vehicles.

(d) Provide for a quality product that minimises maintenance costs.

(e) Provide a convenient way for public utilities.

(f) Provide for a quality residential amenity by landscape design and the planting of appropriate street trees and use of the road reserve as a buffer between different land uses.

(g) Provide convenient parking for visitors.

(h) Have appropriate regard for the climate, geology and topography of the area.

(i) Have appropriate regard for the amenity and built environment of the area.

In the network planning of new residential areas, the Designer shall create a safe and pleasant residential area by considering the following matters:

(a) Provide for safe pedestrian and cyclist movement by catering separately for the demands of both using footpath or cycle networks or on-street facilities. Any new networks are to link into existing and proposed facilities identified by Council.

(b) The Designer shall reference Council's Bike Plan and liaise with Council to identify the proposed footpath and cycleway network.

(c) Where demands cross minor collector streets (or higher classified streets), provision must be made to provide safe and appropriate crossing facilities to ensure equitable access.

(d) The connectivity of local access streets should not provide the opportunity for motorists to be able to 'rat-run' from one trunk road to another through the new residential area.

(e) The Designer shall liaise with Queensland Transport to identify current and proposed bus routes and bus stops. The Designer shall also refer to Table C1 (from the Road Hierarchy) to identify the form of any bus stop. Bus shelters are to be provided where required.

SC6.5.1.3 Reference and source documents

(a) Council guidelines and specifications:
  (i) Road hierarchy overlay
  (ii) Eppell Olsen and Partners (2003) *Mackay four level road hierarchy*
  (iii) Mackay Regional Council *Development construction specification series*
  (iv) Mackay Regional Council (2007) *Landscape performance and style manual for development applications*
  (v) Mackay Regional Council (2011) *Emergency action guide*
  (vi) Mackay Regional Council, *Standard drawings*

(b) Australian Standards:
- (i) AS1348.1 – Road and traffic engineering – glossary of terms, road design and construction
- (ii) AS1428 – Design for access and mobility
- (iii) AS2890.1 – Parking facilities: off-street parking
- (iv) AS2890.2 – Parking facilities: off-street commercial vehicle facilities
- (v) AS2890.5 – Parking facilities: on-street car parking
- (vi) AS/NZS 3845 – Road safety barrier systems
- (vii) AS1158 – Road lighting
- (viii) AS4282 – Obtrusive effects of outdoor lighting

(c) Queensland authorities:
- (i) Queensland Government (1998) *Queensland residential design guidelines*
- (ii) State Planning Policy
- (iii) Queensland Department of Transport and Main Roads (2002) *Road planning and design manual*

(d) other:
- (i) AustRoads, *Rural road design, guide to geometric design of rural roads*
- (ii) AustRoads, *Guide policy for the geometric design of major urban roads*
- (iii) AustRoads, *Guide to traffic engineering practice (Part 5 – Intersections at grade, Part 6 – Roundabouts, Part 10 – Local area traffic management (2004), Part 12 – Roadway lighting, Part 13 – Pedestrians and Part 14 – Bicycles)*
- (iv) Brindle, R. for Australian Road Research Board (1988) *Planning and design of the local distributor*
- (v) Colman, J. for Australian Road Research Board (1978) *Streets for Living*
- (vi) Comerford, L. E., for Australian Road Research Board, *Special report no. 33 – a review of subdivision road design criteria*
- (vii) Commonwealth Department of Housing and Regional Development (1995) *Australian model Code for Residential Development (AMCORD) – a national resource document for residential development*
- (viii) Pak-Poy Kneebone Pty Ltd (1989) *Research Study into Road Characteristics for Residential Development*
- (ix) Stapleton, C. (1984) *Streets where we live – a manual for the design of safer residential estates*
- (x) Stapleton, C. for South Australia Department of Transport (1988) Planning and road design for new residential subdivisions
- (xi) The Institute of Municipal Engineering Australia, Queensland division (1995) *Queensland streets, design guidelines for subdivisional streetworks*
- (xii) The Institute of Municipal Engineering Australia, Queensland division (1997) *Standard drawings*
- (xiii) Witherington, B. E., and Martin R. E., for Florida Department of Environmental Protection (1966) *Understanding, assessing and resolving light-pollution problems on sea turtle nesting beaches – FMRI technical report TR-2*

SC6.5.1.4 Consultation

Designers are required to consult with the Council and other relevant Authorities prior to, and during, the preparation of a site layout and design concept. Designers should, in addition to requirements of this Guideline, ascertain specific requirements of the relevant Authority as they relate to the road system layout.

The Designer is required to prepare one overall layout plan (not less than A2 size) of any roadwork's associated with the overall creation of more than 24 new urban lots or 9 rural lots. The plan is to be used in conjunction with the initial consultation with Council and indicate the following aspects of the new estate:

(a) road and lot layout – including any proposed traffic calming

(b) major drainage lines – including detention basins and outfall

(c) footpath and cycleways – including existing paths and crossings of major roads

(d) sewer main locations – including connection into existing system

(e) parkland – including area of any play equipment/irrigation area.

The Designer shall obtain service plans from all relevant public utility authorities and organisations whose assets may exist within the area of the proposed development. These services are to be plotted on the relevant drawings including the plan and cross-sectional views.

Public consultation on concept designs shall be provided where Council requires such action.

SC6.5.1.5 Planning concepts

A hierarchical road network is essential to maximise road safety, residential amenity and legibility. Each class of road in the network serves a distinct set of functions and is designed accordingly. The road network for residential developments should have clear legibility.

The road network should reinforce legibility by providing sufficient differentiation between the road functions.

Distinct landmark features such as watercourses, mature vegetation or ridgelines should be emphasised within the structural layout to enhance the legibility.

Whilst introduced physical features such as pavement and lighting details can enhance legibility, the road network should by its inherent design and functional distinction provide the necessary legibility.

Roads of different classification should differ in alignment and design standard by complying with the Objectives and Desirable Performance Criteria (Council's Road Hierarchy – Table B) for the relevant road function classification.

The road layout and width must be in conformity with Council's Road Hierarchy Plan as shown on Infrastructure Maps A and B of the Planning Scheme.

The Designer shall take specific care when proposing any new estate layout to ensure that property access requirements, as defined in Tables B1 and B2 of Council's Road Hierarchy, are adhered to.

In new areas (as distinct from established areas with a pre-existing road pattern), the form of each new road should reflect its function in the road hierarchy by its visual appearance and related physical design standards.

The maximum number of turning movements at intersections or junctions that a driver should be required to undertake to reach a particular address within the development should be minimised.

There will be special constraints and costs associated with the design of roads through or adjacent to land known to be salt affected. Early planning shall consider avoiding detrimental interference with land known to be salt affected.

Adjustments in horizontal and vertical line shall be considered to avoid recharge of subsurface water within or adjacent to the road reserve. Consultation with the relevant land and water resource authority shall be mandatory under the above circumstances.

Appropriate native deep-rooted species should be selected for plantings in association with road reserve works. Plantations should be of sufficient size and density to be effective in their desired role of lowering the groundwater table.

SC6.5.1.6 Carriageway details

Road Reserve and Carriageway widths for street and roads shall generally conform to those defined in Council's Road Hierarchy.

The cross-section details shown in Council's Road Hierarchy are considered "acceptable solutions" to the form of the various street and road classifications. However, where the Designer is proposing an alternative form of cross-section then discussions are required with Council staff prior to seeking formal approval.

SC6.5.1.7 Drawings and documentation

All drawings and documentation being submitted to Council for approval shall conform to the requirements of Council's Engineering Design Guideline D20 Drawings and Documentation Guidelines.

Failure to comply with Council's Engineering Design Guideline D20 Drawings and Documentation Guidelines may result in the drawings and/or documentation being returned to the Designer without consideration by Council.

SC6.5.2 Urban design criteria

SC6.5.2.1 Road network

A suitable qualified and experienced professional engineer (RPEQ) shall oversee aspects of the road design. The design shall comply withal relevant requirements of:

(a) this planning scheme policy

(b) all reference and source documents listed in Section 1.3

(c) any development approval conditions relevant to the design, and

(d) any specific relevant and reasonable request provided by Council in writing.

The RPEQ shall sign all plans associated with the project, certifying that the design complies with this section.

The design features of each type of road convey to the driver its primary functions and encourage appropriate driver behaviour.

Traffic volumes and speed environment on any road should be compatible with the function of the road as described in Council's Road Hierarchy Plan.

The maximum length of an access street should ensure its status as a residential place is retained, where the traffic, in terms of speed and volume will enable the integration of pedestrian, bicycle and vehicular movements. This length will also ensure that residential convenience is not unduly impaired because of speed restraints.

The time required for drivers to travel on all streets within the development should be minimised.

Where access places form part of a pedestrian or bicycle network, access links should provide suitable connectivity with adjoining access places or open space systems so as to ensure such pedestrian and bicycle network are functionally efficient.

The minimum width of land that provides pedestrian or bicycle linkage is 15 metres.

The designer shall also take into account the requirements of SC6.5 – Engineering design guideline – geometric road design (urban and rural) in any new road design.

The road network should ensure that no road links with another road that is more than two levels higher or lower in the hierarchy. In exceptional circumstances roads may link with others that are more than two levels apart, however, no access place or access street should have access to a major collector street, unless otherwise approved by Council.

Connections between internal roads should be T-junctions or controlled by roundabouts.

The creation of any new intersection along a road must provide that the final minimum intersection spacing along the higher-order through road complies with the requirements of Table B1 or B2 in Council's Road Hierarchy.

Where this cannot be met in established built-up areas, then the designer shall seek and obtain separate in-principle approval to the proposed intersection location.

In considering any request for an intersection spacing closer than provided for in Council's Road Hierarchy, the designer must provide documented evidence to Council that demonstrates that the proposal will not reduce the functional performance requirements of either the through or the terminating road.

This will require the designer, as a minimum, to consider and provide evidence with regard to the following issues:

(a) Existing and predicted traffic volumes on all roads ensuring the function of the higher-road road is not substantially compromised

(b) Satisfactory operational performance of the proposed intersection(s)

(c) Access and egress from all properties adjacent to the proposed intersection is not compromised, unless the affected owner(s) agrees in writing

(d) Existing and proposed road form, including linemarking, road width and traffic islands

(e) A plan of the area indicating existing property accesses, drainage and other underground services

(f) Sight distance and turning movements requirements are met

(g) Pedestrian and cyclist safety is not compromised.

The road layout should conform to the requirements of the external road network and satisfy the transport provisions of an outline development plan.

The external road network should be designed and located to provide routes that are more convenient for potential through traffic within the network. Major roads should be provided at intervals of no more than 1.0 km and should be complete and of adequate capacity to accommodate through network movements.

The internal road system should not provide through routes that are more convenient than the external road network.

SC6.5.2.2 Design speed

Design speed is generally used as the basic parameter in the specification of design standards, determining the minimum design value for other elements. 'Queensland Streets' uses the 85th percentile maximum speed of traffic within the street. This is similar to the 'Speed Environment' used in AustRoads Guide to the Geometric Design of Rural Roads. Road intersections as well as changes in horizontal and vertical alignment also limit vehicle speeds.

Adoption of a low design speed discourages speeding. However, where vertical curves of low design speed are located in otherwise high speed sections (tangents) the result is a potentially dangerous section of road. It should be recognised that in low standard roads, operating speeds will tend to be in excess of arbitrary speed standards.

The designer must ensure that potentially hazardous features are visible to the driver and adopt traffic engineering measures that will help a driver avoid errors of judgement.

The designer shall ensure that the selected design speed will result in a speed environment that is likely to comply with that specified in Table B of Council's Rod Hierarchy under the 'Traffic Speed Environment' criteria. The adoption of a design speed that will result in a speed environment that is outside the desirable range stated in Table B shall require separate Council approval.

The need for road safety barriers shall be assessed and designed in accordance with Chapter 8 of Department of Main Roads (DMR) 'Road Planning and Design Manual''.

SC6.5.2.3 Longitudinal gradient

Where the street design includes kerb and channel, a general minimum gradient of 0.5 per cent should be adopted. In very flat conditions it may be reduced to 0.2 per cent. Where underground drainage with gully pits or other special works are used it is acceptable to introduce artificial undulations. Variable crossfall may be necessary to produce the required grade in the gutter. Maximum recommended grades for all street types are as shown in 'Queensland Streets'.

Longitudinal grade of the minor street on the approach to an intersection should comply with the AustRoads Guidelines and DMR Road Planning and Design Guideline. The actual gradient alignment and the grades used are interrelated. A steep grade on a minor side street is undesirable if vehicles have to stand waiting for traffic in the major road.

Turning areas in culs-de-sac on steep grades should have grades less than 5 percent.

SC6.5.2.4 Vertical curves

Vertical curves will be simple parabolas and should be used on all changes of grade exceeding 1 percent. The length of the crest vertical curve for stopping sight distance should conform to 'Queensland Streets'.

For adequate riding comfort, lengths of sag vertical curves should conform to 'Queensland Streets'.

Junctions of roads should be located at a safe distance from a crest, determined by visibility from the side road. Location of a side road at a crest should only occur if there is no suitable alternative and then only with agreement of Council during the consultation outlined in Clause 1.4.

Drainage poses a practical limit to the length of sag curves and a maximum length (in metres) of 15 times the algebraic sum of the intersecting vertical grades (expressed as a percentage) has been suggested. This is to avoid water ponding in excessively flat sections of kerb and channel. A minimum grade of 0.2 percent shall be maintained in the kerb and channel. This may require some warping of road cross sections at sag points.

The three dimensional co-ordination of the horizontal and vertical alignment of a road should be aimed at improved traffic safety and aesthetics. Economic considerations often require a compromise with aesthetic considerations.

The following principles should be applied:

(a) the design speed of the road in both horizontal and vertical planes should be of the same order.

(b) combined horizontal and vertical stopping sight distance and minimum sight distance should be considered three dimensionally.

(c) sharp horizontal curves shall not be introduced at or near the crest of a vertical curve. A horizontal curve should leave the vertical curve and be longer than the vertical curve.

(d) a short vertical curve on a long horizontal curve or a short tangent in the grade line between sag curves may adversely affect the road's symmetry and appearance.

SC6.5.2.5 Superelevation

The maximum superelevation for urban roads of higher design speeds should be 6 percent. Any increase in the longitudinal grade leading to excessive crossfall at intersections should be considered with caution. While it is desirable to superelevate all curves, negative crossfall should be limited to 3 percent.

In general, curve radii larger than the minimum and superelevation rates less than the maximum should be used where possible. The minimum radius of curves is determined by the design speed, the minimum superelevation (or maximum adverse crossfall) at any point on the circular portion of the curve, and the maximum coefficient of side friction that allows safe lane changing. This is 0.15 where there is positive superelevation and 0.12 where there is adverse crossfall. The coefficient of side friction depends upon the type and condition of tyres, the pavement and on speed.

Recommendations for minimum curve radii (in metres) on major urban roads under varying superelevation / crossfall are shown in AustRoads, Guide Policy for the Geometric Design of Major Urban Roads.

Plan transitions are desirable on superelevated curves for appearance and to provide a convenient length in which to apply the superelevation. On urban roads, superelevation may be conveniently applied to the road cross section by shifting the crown to 2 m from the outer kerb.

SC6.5.2.6 Road reserve characteristics

The cross section of the road reserve must provide for all functions that the road is expected to fulfil, including the safe and efficient movement of all users and provision for parked vehicles. The cross section also allows for the provision of a buffer for residents from traffic nuisance, and also to cater for garbage bin collection, public utilities and streetscape.

Generally, the Designer shall provide a cross section and road reserve width that reflects that shown for the relevant road hierarchy cross section as detailed in Appendix D and E of Council's Road Hierarchy Plan and Council's Standard Drawings unless separate approval is obtained from Council. The minimum verge width is to be maintained at intersections, traffic calming and traffic management devices and at the ends of cul-de-sac. However, at intersections sight lines may control the verge width.

The designer may need to provide a wider road reserve width than indicated in Standard Drawings. This may occur adjacent to traffic calming devices, where a series of various services are laid along a road (and minimum separation clearances has to be maintained) and along some streets where a shared pathway is to be constructed n the verge/footpath.

The carriageway width must allow vehicles to proceed safely at the operating speed intended for that level of road in the network and with only minor delays in the peak period. This must take into consideration the restrictions caused by parked vehicles where it is intended or likely that this will occur on the carriageway. Vehicles that include trucks, emergency vehicles and on some roads, buses. (Refer to Clause 1.21 for bus routes).

The safety of pedestrians and cyclists where it is intended they use the carriageway must also be assured by providing sufficient width and lateral separation.

The carriageway width should also provide for unobstructed access to individual allotments. Drivers should be able to comfortably enter or reverse from an allotment in a single movement, taking into consideration the possibility of a vehicle being parked on the carriageway opposite the driveway.

The design of the carriageway should discourage drivers from travelling above the intended speed environment by reflecting the functions of the road in the network. In particular the width and horizontal and vertical alignment must not be conducive to excessive speeds.

Appropriate verge width should be provided to enable the safe location, construction and maintenance if required of paths and public utility services (above or below ground) and to accommodate the desired level of streetscape. Wherever possible services should be located in common trenches.

The verge when considered in conjunction with the horizontal alignment and permitted fence and property frontage treatments should provide appropriate sight distances, taking into account expected speeds and pedestrian and cyclist movements.

Stopping sight distances and junction or intersection sight distances, provided by the verge, should be based on the intended speeds for each road type.

In streets where there is to be a temporary "dead end", the designer shall make suitable provision for a single unit garbage truck to turn around.

SC6.5.2.7 Crossfall

Desirably, roads should be crowned in the centre. Typical pavement crossfalls on straight roads accord with the following.

Table SC6.5.2.8.A – Typical crossfalls

Pavement type	Typical crossfall
Bituminous seal coat	3%
Asphaltic concrete pavement	3%
Concrete pavement	2%

The crossfall on a collector street should take precedence over the grade in minor side streets. Standard practice is to maintain the crossfall on the major road and adjust the minor side street levels to suit. The crossfall in side streets should be warped quickly either to a crown or a uniform crossfall depending on the configuration of the side street. A rate of change of grade of two percent in the kerb line of the side street, relative to the centre line grading, is a reasonable level.

The maximum gradient in carparks shall be in accordance with AS2890.1.

SC6.5.2.8 Verge and property access

A suitable design for the verge will depend on utility services, the width of footpath, access to adjoining properties, likely pedestrian usage and preservation of trees. Crossfalls in footpath paving shall generally be 2% and shall not exceed 2.5%. Longitudinal grades usually parallel that of the road.

Differences in level between the road reserve boundaries may be accommodated by:

(a) cutting at the boundary on the high side and providing the verge at normal level and crossfall

(b) a uniform crossfall across the carriageway.

The above measures can be used singularly or combined. The verge formation should extend with a 1 m berm beyond the road reserve boundary. The designer shall consider options shown on Council's standard drawing.

The Designer shall design a centreline profile for the property access and check this design using critical car templates, to ensure that vehicles can use the property access satisfactorily.

SC6.5.2.9 Intersections

The design of intersections or junctions should allow all movements to occur safely without undue delay. Projected traffic volumes should be used in designing all intersections or junctions on major collector streets or sub-arterial roads.

Intersection design for the junction of roads with existing rural or urban roads shall be in accordance with the publication AustRoads Guide to Traffic Engineering Practice, PART 5, Intersections at Grade.

All new intersections shall be three-way intersections, unless otherwise approved.

Intersections with State-controlled roads or national highways are to be designed, approved by and constructed in accordance with the requirements of the Queensland Department of Main Roads.

Where major intersections are required to serve a development complete reconstruction of the existing road pavements will be necessary where the speed environment and irregularity of the existing road pavement may endanger the safety of traffic in the locality.

Intersections should be generally located in such a way that:

(a) The intersection spacing complies with the requirements of Table B1 or B2 of Council's Road Hierarchy Plan.

(b) The streets intersect preferably at right angles and not less than 70°.

(c) The landform allows clear sight distance on each of the approach legs of the intersection.

(d) The minor street intersects the convex side of the major street.

(e) The vertical grade lines at the intersection do not impose undue driving difficulties.

(f) The vertical grade lines at the intersection will allow for any direct surface drainage.

(g) Two minor side streets intersecting a major street in a left-right staggered pattern should have a minimum centre-line spacing of 40 m to provide for a possible right-turn auxiliary lane on the major street.

(h) A right-left manoeuvre between the staggered streets is required, avoiding the possibility of queuing in the major street.

Adequate stopping and sight distances are to be provided for horizontal and vertical curves at all intersections.

Where the intersection involves a road having a classification of "Major Collector", or higher, then the designer shall demonstrate that the requirements of Section 5.2 of AustRoads Guide to Traffic Engineering Practice – Intersections at Grade have been satisfied.

Appropriate provision should be made for vehicles to park safely in accordance with Queensland Streets and Council's Road Hierarchy Plan (where appropriate).

The drainage function of the carriageway and/or road reserve must be satisfied by the road reserve cross-section profile.

All vehicle turning movements are accommodated utilising AustRoads Design Vehicles and Turning Templates, as follows:

(a) For intersection turning movements involving major collector streets, the "design vehicle" shall be a semi-trailer with turning path radius of 15 m. Should the Designer wish to propose a smaller turning radius, thereby resulting in a slower turning speed, then separate Council approval must be obtained.

(b) For intersection turning movements involving access streets or minor collector streets, but not major collector streets. The "design vehicle" shall be single unit truck with turning path radius 12.5m.

(c) For intersection turning movements on access places but not involving major collector streets, collector streets or access streets, the garbage collection vehicle used by Council as discussed in 'Queensland Streets'.

(d) For turning movements at the head of cul-de sacs in access places sufficient area is to be provided for the garbage collection vehicle to make a three-point turn. Where driveway entrances are to be used for turning movements, the designer shall ensure that the required area is to be designed and constructed to withstand the relevant loads. Refer to 'Queensland Streets' for additional requirements on turning areas.

In the case where a vehicle is required to undertake a three-point turn in the "turning area", the following points are to apply (refer to Fig. 2.12K in Queensland Streets):

(a) The maximum leg length shall be 20m (centreline to end);

(b) Driveways to all frontage lots is to be provided at the time of construction; and

(c) The pick-up point for garbage bins, pathways and parking is to be considered in the design.

No median breaks will be permitted at intersections on major collector streets, sub-arterial or arterial roads except at approved intersections.

Turning radii at intersections shall accommodate the intended movements without allowing desired speeds to be exceeded.

Threshold treatments (splitter island with pedestrian break and pavement surface treatment) raised medians with pedestrian breaks or flush painted median islands and rumble bars shall be provided at various intersections. Designers should make reference to Council's standard drawing to determine requirements.

SC6.5.2.10 Turning and auxiliary lanes

Turning and Auxiliary Lanes at intersections should be designed to accommodate the appropriate design vehicle. Generally, the turn/auxiliary lane should be at least the same width as the adjacent through lane with the following provisions:

(a) Where the lane is located between kerbs the distance between kerbs shall be 5.5 metres or the swept path for the design vehicle plus 1.6 metres whichever is greater

(b) For turn auxiliary lanes to any industrial road, the minimum lane widths shall be 3.5 metres, measured from lip of kerb to the edge of the through lane.

In addition, verge widths are to be maintained at the dimension equivalent to that shown on the standard road cross-section for the hierarchy of the road concerned. Auxiliary/Turn Lanes are not to be catered for by a reduction in verge width.

SC6.5.2.11 Roundabouts

Roundabouts are to be approved by Council.

Roundabouts shall be designed in accordance with the requirements of the publication AustRoads Guide to Traffic Engineering practice – PART 6 Roundabouts. Designs adopting alternative criteria will be considered on their merits. Roundabout design should generally comply with the following:

(a) Entry width to provide adequate capacity

(b) Adequate circulation width, compatible with the entry widths and design vehicles eg. buses, trucks, cars

(c) Central islands of diameter sufficient only to give drivers guidance on the manoeuvres expected

(d) Deflection of the traffic to the left on entry to promote gyratory movement

(e) Adequate deflection of crossing movements to ensure low traffic speeds

(f) A simple, clear and conspicuous layout

(g) Designed to ensure that the speed of all vehicles approaching the intersection will be less than 40 km/h; and

(h) Provide for safe pedestrian and cyclist movements.

No streetlights shall be placed inside the roundabout with all light poles to be located on the street verge/footpath. Consideration for approval of alternate light pole locations (eg in large roundabouts) will only occur where the Designer can demonstrate that illumination levels required by AS1158 cannot be achieved if the light poles are installed on the verge.

The internal area of the roundabout shall be landscaped with suitable plants that are to be watered by an approved underground irrigation system.

Raised splitter islands are to be provided on the approach to all roundabouts, unless otherwise approved.

Barrier kerb and channel is to be provided on the outside kerbs at all roundabouts.

The designer shall provide Council with plans and documentation to support the design.

SC6.5.2.12 Traffic calming

Traffic calming devices are to be approved by the Council.

All calming devices (such as thresholds, slowpoints, speed humps, chicanes and splitter islands) shall be designed in accordance with the requirements of the publication AustRoads Guide to Traffic Engineering Practice – PART 10, Local Area Traffic Management (LATM), Queensland Streets and Council's Standard Drawings.

The designer may be required to provide Council with plans and documentation to support the design.

Raised traffic islands and medians less than 12 m^2, or narrower than 2 m between kerb faces, shall be infilled with concrete. The concrete is to be a minimum of 100 mm thick, be N25 reinforced concrete and be finished in R52 'Terra Cotta' colour in accordance with AS2700 with a herringbone paver pattern.

Note that if coloured / patterned concrete is proposed then the colouring is to extend for the full depth of the concrete.

Device designs shall comply with Council's standard drawings where applicable.

Streetscape

(a) Enhance existing landscape character

(b) Maximise continuity between existing and new landscape areas

(c) Reduce the linearity of the street by segmentation

(d) Avoid continuous long straight lines (eg. kerb lines)

Location of devices / changes

(a) Devices other than at intersections should be located to be consistent with streetscape requirements

(b) Existing or proposed street lighting power poles, drainage pits, driveways and services may decide the exact location of devices

(c) Calming devices are to be located at spacings of 80 – 100 metres

(d) Where any device (including linemarking) will restrict vehicle access to any abutting properties, then the property access shall be constructed at the same time as the roadworks in the approved location. This requirement also applies at intersections and roundabouts

Design vehicles

(a) Emergency vehicles must be able to reach all residences and properties.

(b) Where bus routes are involved, buses must be able to pass without mounting kerbs and with minimised discomfort to passengers.

(c) In newly developing areas where street systems are being developed in line with LATM principles, building construction traffic must be provided for.

Control of vehicle speeds

(a) The designer is to ensure that the road layout and location and type of any traffic calming devices will result in a speed environment (measured by the 85th percentile) in the street is no greater than the posted speed limit for the street. The designer is to endeavour to achieve the desired speed environment by appropriate road alignment design before considering the use of traffic calming devices.

(b) Maximum vehicle speeds will only be reduced by deviation of the motorist's travelled path. Pavement narrowings have only minor effects on average speeds with little or no effect on maximum speeds.

(c) Speed reduction can be achieved using calming devices which shift vehicle paths laterally (slow points, roundabouts, blister islands) or vertically (raised platform, speed cushion). Speed humps are not to be installed without express prior approval.

(d) Creating a visual environment conducive to lower speeds can help speed reduction. This can be achieved by 'segmenting' local streets into relatively short lengths (preferably less than 300 metres), using appropriate devices, streetscapes, or street alignment to create short sight lines.

(e) All calming devices shall be designed to enable a single unit garbage truck to negotiate the device without mounting any kerb. Further, a heavy rigid vehicle shall be able to negotiate all calming devices without mounting the footpath/verge, landscaped areas or any parking bays, or conflicting with any signs.

Visibility requirements (sight distance)

(a) Adequate critical sight distances should be provided such that evasive action may be taken by either party in a potential conflict situation. Sight distances should relate to likely operating speeds.

(b) Sight distance to be considered include those of and for pedestrians and cyclists, as well as for drivers.

(c) Night time visibility of street features must be adequate. Speed control devices particularly should be located near existing street lighting if practicable, and all street features/furniture should be delineated for night time operation. Additional street lighting shall be provided at proposed new speed control devices located away from existing street lighting in accordance with AS1158.4.

(d) A suitable qualified and experienced professional engineer (RPEQ) shall oversee the design all street lighting. The designer is to initially try and use any existing power poles where appropriate before requiring any new power poles. All street lighting shall be checked to ensure both horizontal and vertical lighting requirements are complied with.

SC6.5.2.13 Parking

The parking requirements associated with any land use shall comply with the conditions imposed by the Development Approval, or any separate direction provided by Council in writing.

All on-site parking should be located and have dimensions that allow convenient and safe access and usage and be designed in accordance with the relevant Australian Standard. The parking layout shall take into consideration desired pedestrian movements and appropriate separation between vehicles and pedestrians.

Parking within the road reserve shall be in accordance with Council's Road Hierarchy and Queensland Streets.

On single-lane access streets, parking spaces shall be provided within the verge. Such parking should be well defined and an all-weather surface provided. Such parking shall not restrict the safe passage of vehicular or pedestrian traffic or prevent access to adjacent properties.

The parking bays shall generally be delineated with the use of the wearing surface material, rather than with the use of painted pavement markings.

On streets in industrial areas, longitudinal line marking shall comply with requirements of the appropriate Council standard drawing.

On-street parking facilities shall provide for convenient and safe equitable access. Provision for disabled parking bays shall be provided where requested by Council and shall comply with AS 1428.1.

Parking spaces provided on the verge or carriageway shall be designed in accordance with AS 2890.5. All parking within the road reserve shall be sign posted.

Linemarking of individual on-street parking bays shall generally be provided only in the following circumstances:

(a) Anywhere inside the City Centre area of Mackay, or

(b) Adjacent to, or near, areas of high demand - eg convenience stores, schools, churches, community facilities.

All linemarking shall be in accordance with the Queensland MUTCD.

For non-residential land uses, the opportunity for joint use of parking should be maximised by being shared with a number of complementing uses.

All verge spaces and indented parking areas are constructed of concrete, interlocking pavers, asphalt with crushed rock or other suitable base material and are designed to withstand the loads and manoeuvring stresses of vehicles expected to use those spaces.

90° angled kerb-side parking will generally only be permitted on access places and access streets and then only where the posted speed limit does not exceed 40 km/h.

If the designer wishes to provide 90° kerb-side parking within a posted speed limit of 50 km/h then separate approval shall be required to be given by Council. For approval to be considered then the following minimum circumstances must apply:

(a) There is a demonstrated need for a high level of parking, and

(b) The parking bays must be linemarked, and

(c) The edge line of the adjacent traffic lane must be marked, and

(d) A vehicle must be able to enter and exit the parking space without the need to cross over in any adjacent travel lane.

90° angled kerb-side parking will not be permitted in a street with a 60 km/h, or higher, posted speed limit.

SC6.5.2.14 Bus and heavy vehicle routes

The designer will need to identify existing and proposed bus routes in consultation with Queensland Transport. It is important that the road form and network layout adequately cater for buses. The main criteria in determining the location of bus routes is that no more than 5% of residents should have to walk in excess of 400 metres to catch a bus. Normally roads classified as collector streets, or higher order streets, in Council's Road Hierarchy Plan are to be capable of functioning as a bus route. Table SC6.5.2.15.A details minimum criteria for bus route design.

Table SC6.5.2.15.A – Bus route criteria

Road classification	Traffic volumes – 10 year design horizon	Spacing of bus stops	Bus stop provision
Minor collector	< 2,000 vpd	400 metres	Kerbside stop with shelter[1]
	> 2,000 vpd	400 metres	Indented bay with shelter[1]
Major collector		400 metres	Indented bay with shelter[1]
Sub-arterial		400 metres	Indented bay with shelter[1]

All new bus stops and shelters and adjacent footpaths must comply with the Federal Government's "*Disability Standards for Accessible Public Transport Guidelines 2004 (No. 2)*.

All new bus shelters shall comply with Council's standard drawings. Alternate suppliers must be able to demonstrate that they are to supply a shelter that meets the shape, materials, colour and standard of finish.

Where projects are on identified heavy vehicle route the road form and geometry shall adequately cater for the identified vehicles. Existing heavy vehicle routes should be determined by reference to the Queensland Transport web site.

SC6.5.2.15 Street lighting

Street lighting shall be provided on all urban street and road and rural street classifications. Council requires lighting of intersections on rural roads where one of the roads is classified as a "Sub Arterial", or higher, under Council Road Hierarchy Plan. Where lighting is required to be placed at an isolated rural intersection it shall be designed as "flag lighting" in accordance with AS1158.1.1

Street lighting in new access streets/places and collector streets shall be designed to a P category. The minimum lighting category for new developments is to be P4.

Arterial and sub-arterial roads shall be designed to a V category. The designer shall consider all relevant aspects of AS1158.1.1 or AS1158.3.1 when designing the streetlights.

The street lighting design shall include the lighting of any existing or proposed roundabouts, traffic calming or traffic management devices.

Where the roadway to be lit currently exists, the designer shall endeavour to initially locate any new light on existing power poles. The addition of new poles shall only be considered where the use of existing poles is impractical or results in an inefficient outcome.

If a new pole is required, the designer shall consider the implications of the removal of one, or more, existing poles to maintain the current amenity in the street. The designer shall liaise with Ergon Energy about the cost and other implications prior to making a recommendation to Council.

The alignment of street lighting poles to be utilised in any design shall be as indicated on Council's Road Hierarchy Cross Sections.

[1] Please note – bus shelters are subject to Council's requirements.

New street lights shall be the luminaire types which meet the requirement as being a 'standard' luminaire in accordance with Table 7.6 from *Ergon Energy Lighting Construction Manual and Specification RSM02*.

Designers should note that Council will not approve the installation of "Nostalgia" luminaries, as they do not comply with the glare control requirements of AS 1158.3.1. Further, Council required all luminaires installed to be fitted with Aeroscreen lamps to assist in complying with glare control.

Public Lighting tariff arrangements are described in the Queensland Transmission and Supply Commission Corporation (QTSC) standard conditions. All street lighting installations shall meet the requirements for acceptable of supply under the above conditions as Rate 2 installations.

All street lighting shall be checked to ensure both horizontal and vertical lighting requirements are complied with and that possible obtrusive lighting issues in future or existing residences are addressed as specified in AS4282.

All street lighting design records shall be included as part of the documentation to be submitted by the Designer. The Designer shall provide isolux diagrams to support their street lighting designs. Isolux diagrams shall illustrate lighting on both horizontal and vertical surfaces where these are considered to be critical to the design.

Special requirements for public lighting near foreshores

Artificial lighting on or near beaches is strongly attractive to hatchlings and can cause sea turtle hatchlings to move in the wrong direction (disorientation) as well as interfere with their ability to orient in a constant direction (disorientation). The requirement to minimise the light-pollution impact on nesting turtles is to apply where light from any artificial light (including street lighting) is visible to a person standing anywhere on a beach.

Where any proposed lighting is near a beach known to be, or likely to be, frequented by nesting turtles then the designer shall undertake a design that minimises the light-pollution impact on nesting turtles.

As any measurable level of artificial brightness is not 'acceptable' for nesting turtles, the designer is to adopt a "*best available technology (BAT)*" approach in the design of the street lighting. This will include consideration of any of the following options:

(a) Lighting that can be switched off or fitted with a timer

(b) Minimal numbers and wattage of lights

(c) Minimise height of luminaire to achieve light standard required

(d) Use of vegetation, shields or recesses to ensure that light does not reach the beach.

The use of low-pressure sodium lighting is well recognised as having the least disruptive impact on Logger Head and Leather Back sea turtles.

SC6.5.2.16 Residential estate entrances

Where it is proposed that a residential estate will have permanent entry sign that includes the "estate's name", the designer shall ensure that this sign (usually of low-wall construction) is not located on the road reserve or any other land/reserve that Council will assume the on-going maintenance for.

Council may require separate planning approval for the erection of such signage.

Council will not assume maintenance responsibility for these type of constructions/signs.

The designer shall demonstrate to Council that suitable on-going maintenance arrangements will be in place prior to any approval for the construction is given.

SC6.5.2.17 Street furniture

The designer shall ensure that all proposed street furniture (including street signs) complies with Council's current standards as indicated in its standard drawings or landscape style manual.

SC6.5.2.18 Evacuation routes

Where works are proposed for existing or foreshadowed evacuation routes, designers shall recognise that minimisation of inundation during flooding or storm surge events is a requirement to ensure the ability of the roadway to maintain its function as an evacuation route.

Crown levels on these roads is to be maintained at a minimum level of 5.0m AHD to ensure its viability and trafficability during evacuation incidents.

Further, where the development is controlled by the storm surge Minimum Level of RL5.0m, then the road shall be no lower than 4.7m AHD at the lip of the kerb & channel.

The evacuation routes to which this requirement applies are shown in the *Mackay Regional Council – Emergency Action Guide*. Copies of this document are available from Council and are on Council's web page.

SC6.5.3 Rural design criteria

SC6.5.3.1 General

This section applies to all roads in designated rural areas, including rural home sites and rural residential types of developments.

Design speed is to be generally used as the basic parameter of design standards. The determination of the minimum design value for other elements in rural subdivisions is to be based on the concept of a "speed environment" as outlined in AustRoads Guide to the Geometric Design of Rural Roads.

The minimum Design Speed to be adopted is specified in Council's Road Hierarchy in Table C2 attached.

Where appropriate, superelevation widening and centreline shift and their associated transitions are to comply with AustRoads Guide.

Any new rural subdivision layout shall be designed to prevent direct property access onto a sub-arterial and higher order road.

Accesses shall be limited to one point onto any road. New property accesses will not be permitted onto any sub-arterial or arterial road.

SC6.5.3.2 Sight distances

Minimum stopping and sight distances shall be provided at all points on the road in accordance with AustRoads – Guide to Geometric Design of Rural Roads.

SC6.5.3.3 Horizontal and vertical alignment

Horizontal and vertical curves are to be designed generally to the requirements of AustRoads – Guide to Geometric Design of Rural Roads. These requirements are essential to satisfy the safety and performance of proper road design.

Roads having both horizontal and vertical curvature should be designed to conform to the terrain to achieve desirable aesthetic quality and being in harmony with the landform.

The designer shall ensure the location of guideposts and Chevron Alignment Marker signs (CAMs) is in accordance with the Queensland MUTCD and Council's standard drawing.

SC6.5.3.4 Intersections

Intersections shall be designed in accordance with the publication AustRoads Guide to Traffic Engineering Practice – Part 5, Intersections at Grade. The type of intersection required will depend on existing and planned connecting roads.

New four-leg cross-intersections will not be permitted in rural areas.

Tabulated speed/sight distance requirements together with detailed explanations for each of the sight distance criteria are given in Part 5 of the AustRoads Guide, Intersections at Grade. Repositioning of an intersection may be required to obtain conformance with the sight distance criteria.

Staggered-T arrangements proposed for rural cross-intersections shall be of the "right to left" type. This arrangement eliminates traffic queuing in the major road, the need for additional pavement for right turn lanes and greater stagger length associated with "left to right" T-intersections.

Figures and discussion on staggered-T treatments are given in Part 5 of the AustRoads Guide, Intersections at Grade.

SC6.5.3.5 Plan transitions

A plan transition is the length over which widening and shift is developed from the "tangent-spiral" point to the "spiral-curve" point; i.e., the length between the tangent and the curve. Plan transitions are generally only required on arterial and sub-arterial rural roads. Widening on horizontal curves compensates for differential tracking of front and rear wheels of vehicles; overhang of vehicles; and transition paths. Where proposed roads are curved, the adequacy of carriageway width shall be considered.

Abrupt changes in crossfall, can cause discomfort in travel and create a visible kink in the kerb line. A rate of change of kerb line of no more than 0.5 percent relative to the centre line should ensure against this. The wider the pavement the longer the transition. Superelevation transitions should be used at all changes in crossfall, not just for curves. Drainage problems can arise with superelevation transitions that may require extra gully pits and steeper gutter crossfalls. Where crossfalls change at intersections, profiles of the kerb line should be drawn. Calculated points can be adjusted to present a smooth curve.

SC6.5.3.6 Superelevation

Use of maximum superelevation will be considered where the radius of the curve is approaching the minimum speed environment. Reference should be made to AustRoads Guide to Geometric Design of Rural Roads for superelevation calculation. At low and intermediate ranges of design speed (i.e. below 80 km/h) it is desirable to superelevate all curves at least to a value equal the normal crossfall of straights.

Notwithstanding the above, the maximum superelevation to be adopted for rural roads is 6%. This is to minimise the likelihood of tipping of cane haulage vehicles.

SC6.5.3.7 Scour protection

Scour protection of road drainage and table drains is required. The level of protection will depend on the nature of the soils, road gradients and volume of stormwater runoff. Protection works may involve concrete lined channels, turfing, rock pitching, grass seeding, individually or any combination of these. Geotechnical investigations should be carried out to determine the level and extent of any protection works prior to proceeding to final design stage.

Where the table drain is likely to scour, or the table drain exceeds 5%, a suitably lined table drain is to be constructed along the invert. Also for grades of less than 0.1% the inverts of the table drain shall be concrete lined to prevent siltation and facilitate on-going maintenance.

In the design of any scour protection works, the designer shall take into account the on-going maintenance requirements of Council, including the need to provide safe and adequate access for plant and personnel, the need to minimise on-going costs and eliminate the need for any specialist plant or equipment.

SC6.5.3.8 Evacuation routes

Where works are proposed for existing or foreshadowed evacuation routes, designers shall recognise that minimisation of inundation during flooding or storm surge events is a requirement to ensure the ability of the roadway to maintain its function as an evacuation route.

Crown levels on these roads is to be maintained at a minimum level of 5.0m AHD to ensure its viability and trafficability during evacuation incidents.

The evacuation routes to which this requirement applies are shown in the *Mackay Regional Council – Emergency Action Guide*. Copies of this document are available from Council and are on Council's web page.

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Table A.1 *Road Hierarchy Levels and Objectives- Urban Areas*

LEVEL 1: PURPOSE									
Road							**Street**		
• to carry through traffic.							• to provide local property access; • to collect local traffic.		
LEVEL 2: FUNCTION									
Arterial Road			**Sub Arterial Road**				**Collector Street**	**Local Street**	
• through traffic movements across town; • longer distance strategic traffic movements; • primary connection between suburbs and employment, economic, education or entertainment centres; • line haul public transport task; • primary freight and dangerous goods routes; • regional cycle movements.			• through traffic between arterial roads; • connections between local areas and arterial roads; • access to public transport; • through movement of public transport; • regional – local cycle movements; • pedestrian movements.				• carry traffic having a trip end within the specific area; • direct access to properties; • access to public transport; • pedestrian movements; • local cycle movements.	• direct access to properties; • pedestrian movements; • local cycle movements.	
LEVEL 3: MANAGEMENT									
Highway	**Arterial**	**Arterial Main Street**	**Traffic Distributor**	**Controlled Distributor**	**Sub Arterial Main Street**	**Major Collector**	**Minor Collector**	**Access Street**	**Access Place**
The aim of management policies for these categories will be to facilitate:-									
• longer distance traffic movements between towns; • regionally and nationally significant movements.	• longer distance traffic movements between suburbs and other centres.	• longer distance traffic movements; • access to commercial properties; • car parking; • pedestrian movements. *Treatment may involve preservation of aspects of local amenity in balance with traffic operation*	• connection of local areas to arterial roads; • through movements between arterial roads.	• connection of local areas to arterial roads; • access to properties (certain cases). *Treatment may control some aspects of traffic operation to ameliorate impacts.*	• connection of local areas to arterial roads; • access to commercial properties; • car parking; • pedestrian movements. *Treatment may involve preservation of aspects of local amenity in balance with traffic operation.*	• connection of local and/or minor collector streets with traffic carrying roads; • access to grouped/ commercial properties and community facilities.	• connection of local streets with traffic carrying roads; • access to individual adjacent properties.	• access to individual adjacent properties; • connection to other local streets.	• access to individual adjacent properties.
LEVEL 4: DESIGN									
• according to relevant guidelines and codes including Council Development Manual, AUSTROADS Guides, Queensland Streets, AMCORD, Australian Standards.									

Table A.2 — *Road Hierarchy Levels and Objectives- Rural Areas*

LEVEL 1: PURPOSE							
Road				**Street**			
• to carry through traffic.				• to provide local property access; • to collect local traffic.			
LEVEL 2: FUNCTION							
Arterial Road		**Sub Arterial Road**		**Collector Street**		**Local Street**	
• through traffic movements between towns; • longer distance strategic traffic movements; • primary connection between town and employment, economic, education or entertainment centres; • line haul public transport task; • primary freight and dangerous goods routes; • regional cycle movements.		• through traffic between arterial roads; • connections between local areas and arterial roads; • access to public transport; • through movement of public transport; • regional - local cycle movements.		• carry traffic having a trip end within the specific area; • direct access to properties; • access to public transport; • local cycle movements.		• direct access to properties; • pedestrian movements; • local cycle movements.	
LEVEL 3: MANAGEMENT							
Highway	**Arterial**	**Traffic Distributor**	**Controlled Distributor**	**Major Collector**	**Minor Collector**	**Access Street**	**Access Place**
The aim of management policies for these categories will be to facilitate:-							
• longer distance traffic movements between towns; • regionally and nationally significant movements.	• longer distance traffic movements between town and other centres.	• connection of local areas to arterial roads; • through movements between arterial roads.	not normally required	not normally required	• connection of local streets with traffic carrying roads; • access to individual adjacent properties.	• access to individual adjacent properties; • connection to other local streets.	• access to individual adjacent properties.
LEVEL 4: DESIGN							
• according to relevant guidelines and codes including Council Development Manual, AUSTROADS Guides, Queensland Streets, Australian Standards.							

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Table B.1 *Road Hierarchy Desirable Performance Criteria – Urban Areas*

Criterion	Road						Street			
	Arterial Road			Sub Arterial Road			Collector Street		Local Street	
	Highway	Arterial	Arterial Main Street	Traffic Distributor	Controlled Distributor	Sub Arterial Main Street	Major Collector	Minor Collector	Access Street	Access Place
Functional Characteristics										
Dominant linkage	Regional	Metropolitan	Metropolitan/sites	Specific area	Specific area	Specific area/sites	Environmental cell	Environmental cell	Sites	Sites
Traffic carrying function	Volumes not restricted	Volumes not restricted	<20,000vpd	Volumes not restricted	<10,000vpd	<10,000vpd	<6,000vpd	<3,000vpd	<750vpd	<150vpd
Residential access function	Nil	Nil	Site specific	Nil desirable, accept consolidated	Accepted with conditions	Site specific	Consolidated	Individual	Individual	Individual
Commercial access function	Nil	Nil	Site specific	Consolidated	Consolidated	Site specific	Direct possible for large sites	Individual	Individual	Individual
Industrial access function	Nil	Nil	Nil	Site specific (large sites)	Site specific (large sites)	Site specific (large sites)	Direct possible for large sites	Individual	Individual	Individual
Traffic speed environment	>=100km/h	70-80km/h	40-50km/h	60-80km/h	May be controlled to 50-70km/h	40-50km/h	60km/h	50km/h	<=40km/h	<=25km/h
Heavy vehicle movement	Primary freight routes	Primary/secondary freight routes	Should bypass except for access	Secondary routes	Should bypass except for access	Should bypass except for access	Access only	Access only	Access only	Access only
Dangerous goods movement	Primary routes	Nominated routes only	Inappropriate except for access	Nominated routes only	Nominated routes only	Inappropriate except for access	Inappropriate except for access	Inappropriate except for access	Inappropriate except for access	Inappropriate except for access
Public transport facilities	Line haul, priority treatments	Line haul, priority treatments	Bus route	Bus route	Bus route	Bus route	Bus route	Bus route	Nil	Nil
Cycle facilities	Trunk Routes, off carriageway	Trunk Routes, off carriageway or cycle lanes on road	Trunk/District routes, cycle lanes on road	Trunk/District routes cycle lanes on road	Trunk/District routes cycle lanes on road	Trunk/District routes cycle lanes on road	District/ Neighbourhood routes, cycle lanes on road	District/Neighbourhood routes, marked lanes not required	Neighbourhood routes, shared road space with cars	Neighbourhood routes, shared road space with cars
Pedestrian movement facilities	Only where linkage required, separate from road	Only where linkage required, pathways	Pathways both sides	Only where linkage required, pathways	Pathways both sides	Pathways both sides	Pathways both sides	Pathways both sides or as determined by master plan	Generally nil unless identified in master plan	Generally nil unless identified in master plan

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Table B.1 (continued)

Road Hierarchy Desirable Performance Criteria – Urban Areas

Criterion	Road						Street			
	Arterial Road			Sub Arterial Road			Collector Street		Local Street	
	Highway	Arterial	Arterial Main Street	Traffic Distributor	Controlled Distributor	Sub Arterial Main Street	Major Collector	Minor Collector	Access Street	Access Place
Frictional Characteristics										
Access Control	No access	No access	Selective access control	Selective access control	Selective access control	Selective access control	Selective access control	Individual sites	Individual sites	Individual sites
Parking Provision	Nil	Nil	Keep clear of through lanes	Nil	Keep clear of through lanes	Keep clear of through lanes	Generally nil	Kerbside	Generally no specific provision (dedicated bays where required)	Generally no specific provision (dedicated bays where required)
Bus stopping provision	None on road	Indented bays where appropriate	Indented bays where appropriate	Indented bays where appropriate	Indented bays where appropriate	Indented bays where appropriate	Indented bays where appropriate	Kerbside/ Indented bays where appropriate	No provision	No provision
Pedestrian crossings	Grade separated	Signalised	Controlled points	Controlled points	Controlled points	Controlled points	Some controlled points	Some controlled points	No specific provision	No specific provision
Intersection spacing	1-2km highway >=2km motorway	500-1000m	Site specific	300m	300m	Site specific	100m	60m	40m	Nil
Intersection treatments	Grade separated	Grade separated/ signal/roundabout	Signal/roundabout	Signal/roundabout /priority T	Signal/roundabout/ priority T	Signal/roundabout /priority T	Roundabout/ priority	Roundabout/ priority	Priority	Priority
Cross section	Volume driven, divided	Volume driven, could be divided	4 or 2 lanes, could be divided	Volume driven, could be divided	4 or 2 lanes, could be divided	Generally 2 lanes	2 lanes, could be divided	2 lanes	2 lanes	2 lanes
Impact Characteristics										
Abutting land use types	Non sensitive to traffic	Non sensitive, vehicle associated	Retail/ commercial	Non sensitive to traffic	Preferably non sensitive to traffic	Retail/ commercial	As specified under zoning	As specified under zoning	As specified under zoning	As specified under zoning
Land use impact amelioration	Barriers/buffers/ setbacks	Buffers/streetscaping/ setbacks	Streetscaping	Streetscaping/ setbacks	Streetscaping	Traffic management/ streetscaping	LATM/ streetscaping	LATM/ streetscaping	LATM/ streetscaping	LATM/streetscaping

* reduced carriageway width can be accepted in special circumstances

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Table B.2 — *Road Hierarchy Desirable Performance Criteria – Rural Areas*

Criterion	Road				Street			
	Arterial Road		Sub Arterial Road		Collector Street		Local Street	
	Highway	Arterial	Traffic Distributor	Controlled Distributor (not normally required)	Major Collector (not normally required)	Minor Collector	Access Street	Access Place
Functional Characteristics								
Dominant linkage	Regional	Intra regional	Specific area	-	-	Local area	Sites	Sites
Traffic carrying function	Volumes not restricted	Volumes not restricted	Volumes not restricted typically 250 - 1,000vpd	-	-	Typically <250vpd	Typically < 250vpd	Typically < 100vpd
Residential access	Nil	Nil	Nil	-	-	Individual	Individual	Individual
Commercial access	Nil	Nil	Consolidated	-	-	Individual	Individual	Individual
Industrial access	Nil	Nil	Nil	-	-	Individual	Individual	Individual
Traffic speed	>=100km/h	80-100km/h	80-100km/h	-	-	Maximum 60km/h	Maximum 60km/h	Maximum 50km/h
Heavy traffic movement	Primary freight routes	Primary/secondary freight routes	Secondary routes	-	-	Access only	Access only	Access only
Dangerous goods movement	Primary routes	Primary/secondary routes	Nominated routes only	-	-	Inappropriate except for access	Inappropriate except for access	Inappropriate except for access
Public transport	Line haul, priority treatments	Line haul, priority treatments	Bus route	-	-	Bus route (if required)	Bus route (if required)	Nil
Cycle facilities (where required)	Regional, off carriageway	Regional, on or off carriageway	Regional/local, on or off carriageway	-	-	No specific provision	No specific provision	No specific provision
Pedestrian movement facilities	Where linkage required, separate from road	Where linkage required, separate from road	Where linkage required, separate from road	-	-	No specific provision	No specific provision	No specific provision
Frictional Characteristics								
Access control	No access	No access	Selective access control	-	-	Individual sites	Individual sites	Individual sites
Parking provision	Nil	Nil	Nil	-	-	No specific provision	No specific provision	No specific provision
Bus stopping provision	None on road	Dedicated bays where appropriate	Dedicated bays where appropriate	-	-	In carriageway	In carriageway	Nil
Pedestrian crossings	Grade separated	Controlled points	Controlled points	-	-	May require controlled points	No specific provision	No specific provision
Intersection spacing	4-8km (maximum 12km)	>1000m	>300m	-	-	>100m	>100m	Nil
Intersection treatments	Grade separated/ priority	Roundabout/ priority	Roundabout/ priority	-	-	Roundabout/ priority	Priority	Priority
Cross section	Volume driven	Volume driven	Volume driven	-	-	2 lanes	2 lanes	2 lanes
Impact Characteristics								
Abutting land use types	Non sensitive, vehicle associated	Non sensitive, vehicle associated	Non sensitive to traffic	-	-	-	-	-
Land use impact	Setbacks	Setbacks	Setbacks	-	-	Setbacks	Setbacks	Setbacks

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Table C.2

Road Hierarchy Acceptable Solutions – Rural Areas

Criterion	Units	Road				Street			
		Arterial Road		Sub Arterial Road		Collector Street		Local Street	
		Highway	Arterial	Traffic Distributor	Controlled Distributor (not normally required)	Major Collector (not normally required)	Minor Collector	Access Street	Access Place
Design speed	km/h	>=100km/h	80-100km/h	80-100km/h	-	-	60km/h	60km/h	60km/h
Reserve width	m	50m (nominal)	30m	25m	-	-	20m	20m	20m
Carriageway form	form	2 lanes (min)	2 lanes	2 lanes	-	-	1 or 2 lanes	1 or 2 lanes	1 or 2 lanes
Through lane or carriageway width	m	3.5m	3.5m	3.0m	-	-	4.0m (single lane) or 6.0m (2 lanes)	6.0m (2 lanes, may be unsealed)	6.0m (2 lanes, may be unsealed)
Verge width	m	11.0m (min)	10.5m (min)	8.5m (min)	-	-	6.0m (min)	6.0m (min)	6.0m (min)
Shoulder width	m	2.0m	1.0m	1.0m	-	-	1.0m (min)	1.0m (min)	1.0m (min)
Median width	m	10m (if divided)	n/a	n/a	-	-	n/a	n/a	n/a
Kerb type	type	Nil	Nil	Nil	-	-	Nil	Nil	Nil
Off street path width (pedestrian/cycle)	m	not normally required	not normally required	not normally required	-	-	no provision	not required	not required
Bicycle lane width	m	not normally required	not normally required	not normally required	-	-	no provision	not required	not required
On street parking (width, indented)	m	Nil	Nil	Nil	-	-	no provision	not required	not required
Bus stop (width, indented)	m	none on road	dedicated bays where appropriate	dedicated bays where appropriate	-	-	in carriageway	in carriageway	no provision
Grade - longitudinal	%	3-5% (flat) 4-6% (rolling) 6-8% (mountainous)	3-6% (flat) 4-7% (rolling) 6-9% (mountainous)	3-6% (flat) 4-7% (rolling) 6-9% (mountainous)	-	-	0.3% min - 16% max	0.3% min - 16% max (20% absolute max)	0.3% min - 16% max (20% absolute max)
Noise attenuation		n/a	n/a	n/a	-	-	increase reserve and verge widths	increase reserve and verge widths	increase reserve and verge widths
Appropriateness of LATM		not appropriate	not appropriate	not appropriate	-	-	not appropriate	not appropriate	not appropriate

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SC6.6 Engineering design guideline – healthy waters

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SC6.6.1 Scope and general

SC6.6.1.1 Scope

This policy presents the guidelines developed to ensure development is planned, designed constructed and operated to manage stormwater in ways that will help protect the environmental values of Mackay's waterways.

Virtually all construction activity which requires the disturbance of the soil surface and the existing vegetation, naturally predisposes the construction site to erosion. This in turn leads to sediment loss in the resultant run-off water.

Since such soil disturbance is a necessary part of development, it is essential therefore to develop measures which reduce the erosion hazard of any particular construction activity. Having done that, it is necessary to control run-off water, which carries the sediment, in such a way as to reduce the amount of that sediment leaving the site to an acceptable level.

After construction is complete and the site fully rehabilitated, permanent water quality control structures and features commence their role. These include bio-retention basins, constructed wetlands, sand filters and proprietary stormwater quality improvement devices.

SC6.6.1.2 Objective

Minimise the amount of pollutants such as sediment, litter, nutrients and oil entering Mackay's waterways and stormwater drains.

Minimise and prevent environmental harm to the Mackay Region's waterways and associated ecosystems.

Provide an effective stormwater management system that balances environmental, social and economic interests within the Mackay community and incorporates water quantity, quality and waterway corridor controls.

Minimise environmental nuisance or harm from land-disturbing activities.

SC6.6.1.3 Terminology

Table SC6.6.1.3.A – Terminology used in SC6.5 – Engineering design guideline – healthy waters

Term	Definition
Acid sulfate soils	Acid Sulfate Soils are soils occurring naturally in low lying coastal areas predominantly below 5 m AHD. The term refers to both 'actual' and 'potential' acid sulfate soils as detailed below: (a) Soil or sediment containing highly acidic soil horizons or layers affected by the oxidation of iron sulphides (actual acid sulfate soils); and/or (b) Soil or sediment containing iron sulphides or other sulfacid material that has not been exposed to air and oxidised (potential acid sulfate soils)

Term	Definition
Catchment management plans (CMP's)	These documents describe the catchment, waterways, environmental values, water quality objectives, hydrology, water quality and hydraulic issues associated with the catchment. The CMPs also include strategies and action plans to manage a wide range of waterway issues within the catchment, including social, environmental, financial and planning issues. CMPs may be used by: (a) Council to identify and prioritise actions that need to be undertaken in the catchments; (b) Community groups to guide community based activities in their catchment and increase their understanding of the waterway related issues facing their catchment and their waterways; (c) Staff in Council who are developing Priority Infrastructure Plans (PIPs); and (d) Developers or their Consultants who need specific information (eg on existing water quality, waterway health and key local issues) to support their development applications.
Creek catchment	An area of land bounded by natural features such as hills, from which all runoff flows to a common low point (such as a creek, lake, river, bay etc).
Erosion and sediment control (ESC) management plan	A site plan, including brief explanatory notes (usually on the plan) that simply explains to regulators and site personnel how erosion is going to be minimised and sediment runoff controlled. This Plan is usually acceptable for low risk developments.
Erosion and sediment control (ESC) program	A set of documents including ESC Management Plans, supporting documentation, specifications and construction details.
Erosion and sediment control (ESC) measures	Practices and devices used to minimise erosion (eg retaining and/or establishing vegetation) and control sediment (eg installing a sediment fence or sediment basin).
Environmental values (EVs)	Qualities or characteristics of a waterway that support healthy ecosystems and the community's livelihoods and lifestyle. Environmental Values are determined by community preference and reasonable judgement.

Term	Definition
High risk development	A development (or development proposal) may be classified as 'high risk' if it falls within one of the following categories: (a) a material change of use for urban purposes that involves a land area greater than 2,500 m^2 that : (i) will result in an impervious area greater than 25 per cent of the net developable area, or (ii) will result in 6 or more dwellings; or (b) reconfiguring a lot for urban purposes that involves a land area greater than 2,500 m^2 and will result in 6 or more lots. or (c) operational works for urban purposes that involve disturbing[1] more than 2,500m^2 of land.
Land-disturbing development	Any carrying out of building work, plumbing or drainage work, land clearing, operational work (e.g. road building, placement of fill) or reconfiguring a lot (i.e. subdivision) where there is potential for accelerated erosion from wind or water and/or the discharge of sediment to drains or waterways.
Low risk	For development subject to Council approval but not specified as 'high risk development' (see above). Note that for these types of development, water quality impacts need to be minimised by identifying and adopting best practice techniques.
Receiving water	A water body that may receive runoff from the catchment under consideration, and has some environmental value of beneficial use. Natural wetlands are included in the definition of receiving waters, but constructed wetlands that have been built primarily for the purpose of stormwater (or wastewater) treatment, are not.
Riparian	The banks and associated areas that fringe waterways and are linked by physical and ecological processes to the waterway.

[1] Moving or otherwise disturbing soil.

Term	Definition
Sediment	Solids (typically sand, silt and mud) that are transported by water. Considered to be a 'contaminant' as defined in the *Environmental Protection Act 1994*.
Stormwater	Surface water runoff following a rain event (including piped flows).
Site based acid sulfate soil management plan (SBASSMP)	A SBASSMP shall identify potential on and off site impacts associated with the disturbance of ASS from a development. The Plan should also identify performance outcome and mitigation strategies together with relevant monitoring, reporting and corrective actions. A SBASSMP is required when a development application relates to: (a) an acid sulphate soils affected area, and (b) land at or below 5 m AHD, where the natural ground level is below 20 m AHD, if the application is for a material change of use, or operational works, involving: (i) excavating or otherwise removing 100 m^3 or more of soil or sediment, or (ii) filling of land with 500 m^3 or more of material with an average depth of 0.5 m or more.
Site based stormwater management plan (SBSMP)	A SBSMP shall identify potential on and off site (upstream, downstream and adjacent properties) impacts associated with stormwater for a proposed development. The SBSMP shall also identify a range of stormwater management strategies and action for water quality, water quantity and environmental issues (eg riparian vegetation within the waterways affected by the development). A SBSMP may form part of the development's overall Environmental Management Plan.
Stormwater management plan (SMP)	A plan that evaluates options for the management of stormwater quantity, quality and ecological values within the waterway corridor on a benefit-cost basis. The plan draws upon environmental assessments, as well as hydrologic, hydraulic and water quality modelling. The plan replaces the functions of, and builds upon, the old 'Master Drainage Plan'. The plan is usually developed for developing areas, for example, fringes or pockets of the City that are being urbanised.
Stormwater quality best management practices (SQBMPs)	A range of stormwater management measures which aim to reduce the amount of stormwater runoff and export of pollutants. These practices include: (a) *Source Controls* that aim to prevent the entry of pollutants into stormwater at the pollutant source. These are often non-structural controls that involve public education to modify community behaviour (e.g. drain and kerb labelling, public awareness campaigns).

Term	Definition
	(b) *Runoff Reduction Controls* which lower the volume and peak discharge of stormwater flows. These controls reduce the potential for pollutant wash off and downstream erosion (e.g. on-site detention systems, stormwater recycling systems, dry detention basins). (c) *Infiltration Controls* that include stormwater treatment and/or disposal methods that allow filtration through a porous media (e.g. porous pavements, percolation trenches). (d) *Pollution interception controls* (e.g. Stormwater Quality Improvement Devices – SQIDs) that physically intercept or retain stormwater pollutants for removal or further treatment (eg. filter strips gross pollutant traps, constructed wetlands, vegetated filter strips, grassed swales).
Stormwater quality improvement devices (SQIDs)	Devices used to improve the health of our waterways. SQIDs work by reducing the amounts of pollutants that enter stormwater and waterways. Types of SQIDs include trash racks, gross pollutant traps, constructed wetlands, gully pit baskets.
Uncontaminated runoff	Stormwater runoff that has not been contaminated by sediment from a work site, or has not been directly or indirectly contaminated as a result of actions associated with the work site.
Water quality indicators	A water quality indicator is an indicator for an environmental value, and is a property that can be measured in a quantitative way (e.g. pH, temperature).
Water quality modelling	A technique used to make predictions about the quality of water in waterways. Water quality modelling encompasses pollutant export modelling via models such as MUSIC, which predicts the pollutant loads being discharged from a given area.
Water quality objectives (WQOs)	Measurable goals for the quality of receiving waters to ensure the Environmental Values are protected.
Water sensitive urban design (WSUD)	WSUD is a relatively new concept in regional Queensland, dealing with the '*interactions between the urban built form (including urban landscapes) and the urban water cycle as defined by the three urban water streams being potable water, wastewater and stormwater'* (Engineers Australia 2003).
Waterway	Any element of a river, creek, stream, gully or drainage channel, including the bed and banks. This term includes waterways indicated on the Planning Scheme Maps.

SC6.6.1.4 Reference and source documents

(a) Council guidelines, policy and specifications:
- (i) SC6.12 – Engineering design guideline – stormwater drainage design
- (ii) MUSIC guideline
- (iii) Stormwater quality management plan for Mackay (2006)
- (iv) Council Policy No. 87 Voluntary Mechanism for Stormwater Quality Management

(b) Queensland legislation:
- (i) *Environmental Protection Act 1994*
- (ii) Environmental Protection Regulation 2008
- (iii) Environmental Protection (Water) Policy 2009
- (iv) *Sustainable Planning Act 2009*
- (v) State Planning Policy (July 2014)
- (vii) *Coastal Protection and Management Act 1995*
- (viii) Coastal Protection and Management Regulation 2003
- (ix) *Fisheries Act 1994*
- (x) *Water Act 2000*
- (xi) *Soil Conservation Act 1986*
- (xii) *Vegetation Management Act 1999*
- (xiii) *Local Government Act 2009*

(c) Queensland authorities:
- (i) Queensland Government (2014) *Soil Management Guidelines v4.0 in Queensland Acid Sulfate Soil Technical Manual*
- (ii) Queensland Government (2009) *Queensland Water Quality Guidelines*
- (iii) Queensland Government (2010) *Urban Stormwater Quality Planning Guidelines*
- (iv) Queensland Department of Transport and Main Roads (2002) *Road Drainage Manual, Chapter 13 Erosion and Sediment Control*
- (v) Acid sulfate soils water quality improvement plan: Mackay – Whitsunday region (J McClurg, Department of Environment and Resource Management, 2009)

(d) Other:
- (i) Acid Sulfate Soils of the Sarina Beaches, Hay Point to Armstrong Beach, Queensland (Muller, Peter G)
- (ii) Acid sulphate soils and estuarine water quality of the Mackay district (Muller, Peter G)
- (iii) ANZECC (2000) *Australian water quality guideline for fresh and marine waters*
- (iv) Argue, J.R. (Ed)(2000) *Water sensitive urban design: basic procedures and marine waters*
- (v) AustRoads (1994) *Waterway design (a guide to the hydraulic design of bridges, culverts and floodways)*
- (vi) Brisbane City Council (2001) *Sediment basin design guidelines*
- (vii) Brisbane City Council (2002) *Stormwater outlets in parks and waterways, guidelines*
- (viii) Brisbane City Council (2000) *Natural channel design guidelines*
- (ix) Brisbane City Council (2003) *Guidelines for pollutant export modelling in Brisbane, version 7 – draft*
- (x) Brisbane City Council (2000) *Water quality management guidelines*
- (xi) Brisbane City Council, *Water sensitive urban design engineering guidelines: stormwater*
- (xii) Engineers Australia (2006) *Australian runoff quality – a guide to water sensitive urban design*
- (xiii) Healthy Waterways (2006) *Water sensitive urban design technical design guidelines for south east Queensland*
- (xiv) Healthy Waterways, *Construction and establishment guideline*
- (xv) *Healthy Waterways (2012) Bioretention Technical Design Guidelines*
- (xvi) *Healthy Waterways (2012) Transferring Ownership of Vegetated Stormwater Assets*

(xvii) *Healthy Waterways (2010) Construction and Establishment Guidelines : Swales Bioretention Systems and Wetlands*
(xviii) *Healthy Waterways (2013) Managing and Maintaining Vegetated Stormwater Assets*
(xix) International Erosion Control Association (2008) *Best practice erosion and sediment control*
(xx) *Designflow (2009) Stormwater Quality Performance Curves & Stormwater Quality Objectives for Mackay*

SC6.6.1.5 Planning and concept design

The Designer is to consider the site characteristics, constraints and opportunities relating to stormwater management at the initial planning phases of the development. This is to ensure that sufficient area is allocated within the development site for appropriate stormwater management infrastructure.

For all IDAS applications, a Site Based Stormwater Management Plan (Concept) shall be submitted with the development application to Council for all developments. This will assist in assessing the impact of the development on the site.

Where an IDAS application disturbs ASS (where defined), a Site Based Acid Sulfate Soils Management Plan (Concept) is to be submitted with the development application.

A Site Based Stormwater Management Plan (Concept) for all Council projects shall be prepared by the Designer, or Consultant, and submitted to Council for approval. The approved concept design shall be included in the Drawings for the project.

A Site Based Acid Sulfate Soil Management Plan (Concept) for Council projects shall be prepared where it would apply to the works if it was a development assessed under IDAS.

SC6.6.1.6 Detailed design

The following documents shall be submitted to Council as part of the detailed engineering design documentation following approval of the concepts from Council and other relevant Government Departments:

(a) Site Based Stormwater Management Plan (SBSMP);

(b) Site Based Acid Sulfate Soils Management Plan (SBASSMP) where applicable; and

(c) Erosion and Sediment Control Program (ESC Program).

The documents are to be site specific and not a generalisation of erosion and sediment control, stormwater quality and acid sulfate soil management philosophies. The documents may also form part of the contract specifications for a contractor to comply with during construction.

For Council projects, the organisation responsible for the preparation of the detailed design of the SBSMP, SBASSMP (where applicable) and ESC Program will depend on whether the Works are to be constructed by Council's staff or by Contract.

Where Council's staff are utilised, the detailed design shall be prepared by Council, or its consultant.

For Works by Contract, the Contractor is responsible for preparing and submitting for approval, the SBSMP and SBASSMP and ESC Program.

These detailed Plans and Program shall be referred to the Designer for a concurrence report in both cases and subsequent consideration for approval by Council's Environmental Engineer.

Documentation required for SBSMPs, ESC Programs and SBASSMPs are detailed in Section 1.16 to 1.19.

Where available, examples of proposed developments detailing locations of water quality structures, sediment and erosion control devices may be obtained from Council and used as a guide when preparing SBSMPs and ESC Programs.

SC6.6.1.7 Construction

No site works shall commence prior to approval of the detailed design documents submitted to Council. All works are to be undertaken in accordance with the approved SBSMP, SBASSMP and ESC Program, ESC Management Plans, local laws, development conditions and environmental regulations.

Implementation of the approved works during construction must be supervised by personnel with appropriate qualifications in soil and water quality management.

The developer (or representative) shall constantly monitor, review and modify soil and water management practices to correct any deficiencies.

Amendments required to the approved documents during construction are to be discussed and approved by Council Officers prior to implementing amended practices.

Random audits may be performed by Council Officers throughout the construction phase of the project to review compliance with approved documentation. Where inconsistencies are noted, written advice will be sent to the developer (or representative) requiring appropriate action within 24 hours.

Where Council Officers notifications are not complied with, the works may be undertaken by Council without further reference to the developer. All costs incurred by Council in carrying out the works will be recovered from the maintenance bond.

SC6.6.1.8 Maintenance

Maintenance plans are to be provided for SQIDs that are to be handed over to Council. The responsibilities for maintenance of SQIDs are to be detailed in the SBSMP. The maintenance plans are to be written for use by Council's maintenance and asset personnel. Examples of SQIDs that require maintenance plans include trash racks, gross pollutant traps, constructed wetlands and ponds. The maintenance plans are to include:

(a) design details;

(b) manufacturer and supplier contact details (where relevant);

(c) inspection frequency;

(d) maintenance frequency;

(e) data collection requirements; and

(f) clean-out procedures that address, at a minimum, public safety, maintenance techniques, equipment requirements, environmental management considerations and occupational health and safety and disposal requirements.

A hand-over meeting must occur between the developer (or representative), previously responsible maintenance personnel, Council's Maintenance Co-ordinator and Environmental Engineer.

In the event that the SQID is not complying with approved conditions, Council is under no obligation to accept responsibility of the asset.

SC6.6.2 Stormwater quality management

SC6.6.2.1 Stormwater quality management

Council is committed to improving stormwater quality. This is demonstrated in Council's Stormwater Quality Management Plan (SWQMP), which has been prepared for Mackay's urban areas. An Urban Stormwater Quality Management Plan is currently being prepared in accordance with the requirements of the Urban Stormwater Quality Planning Guidelines (DERM 2010). This plan is to be finalised by June 2013.

The SWQMP establishes the framework "*to manage stormwater quality in urban waterways in a way that maintains or enhances the state of balance among environmental, social and economic interests within the community*". The goal is consistent with Council's corporate objective for ecological sustainability as described in the Corporate Plan.

Stormwater inlet structures such as gully pits and field inlet pits are to be stencilled or embedded with an environmental awareness message aimed to improve the quality of water entering waterways. Appropriate messages include:

(a) the drain is just for rain;

(b) dump – no waste – flows to creek; and

(c) protect our waterways – flows to the ocean.

Refer to Council's standard drawings for details.

Implementation of on the ground improvements for stormwater quality is to be achieved through catchment-based management strategies, initially focusing on 'at risk' catchments. The SWQMP identifies and prioritises urban catchments within Mackay City.

Catchment Management Plans (CMPs) for these catchments together with Stormwater Management Plans (SMPs) and Waterway Management Plans (WMPs) are progressively being prepared with outcomes form these projects including the definition of Environmental Values (EVs) and Water Quality Objectives (WQOs) in Mackay's waterways.

The Environmental Protection (Water) Policy 2009 (EPP Water) provides the legislative basis for water quality management in Queensland. It identifies the need to establish Environmental Values (EVs) and related Water Quality Objectives (WQOs) for waters.

EVs and WQOs need to be identified to ensure that the quality of affected receiving waters are maintained or enhanced. WQOs includes all measurable water quality goals that have been derived to protect corresponding environmental values.

As the values and objectives are being determined, Council will maintain a set of recommended environmental values and water quality objectives for all of the City's waterways. These will be provided to developers for guidance on the performance objectives that their development is to be designed to achieve for receiving water quality. These are documented in Council's Stormwater Quality Management Plan.

These water quality objectives have been developed based on expert advice and the best information available. However, where a developer wishes to invest in local water quality studies to better define applicable site-specific environmental values and water quality objectives, this may be done in consultation with regulatory authorities, and the resulting site-specific water quality objectives may override Council's recommended water quality objectives.

Council is to be contacted regarding the status of the various CMPs, SMPs and WMPs.

SC6.6.2.2 Stormwater quality risk classification

Small, 'low risk' developments in Mackay do not have to identify EVs and WQOs for receiving waters. Proposals for these developments need to demonstrate achievement of best management practices for the type of pollutants that are likely to be generated.

Developments in Mackay considered a 'high risk' in relation to impacts on stormwater quality require the identification of EVs and WQOs for receiving waters within and/or downstream of the development. Proposals for these developments need to demonstrate that stormwater draining from the site will not threaten the relevant environmental values and their corresponding water quality objectives, in affected receiving waters through the use of appropriate SQBMPs.

SC6.6.2.3 Stormwater quality best management practices (SQBMP)

Stormwater quality best management practices is a term given to a collection of practices and devices that improve stormwater quality through the prevention, minimisation and/or trapping of pollutants. They include non-structural and structural controls as described below.

Non structural source controls

(a) Community awareness (education) programs

(b) enforcement on littering and ESC on construction sites;

(c) incentives for adopting innovation in SQBMP;

(d) street cleaning;

(e) rehabilitating, expanding and protecting buffer zones; and

(f) environmental awareness message on stormwater inlet structures

Structural source controls (or stormwater quality improvement devices (SQIDs))

(a) *Primary practices/devices* – remove gross pollutants and coarse sediment:
  (i) in-ground GPT
  (ii) oil/grit separators
  (iii) sediment traps
  (iv) litter and trash racks
  (v) downwardly inclined screens
  (vi) floating litter booms
  (vii) end of pipe litter nets
  (viii) litter baskets
  (ix) side entry traps or gully pit gross pollutant traps

(b) *Secondary practices/devices* – remove sediments, with partial removal of heavy metals and bacteria:
  (i) filter strips
  (ii) grass swales
  (iii) sand / bioretention filters
  (iv) infiltration trench / basin
  (v) porous pavements
  (vi) detention basins (dry)

(c) *Tertiary practices/devices* – remove nutrients, bacteria, fine sediments and heavy metals:
  (i) water quality ponds (with pre-treatment)

(ii) constructed wetlands

The design of structural source controls or SQIDs should be prepared in accordance with the reference and source documents contained in 1.4.

SC6.6.2.4 Determining stormwater quality design objectives[2]

The EPP (Water) 2009 establishes the EVs in receiving waters. The associated WQOs form the basis for defining the required water quality of urban stormwater entering and mixing in local waterways. There are three ways to estimate the level of stormwater quality improvement necessary for a site to ensure WQOs are taken into account to help protect the EVs for waterways (refer Figure SC6.6.2.4.A).

For the site scale these are:

(a) monitoring – actual stormwater quality can be compared with receiving water quality to establish the level of treatment necessary to protect EVs, where sufficient monitoring data are available from the same development type in similar landscape conditions.

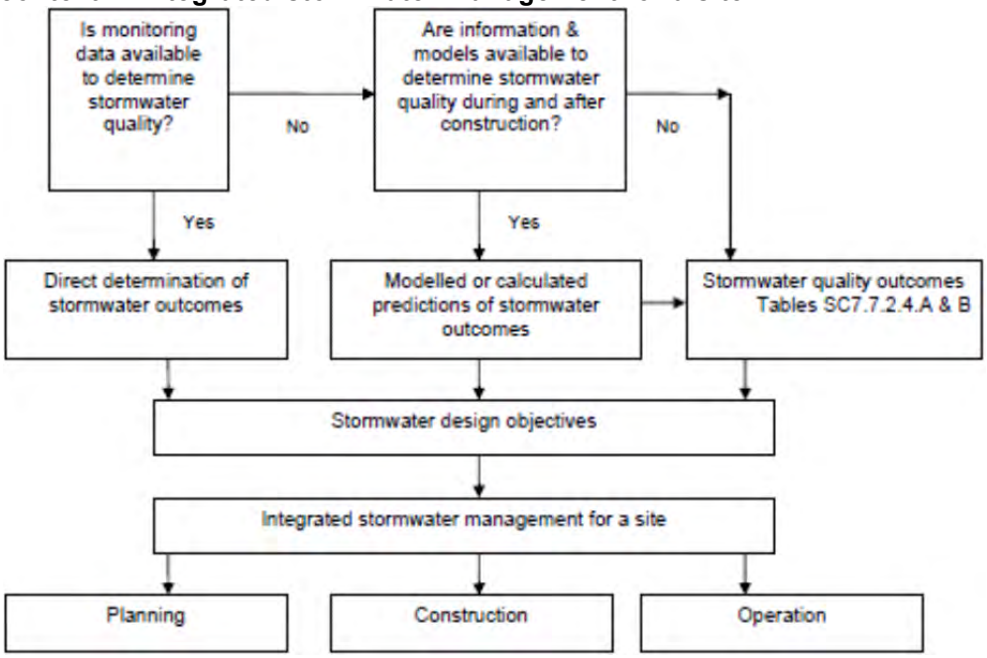
(b) modelling – stormwater quality and its potential impact on receiving waters can be mathematically modelled to determine treatment requirements (design objectives). Some monitoring data are usually required to validate such models.

(c) best management practices – best available data on the performance efficacy of current best practice treatment technologies can be used to establish minimum standards of performance (typically expressed as minimum average annual pollutant load reductions, or minimum average percentage reductions in pollutant loads – see Table SC6.6.2.4.A and Table SC6.6.2.4.B).

In rapidly urbanising catchments, the wet-weather impacts of the construction phase of the land development phase need to be considered as well as the post-development or permanent settlement phase, as the issues and impact assessment methodology are different. Critical impact factors include soil erosion hazard of the landscapes being developed, and increased rainfall run-off coefficients which occur when land is cleared and topsoil removed.

[2] Please note, the following sections are extracted from the Queensland Government's Urban Stormwater Quality Planning Guidelines 2010. Amendments have been made to reflect the Mackay Region's requirements.

Figure SC6.6.2.4.A – Approaches for determining stormwater design objectives and their context in integrated stormwater management for a site



The preferred method for determining the required level of treatment is by use of monitoring data from a similar development. However, the inherent variability in water quality experienced in waterways and stormwater systems means that an extensive monitoring program is usually required to obtain sufficient data for such assessments.

Modelling provides an ability to predict likely changes in water quality associated with proposed urban developments. Such water quality models can be used to establish performance outcomes for stormwater systems. These are limited by the availability of local water quality data and the understanding of the biological and physical processes that influence water quality and the receiving water environment. There are often significant limits on the confidence with which predictions can be made using water quality models at the site scale.

Despite the uncertainty of modelling, adopting predictive modelling techniques to quantify estimates of stormwater pollutant concentrations and loads from urban land surfaces and the pollutant removal efficacy of current best practice stormwater treatment infrastructure is an accepted method for establishing best practice stormwater management 'treatment train' design for regions where limited or no monitoring data exists. Refer to *Stormwater Quality Performance Curves & Stormwater Quality Objectives for Mackay* (DesignFlow, April 2009).

Stormwater quality and flow management design objectives for the construction phase of development are provided in Table SC6.6.2.4.A and focus on suspended solids and gross pollutants. The construction phase design objectives were derived from a review of the current design objectives found in local government jurisdictions and review of contemporary literature on erosion and sediment control. The construction phase design objectives for suspended solids will typically differ from the operational phase design objectives because of the risk of exposing large areas of bare soil, timing of the exposure in the context of rainfall, and the relative range of activities on the site.

Stormwater quality management design objectives for the operational phase are provided in Table SC6.6.2.4.B with a focus on suspended sediments and nutrients. Stormwater flow management design objectives for the operational phase are provided in Table SC6.6.2.4.A.

The stormwater quality management design objectives for the operational phase were derived from predictive modelling using local climatic data and best available information on:

(a) hydrologic characteristics of soils;

(b) pollutant concentrations generated from different land surfaces;

(c) pollutant removal efficacy of contemporary stormwater treatment infrastructure designed to current best practice standards, configured in a 'treatment train' and sized to operate at each treatment technology's point of diminishing return; and

(d) minimum and interim criteria to reduce the impacts of urbanisation on waterway health.

Catchment-specific modelling and local area field studies are always preferred methods to support planning and development design decisions. Where this information is available it should be used to develop site-specific design objectives.

The operational phase design objectives in Table SC6.6.2.4.B are:

(a) applicable to typical urban developments;

(b) generally achievable by at least two best practice 'treatment train' solutions; and

(c) effective in helping to protect EVs for the waterway.

Table SC6.7.2.4.A is for the construction phase of development for medium and large scale construction sites (defined as disturbance greater than 2,500m^2). For small scale construction sites (defined as disturbance area less than 2,500m^2) and independent of a larger common development, the implementation of urban stormwater quality management should be in accordance with MRC's *Best Practice Guidelines for Controlling Stormwater Pollution from Building Sites*.

Refer to Section SC6.6.3 for further information on erosion and sediment control requirements.

Table SC6.6.2.4.A – Summary of design objectives for management of stormwater quality – construction phase of development (USQPG DERM, 2010)

Construction phase stormwater design objectives	Explanatory notes
Drainage control	
Design life and design storm of temporary drainage works: (a) disturbed area open for <12 months – 39.35% Annual Exceedance Probability (former 2 year ARI) (b) disturbed area open for 12-24 months – 18.13% Annual Exceedance Probability (former 5 year ARI) (c) disturbed area open for > 24 months – 10% Annual Exceedance Probability (former 10 year ARI)	Design capacity excludes minimum 150 mm freeboard. A higher drainage design objective may be required for temporary drainage structures upslope of occupied properties. A revised drainage design storm may be required if these design objectives are found to be impracticable (e.g. in North Queensland).
Erosion control	
(a) Minimise exposure of disturbed soils at any time (b) Avoid or minimise large construction activities in the wet season (b) Divert water run-off from undisturbed areas around disturbed areas (c) Use erosion risk ratings to determine appropriate erosion control measures	'Wet season' means the high rainfall months, e.g. the four highest rainfall months. For point (d), determine the erosion risk rating using local rainfall erosivity, rainfall depth, or soil loss rate or other acceptable method. A rating scale such as very low, low, moderate, high, extreme should be applied. Such ratings should reflect the local area. Example ratings may be shown in local council guidelines or detailed in best practice guidelines.

Construction phase stormwater design objectives	Explanatory notes
Sediment control	
(a) Use soil loss rates to determine appropriate sediment control measures (b) Design storm for sediment control basins should be based on retaining the maximum sediment quantity for the maximum volume of water run-off (c) Site discharge during sediment basin dewatering should not exceed 50 mg/L TSS and pH between 6.5–8.5	For point 1, surrogate determinations may be used such as monthly erosivity or average monthly rainfall. For point 2, a commonly used design storm for basin sizing is 80th% five-day event. Depending on the settling characteristics of local soils, a higher 'operational' design storm can be achieved with chemical dosing operated in flow-through mode in a large storm with rainfall-activated auto-flocculent dosing, and advanced hydraulic efficiency features such as floating offtakes, and a sediment forebay. For example, on the Sunshine Coast operation of the basin can achieve the water quality outcomes in any rainfall event up to 125 mm rainfall depth in any five-day period 2. For point 3, TSS = total suspended solids. Turbidity measurements (e.g. 60 Nephelometric Turbidity Units (NTU)) could be used; however, for accuracy, a sitespecific relationship should be developed between turbidity and total suspended solids.
Water quality outcomes	
Stormwater flows from undisturbed and disturbed areas – manage to help protect environmental values.	As far as is reasonable and practicable, all run-off from disturbed areas is collected and drained to a sediment basin—up to the design storm event.
(a) *Coarse sediment* – coarse sediment is retained on site. (b) *Fine sediment* – Site discharge during sediment basin dewatering has a TSS concentration less than 50 mg/L.	Achieve site discharge water quality through, for example, appropriate sediment basin design and operation with flocculation as required.

Construction phase stormwater design objectives	Explanatory notes
Turbidity – Site discharge during sediment basin dewatering has a turbidity (NTU) less than 10% above receiving waters turbidity – measured immediately upstream of the site.	A site-specific relationship should be developed between turbidity and suspended solids, prior to the commencement of construction on large and medium scale construction site
Nutrients (N and P) – Nitrogen and phosphorus are managed through sediment control.	
pH – Site discharge during sediment basin dewatering has a pH range 6.5–8.5.	May be further limited to prevent mobilisation of specific elements.
Litter and other waste – Prevent litter/waste entering the site, the stormwater system or watercourses that discharge from the site. Also minimise or sufficiently contain on-site litter and waste production and regularly clear waste bins.	Avoid wind blown litter; remove gross pollutants.
Hydrocarbons and other contaminants – Hydrocarbons and other contaminants are prevented from entering the stormwater system or internal watercourses that discharge from the site.	See the prescribed water contaminants in schedule 9 of the *Environmental Protection Regulation 2008*. Waste containing contaminants must be disposed of at authorised facilities. Store oil and fuel in accordance with Australian Standard AS1940—no visible oil or grease sheen on released waters.
Wash down water – Wash down water is prevented from entering the stormwater system or internal watercourses that discharge from the site.	
Cations and anions – Cations and anions including aluminium, iron and sulfate are managed as required under an approved acid sulfate soil management plan.	

Construction phase stormwater design objectives	Explanatory notes
Stormwater drainage / flow management	
Hydraulics and hydrology – Take all reasonable and practicable measures to minimise significant changes to the natural waterway hydraulics and hydrology from: (a) peak flow for the one-year and the 1% Annual Exceedance Probability (inlcuing climate change factor) flood event (respectively for aquatic ecosystems and flood protection) (b) run-off frequency and volumes entering receiving waters (c) uncontrolled release of contaminated stormwater	Including making best use of constructed sediment basins to attenuate the discharge rate of stormwater from the site.

Table SC6.6.2.4.B – Summary of design objectives for management of stormwater quality – operational (post-construction) phase of development (USQPG DERM, 2010)

Region	Minimum reductions in mean annual loads from unmitigated development (%)				Further information
	Total suspended solids (TSS)	Total phospho-rous (TP)	Total nitrogen (TN)	Gross pollutants > 5 mm	
Mackay	75	60	35	90	DesignFlow (2009) *Stormwater Quality Performance Curves and Stormwater Quality Objectives for Mackay*

SC6.6.2.5 Determining stormwater quantity design objectives

Stormwater quantity management for waterway health enhancement focuses on the management of frequent urban stormwater flows that cause disturbance to aquatic habitats and aquatic ecosystem health, and on waterway geomorphic stability. This is distinct from urban stormwater quantity management for flood management purposes which is concerned with the management of less frequent, more extreme stormwater flows that cause nuisance flooding and potential flood damage. The latter is an important part of integrated stormwater management and should not be compromised in pursuit of the management of frequent flows for waterway health protection. Stormwater management infrastructure can be designed to meet multiple objectives, such as flooding and waterway quality and stability, and thus reduce costs.

Construction phase quantity design objective

Some Queensland soils have infiltration rates of less than one millimetre per hour and many less than 10 mm/hour. An increase in site surface run-off coefficients begins on most sites when an urban development site is first cleared of vegetation and topsoils removed to expose subsoils. Hence, there is a potential for stream damage through increased flow volume, reduced baseflow, altered stream substrates, and increased frequency of run-off events to waterways during this period, especially if the period of construction is prolonged (in excess of one year from land clearing to end of construction activities). The risk will generally depend on:

(a) the relevant EVs of the receiving waters and their sensitivity to impacts;

(b) climatic region—sites in the Western districts (see Figure 2.5 or Table 2.2) will usually not require specific quantity control measures;

(c) the period that the site has exposed soils, i.e. a high rainfall run-off coefficient compared to the natural condition; and

(d) the area exposed at any one time.

Operational (post-construction) phase

Two stormwater quantity management design objectives are described in Table 2.4—the frequent flow management design objective and the waterway stability management design objective.

Frequent flow management design objective

This objective aims to protect in-stream ecosystems from the significant effects of increased run-off frequency, by capturing the initial portion of run-off from impervious areas. This approach ensures that the frequency, duration and severity of hydraulic disturbance to in-stream ecosystems in developed catchments is similar to predevelopment conditions for small flow events.

Compliance with this objective may be demonstrated by providing a total stormwater capture volume (m^3) calculated as follows:

Capture volume (m^3) = Impervious area (m^2) x target design run-off capture depth (m)

The spatial distribution of the required capture volume may be adapted to suit individual site conditions, provided that the required volume from all impervious areas is captured before leaving the site. Implementing the required capture volume will reduce contaminants, providing a synergistic benefit for water quality. Hence there may be opportunity to incorporate frequent flow and stormwater quality treatment measures. Since the objective requires that this capture volume be available each day, the management system (whether infiltration, evaporation, reuse or discharge via bioretention) must be capable of draining the captured stormwater within 24 hours or have extra storage capacity.

Waterway stability management design objective

This objective aims to prevent accelerated in-stream erosion downstream of urban areas by controlling the magnitude and duration of erosion-generation and sediment-transporting flows.

Compliance with this design objective can be demonstrated using a run-off routing model. The aim is to ensure the one-year average recurrence interval event is maintained at predevelopment levels. At the discretion of the local authority, the adoption of simplified methods for demonstrating compliance for small developments is acceptable.

The document 'Water sensitive urban design—Developing design objectives for water sensitive urban development in South East Queensland' (SEQ Healthy Waterways 2006) provides detailed technical discussions on the frequent flow design objective and the waterway stability management design objective, including an outline of possible methods for demonstrating compliance with these two design objectives.

Table SC6.6.2.5.A – Design objectives for management of stormwater quantity—operational (post-construction) phase of development (USQPG DERM, 2010)

Assessment criteria	Frequent flow management	Waterway stability management
Intent	To minimise the frequency of disturbance to aquatic ecosystems from urban development by managing the volume and frequency of surface run-off during small rainfall events.	To control the impacts of urban development on channel bed and bank erosion by limiting changes in flow rate and flow duration within the receiving waterway.
Design objective	Capture and manage the following design run-off capture depth from all impervious surfaces of the proposed development: (a) for total fraction impervious up to 40%—capture at least the first 10 mm of run-off from impervious surfaces (b) for total fraction impervious >40%—capture at least the first 15 mm of run-off from impervious surfaces (c) run-off capture capacity replenished within 24 hours of the run-off event; or (d) in accordance with locally developed designobjectives which are demonstrated to protect the key hydrologic characteristics of the downstream aquatic ecosystem.	Limit the post-development peak 1 Exceedance per year flood event discharge within the receiving waterway to the pre-development peak 1 Exceedance per year flood event discharge ('pre-development' is defined in Appendix B of Technical Note: Derivation of Design Objectives January 2009).

Assessment criteria	Frequent flow management	Waterway stability management
Recommended application	Applicable where run-off from or within the site passes through or drains only to unlined channels, or non-tidal waterways or wetlands. Also applicable to subdivisional scale development. It is not necessarily applicable to catchment scale planning where the cumulative drainage impacts of multiple developments and other hydrological impacts may need to be considered. The implications of such specific catchment-scale planning may affect these objectives and the local authority may substitute alternative design objectives. Where a receiving waterway is degraded[3] the local or regional authority may choose not to require compliance with this objective, on the basis that the receiving waterway and its associated catchment/s have been identified by the authority as having limited potential for future rehabilitation and/or WSUD retrofitting. Management of captured stormwater should include one or more of the following: (a) stormwater evaporation (b) stormwater reuse (c) diversion of flows from receiving environments (d) infiltration to native soils or otherwise filtered through an appropriately designed soil and plant stormwater treatment system, such as bioretention.	Applicable where run-off from or within the site passes through or drains only to unlined channels, or non-tidal waterways or wetlands. Where a receiving waterway is significantly degraded[5], the local government may choose not to require compliance with this objective, on the basis that the receiving waterway and its associated catchment/s have been identified by the authority as having limited potential for future rehabilitation and/or WSUD retrofitting. Local government may substitute alternative criteria where catchment-scale studies have been undertaken to develop a catchment-specific approach to the management of in-stream erosion impacts.

[3] For the purpose of these guidelines, a waterway is defined as degraded where:
(a) the proportion of impervious area within the catchment, prior to the proposed development, is greater than 30 per cent; or
(b) the waterway is designated as 'highly disturbed' in Schedule 1 of the *Environmental Protection (Water)Policy 2009.*

SC6.6.3 Erosion and sediment control

SC6.6.3.1 Erosion and sediment control principles

The principles for effective erosion and sediment control are:

(a) Minimise the extent and duration of soil disturbance.

(b) Control the location and velocity of drainage flow during the construction phase.

(c) Minimise soil erosion initiated by wind, rain or concentrated flow.

(d) Minimise sediment runoff from the site.

(e) Promptly revegetate or stabilise all exposed and or unstable soil surfaces.

(f) Adequately install, operate and maintain all ESC measures.

(g) Develop an Erosion and Sediment Control Program (ESC Program) and amend the program to minimise environmental harm.

SC6.6.3.2 Erosion and sediment control measures

The following list contains control measures that can minimise drainage, erosion and sediment control issues. When these measures are implemented appropriately, the effects of soil erosion and sediment dispersion may be significantly decreased when compared to development without these control measures.

(a) Drainage control techniques:
- (i) water diversion channels/structures
- (ii) temporary and permanent waterway crossings
- (iii) energy dissipators and outlet protection
- (iv) check dams
- (v) chutes and drop pipes
- (vi) grassed channels
- (vii) level spreaders
- (viii) reinforced grassed channels
- (ix) rock and concrete lined channels and protection\Sediment basin spillways
- (x) sediment basin spillways
- (xi) vegetative cover

(b) Erosion control techniques:
- (i) ground covers
- (ii) mulching and seeding
- (iii) erosion control blankets/mats
- (iv) surface roughening
- (v) vegetation/revegetation
- (vi) chemical surface stabilisers
- (vii) soil-cement treatment
- (viii) geosynthetic lined channels
- (ix) control of wind erosion
- (x) turfing
- (xii) vegetation logs and mats

(c) Sediment control techniques:
  (i) entry / exit pads
  (ii) grass filter strips and buffer zones
  (iii) stockpile protection
  (iv) grass swales
  (v) dewatering Activities
  (vi) sand filters
  (vii) infiltration trench / basin
  (viii) water quality ponds and constructed wetlands
  (ix) control of wind erosion
  (x) sediment fences
  (xii) rock filter dams
  (xiii) sediment basins, ponds and weirs
  (xiv) gross pollutant traps

The designer is encouraged to refer to the Reference and Source Documents listed in sub-clause 1.4(d) for assistance in the design of ESC measure listed above.

SC6.6.3.3 Model code of practice provisions – erosion and sediment control

SC6.6.A – Appendix A presents detailed supporting information to the model code of practice provisions for erosion and sediment control on construction sites.

Compliance with a given performance outcomes can only be achieved by:

(a) complying with the acceptable outcome

(b) formulating an alternative solution which complies with the performance outcomes, or is shown to be at least equivalent to the acceptable outcomes

(c) a combination of (i) and (ii).

Unless otherwise indicated, all outcomes listed within the acceptable outcome must be satisfied in order to comply with the acceptable outcome.

SC6.6.A – Appendix A forms part of this code. The attachment provides essential information and requirements not otherwise provided within the code.

Please note, where Appendix H and Appendix I are mentioned in this appendix, they refer to the IECA 2008, Best Practice Erosion and Sediment Control, International Erosion Control Association (Australasia), Picton NSW.

If the scheduled works incorporate building activities, then the model code of practice provided in Appendix H (Building sites) shall apply.

If the scheduled works incorporate instream soil disturbances, then the model code of practice provided in Appendix I (Instream works) shall apply.

In the event of a conflict over the desired outcome of a performance outcomes or an acceptable outcome, then the outcome shall be that which best achieves the objective of the code, that being:

(a) To protect the environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends.

(b) To achieve this objective a person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm (s319 *Environmental Protection Act 1994*). In assessing all reasonable and practicable measures, appropriate consideration must be given to:
   (i) the nature of the potential harm
   (ii) the sensitivity of the receiving environment
   (iii) the current state of technical knowledge for the activity
   (iv) the likelihood of successful application of the various measures that might be undertaken
   (v) the financial implications of the various measures relative to the type of activity.

The various recommendations presented in this guideline are an indication of what may be considered reasonable and practicable for the construction industry.

This model code of practice does not provide all the information necessary to adequately control soil erosion and sediment run-off in all situations.

Users of the code should always make their own site-specific evaluation, testing and design, and refer to their own advisers and consultants as appropriate.

Specifically, the adoption of this model code of practice will not necessarily guarantee:

(a) compliance with any statutory obligation; or

(b) avoidance of all environmental harm or nuisance.

Table SC6.3.3.3.A – Model code of practice provisions – erosion and sediment control – assessment criteria

Performance outcomes	Acceptable outcomes
Development planning and design	
PO1 Adequate data is obtained to allow appropriate site planning and design.	**AO1.1** The extent and complexity of data collection is commensurate with the potential environmental risk, and the extent and complexity of the proposed soil disturbance.
	AO1.2 Potential site constraints and zones of high or extreme erosion hazard are identified early in the planning phase.
	AO1.3 A conceptual ESCP is prepared if the construction activities are deemed to represent a high to extreme erosion hazard.
PO2 The design and layout of the development does not cause unnecessary soil disturbance.	**AO2.1** The development is appropriately integrated into the existing site conditions, including the existing topography, such that the need for extensive land reshaping and surface modifications is minimised.

Performance outcomes	Acceptable outcomes
	AO2.2 Wherever reasonable and practicable, 'cut and fill' and 'slab-on-ground' construction practices are not employed on land slopes equal to, or steeper than 15 per cent.
	AO2.3 The design, staging, and layout of the development do not cause unnecessary soil disturbance if an alternative design, staging or layout (which reduces the potential environmental harm) is available that achieves the same or equivalent project outcomes at a reasonable cost.
PO3 The design and layout of the development minimise the risk of environmental harm occurring during the construction phase.	**AO3.1** Potential high-risk construction activities are identified during development planning.
	AO3.2 Essential ESC control measures are appropriately integrated into the project's planning, design and financial analysis.
	AO3.3 Adequate space is provided for the construction and maintenance of essential ESC measures.
	AO3.4 The development layout avoids the placement of critical structures or buildings within the region of the lowest land elevation within any sub-catchment if such a structure would prevent the construction and effective operation of essential ESC measures throughout the construction period.
	AO3.5 The development's design and layout do not cause unnecessary delays to the initiation and satisfactory completion of site stabilisation and final rehabilitation activities.
PO4 The design and layout of the development minimise the risk of environmental harm occurring during the operational phase of the development.	**AO4.1** The development is designed to appropriate drainage standards (permanent drainage works).

Performance outcomes	Acceptable outcomes
	AO4.2 Ongoing erosion problems at the inlet and outlet of permanent drainage systems (pipes or channels) are minimised.
	AO4.3 The development incorporates current best practice stormwater quality controls for the operational phase of the development.
	AO4.4 The development design and layout appropriately recognises and integrates identified site constraints.
	AO4.5 To the maximum degree reasonable and practicable, disturbance to deep-rooted vegetation on slopes susceptible to mass movement is minimised, if not totally avoided.
PO5 The design and layout of the development minimise the risk of environmental harm to downstream waterways.	**AO5.1** All reasonable and practicable measures are taken to minimise changes to the natural water cycle (including volume, frequency, duration and velocity of stormwater run-off) during the operational phase of the development.
	AO5.2 The number of temporary and permanent watercourses crossing is reduced to the minimum necessary.
Construction planning	
PO6 Adequate site data is obtained to allow appropriate construction planning.	**AO6.1** Zones of high to extreme erosion hazard are identified prior to construction planning.
	AO6.2 The extent and complexity of site data, including soil mapping, is commensurate with the potential environmental risk, and the extent and complexity of the soil disturbance.
PO7 Construction planning aims to minimise the risk of environmental harm occurring during the construction phase.	**AO7.1** Development of the ESCP is an integral part of construction planning.

Performance outcomes	Acceptable outcomes
	AO7.2 High-risk construction activities are identified during construction planning.
	AO7.3 High-risk construction activities and disturbances of high to extreme erosion hazard areas are minimised, if no totally avoided, especially during periods of high to extreme erosion potential.
	AO7.4 All reasonable and practicable measures are taken to design/plan the construction layout, programming, staging and methodology to minimise environmental risks associated with high-risk construction activities.
	AO7.5 Construction planning minimises the duration that any and all areas of soil will be exposed to the erosive effects of wind, rain and flowing water, in part through the progressive and prompt stabilisation of disturbed areas.
	AO7.6 Construction site layout, methodology, staging and programming do not cause unnecessary environmental harm if an alternative layout, methodology, staging or program (which reduces unnecessary soil disturbance and/or potential environmental harm) is available that achieves the same or equivalent project outcomes at a reasonable cost.
	AO7.7 On sites with a soil disturbance greater than 2500m2, a water quality monitoring program, and site stabilisation plan, landscape plan, and/or vegetation management plan is prepared and approved by the relevant regulatory authority prior to site establishment.
PO8 Construction planning aims to minimise the risk of environmental harm to downstream waterways.	**AO8.1** To the maximum degree reasonable and practicable, instream disturbances are programmed to occur during the least erosive and environmentally damaging periods of the year.

Performance outcomes	Acceptable outcomes
	AO8.2 The number of temporary watercourse crossings is minimised.
Erosion and sediment control plan (ESCP)	
PO9 An ESCP is prepared prior to site disturbance that provides sufficient information to achieve the required environmental protection.	**AO9.1** The design standard of drainage, erosion and sediment controls comply with the requirements of the relevant regulatory authority, or where such a standard does not exist, are designed in accordance with current best practice.
	AO 9.2 As a minimum, the ESC design standard applied to a site at any given instant is commensurate with the degree of environmental risk, and the type, cost, and scope of the proposed works.
	AO9.3 The level of information and detail supplied in the ESCP is commensurate with the potential environmental risk and the complexity of the proposed works; and of sufficient clarity to allow on-site personnel to appropriately implement the plan.
PO10 The ESCP is prepared by, or under the supervision of, suitably qualified and experienced personnel.	**AO10.1** The qualifications and experience of the personnel preparing and/or supervising the preparation of the ESCP is commensurate with the potential environmental risk, and the extent and complexity of the soil disturbance.
	AO10.2 The design of each sediment basin is signed off by a suitably qualified and experienced professional.
	AO10.3 On sites with a soil disturbance greater than 2500m^2, the ESCP is signed off by a suitably qualified and experienced professional.
	AO10.4 On sites with a soil disturbance greater than one hectare, or where the ESCP incorporates a sediment basin, the ESCP is signed off by an engineer experienced in hydrology and hydraulics.

Performance outcomes	Acceptable outcomes
	AO10.5 Where the ESCP incorporates a sediment basin with a constructed earth embankment with a height greater than one metre, the ESCP is signed off by an appropriate geotechnical specialist.
PO11 The ESCP is appropriate for the site conditions and the potential environmental risk.	**AO11.1** The extent and complexity of data collected prior to finalisation of the ESCP is commensurate with the potential environmental risk, and the extent and complexity of the soil disturbance.
	AO11.2 In preparation of the ESCP, priority is given to the prevention, or at least the minimisation, of soil erosion, rather than just the trapping of displaced sediment.
	AO11.3 The stormwater drainage requirements of the construction phase are appropriately integrated into the ESCP through the use of best-practice drainage control measures and design standards.
PO12 The ESCP remains relevant, at all times, to the current site conditions.	**AO12.1** The ESCP remains both effective and flexible, and is based on anticipated soil, weather, and construction conditions (as may vary from time to time).
	AO12.2 The ESCP is appropriately amended if the implemented works fail to achieve the 'objective' of the ESCP, the required performance standard, or the State's environmental protection requirements.
	AO12.3 Once the works commence, a revised ESCP is prepared should the works not be completed within 12 months, with further reviews undertaken thereafter at half-yearly intervals.
	AO12.4 All amended ESCPs are prepared by, or under the supervision of, suitably qualified and experienced personnel.
P13 Potential harm to wildlife as a result of ESC measures is minimised.	**A13.1** Synthetic (plastic) reinforced fabrics are not specified within, or adjacent to, bushland areas, riparian zones and watercourses if such materials are likely to cause harm to wildlife or wildlife habitats.

Performance outcomes	Acceptable outcomes
Site establishment	
PO14 Site personnel are provided with all necessary information prior to site establishment.	**AO14.1** The development approval conditions, development permit, ESCP, monitoring and maintenance program, landscape and/or site rehabilitation plan, and any other document required for the management of soil erosion and sediment control, are provided to the principal contractor prior to the commencement of land disturbing activities.
	AO14.2 On sites with a soil disturbance greater than one hectare, a vegetation management plan, and procedures for conducting a site shutdown (whether programmed or unprogrammed), are provided to the principal contractor prior to the commencement of land disturbing activities.
PO15 Appropriate personnel are engaged to implement and monitor all necessary ESC measures prior to commencement of site disturbance.	**AO15.1** Prior to the commencement of any construction activities or soil disturbance, appropriately trained and experienced personnel are engaged to undertake regular ESC audits of the site.
	AO15.2 Prior to commencement of site works, a 'chain of command' in relation to the implementation, modification, and maintenance of ESC measures is established.
PO16 Site establishment does not cause unnecessary soil disturbance or environmental harm.	**AO16.1** No land-disturbing activities occur on the site until all perimeter ESC measures, sediment traps, and associated temporary drainage controls, have been constructed in accordance with the ESCP and best practice erosion and sediment control.
	AO16.2 All site office facilities and operational activities are located such that all effluent, including wash-down water, can be totally contained and treated within the site.
	AO16.3 Adequate waste collection areas/bins are provided on-site and maintained such that environmental harm is minimised.
PO17 Site access is appropriately managed to minimise the risk of environmental harm.	**AO17** Authorised site access is confined to the minimum practicable number of locations.

Performance outcomes	Acceptable outcomes
	AO17 Access onto the site, where authorised or unauthorised, is appropriately managed to minimise the risk of sediment being tracked onto adjoining sealed roadways.
	AO17 All reasonable and practicable measures are taken to ensure stormwater run-off from access roads and stabilised entry/exit systems, drains to an appropriate sediment control device.
Site management	
PO18 The work site is managed such that environmental harm is minimised.	**AO18.1** No land-disturbing activities are undertaken prior to appropriate consideration being given to erosion and sediment control issues.
	AO18.2 All works subject to an ESCP are carried out in accordance with the ESCP (as amended from time to time) unless circumstances arise where compliance with the ESCP would increase the potential for environmental harm as assessed by a recognised authority.
	AO18.3 All ESC measures are installed, operated and maintained in accordance with current best management practice.
	AO18.4 Land-disturbing activities are undertaken in such a manner that allows all reasonable and practicable measures to be undertaken to: (a) allow stormwater to pass through the site in a controlled manner and at non-erosive flow velocities (b) minimise soil erosion resulting from wind, rain and flowing water (c) minimise the duration that disturbed soils are exposed to the erosive forces of wind, rain and flowing water (d) prevent, or at least minimise, environmental harm (including public nuisance and safety issues) resulting from work-related soil erosion and sediment run-off.
	AO18.5 Site spoil is lawfully disposed of in a manner that does not result in ongoing soil erosion or environmental harm.

Performance outcomes	Acceptable outcomes
PO19 Those responsible for erosion and sediment control are appropriately trained and equipped.	**AO19** Site managers and/or the nominated responsible ESC personnel achieve and maintain a good working knowledge of the correct installation and operational procedures of all ESC measures used on the site.
PO20 Disturbance to ESC measures by on-site personnel is minimised.	**AO20.1** On-site personnel are appropriately instructed and educated as to the purpose and operation of adopted drainage, ESC measures, and the need to maintain such measures in proper working order at all times.
	AO20.2 Unnecessary disturbance to ESC measures by on-site personnel, sub-contractors and construction traffic (including site management and material delivery vehicles) is minimised.
PO21 The adopted ESC measures remain relevant at all times to the current site conditions.	**AO21.1** Performance of the site's ESC measures is monitored in accordance with the site's monitoring and maintenance program.
	AO21.2 The adopted erosion and sediment control measures are appropriately amended if site conditions significantly change, or are expected to significantly change, from those conditions assumed during development of the ESCP.
	AO21.3 The adopted erosion and sediment control measures are appropriately amended if the implemented works fail to achieve the 'objective' of the ESCP, or the required performance standard, or the State's environmental protection requirements, or unacceptable environmental harm is occurring or is likely to occur.
	AO21.4 In circumstances where addition or alternative erosion and sediment control measures are required on a site, and a revised ESCP needs to be prepared, then only those works necessary to minimise environmental harm are conducted prior to preparation of the revised ESCP.
PO22 The work site is appropriately prepared for imminent construction activities and weather conditions.	**AO22.1** Adequate supplies of drainage, erosion and sediment control, and relevant pollution clean-up materials, are retained on-site during the construction period.

Performance outcomes	Acceptable outcomes
	AO22.2 Appropriate short-term drainage control measures (e.g. flow diversion around recently opened trenches and excavations) are installed and operational prior to impending storms.
	AO22.3 A minimum stockpile of flocculating agents is securely stored on-site to provide for at least three complete treatments of all chemically treated sediment traps.
PO23 Land disturbing activities do not cause unnecessary soil disturbance.	**AO23.1** Land-disturbing activities do not cause unnecessary soil disturbance if an alternative construction process (that reduces potential environmental harm) is available that achieves the same or equivalent project outcomes at a reasonable cost.
	AO23.2 The extent of unnecessary soil disturbance, including disturbances outside the designated work area, is minimised.
PO24 Damage to retained or protected vegetation is minimised.	**AO24.1** Prior to the commencement of land disturbing activities within any given area, all protected vegetation and significant areas of retained vegetation within that area, are appropriately identified to minimise the risk of disturbance to such areas.
	AO24.2 No damage is allowed to occur to roots, trunk or branches of 'retained' vegetation, unless under the direction of an appropriate vegetation management plan.
PO25 Adopted work practices minimise the release of pollutants into receiving waters.	**AO25.1** Emergency and pollution control procedures are commensurate with the site conditions, local environmental values, and the type, cost, scope and complexity of the works.
	AO25.2 All liquid chemicals, including petroleum products, that could potentially be washed or discharged from the site in association with sediment, are stored and handled on-site in accordance with relevant standards such as AS1940.

Performance outcomes	Acceptable outcomes
	AO25.3 Cement-laden run-off, concrete waste, and chemical products (including petroleum and oil-based products), are managed on-site in accordance with current best management practice.
	AO25.4 Brick, tile and masonry-cutting activities are carried out in accordance with current best management practice.
	AO25.5 Washing of tools and painting equipment is carried out in accordance with current best management practice.
	AO25.6 Newly sealed hard-stand areas (e.g. roads, driveways and car parks) are swept thoroughly as soon as practicable after surfacing to minimise the risk of components of the surfacing compound (e.g. bitumen and gravel) entering stormwater drains.
	AO25.7 All pollutants washed or blown from the site are collected and secured as soon as practicable.
PO26 The application of liquid or chemical-based dust suppression measures does not cause an environmental hazard.	**AO26.1** The application of dust suppression measures complies with state-approved environmental controls and manufacturer's instructions (whichever is the most restrictive or environmentally conservative).
	AO26.2 Vegetation watering and dust suppression activities are conducted in a manner that ensures sediment-laden run-off from such activities does not create a traffic or safety hazard.

Performance outcomes	Acceptable outcomes
PO27 Environmental harm, safety issues, and nuisance or damage to public and private property resulting from off-site sediment deposits, material spills, and/or the adopted ESC measures is minimised.	**AO27.1** Sediment and other material originating from the work area, or as a result of the transportation of materials to or from the work area, that collects on sealed roads, or within gutters, drains or waterways outside the immediate work area, is removed: (a) immediately if rain is occurring or imminent (b) immediately if considered a safety hazard (c) if items (a) or (b) do not apply, as soon as practicable, but before completion of the day's work. Washing/flushing of sealed surfaces only occurs where sweeping has failed to remove sufficient sediment, and there is a compelling need to remove the remaining sediment (e.g. for safety reasons).
	AO27.2 Sediment deposits that cause nuisance to, or adversely affect the use or value of, neighbouring properties are removed and the area rehabilitated as soon as practicable.
	AO27.3 The adopted ESC measures do not adversely affect drainage or flooding conditions within neighbouring properties.
PO28 Potential safety risks to site workers and the public as a result of ESC measures are minimised.	**AO28.1** Operational safety issues (public and site personnel) are given appropriate consideration during the installation, operation, maintenance and removal of ESC measures.
	AO28.2 Publicly accessible sediment basins are fenced (i.e. exclusion fencing) where there is considered to be an unacceptable safety risk.
PO29 Potential harm to wildlife as a result of ESC measures is minimised.	**AO29.1** Disturbance to wildlife habitats is limited to the minimum necessary to complete the approved works.
	AO29.2 Large sediment traps allow appropriate egress of wildlife where such wildlife could enter the trap.

Performance outcomes	Acceptable outcomes
	AO29.3 Synthetic (plastic) reinforced fabrics are not placed within, or adjacent to, bushland areas, riparian zones, and watercourses if such materials are likely to cause harm to wildlife or wildlife habitats.
PO30 Disturbance to natural watercourses is minimised.	**AO30.1** Instream works are conducted in accordance with an approved code of practice for instream works.
	AO30.2 No instream land-disturbing activities are undertaken prior to development of a vegetation management plan.
	AO30.3 Disturbance to natural watercourses (including bed and bank vegetation) and their associated riparian zones is limited to the minimum necessary to complete the approved works.
	AO30.4 The number, location, type, and size of temporary watercourse crossing are such that the overall adverse impact on the environment is minimised.
	AO30.5 All temporary watercourse crossings, including their approach roads, employ appropriate drainage, erosion and sediment controls to minimise sediment inflow into the watercourse.
PO31 Site shutdowns are conducted in a manner that minimises potential environmental harm.	**AO31.1** Procedures for initiating a site shutdown incorporate appropriate revegetation of all soil disturbances unless otherwise stipulated within an approved site management plan.
	AO31.2 Revegetation procedures associated with a programmed site shutdown commence at least 30 days prior to the nominated shutdown time.
	AO31.3 Adopted site stabilisation measures do not rely upon the longevity of non-vegetated erosion control blankets and short-term soil binders.
Land clearing	
PO32 Potential environmental harm resulting from land clearing is minimised.	**AO32.1** All land clearing is conducted in accordance with State and local government vegetation protection and/or preservation requirements and/or policies.

Performance outcomes	Acceptable outcomes
	AO32.2 On sites with a soil disturbance greater than one hectare, no land clearing is undertaken prior to approval of a vegetation management plan.
	AO32.3 Limits on the extent and duration of soil disturbance are commensurate with the potential erosion risk and/or erosion hazard.
	AO32.4 Compliance with performance outcome PO24.
PO33 Land clearing is limited to the minimum necessary.	**AO33.1** Land clearing does not cause unnecessary soil disturbance if an alternative process (which reduces the potential environmental harm) is available that achieves the same or equivalent project outcomes at a reasonable cost.
	AO33.2 Land clearing at any given time during periods of potential soil erosion is restricted to only those areas required for the current stage of works.
	AO33.3 Wherever reasonable and practicable, land clearing is limited to five metres from the edge of proposed constructed works, two metres of essential construction traffic routes, and a total of 10 metres width for construction access.
PO34 Soil erosion during and following land clearing is minimised.	**AO34.1** Land clearing within any sub-area is delayed as long as reasonable and practicable.
	AO34.1 Land clearing and site rehabilitation are staged to minimise the extent and duration that any and all areas of soil are exposed to the erosive effects of wind, rain and flowing water.
	AO34.1 If tree clearing is required well in advance of future earthworks, then tree clearing methods that will minimise potential soil erosion are employed, especially in areas of high to extreme erosion risk.
PO35 Sediment releases to receiving water (within or outside the site) are minimised during land clearing operations.	**AO35.1** No land clearing is undertaken unless preceded or accompanied by the installation of adequate drainage and sediment control measures.

Performance outcomes	Acceptable outcomes
	AO35.2 No part of a sediment basin catchment area is grubbed of vegetation, or stripped of topsoil, until the basin is constructed and fully operational.
Soil and stockpile management	
PO36 The 'soil structure' of soils that are to be revegetated is not unnecessarily damaged.	**AO36** Soils that are to be revegetated are not unnecessarily disturbed when they are either too wet, or too dry.
PO37 Maximum benefit is obtained from existing topsoil.	**AO37.1** The topsoil is managed (i.e. stripped, treated, stockpiled and reused) in accordance with the recommendations of an approved vegetation management plan or similar.
	AO37.2 Topsoil is stripped, stockpiled, placed, and where necessary treated, in accordance with current best practice.
	AO37.3 Topsoil originating from the site is respread as the topsoil to maximise erosion control and revegetation, except where it has been assessed that such soil will not improve erosion control and/or revegetation on the site.
PO38 Environmental harm caused by the temporary stockpiling of erodible material is minimised.	**AO38** Stockpiles of erodible material are: (a) located fully within the relevant property; (b) appropriately protected from wind, rain and excessive surface flows in accordance with current best practice; and (c) located at least two metres from hazardous areas, retained vegetation, and overland flow paths; and (d) located up-slope of an appropriate sediment control system.
PO39 Exposed dispersive soils are managed such that the risk of ongoing soil erosion is minimised.	**AO39** Construction details for drainage systems and bank stabilisation works within dispersive soil areas clearly demonstrate how these soils will be managed to prevent future erosion problems.
PO40 Exposed potential acid sulfate soils are appropriately managed.	**AO40.1** If acid sulfate soils conditions exist on site, then appropriate warnings are placed on the ESCP.

Performance outcomes	Acceptable outcomes
	AO40.2 All exposed actual or potential acid sulfate soils are managed in accordance with current best practice.
	AO40.3 On-site personnel involved in the disturbance of actual or potential acid sulfate soils are appropriately trained and/or supervised.
Drainage control	
PO41 Temporary drainage control measures are designed, constructed and maintained to an appropriate standard.	**AO41.1** The standard of drainage control complies with the requirements of the relevant regulatory authority, or where such a standard does not exist, drainage controls are designed in accordance with current best practice.
	AO41.2 Stormwater drainage during each stage of earth works is managed in accordance with the appropriate ESCP or construction drainage plan (as amended from time to time).
	AO41.3 All drainage channels, whether temporary or permanent, are constructed and maintained (at all times) with sufficient size, gradient and surface conditions to maintain their required hydraulic capacity.
	AO41.4 The adopted drainage control measures remain relevant, at all times, to the current and imminent site conditions.
PO42 Stormwater movement through the site is appropriately managed to minimise soil erosion.	**AO42.1** If the drainage area up-slope of a soil disturbance exceeds 1500 m^2, and the average monthly rainfall exceeds 45 mm, all stormwater discharged from this area (up to the design storm) is diverted around or through the soil disturbance in a manner that minimises soil erosion.
	AO42.2 Appropriate drainage controls are installed above an exposed earth batter to minimise soil erosion on the batter.

Performance outcomes	Acceptable outcomes
	AO42.3 The spacing of cross-slope drainage systems down long exposed, non-vegetated or recently seeded slopes, does not exceed that standard set by the relevant regulatory authority, or in the absence of such standard, are designed in accordance with current best practice.
	AO42.4 Flow velocities within drainage channels and at the entrance and exit of all drainage structures (including chutes, slope drains, and spillways) are controlled in such a manner that prevents soil erosion during all discharges up to the relevant design discharge.
PO43 Stormwater movement through the site is appropriately managed to minimise environmental harm.	**AO43.1** All temporary and permanent drainage systems are installed as soon as practicable.
	AO43.2 'Clean' water is diverted around sediment traps in a manner that maximises the sediment trapping efficiency of the sediment trap.
	AO43.3 All reasonable and practicable measures are taken to ensure stormwater run-off entering an area of soil disturbance is diverted around or through that area in a manner that minimises soil erosion and contamination of that water for all discharges up to the specified design discharge.
	AO43.4 Adequate drainage controls (e.g. cross drainage systems and/or longitudinal drainage) are applied to all unsealed roads and tracks to minimise erosion on, and sediment run-off from, such surfaces.
	AO43.5 All reasonable and practicable measures are taken to ensure sediment-laden run-off from access roads and stabilised entry/exit systems drains to an appropriate sediment control device.
	AO43.6 All reasonable and practicable measures are taken to divert stormwater around excavations and trenches.

Performance outcomes	Acceptable outcomes
PO44 Stormwater movement through the site is appropriately managed to minimise site wetness within active work areas.	**AO44.1** Roof water does not unreasonably increase soil wetness within work areas.
	AO44.2 Roof water drainage systems are installed prior to placement of the roof.
	AO44.3 Roof water drainage systems are connected to an approved stormwater drainage system immediately after placement of the roof.
PO45 Stormwater entering into, or discharged from, the site is appropriately managed to minimise flooding, damage and nuisance to neighbouring properties.	**AO45.1** All waters discharged during the construction phase are discharged onto stable land, in a non-erosive manner, and at a legal point of discharge.
	AO45.2 All drainage channels up-slope of neighbouring properties are constructed and maintained with sufficient size, gradient and surface conditions to maintain the required hydraulic capacity.
	AO45.3 Stormwater is not unlawfully diverted into neighbouring properties.
Erosion control	
PO46 Erosion control measures are designed, installed and maintained to an appropriate standard.	**AO46.1** The standard of erosion control complies with the requirements of the relevant regulatory authority, or where such a standard does not exist, erosion controls are designed in accordance with current best practice.
	AO46.2 As a minimum, the type and degree of erosion control are commensurate with the expected site conditions, soil type, potential environmental risk, and the type, cost, and scope of the works.
	AO46.3 The adopted erosion control measures remain relevant, at all times, to the current and imminent site conditions.
PO47 The control of soil erosion is given appropriate priority.	**AO47.1** Wherever reasonable and practicable, priority is given to the prevention, or at least minimisation, of soil erosion, rather than allowing soil erosion to occur and trying to trap the resulting sediment.

Performance outcomes	Acceptable outcomes
	AO47.2 The existence of best practice sediment control measures within a given sub-catchment does not diminish the need for the application of best-practice erosion control measures.
PO48 Soil erosion is minimised.	**AO48.1** Appropriate erosion control measures are incorporated into all stages of a development, including each phase of earthworks.
	AO48.2 Site activities are carried out in a manner that minimises the duration that any and all disturbed soil surfaces are exposed to the erosive forces of wind, rain and flowing water.
	AO48.3 Erosion control measures are applied to exposed soils as soon as practicable after earthworks have been completed within each sub-area.
	AO48.4 The application of necessary erosion control measures is not unnecessarily delayed for the purpose of coordinating such activities with final site rehabilitation / revegetation.
	AO48.5 Appropriate drainage and erosion control measures are implemented and maintained around the site office area and on temporary access roads to minimise raindrop impact erosion and the generation of mud.
PO49 Soil erosion resulting from rainfall is minimised.	**AO49.1** Soil disturbing activities are programmed to minimise soil exposure during periods when: (a) the monthly rainfall erosivity is expected to exceed 1500; or (b) the monthly rainfall is expected to exceed 225 mm.
	AO49.2 Existing ground covers are protected from damage and retained as long as practicable.
	AO49.3 Exposed dispersible soils are either treated or covered with a layer of non-dispersible soil before being covered with vegetation, mulch or erosion control blankets.

Performance outcomes	Acceptable outcomes
PO50 Soil erosion resulting from surface water flow is minimised.	**AO50** Service trenches are backfilled, compacted and rehabilitated in a manner that prevents undesirable water flow and soil erosion along the trench.
PO51 Soil erosion resulting from wind erosion is minimised.	**AO51.1** Erosion control measures used to control wind erosion are commensurate with soil exposure and the expected wind conditions in terms of speed and direction.
	AO51.2 Stockpiles of erodible material are covered during periods of strong wind or when strong winds are imminent.
Sediment control	
PO52 Sediment control measures are designed, installed, operated and maintained to an appropriate standard.	**AO52.1** The standard of sediment control complies with the requirements of the relevant regulatory authority, or where such a standard does not exist, sediment controls are designed in accordance with current best practice.
	AO52.2 As a minimum, the type and degree of sediment controls are commensurate with the site conditions, soil type, potential environmental risk, and the type, cost, and scope of the works.
	AO52.3 No sub-catchment relies solely on 'supplementary' sediment traps unless site conditions prevent the use of other more appropriate sediment control systems.
	AO52.4 As-constructed plans are prepared for all constructed sediment basins and associated emergency spillways.
	AO52.5 The adopted sediment control measures remain relevant at all times to the current and imminent site conditions.
Sediment control	
PO53 The on-site retention of sediment is maximised.	**AO53.1** All reasonable and practicable measures are taken to prevent, or at least minimise, the release of sediment from the site, or into water where it is likely to cause environmental harm.

Performance outcomes	Acceptable outcomes
	AO53.2 Appropriate sediment controls are installed and made operational before any up-slope soil disturbance occurs.
	AO53.3 All sediment-laden run-off from the site is directed to an appropriate sediment control device in accordance with the required treatment standard.
	AO53.4 The site's sediment control standard does not rely on operation of off-site sediment control systems.
	AO53.5 Optimum benefit is made of every opportunity to trap sediment within the work site.
	AO53.6 Sediment is trapped as close to its source as possible.
	AO53.7 Appropriate sediment control measures are applied to all temporary building and construction works, including the site office, car park, stockpile areas and watercourse crossings.
	AO53.8 Sediment traps are designed, constructed, maintained and operated to collect and retain sediment.
	AO53.9 All type F and type D sediment basins are maintained at a minimum achievable water level between rainfall events.
PO54 Sediment displaced off-site by vehicular traffic is minimised.	**AO54.1** Number of site entry/exit points is limited to the minimum practical number.
	AO54.2 Site entry/exit points are appropriately designed and stabilised to minimise sediment being washed off the site by stormwater and/or being transported off the site by vehicles.
	AO54.3 All reasonable and practicable measures are taken to ensure sediment-laden stormwater run-off from access roads and stabilised entry/exit systems drains to an appropriate sediment control device.

Performance outcomes	Acceptable outcomes
PO55 Sediment-related environmental harm resulting from de-watering activities is minimised.	**AO55.1** Flow diversion barriers, or other appropriate systems, are used to minimise the quantity of watering entering excavations and trenches.
	AO55.2 All sediment control measures implemented for the control of sediment-laden discharge from de-watering activities are designed to satisfy, as a minimum, current best practice discharge standards.
	AO55.3 As a minimum, the type and degree of sediment controls utilised during de-watering operations are commensurate with the site conditions, soil type, potential environmental risk, and the type, cost, and scope of the works.
PO56 Sediment control measures are located within the property boundary.	**AO56** All sediment control measures are located within the property boundary, unless: (a) it is that portion of the entry/exit pad located between the property boundary and the sealed road; or (b) the sediment control measure is required to collect sediment wash-off from building works located along the property boundary; and (c) approval has been obtained from the relevant regulatory authority and the relevant landowner or asset manager.
Site stabilisation and rehabilitation	
PO57 Site rehabilitation, including site revegetation, is designed, installed and maintained to an appropriate standard.	**AO57.1** The standard of site rehabilitation complies with the requirements of the relevant regulatory authority or, where such a standard does not exist, complies with current best practice.
	AO57.2 As a minimum, the type and degree of site rehabilitation is commensurate with the expected site conditions, soil type, potential environmental risk, and the type, cost and scope of the works.
	AO57.3 Site rehabilitation, including site revegetation, remains, at all times during the construction and specified maintenance period, relevant to the current and imminent site conditions.
PO58 Adequate site data is obtained to allow the appropriate design of site rehabilitation measures.	**AO58** All necessary site data, including soil data, is obtained to appropriately plan, design, implement and maintain site revegetation and stabilisation.

Performance outcomes	Acceptable outcomes
PO59 Site rehabilitation methods and procedures minimise the risk of environmental harm.	**AO59.1** Site revegetation, excluding temporary revegetation conducted for purposes of erosion control, is conducted in accordance with a site stabilisation plan, landscape plan, revegetation plan, or vegetation management plan, where such a plan exists.
	AO59.2 Disturbed soil surfaces are appropriately stabilised to minimise the risk of short-term soil erosion.
	AO59.3 Site stabilisation and/or revegetation are commenced as soon as practicable after earthworks are completed within any given manageable drainage area.
	AO59.4 The construction schedule and/or ESC installation sequence clearly indicates the staging of site stabilisation and revegetation measures.
	AO59.5 All temporary ESC measures are removed and the land rehabilitated as soon as practicable after they are no longer needed.
PO60 Optimum soil conditions are achieved prior to revegetation.	**AO60.1** Soil surfaces that are to be vegetated, are left in an appropriate roughened state, and an appropriate physical and chemical condition, to encourage rapid revegetation.
	AO60.2 Required adjusts to the soil condition are made prior to seeding/planting.
PO61 Site rehabilitation methods, procedures, and outcomes are compatible with site conditions and local environmental values.	**AO61.1** The qualifications and experience of the personnel preparing and/or supervising the preparation of any site stabilisation plan, vegetation management plan, or similar, are commensurate with the potential environmental risk, and the extent and complexity of the works.
	AO61.2 Plant selection and landscape design are compatible with identified environmental values.

Performance outcomes	Acceptable outcomes
Site inspection and monitoring	
PO62 A monitoring and maintenance program is prepared by, or under the supervision of, suitably qualified and experienced personnel.	**AO62** The qualifications and experience of the personnel preparing and/or supervising the preparation of the monitoring and maintenance program is commensurate with the potential environmental risk, and the extent and complexity of the works.
PO63 The performance of the site's drainage, erosion and sediment control measures is regularly monitored.	**AO63.1** The extent and complexity of site monitoring (including water quality monitoring) is commensurate with the potential environmental risk, and the extent and complexity of the works.
	AO63.2 A record is maintained of the site's compliance and non-compliance with erosion and sediment control approval requirements.
	AO63.3 All site monitoring data including environmental incidents, rainfall records, dates of water quality testing, testing results, and records of controlled water releases for the site, are kept in an on-site register.
PO64 The site's drainage, erosion and sediment control measures remain relevant at all times to the current site conditions.	**AO64** All ESC measures are inspected by site personnel: (a) at least daily (when work is occurring on-site); (b) at least weekly (when work is not occurring on-site); (c) within 24 hours of expected rainfall; and (d) within 18-hours of a rainfall event of sufficient intensity and duration to cause run-off on the site.
Site maintenance	
PO65 All ESC measures are maintained in proper working order at all times during their required operational life.	**AO65.1** All ESC measures are maintained in proper working order for the duration of the period in which their operation is required in order to satisfy the required treatment standard, and/or the objective of the ESCP.
	AO65.2 All sediment control measures are maintained in accordance with the requirements of the relevant regulatory authority, or where such a standard does not exist, in accordance with current best practice.

Performance outcomes	Acceptable outcomes
	AO65.3 As a minimum, the maintenance of all ESC measures is commensurate with the expected site conditions, and potential environmental risk.
	AO65.4 Suitable access is provided to allow the proper installation and maintenance of sediment traps.
	AO65.5 The ESCP clearly indicates what degree of site stabilisation is required prior to the decommissioning of any ESC measure.
PO66 The maintenance of ESC measures does not increase the risk of soil erosion.	**AO66.1** Excess vegetation cleared for the purpose of restoring the hydraulic capacity of open drains is selectively cut and trimmed so as to leave a short, dense, live ground cover with a grass length no shorter than 50mm.
	AO66.2 Maintenance mowing is done in a manner that does not damage the profile of formed, soft edges, such as the crest of earth embankments.
PO67 The maintenance of ESC measures does not cause environmental harm.	**AO67** All materials removed from ESC devices during maintenance or decommissioning, whether solid or liquid, is lawfully disposed of in a manner that does not cause ongoing soil erosion or environmental harm.

SC6.6.4 Acid sulphate soils management

Acid Sulfate Soils (ASS) can have major environmental, economic, engineering, and health impacts that may provide constraints to activities in coastal areas. Acid sulfate soils, if oxidised (through exposure of the pyrite to air), produce sulfuric acid that can result in soil and groundwater/surface waters becoming acidic. Exposure to ASS can occur naturally, through soil disturbance or from lowering of the water table.

If managed inappropriately the acid generated can corrode steel and concrete and release toxic levels of aluminium, iron, and heavy metals from the breakdown of clays and silts. Toxic levels of these metals combined with acid conditions, pose a significant risk to vegetation, concrete and steel infrastructure, and aquatic organisms.

In coastal situations, proposals that involve earthworks or disturbances to hydrology/drainage patterns must consider ASS. Any development that alters the existing conditions of ASS can trigger the oxidation of iron sulfides. The potential risk to the environment must be quantified, and management techniques proposed to mitigate the environmental impacts associated with the proposed activity both on and off the site.

Where disturbances of ASS is unavoidable, preferred management strategies are:

(a) minimisation of disturbance;

(b) neutralisation;

(c) hydraulic separation of sulfides, either on its own or in conjunction with dredging;

(d) strategic re-burial (reinterment); and

(e) other management measures may be considered, but may pose increasingly higher or even unacceptably high risks.

A detailed assessment of the site is an essential prerequisite before deciding on a management approach. There are many options for managing, handling and treating actual and potential acid sulfate soils. The Soil Management Guidelines (NRM, 2002) in the *Queensland Acid Sulfate Soil Technical Manual* documents risk based management procedures for ASS and provides guidance on how to achieve best practice environmental management (BPEM).

SC6.6.5 Managing nutrients of concern for coastal algal blooms

SC6.6.5.1 Coastal algal blooms

Coastal algae includes photosynthetic algae, cyanobacteria (often referred to as blue-green algae), dinoflagellates and diatoms in estuarine and coastal waters such as *Trichodesmium* spp, *Lyngbya majuscula* (Lyngbya) and *Hinksia sordida*[1]. Whilst algae occur naturally within aquatic ecosystems, the occurrence of an algal bloom usually indicates that the processes, which normally control the algal population, have failed (for example, a lack of grazers or an increase in nutrient levels). Blooms may be the result of a natural set of processes or changes associated with human activity.

The increased occurrence of coastal algal blooms is a worldwide phenomenon that has been linked to nutrient-enrichment of coastal waters. This is also a concern in Queensland, where blooms have increased in incidence, duration and intensity. Such blooms have had negative impacts on seagrass and coral reef communities and pose a significant threat to human health, biodiversity, water quality, marine megafauna and the recreational and commercial values of coastal waterways.

Land-based development and management activities that disturb soils and sediments or alter the natural hydrological regime (including groundwater levels and composition and surface-water run-off) can result in the mobilisation and transport of increased loads of nutrients into coastal waters. Nutrients of concern that are known to contribute to increased algal growth include iron, phosphorus, nitrogen and organic matter (dissolved organic carbon).

Practices associated with agriculture, forestry, extractive industry, sewage treatment, intensive animal industries, marine infrastructure and other urban, commercial and industrial development can potentially result in the release and movement of nutrients of concern through surface run-off and alteration to groundwater levels. Activities such as land and vegetation clearing, tree harvesting, cultivation, fire management, drainage, fertiliser use, irrigation, waste disposal, dewatering, excavation/filling, extractive operations, disturbance of acid sulfate soils (ASS) and dredging, can also mobilise and increase nutrients of concern entering coastal waters/waterways (if not appropriately managed).

SC6.6.5.2 Development

Development is to consider and demonstrate compliance against the "Outcomes and measures for coastal algal bloom nutrient management" provisions (Appendix 2) within the guideline for *Implementing Policies and Plans for Managing Nutrients of Concern for Coastal Algal Blooms in Queensland* (prepared by the Queensland Government, 2011).

SC6.6.6 Documentation

SC6.6.6.1 Site based stormwater management plan

A Site Based Stormwater Management Plan (SBSMP) identifies stormwater management strategies and actions to address:

(a) water quality;

(b) water quantity; and

(c) waterway corridor issues.

The contents of the SBSMP are dependent on the stage of development (concept or detailed design) and the level of risk for the proposed development ('low' or 'high').

The SBSMP should contain sufficient detail to determine whether the stormwater controls are acceptable. An example of the contents of a SBSMP is described below.

All drawings and documentation to be submitted to Council for approval shall conform to the requirements of Council's Guideline D20 - *Drawings and Documentation*. A copy of these Guidelines will be made available on request.

Failure to comply with Council's *Drawings and Documentation Guidelines* may result in the drawings and/or documentation being returned to the designer without consideration by Council.

Table SC6.6.6.1.A – Elements required in site based stormwater management plan

Elements (general)		Low Risk	High Risk
1.0	**Introduction**		
	• Proposed development	✓	✓
	• Risk assessment	✓	✓
	• Study team	✓	✓
2.0	**Site Description**		
	• Location	✓	✓
	• Land use (existing and proposed on-site and surrounding land uses)	✓	✓
	• Topography and drainage	✓	✓
	• Soils	✓	✓
	• Watercourses	✓	✓
	• Flora and fauna	✓	✓
3.0	**Data**		
	• Existing stormwater infrastructure	✓	✓
	• Related studies / plans such as catchment management plans, waterway management plans, stormwater management plans	✓	✓
	• Hydrologic and hydraulic needs / wants	x	✓
	• Water quality / stream health data	x	✓
4.0	**Opportunities and Constraints**		
	• Key site characteristics	✓	✓
	• Previous studies / plans	✓	✓
	• Key stakeholder's needs / wants	x	✓
	• Parkland contributions (if required)	✓	✓

Elements (general)		Low Risk	High Risk
5.0	**Stormwater Quantity (Hydrology & Hydraulics)**		
	• Existing conditions	✓	✓
	• Methodology	✓	✓
	• Model analysis	x	✓
	• Comparison of existing and proposed hydrology and hydraulics e.g. catchments, flows and flood levels	✓	✓
	• Designs drawings	✓	✓
	• Proposed mitigation measures	✓	✓
6.0	**Stormwater Quality**		
	• Pollutants of concern	✓	✓
	• Receiving waters	✓	✓
	• Identification of environmental values and water Quality Objectives	x	✓
	• Methodology	✓	✓
	• Model analysis	x	✓
	• Impact of development	✓ (qualitative)	✓
	• Proposed management strategies	✓	✓
7.0	**Stormwater Management Options**		
	• Selection and assessment of stormwater quantity controls	✓	✓
	• Selection and assessment of stormwater quality controls	✓	✓
	• Integration with waterway corridor	✓	✓
	• Stormwater management strategy including actions, responsibilities and program	✓	✓
8.0	**Cost Assessment**		
	• Capital cost of proposed strategy	✓	✓
	• Maintenance Cost of proposed Strategy	✓	✓
	• Asset life of proposed strategy	✓	✓
	• Lifecycle cost of proposed strategy	✓	✓
9.0	**Water Quality Monitoring Program**		
	• Proposed program	x	✓
10.0	**Maintenance Plans**		
	• Responsibilities for maintenance of structural controls	x	✓
11.0	**Asset Handover**		
	• Process and timing for asset handover to council	x	✓
12.0	**References**	x	✓

SC6.6.6.2 Erosion and sediment control program

An erosion and sediment control program (ESC program) is a set of documents including:

(a) erosion and sediment Control Plans (ESC Management Plan);

(b) supporting documentation; and

(c) specification and construction details.

The supporting documentation for an ESC Program may include:

(a) design standards used for ESC Measures;

(b) calculations for the sizing of various ESC measures, particularly sediment basins;

(c) proposed construction staging;

(d) proposed ESC installation sequence.

It is envisaged that a brief description of the site and major site issues and concerns would be highlighted in the SBSMP.

ESC specifications typically cover:

(a) Materials used in construction of ESC measures

(b) Construction or installation procedures

(c) Operational requirements

(d) Inspection and maintenance requirements

(e) Procedures for removal of ESC measures and site rehabilitation.

SC6.6.6.3 Erosion and sediment control management plans

Erosion and Sediment Control Management Plans shall be scaled drawings (no larger than 1:1000) with detailed specifications/diagrams which can be readily understood and applied on site by supervisory staff. All Drawings shall be in accordance with the minimum drafting requirements in D20 – Drawing and Documentation Guidelines.

Items to be included on the ESC Management Plan but not limited to, shall be:

(a) Limits of disturbance such as proposed vegetated buffer strips, vegetation, retention and "no access" areas;

(b) Location of critical areas (vegetated buffer strips, drainage lines and structures, water bodies, unstable slopes, flood plains and seasonally wet areas);

(c) Location and description of existing vegetation;

(d) Soil types;

(e) Location of access haulage tracks and borrow pits;

(f) Location of temporary drainage, erosion and sediment control measures;

(g) Construction details for erosion and sediment control measures; and

(h) Notes relating to:
  (i) site preparation
  (ii) ESC measures
  (iii) procedures for maintenance of ESC measures
  (iv) details for staging of works
  (v) revegetation requirements

SC6.6.6.4 Site based acid sulfate soils management plan

A Site Based Acid Sulfate Soils Management Plan (SBASSMP) is to be prepared to address the management of ASS when a development application relates to:

(a) an acid sulphate soils affected area, and

(b) land at or below 5m AHD, where the natural ground level is below 20m AHD, if the application is for a material change of use, or operational works, involving:
   (i) excavating or otherwise removing 100m^3 or more of soil or sediment, or
   (ii) filling of land with 500m^3 or more of material with an average depth of 0.5m or more.

SC6.6.A Appendix A – Information supporting the model code of practice provisions – erosion and sediment control

SC6.6.A.1 Introduction

This Appendix forms part of the Code and provides essential information and requirements not otherwise provided within the Code.

Please note, for various appendices, chapters and tables mentioned throughout this attachment, refer to "International Erosion Control Association (Australasia) (2008) *Best practice erosion and sediment control*".

SC6.6.A.2 Development planning and design

The intent of the development planning and design section is to:

(a) enable erosion and sediment control issues to appropriately influence the planning and design of developments and other land disturbing activities for the purpose of minimising their overall adverse environmental impact;

(b) enable development planners to recognise that along with consideration of the operational phase of a development, appropriate consideration must be given to how something is to be constructed, and the potential adverse impacts of this construction phase; and

(c) recognise the limitations of control measures on constrained sites, e.g. flood prone land.

Acceptable outcome AO1.1

Data collection may include soil testing, identification of potential site constraints, and development of a conceptual erosion and sediment control plan (where such data and/or plans are considered reasonably necessary to enable appropriate site planning and design). Appropriate site planning and design refers to the aim of minimising the potential environmental harm (both during the construction and operational phases) of the development. The extent and complexity of data collection is discussed further in Chapter 3 – Site planning.

Sufficient soil data must be obtained on the site to:

(a) reasonable identify the location of dispersive soils;

(b) reasonable identify the location of potential acid sulfate soils;

(c) allow the appropriate selection, design, and specification of ESC measures; and

(d) maximise the erosion control benefits of the proposed site revegetation and stabilisation works.

The 'potential environmental risk' relates to the potential of a land-disturbing activity to cause harm, whether material, serious, reversible or irreversible, to an environmental value, including nuisance to a neighbouring property or person. The potential environmental risk is related, in part, to the assessed Erosion Hazard (refer to Appendix F – Erosion hazard assessment).

Acceptable outcome AO1.2

Potential site constraints are discussed within Chapter 3 – Site planning, and include:

(a) limitations of the supply of water;

(b) problematic soils and soil conditions, including: acid sulfate soils, dispersive or sodic soils, expansive/reactive soils (cracking clays), soils of extreme pH (less than 5.5 or greater than 8.5), soils of low wet-bearing strength, saline soils, toxic soils, and any other soil that could result in ongoing erosion or environmental harm; and

(c) topographic limitations, including: coastal and intertidal areas, drainage problem areas, existing erosion problems, flood prone land, high groundwater, land prone to mass movement, local microclimates, rock outcrops, steep slope, waterways and wetlands.

Problematic soils are discussed in more detail in Section 3.4 of Chapter 3, and Section C11 of Appendix C – Soils and revegetation.

Zones of high or extreme erosion hazard may be identified through the application of an appropriate Erosion Hazard Assessment scheme such as those discussed in Chapter 3 – Site planning, and Appendix F – Erosion hazard assessment.

Acceptable outcome AO1.3

A conceptual erosion and sediment control plan incorporates plan(s) (no larger than 1:1000) that:

(a) identify the likely need for the construction of sediment basins on the site;

(b) identify that adequate space has been made available for the construction and operation of major sediment traps and essential flow diversion systems;

(c) demonstrate that there is a feasible means of constructing the project while still protecting key environmental values;

(d) identify problem soil areas including, dispersive soils, acid sulfate soils, and areas of potential mass movement; and

(e) identify key environmental features on the site such as protected vegetation.

The preparation of erosion and sediment control plans (ESCPs), including conceptual ESCPs is discussed in Chapter 5 – Preparation of plans.

Environmental risk, project cost, and safety issues must be given appropriate consideration when determining the development layout and construction process.

Construction activities that are deemed to represent a high to extreme erosion hazard include:

(a) any disturbance of high to extreme hazard areas, or a problematic soil that could result in unmanageable soil erosion and/or environmental harm;

(b) any construction or building activity, or procedure, that could potentially cause 'serious' environmental harm; and

(c) any soil disturbance that could cause the transformation of significant quantities of potential acid sulfate soils (PASS) into actual acid sulfate soils (AASS), such as to cause 'material' or 'serious' environmental harm.

Acceptable outcome AO2.2

The development design must aim to minimise, if not totally avoid, disturbance to high or extreme erosion hazard areas, including dispersive soils, acid sulfate soils, and slopes steeper than 20 per cent, wherever reasonable and practicable.

Acceptable outcome AO3.1

Refer to AO1.1 for discussion on 'high-risk construction activities'.

Acceptable outcome AO3.2

Essential ESC control measures include any drainage, erosion or sediment control measures that are considered critical in regards to the protection of environmental values. Such measures usually include:

(a) all Type 1 sediment traps, including sediment basins;

(b) all Type 2 sediment traps located within subcatchments that do not incorporate a Type 1 sediment trap;

(c) all Type 3 sediment traps located within subcatchments that do not incorporate a Type 1 or Type 2 sediment trap;

(d) drainage control measures that allow the diversion of up-slope catchment areas in excess of 2500 metres; and

(e) any instream sediment control or flow diversion system.

Acceptable outcome AO3.3 & AO3.4

The most critical issue is ensuring sufficient space is available to construct and maintain all sediment basins, including associated settling ponds, embankments and spillways.

Acceptable outcome AO3.5

If erosion control practices are reliant on final site revegetation, then to the maximum degree practicable, such activities must be allowed to occur in close association with the staging of soil disturbance for the purpose of minimising the duration that any and all soil surfaces are exposed to the erosive force of wind, rain and flowing water.

Acceptable outcome AO4.1

Reference is to drainage design standards suitable for the operational phase of developments, not the drainage standards presented within this document, which focuses on the construction phase.

Acceptable outcome AO4.2

Ongoing erosion problems can result from any of the following:

(a) changes to the volume, duration, frequency, or rate of stormwater runoff;

(b) excessive (i.e. erosive) flow velocities;

(c) inappropriate distribution of flow velocities throughout the depth and width of flow discharged from a stormwater drain into a receiving water; and

(d) inappropriate direction of flow discharged from a stormwater drain into a receiving water.

Acceptable outcome AO4.4

Refer to AO1.2 for discussion on 'site constraints'.

Acceptable outcome AO4.5

The full impact of the removal of deep-rooted vegetation from steep slopes may not be evident for 5 to 10 years, or until such time as the plant root system begins to fail (assuming that the root system remains within the soil profile after removal of the upper portion of the plant). Planners and designers must appreciate that plants provide many essential roles besides the provision of 'scenery'.

Acceptable outcome AO5.2

'Temporary' watercourse crossings referring to those crossings constructed for use only during the construction phase.

SC6.6.A.3 Construction planning

The intent of the construction planning section is to:

(a) take all reasonable and practicable measures to actively avoid foreseeable soil erosion problems and associated environmental hazards during the construction phase; and

(b) ensure that those involved in construction planning do not assume that the environmental impact of such hazards can be totally resolved (irrespective of the site's layout, methodology, staging, and programming) through applying best practice erosion and sediment control.

'Construction planning' refers to planning the layout, methodology, staging, and programming (timing and scheduling) of the construction phase.

Acceptable outcome AO6.1

Refer to AO1.2 for discussion on 'zones of high and extreme erosion hazard'.

Acceptable outcome AO6.2

Refer to AO1.1 for discussion on 'potential environmental risk'.

Acceptable outcome AO7.1

Ideally, ESCPs should be developed in close association with construction planning because the needs and limitations of the construction process represent an important component of the ESCP. In theory, a construction process cannot be finalised without reference to an ESCP, and an ESCP cannot be finalised without knowledge of the construction process.

Acceptable outcomes AO7.2 and AO7.3

Refer to AO1.1 for discussion on 'high-risk construction activities'.

Refer to AO1.2 for discussion on 'zones of high and extreme erosion hazard'.
Periods of high and extreme erosion potential refers to the variation in the erosion hazard throughout a calendar year based on variations in the rainfall erosivity as described in Appendix E – Soil loss estimation. Periods of high to extreme erosion potential include:

(a) periods of high to extreme erosion risk as defined in Section 4.4 of Chapter 4 – Design standards and technique selection; and

(b) periods of strong winds sufficient to cause significant dust problems.

Acceptable outcome AO7.6

Reference is made to the extent of unnecessary soil disturbance that can be influenced by the construction planning process. The extent of any unnecessary soil disturbance, including disturbances outside the designated work area, must be minimised in order to minimise the risk of environmental harm.

Minimising the potential environmental harm can be achieved, in part, by scheduling major land disturbances, and disturbances to high and extreme erosion risk areas, for the least erosive periods of the year.

Acceptable outcome AO7.7

Site stabilisation plans, landscape plans, and/or vegetation management plans must show progressive stabilisation of exposed soil for the purposes of erosion control, including but not limited to, all of the following:

(a) schedule for stabilisation of exposed soil area;

(b) specifications for subsoil and topsoil preparation and application;

(c) specification of stabilisation by mulching or other appropriate surface treatment (note, grass seeding without adequate mulching is generally not considered best-practice); and

(d) details on the type and application rate of any tackifiers to be used in the application of mulches (including hydromulch, bonded fibre matrix, and compost blankets).

Water quality monitoring programs must document proposed water quality monitoring, and include:

(a) location of all instream water quality monitoring stations; and

(b) water quality monitoring, sampling, and analysis procedures and standards.

SC6.6.A.4 Erosion and sediment control plan (ESCP)

The intent of this section is to ensure ESCPs are:

(a) appropriate for the site conditions, which may vary from time to time;

(b) prepared by, or under the supervision of, suitable personnel; and

(c) able to achieve the required design standard and environmental protection.

Acceptable outcome AO9.1

Such a clause shall not reduce the responsibility of applying and maintaining, at all times, all necessary sediment control measures in accordance with the sediment control standard.

Acceptable outcome AO9.2

Refer to AO1.1 for discussion on ‘environmental risk’.

It is recognised that the degree of erosion and sediment control is related to the type, cost and scope of works in addition to the environmental risk. This association is acknowledged within the terms of current best practice erosion and sediment control as defined within this document (2008 conditions).

Acceptable outcome AO9.3

On very minor works, such as regular council maintenance activities, or the installation of minor services, the ESCP may be represented by standard drawings prepared by the principle company/organisation as part of an in-house Code of Practice. The key intent is to ensure that appropriate consideration is given to erosion and sediment control requirements before works commence.

On sites with a soil disturbance greater than 2500m^2, the ESCP (including supporting documentation and construction specifications) must include:

(a) north point and plan scale

(b) site and easement boundaries and adjoining roadways

(c) construction access points

(d) site office, car park and location of stockpiles

(e) proposed construction activities and limits of disturbance

(f) retained vegetation including protected trees

(g) general soil information and location of problem soil

(h) location of critical environmental values (where appropriate)

(i) existing site contours (unless the provision of these contours adversely impacts the clarity of the ESCP)

(j) final site contours including locations of cut and fill

(k) construction drainage plans for each stage of earthworks, including land contours for that stage of construction, subcatchment boundaries and location of watercourses

(l) general layout and staging of proposed works

(m) location of all drainage, erosion and sediment control measures

(n) full design and construction details (e.g. cross-sections, minimum channel grades, channel linings) for all drainage and sediment control devices, including diversion channels and sediment basins

(o) construction specifications for adopted ESC measures (as appropriate)

(p) site revegetation requirements (if not contained within separate plans)

(q) site monitoring and maintenance program, including the location of proposed water quality monitoring stations

(r) technical notes relating to:
  (i) site preparation and land clearing
  (ii) extent, timing and application of erosion control measures
  (iii) temporary ESC measures installed at end of working day
  (iv) temporary ESC measure in case of impending storms, or emergency situations
  (v) installation sequence for ESC measures
  (vi) site revegetation and rehabilitation requirements

(vii) application rates (or at least the minimum application rates) for mulching and revegetation measures
(viii) legend of standard symbols used within the plans
(ix) chemical flocculation procedures

(s) calculation sheets for the sizing of ESC measures

(t) a completed ESCP checklist such as presented in [insert publication]

(u) any other relevant information the regulatory authority may require to properly assess the ESCP.

Site-specific ESCPs must address all aspects of proposed site disturbance, temporary drainage works, erosion and sediment control measures, installation sequence, and site rehabilitation for the duration of the construction phase, including (where appropriate) the nominated maintenance period.

If the timing of the proposed construction activity is not known during development of the ESCP, and if rainfall erosivity varies significantly throughout the year, then the erosion control specifications placed on the ESCP must specify appropriate erosion control measures for each level of rainfall erosivity. For example, light mulching may be appropriate during periods of light rainfall, hydromulching during periods of light to moderate rainfall, and erosion control blankets or bonded fibre matrix during those periods of the year when moderate to heavy rainfall is either occurring or expected to occur.

The ESCP must clearly state that no land-disturbing activities shall occur on the site until all associated perimeter ESC measures, including sediment basins and temporary drainage controls, have been constructed in accordance with the ESCP and best practice erosion and sediment control procedures.

Sufficient information and detail includes the provision of sufficient long-sections and cross-section of all Type 1 and Type 2 sediment traps (e.g. sediment basins) relative to existing and/or final ground levels to allow their construction.

On sites with a soil disturbance greater than one (1) hectare, the ESCP must include:

(a) individual ESCPs for the 'bulk earthworks' phase, 'roadworks and drainage' phase and the 'practical completion/on-maintenance' phases of construction. Each phase above must be documented graphically on a dedicated ESCP, or detail shown on an ESCP, and supported by a clearly documented construction sequence, or ESC installation sequence, which describes the timing of key ESC actions on the site; and

(b) procedures for the temporary shutdown of the site, whether a planned or unplanned shutdown.

Acceptable outcomes AO10.2 and AO10.3

A suitably qualified and experienced professional is defined as a person with all of the following:

(a) training and/or qualifications in erosion and sediment control that are recognised by the regulatory authority

(b) professional affiliations with an engineering, environmental engineering, soil science, and/or scientific organisation (e.g. the International Erosion Control Association; Engineers Australia; Environment Institute of Australia and New Zealand; or the Australian Society of Soil Science Inc

(c) at least two years experience in the management of erosion and sediment control which can be verified by an independent third party.

ESCPs for high-risk sites should be reviewed by a suitably qualified and experienced third party reviewer prior to its implementation.

The assessment and categorisation of high-risk sites may be defined by the relevant Regulatory authority; otherwise, refer to the discussion in Chapter 3 – Site planning, and Appendix F – Erosion hazard assessment.

Acceptable outcome AO10.4

The intent is to ensure the adoption of an appropriate design discharge for sizing the basin and associated emergency spillway, and to ensure the appropriate hydraulic design of the basin's, including the spillway's location, sizing and scour protection.

Acceptable outcome AO10.5

The intent is to ensure the appropriate design and construction specification of the embankment with regard to its structural stability.

Acceptable outcome AO11.1

It is sufficient for the extent and complexity of data collection to be determined by a suitably qualified and experienced professional as defined in AO10.3 above.
On sites with a soil disturbance greater than one (1) hectare, the site needs to be assessed from a hydrological, hydraulic, vegetation, soils, and geological perspective to determine relevant site constraints that may affect the focus or detail of the ESCP.

Acceptable outcome AO11.2

Typically the drainage standard is based on a specified design storm Annual Exceedance Probability, the erosion standard is based on the expected rainfall erosivity, and the sediment control standard is based on the expected soil loss rate. Refer to Chapter 4—Design standards and technique selection for selection of design standards.

Acceptable outcome AO11.3

On disturbances exceeding 2500m^2, construction drainage plans need to be prepared for each stage of earth works.

The intent of construction drainage plans is to show:

(a) flow entry and exit points;

(b) areas of sheet flow and path lines of concentrated flow;

(c) subcatchment boundaries;

(d) all permanent and temporary roads; and

(e) all temporary and permanent drainage control measures expected to exist during the given stage of works.

Acceptable outcome AO12.1

The timing and degree of ESC specified in the ESCP(s) needs to be appropriate for the given soil properties, expected weather conditions, and susceptibility of the receiving waters to environmental harm resulting from sediment-laden runoff. Current (2008) best practice design standard of the drainage, erosion and sediment control measures are outlined in Chapter 4 – Design standards and technique selection.

Acceptable outcome AO12.2

Additional and/or alternative erosion and sediment control measures must be implemented, and a revised ESCP must be prepared and submitted to relevant Regulatory authority for approval (where required) in the event that any of the following apply:

(a) site conditions significantly change from those previously anticipated;

(b) there is a high probability that serious or material environmental harm might occur as a result of sediment leaving the site;

(c) the implemented works fail to achieve the adopted ESC standard, or the State's environmental protection requirements; and

(d) site inspections indicate that the implemented works are failing to achieve the 'objective' of this ESCP.

Acceptable outcome AO12.4

A suitably qualified and experienced professional is defined in AO10.3 above.

Acceptable outcome AO13.1

Synthetic reinforced fabrics include 'plastic' reinforced erosion control blankets, mats and meshes.

SC6.6.A.5 Site establishment

The intent of this section is to ensure that during site establishment:

(a) on-site personnel are provided with all necessary information to fully comply with all legal requirements, minimise environmental harm, and achieve the objective of the ESCP; and

(b) land-disturbing activities proceed in a manner consistent with the objective of the ESCP.

Acceptable outcome AO14.1

Supply of such material is relevant only to that material that exists, or is required to exist.

Acceptable outcome AO14.2

A discussion on site shutdown procedures is provided in Section 6.15 of Chapter 6 — Site management.

Acceptable outcome AO15.1

On low-risk sites, ESC audits (including site inspections and water quality monitoring) may be performed by site personnel; however, as the risk of environmental harm increases, the need for third-party site inspections and water quality monitoring increases.

Personnel undertaking ESC audits of a site must, collectively, have the following capabilities:

(a) an understanding of the local environmental values that could potentially be affected by the proposed works

(b) a good working knowledge of the site's Erosion and Sediment Control (ESC) issues, and potential environmental impacts, that is commensurate with the complexity of the site and the degree of environmental risk

(c) a good working knowledge of current best practice ESC measures for the given site conditions and type of works

(d) ability to appropriately monitor, interpret, and report on the site's ESC performance, including the ability to recognise poor performance and potential ESC problems

(e) ability to provide advice and guidance on appropriate measures and procedures to maintain the site at all times in a condition representative of current best practice, and that is reasonably likely to achieve the required ESC standard

(f) a good working knowledge of the correct installation, operational and maintenance procedures for the full range of ESC measures used on the site.

Acceptable outcome AO15.2

The construction industry's dealing of work place safety issues provides a good model for the development of an appropriate 'chain of command' for the protection of environmental values. The aim is to produce a fair, reasonable and practicable approach based on environmental risk.

As in workplace safety, the responsibility of environmental protection, and therefore erosion and sediment control, rests with all site personnel, whether or not the work site is the normal place of work of any and all personnel. Establishing a 'chain of command' does not diminish the responsibility of each and every person to take all reasonable and practicable measures to minimise environmental harm resulting from their actions as per their 'environmental duty of care'.

Acceptable outcome AO16.1

The exception to this clause is land disturbance necessary to provide access and allow the installation the initial ESC measures.

In general, initial land-disturbing activities should be limited to the establishment of the site compound, site entry/exit points, temporary drainage controls (including drain stabilisation measures), haul road(s), perimeter sediment controls, and any sediment basins/traps required for the first stage of works.

Acceptable outcome AO16.2

'Operational activities' include such things as material stockpiles, storage areas, vehicle maintenance facilities, cleaning stations and concrete waste receptors.

Acceptable outcome AO16.3

'Waste collection areas' include litter bins and receptors for waste concrete.

Acceptable outcome AO17.2

Within the limits of what is considered reasonable and practicable, site managers should take appropriate actions (such as fencing) to minimise the potential environmental harm cause by both authorised and unauthorised access onto the site.

Acceptable outcome AO17.3

It is recognised that it may not be practicable for all stormwater runoff from all areas of site entry/exit paths to be directed to a sediment trap; however, such areas must be limited to the minimum practicable.

SC6.6.A.6 Site management

Acceptable outcome AO18.1

Where appropriate, an ESCP is prepared (in accordance with Appendix 1A, section 6), and where necessary approved by a relevant Regulatory authority, prior to commencing any land-disturbing activities.

Acceptable outcome AO18.2

The potential for environmental harm must be assessed by a recognised expert or authority.

Acceptable outcome AO18.3

Refer to A1(a) for discussion on 'potential environmental risk'.

Acceptable outcome AO18.4

Applies to all land-disturbing activities, whether planned or unplanned, and especially to any works that are required to be conducted without an associated ESCP.

Acceptable outcome A18.4

Includes ensuring that the value and use of land/properties adjacent to the development (including roads) are not diminished as a result of work-related soil erosion and sediment runoff.

Acceptable outcome AO19.1

'Responsible ESC personnel' are those persons employed or contracted by the land owner and/or developer as the principal officer(s) responsible for ensuring appropriate application of the planned ESC measures and for the provision of advice in response to unplanned ESC issues.

Acceptable outcome A020.1

Recommended training requirements are discussed in Section 6.19 of Chapter 6 — Site management.

Acceptable outcome AO20.2

Necessary disturbance to ESC measures would include the short-term removal of an ESC measure to allow the installation of services under the ESC measure, or to allow vehicular or material access.

Performance outcome PO21

Performance outcome PO21 and PO22 require work sites to be appropriately prepared for both current and imminent site conditions. Compliance with these outcomes requires ESCPs to be living documents that remain both effective and flexible, and thus are able to appropriately adapt to changing site conditions.

Acceptable outcome AO21.2

A significant change in site conditions includes:

(a) unseasonable weather conditions

(b) exposure of problematic soil conditions not previously anticipated

(c) significant change in construction methodology, staging or programming of earthworks and/or site stabilisation activities

(d) significant change in the development design or layout

(e) an unprogrammed site shutdown.

Performance outcome PO22

Performance outcome PO21 and PO22 require work sites to be appropriately prepared for both current and imminent site conditions. Compliance with these outcomes requires ESCPs to be living documents that remain both effective and flexible, and thus are able to appropriately adapt to changing site conditions.

Acceptable outcome AO24.1

Appropriate identification depends on the level of risk of damage to protected or retained vegetation. Appropriate identification does not necessarily mean markers, signs or fencing; however, such measures may be appropriate in some areas.

Acceptable outcome AO25.2

AS1940 – The storage and handling of flammable and combustible liquids (as amended from time to time).

In addition to the above:

(a) Impervious bunds must be constructed around all storage areas containing more than 1m of petroleum and oil-based products such that the enclosed volume is large enough to contain 110 per cent of the volume held in the largest, individual storage tank.

(b) On-site personnel involved in the handling and storage of flammable and combustible liquids, including all liquid chemicals, must be appropriately trained and/or supervised, as required in order to allow such personnel to appropriately perform such activities.

Acceptable outcome AO25.3

Current (2008) best practice requires that all reasonable and practicable measures are taken to:

(a) prevent the release of cement-laden runoff, concrete waste, and chemical products (including petroleum and oil-based products), into an internal or external water body, completed internal drainage systems, or any external drainage system, excluding those on-site drains and water bodies specifically designed to contain and/or treat such material;

(b) ensure all solid and liquid waste from concrete production, and concreting equipment (including delivery and placement vehicles), is fully contained within the property; and

(c) ensure cement residue from work activities is:
  (i) retained on a pervious surface (e.g. a grassed or open soil area, or excavated trench); or
  (ii) filtered through a fine-grained, porous earth embankment; or
  (iii) collected and disposed of in a manner that minimises ongoing environmental harm.

Acceptable outcome AO25.4

Current (2008) best practice requires that wherever practicable, the cutting of bricks, concrete, ceramics, and other slurry-producing materials must be carried out in a manner that:

(a) complies with current State guidelines, policies, and legislation; and

(b) fully contains any contaminated waste water for later treatment and/or lawful disposal; or

(c) appropriately filters (e.g. through a fine-grained, porous earth embankment) any contaminated slurry/water prior to its release from the immediate work area.

Acceptable outcome AO25.5

Current (2008) best practice requires that wherever practicable, the washing of tools and painting equipment is carried out in a manner that:

(a) complies with current State guidelines, policies and legislation; and

(b) fully contains any contaminated waste water for later treatment and/or lawful disposal; or

(c) appropriately filters (e.g. through a fine-grained, porous, earth embankment) any contaminated liquid prior to its release from the immediate work area; or

(d) appropriately infiltrates all contaminated liquid matter into an area of porous grass or open soil.

Acceptable outcome AO26.2

Sediment and sediment-laden runoff must not settle or collect on public roadways where such material could result in a traffic or safety hazard.

Acceptable outcome AO27.1

'Sediment and other material' includes clay, silt, sand, gravel, soil, mud, cement and fine-ceramic waste.

Acceptable outcome AO27.2

Sealed surfaces include sealed roads and car parks. In circumstances where the washing/flushing of sealed surfaces is required, all reasonable and practicable sediment control measures must be employed to prevent, or at least minimise, the release of sediment into receiving waters. Only those measures that will not cause safety issues or adverse property flooding to third parties shall be employed.

Acceptable outcome AO28.1

'Appropriate consideration' includes taking all reasonable and practicable measures to minimise safety risks. As a general rule, safety issues take a higher priority than ESC issues; however, this does not mean that the existence of potential safety issues diminishes the ESC standard required of a work site.
Public safety risks include potential damage to public vehicles resulting from the use of inappropriate kerb-inlet sediment traps on public roads. The potential safety risk of a proposed sediment trap to site workers and the public must be given appropriate consideration before its installation, especially those sediment traps located within publicly accessible areas.

Performance outcome PO29

The protection of wildlife does not diminish the required ESC standard, or the need to take all reasonable and practicable measures to minimise environmental harm resulting from soil erosion and displaced sediment.

Performance outcome PO30

Further discussion on the protection of waterways and the conducting of instream works is provided in Appendix I – Instream works.

Performance outcome PO31

A discussion on site shutdown procedures is provided in Section 6.15 of Chapter 6—Site management.

SC6.6.A.7 Land clearing

Acceptable outcome AO32.3

Operational restrictions on the extent and duration of land disturbance, including land clearing (as presented by performance outcome PO32 to PO35) only apply when such land disturbance is at risk, or potentially at risk, of erosion by wind, rain, or flowing water.

The potential erosion risk is related (in part) to the potential rainfall erosivity as defined in Section 4.4 of Chapter 4 – Design standards and technique selection. The potential erosion hazard may be identified through the application of an appropriate erosion hazard assessment scheme such as those discussed in Chapter 3 – Site planning, and Appendix F – Erosion hazard assessment.

Acceptable outcome AO33.2

The extent of unnecessary soil disturbance, including disturbances outside the designated work area, must be minimised at all times.

Wherever reasonable and practicable, land clearing must be limited to the current stage of works. Current (2008) best practice recommends that land clearing not extend beyond the parameters indicated in Table 4.4.7 of Chapter 4 – Design standards and technique selection; that being the minimum necessary to provide either of the following:

(a) up to eight (8) weeks of site activity during those months when the expected rainfall erosivity is less than 100, six (6) if between 100 and 285, four (4) weeks if between 285 and 1500, and two (2) weeks if greater than 1500

(b) up to eight (8) weeks of site activity during those months when the actual or average rainfall is less than 45 mm, six (6) if between 45 and 100mm, four (4) weeks if between 100 and 225mm, and two (2) weeks if greater than 22mm.

Condition (b) generally only applies if directed by the relevant regulatory authority.

Acceptable outcome AO33.3

Clause AO33.3 does not imply that land clearing should occur to the full extent of these limits, rather that all reasonable and practicable measures are taken to limit land clearing to no more than these limits. In all cases, land clearing must be limited to the minimum necessary to complete the approved works.

Acceptable outcome AO34.3

During such tree clearing, all reasonable and practicable measures must be taken to minimise unnecessary removal of, or disturbance to, any existing ground cover (organic or inorganic) until just prior to final grubbing and topsoil removal.

In some cases it might be advantageous to perform bulk removal of trees and shrubs at the beginning of each stage of works, followed by the establishment of a temporary grass, mulch or other ground cover. Final grubbing of roots and topsoil removal should then be delayed until just prior to commencement of bulk earthworks.

Acceptable outcome AO35.1

This clause excludes that (minimal) land clearing required for the purpose of installing such ESC measures, in which case only that land clearing required to install such measures shall occur prior to their installation and operation.

SC6.6.A.8 Soil and stockpile management

Acceptable outcome AO36.1

Topsoil should be stripped only while in a moist condition. If the soil is too dry it will pulverise the soil, if too wet it may lead to clodding or hardsetting – particularly if the soil has a high silt or clay content. The soil should be wet enough to form a clump when squeezed, but not wet enough to squeeze-out water. Further discussion on the management of soils is provided in Section 6.11 of Chapter 6 – Site management.

Performance outcome PO37

Applies to all areas of proposed soil disturbance, including footprint of proposed stockpiles prior to placement of soil within such areas. Does not include any material best described as subsoil.

Acceptable outcome AO37.2

Current (2008) best practice recommendations for the management of topsoil are presented in Table 6.2 in Chapter 6 – Site management.

Acceptable outcome AO38.2

The diversion of up-slope stormwater is recommended during those periods when rainfall is possible and the up-slope catchment area exceeds 1500m^2.

Current (2008) best practice recommendations for the protection of sand and soil stockpiles from the erosive effects of wind and rainfall are presented in Table 4.6.1 in Chapter 4 – Design standards and technique selection.

Acceptable outcome AO38.4

Current (2008) best practice recommendations for the selection of an appropriate sediment control system is presented in Table 4.6.2 in Chapter 4 – Design standards and technique selection.

Short-term stockpiles of erodible material located outside of an appropriate sediment control zone must be covered if it is raining, or if rain is imminent or possible.

Acceptable outcome AO39.1

Dispersive soils normally need to be stabilised (i.e. treated with gypsum or lime depending on desired pH adjustment) and/or buried under a layer of non-dispersive soil prior to placement of channel lining (whether rock, gabion, synthetic material, or concrete), or initiation of revegetation.

Refer to Section 6.12 in Chapter 6 – Site management, or Section C11 in Appendix C – Soils and revegetation for further discussion on the management of dispersive soils.

Acceptable outcome AO40.1

Refer to Section 6.12 in Chapter 6—Site management, or Section C11 in Appendix C – Soils and revegetation for further discussion on the management of acid sulfate soils.

Within Queensland, guidelines on the management of acid sulfate soils is provided in State Planning Policy 2/02 Guideline: Planning and Managing Development involving Acid Sulfate Soils, and Dear, et al. 2002, Queensland Acid Sulfate Soil Technical Manual – Soil Management Guidelines. Department of Natural Resources and Mines, Indooroopilly, Queensland.

SC6.6.A.9 Drainage control

The intent of this section is to take all reasonable and practicable measures to prevent, or at least minimise, environmental harm and public nuisance resulting from the exposure of soil to the erosive forces of flowing water. It is not the intent to unfairly burden those performing land-disturbing activities with the cost and inconvenience of installing and maintaining drainage control measures if there is no risk of such environmental harm and public nuisance.

Acceptable outcome A041.1

Current (2008) best practice construction phase drainage standards are presented in Table 4.3.1 of Chapter 4 – Design standards and technique selection. Drainage systems must be designed to have a minimum non-erosive hydraulic capacity (excluding 150mm freeboard) in accordance with this table.

Acceptable outcome AO41.2

Construction Drainage Plans are normally prepared for sites with a soil disturbance exceeding 2500m^2. Further discussion on the requirements of Construction Drainage Plans is presented in acceptable outcome AO11.4.

Acceptable outcome AO41.4

This clause requires compliance with performance outcome PO21 and PO22.

Acceptable outcome AO42.2

Sandbag flow diversion banks, catch drains, and flow diversion banks are examples of appropriate drainage systems that can be used to divert stormwater around excavations and other soil disturbances.

Acceptable outcome AO42.3

Current (2008) best practice for the lateral spacing of drainage channels down open soil (non vegetated) slopes is presented in Table 4.3.2 of Chapter 4—Design standards and technique selection.

Acceptable outcome AO42.4

The relevant design discharge is related to acceptable outcome A41(a). The 'design flow' or 'design discharge' is the design hydraulic capacity of that component of the drainage system. All temporary and permanent drainage systems must be able to accept the design flow within 10 days of construction. This may require the application of an appropriate permanent or temporary channel liner, or the use of velocity control check dams.

Acceptable outcome AO43.1

'Temporary' drainage systems are only utilised during the construction phase, and only until the permanent drainage systems are constructed and made operational.
The intent of installing the permanent drainage system as soon as practicable is to maximise the effective passage of 'clean' water through the site without the risk of contamination by on-site sediment.

Acceptable outcome AO43.2

'Clean' water is defined as water that either enters the property from an external source and has not been further contaminated by sediment within the property; or water that has originated from the site and is of such quality that it either does not need to be treated in order to achieve the required water quality standard, or would not be further improved if it was to pass through the type of sediment trap specified for the site.

Acceptable outcome AO43.6

Does not refer to excavations and trenches that form or act as sediment traps.

Performance outcome PO44

'Active work areas' includes site office and car park areas.

Acceptable outcome AO44.1

The intent is to minimise soil erosion and sediment runoff, and on-site safety issues, by reducing the generation of mud within active work areas.

The roof water drainage system needs to be installed before the roof covering is laid. Appropriate roof water drainage systems may be formed from either temporary (i.e. temporary solid or flexible) downpipe, or the permanent drainage system.

Acceptable outcome AO44.3

Does not apply to contaminated (e.g. sediment-laden) roof water.

SC6.6.A.10 Erosion control

The intent of this section is to take all reasonable and practicable measures to prevent, or at least minimise, environmental harm and public nuisance resulting from the exposure of soil, sand, silt, mud or cement to the erosive forces of wind, rain and flowing water. It is not the intent to unfairly burden those performing land-disturbing activities with the cost and inconvenience of installing and maintaining erosion control measures if there is no risk of such environmental harm and public nuisance.

Acceptable outcome AO46.1

Current (2008) best practice (construction phase) land clearing and site rehabilitation standards are presented in Table 4.4.7 of Chapter 4 – Design standards and technique selection. Unless otherwise stated by the relevant Regulatory authority, the potential erosion risk is based on the rating outlined in Table 4.4.1 of Chapter 4 – Design standards and technique selection.

In addition, all temporary earth banks, flow diversion systems, and sediment basin embankments should be machine-compacted, seeded and mulched within ten (10) days of formation for the purpose of establishing a vegetative cover, unless otherwise stated within an approved Site Stabilisation Plan, Revegetation Plan, or Vegetation Management Plan.

Acceptable outcome AO46.2

Erosion control measures primarily focus on the control of fine sediments such as clay and silt-sized particles. Thus, with respect to the value of 'erosion control measures', potential environmental harm is strongly related to the susceptibility of the receiving waters to environmental harm resulting from turbid runoff (i.e. suspended fine sediments).

Erosion control measures need to be appropriate for the land slope and the expected wind, rain and hydraulic conditions. Application of effective drainage control measures should help to control hydraulic conditions such that damage to adopted erosion control measures during regular rainfall events is minimised.

Acceptable outcome AO46.3

This clause requires compliance with performance outcome PO21 and PO22.

Acceptable outcome AO47.1

Such a clause shall not reduce the responsibility to apply and maintain, at all times, all necessary sediment control measures.

The minimisation of soil erosion requires the application of effective drainage and erosion control throughout each and all subcatchments.

Acceptable outcome AO48.2

Compliance with this clause requires:

(a) soil disturbance within any subcatchment to be delayed as long as possible, and ideally, not until the principal on-site activities within that area are ready to commence;

(b) soil disturbance at any given time to be limited to the minimum necessary to perform the required works; and

(c) the extent of unnecessary soil disturbance, including disturbances outside the designated work area, to be minimised.

Disturbed soils associated with non-completed earthworks that are likely to be exposed to rainfall are protected from soil erosion:

(a) if further soil disturbances are likely to be delayed for more than 30 days during those months when the expected rainfall erosivity is less than 100, or 20 days if between 100 and 285, or 10 days if between 285 and 1500, or 5 days if greater than 1500: or

(b) where directed by the regulatory authority, further soil disturbances are likely to be delayed for more than 30 days during those months when the expected rainfall is less than 45 mm, or 20 days if between 45 and 100mm, or 10 days if between 100 and 225mm, or 5 days if greater than 225mm.

Acceptable outcome AO48.3

Compliance with the requirements outlined within Table 4.4.7 of Chapter 4 – Design standards and technique selection does not diminish the need to apply all reasonable erosion control measures as soon as practicable.

A 'sub-area' is an area within a given subcatchment fully contained within a set of drainage control structures designed to minimise the risk of rill erosion within that area.

Acceptable outcome AO48.4

If the adopted erosion control measures incorporate temporary or permanent grassing, then the application of that grass cover must not be unnecessarily delayed simply because it is (inappropriately) viewed by the principal contractor as part of site revegetation that has been subcontracted to another contractor. In cases where it is not possible for the principal contractor to apply a temporary grass cover (for the purposes of erosion control), then alternative erosion control measures must be applied to protect the site during the intervening period.

Acceptable outcome AO49.1

Condition (b) generally only applies if directed by the relevant regulatory authority.

Acceptable outcome AO49.2

Existing ground covers include mulch (organic or inorganic), grasses, and other low-growing plants. This clause required compliance with performance outcome PO34.

Acceptable outcome AO49.3

Dispersive soils normally need to be stabilised (i.e. treated with gypsum or lime depending on desired pH adjustment) and/or buried under a layer of non-dispersive soil prior to placement of channel lining (whether rock, gabion, synthetic material, or concrete), or initiation of revegetation.

Refer to Section 6.12 in Chapter 6 – Site management, or Section C11 in Appendix C – Soils and revegetation for further discussion on the management of dispersive soils.

Acceptable outcome AO50.1

All stormwater, sewer line and other service trenches not in streets are mulched and seeded, or otherwise appropriately stabilised, within 7 days after backfill, or otherwise rehabilitated in accordance with an approved Site Stabilisation Plan, Landscape Plan, Revegetation Plan, or Vegetation Management Plan.

Acceptable outcome AO51.2

This clause requires compliance with performance outcome PO38.

SC6.6.A.11 Sediment control

The intent of this section is to take all reasonable and practicable measures to prevent, or at least minimise, environmental harm and public nuisance resulting from the exposure, placement, or displacement of sediment (including soil, sand, silt, mud and cement). It is not the intent to unfairly burden those performing land-disturbing activities with the cost and inconvenience of installing and maintaining sediment control measures if there is no risk of such environmental harm and public nuisance.

Acceptable outcome AO52.1

Current (2008) best practice (construction phase) sediment control standards are presented in Table 4.5.1 of Chapter 4 – Design standards and technique selection.

Acceptable outcome AO52.2

Relevant site conditions include the soil type, design flow rate, flow condition (i.e. sheet flow or concentrated flow), and erosion hazard. The erosion hazard may be related to the expected soil loss rate (as presented in Table 4.5.1 of Chapter 4, and Appendix E – Soil loss estimation), or other factors such as discussed in Appendix F – Erosion hazard assessment.

Unless otherwise noted within this document, or specified by the regulatory authority, the design storm for sediment traps (excluding de-watering and instream sediment control measures) must be taken as 0.5 times the 1 Exceedance per year flood event peak discharge.

The ‘potential environmental risk’ is discussed in acceptable outcome AO1.1, and is summarised in Table 5.1 of Chapter 5 – Preparation of plans.

Acceptable outcome AO52.3

A ‘supplementary’ sediment trap is a minor sediment trap, such as grass filter strips and most kerb inlet sediment traps, that is not effective enough to be classified as Type 3 sediment trap. Refer to Table 4.5.4 of Chapter 4 – Design standards and technique selection.

Acceptable outcome AO52.4

Such plans must appropriately verify the basin's dimensions, surface level elevation, and surface area (Type C basins) and/or volumes (Type F and Type D basins) comply with the approved design drawings.

Acceptable outcome AO53.1

Compliance with this clause means that no sediment control system is utilised if another more appropriate system (of equivalent treatment standard, i.e. Type 1, 2 or 3) is available. This means that straw bale sediment traps (appropriately wrapped in filter cloth) must not be used unless site conditions prevent the use of any other more appropriate sediment control systems.

Acceptable outcome AO53.2

This means that the catchment area of a sediment basin is not grubbed of vegetation, or stripped of topsoil, until the basin is fully constructed and operational.

Acceptable outcome AO53.4

This means that sediment control within a development site does not rely on the operation of an off-site sediment trap such as a downstream, council-operated, gross pollutant trap, or other stormwater treatment system.

Acceptable outcome AO53.5

This means that independent of the required sediment control standard within a given subcatchment, the following actions are taken:

(a) all reasonable and practicable measures are taken to utilise additional sediment traps of an equivalent or lower efficiency (including 'supplementary' sediment traps) throughout the subcatchment; and

(b) every reasonable and practicable opportunity is taken to trap sediment as close to its source as possible.

Acceptable outcome AO53.6

This does not mean that sediment traps should be placed in inappropriate locations; an inappropriate location being one where existence of the sediment trap would likely result in the hydraulic failure of the sediment trap, or unacceptable soil erosion during moderate to heavy rainfall.

Acceptable outcome AO53.8

This clause means that sediment traps are not designed to simply divert sediment and sediment-laden waters away from stormwater inlets.

Compliance with this clause includes the following actions:

(a) Wherever practical, sediment fences are located along the contour to maintain 'sheet' flow conditions down-slope of each fence. Where this is not practical, regular returns are utilised to allow water to pond at regular intervals along the length of the fence; and

(b) Adopted roadside kerb inlet sediment traps are appropriate for the type of inlet (i.e. sag or on-grade), for further discussion refer to Principle 8.14 in Chapter 2 – Principles of erosion and sediment control.

Acceptable outcome AO55.1

The intent of this clause is to minimise the quantity of water that needs to be de-watered from excavations and trenches. Thus, if water does not need to be de-watered from such areas, then the clause does not apply.

Acceptable outcome AO55.2

Current (2008) best practice sediment control standards for de-watering activities are outlined in Table 4.5.13 of Chapter 4 – Design standards and technique selection.
Alternatively, Table 4.5.14 of Chapter 4 presents a water quality standard for de-watering operations based on Nephelometric Turbidity Units (NTU).

Appropriate sediment controls placed down-slope of material stockpiles during the de-watering of such stockpiles are summarised in Table 4.5.14 of Chapter 4 – Design standards and technique selection.

Acceptable outcome AO55.3

The 'potential environmental risk' is discussed in acceptable outcome AO1.1, and is summarised in Table 5.1 of Chapter 5 – Preparation of plans.

SC6.6.A.12 Site stabilisation and rehabilitation

Acceptable outcome AO57.1

Current (2008) best-practice site rehabilitation standards are presented in Table 4.4.7 of Chapter 4 – Design standards and technique selection. Unless otherwise stated by the relevant Regulatory authority, the potential erosion risk shall be based on the rating outlined in Table 4.4.1 of Chapter 4.

Acceptable outcome AO58.1

Data collection necessary to assist the design of site revegetation is outlined in Sections C3 and C9 of Appendix C – Soils and revegetation.

Acceptable outcome AO59.1

Temporary revegetation conducted for the purpose of erosion control must be conducted in accordance with a Site Stabilisation Plan, Landscape Plan, Revegetation Plan, or Vegetation Management Plan, where such a plan specifically refers to such activities.

Acceptable outcome AO59.2

The type of permanent vegetation applied to completed earthworks must be compatible with the anticipated long-term land use, current and ongoing erosion risk, environmental requirements (including weed control), and associated components of the site rehabilitation.

Acceptable outcome AO59.3

A 'manageable drainage area' refers to an area of open soil that can be managed (at any given time) within the limits of the specified ESC treatment standard without the need for the placement of erosion control measures (e.g. mulching) on any part of the soil.

On a well-managed site, it is typical for a 'manageable drainage area' to consist of a series of 'sub-areas' interconnected by temporary or permanent drainage channels. A 'sub-area' is an area within a given subcatchment fully contained within a set of drainage control structures designed to minimise the risk of rill erosion within that area.

Acceptable outcome AO60.1

Compliance with this clause required compliance with performance outcome PO37.

Unless otherwise directed by an approved Site Stabilisation Plan, Landscape Plan, Revegetation Plan, or Vegetation Management Plan, topsoil should be placed at a minimum depth of 75mm on slopes 4:1 (H:V) or flatter, and 50mm on slopes steeper than 4:1.

Further discussion on soil preparation and treatment prior to planting is provided in Appendix C—Soils and revegetation.

Performance outcome PO61

Local environment includes local wildlife.

SC6.6.A.13 Site inspection and monitoring

Acceptable outcome AO62.1

Personnel preparing and/or supervising the preparation of the Monitoring and Maintenance Program must, collectively, have all of the following capabilities:

(a) an understanding of the local environmental values that could potentially be affected by the proposed works

(b) a good working knowledge of the site's ESC issues, and potential environmental impacts, that is commensurate with the complexity of the site and the degree of environmental risk

(c) a good working knowledge of current best practice ESC measures appropriate for the given site conditions and type of works

(d) a good working knowledge of the correct installation, operational and maintenance procedures for the full range of ESC measures used on the site.

Refer to AO1.1 for discussion on 'potential environmental risk'.

Acceptable outcome AO63.1

Discussion on scheduling and conducting site inspections by internal and external parties is provided in Chapter 7 – Site inspection.

In those instances where specific site monitoring stations are identified within the monitoring and maintenance program, then:

(a) during periods of water discharge from the site, water quality samples are collected at each monitoring station at least once on each calendar day until such discharge stops

(b) a minimum of three (3) water samples are taken and analysed, and the average result used to determine quality.

Sediment basin water quality samples are taken at a depth no greater than 200 mm above the top surface of the settled sediment within the basin.

Current (2008) best-practice procedures for 'high-risk' sites, requires regular ESC audits to be:

(a) undertaken by a person suitably qualified and experienced in erosion and sediment control that can be verified by an independent third-party (this person must not be an employee or agent of the principal contractor)

(b) conducted on the next business day following a rainfall event in which greater than 10 mm of rainfall has been recorded by the Bureau of Meteorology rain gauge nearest to the site

(c) conducted at intervals of not more than one (1) calendar month commencing from the day of site disturbance until all disturbed areas have been adequately stabilised against erosion to the acceptance of the relevant Regulatory authority

(d) conducted using an appropriate Site Inspection Checklist.

'High-risk sites' are work sites that do either of the following:

(a) satisfy the requirements of a high-risk site as defined by either the State or local government; or

(b) satisfy the requirements of those risk categories greater than high-risk (such as extreme-risk) where such categories have been defined (i.e. score a hazard rating equal to or greater than the 'critical hazard value').

Discussion on the assessment of erosion hazard and site risk assessment is presented in Chapter 3 – Site planning, and Appendix F – Erosion hazard assessment.

ESC audits must include, as a minimum, all of the following:

(a) copies of all original site inspection checklists;

(b) non-conformance and corrective action reports;

(c) sediment basin water quality and site discharge water quality monitoring results;

(d) a plan showing the areas of completed soil stabilisation; and

(e) rainfall records including date and rainfall depth.

Acceptable outcome AO64

Discussion on scheduling and conducting of site inspections is provided in Chapter 7 — Site inspection.

SC6.6.A.14 Site maintenance

Performance outcome PO65

Proper working order includes maintaining the required hydraulic capacity and operational effectiveness.

Acceptable outcome AO65.2

Current (2008) best practice requirements for the maintenance of sediment control devices requires these devices to be maintained and made fully operational as soon as reasonable and practicable in accordance with Table 6.1 of Chapter 6 – Site management.

The top of a sediment basin's sediment storage volume must be clearly identified by the horizontal member of a marker post (cross).

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SC6.7 Engineering design guideline – landscape

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SC6.7.1 General

SC6.7.1.1 Scope

This section sets out the Guidelines for landscape within new subdivisions and on-street works for private developments.

This Guideline contains procedures for the design of:

(a) On-street landscape works, including buffers mounds, stormwater management measures, traffic islands and roundabouts; and

(b) Public Open Spaces including, signage, furniture and playgrounds.

SC6.7.1.2 Objectives

The objective of this guideline is to define Council's minimum landscape requirements and to assist the designer in achieving the following:

(a) Visual enhancement of the streetscapes

(b) Enlargement of the habitat and plant diversity in order to provide a food source for indigenous fauna

(c) Enhanced living environments by reducing the impacts of noise, fumes and car headlights

(d) Provision of shade trees

(e) Crime prevention through environmental design (CPTED)

SC6.7.1.3 Reference documents

(a) Council guidelines and specification:
  (i) Mackay Regional Council *Construction specification C273 – Landscaping*
  (ii) Mackay Regional Council (2007) *Landscape performance and style manual for development applications*
  (ii) Mackay Regional Council *Standard drawings*

(b) Australian standards:
  (i) AS/NZS 1158.3 – Pedestrian area (Category P) lighting
  (ii) AS 3500 – National plumbing and drainage, Part 1.2 – Water supply – acceptable solutions
  (iii) AS/NZS 4422 – Play ground surfacing
  (iv) AS/NZS 4486 Playgrounds and playground equipment
  (v) AS4685 Playground equipment

(c) Other:
  (i) Queensland Government (2002) *Building safer communities – crime prevention manual for Queensland*
  (ii) Healthy waterways (2006) *Water sensitive urban design technical guidelines for south east Queensland*

SC6.7.2 On-street landscaping works

SC6.7.2.1 General

At the time of development, the designer shall provide all on-street landscape including street tree planting, grass establishment to road verges and landscape of traffic islands and buffer mounds.

Council should be consulted prior to commencement of the design to ascertain whether there are any site specific design requirements.

Council has plant selection guidelines and suburban planting themes, Designers are encouraged to consult with Council in the preparation of the landscape design.

Landscape plans shall be prepared by a person of professional standing in the field of Landscape Architecture or Landscape Design, at a standard acceptable to Council. However, the Designer of the civil works involved in the development; that is, roads, street lighting, drainage and so on; shall certify that prior to Council's assessment of the landscape design that the design does not impact on the operation or ongoing maintenance of the civil works design as follows:

(a) Landscape within drainage channels does not reduce design capacities of the drainage system;

(b) Initial and mature species size of street tree plantings does not impinge on intersection and property access sight distances or vehicle operator safety by the establishment of trees within roadway clear zones;

(c) Mature species size of street trees will not affect street lighting standards for either vehicular or pedestrian traffic;

(d) Street tree plantings are to conform to Council's requirements as specified in Section 2.4; and

(e) Appropriate provision is to be made for maintenance operations as part of the consideration of any landscape design.

The designer shall incorporate into their design the requirements for both installation and maintenance, especially during the initial "*on-maintenance*" period, as detailed in Council's construction specification *C273 Landscaping*.

SC6.7.2.2 Existing vegetation

In order to retain any established landscape character, all trees located within existing road reserves shall be protected and retained unless approved otherwise by Council.

Significant trees located within the verge of new road reserves shall be protected wherever possible and where advised by Council. This may require the adoption of non-standard utility service alignments; therefore, Designers are encouraged to discuss proposed solutions with Council.

All instances of trees / vegetation removed without prior consent will result in referral of these matters for action by the Department of Natural Resources and Mines under the *Vegetation Management Act 1999*.

SC6.7.2.3 Verges

All verges shall be covered full width with topsoil to a depth of not less than 40mm and shall be lightly compacted and grassed in accordance with Council's Guidelines and Specifications. This shall also require full width turfing of all verges.

In order to guarantee a high standard of maintenance all verges are to be in a mowable condition, free from rocks and loose stones, and graded to even running contours.

Aside from grass establishment and tree planting, landscaping of the verge between the property boundary and kerb is not a Council requirement. However, additional landscape within the verge may be considered subject to Council approval. Generally, any additional landscape shall be clear of underground services or alternatively limited to ground covers or small shrubs less than in 600mm height from road surfaces.

Should any excavation of the underground services in this vicinity of the additional verge landscape be required, thus destroying the vegetation, Council will not be held responsible for plant replacement. Maintenance of planting in this vicinity will be the sole responsibility of the adjacent property owner/occupier.

SC6.7.2.4 Street tree planting

The ultimate aim of street tree planting is to provide:

(a) An attractive streetscape with character and charm. An individual character may be obtained by using a specific tree species for each street.

(b) Shade and the reduction of heat and glare from the road pavement. Parked cars may remain cool during the summer months.

(c) A reduction in pollutants and a cleaner environment.

(d) Habitat provision and enhancement. Native flowering trees provide a source of food and shelter for insects, birds and animals.

An avenue of trees of identical species and size planted at regular intervals has far greater visual and aesthetic impact than a mis-matched selection of incompatible trees. In order to promote continuity in new streetscapes, a single species should be nominated for each street.

Where a development is occurring in an established street setting, an assessment of the existing trees should be made and the most prevalent and healthy species chosen for verge planting. This species selection shall be approved by Council's Landscape Architect.

Tree species shall be selected for their suitability to the site conditions (eg. Small trees under power lines, drought resistance, soil suitability) and shall be in accordance with any relevant Council plant selection guidelines and suburban planting themes (see SC6.7.A – Appendix A – Recommended Street Tree Species List).

To ensure consistency in growth rate and form all trees shall be no less than two metres in height and shall be well established in their root and branch formation. A minimum 45-litre container should ensure a good survival factor. Any trees to be planted within the Mackay CBD shall be required to be of minimum 100 litre container size.

Street trees are to have a minimum of 2.4 metre clearance from ground level at time of maturity. At the discretion of the traffic engineer, advanced stock may be required to provide a minimum 1.5 metre canopy clearance from ground level at the time of installation.

The alignment and placement of street trees measured from the tree at the estimated ultimate size shall be in accordance with the following:

(a) Greater than 4.0 metres from electricity or telecommunication poles or pillars;

(b) Greater than 7.5 metres from streetlights to ensure effective street lighting;

(c) Greater than 4.0 metre radius from high voltage transmission lines;

(d) Greater than 2.0 metres from stormwater drainage pits;

(e) Trees are to be planted in the front of properties at the centre of the lot, if no structures are present, at a rate of one per lot, or at the necessary rate to provide minimum 20-metre spacing. Within the CBD this density shall be reduced to a maximum 10 metre spacing. If this planting location will impinge on existing structures alternative locations shall be negotiated with Council's Landscape Architect;

(f) Trees are to be placed a minimum of 750mm and a maximum of 1000mm from the back of kerb;

(g) Trees are to be placed a minimum of three (3) metres from driveway;

(h) At intersections trees are to be placed a minimum of 10 metres back from the face of the kerb of the adjoining street;

(i) Trees are to be located so as not to obstruct access to any services or signage;

(j) Trees are to be located so as not to obstruct pedestrian or vehicular traffic, nor create traffic hazard or cause damage to existing trees;

Street trees shall be planted in accordance with Standard Drawing A4-49G and installed in accordance with Council Specifications.

Street trees planted within Mackay CBD are to be in accordance with the Mackay Master Street Tree Plan and in accordance with Standard Drawing A4-177C.

Street trees should not be a plant listed in:

(a) Land Protection (Pest and Stock Route Management) Regulation 2003;

(b) Mackay Regional Council Pest Management Plan or the; and

(c) Publication "Agricultural and Environmental Weeds – Far North Queensland" (Wet Tropics Management, Department of Natural Resources and Mines).

SC6.7.2.5 Buffer zones

Mounds / buffers adjacent to major roads controlled by the Department of Transport and Main Roads must comply with the requirements as specified by the Department of Transport and Main Roads and as outlined in this document. Generally, these buffers are five (5) to ten (10) metres wide along the full frontage of the major road.

Landscape of Buffer Mounds shall be in accordance with Standard Drawing A3-841 'Buffer Plantings' and A3-842 'Buffer Plantings - Plant Schedule'.

The aim of the Buffer mound landscape is to:

(a) Reduce the visual impact of adjacent development by screening rooflines.

(b) Reduce the visual impact of proposed noise attenuation barriers, which may be constructed at some time in the future on the mound crest.

(c) Reduce the visual impact of the mound's severe geometric landform by screening with foliage to ground level.

(d) Introduce a "natural" vegetated landscape appearance by replacing open agricultural land with a façade of dense planting.

(e) Reinforce the local character by indigenous tree and shrub species.

(f) Provide additional functions, i.e. Shade over adjacent bikeways.

In order to accomplish the above aims, the species mix of plant selection should incorporate a range of species to provide variation in form, colour and texture, to contribute to a natural appearance. The front line of planting should have foliage down to ground level. The species mix to be provided shall be a minimum of 70% / 30% ratio of native / exotics (greater % if Native component is acceptable).

To ensure that buffer mounds are given the best possible chance of successful establishment and prolonged survival, a temporary irrigation system is required to be installed to the mounding. The preferred system is with a drip style irrigation system or similar below the surface of the mulch, which reduces the chances of vandalism and reduces excess water loss as a result of runoff and evaporation.

Strong recognisable character is further reinforced by repetition of some suitable species as street and park trees in the adjacent subdivision.

Use of disciplined plant selection based on themes such as colour, texture, or natural species associations, in addition to site suitability, creates higher quality landscapes than random assortments of nursery stock chosen solely for short notice availability and growth suitability. Advance ordering and growing on contracts are desirable to ensure availability of desired species in the large quantities required.

Local species, which typify and reinforce the regions image, are preferred. Most are hardy, long lived and have dense growth, which suppress weeds and reduce long-term maintenance.

The landscape shall be designed so as not to create a safety risk to people using the mound and adjacent areas (i.e. no thorns, heavy nuts or poisonous fruits or berries). In addition, a 1 metre maintenance strip shall be allowed along the property boundary.

SC6.7.2.6 Stormwater management measures

The landscape design for stormwater management measures such as bioretention basins and swales should consider documents such as the *Water sensitive urban design technical guidelines for south east Queensland* (Healthy Waterways, 2006). It is important that the landscape design of these measures address stormwater quality objectives whilst also incorporating landscape functions.

SC6.7.2.7 Roundabout and median strip landscape design

Roundabout and median strip landscape design must have due regard for plant siting and maintenance requirements. Planting in roundabouts and medians are to be set back from the inside kerb edge as follows:

Roundabouts

(a) 0.0m–1.0m setback: appropriate pavement material;

(b) 1.0m–>3.0m setback: shrubs / groundcovers only with a maximum mature unpruned height of 600mm above the road pavement (not top of kerb); and

(c) 3.0m–>3.0m setback: trees and shrubs / ground covers. Roundabouts of 6.0 metres in diameter in low speed zones of 50km/h or less, a small single trunked tree with a mature diameter of 100mm may be located in the centre of the roundabout, providing such achieves a clear trunk height at planting of 1.5 metres above the road pavement level.

(d) Mown grass or turf is discouraged in roundabouts.

(e) Grass should be avoided for use in median landscapes.

Median Islands

(a) 0.0m–0.3m setback: appropriate pavement treatment (Applicable to state controlled roads only);

(b) 0.0m–1.0m setback: appropriate ground covers, 200mm high, with minimal pruning requirements

(c) 1.0m–1.5m setback: shrubs / ground covers only. Shrubs and ground covers to have a maximum maintained mature height of 900mm above the road pavement (not top of kerb);

(d) More than 1.5m setback: trees and shrubs / ground covers. Trees are to be primarily single trunked species. Tree species chosen will depend on the species spatial requirements and clearance from service elements and light poles;

(e) Trees will generally not be planted in medians with an internal width less than 3.0 metres;

(f) In median strips, three (3) metres or wider, trees may be located centrally or staggered provided such accords with traffic engineering visibility requirements. Tree species will be selected for appropriate canopy shape.

(g) Ends of median strips require special consideration and discussion with Council with regards to clear zones and safety requirements.

(h) Irrigation is to be placed in medians with subsoil drainage installed to adequately stop the ingress of water into the roadway. Irrigation shall be of such a design and quality of material and workmanship that the ingress of water into the pavement due to failure or damage is avoided.

(i) The root system of plants must not interfere with subsurface drainage.

(j) The design should minimise the requirements for maintenance.

(k) Interfaces between grass and areas of chip mulch are to be avoided. Where grass does interface with chip mulch, a concrete mowing strip of 300mm wide must be provided.

(l) Irrigation is to be placed in medians with subsoil drainage installed to adequately stop the ingress of water into the roadway. Irrigation shall be designed to prevent pavement failures by ingress of water.

(m) The mature unpruned height of under plantings on road verges or in roundabouts, medians and splitter islands is not to exceed 600mm above road surfaces. This height, however, may be reduced at the discretion Council with approval to take into account individual site requirements.

SC6.2.7.8 Stockpiling of materials

Stockpiling of material is undertaken in a manner that minimises environmental impacts and nuisance and annoyance to existing and adjacent premises. Existing or future public open space sites used for stockpiling are decompacted and remediated prior to any further landscape or grassing works.

(a) Stockpiles of landscape are stored separately on site.

(b) Landscape material is free of any deleterious material that has the potential to impact upon the intended use of the land, prior to stockpiling.

(c) Stockpiles are treated appropriately to prevent wind and water borne erosion and weed infestation. Temporary erosion and sediment controls are installed to contain the stockpile and are removed upon usage of landscape material.

SC6.7.2.9 Managing impacts during construction

Landscape works are to be carried out in a safe manner that minimises adverse impact to the natural environment caused by erosion, saltation, incineration of cleared vegetation, and rubbish and avoids noise, dust and saltation impacts / nuisance, redirection of stormwater runoff and any inconvenience to residents and other premises.

(a) The landscape works incorporate temporary stormwater runoff, erosion and sediment controls and trash traps;

(b) Stormwater runoff, erosion, and sediment controls are constructed prior to commencement of any clearing works;

(c) During construction, dust suppression measures (such as watering of the site) are implemented to protect nearby premises;

(d) Temporary construction works do not pond or concentrate stormwater runoff in adjoining properties;

(e) Temporary construction works do not create nuisance or annoyance on adjoining premises as a result of altering the stormwater runoff pattern exiting the site;

(f) Construction traffic to and from the site uses the highest classification streets and roads where a choice of access routes is available;

(g) All materials associated with the landscape works that are dropped, deposited or spilled on streets giving access to the site are removed and the streets are cleaned as soon as practicable after the event. Any damaged areas are repaired and reinstated to the original condition;

(h) Where works are carried out on existing roads a traffic control plan is prepared in accordance with the Manual of Uniform Traffic Control Devices and maintained during the works; and

(i) Traffic Control Devices. All traffic control measures are properly erected.

SC6.7.3 Public open space

SC6.7.3.1 General

At the time of development, the designer shall landscape all public open spaces to the satisfaction of Council and in accordance with this guideline.

Where a development is proposing to undertake any work within existing or proposed park a landscape plan shall be prepared for approval by Council.

Landscape plans shall be prepared by a person of professional standing in the field of landscape architecture or landscape design, at a standard acceptable to Council.

SC6.7.3.2 Crime prevention through environmental design

It is important when designing parks that the principles of crime prevention through environmental design are considered and incorporated into the design, in particular:

(a) Dense stands of vegetation should be confined to park peripheries and should not be located along side paths and play equipment. Vegetation should not block casual surveillance of picnic and play areas from adjacent residences.

(b) Landscaping should not restrict sightlines and opportunities for natural surveillance within and of a site, therefore all new vegetation around centres of activity should be single clean trunked trees with shrubs which do not grow beyond 600mm height. This will avoid the problem of concealment and allow a greater area of surveillance from the road.

(c) Lighting where required should be sufficient to deter loitering and vandalism.

(d) Large shrubs and trees should be planted in such a way as to prevent or reduce illicit access to buildings and neighbouring properties.

(e) Safety in large parks or areas of vegetation within a development may be enhanced by planting trees in thin strips which maximises the number of trees planted but which also restricts the ability of offenders to hide within a "mass" of vegetation.

SC6.7.3.3 Treatment to park boundaries

Vehicles should be prevented from driving into parks, drainage reserves and public open spaces by the provision of barriers along the road frontages. These may be log barriers, bollards or natural features such as existing vegetation or newly planted and staked trees. Access for maintenance vehicles shall be provided through a lockable gate or removable bollard.

Definition of the park side boundaries should be indicated by installing a log barrier fencing or bollards at approximately 20-metre centres, down each side. These should be offset from the surveyed boundary by 100mm in order to allow future erection of private fencing without having to remove Council's markers. Definition of the park boundary is intended to deter encroachment onto park by adjacent private properties and to define the park limits.

Log barriers and bollards shall be in accordance with Standard Drawing A4-46D & A4-160B unless otherwise approved by Council.

SC6.7.3.4 Internal circulation

The park layout should be designed to ensure that internal circulation or movement within the park is:

(a) safe;

(b) unencumbered;

(c) highly visible internally and externally; and

(d) linked to external cycle and pedestrian networks.

Design features including access points, street frontages, car parks, pedestrian / bike paths, park equipment and lighting should be considered.

Design of paths, car parking and access points should consider the needs of people with mobility challenges. Pathways shall be in accordance with Design Guideline D1 and comply with accessibility standards.

SC6.7.3.5 Planting

Council parks seek to provide a range of recreation opportunities and there is scope to utilise planting design to help achieve this objective, options include:

(a) Shade trees evenly planted throughout the site to maximise protection from the sun.

(b) Island or corridor planting to concentrate trees for easy maintenance and encourage bird life for pleasure viewing.

(c) Grouped planting will also provide shade adjacent to open space to allow unencumbered active play areas.

(d) Lines of tree planting to define edges of informal kick-about areas.

A minimum 70% of the proposed tree planting should be native, and species should be selected on their adaptability to site conditions and their value to local fauna. Where the proposed park adjoins an area of established native vegetation, an extension of this habitat into the park should be implemented by using compatible species. The designer should also be encouraged to use rare and endangered plant species, or species proven to have excellent bird, butterfly and insect attracting qualities.

In order to promote the unique landscape characteristics of the region exotic flowering trees and non-native palms should only be used as features or emphasis, where necessary.

Council has plant selection guidelines and suburban planting themes and designers are encouraged to consult with Council in preparation of the landscape design.

Street trees should not be a plant listed in:

(a) Land Protection (Pest and Stock Route Management) Regulation 2003;

(b) Mackay Regional Council, *Pest Management Plan*; or

(c) Wet Tropics Management Authority – Department of Natural Resources and Mines, *Agricultural and Environmental Weeds - Far North Queensland*

SC6.7.3.6 Grassing

All parks shall be covered with topsoil to a depth of not less than 40mm and shall be lightly compacted and grassed in accordance with Council's Guidelines and Specifications.

In order to guarantee a high standard of maintenance all parks shall be in a mowable condition, free from rocks and loose stones, and graded to even-running contours.

Grass should be established within the proposed park as quickly as possible in order to avoid erosion and sedimentation to the local waterways, and prevent the establishment of weeds in accordance with Council's Guidelines and Specifications.

Edging is designed to provide adequate separation between turf and gardens and to provide safety for maintenance staff and other user groups.

Built edges must be installed at grass mulch interfaces in local, district and regional parks and in commercial and retail centre development. Appropriate edging for these areas may include reinforced concrete edging, recycled plastic and bricks laid on a mortar bed. Timber edges within Council controlled land is not acceptable.

Detailed requirements are as follows:

(a) Extruded concrete edge, flush mounted or proud – machine installed with at least one 12mm deformed bar through the centre for reinforcement or steal pins where a raised kerb is used, both a minimum 150mm wide; or

(b) Recycled plastic kerb 50mm wide; or

(c) Brick - laid either header or stretcher course on mortar; or

(d) Timber edges (only applicable on land not to be managed by Council at any time) are built to a high durability standard. The minimum dimensions of the cross section of the timber edge are to be 140x45. CCA Pine 50x50 CCA stakes are to be installed at both ends of every panel with galvanized batten screws.

All edging, especially that associated with Council managed land, is to be designed with smooth navigable lines and must be able to accommodate the operational characteristics of mowers and maintenance vehicles. Inward facing 90 degree or sharper corners are not permitted.

At garden and turf interfaces, edging is to finish flush so that obstacles and trip hazards are not created.

SC6.7.3.7 Mounding

Mounding may be used within the park design to provide topographical interest, to emphasise views, to help screen adjacent properties or eyesores, or as part of the internal design. The mounds should not exceed a gradient of 25% (1 in 4) in order to reduce erosion and allow mowing. Planting of trees and shrubs over the mound will further emphasise height and shape.

Care should be given to ensuring that the mound does not restrict visibility into and out of the park thus threatening the safety of users or provide unwanted visibility into private properties.

Landscape mounding shall be in accordance with Standard Drawing A3-841 and A3-842 unless otherwise approved by Council.

SC6.7.3.8 Stormwater management measures

The landscape design for stormwater management measures such as bioretention basins and swales should consider documents such as the *Water sensitive urban design technical guidelines for south east Queensland* (Healthy Waterways 2006). It is important that the landscape design of these measures address stormwater quality objectives whilst also incorporating landscape functions.

SC6.7.3.9 Furniture

Park furniture should reflect the intended function of the park and compliment any distinguishing features present eg. Seating situated to maximise a viewscape. Some preferred features of furniture include:

(a) Park benches located under a natural or built shade structure to allow daylong use. If the shade is built, it should have an impervious roof e.g. Colorbond to provide shelter during rain.

(b) Well drained ground and hard surfacing below any structure. Surface material could be pavers, coloured or exposed aggregate concrete etc.

(c) Shade structures should maximise protection from the sun during the hours of 12 noon – 4pm.

(d) Refuse bins should be located for ease of use and pick up by refuse trucks eg. adjacent to playgrounds or picnic areas, at park exits.

Designs of furniture should reflect a strong aesthetic and vandal resistant appearance and be in compliance with specified requirements indicated in Council's Landscape Style Manual.

Where possible, natural features may be used e.g. mounding for seating, trees or natural rock for bollards to simulate park furniture.

Council has park furniture themes and master plans, Designers are encouraged to consult with Council in the preparation of the landscape design.

SC6.7.3.10 Signage and interpretation

A park name sign is to be provided in accordance with Council's *Landscape Style Manual*. The park name is to be submitted to Council for approval with the landscape drawings. The proposed name is to preferably have the same theme as the subdivision's street names. The name is to be creative and imaginative in order to appear to children for local parks and to adults for district and regional parks.

If the park has any historic, cultural or natural value, the provision of interpretive signage will provide further interest to local users. Council can provide assistance in developing interpretive concepts.

SC6.7.3.11 Lighting

Lighting requirements within parks will be advised by Council in accordance with the classification of the park.

As a guide, two (2) park lights on poles shall be provided for every park of 4,000 square metres. However, this may vary depending upon the shape and alignment of the park and the presence of existing vegetation. Generally, parks should be well lit providing safe nocturnal environment for local users. Council will consider the relaxation of one or both lights where existing street lights are adjacent to the park area. Underground power should be provided to each pole. Light fittings should be vandal resistant.

Pathways within parks that require lighting shall be lit to the lighting category determined from the Road Lighting Standards AS/NZS 1158.3, "Pedestrian area (Category P) lighting". Minimum lighting requirements shall be Category P2 with the absolute minimum level subject to approval by Council being Category P4 due to extenuating circumstances.

SC6.7.3.12 Provision of water

Facilities for drinking, such as drinking tap / bubbler, shall be provided for each park area, and should be located near active recreational areas, adjacent to a well-used access route, and within an area serviceable form the road frontage. A soak-away trench shall be provided to the base of each tap to prevent ponding and water logging.

Irrigation is to be provided and the proposed system shall comply with the Council requirements for irrigation.

SC6.7.3.13 Water features

Water should also be considered as an aesthetic feature of the park. Council does not recommend a formal water feature incorporating concrete structures and pumps, due to the excessive maintenance requirements, but utilising an existing water course as a park highlight could be possible. Sensitive manipulation of an existing creek could facilitate a year-round aquatic environment, thus encouraging greater bio-diversity and providing an exciting focal point to the park and surrounding subdivision.

SC6.7.3.14 Playgrounds

To ensure play equipment is as safe as possible and appropriate for the intended users, it should conform to the current and relevant Australian Standards for playgrounds and play areas and additional standards as may be established by Council.

Where playground equipment is required by Council as a condition of the development permit of the subdivision, or proposed to be installed by the developer, the following requirements should be considered and incorporated into the design:

(a) Type of play equipment proposed should be selected in consultation with Council.

(b) The age range of the users should influence the type of equipment provided.

(c) The siting of the playground should not infringe upon adjacent residential properties, a minimum distance of 10 metres between equipment and park boundaries should be provided and suitably landscaped with a minimum of 3 metre of screen planting to reduce noise and visual impact. Such landscape is to be consistent with CPTED Principles.

During installation and maintenance periods it is the responsibility of the developer to undertake, by suitably trained and certified staff, the inspection and documentation of safety inspections of playground equipment in accordance with AS/NZS 4486.1. Such records are to be provided to Council at the end of the "on maintenance" period

To conform to safety requirements impact absorbing surfacing should be installed to the play area in accordance with the relevant Australian Standard eg. sand, continuous rubberised matting, shredded car tyres.

The site must be raised and free draining with positive falls and sub-soil drainage connected to a storm water system.

A concrete surround edge must be installed to the softfall perimeter. Construct a 200x150 reinforced edge with 2/12mm deformed bars, doweled expansion jointing every 9 meters and crack control every 3 meters. A large round edger must be used to remove all sharp edges and located outside of the fall zone.

All screws, bolts and other connection items to be installed shall be of 316-grade stainless steel construction.

Shade cover over playgrounds is to be provided, in order to encourage day long use. Preferably, this should be a permanent shade structure approved by Council, however shade trees planted at maximum 6-metre centres around the safety area are acceptable.

The provision of seating overlooking the playground will be required.

SC6.7.4 Irrigation

SC6.7.4.1 General

All irrigation systems connected to Council's water supply shall be installed to satisfaction of Council. The installation of water meters, backflow prevention device and isolation valves are mandatory in all irrigation systems. Refer AS 3500 "*National Plumbing and Drainage, Part 1.2 Water Supply - Acceptable Solutions*".

The designer shall ensure that the installation of an irrigation system to all landscaped traffic islands and roundabouts is provided for.

An irrigation plan prepared by an experienced irrigation consultant, shall be submitted to Council for approval together with the landscape plans and the proposed planting plans for the traffic islands / roundabouts.

The design of all watering systems must ensure an efficient and economical application of water. Such systems are to be designed to use low water application and shall run only during Council's nominated times.

The irrigation system shall be installed in accordance with Council Specifications and shall be installed to a standard compatible with Council's central irrigation control system, the Toro 'IrriNet' system. No alternative type is to be installed without prior written approval of Council. Reference should be made to construction specification C273 'Landscaping' for details of these requirements.

All irrigation pipework installed under roadways shall be laid in minimum 100mm dia. uPVC Class 9 conduit of diameter equal to that of the irrigation pipe plus 50%.

The water connection and installation of the irrigation system shall be carried out by Council personnel or an approved contractor at the developers / applicants cost. The maintenance period for irrigation works shall be three months and shall run concurrently with the 'on maintenance' / establishment period for landscape works. Thereafter all maintenance and watering will be the responsibility of the Council.

The installation of an irrigation system on Council property, other than buffer mounds, traffic islands and roundabouts, e.g. verges, will not be permitted unless:

(a) the system is separate from the development and all pipework is located adjacent to the kerb and channel; or

(b) the verge is irrigated from sprinklers that fall within the development property boundaries.

These requirements have come about in order to prohibit the installation of water lines across the underground services located within the verge. These water lines would not appear in Council records and are therefore at risk of breakage during service repair work / trench excavation.

If a separate irrigation system within the verge is desired, the developer will be required to pay all installation costs, which include:

(a) Tapping into main;

(b) Installation of backflow prevention device;

(c) Installation of pipework and pop-up sprinklers; and

(d) Installation of solenoid valves and automatic controller in accordance with Council central irrigation control system.

SC6.7.A Appendix A – Recommended street tree species

Figure SC6.7.A.A – Street tree planting list

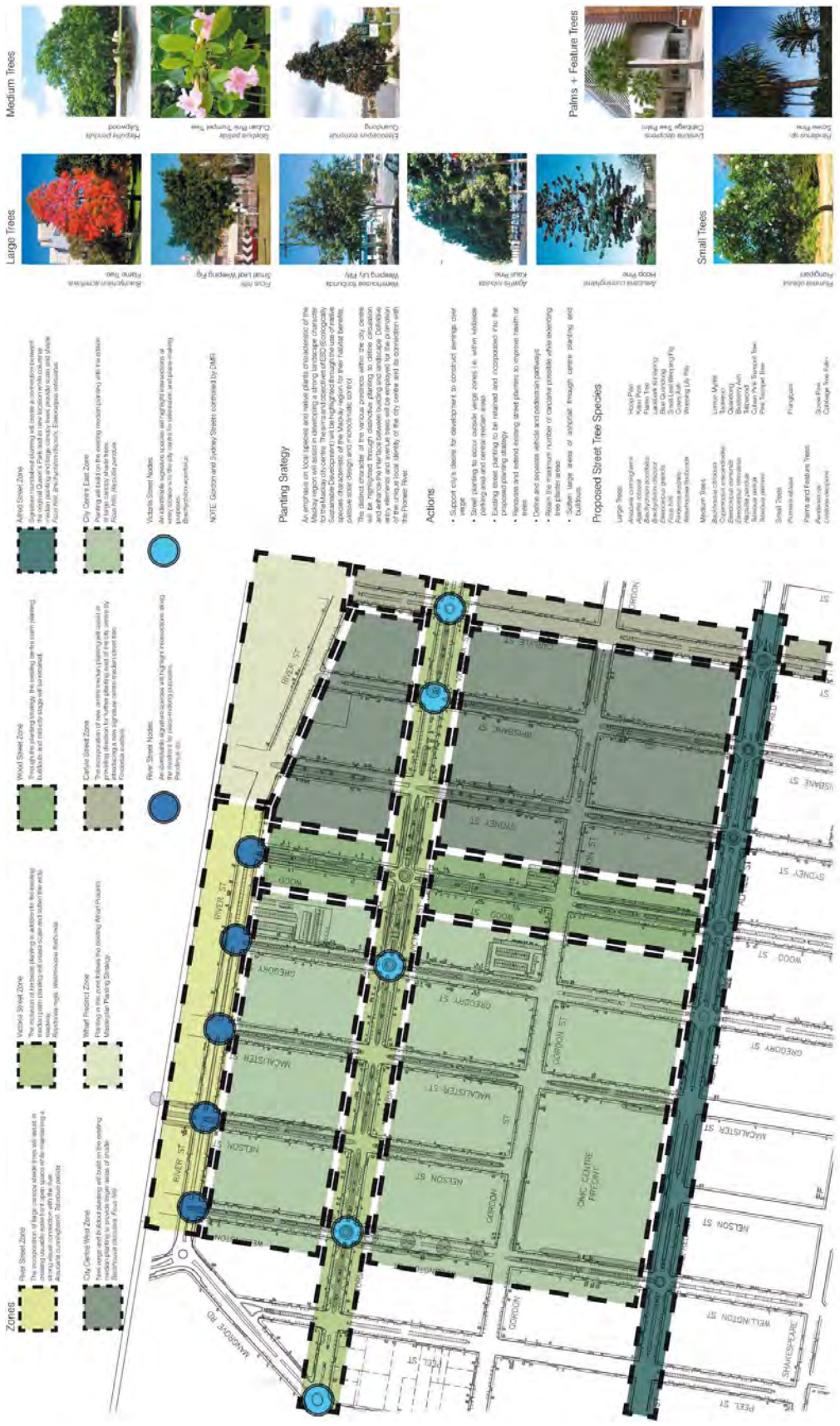
Occur	Botanical Name	Common Name	Size	1a	1b	2	3	4	5	Under Power Lines
N.Qld	Barringtonia calyptrata	Mango Pine. Cassowary Pine	S/M		Y	Y	Y		Y	
CQC/Qld /+	Brachychiton acerifolius	Flame Tree	L		Y	Y	Y		Y	
N.Qld	Buckinghamia celsissima	Ivory Curl Tree	S/M		Y	Y				Y
CQC	Callistemon (Melaleuca) viminalis	Weeping Bottlebrush	S/M		Y	Y	Y	Y	Y	Y
CQC/Qld /+	Cupaniopsis anacardioides	Tuckeroo	M	Y	Y	Y	Y			Y
CQC/Qld /+	Elaeocarpus eumundii	Eumundi Quandong, Smooth-leaved Quandong	M		Y	Y	Y	Y	Y	
CQC/Qld /+	Euroschinus falcatus	Ribbonwood, Maiden's Blush	M		Y	Y	Y		Y	
CQC/Qld	Flindersia australis	Crows Ash	L		Y	Y	Y		Y	
CQC/Qld /+	Flindersia schottiana	Bumpy Ash, Cudgeri	L	Y	Y	Y	Y		Y	
CQC/Qld /+	Melaleuca viridiflora	Broad-leaved Tea Tree	M		Y	Y	Y	Y		
CQC/Qld /+	Mimusops elengi	Red Coondoo	M	Y	Y	Y	Y		Y	
CQC/Qld /+	Podocarpus elatus	Brown Pine	L		Y	Y	Y		Y	
CQC/Qld /+	Syzigium australe	Creek Cherry	S/M		Y	Y	Y			
N.Qld	Syzigium tierneyanum	River Cherry	M		Y	Y	Y	Y		
Exotic	Tabebuia pallida	Evergreen/Silver Tabebuia	M	Y	Y	Y	Y			
Exotic	Tabebuia (Handroanthus impetiginosus) palmeri	Pink Trumpet Tree	M	Y	Y	Y	Y			
Exotic	Tabebuia rosea	Pink trumpet Tree, Pink Tecoma	M	Y	Y	Y	Y			
CQC/Qld	Waterhousia floridunda	Weeping Lilly Pilly	M/L			Y	Y			
N.QLD	Xanthostemon chrysanthus	Golden Penda	M		Y	Y	Y			

#	Soil type/location suited
1a	**Exposed seafront**
1b	**Sandy soil** (may be hydrophobic**)**
2	**Well-drained alluvial**
3	**Well-drained hillslopes**
4	**Glue-pot/poorly drained soils**
5	**Shallow, skeletal or rock**

SC6.7.B Appendix B – Mackay city centre street tree master plan

Figure SC6.7.B.A – Existing vegetation

Figure SC6.7.B.B – Planting strategy



Author of figures SC6.7.B.A and SC6.7.B.B – Gamble McKinnon Green

SC6.7.C Appendix C – Park maintenance program (template only)

DEVELOPMENT DETAILS

Development Name _____
Stage (if applicable) _____
Development Approval Reference _____
Park Address _____
UBD Reference (e.g. 161 H16) _____
Park Real Property Description _____

SUPERINTENDENT

Company Name _____
Superintendent Name _____
Address for Correspondence _____
Telephone/Facsimile/Email _____

COUNCIL DELEGATE

Name _____
Position _____
Telephone/Facsimile/Email _____

AGREEMENT

We agree that responsibility for park maintenance works for the above development during the maintenance period will be undertaken in accordance with the table below.

Date of commencement of agreement:

Signature: _____
Duly Authorised On Behalf Of
(insert name of Superintendent) _____
Date: _____

Duly Authorised On Behalf Of _____
Date: _____

Item Description	Maintenance standard / action	Responsibility
Park Amenities	Repair or replace defective park visitor facilities (e.g. barbecues, play equipment, toilets) on the same day in district and metropolitan parks, and within five working days at other locations.	Developer / Mackay Regional Council / Not Applicable
	Safety hazards to be repaired on same day (urgent) or barricade the site and arrange repairs within 20 working days.	Developer / Mackay Regional Council / Not Applicable
	Maintain equipment to manufacturer requirements.	Developer / Mackay Regional Council / Not Applicable

Item Description	Maintenance standard / action	Responsibility
Grass mowing and edge trimming	Mow grass at least 16 times a year with a mid-mounted mower or equivalent. Set cutting height at about 50mm. Schedule one cut per month from March to October and two cuts per month from November to February. Hand trim around structures such as fences and signs in conjunction with each mowing service. Maintain grass growth along path edges to within 100mm of the edge.	Developer / Not applicable
Cleansing	Pick up litter and large debris (fallen branches etc) from "maintained parkland" at least once a month in local parks and once a week in district and metropolitan parks. Dispose of the litter and debris to a legal place of tipping. Note: "Maintained parkland" includes all mown areas, roads, car parks, picnic areas, pathways, playgrounds and pavement areas.	Developer / Mackay Regional Council / Not Applicable
	Sweep leaves and small debris (e.g. eroded materials) from paths and pavement areas by blowing or sweeping at least once a month in metropolitan and district parks and once a quarter in local parks.	Developer / Mackay Regional Council / Not Applicable
	Empty rubbish bins at least three times a week (Monday, Wednesday and Friday) in district and metropolitan parks and once a week in local parks.	Developer / Mackay Regional Council / Not Applicable
	Clean toilets including pans, basins, tiled surfaces and floors at least once a day. Replenish supplies of toilet paper. Spot remove graffiti. Clean gutters of leaves at least once every six months.	Developer / Mackay Regional Council / Not Applicable
	Clean electric barbecues and surrounds at least three times a week (Monday, Wednesday and Friday). Empty fat receptacles at least once a month.	Developer / Mackay Regional Council / Not Applicable

Item Description	Maintenance standard / action	Responsibility
Landscape	Weed garden beds, rehabilitation sites and landscape areas at least once a quarter. Replace dead and poorly performing plants and replenish mulch at the same service frequency. Water young plants during dry periods to prevent wilting.	Developer / Not applicable
Playground	Undertake a routine visual inspection to detect hazards from broken equipment, broken glass, vandalism, etc at least once a month in local parks and once a week in district and metropolitan parks.	Developer / Mackay Regional Council / Not Applicable
	Undertake operational inspections to check the operation and stability of play equipment at least once a month in district and metropolitan parks. Inspections to be undertaken by a trained playground maintenance inspector or engineer.	Developer / Mackay Regional Council / Not Applicable
	Check under-surfacing for trip hazards at least once a quarter and more frequently in high use playgrounds. Rake and replenish bark under-surfacing as required.	Developer / Mackay Regional Council / Not Applicable
Buildings, facilities and furniture	Repair or replace missing, defective or damaged rubbish bins.	Developer / Not applicable
	Check toilet operation including flushing mechanisms, door locks, leaking taps, lights, etc at least once a month. Repair or replace defective and vandalised fixtures and fittings and remove graffiti.	Developer / Mackay Regional Council / Not Applicable
	Check barbecue operation including hot plate temperature (thermostat and heating times) and fat drainage at least once a month.	Developer / Mackay Regional Council / Not Applicable
	Sand and oil exposed timber surfaces every six months. Repair or replace damaged or defective furniture and remove graffiti.	Developer / Mackay Regional Council / Not Applicable

Item Description	Maintenance standard / action	Responsibility
Paved areas and pathways	Check paved surfaces (e.g. asphalt) at least once every six months. Repair potholes, trip hazards and failures. Check drainage of paths and pavement areas and rectify defects.	Developer / Mackay Regional Council / Not Applicable
Bridges and boardwalks	Oil exposed timber surfaces as needed. Check structural stability, handrails and decking at least once every six months. Repair defective items and vandalism and remove graffiti.	Developer / Mackay Regional Council / Not Applicable
Irrigation	Check operation of valves, timers, pipes and sprinkler heads at least once a week and rectify defects. Adjust irrigation times during extended wet weather.	Developer / Mackay Regional Council / Not Applicable
Utilities	Check operation of pumps, lights, drinking fountains and taps at least once every three months. Replace defective or damaged globes, washers and other utility components.	Developer / Mackay Regional Council / Not Applicable
Signage	Check signage for vandalism and graffiti at least once every three months. Repair or replace damaged, missing, unreadable or faded signs.	Developer / Mackay Regional Council / Not Applicable
Fence and barriers	Repair or replace sections of fence/barriers removed or damaged by vehicles etc and rectify defects.	Developer / Mackay Regional Council / Not Applicable
Turf	Top dress, fertilise, control weeds and replace worn or damaged turf as needed.	Developer / Mackay Regional Council / Not Applicable
Trees	Replace dead and poorly performing planted trees. Control weeds and replenish mulch around the base of young trees. Water young plants during dry periods to prevent wilting.	Developer / Not applicable
	Prune dead limbs and remove defective branches over park activity areas to reduce hazards.	Developer / Mackay Regional Council / Not Applicable

Item Description	Maintenance standard / action	Responsibility
Vegetation Management	Continue programs that have been specified in Council approvals to control proclaimed and environmental weeds.	Developer / Mackay Regional Council / Not Applicable
	Trim back vegetation along paths and around park facilities to maintain surveillance opportunities and required clearance widths.	Developer / Mackay Regional Council / Not Applicable

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SC6.8 Engineering design guideline – pavement design

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SC6.8.1 Scope and general

SC6.8.1.1 Scope

This section sets out the guidelines for the design of the road pavement to meet the required design life, based on the subgrade strength, traffic loading and environmental factors, and including the selection of appropriate materials for subgrade, sub-base, base and wearing surface.

The Guideline contains procedures for the design of the following forms of surfaced road pavement construction:

(a) Flexible pavements consisting of unbound materials;

(b) Flexible pavements that contain one or more bound layers, including pavements containing asphalt layers other than thin asphalt wearing surfaces;

(c) Rigid pavements (i.e. cement concrete pavements); and

(d) Concrete or clay segmental pavements.

The design of unsealed (gravel) pavements will only be required for low trafficked rural access roads in isolated areas where express prior approval has been given by Council.

SC6.8.1.2 Objective

The objective in the design of the road pavement is to select appropriate pavement and surfacing materials, types, layer thicknesses and configurations to ensure that the pavement performs adequately and requires minimal maintenance under the anticipated traffic loading for the design life adopted.

SC6.8.1.3 Reference documents

(a) Council guidelines and specifications:
- (i) SC6.5 – Engineering design guidelines – geometric road design (urban and rural)
- (ii) SC6.14 – Engineering design guidelines – subsurface drainage design
- (iii) Construction standard C242 – Flexible pavements
- (iv) Construction standard C244 – Sprayed bituminous surfacing
- (v) Construction standard C245 – Asphaltic concrete
- (vi) Construction standard C247 – Mass concrete sub base
- (vii) Construction standard C248 – Plain or reinforced concrete base
- (viii) Construction standard C249 – Steel fibre reinforced concrete base
- (ix) Construction standard C254 – Segmental paving
- (x) Construction standard C255 – Bituminous micro surfacing
- (xi) Mackay Regional Council, *Standard drawings*
- (xii) Eppell Olsen and Partners (2003) *Mackay four level road hierarchy*

(b) Other:
- (i) Australian Road Research Board (1995) *Sealed local roads manual*;
- (ii) AustRoads, *Pavement design – A Guide to the Structural Design of Road Pavements, AP-G17/04*;
- (iii) AustRoads, *Technical report – Pavement design for light traffic – a Supplement to Aust Roads Pavement Design Guide AP-T36/06*;
- (iv) AustRoads (2002) *Asphalt guide*;
- (v) AustRoads (2000) *Provisional sprayed seal method*;
- (vi) Austroads, *Guide to control of moisture in roads*;

(vii) Clay brick and paver institute (1989) *Design manual 1 – Clay segmental pavements, a design and construction guide for sites subjected to vehicular and pedestrian traffic*;
(viii) Concrete masonry association of Australia (1997) *CMAA–T44 – Concrete segmental pavements – guide to specifying*;
(ix) Concrete masonry association of Australia (1997) *CMAA–T45 – Concrete segmental pavements – design guide for residential access ways and roads*;
(x) Concrete masonry association of Australia (1997) *CMAA–T46 – Concrete segmental pavements – detailing guide*; and
(xi) Department of Transport and Main Roads, *Standard specification MRS11.05 – Unbound pavements*.

SC6.8.2 Pavement design criteria – design variables

Regardless of the type of road pavements proposed, the design of the pavement shall involve consideration of the following five input variables:

(a) design traffic;

(b) subgrade evaluation;

(c) environment;

(d) pavement and surfacing materials; and

(e) construction and maintenance considerations.

A suitably qualified and experienced professional engineer (RPEQ), using an acceptable approach outlined in this Guideline shall determine the road pavement thickness and material types.

SC6.8.3 Design traffic

SC6.8.3.1 General

The design traffic shall be determined based on the following minimum pavement design life:

(a) urban streets and roads – 25 years;

(b) rural streets and roads – 20 years;

(c) commercial and industrial streets and roads – 25 years;

(d) rigid (concrete) – 40 years; and

(e) segmental block – 30 years.

Design traffic shall be calculated in equivalent standard axles (ESA's) for the applicable design life of the pavement, taking into account present and predicted commercial traffic volumes, axle loadings and configurations, commercial traffic growth and street capacity.

For new subdivisions and areas identified for future development or redevelopment, the design traffic shall take account of both the construction traffic associated with the developments and the in service traffic for the subdivisions and any future developments within the likely traffic catchment for the street or road.

For interlocking concrete segmental pavements, the simplification of replacing ESA's with the number of commercial vehicles exceeding 3 tonne gross contained in CMAA-T45 is acceptable up to a design traffic of $1x10^6$. Beyond this, ESA's should be calculated.

The pavement design report shall include all traffic data and/or assumptions made in the calculation of the design traffic. Where practicable, traffic data shall be based on actual traffic counts (less than 3 years old) undertaken by either Council or the engineer.

In determining the AADT/ESA's for any specific road in rural areas, the engineer shall take into account any seasonal use factors of the road – generally cane haulage.

Any traffic count used to determine the AADT shall be for a minimum of 72 hours and be taken to achieve an appropriate determination of the AADT, peak hour volumes and percentage use by commercial vehicles.

Council will provide all available relevant traffic data held, upon request. The Designer will be responsible for the cost of obtaining traffic data not held by Council.

In the absence of actual traffic data, the following traffic values (in ESA's) may be taken as a guide to the minimum design traffic, but shall be subject to variation depending on the circumstances for the particular traffic generating catchment for the street.

Street type – design ESA's

Access Place (Urban)	2×10^4
Access Street (Urban)	3.5×10^4
Access Place (Rural)	4×10^4
Access Street (Rural)	1×10^5
Industrial (Access & Collector)	5×10^5 (To be determined by specific design data)
Minor Collector	1 x 106
Major Collector	2 x 106 (To be determined by specific design data)
Sub Arterial	2 x 106 (To be determined by specific design data)

For roads of higher order than those listed above, design traffic determination shall be on a case by case basis for a design life of not less than 25 years.

In new estates, or where traffic figures are not able to be accurately determined, the designer may use the following data to determine the design traffic loading in lieu of an approved alternative approach:

Construction traffic	20 ESA/equivalent allotment
Traffic generation rates	10vpd/allotment (residential development)
Annual Traffic growth rates	0.5% (local residential street – post fully developed) 2.0% (minor collector residential street) 3.0% (major collector streets) 3.5% (arterial and sub-arterial roads)

Commercial Vehicles	3% (local residential streets) 7% (minor collector street) 8% (industrial access and collectors streets) 5% (major collector street)
ESA/HVAG	0.3 ESA/HVAG Local Streets 0.5 ESA/HVAG Collector Streets
N_{HVAG}	Rural 2.8 Urban 2.5

SC6.8.3.2 Subgrade evaluation

Except where a mechanistic design approach is employed using Aust Roads Pavement Design Manual, the measure of subgrade support shall be the California Bearing Ratio (CBR). Where a mechanistic design approach using linear elastic theory is employed for flexible pavements, the measure of subgrade support shall be in terms of the elastic parameters (modulus, Poisson's ratio).

The following factors must be considered in determining the design strength/stiffness of the subgrade:

(a) sequence of earthworks construction;

(b) the compaction moisture content and field density specified for construction;

(c) moisture changes during service life;

(d) subgrade variability; and

(e) the presence or otherwise of weak layers below the design subgrade level.

The subgrade design CBR adopted for the pavement design must consider the effect of moisture changes in the pavement and subgrade during the service life. Accordingly consideration must be given to the provision of subsurface drainage in the estimation of equilibrium in-situ CBRs, and hence in the design of the pavement structure.

Warrants for the provision of subsurface drainage are given in Guideline D3 – Subsurface Drainage Design. If subsurface drainage is not to be provided, then the Design CBR adopted must allow for a greater variability in subgrade moisture content during the service life of the pavement, and hence Design Moisture Content above the Optimum Moisture Content.

The calculation of the Design CBR shall be based on soaked conditions. All design assumptions and engineering judgments used to determine the Design CBR are to be included in the pavement design report.

(a) Soaked conditions are to be adopted for the calculation of Design CBR and shall be based on a minimum of 3 x 5-day soaked CBR laboratory samples for each subgrade area compacted to 100 percent of standard maximum dry density

(b) The maximum spacing of test sites for field inspection pits is to be:
  (i) 100 metres for urban projects, minimum of two tests; and
  (ii) 250 metres for rural projects, minimum of three tests;

(c) Once each subgrade area has been classified according to its particular soil type and drainage assessed, the Design CBR for each subgrade area is computed by using the appropriate formulae as follows:

(i) Design CBR = Least of individual CBRs, for less than five results

(ii) Design CBR = 10th percentile of all individual CBRs, for five or more results
= C – 1.3S

(iii) Where C is the mean of all individual CBR tests, and
S is the standard deviation of all values

Where the Design CBR, as determined above, is calculated to be less than 3, then the design engineer is to:

(a) Design and detail, by an industry recognised method acceptable to Council, the improvement measures required to improve the insitu sub-grade to CBR 3; and

(b) Design the pavement above the improved subgrade.

Methods of improving the subgrade treatment, which are acceptable to Council, are available on an "*Information Note*" available on Council's Web page.

Where practicable, the design obtained by adopting the CBR from laboratory testing should be confirmed by testing existing road pavements near to the job site under equivalent conditions and displaying similar sub grades.

The pavement design report shall be prepared and certified by a suitably qualified and experienced professional engineer and include a summary of all laboratory and field test results and assumptions and / or calculations made in the assessment of subgrade support.

SC6.8.3.3 Environment

The environmental factors that significantly affect pavement performance are moisture and temperature. Both of these factors must be considered at the design stage of the pavement. Reference should be made to Aust Roads Pavement Design manual, ARRB-SR41, and to Aust Roads (formerly NAASRA) – Guide to Control of Moisture in Roads.

The following factors relating to moisture environment must be considered in determining the design subgrade strength/stiffness and in the choice of pavement and surfacing materials:

(a) rainfall / evaporation pattern;

(b) permeability of wearing surface;

(c) depth of water table and salinity problems;

(d) relative permeability of pavement layers;

(e) whether shoulders are sealed or not; and

(f) pavement type (boxed or full width).

The effect of changes in moisture content on the strength/stiffness of the subgrade shall be taken into account by evaluating the design subgrade strength parameters (i.e. CBR of modulus) at the equilibrium moisture content likely to occur during the design life, i.e. the Design Moisture Content. The provision of subsurface drainage may, under certain circumstances, allow a lower Design Moisture Content, and hence generally higher Design CBR.

The effect of changes in temperature environment must be considered in the design of pavements with asphalt wearing surfaces, particularly if traffic loading occurs at night when temperatures are low, thus causing a potential reduction in the fatigue life of thin asphalt surfacing. The effect of changes in temperature environment should also be considered for bound or concrete layers.

The pavement design report shall include all considerations for environmental factors, and any assumptions made that would reduce or increase design subgrade strength, or affect the choice of pavement and surfacing materials.

SC6.8.3.4 Pavement and surfacing materials

Pavement materials can be classified into essentially four categories according to their fundamental behaviour under the effects of applied loadings:

(a) unbound granular materials, including modified granular materials

(b) bound (cemented) granular materials

(c) asphaltic concrete

(d) cement concrete

(e) surfacing materials can be classified into essentially five categories or types:
  (i) sprayed bituminous seals (chip seals)
  (ii) asphaltic concrete and bituminous micro surfacing (cold overlay)
  (iii) cement concrete
  (iv) concrete segmental pavers
  (v) clay segmental pavers

Unbound granular materials, including modified granular materials, shall satisfy the requirements of Council's Construction standard C242 – Flexible pavements.

Bound (cemented) granular materials shall satisfy the requirements of Council's Construction standard C242 – Flexible pavements.

Asphaltic concrete shall satisfy the requirements of Council's Construction standard C245 – Asphaltic concrete.

Cement concrete shall satisfy the requirements of Council's Construction Specifications C247 – Mass concrete sub base, C248 – Plain or reinforced concrete base and C249 – Steel fibre reinforced concrete base.

Sprayed bituminous seals shall satisfy the requirements of Council's Construction standard C244 – Sprayed bituminous surfacing

Concrete and clay segmental pavers shall satisfy the requirements of Council's Construction standard C254 – Segmental paving.

Bituminous micro surfacing (cold overlay) shall satisfy the requirements of Council's Construction standard C255 – Bituminous micro surfacing

The use of sprayed bituminous seal (chip seal) is not acceptable wearing surface on any urban street, regardless of road hierarchy level classification, unless otherwise approved by Council.

SC6.8.4 Pavement thickness design

SC6.8.4.1 Pavement structure – general

Unless otherwise approved, all pavement materials shall be supplied from commercial quarries where the material is to comply with the requirements of the Department of Main Roads Standard Specification MRS11.05 *Unbound Pavements.*

Current test results may be required to be submitted to Council to support the quality of material that is proposed to be used.

Where pavement materials from new quarries or gravel pits are proposed for use, current test results for CBR, Atterberg limits and material grading (as a minimum) shall be provided for Council approved.

Notwithstanding subgrade testing and subsequent pavement thickness design, the thickness of sub base and base layers shall not be less than that set out in Tables SC6.8.1.6.1.A and SC6.8.1.6.1.B below.

Table SC6.8.1.6.1.A – Sub-base and base layer pavement thickness – flexible pavement

Design Traffic (ESA's)	Pavement Layer (mm)	
	Sub-base	Base
$<1 \times 10^5$	125	125
$>1 \times 10^5 < 2 \times 10^5$	125	125
$>2 \times 10^5$	150	150

Table SC6.8.1.6.1.B – Sub-base and base layer pavement thickness – rigid pavement

Design Traffic (ESA's)	Pavement Layer (mm)	
	Sub-base	Base
All values	100	150

The sub base layer shall extend a minimum of 300mm behind the back of any kerbing and/or channel.

The base and surfacing shall extend to the face of any kerbing and/or channel. Where the top surface of the sub base layer is below the level of the underside of the kerbing and/or channel, the base layer shall also extend a minimum of 300mm behind the rear face of the kerbing and/or channel.

For unkerbed roads, the sub base and base layers shall extend to at least to the nominated width of shoulder and shall provide for free drainage of both layers.

The pavement design engineer shall make specific allowance for traffic load concentrations within carpark areas (e.g. entrances/exists). The minimum pavement thickness for carparks is to be 150mm.

The pavement design engineer shall make provision for pavement layer drainage on the assumption that during the service life of the pavement ingress of water will occur.

The use of any computer software (such as Circly) by the design engineer to determine the pavement structure will only be permitted where an alternative to a simple unbound or bound pavement is proposed.

SC6.8.4.2 Unbound granular flexible pavements (bituminous surface)

The engineer shall refer to the relevant Reference document listed below, and adhere to the design approach detailed in the document, for the design of sealed flexible pavements:

(a) $<10^5$ ESA's: AustRoads, *Technical report – Pavement design for light traffic – a supplement to AustRoads pavement design guide AP-T36/06*

(b) $>1x10^5$ ESA's: Aust Roads, *Pavement design – A guide to the structural design of road pavements AP-G17/04.*

The design of the pavements is based on the traffic volumes (measured in ESA's) over the design life of the pavement.

Unbound granular flexible pavements designed in accordance with Aust Roads – *Pavement design for light traffic – a supplement to AustRoads pavement design guide AP-T36/06* shall use the 95% confidence limit curves for urban projects and 90% confidence limits for rural projects.

SC6.8.4.3 Flexible pavements containing bound layers (bituminous surfaced)

Flexible pavements containing one or more bound layers including cement stabilised layers or asphaltic concrete layers other than thin asphalt surfacing, shall be designed in accordance with AustRoads – *Pavement design for light traffic – a supplement to AustRoads pavement design guide AP-T36/06.*

As an alternative for design traffic up to 10^5 ESA's, bound layers may be assumed equivalent to unbound layers of the same thickness, and the pavement designed in accordance with Aust Roads – *Pavement design for light traffic – a supplement to AustRoads pavement design guide AP-T36/06*, using 95% confidence limit curves.

SC6.8.4.4 Rigid pavements

Rigid (concrete) pavements, with design traffic from 10^3 to 10^6 HVAG shall be designed in accordance with AustRoads – *Pavement design for light traffic – a supplement to AustRoads pavement design guide AP-T36/06.*

Rigid (concrete) pavements for design traffic above 10^6 HVAG, the design shall be in accordance with AustRoads – *Pavement design, a guide to the structural design of road pavements, AP-G17/04.*

SC6.8.4.5 Concrete segmental pavements

Concrete segmental pavements with design traffic up to 10^6 ESA's and width estimated commercial vehicles exceeding 3T gross shall be designed in accordance with Concrete masonry association of Australia (1997) *CMAA–T45 – Concrete segmental pavements – design guide for residential access ways and roads*.

For design traffic above 10^6 ESA's and with estimated commercial vehicles exceeding 3T gross the design shall be in accordance with AustRoads Pavement design, with the calculation of design traffic in terms of ESA's.

SC6.8.4.6 Clay segmental pavements

Clay segmental pavements with design traffic up to 10^6 ESA's shall be designed in accordance with Clay brick and paver institute (1989) *Design manual 1 – Clay segmental pavements, a design and construction guide for sites subjected to vehicular and pedestrian traffic*.

For design traffic above 10^6 ESA's and up to 10^7 ESA's the design shall involve consideration of both Design manual 1 and AustRoads Pavement design, with the thicker and more conservative design of each of the two methods adopted.

For design traffic above 10^7 ESA's, the pavement shall be designed in accordance with AustRoads Pavement design.

SC6.8.5 Surfacing design

SC6.8.5.1 Choice of surface types

Except where the pavement is designed for concrete or segmental pave surfacing on urban access streets and places, the wearing surface shall be a bituminous wearing surface as indicated on the standard road hierarchy cross-sections as follows:

(a) all street and roads (urban areas) – primerseal, plus asphalt; or

(b) all streets and roads (rural areas):
  (i) prime plus two coat chip seal; or
  (ii) primerseal, plus asphalt; or
  (iii) primerseal plus final seal.

At all intersections and cul-de-sac turning circles on streets the design engineer shall take into account the vehicle braking and turning movements in the design and specification of the bituminous materials to be adopted.

Council may approve variations to these requirements in special circumstances. However to obtain the variation approval, the engineer must present a written developed case outlining the advantages to Council of the proposed change. Council reserves the right to refuse the request.

SC6.8.5.2 Sprayed bituminous seals (chip seals)

The design of sprayed bituminous (chip) seals, including primer seals, shall be in accordance with AustRoads (2000) *Provisional sprayed seal method*.
7mm primer seals shall be indicated on the Drawings below all asphalt surfacing. Where a 7mm primer seal is inappropriate, a 10mm primer seal shall be used in lieu.

Two-coat chip seals shall be double-double seals comprising a minimum of two coats binder and two costs of aggregate. The preferred seal types are:

(a) 1st coat – 14mm; and

(b) 2nd coat – 10mm.

Single coat chip seals shall only be approved if asphaltic concrete is to be applied as the finished surface at a nominated later date.

SC6.8.5.3 Bituminous micro surfacing (cold overlay)

Any bituminous micro surfacing, also referred to as 'cold overlay', shall be designed to provide a nominal compacted thickness of not less than 8mm.

SC6.8.5.4 Asphaltic concrete

On urban and rural roads within design traffic up to 1 x 10^6 ESA's (except within industrial areas), the asphalt mix design shall be either a 'high-bitumen content' mix or Fine gap graded asphalt (FGGA) mix in accordance with AustRoads (2002) *Asphalt guide* and Council's Construction standard C245 – Asphaltic concrete.

In industrial areas and on street and roads with design traffic greater than 1 x 10^6 ESA's, the asphalt mix design shall be a dense graded mix designed by the engineer in accordance with AustRoads (2002) *Asphalt guide* and Council's Construction standard C245 – Asphaltic concrete.

Notwithstanding the requirements of sub-clause 2.19(1) or (2), the engineer shall provide a minimum asphaltic compacted layer thickness as shown on the appropriate Council Standard Cross-section Drawing and not less than 50mm on intersections involving a collector street, or higher road hierarchy classification streets/roads.

A 7mm primer seal shall be indicated on the Drawings below all asphalt surfacing. Where a 7mm primer seal is considered inappropriate, a 10mm primer seal shall be indicated in lieu.

SC6.8.5.5 Segmental pavers

Concrete segmental pavers shall be 80mm thick, shape Type A, and designed to be paved in a herringbone pattern.

Clay segmental pavers shall be 65mm thick, Class 4, and designed to be paved in a herringbone patter.

The edges of all paving shall be designed to be constrained by either kerbing and/or channel, or by concrete edge strips.

SC6.8.6 Documentation – design criteria and calculations

All drawings and documentation to be submitted to Council shall conform to the requirements of Council's Drawings and documentation guidelines. A copy of these guidelines will be made available on request.

The drawings shall clearly indicate the structure, material types and layer thicknesses of the proposed pavement and wearing surface.

All considerations, assumptions, subgrade test results, reference material and calculations shall be submitted with the pavement and wearing surface course design.

Failure to comply with Council's Drawings and documentation guidelines may result in the drawing and/or documentation being returned to the engineer without consideration by Council.

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SC6.9 Engineering design guideline – quality assurance requirements for design

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SC6.9.1 Scope and general

SC6.9.1.1 Scope

This Guideline sets out the process for quality assurance of designs required for Operational Works approval and undertaken as part of Council's road and drainage Capital Works Program. The requirements are applicable to all design work whether undertaken by Council's design staff, consultant or a sub-consultant.

The Guidelines refers to the detail engineering design processes. Requirements which refer to the development of the Concept Design are generally covered in other planning scheme policies

SC6.9.1.2 Objectives

This Guideline aims to set standards and document requirements for the execution and recording of design processes in order that the infrastructure associated with any development is designed to be fit for service and of a standard reasonably maintainable when it is accepted by Council as a community asset

It is also an objective that these qualities be readily demonstrable by clear records of key design processes and that data relevant to the upkeep of the assets is available to Council officers.

SC6.9.1.3 Reference documents

(a) Council specifications:
- (i) all planning scheme policies;
- (ii) all construction specifications and standard drawings; and
- (iii) all other relevant policies.

(b) Australian standards:
- (i) AS/NZS3905.2 – Guide to Quality System Standards AS/NZS 9001, AS/NZS 9002 and AS/NZS 9003 for construction
- (ii) AS/NZS3913 – Quality Manuals – Guide to Preparation
- (iii) AS/NZS ISO 8402 – Quality Management and Quality Assurance – Vocabulary
- (iv) AS/NZS ISO 9001 – Quality Systems – Model for Quality Assurance in Design
- (v) AS/NZS ISO 9004.1 – Quality Management and QUALITY System Elements – Guidelines

(c) Other:
- (i) *Sustainable Planning Act 2009*
- (ii) *Local Government Act 1993*
- (iii) *Environmental Protection Act 1994*

SC6.9.2 Quality system requirements for design

SC6.9.2.1 Certification

The Designer shall present all engineering drawings to Council for acceptance. Each set of drawings shall be accompanied by a Certification Report which will be signed by an RPEQ. The Design Certification Report will comprise the certificate set out in SC6.9.A – Appendix A – Mackay Regional Council Design Certification Report.

The Design Certification Report is required when the final drawings and resubmission drawings are submitted. Certification is not required with sketch plans or concept plans.

In addition to the Design Certification Report, the engineer shall submit a design "Non-Compliances Report" which shall clearly identify any aspects of the design which does not meet requirements or tolerances set out in Council's Design Guidelines, Construction Specifications, Local Laws or Planning Approval conditions.

Council officers are not responsible for checking drawings in detail and it is the engineer's responsibility, through their own internal quality assurance procedures, to ensure that the drawings and calculation sheets are in accordance with Council's standards, are of acceptable engineering practice and will result in a safe and acceptable design.

Council's checking will be on an audit basis only and the RPEQ who certifies the individual respective drawings and calculation sheets will be responsible for any consequences as a result of the inadequacy or inappropriateness of the design.

SC6.9.2.2 Minimum drafting requirements

Design drawings shall be definitive and clearly set out so as to present the design concepts in such a way that the project can be understood, specified for construction and satisfactorily built.

All design drawings shall comply with Council's Drawings and documentation guidelines.

SC6.9.2.3 Designer's qualifications

A Registered Professional Civil Engineer (RPEQ) shall be required to certify plans for roadworks, drainage works, water supply, sewerage works (excluding pumping stations), bridges, retaining walls, miscellaneous structures, buildings, pumping stations and flood control structures.

SC6.9.2.4 Records

The Designer shall retain appropriate design records in a format such that they can be understood readily by design staff with no prior knowledge of the particular design.

A design file shall be maintained by the Designer containing records of calculations, approvals and decisions, geotechnical data and other design data which could be relevant in reviewing aspects of the design or planning future maintenance responsibilities.

Particular requirements apply to hydrological and hydraulic design data (refer to SC6.12 – Engineering design guideline – stormwater drainage).

Copies of records are to be made available to Council upon request.

SC6.9.2.5 Audit

Council shall have the right to audit of all processes and documents related to the project design. The Designer shall provide reasonable assistance to a nominated Council's Officer in inspecting records of designs submitted to Council for acceptance.

SC6.9.A Appendix A – Mackay Regional Council Design Certification Report

Name of consultant: _____

Address of consultant: _____

_____

Project title: _____

DA No: _____

Consultant's Drawing No: _____

(Please print all details) _____

_____

I,..... (Print Full Name) hereby certify that the nominated drawings represent a design for the above Development Application which has been Audited through our approved QA system.

Further, I certify that the Design has been carried out in accordance with:

(a) Mackay Region Planning Scheme including all relevant codes and planning scheme policies;

(b) Development approval conditions and any specific instructions received (copies attached);

(c) Relevant Australian Standards; and

(d) Relevant local laws;

with the exception of non-conformance departures stated in the Non-Compliances Report which are attached for Council's advice.

I also certify that this Design will not significantly impact on the environmental factors of the site, as interpreted under the *Sustainable Planning Act 2009* and the *Environmental Protection Act 1994* and that the design has been carried out in compliance with the requirements of the *Aboriginal Cultural Heritage Act* 2003.

I certify that, as a competent qualified practicing Engineer (RPEQ), I have undertaken or overseen all elements of the Design and that the design complies with good professional practice.

_____

RPEQ No Qualifications

_____

Signature Date

SC6.10 Engineering design guideline – sewerage system design

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SC6.10.1 Scope and general

SC6.10.1.1 Scope

This Guideline sets out the requirements to be used in the design of sewerage system infrastructure within Mackay Region to meet the required service standards, design life, environmental requirements and adherence to Council's preferred plant and equipment needs.

This Guideline includes the design of a sewerage system as either a stand-alone project or part of a development and its integration into the existing sewerage system.

The design shall be undertaken under Council's Asset Creation process (as outlined in this Guideline) and shall comply in all respects with relevant Legislation, Codes of Practice, Australian Standards and with Council's local laws, policies and Guidelines.

The Designer shall ensure that all assets to be procured in the Asset Creation process shall comply in all respects with the requirements of and/or intent of this Guideline and referenced documentation.

This Guideline contains procedures for the design of the following elements of a sewerage system:

(a) gravity sewers, including trunk mains and reticulation sewers,;

(b) junctions and property connections;

(c) maintenance holes and other structures;

(d) rising mains; and

(e) pump stations, including odour control facilities, emergency storage, emergency backup power, monitored emergency relief structure and other ancillary facilities to effect a fully operational pump station.

This Guideline does not cover the design of alternative sewerage systems such as low pressure sewerage, vacuum sewerage and common effluent pumping. These systems are subject to separate Council review and approval.

SC6.10.1.2 Structure

This Guideline, is based on the national Sewerage Code of Australia (WSA-02) and the Sewage Pumping Station Code of Australia (WSA-04) and is complimented by the strategic product specifications and technical requirements contained within WS-SPEC.

In doing so, this Guideline is structured as follows;

(a) to nominate the Water Services Association of Australia (WSAA) Codes and associated documents as the general requirements to be met for the Asset Creation process within the Mackay Regional Council Area of jurisdiction;

(b) to specify parameters, requirements and functions contained within the Codes that Council is to nominate or to amend;

(c) to specify additional technical and/or administrative matters (that are not otherwise specified within Australian Codes or Standards) pertaining to Operational Works applications made in accordance with the SPA;

(d) to specify any technical requirements not covered by the Codes;

(e) to identify materials, solutions and methods permitted by the Codes that are not acceptable to Council; and

(f) to specify preferred options where the Codes provide for several methods to deal with a particular issue.

WSA-02 & WSA-04 are available from the Water Supply Association of Australia (WSAA), email: info@wsaa.asn.au,

WS-SPEC is available from the Saiglobal webshop at www.saiglobal.com/shop.

SC6.10.1.3 Consultation

The Designer is required to prepare one concept Sewerage Master Plan of the proposed development and indicate how the proposed gravity pipeline collection system for the proposed development will transport fresh sewage, or effluent, and how it relates to the current/proposed road layout, existing utility services, streetscape and sewerage network system. These services and infrastructure are to be plotted onto the plan and cross-sectional views.

The Designer is encouraged to consult with the relevant Authorities prior to, and during, the preparation of a design concept to ascertain service plans and specific requirements of the relevant Authority as they relate to the proposed gravity pipeline (and possible sewerage pump station and rising main) and installation.

The Designer is strongly encouraged to discuss the Master Plan during initial consultation with Council (Mackay Water) officers to ensure planning and the Designer considers know constraints prior to the lodgement of any Operational Works application. The plan may also be required to be prepared and consultation held with Council officers prior to lodgement of a MCU or RoL Development Application. As a minimum, the following aspects of the proposed development should be included on the plan;

(a) legend;

(b) all allotments;

(c) boundary of the subdivision;

(d) north point;

(e) location and size of existing sewers;

(f) invert levels of existing lines;

(g) location of other services which cross sewer lines;

(h) location of manholes with manhole numbers (including dimensions where not shown on alignment);

(i) identification of allotments, which are currently sewered;

(j) finished surface contours sufficient to enable verification of house connection design;

(k) grading information for new sewer lines including distance between manholes, pipe grades, pipe diameter, pipe material and class of each pipe length;

(l) manhole inlet types;

(m) locations of sewer house connections;

(n) details of pumping stations including location, inlet/outlet levels, overflow, cut-off levels, electrical switchboard layout and water supply, size of pumping plant;

(o) diameter, material class and route of pressure main(s); including air valve and scour valve locations; and

(p) clear identification of any alterations / connections to existing sewers.

SC6.10.1.4 Environmental risk assessment

The Designer shall ensure that the design of infrastructure shall be planned and executed to minimise risk to the environment. Where a choice of alternative solutions is possible, an objective environmental risk assessment shall be undertaken to give due weight to reducing the risks to the environment resulting from the construction and operation of the infrastructure.

SC6.10.1.5 Connection to Council's infrastructure

The connection of new sewerage infrastructure to Council's existing system forms part of the infrastructure realisation to be carried out at the Developer's expense. Generally, the Contractor shall carry out the connection unless:

(a) prior approval is given by Council, in exceptional circumstances, decides to carry out the connection work. Such circumstances may include connection to trunk mains, complex systems and connection in areas with operational difficulties;

(b) the Developer requests that Council makes the connection on the understanding that the connection work will be carried out at Council's convenience subject to its other work commitments; and

(c) Council's representative believes that the Contractor is not competent to make the connection or that the Contractor is not adhering to safe working practices.

When Council makes the connection, an estimate of cost will be provided to the Developer and the connection will not be made until the payment is received.

Where the Contractor is to make a connection, the Consulting Engineer is to co-ordinate the work and the processes for inspection and payment. Council shall be given 5 working days notice of the work to enable Council to provide staff to operate valves and isolate pumping stations as necessary and to monitor the Contractor's work. An estimated cost of the monitoring shall be agreed prior to notice being given. The estimated cost and a signed undertaking to pay the actual costs of the work when completed shall accompany the notice.

The Contractors are not permitted to operate Council's infrastructure unless written approval has been obtained from Council. The placement and removal of plugs within live sewers must be done under direct monitoring of Council's representative.

Council reserves the right, on advice of its representative, to stop, or take over a connection being undertaken by a Contractor, if in the representative's opinion the Contractor is incapable of completing the connection work in a reasonable time without causing damage to Council's infrastructure or undue inconvenience to the public.

Property connection requirements shall be met by providing a connection point to each property in accordance with Clause 5 of WSA-02 as amended herein.

SC6.10.1.6 Definitions

Table SC6.10.1.6.A – Definitions used in SC6.10 – Engineering design guidelines – sewerage system design

Term	Definition
Asset creation	Means any or all aspects of the planning, design, construction, supervision of construction, testing and commissioning and eventual handover of sewerage infrastructure.
Contractor	Means a private contractor approved by Council to construct sewerage infrastructure on behalf of a Developer.
Council	Means Mackay Regional Council and the Mackay Water business unit.
Designer	Means an experienced Professional Engineer who is certified as a Registered Professional Engineer Queensland (RPEQ) and is competent to perform the engineering works required for the Asset Creation process.
Developer	Means the person who has submitted a planning application for the provision of infrastructure under the Asset Creation process or for the utilisation of existing sewerage infrastructure.
Surveyor	Means a licensed surveyor, endorsed in the Register of Surveying Associates, Surveying Graduates, Surveyors (Body Corporate) and Surveyors (Individual) who is competent to perform the surveying work required for the Realisation of Infrastructure on behalf of the Developer.
Sewer reticulation	Means pipework less than DN375 and for which connections are permissible.
Switchgear and control gear assembly	Means main switchboard, main distribution board, distribution board, control board, electrical kiosk, electrical panel, control panel or similar enclosure.
Trunk mains	Means pipework equal to or greater than DN 375, and for which no connections are permissible.
The code	Means the Sewerage Code of Australia (WSA-02) and the Pumping Station Code of Australia (WSA-04), both published by the Water Supply Association of Australia (WSAA).
WS-SPEC	Means the national standard water industry specifications.

SC6.10.1.7 Abbreviations

Table SC6.10.1.7.A – Abbreviations used in SC6.10 – Engineering design guidelines – sewerage system design

Abbreviation	Full term
ABS	Acrylonitrile butadiene styrene
AHD	Australian height datum
AOP	Allowable operating pressure
AS/NZS	Australian / New Zealand standard
DA	Development approval
DICL	Ductile iron cement lined
DIEL	Ductile iron epoxy lined
DN	Nominal diameter
EN	European standard
EMP	Environmental management plan
ERS	Emergency relief structure
FBPE	Fusion bonded polyethylene (“sintakote”)
GRP	Glass reinforced plastic
IDAS	Integrated development assessment system
ITP	Inspection and test plan
KL	Kilolitre
KPA	Kilopascal
KW	Kilowatt
L/S	Litres per second
MA	Milliamps
MAOP	Maximum allowable operating pressure
MEN	Multiple earthed neutral
MGA	Map grid of Australia
MH	Maintenance hole
MPA	Megapascal
NPSHA	Net positive suction head available
NPSHR	Net positive suction head required
PID	Process and instrumentation diagram

Abbreviation	Full term
PLC	Programmable logic controller
PN	Nominal pressure class
PVC	Polyvinylchloride
PVC–M	Polyvinylchloride modified
PVC–O	Polyvinylchloride orientated
PVC–U	Polyvinylchloride unplasticised
RPEQ	Registered Professional Engineer Queensland
RPZD	Reduced pressure zone device
RRJ	Rubber ring joint
SCA	Switchgear and control gear assembly
SCADA	Supervisory control and data acquisition
SCL	Steel cement lined
SEL	Steel epoxy lined
SPA	*Sustainable Planning Act 2009*
SS	Stainless steel
WSAA	Water services association of Australia
WS-SPEC	Water services specification
WWSS	Wastewater swirl separator

SC6.10.1.8 Order of precedence

Where discrepancy or contradiction in documentation may occur, the order of precedence for documents specifying the works to be undertaken (from highest to lowest order of precedence) shall be as follows:

(a) this planning scheme policy; then

(b) Mackay Regional Council Standard Policies Specifications and Drawings; then

(c) Sewerage Code of Australia (WSA-02) and the Sewage Pumping Station Code of Australia (WSA-04) (equal).

SC6.10.1.9 Reference documents

Documents referenced in this Guideline are listed below. The Designer shall possess, or have access to; the latest edition of all documents required to enable compliance with this Guideline. The Designer shall include all relevant specifications and requirements of these documents into the design of the works.

(a) Council construction specifications:
  (i) Construction standard C402 – Sewerage

(b) Council policy documents:
  (i) Council policy MW16 – Clearance to water and sewerage assets
  (ii) Council policy MW02 – Building over or adjacent to sewers
  (iii) Council policy MW – Headworks

(c) WSAA codes of practice:
  (i) WSA-02 – Sewerage code of Australia
  (ii) WSA-04 – Sewerage pumping station code of Australia

(d) WS-SPEC water services specification

(e) Australian Standards:
  (i) References in this planning scheme policy or the drawings to Australian Standards are noted by their prefix AS or AS/NZS. The designer shall use the latest edition of all relevant Australian Standards, including all current amendments, supplements and replacements applicable thereto. Australian Standards are listed within WSA-02 and WSA-04.

(f) Council standard specifications:
  (i) Council Standard Specification for Electrical Assets

(g) Other documents:
  (i) Department of Natural Resources (1997) *Water resources guidelines for the planning and design of sewerage systems*
  (ii) Institute of Public Works Engineering Australia (IPWEA) *Streets opening conference - Information bulletin on codes and practices (sections 3 and 4, detailing locations and depths of other services and preferred location for sewerage pipes)*

(h) WSAA WSA-02 drawings (as amended by Council):

(i)	SEW 1100	Design layouts	A3-04196B
(ii)	SEW 1101	Design layouts	A3-04197B
(iii)	SEW 1102	Design layouts	A3-04198B
(iv)	SEW 1103	Pipelaying typical arrangements	A3-04199B
(v)	SEW 1104	Pipe connection details	A3-04200B
(vi)	SEW 1105	Pipe connection details	A3-04201B
(vii)	SEW 1106	Pipe connection details	A3-04202B
(viii)	SEW 1107	Pipe connection details	A3-04203B
(ix)	SEW 1108	Pipe connection details	A3-04204B
(x)	SEW 1109	Pipe connection details	A3-04205B
(xi)	SEW 1200	Soil classification guidelines	A3-04206B
(xii)	SEW 1201	Embedment and trenchfill	A3-04207B
(xiii)	SEW 1202	Standard embedment	A3-04208B
(xiv)	SEW 1203	Special embedments	A3-04209B
(xv)	SEW 1204	Special embedments	A3-04210B
(xvi)	SEW 1205	Special embedments	A3-04211B
(xvii)	SEW 1206	Trench drainage	A3-04212B
(xviii)	SEW 1207	Trench drainage	A3-04213B
(xix)	SEW 1208	Verticals	A3-04214B
(xx)	SEW 1300	Maintenance holes	A3-04215B
(xxi)	SEW 1301	Maintenance holes	A3-04216B
(xxii)	SEW 1302	Maintenance holes	A3-04217B
(xxiii)	SEW 1303	Maintenance holes	A3-04218B
(xxiv)	SEW 1304	Maintenance holes	A3-04219B
(xxv)	SEW 1305	Maintenance holes	A3-04220B
(xxvi)	SEW 1306	Maintenance holes	A3-04221B
(xxvii)	SEW 1307	Maintenance holes	A3-04222B
(xxviii)	SEW 1308	Maintenance holes	A30-4223B
(xxix)	SEW 1309	Maintenance holes	A3-04224B

(xxx)	SEW 1310	Maintenance holes	A3-04225B
(xxxi)	SEW 1311	Maintenance holes	A3-04226B
(xxxii)	SEW 1312	Maintenance holes	A3-04227B
(xxxiii)	SEW 1313	Maintenance holes	A3-04228B
(xxxiv)	SEW 1314	Maintenance shafts	A3-04229B
(xxxv)	SEW 1315	Maintenance shafts	A3-04230B
(xxxvi)	SEW 1316	Maintenance shafts	A3-04231B
(xxxvii)	SEW 1317	Maintenance shafts	A3-04232B
(xxxviii)	SEW 1400	Buried crossings	A3-04233B
(xxxix)	SEW 1401	Buried crossings	A3-04234B
(xl)	SEW 1402	Buried crossings	A3-04235B
(xli)	SEW 1403	Buried crossings	A3-04236B
(xlii)	SEW 1404	Aerial crossings	A3-04237B
(xliii)	SEW 1405	Aerial crossings	A3-04238B
(xliv)	SEW 1406	Aerial crossings	A3-04239B
(xlv)	SEW 1407	Ventilation systems	A3-04240B
(xlvi)	SEW 1408	Ventilation systems	A3-04241B
(xlvii)	SEW 1409	Water seal arrangements	A3-04242B
(xlviii)	SEW 1410	Water seal arrangements	A3-04243B
(xlix)	SEW 1411	Water seal arrangements	A3-04244B
(l)	SEW 1412	Emergency relief structures	A3-04245B
(li)	SEW 1500	Repair systems	A3-04246B
(lii)	SEW 1501	Repair systems	A3-04247B
(liii)	SEW 1502	Repair systems	A3-04248
(liv)	SPS 1100	Concept plan	A3-04134B
(lv)	SPS 1101	Pumping station concept design	A3-04135B
(lvi)	SPS 1102	Pumping station concept design	A3-04136B
(lvii)	SPS 1103	Pumping station concept design	A3-04137B
(lviii)	SPS 1104	Pressure main concept design	A3-04138B
(lix)	SPS 1200	Typical site plan Sydney Water	A3-04139B
(lx)	SPS 1201	Typical site plan SA Water	A3-04140B
(lxi)	SPS 1202	Typical site plan SA Water	A3-04141B
(lxii)	SPS 1203	Typical site plan Brisbane Water	A3-04142B
(lxiii)	SPS 1204	Typical site plan Water Corporation	A3-04143B
(lxiv)	SPS 1205	Access roadway	A3-04144B
(lxv)	SPS 1300	General arrangement	A3-04145B
(lxvi)	SPS 1301	Detailed arrangement	A3-04146B
(lxvii)	SPS 1302	Civil plan	A3-04147B
(lxviii)	SPS 1303	Wet well construction	A3-04148B
(lxix)	SPS 1304	Wet well construction	A3-04149B
(lxx)	SPS 1305	Electrical and telemetry	A3-04150B
(lxxi)	SPS 1306	Valve chamber adjacent to wet well	A3-04151B
(lxxii)	SPS 1307	Valve chamber adjacent to wet well	A3-04152B
(lxxiii)	SPS 1308	Water supply	A3-04153B
(lxxiv)	SPS 1309	Mobile pump connection arrangement	A3-04154B
(lxxv)	SPS 1310	Mobile pump connection arrangement	A3-04155B
(lxxvi)	SPS 1400	Grit collection MH	A3-04156B
(lxxvii)	SPS 1401	Grit collection MH	A3-04157B
(lxxviii)	SPS 1402	Emergency storage	A3-04158B
(lxxix)	SPS 1403	Emergency storage details	A3-04159B
(lxxx)	SPS 1404	Emergency relief system	A3-04160B
(lxxxi)	SPS 1405	Discharge MH	A3-04161B
(lxxxii)	SPS 1500	Pump to pressure main connection	A3-04162B
(lxxxiii)	SPS 1501	Pump to pressure main connection	A3-04163B
(lxxxiv)	SPS 1502	Pump to pressure main connection	A3-04164B
(lxxxv)	SPS 1503	Pump to pressure main connection	A3-04165B
(lxxxvi)	SPS 1504	Pump to pressure main connection	A3-04166B

(lxxxvii)	SPS 1505	Hydraulic level sensor	A3-04167B
(lxxxviii)	SPS 1506	External hinged covers	A3-04168B
(lxxxix)	SPS 1507	External hinged covers	A3-04169B
(xc)	SPS 1508	Miscellaneous details	A3-04170B
(xci)	SPS 1600	Design	A3-04171B
(xcii)	SPS 1601	Pipe installation support and trench fill	A3-04172B
(xciii)	SPS 1602	Scour arrangement	A3-04173B
(xciv)	SPS 1603	Scour arrangement	A3-04174B
(xcv)	SPS 1604	Scour Arrangement	A3-04175B
(xcvi)	SPS 1605	Gas release arrangement	A3-04176B
(xcvii)	SPS 1606	Gas release arrangement	A3-04177B

(i) Council standard drawings:

(i)	SA3-850	Standard Access Chambers
(ii)	SA3-851	Sample As Constructed Plan
(iii)	SA3-852	Pressure Main Discharge Details
(iv)	SA3-853	Pump Station Overflow
(v)	SA3-854	Pipeline Construction Types
(vi)	SA3-855	Sewer House Branches
(vii)	SA3-856	Sewerage Manholes
(viii)	SA3-857	Sewerage Pump Station
(ix)	A3-04320	Flowmeter Pit
(x)	A3-04321	Location of Assets
(xi)	A3-04322	Remote Monitoring of ERS
(xii)	A3-04323	Wastewater Swirl Separator

SC6.10.1.10 Code variations

The designer shall ensure that the design of water supply system elements shall comply with the Code unless specified otherwise in this planning scheme policy. Variations made by Council to the Code are included below.

The design of gravity sewers shall comply with the Code (WSA-02) unless specified otherwise in this planning scheme policy.

The design of pump station and rising main components shall comply with the Code (WSA-04) unless specified otherwise in this planning scheme policy.

Variations to the Codes made by Council are included below.

SC6.10.2 Variations to Sewerage code of Australia (SCA) WSA-02

SC6.10.2.1 Variation to "Glossary" in SCA WSA-02

The average dry weather flow (ADWF) shall be taken as 230 L/EP/day.

SC6.10.2.2 Variations to "1.3.3 – Design responsibility" in SCA WSA-02

Except where specified otherwise, the division of responsibilities between the Council and the Designer shall be in accordance with Council's Construction standard C402 – Sewerage.

The Designer shall confirm the design criteria with the Council and shall design a gravity pipeline distribution system with pump stations and rising mains, where necessary, to comply with the requirements of this Guideline, to transport fresh sewage, or effluent, for treatment.

The Designer shall not provide for common effluent or vacuum discharges to gravity sewers or conventional wastewater treatment plants without the concurrence of Council.

SC6.10.2.3 Variations to "2 – System planning" in SCA WSA-02

The Designer is unlikely to have to undertake any System Planning as part of any proposed development. The responsibility for System Planning will normally rest will Council.

However, when required, the Designer may need to submit to Council the peak load demand, and any other required data, to allow Council to assess the impact of the proposed development on Council's existing sewer network, downstream from the site. The network impact assessment may need to be undertaken all the way to the Sewerage Treatment Plant involving a series of pipes and pumps and not merely consider the immediate downstream pipe.

The analysis of the impact of the proposed development on Council's network will generally be required when:

(a) The proposed development is outside Council's existing sewer network, or

(b) The likely peak load demand created by the proposed development is greater than has been assumed for the site – where the proposal is inconsistent with the land use zoning and generic loadings assumed for the site by Council.

SC6.10.2.4 Variations to "2.2 – Planning principles" in SCA WSA-02

The area to be served by an extension to the sewer network shall be determined in accordance with Council's requirements. Council may require that the analysis make provision for any future additional upstream sewerage loads. The analysis Brief, to be prepared by the Designer, will indicate the level and size of any existing pipes, as well as the anticipated flows to be allowed for in the analysis and provide adequate allowance for such loadings in the analysis on Council's network.

The depth of sewer shall be sufficient to allow a minimum of 90 per cent of each lot to be serviced.

All lots shall be served by gravity sewers wherever possible.

SC6.10.2.5 Variation to "2.3.1(c) – Loadings" in SCA WSA-02

The Average Dry Weather Flow (ADWF) is 230 L/EP/day, plus an infiltration allowance of 40 kl/km/day and a Peak factor of 5.

SC6.10.2.6 Variations to "2.3.5 – Geotechnical investigations" in SCA WSA-02

The designer shall undertake geotechnical investigations to determine any considerations which will impact upon the design and / or construction of the works.

In particular, the geotechnical investigations will include, where appropriate, any necessary consideration of soil conditions relating to:

(a) the presence, impact and management of Acid Sulphate Soils;

(b) the presence, impact and management of soil or other material at any contaminated sites;

(c) the impact of soil and groundwater aggressivity on the durability of underground concrete structures and pipework;

(d) the impact of saline / marine environments or tidal flats on the design of structures and pipelines; and

(e) the need for protective coatings of concrete structures or cathodic protection of pipelines.

All geotechnical investigations shall be undertaken by a suitably qualified geotechnical engineer (RPEQ, Geotechnical) and shall be documented in a geotechnical report available to the designer, Council and the Contractor.

SC6.10.2.7 Variation to "3.2.1 – Design flow estimation" in SCA WSA-02

The Peak Wet Weather Flow (PWWF) shall be 1150 l/EP/day, with an assumed density (detached dwellings) of 2.7 EP/ET.

SC6.10.2.8 Variations to "4.2.3 – Sewer layout" in SCA WSA-02

Common effluent, vacuum and pressure sewer systems shall only be considered after consultation with Council.

Where it is necessary for sewers to be located on private property outside of the proposed development, the *Local Government Act 2009* requires the Designer to obtain written approval from the affected property owner or tenants to enter and/or undertake any construction work on such private property.

The Developer shall obtain easements over any rising mains to be constructed within private property at the Developers cost prior to commencement of works.

SC6.10.2.9 Variations to "4.2.5 – Easements" in SCA WSA-02

Council requires all sewerage pumping stations to be located on freehold land owned by Council.

Land dedicated to Council as park, open space or similar cannot be used to locate a sewerage pump station on.

The land on which the pumping station is to be located shall have a minimum of 5 metre wide access around each side of structure.

No easements are required over a gravity sewer when the pipe is proposed to be laid across the front of the lot and within 3 metres of the street frontage.

Council requires all sewer easements to be registered in its favour when pipelines and appurtenances relating to pipelines are constructed in freehold land:

(a) where the sewer is laid across the front of a lot and at a distance greater than 3 metres from the street frontage; and

(b) where the sewer is laid along the side or rear of a lot.

Easements for pipelines shall be a minimum 3 metres wide where the pipe is laid up to 2.5 metres deep (below the finished lot level) and is to be located centrally over the pipeline.

Where the pipe is to be laid at a depth greater than 2.5 metres and up to 4 metres deep, the easement width shall be 4 metres wide.

Separate Council approval is to be given for sewer pipes to be laid greater than 4 metres deep and advice on the easement width will be provided at the time of approval for the deeper sewer.

Where a pipeline is laid on standard alignment of 1.5 metres from a property boundary, the boundary of the lot and one boundary of the easement may be coincident.

Where the Designer proposes to install a sewer greater than 2.5 metres deep along the side of a lot smaller than 700m^2, then the designer may need to consider the impact of Council's Policy – *MW02 Building Over or Adjacent to Sewers* on the future lot owner and their ability to construct a house.

Separate Council approval is required to locate a sewer rising main in freehold land not owned by Council. Where approval is given, then a minimum 5 metre wide easement in Council's favour is required over the rising main.

SC6.10.2.10 Variations to "4.3.2 – Road reserves and open space" in SCA WSA-02

Where sewers are proposed to be located within existing road reserves, the designer shall check that the sewers do not conflict with other utility services and locate the sewers in accordance with established protocols.

Where control of the trench width is practical or effective, the design may be based on wide trench conditions. The designer shall call up the need, on the design drawings, for the contractor to supply special construction control with a method statement when there is economic or practical justification to design to narrow trench condition.

SC6.10.2.11 Variation to "4.3.6 – Dead ends" in SCA WSA-02

The designer is to ensure there are no dead ended mains. All sewers are to terminate with a maintenance hole.

SC6.10.2.12 Variation to "4.3.7 – Horizontal curves in sewers" in SCA WSA-02

Horizontal curves in sewers are not permitted by Council.

SC6.10.2.13 Variation to "4.4.4 – Clearance from structures" in SCA WSA-02

Refer to Council Policy - MW02 Building Over or Adjacent to Sewers.

SC6.10.2.14 Variations to "4.4.5.1 – Underground obstructions and services" in SCA WSA-02

The Designer, and/or its contractors, shall ensure that all reasonable care is taken during the design and construction of the works to ensure that existing utility services are protected against damage or interference whatsoever.

If existing utility services are damaged by the developer and/or its contractors during the course of the works, through any cause whatsoever, the developer and/or its contractors shall be fully responsible for all costs associated with rectification of the utility services, to the satisfaction of Council or the utility service owner as appropriate, regardless of the accuracy of any prior location advice given by Council, the utility service owner or its agent.

Where it is necessary to relocate or alter existing utility services, the designer shall make all necessary arrangements with the appropriate authorities concerned at no cost to Council for such relocations or alterations.

The designer is to ensure that all known utility services are detailed on the engineering drawings by Dial Before You Dig (DBYD) investigations and accurately located by non-destructive field location, and it is the Contractors responsibility to have such services confirmed in the field prior to any excavation commencing in their vicinity.

SC6.10.2.15 Variation to "4.4.5.2 – Clearance requirements" in SCA WSA-02

Refer to Council Policy - MW16 Clearance to Water and Sewerage Assets.

SC6.10.2.16 Variation to "4.5.3 – Minimum air space" in SCA WSA-02

At the design flow, the calculated flow depth in gravity pipes shall be not more than 70% of the pipe diameter to allow for ventilation and free air flow above the sewage.

SC6.10.2.17 Variation to "4.5.4 – Minimum pipe sizes" in SCA WSA-02

Minimum allowable reticulation sewer size is 150mm diameter.

SC6.10.2.18 Variations to "4.6.3 – Minimum cover over sewers" in SCA WSA-02

To Council Drawing Location of Assets.

Lesser cover may be provided where special protection of the pipelines has been shown on the drawings or as approved by Council.

SC6.10.2.19 Variations to "4.6.5.4 – Depth of connection point" in SCA WSA-02

Maximum depth of point of connection for vertical riser (jump up) is 1000mm from existing surface level.

The designer shall ensure that house connections to the pipeline shall be not more than 1000mm in depth below the finished surface.

SC6.10.2.20 Variation to "Table 4.10" in SCA WSA-02

Council requires prior written approval for use of internal drops in maintenance holes.

SC6.10.2.21 Variation to "4.6.7 – Vertical curves" in SCA WSA-02

Vertical curves are not permitted by Council.

SC6.10.2.22 Variation to "4.6.8 – Compound curves" in SCA WSA-02

Compound curves are not permitted by Council.

SC6.10.2.23 Variations to "4.7 – Corrosion" in SCA WSA-02

The designer shall show on the drawings the extent of external corrosion protection required to be provided by the contractor.

Ductile iron pipework shall be provided with protective polyethylene sleeving wrapped and taped in accordance with the pipeline manufacturer's instructions.

Steel pipe work shall be protected by fusion bonded polyethylene (FBPE, known commercially as Sintakote) or epoxy coating. At welded joints, the pipeline shall be protected from corrosion by the application of either polyethylene heat shrink sleeves or by a suitable tape wrap system in accordance with the manufacturer's installation requirements.

The designer shall assess the need for cathodic protection (sacrificial anode or impressed current) for metallic piping systems based on the aggressivity of the soil and groundwater characteristics along the alignment of a proposed pipeline and with particular reference to construction through old landfill sites, low lying anaerobic wetlands and coastal/tidal areas. The assessment of the aggressivity of the soil will be part of the geotechnical investigations for the work and the designer will assess the geotechnical advice to determine whether cathodic protection is required.

SC6.10.2.24 Variations to "4.8.2 – Joints" in SCA WSA-02

Gravity sewers and rising mains shall generally be spigot and socket joints with elastomeric rubber rings complying with AS 1646, or butt or electro fusion welded in the case of polyethylene pipe.

The Contractor shall make the joint such that the witness mark, at no point, be more than one (1) mm from the end of the socket.

SC6.10.2.25 Variations to "4.8.4 – Flanged joints" in SCA WSA-02

Flanged joints connecting pipes, fittings, valves and pumps shall comply with AS 2129 (Flanges shall be Table E) or AS 4087, Class PN16, as appropriate. Mating pipe flanges shall be drilled to suit the specified drilling of the adjoining valve or equipment.

Raised face flanges shall be mated with raised face flanges. Flat faced flanges shall be mated with flat face flanges.

Flanges on all steel, ductile iron, PVC, and GRP pipes shall be fully fixed flanges. Flanges on ABS and PE pipes may be stub flanges with loose metal backing rings or full face up to 100 mm pipe diameter. On ABS and PE pipes of 100 mm diameter and larger, stub flanges with metal backing rings shall be used. Backing rings shall be manufactured from 316 or 316L stainless steel.

All bolts shall be stainless steel Grade 316 and all nuts and washers shall be stainless steel Grade 304.

Uniflanges shall only be used with prior written approval of Council.

SC6.10.2.26 Variations to "5 – Property connections" in SCA WSA-02

Council requires a property connection marker to be installed on all property connections to sewer except where the property connection is provided from a maintenance hole. The marker shall consist of a 50mm x 40mm x 200mm yellow painted peg located above the property connection end cap with the top of the marker peg 50mm above the finished surface level. An approved brown plastic tape 50mm wide shall be attached to the end cap and brought vertically to the surface and stapled to the marker peg.

SC6.10.2.27 Variations to "5.6 – Location of property connections" in SCA WSA-02

A property connection shall be provided to each property at the lowest point of the sewer serving the property. It shall be capable of draining the total area of the property that can be developed, with house drains being laid at required grades and positions, in accordance with AS3500. Connection branches shall be generally located 1.5m upstream of the property boundary.

Property connections shall not be constructed across streets or reserves to enter sewer lines.

Where practicable, property connection branches adjacent to maintenance holes should be constructed as inlet entries to the maintenance hole with internal drops, if necessary, and shall have inspection openings as per the standard drawings.

Council parks and reserves shall be provided with a connection to the sewer utilizing a maintenance hole.

SC6.10.2.28 Variation to "5.7 – Y property connections" in SCA WSA-02

Common property connections are not permitted.

SC6.10.2.29 Variation to "5.8 – Length of property connection sewers" in SCA WSA-02

Maximum allowable length of house connection line is 6 metres.

SC6.10.2.30 Variation to "6.2 – Location of maintenance structures" in SCA WSA-02

All upstream ends of sewers shall terminate in a maintenance hole.

SC6.10.2.31 Variations to "6.3 – Spacing of maintenance structures" in SCA WSA-02

Maintenance holes shall be placed on gravity sewers.

Maintenance holes shall be spaced at a maximum distance of 90 metres apart.

SC6.10.2.32 Variations to "6.4 – Special considerations for location of maintenance structures" in SCA WSA-02

Maintenance structures shall be constructed at:

(a) 1.5 metres upstream of allotment side boundaries and 1.5 metres from front and rear boundaries;

(b) wholly on a footpath or wholly in the allotment, not across the property boundary;

(c) consideration shall be given to future sewerage reticulation requirements and maintenance structures shall be located to facilitate the direct connection of future extensions directly to existing maintenance structures; and

(d) any additional locations required by Council.

Where maintenance structures are proposed to be located in footpaths, prior approval is required from Council.

Connections to existing maintenance holes or sewers of the existing sewerage system are to be based on the Council's sewerage master plan.

The provision of maintenance shafts and terminal maintenance shafts shall not affect the layout of maintenance holes or terminal maintenance holes.

SC6.10.2.33 Variations to "6.5 – Special considerations for connection of new sewers to existing sewers" in SCA WSA-02

Connection options (a) and (c) are the only options permitted.

Option(c) is permitted only at the end of a main which cannot be extended.

SC6.10.2.34 Variations to "6.6.2 – Types of MH construction" in SCA WSA-02

No tapered sections are permitted for maintenance holes. External bitumastic seal tapes of 150mm wide over a coat of prime seal recommended by manufacturers shall be applied for all joints in pre-cast manholes.

SC6.10.2.35 Variations to "6.6.3 – Design of MH's" in SCA WSA-02

Precast MH's can be used for any area unless otherwise specified by Council. All concrete in MH's shall be as per Council Standard Concrete Specifications for Water and Wastewater Structures.

SC6.10.2.36 Variations to "6.6.5 – Diameter of MH's" in SCA WSA-02

The minimum internal diameter of MH's shall be 1050mm. A minimum of 1500mm internal diameter is required for sewer outlets greater than 300mm in diameter or maintenance holes greater than 3 metres deep.

SC6.10.2.37 Variation to "6.6.8 – Ladders, step irons and landings" in SCA WSA-02

Step irons and landings are not permitted.

SC6.10.2.38 Variations to "6.6.9 – MH covers" in SCA WSA-02

Metal access covers to maintenance holes shall be as per Council Standard drawings. Where the MH is located in a driveway or road then the cover MH cover shall be a "heavy duty" type. All MH covers shall be watertight and gastight.

SC6.10.2.39 Variations to "6.7 – Maintenance shifts" in SCA WSA-02

Maintenance shafts and terminal maintenance shafts shall be provided only as permitted by Council. In general, MS's & TMS's shall not be permitted for changes in horizontal or vertical direction of sewers without special approval from Council.

A Designer considering using maintenance shafts and terminal maintenance shafts (MS & TMS) must obtain Council's approval in writing.

Where used, a terminal maintenance shaft shall be no further than 70m from the nearest maintenance hole.

SC6.10.2.40 Variation to "7.2 – Water seals and boundary traps" in SCA WSA-02

Water seals and boundary traps are not permitted.

SC6.10.2.41 Variation to "7.5.2 – Design parameters for vents" in SCA WSA-02

The Designer shall provide a vent to the atmosphere for venting of maintenance holes which accept pumped discharges from rising mains.

SC6.10.2.42 Variation to "7.8 – Invented syphons" in SCA WSA-02

Inverted Syphons are not permitted.

SC6.10.2.43 Variations to "7.11.1 – General" in SCA WSA-02

Wet weather storage is not required as it is impractical in tropical conditions, however, it may be considered upon application to Council in writing.

Wet weather storage is not permitted by Council for the purpose of reducing downstream infrastructure size.

SC6.10.2.44 Variations to "8.2 – Products and materials" in SCA WSA-02

Concrete works

All concrete work shall be compliant with WS SPEC Sections SP43, 44 & 45 and TR10. Classes of concrete used for the construction of the works shall be as follows:

Table 6.10.2.A – Concrete works standards

Application	Grade (F'c at 28 days)	Min cement content ($kg.m^3$)	Max w/c ratio
Blinding concrete, mass concrete	N15	-	-
Surface footpaths and driveways	N25	-	-
Unreinforced thrust blocks, anchor blocks, bulkheads, and concrete encasement in all environments	N25	-	-
Reinforced thrust blocks, anchor blocks, bulkheads, and concrete encasement in all environments	N32	-	-
Maintenance holes and benching – all environments	S40	380	0.50
Valve chambers and flowmeter pits in non–aggressive environments	N32	-	-
Valve chambers and flowmeter pits in aggressive soil and groundwater environments	S40	380	0.50
Underground pumping station wells - in all environments	S40	380	0.45

Aggressive environments are defined as exposure to:

(a) seawater, anaerobic waters, swampwater tidal flats, sewage, effluent and the like, including exposure to intermittent saturation; and

(b) relatively high levels of chlorides, sulphides and /or sulphates, relatively high or low pH, levels, as defined within Appendix B of SW-SPEC Section SP-43, exposure classification 3 (moderate) and above.

Cementitious materials for concrete shall comply with Appendix B of WS-SPEC SP-43.

For other than water retaining structures, cover to reinforcement shall comply with the relevant Exposure Classifications within AS3600 but shall not be less than B1 normally, or C for aggressive conditions.

For water retaining structures, cover to reinforcement shall comply with the requirements of AS3735.

Concrete surfaces exposed to aggressive environments shall be provided with a protective coating compliant with WS-SPEC Section TR-20. The protective coating applied shall be in addition to the concrete cover requirements.

SC6.10.2.45 Variations to "8.6.5 – Mine subsidence" in SCA WSA-02

The designer shall accommodate the movement associated with the ground strain for the area, as advised by the Mine Subsidence Board for sewerage jointing systems in proclaimed Mine Subsidence Areas, or in a known or expected area of subsidence or slippage. The design ground strain for the development shall be detailed on the drawings.

The pipe jointing system selected shall be capable of accepting ground movements, without impairing the water tightness of the joint, for the ground strain as advised by the Mine Subsidence Board. For areas with high ground strains a pipe jointing system using shorter effective length pipes and/or deep socket fittings shall be used.

Where the Mines Subsidence Board does not cover an area of known, or suspected, subsidence or slippage, the above requirements shall still apply, unless stipulated otherwise by Council.

SC6.10.2.46 Variation to "8.7 – Above ground crossings" in SCA WSA-02

Above ground sewers may be designed in a gravity system only where other options are not practical.

SC6.10.2.47 Variations to "8.8 – Pipe cover" in SCA WSA-02

In addition to the requirements given elsewhere in this planning scheme policy, Council requires that the designer obtain the prior approval where the depth of the cover exceeds 3 metres. Where the depth of cover does exceed 3 metres, the designer shall submit calculations, charts or substantiating documentation proving sufficiency of pipe strength to resist buckling for the proposed pipe type and trenching conditions.

The designer shall use AS2566.1 Loads on Buried Pipelines as the basis of substantiation.

SC6.10.2.48 Variations to "9 – Design review and drawings" in SCA WSA-02

Design review and drawings

In accordance with clause 12.08, the designer shall submit to Council for approval 3 copies of the proposed sewer design, including calculations and network analysis, if appropriate, prior to commencement of construction. Council shall advise at the time of notification by the designer whether the option to direct the submission to Council is taken.

Pipelines and pumping stations

In addition to the requirements of WSA-03, the design drawings shall show the following to scale:

(a) Plan showing:
- (i) lot boundaries and lot numbers
- (ii) location and size of all mains, appurtenances and pump stations
- (iii) existing mains
- (iv) existing and proposed features and services
- (v) north point and scale bar
- (vi) easement locations
- (vii) arrangement of or for other utilities.

(b) Longitudinal section, for all pipelines of DN150 or larger, showing:
- (i) reduced levels for natural surface and design surfaces at all changes of grade
- (ii) mains, appurtenances and pump stations.
- (iii) appurtenances numbered in accordance with Council's Asset Register
- (iv) invert levels where necessary
- (v) size, type, class and grade of pipe
- (vi) location, invert level and size of all drainage lines, sewer mains, and other utility services crossing the main
- (vii) notation regarding all joining lines
- (viii) property ownership
- (ix) note "In road" trench conditions

(c) General arrangement of pump stations with site plan; concrete and/or building outlines, number, make, model and details of pumps; inlet and outlet pipework details and levels; pump control levels and/or pressures~~,~~; switchboard location; pump station access details.

(d) Details of corrosion protection required for pipes and fittings.

(e) Areas designated for trench less pipe installation.

Detail plans shall be drawn to a scale of 1:500 and longitudinal sections to a horizontal scale of 1:1000 and a vertical scale of 1:100. The designer shall show locations of hydrants, stop valves, non-return valves, and air valves and scour valves, tees, tapers, creek crossings, trench dimensions and backfill, thrust blocks, and other existing and proposed services and installations including chambers and covers and items of construction which are project specific.

Drawings shall be 'A3' and/or 'A1' size after consultation with Council. One (1) copy of A1 size and three (3) copies of A3 size drawings shall be provided.

Drawings shall also be provided in electronic form comparable with Councils systems~~.~~

All drawings and documentation to be submitted to Council for approval shall conform to the requirements of Council's Drawings and documentation guidelines. A copy of these guidelines will be made available upon request.

Failure to comply with Council's Drawings and documentation guidelines may result in the drawings and/or documentation being returned to the designer without comment.

Electrical and control documentation

The developer shall submit, to Council for approval, prior to commencement of the manufacture of any switchboards and control equipment, three copies of all drawings required in Council standard specification for electrical assets

Council shall advise at the time of notification by the designer whether the option to direct the submission to Council is taken.

SC6.10.2.49 Variation to "Appendix A – Estimation of equivalent population" in SCA WSA-02

For the estimation of EP's, Council's method is to apply EP densities from Council Headwork's Policy to derive total EP then apply DNRM Drg. 99480 if total EP exceeds 1000.

SC6.10.2.50 Variation to "Appendix B – Flow estimation for undeveloped areas" in SCA WSA-02

Council to provide

SC6.10.2.51 Variations to "Table 10.1" in SCA WSA-02

For PVC gravity pipe, Council only allows SN10 for DN100 and SN 8 for other sizes, to AS1260. Jointing method shall be rubber ring seal. In any case, minimum pipe size is DN150mm.

For DI pipes, Council will accept either cement lining (type SR cement) or epoxy lining.

SC6.10.2.52 Variations to "10.4 – Product and standards materials and specifications" in SCA WSA-02

General

All pipeline materials used for sewerage infrastructure shall comply with the relevant sections of WS-SPEC and the specific project requirements of Council as detailed herein.

Council's minimum requirements for gravity main pipe materials are as follows:

(a) mPVC, uPVC or oPVC: rubber ring jointed, SN8/SN10. Ultra rib pipe is acceptable for pipes greater than DN150mm;

(b) PE: electrofusion or butt fusion, minimum SDR 17;

(c) DI: rubber ring jointed, polyethylene sleeved, cement or epoxy lined, minimum Class 21;

(d) GRP: rubber ring jointed couplings, minimum SN10000 stiffness, minimum PN10 pressure class; and

(e) VC: spigot and socket type using roll on rubber ring (elastomeric) joints.

All products and materials used for the creation of infrastructure shall comply with the relevant sections of WS-SPEC as applicable for the respective pipe materials.

PVC pipe and fitting (gravity pipes)

PVC gravity pipes and fittings shall be compliant with Section SP4 of WS-SPEC.

The designer shall ensure that PVC pipe specified is compatible with ductile iron (DI) pipe where necessary.

Pipe shall have smooth external wall for DN150mm to AS1260. Ultra rib is acceptable for pipes greater than DN150mm.

Pipes and fittings shall be handled and stored protected from sunlight. The contractor shall provide protection for the pipes and fittings from ultra violet light and damage. The contractor shall take account of the time for storage and type of cover. All exposed uPVC pipework shall be painted to protect it from UV light using a water based acrylic paint.

Ductile iron pipe and fittings (gravity pipes)

Ductile iron pipes and fittings shall be compliant with Section SP2 of WS-SPEC.

Pipes cast into concrete shall be power-tool cleaned to AS 1627.

Vitrified clay (VC) pipes and fittings (gravity pipes)

VC pipes and fittings shall be compliant with WS-SPEC, section SP7**.**

Pipe and fitting shall be spigot and socket type using roll on rubber ring (elastomeric) joints.

Natural rubber shall not be used in rubber ring joints.

Polyethylene pipe and fittings (gravity pipes)

PE Pipes and Fittings shall be compliant with WS-SPEC, section SP6.

PE pipes shall be manufactured in either PE80B or PE100 polymer material.

Selection of pipe class shall take into account cyclic loading and fatigue.

Glass reinforced plastic (GRP) pipe and fittings

GRP pipes and fittings shall only be used with prior approval of Council.

If approved, GRP pipes and fittings shall be compliant with Section SP5.

Pipes and fittings shall be handled and stored protected from sunlight. The Contractor shall provide protection for the pipes and fittings from ultra violet light and damage. The Contractor shall take account of the time for storage and type of cover. All exposed GRP pipework shall be painted to protect it from UV light using water based acrylic paint.

SC6.10.2.53 Variations to "WSA02 Standard drawings" in SCA WSA-02

All amendments to WSA-02 Drawings are detailed on Council's versions of the applicable drawings.

SC6.10.3 Variations to Sewerage pumping station code of Australia (SPSCA) WSA-04-2005

SC6.10.3.1 General variations to the SPSCA WSA-04-2005

Council has a strong preference for the conveyance of sewage by gravity only and therefore Council's approval in writing is required for any pumping station proposal and its particular requirements including electrical and telemetry requirements, emergency relief arrangements and compliance with Council's current licence conditions.

SC6.10.3.2 Variations to "2.9 – Odour control" in SPSCA WSA-04-2005

Odour control facilities may be required to be provided at pumping stations or other locations. The designer is to consult with Council at the planning stage to determine if odour control facilities will be required. If so, provision of such facilities to Council's performance requirements shall be made.

SC6.10.3.3 Variations to "3.1 – General design" in SPSCA WSA-04-2005

The designer shall ensure selected components make a watertight system and have satisfactory surface finishes to ensure long-term durability of assets exposed to aggressive wastewater environments.

Package pump station units may be used with the prior concurrence of Council, where the area being serviced is small and/or their inclusion contributes to overall benefits to the system and the environment.

The designer shall provide for the design of pump stations and valve pits against flotation both during the construction/installation stage and whilst operating under the 1% Annual Exceedance Probability flood condition (including climate change factor).

For pumping stations and valve pits constructed by open excavation, the vertical soil backfill column above any base slab extension at floor level shall be taken into account in resisting uplift. For the installed operating structure, the minimum factor of safety against uplift (ie the ratio of stabilising to unstabilising forces) shall be 1.5.

For pumping stations constructed as caissons with a mass concrete floor plug, the soil skin friction against the external concrete face of the well shall be ignored. For the installed operating structure the minimum factor of safety against uplift (i.e. the ratio of stabilising to unstabilising forces) shall be 1.2.

SC6.10.3.4 Variations to "3.7 – Easements" in SPSCA WSA-04-2005

Council requires all, except that small pumping stations may, with State Government approval, be located in land that is owned by Council:

(a) land dedicated to Council as park, open space or similar cannot be used for this purpose; and

(b) generally approval can be obtained only for stations with no superstructure except for a vent stack and a control panel.

Pumping stations that are not sited in road reserve shall be provided with a minimum 5m wide access easement either side of the structure dedicated to Council.

Council requires easements to be registered in its favour over all rising mains when pipelines and appurtenances relating to pipelines are constructed in land other than in what is, or will become, a dedicated road reserve or property owned by Council.

Easements for pipelines shall be a minimum 5 metres wide and located centrally over the pipeline, or in the case where a pipeline is laid on standard alignment near a property boundary, the boundary of the lot and one boundary of the easement may be coincident.

A Licensed Surveyor shall survey easement reserves for pumping stations and pipelines.

SC6.10.3.5 Variations to "4.1 – Materials design" in SPSCA WSA-04-2005

Materials to be used in the pump station shall take into consideration the nature and composition of the sewage to be pumped. The designer shall select such materials to ensure durability for a nominal design life of at least 50 years.

SC6.10.3.6 Variations to "4.4.2 – Concrete surfaces" in SPSCA WSA-04-2005

Internal concrete surfaces in pumping station wet wells and in maintenance holes receiving a pumped discharge shall be coated with a protective coating in accordance with WS-SPEC Section TR20.

External concrete surfaces in aggressive soil and groundwater environments shall also be coated with a protective coating compliant with WS-SPEC TR-20.

See also Clause 5.4 below.

SC6.10.3.7 Variations to "4.2.3 – Metallic materials" in SPSCA WSA-04-2005

Ductile iron pipework in pumping stations shall be epoxy coated and epoxy lined. Steel pipework in pumping stations shall be SS316 or SS316L.

Metalwork in pumping stations shall be either marine grade aluminium or SS316 or SS316L.

All bolted connections within wet wells shall be stainless steel Grade 316 bolts with Grade 304 nuts and washers.

SC6.10.3.8 Variations to "5.2 – Location, layout and access" in SPSCA WSA-04-2005

The designer shall take into account access, site maintenance and restoration, easements, power supply and operational working area when locating pump stations on land dedicated for that purpose.

Where the pump station site is exposed to possible flooding, the designer shall provide for the top of pump well to be 300mm above the 1% Annual Exceedance Probability (including climate change factor)flood level, or to such other level as provided by Council's planning instruments.

The base of the electrical switchboard and / or generator shall be located one metre above the 1 in 100 year flood level.

SC6.10.3.9 Variations to "5.4 – Wet well design" in SPSCA WSA-04-2005

The designer shall specify a protective coating to the internal concrete surfaces of pumping station wet wells. Preparation for and application of the protective coating shall comply with WS-SPEC Section TR20. The protective coating shall be a high build 2-pack solvent less epoxy, System W3-C.

SC6.10.3.10 Variations to "5.5 – Ventilations" in SPSCA WSA-04-2005

The designer shall provide for ventilation to each pump station.

Natural ventilation is to be provided to all pump station wet wells by providing a minimum DN100 pvc pipe vent. The vent shall be provided with a stack which shall be a minimum diameter 150mm. The stack shall be a galvanised powder coated mild steel fabrication connected to the vent. The stack shall be of a minimum 6 metres height or higher if required to disperse any foul odour above the roofs of surrounding buildings. The PVC vent pipe shall be provided inside and for the full height of the stack. A stainless steel "Rota" vent with nylon bearings shall be provided to the top of the stack.

Pumping stations with wet wells greater than DN4000mm diameter shall be provided with permanently installed extraction type forced ventilation system.

SC6.10.3.11 Variations to "5.6 – Overflow containment" in SPSCA WSA-04-2005

The designer shall size pipes and pump station capacity to avoid surcharges under design flow conditions. The designer shall provide an emergency relief structure (ERS) in strict accordance with the conditions of Council's EPA licence if permitting a sewage discharge. In addition, in areas to be environmentally sensitive, Council may require a wastewater swirl separator (WWSS) to be provided. Any proposal to provide an ERS and WWSS shall be referred to Council prior to undertaking the design.

Wet weather storage is required to be provided at pumping stations compliant with the following volumetric requirement:

Storage Required = minimum 4 hours at ADWF for the gravitational component of the flows arriving at the pumping station.

Such storage may be provided as:

(a) in-line pipe storage capacity between lowest upstream MH surface level and TWL in pumping station well;

(b) pumping station wet well storage between lowest upstream MH surface level and TWL in pumping station well;

(c) supplementary on-site underground tank storage between lowest upstream MH surface level and TWL in pumping station well; or

(d) any combination of the above.

SC6.10.3.12 Variations to "5.8 – Access covers" in SPSCA WSA-04-2005

Access covers shall comply with Council's Drawing.

Pumping station wells and valve pits shall be provided with signage notifying all personnel that such structures are classified as Confined Spaces and that access limitations apply.

SC6.10.3.13 Variations to "6.4 – Pump selection" in SPSCA WSA-04-2005

The designer shall provide for all pump stations to be of the single well submersible pump station with self-contained freestanding switchboards suitable for external use. Pumping stations shall be, as a minimum, conventional duplex style arrangements with one duty and one standby pump.

Pump sets are to be provided with automatic interchangeable duty rotation arrangements within each pump station.

SC6.10.3.14 Variations to "6.5 – Triplex pumping stations" in SPSCA WSA-04-2005

Where required, triplex pumping stations shall be provided with two duty pumps and one standby pump.

Pump sets are to be provided with automatic interchangeable duty rotation arrangements within each pump station.

SC6.10.3.15 Variations to "6.6.2 – Impellar selection" in SPSCA WSA-04-2005

Each pump shall be capable of passing solids of not less than 75mm diameter unless grinding equipment is incorporated.

SC6.10.3.16 Variations to "6.6.6 – Pumpset lifting equipment" in SPSCA WSA-04-2005

For pump stations less than 6 metres or under 30kW power rating, each pump shall be suspended by a chain as per Council drawing.

For pump stations greater than 6 metres or over 30kW power rating, each pump shall be capable of being removed with the aid of fixed stainless steel guide rails as per Council drawing.

SC6.10.3.17 Variation to "6.7.1 – Flushing valves" in SPSCA WSA-04-2005

Flushing valves are not permitted by Council.

SC6.10.3.18 Variations to "9 – Wet well pipework" in SPSCA WSA-04-2005

All incoming pipes contributing flows to a pumping station shall be connected to a collecting manhole exterior to the pumping station. The collection manhole shall be interconnected to the pumping station with a DI or Class 12 PVC inlet pipe. The inlet pipe shall penetrate the wall of the wet well and shall be provided with a flanged end in the wet well to allow connection to a knife gate isolating valve. The knife gate isolating valve shall be provided with a non-rising type extension spindle to the roof of the pumping station to allow isolation without entry to the well. On the downstream side of the valve a vertical T-piece dropper pipe as per Council drawing

Knife gate valves shall be compliant with WS-SPEC Section SP23.

SC6.10.3.19 Variations to "9.2.3 – Emergency bypass connection" in SPSCA WSA-04-2005

Emergency bypass connection point shall be provided as per Council drawing.

SC6.10.3.20 Variations to "9.2.4 – Sewerage air release valves" in SPSCA WSA-04-2005

Air release valves shall only be used with prior approval of Council.

Air valves shall be compliant with WS-SPEC section SP27.

SC6.10.3.21 Variations to "10 – Pressure mains" in SPSCA WSA-04-2005

Council's minimum requirements for pressure main pipe materials are as follows:

(a) mPVC, uPVC or oPVC : rubber ring jointed, minimum Class 16 Series 2;

(b) PE : electrofusion or butt fusion, minimum PN16 pressure class;

(c) DI: rubber ring jointed or flanged, PE sleeved, cement or epoxy lined, minimum Class 21;

(d) Steel: rubber ring jointed, flanged or welded, FBPE coated, cement or epoxy lined, minimum steel barrel wall thickness of 6mm or diameter/120 whichever is the greater; and

(e) GRP: rubber ring jointed couplings, minimum PN16 pressure class SN10000 pipe stiffness.

All products and materials used for the creation of infrastructure shall comply with the relevant sections of WS-SPEC as applicable for the respective pipe materials.

PVC pipe and fittings (pressure pipes

PVC pressure pipes and fittings shall be compliant with WS-SPEC, section SP4.

The Designer shall ensure that PVC pipe specified is compatible with ductile iron (DI) pipe where necessary.

Pipes and fittings shall be handled and stored protected from sunlight. The contractor shall provide protection for the pipes and fittings from ultra violet light and damage. The contractor shall take account of the time for storage and type of cover. All exposed uPVC pipework shall be painted to protect it from UV light using a water based acrylic paint.

Selection of pipe class shall take into account cyclic loading and fatigue.

Ductile iron pipe and fittings (pressure pipes)

Ductile iron pipes and fittings shall be compliant with WS-SPEC, section SP2.

Steel pipe and fittings (pressure pipes)

Steel pipes and fittings shall be compliant with WS-SPEC, section SP1.

Steel pipes shall be provided with cathodic protection if required in accordance with geotechnical recommendations.

The designer shall take account of congested service corridors, poor soil conditions and the need for additional security for strategic mains with regard to the provision of restrained joints.

The designer shall avoid the positioning of continuously welded steel pipelines in parallel with high voltage power lines.

Steel pipes shall be FBPE (Sintakote) coated and lined with cement mortar type SR or epoxy.

Polyethylene pipe and fittings (pressure pipes)

PE Pipes and Fittings shall be compliant with WS-SPEC section SP6.

PE pipes shall be manufactured in either PE80B or PE100 polymer material.

Selection of pipe class shall take into account cyclic loading and fatigue.

Glass reinforced plastic (GRP) pipe and fittings

GRP pipes and fittings shall only be used with prior approval of Council.

If approved, GRP pipes and fittings shall be compliant with Section SP5.

Pipes and fittings shall be handled and stored protected from sunlight. The contractor shall provide protection for the pipes and fittings from ultra violet light and damage. The contractor shall take account of the time for storage and type of cover. All exposed GRP pipework shall be painted to protect it from UV light using water based acrylic paint.

SC6.10.3.22 Variations to "10.5.4 – Minimum pressure class" in SPSCA WSA-04-2005

The minimum class of pipes and fittings for pressure mains shall be PN16 or equivalent.

SC6.10.3.23 Variations to "10.9 – Pressure main valves" in Sewerage pumping station code of Australia WSA-04-2005

The designer shall provide pressure tappings and gauges in the valve pit for testing and commissioning of the main, as shown on Council drawing.

SC6.10.3.24 Variations to "10.9.2 – Isolating valves" in SPSCA WSA-04-2005

Sluice valves shall be provided to each pump connection pipe work in the valve pit.

Sluice valves shall be resilient seated compliant with WS-SPEC Section SP-21.

SC6.10.3.25 Variations to "10.9.4 – Non return valves" in SPSCA WSA-04-2005

Non-return valves shall be provided to each discharge pipe in the valve pit.

Non return valves shall be resilient seated Flexichek type.

Council's nominated brand of reflux valves is Crevet.

SC6.10.3.26 Variations to "11.1.2 – Geotechnical assessment" in SPSCA WSA-04-2005

The designer shall design the pump well taking into consideration the ground and site conditions.

In particular, the geotechnical investigations will include, where appropriate, any necessary consideration of soil conditions relating to:

(a) the presence, impact and management of Acid Sulphate Soils;

(b) the presence, impact and management of soil or other material at any contaminated sites;

(c) the impact of soil and groundwater aggressivity on the durability of underground concrete structures and pipework;

(d) the impact of saline / marine environments or tidal flats on the design of structures and pipelines; and

(e) the need for protective coatings of concrete structures or cathodic protection of pipelines.

All geotechnical investigations shall be undertaken by a suitably qualified geotechnical engineer (RPEQ, Geotechnical) and shall be documented in a geotechnical report available to both the Designer and the Contractor.

SC6.10.3.27 Variation to "11.2.3 – Structural steelwork" in SPSCA WSA-04-2005

The designer shall design structural steelwork in accordance with AS4100 and all other relevant Australian Standards.

SC6.10.3.28 Variations to "11.2.5 – Pumping station walls" in SPSCA WSA-04-2005

Preformed concrete wall units are to be manufactured to AS4058. The designer shall take into account the cover requirements for reinforcing steel and cement types to ensure minimum expected asset life of 50 years.

SC6.10.3.29 Variations to "12.1.2 – Water supply" in SPSCA WSA-04-2005

The designer shall provide at all pump stations for adequate water supply for cleaning purposes. The minimum size service allowable is DN63mm. Backflow prevention shall be compliant with Council drawing.

SC6.10.3.30 Variations to "Amendments to WSA 04 Standard drawings" in SPSCA WSA-04-2005

All amendments to WSA-04 Drawings are detailed on Council's versions of the applicable drawings.

SC6.10.4 Sewerage pumps

Sewage pumps shall be submersible type, and either:

(a) KSB Forrers; or

(b) ITT Flygt

Other pumps may be considered with prior Council Approval. In seeking approval, the designer will need to demonstrate the reliability of the alternate pump, the availability of spare parts in Mackay, ease of maintenance and the advantages to Council in adopting an alternate brand.

Pumps shall:

(a) be capable of operating at the required duty point for the application;

(b) be capable of operating near optimal efficiency within the range of operating conditions;

(b) be capable of continuous operation;

(c) have non-overloading characteristics beyond the duty point close to zero head;

(d) have starting characteristics acceptable to the electricity supply company and the Council; and

(e) have a minimum of 4 pole unless approved otherwise by Council.

SC6.10.4.1 Standby

Standby pumping capacity shall be provided such that if one pump is out of service, the pump station will remain able to supply the required transfer capacity.

SC6.10.4.2 Electrical standby

Unless otherwise advised by Council the contractor shall provide a permanent on-site generator for each site and shall provide for connection of same. Also refer to SC6.10.6 – Electrical Works of this planning scheme policy.

SC6.10.4.3 Installation

The design of the wet well submersible pumping unit shall be such that the complete pumping unit can be readily removed from the wet well by means of a simple lifting device, without the necessity of either de-watering the wet well or disturbing the permanent connection to the discharge pipe work, and without the need to descend into the wet well.

No portion of the pump shall be permanently fixed to the base of the wet well. The wet well units shall be supported off the discharge 'duck-foot' bend which shall be of a rigid design to take the complete pumping unit load and provide sufficient sealing.

Each submersible pump shall be checked for the operation against a closed discharge (shut-off head) to prove the effectiveness of the seal between the pump and the discharge bend.

When two or more similar pumps are supplied under the same contract, the interchangeability of the units and the discharge bends shall also be checked.

The pump shall have suitable guide rails for withdrawal from and lowering into the wet well. When lowered down the guide rails the pump shall automatically connect to the discharge bend.

SC6.10.4.4 Pressure gauges

The contractor shall provide one direct mounted bottom connected pressure gauge, minimum gauge face 100mm diameter, complying with AS 1349, per pump installation.

Gauges and fittings shall be screwed into the pipe wall of steel and ductile iron pipes of DN150mm and larger. In steel and ductile iron pipework less than DN150mm, gauges and fittings shall be screwed into a tapping band. In pipes other than steel or ductile iron, tapping bands shall be used.

The Designer shall provide a pipe tee on the main to install the pressure gauge. An isolating ball valve shall also be provided to allow release of pressure prior to removal of the gauge.

The pressure gauge range for single or parallel pumps duty shall be 0 to 1.7 times the closed valve head of the pumps.

For pressure gauges details refer to Council's standard specification for electrical assets.

SC6.10.4.5 Level control

The contractor shall provide one (1) continuous level measuring device in each wet well. The output of each level measuring device shall be in a form of 4-20 mA and shall be an input to the pump station controller.

The contractor shall also provide two (2) float switches for the HH level alarm and HHH level alarm for each pump station. The digital signals corresponding to each of high level alarms shall be wired up to the pump station telemetry system.

For details of continuous level measuring device and the level switches refer to Council's standard specification for electrical assets.

SC6.10.4.6 Electromagnetic flowmeters and flow switches

An electromagnetic flowmeter shall be provided at each pumping station. The flowmeter shall be housed within the pumping station or in a separate dedicated concrete structure. The flowmeter converter shall be housed in the pump station electrical switchboard and shall provide an input into the site telemetry system.

For the flowmeter details refer to Council's standard specification for electrical assets.

Each pump shall be provided with IFM Effector flow switch for the flow detection. For details refer to Council Standard Specification for Electrical Assets.

SC6.10.4.7 Electrical design

Power supply requirements, electrical equipment design and telemetry shall comply with the requirements of Council's standard specification for electrical assets.

SC6.10.4.8 Upgrades to existing pumps

The provisions of this planning scheme policy for new pumping stations as detailed above shall also be applicable to the upgrade of any existing pumping stations that may be required to be undertaken as a result of the development works.

SC6.10.5 Electrically operated actuators

The contractor shall be responsible for the design, manufacture, supply, and performance of the actuators.

Electric motor actuators shall be 3 phase with a rated voltage 415 50 Hz and shall be suitable for operation over a phase voltage range of 400 to 440 V. Phase rotation protection shall be provided integral with 3 phase actuators.

The actuators shall be suitable for indoor and outdoor installation. The actuator enclosures, including all auxiliary enclosures, shall be a minimum of IP56 to AS 60529

Actuator motors for penstocks and valves shall be specifically designed for penstock or valve actuator service and winding insulation shall be Class F. It shall be the Contractor's responsibility to determine the rated output (kW) of the motor, in conjunction with the gear reduction unit used, to suit the operational requirements of the respective penstock or valve.

The rated speed and the direction of rotation of the motor, in conjunction with the gear reduction unit used, shall suit the operational requirements of the penstock or valve. The time to operate the penstock from fully closed to fully open and visa versa shall range between 2 to 3 minutes. The time to operate a valve from fully closed to fully open and visa versa shall range between 4 to 6 minutes.

Where possible, actuators shall be selected to be interchangeable with existing actuators at the plant.

The contractor shall have the valve and penstock suppliers prepare calculations of the maximum opening and closing torques for each penstock and valve. These calculations shall be submitted to Council as verified design for acceptance. Actuators shall be sized for non-overload operation at these loadings.

Electric actuators shall be mounted directly on the valve or penstock capstan so that all forces are confined to the valve or penstock. All electric actuators shall be suitable for remote operation from the PLC. All electrical connections, controls, and the like shall be accessible from platforms or walkways.

The actuators shall be position and torque switches which shall be arranged to stop the actuator at the extremes of travel.

All actuators shall be provided with a manual override which shall be a handwheel. Hand wheels shall be located not more than 1000 mm or less than 700 mm above the operating floor level and shall not exceed 600 mm diameter. The hand wheels must be of a diameter which shall require a force of no more than 130 Newtons at the rim to operate the penstock or valve from fully open to fully closed under all operating conditions. Where this cannot be achieved due to the limit on the hand wheel diameter, a gear reduction unit shall be used. Minimum handwheel size shall be 500 mm and minimum clearance 150 mm for penstocks.

Hand wheels shall be rotated clockwise to close the valve, and shall be clearly marked with the words "OPEN " and " CLOSE " and arrows in the appropriate directions. The rims of the hand wheels shall be machined to a smooth finish.

Each actuator shall have integral open and close contactors, local open/close/emergency stop control pushbuttons and local / remote control selector switch together with all ancillary equipment such as control transformers, relays and other components as required. Contactors for modulating duty actuators shall be solid state type.

Each actuator shall be supplied with an integral reversing DOL starter and associated control equipment. It shall be possible to control electrically actuated valves and penstocks either locally manually or remotely. Each penstock or actuated valve shall be fitted with the integral OPEN / CLOSE push buttons, a padlockable local / remote rotary selector switch, and an emergency stop push button.

Operation of the emergency stop push button shall stop the valve or penstock regardless of selector switch position.

The actuators shall be fitted with open, close and stop interposing relays which shall enable the actuators to be opened and closed by the control system when remote is selected.

The actuators shall be provided with voltage free contacts for remote connection of monitoring signals including the following:

(a) open and close status;

(b) actuator available (i.e. voltage present and remote selected); and

(c) actuator fault – e.g. overtorque, motor overload/over temperature fault.

Actuators shall have a local mechanical position indicator. Where specified the actuators shall have a position signal transmitter with an isolated 4 to 20 mA output suitable for connection to the PLC.

Each actuator shall be fitted with a Grade 316 stainless steel nameplate, in accordance with AS 1359.

Actuators shall be fitted with temperature sensing devices which shall be embedded in the motor phase windings and shall be arranged to prevent motor overload. Non-modulating actuators shall be rated for 60 starts (reversals) per hour.

Actuators shall be fitted with 240 V ac anti-condensation heaters.

SC6.10.6 Electrical works

SC6.10.6.1 Compliance with authorities, statutes, regulations and standards

All electrical works shall be carried out in accordance with the requirements of:

(a) AS/NZS 3000 and other relevant Australian Standards;

(b) Power Supply Authority Service Rules and Regulations;

(c) Other relevant Statutory Authorities; and

(d) Council Standard Specification for Electrical Assets.

SC6.10.6.2 Scope of work

The scope of electrical work shall include but shall not be limited to the following:

(a) Negotiations with Power Supply Authority unless another power supply Authority is nominated in the project specification. The name and the phone number of the Power Supply Authority contact shall be as indicated in the project specification. The contractor must fill all relevant application forms and pay all relevant fees;

(b) supply and installation of consumer mains;

(c) supply and installation of electrical switchboard;

(d) supply and installation of all instrumentation and field mounted control equipment;

(e) supply, installation and termination of all cabling;

(f) supply and installation of all telemetry equipment including aerial and aerial mast;

(g) supply and installation of all junction boxes, conduits, cable trays, cable ladders and fittings;

(h) supply and installation of a standby diesel generator set for backup power to ensure continuity of service, or provision of connection facilities for same, as required by Council at the development approval stage;

(i) carry out factory testing of the switchboard;

(j) carry out site testing and commissioning;

(k) provide “As Constructed” design documentation and also Operation and maintenance manuals;

(l) provision of defects liability period;

(m) liaison with Council; and

(n) any other work as required in the project specification.

SC6.10.6.3 Incoming power supply

The designer must provide for all works as required by the relevant power supply authority to provide 3 phase 415V, 50 Hz power supply to site.

The designer must provide for the upgrade or provide new metering facilities at each site as required by the relevant power supply authority.

The contractor must ensure the minimum power factor of 0.9 at each site. The prospective fault level of each electrical installation shall be as nominated by the relevant power supply authority but in any case the minimum fault level shall be as follows:

(a) not less than 15kA for 1 second for the Main Switchboards rated 100 Amp or less; and

(b) not be less than 25kA for 1 second for the Main Switchboards rated over 100 Amp.

If VSD drives are used the level of total harmonics distortion (THD) at the point of common coupling (PCC) must be as required by the relevant power supply authority.

The consumer mains with a cross section greater than 120mm^2 shall consist of single core XLPE/PVC cables.

The current carrying capacity of the consumer mains shall suit the maximum demand plus 30% spare capacity.

The consumer mains shall be sized to ensure the voltage drop at the incoming terminals of the switchboard does not exceed 2.5% under maximum demand conditions plus 30% spare capacity.

Power supply metering must be provided as required by the relevant power supply authority.

SC6.10.6.4 Standby diesel generator

For the diesel generator details refer to Council Standard Specification for Electrical Assets.

Where provisions only are required for the standby diesel generator these provisions must be in a form of external weather and vandal proof socket inlet or a junction box rated for the full load of the relevant switchboard and as required in the Project Specification.

Sufficient space shall be allowed for the mobile diesel generator installation.

SC6.10.6.5 Power supply change-over arrangement

Where a permanent diesel generator is required to be provided on site, the main switchboard shall be fitted with an automatic transfer switch (ATS) to facilitate an automatic transfer between the power grid and the generator supplies. For all other sites where only provisions for connection of mobile diesel generators are required the changeover switch shall be manual switch. For details of ATS refer to Council's standard specification for electrical assets.

SC6.10.6.6 Earthing

The Contractor must provide M.E.N. earthing system at each site. The earthing system must comply with requirements of AS/NZS3000 and Power Supply Authority Service Rules.

Each earthing rod must be a minimum 16 mm stainless steel copper clad rod with a minimum length of 3 metres. Each earthing cable must be provided with a PVC sleeve. Bare earthing conductors must not be used. All earthing cable connections to earthing rods must be by means of approved earthing clamps

The Contractor must provide an earth inspection pit at each rod. Each pit must be marked for easy identification.

SC6.10.6.7 Lightning and surge protection

The need for lightning protection shall be assessed for each site and shall comply with the requirements of AS1768.

Suitable surge protection must be provided at each site to protect equipment against lightning strikes, motor starting and stopping or sudden loss or application of power supply. Surge protection devices must be provided as follows:

(a) inside each Main SCA or Switchboard/Panel/Distribution Board across incoming power supply

(b) across power supply to all instrumentation loops mounted outside in the field

(c) all signal lines run to and from outside. Instrument surge diverters must be provided on both ends of each loop.

(d) on all data and cable communication lines.

Minimum size surge protection earth cable must comprise stranded, 16mm² or as recommended by the manufacturer, green/yellow PVC insulated cable installed such that it is segregated from all other cables.

For details of surge protective devices refer to Council Standard Specification for Electrical Assets.

SC6.10.6.8 Starting of pumps

DOL starting of the pump motors shall be with Ergon Energy approval only. Otherwise, all motor starters must be either soft starter or VSD (Variable Speed Drive) as required by the process.

The maximum number of starts per hour shall be 12 starts.

Where electronic starters are used the disturbance to the electrical supply system shall not exceed limits set down in AS61000.3.6 and AS61000.3.7. Radio interference external to the electronic starters shall not exceed limits set down in AS/NZS CISPR 11:2004. A suitable R.F.I. filter shall be provided to ensure compliance with AS/NZS CISPR 11:2004.

The level of total harmonic distortions at the point of common coupling (PCC) must be limited to planning levels as set by Power Supply Authority. Appropriate harmonic filters shall be provided on each VSD unit to comply with Power Supply Authority requirements.

SC6.10.6.9 Nominated subcontractors

Refer to Council Standard Specification for Electrical Assets for the details of nominated equipment suppliers and service providers.

SC6.11 Engineering design guideline – site regrading

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SC6.11.1 Scope and general

SC6.11.1.1 Scope

This planning scheme policy sets out requirements for the site regarding involved in Council works and land development and subdivision to be approved by Council.

The scope of this planning scheme policy assumes that the designer is familiar with requirements cited in the various construction specifications, specifically those related to earthworks, clearing and grubbing, erosion and sedimentation.

Additionally, the designer will need to make reference to SC6.5 – Engineering design guidelines – geometric road design (urban and rural), SC6.6 – Engineering design guidelines – healthy waters and SC6.12 – Engineering design guidelines – stormwater drainage design.

SC6.11.1.2 Objective

This Guideline aims to assist the Designer in achieving:

(a) efficient and economical design;

(b) enhancement of the environmental character of the site whilst maintaining the natural features of the site;

(c) provision of safe conditions for construction commensurate with the proposed purpose of the works; and

(d) a minimal impact on adjoining properties and other works.

SC6.11.1.3 Reference documents

(a) Design specifications:
  (i) SC6.5 – Engineering design guidelines – geometric road design (urban and rural);
  (ii) SC6.6 – Engineering design guidelines – healthy waters;
  (iii) SC6.12 – Engineering design guidelines – stormwater drainage design;
  (iv) Standard drawings – various;
  (v) Construction specification C211 – Control of erosion and sedimentation
  (vi) Construction specification C212 – Clearing and grubbing
  (vii) Construction specification C213 – Earthworks
  (viii) Construction specification C273 – Landscaping

(b) Australian Standards:
  (i) AS3798 – Guidelines on earthworks for commercial and residential developments

(c) Queensland authorities:
  (i) State Planning Policy

SC6.11.1.4 Site regrading concept

Areas of a site proposed for building or recreational purposes may not be suitable in their natural state for their intended function without improvement works to:

(a) alleviate flooding of low-lying ground;

(b) fill gullies or create emergency flowpaths after underground stormwater piping has been installed;

(c) allow improved runoff from flat ground; and

(d) allow effective recreational use or give reasonable access.

Where natural surface levels are above the 100yr ARI flood level or the designated storm surge level excavation to lower levels will not be permitted.

Filling of land below the 100yr ARI flood level or the design storm surge level will only be permitted where justification is provided to Council that:

(a) the filling will not have a detrimental effect on other land; or

(b) that the proposed filling is in the public interest to an extent that outweighs any detrimental effects on other lands.

The Designer shall review the natural surface contours and where necessary shall design finished surface levels that ensure the land is suitably prepared.

Where practical, areas should be regraded to minimise the necessity for interallotment drainage systems and allow overland water to flow naturally to roads or drainage reserves without excessive concentration.

The Designer shall consider the implications of site regrading in relation to the existing natural environment. Generally, site regrading shall be minimised in heavily treed areas.

Care shall be taken to provide depressions for overland flow from low points and over major drainage lines, to direct stormwater for storms up to a 1% Annual Exceedance Probability (including climate change factor) flood event.

The designer shall ensure that design for the regrading does not result in the diversion and ponding of stormwater from the development onto adjoining land, or that stormwater is not diverted from one adjoining land onto another.

The design of site regrading areas, in conjunction with the design of roadworks, shall be considered with the objective of balancing cut to fill and achieving both an economical works and to minimise the haulage of imported fill or spoil to and from the works site.

SC6.11.1.5 Special treatment of particular areas

In the event that an area is known to be affected by or inundated by local stormwater flows, the designer shall investigate the existing conditions as they relate to the proposed works and advise Council in a preliminary report on all data obtained in the investigation and recommend appropriate contour adjustments. The report shall be accompanied by sketch plans to clarify recommendations.

Constraints either natural or otherwise are to be identified as a burden on the developed site. It is recommended that the designer take this into account when preparing the design. The property may ultimately be affected by a "*restriction as to user*", which may be controlled by a legal instrument placed on title to the land advising prospective purchasers of any restrictions affecting the land.

The proposed finished surface or filled area shall be designed to levels allowing an adequate minimum cover depth over the pipeline (if piped) and permitting surface stormwater flow to be guided to field inlet pits if depressions are retained in the finished surface contouring.

A geotechnical report is required to be provided with the site regrading plan specifying:

(a) the site specific preparation and compaction requirements;

(b) the suitability of the site for the proposed earthworks and any constraints that the earthworks would create for further development; and

(c) the resulting effects of the proposed earthworks.

A description of the minimum acceptable quality of the fill shall also be specified on the plans, supported by geotechnical recommendations.

The finished surface of any allotment shall be designed to comply with Council's standard drawing.

Development in areas containing natural ground slopes of an excessively steep nature, i.e. greater than 15%, shall conform to the requirements of the State Planning Policy.

SC6.11.1.6 General standard of site preparation

Generally, clearing shall be kept to a minimum; however, the site is to be cleared of fallen timber, debris, stumps, large rocks and any trees which in the opinion of Council are approaching the end of their functional life or are dangerous.

Trees and vegetation of significance shall be identified prior to design in order that the amount of disturbance may be minimised through appropriate design.

In areas with significant trees or vegetation, the extent of clearing shall generally be limited to:

(a) clearing roadways to the limit of approved earthworks plus a sufficient lateral clearance to ensure that the trees or vegetation do not interfere with the works; and

(b) allotment clearing to the minimum areas required to safely construct services such as sewers and catchment drains and the limits of approved earthworks to allotments plus a sufficient lateral clearance to ensure that the trees or vegetation do not interfere with the works.

All timber and other materials cleared from the site shall be removed and legally disposed of. All roots, loose timber, etc which may contribute to future drain blockage shall be removed.
No incineration of cleared vegetation is permitted.

In areas to be filled over the butts of trees, allowance is to be made for clearing of all trees and replanting with advanced species, the number and type of which shall be approved by Council.

All replanting to be clear of probably future building location, and not to be commenced until filling have been completed and graded, with provision for watering and maintenance for duration of the contract. These specific requirements shall be shown on the drawings.

Trees on existing roads shall not be damaged or removed without the approval of Council.

No trees that are located on land to be dedicated under the control of Council shall be removed or damaged without written approval. Such requirements shall be shown on the drawings.

Selected trees shall be preserved by approved means to prevent destruction normally caused by placement of conventional filling or other action within the tree drip zone. The details of the protection or relocation of selected trees shall be shown on the drawings.

In rural developments, the recommendations of the Queensland Fire and Rescue Authority (Rural Fire Division) are to be sought and considered by the designer.

Where surplus or unsuitable material is to be disposed of outside the site the designer shall note on the drawings a requirement that the Contractor shall obtain an Operational Works permit from Council prior to placing the material at the disposal site.

Where surplus or unsuitable material is proposed to be disposed of on parkland or road reserves, the designer shall submit details and seek separate approval prior to the lodgement of an Operational Works application.

Where the surplus material is generated from works from within existing declared road reserves, Council may nominate that the spoil be placed on Council controlled land within 5 km of the project site.

The extraction of material from within existing road reserves requires the approval of DPI – Forestry, who may levee a royalty to be paid by the contractor.

SC6.11.2 Design detail

SC6.11.2.1 Fill embankments

The designer shall take into account the requirements of AS 3798 "*Guidelines on Earthworks for Commercial and Residential Developments*" and the State Planning Policy in the design of any filling.

All materials proposed for use in fill embankments, regardless of location, shall be suitable for the purpose.

Fill comprising natural sands or industrial wastes or by-products may only be used after the material type and location for its use is approved by Council and will be subject to specific requirements determined by prevailing conditions.

All fill areas shall be subject to a geotechnical assessment to ensure their stability.

Where the volume of fill material to be imported to the site exceeds 2,500m^3 (loose), the designer / contractor shall submit details of the following information and seek separate approval for:

(a) proposed source

(b) volume of material required

(c) proposed transport route – the route must take particular care to minimise any adverse impacts upon residents and businesses

(d) proposed time of cartage – start and finish times and days per week.

In considering the most appropriate haul route, the designer shall refer to Council for acceptable haul roads and details of any applicable load limits timing.

Council may require contributions toward the cost of any accelerated pavement degradation along the haul route and will additionally request a bond to cover the cost of any pavement repairs to the approved route.

Where embankments require maintenance by conventional machinery, then the maximum transverse slope shall be 1:5, with the absolute maximum being 1:4 over short sections.

The grading of allotments shall be in accordance with the requirements detailed in Council's standard drawing. Generally, the following principles are to apply:

(a) allotments should preferably drain to the street, where practicable;

(b) where significant allotment areas drain to the rear, or other adjoining allotment, then interallotment drainage shall be provided;

(c) the following minimum allotment grades are to apply:
  (i) residential – 1:200
  (ii) commercial / industrial – 1:300

SC6.11.2.2 Batter treatments

The designer shall ensure that no cut or fill batters extend into an existing or proposed road, parkland or allotment, without specific prior approval.

Where Council approval to fill adjoining lands has been given, the designer shall ensure that the filling complies with the following criteria:

(a) provision of a 1m minimum wide strip of land inside the adjoining allotment, having a slope between 1:20 and 1:200; and

(b) the batter slope shall be a maximum of 1:5. The designer must provide the written approval of the adjoining property owner to Council.

Where Council approval to fill adjoining lands has been given, the designer shall ensure that the filling complies with the following criteria:

(a) Cut – 1:2.5; and

(b) Fill – 1:2.5.

SC6.11.2.3 Levels

The final level of any filling on an allotment shall be in accordance with the requirements of the Planning Scheme. The development level makes allowance for:

(a) Storm Surge where the 'minimum level' shall be the 1% Annual Exceedance Probability (including climate change factor) storm surge plus an allowance factor for safety, stormwater drainage freeboard and minor wave run-up with this level being assessed as:
  (i) Mackay Urban Area ("existing areas") – RL 5.4 m AHD
  (ii) Ball Bay/ Haliday Bay/ Seaforth – RL 5.3 m AHD
  (iii) Midge Point – RL 5.0 m AHD

  The minimum finished ground level for such lots shall be at or above the DFE or not less than 400mm below the defined "Minimum Level' for the location.

  Note, the “Minimum Level” is raised by 600mm when the site is located within 100m of the foreshore.

(b) River, stream and local flooding where the Defined Flood Event is the 1% Annual Exceedance Probability flood event which shall cause the highest flood level at the allotment in question.

SC6.11.2.4 Access

The designer shall ensure that the footpath crossfall and batter grades comply with the following requirements, to enable appropriate vehicle access to each allotment to be achieved:

(a) the first 3m from kerb and channel to be 2%;

(b) balance of verge – maximum 1:6 (17%), minimum 1:50 (2%);

(c) within allotment:
  (i) residential – desirable 1:6 (17%), absolute 1:4 (for a minimum distance of 6 metres from the front boundary);
  (ii) rural – desirable 1:6 (17%), absolute 1:5 (20%); and
  (iii) industrial – desirable 1:10 (10%), absolute 1:16 (17%);

(d) accesses to ‘hatchet’ allotments are to be connected to the kerb and channel for the full length of the access ‘handle’ with 3m (minimum) wide paved driveway; and

(e) any concrete inverts are to be built in accordance with Council's standard drawings.

Unless specifically excluded in the development approval, the designer shall ensure that an access is provided to all rural allotments. The access shall be built in accordance with Council’s standard drawings.

Accesses to rural allotments that are at a slope greater than 1:10 (10%) shall be paved and sealed or concreted.

The designer may be required to demonstrate to Council’s satisfaction that practical access can be provided to all allotments and also to a building envelope within the allotment boundary.

SC6.11.2.5 Standard of fill for sites

Where fill is required, the designer shall ensure that the following notations, and the items addressed in paragraphs 2 to 5 below, are incorporated in the special requirements clauses in Council's *Construction Specification C213 – Earthworks*.

"Fill is to be sound clean material, of reasonable standard and free form large rock, stumps, organic matter and other debris."

"Placing of fill on the prepared areas shall not commence until the authority to do so has been obtained from the Superintendent".

Fill comprising natural sands or industrial wastes or by-products may only be used after the material type and location for its use is approved by Council and will be subject to specific requirements determined by prevailing conditions.

It is essential that the designer give prior advice to Council of any intended use of such materials. It should be noted that failure to obtain Council's approval may lead to an order for removal of any material considered by Council or other relevant authorities as unsuitable or in any way unfit for filling.

All work shall be in accordance with AS 3798. Fill is to be placed in layers not exceeding 150mm compacted thickness. All fills are to be compacted to 95% standard maximum dry density. Maximum particle size shall be 2/3 of the layer thickness.

The area under paved areas, footpaths, batters and areas of fill shall be stripped of topsoil and any other organic materials.

SC6.11.2.6 Topsoiling and grassing

All areas where filling has been placed are to be dressed with clean arable topsoil, fertilised and sown with suitable grasses. This work shall be carried out in accordance with Council's *Construction Specification C273 – Landscaping*.

Topsoil shall be spread to a depth of 75mm.

Topsoil is defined as surface soils that are high in organic matter and contaminated by residual grass seeds and grass roots.

The Drawings shall be annotated as follows: "*all topsoil shall be retained on the site and utilised effectively to encourage appropriate revegetation."*

All areas are to be seeded / turfed, watered and fertilised to obtain a minimum of 80% grass coverage within 6 months of the work being accepted "*on maintenance*" by Council.

Designers are to ensure that the full width of the verge is to be seeded / turfed.

SC6.11.2.7 Retaining walls and rock protected slopes

A suitably qualified and experienced professional structural engineer (RPEQ) shall design all retaining walls and rock protected slopes and also provide appropriate certification to design.

Any building restrictions within the lot which occurs as a result of the design or construction of the retaining wall is to be identified on the Drawings. This may also result in Council requiring a covenant being placed on the lot title, or requiring a building envelope being placed on the lot.

The only exceptions are walls that have no surcharge loading and are less than 1m high.

Retaining walls are to be located in general on the allotment which contains the earthworks which gives rise to the need for the retaining wall. Where a retaining wall is required on the boundary between a lot and a road reserve if the earthworks are part of the works required for the creation of the lot, then the retaining wall must be located within the lot.

All walls retaining road or parkland fill are to be located within the road or parkland reserve.

The designer shall ensure that permanent fencing (of a type approved by Council) having a minimum height of 1.2 m shall be provided on retaining walls located on future public land.

SC6.11.2.8 Effect on adjoining properties

Where it is proposed to divert or direct piped stormwater into adjoining properties, drainage easement rights are to be created over the adjoining lots in accordance with SC6.12 – Engineering design guidelines – stormwater drainage design.

SC6.11.3 Special requirements

SC6.11.3.1 Temporary diversion drains

Where temporary drains are required to divert surface flows away from the site regarding area, the location and silt/erosion control treatment shall ensure minimal soil disturbances and material loss off the site.

The designer shall include any requirements identified in the relevant soil and water quality management policies for any additional requirements.

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SC6.12 Engineering design guideline – stormwater drainage design

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SC6.12.1 Scope and general

SC6.12.1.1 Scope

This section sets out the guidelines for the design of stormwater drainage systems for urban and rural areas.

SC6.12.1.2 Objective

The objectives of stormwater drainage design are as follows:

(a) to provide a drainage system that will collect and convey stormwater from a catchment to its receiving waters with minimal nuisance, danger or damage and at a financial and environmental cost that is acceptable to the community as a whole;

(b) limit flooding of public and private property, both within the catchment and downstream, to acceptable levels; and

(c) to provide convenience and safety for pedestrians and traffic in frequent stormwater flows by controlling those flows within prescribed velocity/depth limits.

For new developments, the engineer shall design a stormwater drainage system in accordance with the “major/minor” system concept in accordance with Queensland Urban Design Manual (QUDM). That is, the “major” system shall provide safe, well-defined overland flow paths for rare and extreme storm runoff events while the “minor” system shall be capable of carrying and controlling flows from frequent runoff events.

For redevelopment areas, the on-site drainage system is to be designed in such a way that the estimated peak flow rate from the site for the design Average Exceedance Probability of the receiving minor system is no greater than which would be expected from the existing development. Further, it is not to be concentrated in such a way as to cause nuisance to downstream properties.

SC6.12.1.3 General

A suitable qualified and experienced professional engineer (RPEQ) shall undertake or oversee all aspects of the drainage design. The design shall comply with all relevant requirements of:

(a) this planning scheme policy;

(b) all Reference and Source Documents listed in section 14;

(c) any Development Approval conditions relevant to the design;

(d) any specific relevant and reasonable request provided by Council in writing.

The RPEQ shall sign all plans associated with the drainage, certifying that the design complies with this section.

The Queensland Urban Drainage Manual (QUDM) shall be the basis for design of stormwater drainage except where amended by this Guideline.

The engineer shall ensure that Council’s requirements relating to stormwater quality management, erosion and sediment control and acid sulphate soils are provided for in the stormwater design.

These requirements are detailed in Council's Soil and Water Quality Management guideline. Council has had prepared, or are in the process of producing, drainage studies for a number of particular catchments. Where a drainage study does not exist, the developer will be required to prepare a drainage study for Council approval prior to the lodgement of any development application.

The drainage study will act as a master plan for determining the drainage system and contributions for the development. The cost of the drainage plan shall be credited against drainage contributions required.

The design of the stormwater drainage system for any development shall be such that it caters for:

(a) that upstream drainage / properties are not adversely affected;

(b) that the downstream drainage system is capable of adequately catering for the discharge of the modified flow produced as a result of the development;

(c) it is consistent with any relevant drainage study or catchment and waterway management plan; and

(d) is based on the premise of peak load reduction by the use of suitable detention or infiltration methods.

If the downstream system is not capable of carrying the modified discharge, the engineer shall indicate the measure proposed to ensure the downstream system is capable of carrying the modified discharge. This will involve negotiation with adjoining landowners to produce easements over downstream drainage paths from the development site to the legal point of discharge.

Alternatively, where a development will result in increased runoff, the stormwater drainage system may include on-site measures such as detention basins to ensure that the peak discharge from the development area is restricted to a level no greater than that discharging prior to the development.

This does not preclude the need to obtain downstream drainage easements for discharges where none currently exist.

All works proposed within creeks and natural watercourse must have the approval of all relevant authorities prior to commencing the work and evidence of such approvals shall be provided with the design submission.

The design of the stormwater drainage system shall accommodate the future developed peak flows from upstream catchments on the basis of potential development in accordance with the Planning Scheme.

The engineer shall be responsible for assessing the existing and future developed flow regime entering the development site from upstream catchments and shall provide detailed calculations with the design submission.

Unless approved otherwise by the Council, piped drainage systems shall extend to the lawful point of discharge, with inlet works within the subject property.

SC6.12.1.4 Reference documents

(a) Council guidelines and specifications:
  (i) Construction standard C220 – Stormwater drainage – general
  (ii) Construction standard C221 – Pipe drainage
  (iii) Construction standard C222 – Precast box culverts
  (iv) Construction standard C223 – Drainage structures

(v) Construction standard C224 – Open drains including and kerb and gutter
(vi) Standard drawings – various
(vii) Council policy MW16 – Clearances to water and sewerage assets

(b) Australian Standards:
(i) AS1254 – Unplasticised PVC (uPVC) pipes and fittings for stormwater or surface water applications
(ii) AS2032 – Code of practice for installation of uPVC pipe systems
(iii) AS/NZS2566.1 – Buried flexible pipelines, structural design
(iv) AS3725 – Loads on buried concrete pipes
(v) AS4058 – Precast concrete pipes
(vi) AS4139 – Fibre reinforced concrete pipes and fittings

(c) Queensland legislation:
(i) *Local Government Act 2009*
(ii) *Sustainable Planning Act 2009*

(d) Queensland authorities:
(i) Department of Natural Resources, Brisbane City Council and IMEAQ (1993) *Queensland Urban Drainage Manual, Volumes 1 and 2*
(ii) Department of Community Safety (2003) *State Planning Policy 1/03, Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*
(iii) Department of Transport and Main Roads (2002) *Road Drainage Design Manual*

(e) Other:
(i) Argue J, *Australian Road Research Board Special Report 34, Stormwater drainage design in small urban catchments: a handbook for Australian practice*
(ii) Australian National Conference on Large Dams, Leederville WA (1986) *Guidelines on design floods for dams*
(iii) AustRoads, *Bridge design code*
(iv) Chow, Ven Te (1959) *Open channel hydraulics*
(v) Concrete Pipe Association of Australia, *Concrete Pipe Guide, charts for the selection of concrete pipe to suit varying conditions*
(vi) Hare, C.M., (1983) *Magnitude of Hydraulic Losses at Junctions in Piped Drainage Systems*, Institute of Engineers Australia
(vii) Henderson F.M. (1966) *Open channel flow*
(viii) Institute of Engineers Australia (1997) *Australian rainfall and runoff, a guide to flood estimation (ARR)*
(ix) Sangster, W.M., Wood, H.W., Smerdon, E.T., and Bossy, H.G. (1958) *Pressure changes at storm drain junction, engineering series, Bulletin No. 41, Engineering Experiment Station*, University of Missouri

(f) Council documents:
(i) Various stormwater drainage studies, catchment management plans and waterway management plans

SC6.12.2 Design, construction and other criteria

SC6.12.2.1 Hydrology

SC6.12.2.1.1 Design rainfall data

Council shall provide the design rainfall Intensity–Frequency–Duration (IFD) relationship data, for the particular catchment under consideration, upon request.

The nine basic parameters read from Maps 1–9 in Volume 2 of ARR shall be shown in the calculations submitted to Council, except where the Bureau of Meteorology provides a polynomial relationship for the catchment.

The design Annual Exceedance Probability (including climate change factor) is 1%.

For in-fill development and reconstruction works within existing developed areas, Council may vary the design Annual Exceedance Probability to be compatible with existing conditions. Where Council approves a lower Annual Exceedance Probability for in-fill development it will not be less than 50 years.

For minor events, the Annual Exceedance Probability depends on the zoning of the land being serviced by the drainage system. The minor system design Annual Exceedance Probability shall be:

(a) open space – 1 Exceedance per year

(b) residential – 18.13% Annual Exceedance Probability (former 5 year ARI)

(c) commercial – 18.13% Annual Exceedance Probability (former 5 year ARI)

(d) industrial – 18.13% Annual Exceedance Probability (former 5 year ARI)

(e) rural residential – 18.13% Annual Exceedance Probability (former 5 year ARI)

(f) central business – 7.5% Annual Exceedance Probability (former 15 year ARI)

For Cross-drainage requirements, refer to Table 5.06.01 in QUDM. Please note, a "Major" road, as defined in QUDM, is considered as a "Major Collector" road, and higher classifications, in Council's Road Hierarchy Plan.

Where a development is designed in such a way that the major system flows involves surcharge across private property, then the underground system (both pipe and inlets) shall be designed to allow the collection and containment of flows having a 1% Annual Exceedance Probability (including climate change factor) flood event from the upstream catchment within an easement in the private property.

A surcharge path shall be defined for systems even where 1% Annual Exceedance Probability (including climate change factor) flows can be maintained within the underground system. Easements shall be provided in private property over pipe systems and surcharge paths.

SC6.12.2.1.2 Catchment area

The catchment area of any point is defined by the limits from where surface runoff will make its way, either by natural or man-made paths, to this point. Consideration shall be given to likely changes to individual catchment areas due to the development of the catchment.

The catchment boundary shall be determined by using the most accurate information available subject to such information being acceptable to Council as appropriate. This shall be presented to Council in a contour map along with the source of information.

Catchment area land use shall be based on current available zoning information or proposed future zonings, where applicable.

Catchment plans shall be produced to reflect both the minor and major event catchments.

SC6.12.2.1.3 Rational method

Rational Method calculations to determine peak flows shall be carried out in accordance with QUDM Section 5.02.

A suitably qualified and experienced professional engineer (who shall be an RPEQ), using the approach outlined in this Guideline shall undertake or oversee all hydrologic calculations.

Co-efficients of Run-off shall be calculated in accordance with QUDM.

Details of percentage impervious for specific locations and for individual zonings shall be based on those stated in Council's *PSP 16.04 Stormwater Trunk Infrastructure Contributions Policy*.

The time of concentration of a catchment is to be determined in accordance with QUDM Section 5.05. For smaller urban catchments, standard inlet times in accordance with QUDM Table 5.05.1 are to be adopted unless otherwise agreed or directed by Council.

The maximum time of concentration, to the first inlet pit, in an urban area is to be 20 minutes unless sufficient evidence is provided to justify a greater time.

Where the flow path is through areas having different flow characteristics or includes property and roadway, then the flow time of each portion of the flow path shall be calculated separately.

Where it is deemed more appropriate to determine the time of concentration for a particular area, flow paths to pits shall be representative of the fully developed catchment. The engineer shall consider such things as fencing and the likely locations of buildings with the flow path shown for each collection pit on the catchment area plan. Consideration shall be given to likely changes to individual flow paths due to the full development of the catchment.

Surface roughness coefficients "n" in the kinetic wave equation is to be in accordance with QUDM Section 5.05. Note that the surface roughness / retardance co-efficient "n" referred to in QUDM is not the same as Manning's "n" value for surface roughness.

SC6.12.2.1.4 Other hydraulic models

The use of hydrological models may be used as long as the requirements of ARR and QUDM are met.

Where computer analysis programs are used, copies of the final data files and details of all calculations shall be provided on submission of the design to Council along with the final drawings.

SC6.12.2.2 Hydraulics

SC6.12.2.2.1 Hydraulic grade line

A suitably qualified and experienced professional engineer (who shall be an RPEQ), using the approach outlined in this Guideline shall undertake or oversee all hydraulic designs.

The calculations shall substantiate the hydraulic grade line adopted for design of the system shown on the drawings.

The criteria for determining the downstream water surface level are given below:

(a) known hydraulic grade line level from downstream calculations including pit losses at the starting pit in the design event;

(b) where the downstream starting point is a pit and the hydraulic grade line is unknown, a level of 0.15m below the invert of the downstream pit inlet is to be adopted;

(c) where the outlet is tidal or into other waterways the engineer shall refer to section 7.0 of QUDM;

(d) where the outlet is an open channel or natural watercourse and the design storm is the major event and the downstream flood levels are not known the top of the outlet pipe shall be the downstream control; and

(e) where the outlet is an open channel or natural watercourse, the design storm is the major event and downstream flood levels are known, the downstream control shall be the major event flood level.

The engineer shall take into consideration the following requirements during major flood events with regard to the road inundation depth:

(a) maximum depth of inundation at the kerb & channel lip to be limited to 300mm, based on the local catchment; and

(b) where the road reserve is adjacent to a trunk drain (as advised by Council) the road shall be graded such that the maximum water level from a Q100 event is to be less than 75mm at the kerb and channel lip.

The water surface in drainage pits shall be limited to 150mm below the kerb and channel invert for inlet pits and 150mm below the underside of the lid for junction pits.

In addition detailed calculations shall be provided to substantiate compliance in relation to:

(a) depth of flow criteria in relation to surcharging of major system flows;

(b) flow velocities to ensure vehicle / pedestrian safety; and

(c) road reserve inundation depths.

SC6.12.2.2.2 Minor system criteria

The acceptable channel flow widths shall be in accordance with section 5.09 pf QUDM unless otherwise agreed by Council.

Minimum conduit sizes shall be as follows:

(a) pipes – 375mm diameter (under roads/streets); and

(b) box culverts – 600mm wide x 300mm high

Minimum and maximum velocity of flow in stormwater pipelines shall be in accordance with section 5.16 of QUDM.

SC6.12.2.2.3 Pits

Inlet Pits shall be spaced so that the channel flow width is limited in accordance with sub-clause 5.09.1 and so that the inlet efficiency is not affected by adjacent inlet openings. Preference is to be given to the location of drainage pits being centred opposite the side boundaries or centre of an allotment.

Other pits shall be provided:

(a) to enable access for maintenance;

(b) at changes in direction, grade, level or class of pipe; and

(c) at junctions.

The maximum recommended spacing of pits where flow widths are not crucial is given in section 5.11.1 of QUDM.

Kerb inlet sections to gully pits are to be a preferred maximum of 2 number.

Information on pit capacities is available in the following sources:

(a) Queensland Urban Drainage Manual (QUDM);

(b) pit relationships given in Volume 1, Chapter 14 or ARR; and

(c) pit manufacturer's charts.

The engineer is able to assume that Mackay Regional Council (MRC) Standard gully pit has the same inlet capacity as a Bro Pit, but with no trough.

The engineer shall make allowance for a potential blockage as per the requirements of section of 5.10.2 of QUDM.

SC6.12.2.2.4 Hydraulic losses

The pressure change co-efficient "Ke" shall be determined from the appropriate charts given in QUDM.

Allowable reduction in "Ke" due to benching is given in QUDM.

Construction of a junction without a structure should be avoided where possible. Permission to do this is required by Council prior to detailed design. Where this is unavoidable, the pressure change co-efficients Ku, for the upstream pipe and Kl, for the lateral pipe, shall be determined from the charts given in QUDM Volume 2.

Going from larger upstream to small downstream conduits is to be in accordance with section 5.11.4 of QUDM.

SC6.12.2.2.5 Major system criteria

Surcharging of drainage systems which would provide for water depth in excess of the top of kerb will not be permitted except where the requirements of table 5.08.1 of QUDM are met.

The velocity x depth product of flow across the footpath and within the road reserve shall be such that safety of children and vehicles is considered. The maximum allowable depth of water within the road reserve, at the lip of the kerb and channel, is 0.3 metres and the maximum velocity x depth product of $0.4m^2/s$ is permitted. Where the safety of only vehicles can be affected, a maximum velocity x depth product of $0.6m^2/s$ is permitted. In open channels, the above velocity x depth product criteria will generally be followed or the engineer shall address the requirements for safety in relation to children by providing safe egress points from the channel or other appropriate methods.

Major storm flows in new developments shall be in accordance with section 5.09 of QUDM. In situations where allotments do not drain toward the new road frontage, the depth of the major storm flow shall not extend above the top of the roadway kerb. Roadway flow capacity shall be determined in accordance with section 5.09.2 of QUDM.

SC6.12.2.2.6 Open channels

Generally, open channels will only be permitted where they form part of the trunk drainage system and shall be designed to have smooth transitions with adequate access provisions for maintenance and cleaning. Where Council permits the use of an open channel to convey flows from a development site to the receiving water body, such channel shall comply with the requirements of this planning scheme policy.

The design of open channels shall be in accordance with Volume 1, Chapter 14, of ARR, Section 8 of QUDM. Council is also supportive of the approach adopted in the *Natural Channel Design Guidelines* published by Brisbane City Council.

Open channels will be designed to contain the major system flow less any flow that is contained in the minor system, with an appropriate allowance for blockage of the minor system.
Mannings "n" Roughness Co-efficients for open channels shall generally be derived from information in Chapter 14 of ARR.

Friction losses applicable to specific open channel types shall generally be determined using Mannings "n" values given below:

(a) concrete pipes of box sections – 0.013

(b) concrete (trowel finish) – 0.014

(c) concrete (formed without finishing) – 0.016

(d) sprayed concrete – 0.018

(e) bitumen seal – 0.018

(f) bricks or pavers – 0.015

(g) pitchers or dressed stone on mortar – 0.016

(h) rubble masonry or random stone in mortar – 0.028

(i) rock lining or rip-rap – 0.028

(j) corrugated metal – 0.027

(k) earth (clear) – 0.022

(l) earth (with weeds and gravel) – 0.028

(m) rock cut – 0.038

(n) short grass – 0.033

(o) long grass – 0.043

Where the product of average velocity and average flow depth for the design flow rates is greater than $0.4m^2/s$, the design will be required to be in accordance with Volume 1, Chapter 14, of ARR to specifically provide for safety.

Side slopes on grassed lined open channels are to be as shown in Council's standard drawing. Channel inverts are generally to have minimum cross slopes of 1 in 20.

The clearance between the top of the side slope batter and the boundary of the reserve, or easement, shall be an absolute minimum of 1.0m as shown on Council's standard drawings.

The preferred solutions for open channel treatments are natural treatments including the use of river rock lining, vegetation treatments, bio-retention systems or other soft engineering solutions.

Low flow provisions in open channels (man-made or altered channels) will require low flows to be contained within a pipe system or concrete lined channel section at the invert of the main channel. Sub-surface drainage is to be provided in grass lined channels to prevent waterlogging of the channel bed.

Transitions in channel slopes are to be designed to avoid or accommodate any hydraulic jumps due to the nature of the transition.

Energy losses associated with channel transitions and channel bends shall be determined in accordance with section 8.05 or QUDM.

SC6.12.2.2.7 Major structures

All major structures in urban areas, including bridges and culverts with a total waterway area greater than $3m^2$ shall be designed for the 1% Annual Exceedance Probability (including climate change factor) storm event.

A minimum clearance of 75mm in urban catchments and 300mm in rural catchments is required to allow for passage of debris without blockage between the 1% Annual Exceedance Probability (including climate change factor) flood level and the underside of any major structure superstructure, unless otherwise approved by Council. The engineer is required to liaise with Council where the proposed major structure is located in an urban area, and likely to be of piped construction, to discuss the need to provide debris clearance (to minimise the impact of flooding adjacent to the structure) and the desire to provide hydraulic efficiency in the design.

Certified structural design shall be required on bridges, major culverts and some specialised structures. Structural design shall be carried out in accordance with the Guidelines D3- *Structures / Bridge Design*.

Culverts (either pipe or box section) shall be designed in accordance with Queensland Department of Main Roads Road Drainage Design Manual, with due regard being given to inlet and exit losses, inlet and outlet control and scour protection.

Major structures, such as bridges and culverts, need to be considered by the designer as possible routes for fauna movements and where appropriate catered for in the design.

SC6.12.2.3 Stormwater detention – detention basins

Detention Basins may be provided as part of the drainage solution to limit the post development discharge to pre-development levels. Any proposed detention basin must be in conformity with Council's drainage strategy for the area and shall be designed in accordance with Section 6 of QUDM.

Minimum floor levels of dwellings adjacent to the detention basin shall be 0.3m above the 1% Annual Exceedance Probability (including climate change factor) flood level in the basin.

Installation of stormwater detention may be required on sites where the existing downstream drainage system is under capacity, or where large increases from pre-development flows are likely.

The storm duration for the design flood downstream of the detention basin is likely to be longer than without the basin. A graph showing the range of peak flood levels in the basin and peak discharges from the basin shall be provided for the storms examined.

Detention Basins shall be designed with the following characteristics:

(a) The peak discharge resulting from a storm having an average recurrence interval of 1% Annual Exceedance Probability (including climate change factor) on the fully developed catchment shall be attenuated. The extent of attenuation will be such that the peak discharge from the detention basis is equal to, or less than, the peak discharge produced from the undeveloped catchment by a storm of 1% Annual Exceedance Probability (including climate change factor). In addition the minor system Annual Exceedance Probability event shall be assessed to ensure downstream drainage systems can contain these flows. Where downstream easements are not in place the developer shall be responsible for obtaining such easements as is required to contain discharges in all events; and

(b) Alternatively the detention basin may be designed to alternate peak discharges from both minor system recurrence interval and 1% Annual Exceedance Probability (including climate change factor) recurrence interval events such that this discharge is equal to, or less than, the peak discharge produced from the undeveloped catchment for both the minor system recurrence interval and 1% Annual Exceedance Probability (including climate change factor) events.

The designer of the detention basin shall check its performance during floods resulting from the probable maximum precipitation to ensure that sudden catastrophic failure will not occur.

The engineer shall also check that the flow paths in excess of the design discharge are provided at locations where public safety will not be endangered.

The engineer shall consider the incorporation of a number of public safety measure in the design of the detention basin. The measures will be site-specific but may include:

(a) warning notices;

(b) fencing off the basin;

(c) depth gauges;

(d) child-proofing access to inlet structures, gully pits and manholes; and

(e) having due consideration for the probable maximum discharge and the safe conveyance of this flow through downstream properties.

Without limiting the approach taken by the engineer, Council will give due regard for the need to incorporate appropriate and specific safety measures in the design of the detention basin when considering its approval.

Unless prior separate approval has been given, any detention basin floor shall be graded to ensure it is self-draining.

The developer may propose that part of the detention basin is to be contributed to Council's part of their open space contribution. Prior to seeking any ‘credits’, the engineer should check that the circumstances proposed comply with the Planning Scheme Policy.

Any ‘credits’ for public open space contribution shall be at the sole discretion of Council.

SC6.12.2.4 Interallotment drainage

Interallotment Drainage shall be provided for every allotment in urban environments that does not drain directly to its frontage. Such drainage shall be designed to conform to Council's standard drawing.

Interallotment drainage shall be contained within an easement as detailed in Council's standard drawing. The easement shall be in favour of Council.

The interallotment drain shall be designed in accordance with Section 5.18 of QUDM to accept concentrated drainage from buildings and paved areas on each allotment. The engineer shall adopt Level III as the basis of the design for the roof and allotment drainage system – refer to Fig. 5.18c of QUDM.

The minimum pipe size for interallotment drainage shall be 225mm diameter.

Pipes installed as part of the interallotment drainage shall have a minimum longitudinal gradient of 0.2%.

The interallotment piped drain shall be constructed from rubber ring jointed pipes of either fibre reinforced concrete drainage pipe, reinforced concrete pipe, or uPVC pipe and shall conform respectively to the requirements of AS 4139, AS 4058 and AS 1254. In public road and recreation reserves where vehicle loads may be encountered, reinforced concrete and fibre-reinforced pipe shall be used. Should the Designer wish to propose an alternate material type, then separate Council approval must be obtained. Approval will only be given following satisfactory demonstration that the proposed alternate material will meet the performance requirements with regard to design and installation.

Interallotment drainage pits shall be located at all changes of direction. Pits shall be constructed in accordance with the Standard Drawing.

Where interallotment drainage and sewer mains are laid adjacent to each other they are to be spaced as specified in Council's standard drawing.

Where sewer mains are within 2 metres to interallotment drainage lines, they shall be shown on the interallotment drainage drawing.

SC6.12.2.5 Roof / allotment drainage

All roof drainage is to be conveyed to the underground drainage system.

The stormwater drainage system is to allow for underground drainage connections from the following:

(a) multi-unit developments on allotments greater than 900m^2;

(b) commercial developments;

(c) industrial developments; and

(d) other significant developments as determined by Council.

These connections are to be provided with an appropriately sized and located stub pipe extending at least 1m into the property. The designer shall provide for a minimum 600mm x 600mm drainage pit inside the private property at the end of the stub pipe.

The street inlet design capacity shall not account for the direct drainage connections.

Allotments including those adjoining drainage or park reserves are required to drain to the road frontage, unless otherwise approved.

Where allotments do not drain to the road frontage, allotment drainage shall be provided in accordance with Council's standard drawing. The outlet discharge point shall be as approved by Council.

Roof drainage outlets shall be provided on each side of the allotments, between 0.5m and 1.5m from the side boundary. The outlet shall include an approved kerb adaptor and pipe extending 1.0m into the property. Connections to the underground system shall be undertaken on the most elevated side of lots with one-way crossfall.

Where the underground drainage system is to be extended to provide a lawful point of discharge for 1-2 lots, then the designer shall provide for a 600mm x 600mm drainage pit inside the private property at the end of the stub pipe.

The stub drainage pipe shall be a minimum diameter of 225mm and the pipe invert shall be suitable to allow for the future installation of an upstream Gross Pollutant Trap (GPT), if considered appropriate.

SC6.12.2.6 Detailed design – conduits

The engineer shall specify the material type to be used in the conduit for the underground drainage system. The material type shall be either:

(a) precast reinforced concrete pipes complying with AS 4058;

(b) fibre reinforced concrete pipes complying with AS 4139;

(c) steel pipe and steel arches complying with AS 2041, AS 1761, AS 1762 or AS 3703 as appropriate; and

(d) UPVC pipes complying with AS 1254.

Alternate pipe material subject to satisfactory demonstration that the proposed alternate material will meet the performance requirements with regard to design and installation.

Conduits shall be designed to take into accordance requirements detailed in the Construction Specification C221 – Pipe Drainage.

Flexible pipes (PE and PP types) complying with AS 5065 are suitable for use in interallotment drainage, or in drainage reserves, where the conduit will be subject to infrequent and light traffic use.

The engineer shall ensure that any proposed use of flexible pipes confirms with the requirements of AS 2566 and Construction Specification C222 - *Pipe Drainage*.

If the engineer proposes to use reinforced concrete pipes in areas where any part of the pipe is below the potential acid sulphate zone, then the pipes shall be specified to have acid sulphate cover and the appropriate type of cement, unless otherwise approved by Council.

If the engineer proposes to use reinforced concrete pipes in areas where any part of the pipe is below the Highest Astronomical Tide (HAT), then pipes shall have saltwater cover to reinforcement, unless otherwise approved by Council.

Where the outlet of any proposed drainage system is below HAT then the engineer shall include an approved mechanism to prevent ingress of saline water into the drain during high tide.

Pipe bedding and cover requirements for reinforced and fibre reinforced concrete pipes shall be determined from the Concrete Pipe Association "Concrete Pipe Guide: or AS 3725.

For uPVC pipes, the bedding and cover requirements are to be detailed on the drawings and shall conform to AS2032.

In urban drainage systems, unless otherwise approved, all conduits laid under roadways or in areas of high water table and sandy soils shall be specified as rubber ring joint (RRJ) pipes.

Conduits laid along the roadway and in reserves may be flush-jointed, however where flush-jointed pipes are specified they shall be laid with "sand bands" or an approved equivalent.

Box-culverts are to be laid with approved proprietary products to prevent the egress of water and ingress of tree roots into the system.

Drainage lines in road reserves shall generally be located at the kerb line and parallel to the kerb. Drainage lines in easements shall generally be located within easements.

Minimum clear cover shall be the greater of the minimum recommended in Section 5.15 of QUDM or specified by the manufacturer, unless otherwise approved by the Council.

The minimum vertical and horizontal clearances between a stormwater pipe and any other pipe or service conduit shall be 150mm.

Notwithstanding, the engineer shall ensure that the clearance to any water or wastewater mains complies with the requirements of Council's Policy No. MW16 – *Clearance to Water and Sewerage Assets.*

Anchor blocks shall be designed on drainage lines where the pipe gradient exceeds 15 per cent. The design details shall address the size, and position in the trench as well as spacing along the line.

The penetration of the underground stormwater system with other services is generally not permitted. However, where no reasonable alternative is available, the engineer shall obtain Council approval to incorporate a penetration into the design. Full supporting details are to be lodged with Council, which is to include (but not limited to) service types, relevant pipe diameters, levels, hydraulic grade implications, and of angle of penetration.

If approval is granted to allow the penetration, the engineer shall incorporate into the design any requirement of the relevant Service Authority and provide a manhole around the penetration.

Stormwater conduits located within the road reserve shall be done so at an alignment indicated on Council's Standard Drawings and:

(a) where longitudinal to the road centre line on an alignment below or behind the kerb line as determined by the adopted style of kerb inlets selected; and

(b) where transverse to the road centreline on an alignment perpendicular to the road centreline.

At locations where stormwater conduit alignments conflict with other utility corridors within the verge, such as road intersections and curves, the stormwater conduit shall be laid at a grade and depth to ensure a minimum 1 metre cover to the top of the conduit from finished surface levels. If the 1-metre cover cannot be achieved, the designer shall amend the proposed pipe class or introduce suitable protection measures to ensure that the pipe operates within expected structural standards.

In all cases, the nominated pipe class is to be shown on the design (and if subsequently amended on the "as-constructed") drawings and shall be nominated by the designer after haven taken into account both construction and in-service loadings.

SC6.12.2.7 Pit design

Roadway gully pits shall be selected from one of the following types:

(a) Mackay Regional Council (MRC) standard gully pits – refer to standard drawing for details;

(b) bro pits; and

(c) drainway Pits.

Where the engineer wants to use an alternate pit design, prior approval must be obtained from Council.

Field gully pits shall be selected from one of the following types:

(a) Mackay Regional Council (MRC) standard field pits – refer to standard drawing for details;

(b) CPO (Circular Punch-Out) pits with approved tops; and

(c) FRC pit system.

Where the engineer wants to use an alternate pit design, prior approval must be obtained from Council.

Manhole pits shall be selected from one of the following types:

(a) Mackay Regional Council (MRC) standard manhole pits – refer to standard drawing for details

(b) CPO pits with approved tops

Where the engineer wants to use an alternate pit design, prior approval must be obtained from Council.

Typical pit designs and other pit design requirements are to be included in the standard drawings. Step irons shall not be detailed for inclusion within pits, unless otherwise approved by Council.

Generally, grated pits are not to be specified in street drainage designs. Where this is not practicable, the grates are to be of a “bicycle safe” design.

Notwithstanding the requirements of section 5.10 of this Guideline, the engineer shall locate all gully pits (including chamber and trough) opposite the boundary of abutting allotments, or at the centre of the allotment.

All roadway pits are to be provided with a 1m long formed kerb and channel transition.

Pits with troughs on horizontal curves are to be saw cut on the appropriate angle – no mortar infill is permitted.

In areas known to be, or likely to be, affected by a high water table, all pits and manholes shall be cast in-situ and not a precast type.

The engineer shall consider the use of a grate, or similar device, at the upstream entrance to all open conduits to prevent the unauthorised entry by any persons, particularly children, into the drainage system. The engineer shall install a grate, or similar, on any open conduit which has a vertical height greater than 750mm.

Any grate, or similar device, to be installed shall be designed to allow for authorised access into the drainage system, easy maintenance of the grate openings, and any metal shall be hot-dipped galvanised.

SC6.12.2.7.1 Stormwater discharge

Stormwater discharge shall be located to avoid recharging groundwater and creating or worsening salinity degradation of adjacent land. Generally, stormwater discharge shall be located to avoid areas with high groundwater tables, groundwater discharge areas or salt affected land. The designer shall meet requirements of the Environmental Protection Agency with regard to the salinity levels of discharge to natural watercourses.

Scour protection at culvert or pipe system outlets shall be constructed to minimise erosion. Generally, erosion protection shall, as a minimum, be designed in accordance with Queensland Department of Transport and Main Roads Road Drainage Design Manual.

Kerb and channel shall be extended to a drainage pit or natural point of outlet. Where the outlet velocity is greater than 2 metres per second or where the kerb and channel discharge is likely to cause scour, then the engineer shall incorporate appropriate protection to prevent scour and to dissipate the velocity.

At points of discharge from gutters or stormwater drainage lines, or at any concentration of stormwater onto adjoining properties, either upstream or downstream, Council will require an easement over the property(s) to the lawful point of discharge.

The easement shall be in favour of Council.

Where the drainage is to discharge to an area under the control of another statutory authority, the design requirements of that statutory authority are also to be met.

Piped stormwater drainage discharging to recreation reserves is to be taken to a natural watercourse and discharged in an approved outlet structure or alternatively taken to the nearest trunk stormwater line.

The engineer shall ensure that the quality of stormwater discharge complies with Council's Soil and Water Quality Management guideline.

SC6.12.2.7.2 Trench subsoil drainage

Subsoil drainage shall be provided in pipe trenches in accordance with the requirements of SC6.14 – Engineering design guideline – subsurface drainage design.

SC6.12.2.7.3 Reserves and easements

Urban developments

All overland flow paths and open channels not located within a road reserve or park reserve shall be located within an easement or drainage reserve.

All detention basins shall be located within a drainage reserve.

Easements shall be provided through and downstream of private property over underground drains or overland paths to the lawful point of discharge. All easements shall be in Council's favour and provided free of cost to Council.

Overland flow paths between allotments may be provided within local linkage or linear parks which shall have a minimum width of 15m. Narrow reserves between allotments to cater for overland flow paths only will require specific approval and are generally not acceptable.

Any linkage of reserves is to be designed as an integral part of a development by providing access to parks, schools, shops and other community facilities.

The location and layout of any linkage of reserves shall conform to the principles of Crime Prevention through Environmental Design (CPTED).

The minimum width of the easement or reserve shall be the greater of:

(a) the outer width of the largest underground culvert plus 2.5 metres;

(b) the width of the open channel (including batters up to 1:4 slope) plus 1.0m from each batter point; and

(c) where Council has approved open channel batters steeper than 1:4, the required width shall be 1.0m from one batter point and 4.0m from the other batter point. This is required to provide for adequate and safe access for Council plant to maintain the channel.

Evidence of any Deed of Agreement necessary to be entered into to construct any part of the drainage system shall be submitted prior to the issuing of a Decision Notice for Operational Works. Easements will need to be created prior to the endorsement of the plan of survey for the subdivision.

Evidence of any Agreement reached with adjacent landowners to allow an increased flood level on their property, or otherwise adversely affect their property and witnessed by an independent person shall be submitted prior to the issuing of a Decision Notice for Operational Works.

Rural residential development

Council will assess easement requirements for rural developments on an individual basis. In general, an easement, capable of containing the follow from a storm event having a 1% Annual Exceedance Probability (including climate change factor), will be required immediately downstream of the development except in the following circumstances:

(a) where a well-defined natural watercourse exists; and

(b) where the watercourse can contain the Q_{100} flow.

Council will assess the length of any downstream easement, to its lawful point of discharge, on an individual basis.

An easement is to be provided upstream of any culvert inlet where the calculated Q_{100} headwater extends beyond the road reserve and into private property.

Evidence of any Deed of Agreement necessary to be entered into to construct any part of the drainage system will need to be submitted prior to the issuing of a Decision Notice for Operational Works. Easements will need to be created prior to endorsement of the plan of survey for the subdivision.

Evidence of any agreement reached with adjacent landowners to allow an increased flood level on their property, or otherwise adversely affect their property and witness by an independent person shall be submitted prior to the Issuing of a Decision Notice for Operational Works.

SC6.12.3 Drawings and documentation

SC6.12.3.1 Design criteria and calculations

The design shall be submitted for consideration by Council and include all correspondence, Deeds, assumptions, reference material and calculations.

All drawings and documentation to be submitted to Council for approval shall conform to the requirements of Council's *Drawings and Documentation Guideline.* A copy of this Guideline will be made available on request.

Details including standard and non-standard pits and structures, pit benching, open channel designs and transitions shall be provided on the Drawings.

Failure to comply with Council's *Drawings and Documentation Guidelines* may result in the drawings and/or documentation being returned to the engineer without consideration by Council.

SC6.12.3.2 Summary sheets

A copy of a Hydrological Summary Sheet providing the minimum information is to be submitted by the engineer with the drawings. An example of the information required is including in QUDM – Volume 2 Appendix 5.

In addition, the engineer shall submit calculations for major storm events including backwater analysis of the surface drainage flow, including the volume of flow, depth of water, maximum velocity and extent of inundation.

SC6.12.3.3 Computer program files and program output

If requested, the engineer shall submit to Council for review, copies of computer program output and final computer data files for both hydrological and hydraulic models.

SC6.12.3.4 Special requirements – overland flow

Overland flow paths shall be provided at all sag points.

Where the underground drainage system has a design capacity less than 1% Annual Exceedance Probability (including climate change factor) flow, then the balance surface flow up to this flood event is to be accommodated within a drainage reserve which may include a concrete invert of minimum width of 1.2 metres. Where a concrete invert is required, it shall commence from the back of the kerb. The concrete section across the footpath shall be grade away from the kerb at 1:50.

The balance of the drainage reserve shall be turfed with a maximum slope of 1:4.

Where underground drainage has a design flow of 1% Annual Exceedance Probability (including climate change factor), then the underground system may be accommodated within an easement and include a positive outlet by surface drainage along the route of the easement. The inlet capacity of the sag pits is designed to capture the 1% Annual Exceedance Probability (including climate change factor) flow is to provide for blockage in accordance with QUDM.

Allotments adjacent to overland flow paths are to have floor levels in excess of the Q100 level shown on the relevant design drawings.

The engineer shall provide weir calculations at locations where overland flows cross the footpath adjacent to private allotments.

SC6.13 Engineering design guideline – structures / bridge design

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SC6.13.1 Scope and general

SC6.13.1.1 Scope

This section sets out the guidelines developed specifically for the design considerations to be adopted in the design of structural engineering elements for land subdivisions. The Guideline is to also apply to appropriate structurally elements designed on behalf of Council.

Such elements include:

(a) road traffic bridges;

(b) pedestrian bridges;

(c) structures other than bridges, but associated with roads (eg. major culverts, retaining walls, major sign support structures);

(d) small earth dams, detention basins;

(e) structures used for public safety (road safety barriers, pedestrian safety rails, street lighting); and

(f) temporary works.

Such structures may be of concrete, timber or steel constructions, but with emphasis placed on low maintenance.

SC6.13.1.2 Objective

The aim of design shall be the achievement of acceptable probabilities that the structure being designed will not become unfit for use during its design life, having regard to economic, physical, aesthetic and other relevant constraints.

SC6.13.1.3 Basis of design

The design shall be based on scientific theories, experimental data and experience, interpreted statistically as far as possible. The safety and service performance of a structure depends also on the quality control exercised in fabrication, supervision onsite, the control of unavoidable imperfections and the qualifications, experience and skill of all personnel involved. Adequate attention shall therefore be given to these factors.

In addition, adequate management control and supervision by experienced engineers shall be required at all stages of design and construction to prevent the occurrence of gross errors.

The minimum design load for all road traffic bridges shall be determined from AS5100, either using the S or M 1600 load, and based the particular traffic loadings reasonably expected to be imposed on the structure. The use of lesser design loads (eg T44) shall require specific Council approval and will require consideration of the most foreseeable load during the life of the bridge (for 100 years). The engineer will need to consider the likely future use of the bridge by heavy loads – e.g. cranes used in building works, as to whether the structure may have to be designed using higher design loads e.g. HLP 400. Approval for a design load lower than S or M 1600 will not be provided for a single-lane bridge.

Maintenance is a key factor affecting the design life of a structure/bridge. The Designer shall note on the drawings the adopted design life of the structure/bridge, together with the relevant maintenance program to be adopted by asset owner (generally Council) upon which the design life has been based. Parameter used in the design shall also be shown on the design drawings.

Specifications shall be notated on the Drawings with sufficient detail to ensure that the above described strategies are able to be effectively implemented at the construction stage.

SC6.13.1.4 Reference documents

(a) Council guidelines and specifications:
- (i) SC6.5 – Engineering design guideline – geometric road design (urban and rural)
- (ii) SC6.6 – Engineering design guideline – healthy waters
- (iii) SC6.12 – Engineering design guideline – stormwater drainage design

(b) Australian Standards:
- (i) AS1158 – The lighting of urban roads and other public thoroughfares (SAA Public Lighting Code)
- (ii) AS1170 – Minimum design loads on structures (SAA Loading Code)
- (iii) AS1684 – National time framing code
- (iv) AS3600 – Concrete structures
- (v) AS3700 – Masonry in buildings (SAA Masonry Code)
- (vi) AS4100 – Steel structures
- (vii) AS5100 – Bridge design
- (viii) AP23/94 – Waterway design – a guide to the hydraulic design of bridges
- (ix) AS/NZS3845 – Road safety barrier systems
- (x) Other codes and guidelines as relevant

(c) Other:
- (i) AustRoads, *Bridge design code*
- (ii) Institute of Engineers, *Australian rainfall and runoff*
- (iii) Department of Natural Resources, *Queensland urban drainage manual*
- (iv) Department of Main Roads and Transport, *Road planning and design manual*

SC6.13.2 Design, construction and other criteria

SC6.13.2.1 Road traffic and pedestrian bridges

Suitably qualified professional engineers who hold pre-registration with Department of Transport and Main Roads for design of bridges shall carry out bridge designs on behalf of Council or associated with any proposed development. The level of pre-registration must be commensurate to the monetary sum of the proposed structure.

The engineer shall submit evidence of their pre-registration to Council with the bridge design. The person must also be RPEQ certified.

The above pre-registration requirement does not preclude designs being submitted by other qualified professional engineers, (who are RPEQ registered) however Council reserves the right to call for evidence of the qualifications and experience of the nominated engineer; and may require referral of the design calculations to a nominated Consultant for checking.

If Council seeks to have the design calculations checked, the cost for doing so will be borne by the developers.

The Australian Standard AS5100 *Bridge Design* and AP-23/94 *Waterway Design – A Guide to the Hydraulic design of Bridges* shall be used as the basis for all bridge designs. Where bridges are to be constructed from materials other than those covered specially by this Standard, reference shall be made to other specific Standards and current technical literature for materials performance and durability requirements.

The engineer shall incorporate current industry best practices into the bridge design to ensure the bridge has low maintenance finishes. Adequate precautions shall be taken for protection of the materials used in the bridge design; for example, timber and steel require special consideration.

Heavy debris and bed loads may be characteristic of some streams so that large spans with slender piers are encouraged. If overtopping is permitted, pedestrian safety rails and road safety barriers are usually omitted. Flood depth indicators and appropriate signposting will be provided in such cases.

Preventative maintenance is a key issue affecting the design life of the structure. The Drawings shall specify the design life of the structure together with the relevant maintenance programs to be adopted upon which the design life is based.

Parameters used in the design shall also be shown on the Drawings.

Unless otherwise indicated on the development application or in writing by Council, small bridges within the development shall be designed with afflux as determined by Council with certification stating that the bridge is capable of withstanding the inundation loadings for up to the 1% Annual Exceedance Probability (including climate change factor) storm event.

If in the opinion of the engineer, such certification is impractical, the structure shall be designed to convey the 1% Annual Exceedance Probability (including climate change factor) storm event without inundation.

Where structures are designed to be inundated, the effect of the backwater gradient on upstream property shall be identified on the drawings.

The engineer shall also identify the current and possible future implications issues created because of the backwater effect on upstream properties.

Bridges located in roadways which are to be dedicated as public roads shall be designed to convey the stormwater event identified in the drainage design specification. Where no inundation is permitted, appropriate afflux shall be adopted together with a 500mm freeboard to underside of the bridge deck.

Designers should enquire regarding current or likely provision for public utilities on bridges. These should be concealed for aesthetic reasons.

The clear width for a pedestrian bridge shall be 2 metres minimum. Barrier kerb shall be provided on both sides with adequate provision for drainage of the bridge surface.

SC6.13.2.2 Provision for pedestrians on road bridges

Provision for pedestrians on bridges is required in rural residential as well as urban areas. The minimum provision is a 2.0m footpath with kerb at the road edge and pedestrian safety rails at the external edge.

Council may require the provision of separate pedestrian footpaths in other situations should the anticipated traffic warrant it.

Disabled access shall be considered, and incorporated, into the design.

Urban road and footbridges shall be lit in accordance with the appropriate Australian Standard.

SC6.13.2.3 Structures other than bridges, associated with roads

A suitably qualified and experienced professional engineer (RPEQ) shall undertake all aspects of the design of any public utility structures, major culverts, major sign support structures, retaining walls, and the like.

The design shall comply with all relevant requirements of:

(a) this planning scheme policy;

(b) all reference and source documents listed in section 1.4;

(c) any relevant Australian Standard;

(d) any relevant requirements of the utility owner;

(e) any development approval conditions relevant to the design; and

(f) any specific relevant and reasonable request provided by Council in writing.

SC6.13.2.4 Structures used for public safety

A suitably qualified and experienced professional engineer (RPEQ) shall undertake all aspects of the design of any structure to be used for public safety.

The design shall comply with all relevant requirements of:

(a) this planning scheme policy;

(b) all reference and source documents listed in section 1.4;

(c) any relevant Australian Standard;

(d) any development approval conditions relevant to the design; and

(e) any specific relevant and reasonable request provided by Council in writing.

The RPEQ shall sign all plans associated with the project, certifying that the design complies with this section.

Since the requirement of road safety barriers and pedestrian safety rails on bridges are different, the design engineer shall consider whether separate traffic and pedestrian barriers can be detailed to satisfy the major functional requirements.

The AUSTROADS Bridge Design Code and Department of Transport and Main Roads *"Road Planning and Design Manual"* are recommended references in this regard.

It is essential that all safety barriers and rails have been fully tested and accredited for the intended use under quality assurance provision. The engineer is to ensure that appropriate corrosion protection shall be considered in specifying the materials to be used.

Bridge crossings in urban and rural residential areas shall be provided with street lighting in accordance with AS 1158. Such requirements will be noted accordingly on the drawings.

SC6.13.2.5 Temporary works

A suitably qualified and experienced professional engineer (RPEQ) shall undertake all aspects of the design of any temporary works required.

The design shall comply with all relevant requirements of:

(a) this planning scheme policy;

(b) all reference and source documents listed in section D3.03;

(c) any relevant Australian Standard;

(d) any development approval conditions relevant to the design; and

(e) any specific relevant and reasonable request provided by Council in writing.

The RPEQ shall sign all plans associated with the project, certifying that the design complies with this section.

A construction programme, indicating the sequence of events leading to the implementation and removal of the temporary structures shall be specified on the drawings.

SC6.13.2.6 Drawings and documentation

All drawings and documentation to be submitted to Council for approval shall conform to the requirements of Council's *Drawings and Documentation Guidelines*. A copy of these Guidelines will be made available on request.

Failure to comply with Council's *Drawings and Documentation Guidelines* may result in the drawings and/or documentation being returned to the engineer without consideration by Council.

SC6.13.2.7 Special requirements

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SC6.14 Engineering design guideline – subsurface drainage design

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SC6.14.1 Scope and general

SC6.14.1.1 Scope

This section sets out the guidelines for the design of the subsurface drainage system for the road pavement and/or sub-grade.

This planning scheme policy contains procedures for the design of subsurface drainage, including:

(a) subsoil and Foundation Drains;

(b) sub-pavement drains; and

(c) drainage mats, including type A and type B mats.

Reference guidelines for the application and design of subsurface drainage include ARRB Special Reports 35 and 41, and the AustRoads publication – *Guide to the Control of Moisture inroads*. The full titles of these references are given below.

SC6.14.1.2 Objective

The objective in the design of the subsurface drainage system is to control moisture content fluctuations in the pavement and/or sub-grade to within the limits assumed in the pavement design.

In the areas with a history of salinity problems, subsurface drainage may be prescribed to keep the groundwater table lower in the strata to avoid progressive deterioration of the health of topsoil and upper layers due to salinity levels increased by rising and/or fluctuating groundwater tables.

SC6.14.1.3 Terminology

Subsoil drains are intended for the drainage of ground water or seepage from the sub-grade and/or the sub-base in cuttings and fill areas.

Foundation drains are intended for the drainage of seepage, springs and wet areas within and adjacent to the foundations of the road formation.

Sub-pavement drains are intended for the drainage of the base and sub-base pavement layers in flexible pavements. They may also function to drain seepage or groundwater from the sub-grade.

Type A drainage mats are intended to ensure continuity of a sheet flow of water under fills, to collect seepage from a wet seepage areas, or for protection of vegetation or habitat downstream of the road reserve whee a fill would otherwise cut the flow of water.

Type B drainage mats are constructed to intercept water that would otherwise enter pavements by capillary action or by other means or fills and to intercept and control seepage water and springs in the floors of cuttings.

SC6.14.1.4 Reference documents

(a) Council guidelines and specifications:
  (i) Construction standard C230 – Subsurface drainage – general
  (ii) Construction standard C231 – Subsoil and foundation drains
  (iii) Construction standard C232 – Pavement drains
  (iv) Construction standard C233 – Drainage mats
  (v) Standard drawings – various

(b) Australian Standards:
  (i) AS 2439.1 – Perforated drainage pipe and associated fittings
  (ii) AS/NZS1477 – Unplasticised PVC (UPVC) pipes and fittings for pressure applications

(c) Other:
  (i) AustRoads (1983) *Guide to the control of moisture in roads*
  (ii) Gerke, R.J. for the Australian Road Research Board (1987) *Special report no. 35 – Subsurface drainage of road structures (ARRB-SR35)*
  (iii) Mulholland R.J. for the Australian Road Research Board (1989) *Special Report No. 41 – A structural design guide for flexible residential street pavements (ARRB-SR41)*

SC6.14.2 Subsoil and sub-pavement drains

SC6.14.2.1 Warrants for use

Subsoil drains are designed to drain groundwater or seepage from the sub-grade and/or sub-base in cuttings and fill areas.

Sub-pavement drains are designed to drain water from base and sub-base pavement layers in flexible pavements, and too drain seepage or groundwater from the sub-grade.

The designer shall ensure that subsoil or sub-pavement drains are to be provided on both sides of the formation in the following locations:

(a) all urban/street developments – regardless of abutting land zoning;

(b) cut formations where the depth to finished sub-grade level is equal to or greater than 400 mm below the natural surface level;

(c) locations of known hillside seepage, high water table, isolated springs or salt affected areas;

(d) irrigated, flood-prone or other poorly drained areas;

(e) highly moisture susceptible sub-grades, ie. commonly displaying high plasticity or low soaked CBRs (<7);

(f) use of moisture susceptible pavement materials;

(g) existing pavements with similar sub-grade conditions displaying distress due to excess subsurface moisture;

(h) in trenches in which underground drainage has been installed;

(i) at cut-to-fill transitions;

(j) all landscaped island; and

(k) all rural residential developments.

Where only one side of the formation is in cut, the other side in fill, it may be sufficient to provide subsoil or sub-pavement drains only along the edge of the formation in cut.

A geotechnical report supporting the elimination of any subsoil drain will need to be submitted if the designer proposes to consider this option.

The need for subsoil and sub-pavement drains may otherwise become apparent during the construction process, due to changes in site moisture conditions or to areas of poorer sub-grade being uncovered that were not identified in the geotechnical investigation.

The design drawings shall be suitably annotated to the potential need for subsoil or sub-pavement drains in addition to those shown on the drawings.

SC6.14.2.2 Layout, alignment and grade

Typical cross sections or subsoil and sub-pavement drains are shown in Council's standard drawings.

In kerbed roads, the two acceptable alternative options for subsoil drainage both allow for the line of the trench to be directly behind the kerb line. These options are shown in Council's Standard Drawing. Pavement layers must extend to at least the line of the rear of the trench.

In unkerbed roads, subsoil and sub-pavement drains shall be located within the shoulder preferably at the edge of the pavement layers.

The minimum desirable longitudinal design grade shall be 1.0%. For non-corrugated pipes, an absolute minimum grade of 0.5% is acceptable.

Trench widths shall be a minimum of 300 mm, with a minimum depth below finished subgrade level of 600 mm in earth and 450 mm in rock, and below the invert level of any service crossings.

Outlets shall be spaced at maximum intervals of 150 metres into gully pits or outlet headwalls. Where practical, discharge shall be on the downhill side of the embankment or in the cut-fill area so as to reduce the risk of recharge to the subsurface water table. Unless otherwise authorised, where subsurface drains outlet through fill batters, unslotted plastic pipe of the same diameter as the main run shall be specified.

A small precast concrete headwall shall be installed at the drain outlet with a marker post to assist maintenance and protect the end of the pipe.

Flushpoints are to be provided at the commencement of each run of drain, and at intervals not exceeding 60 metres. Cleanouts shall generally be located:

(a) within the kerb & channel transition section (when located at stormwater pit);

(b) directly at the rear of the kerb; or

(c) at the edge of the shoulder, as applicable.

Where the subsoil drain is laid adjacent to new kerb, the designer shall note on the drawings a requirement for the contractor to indicate the location of the flushpoints adjacent to the freshly poured kerb.

In salinity affected areas, the designer should consider providing a separate drainage system for subsurface drains to discharge to a basin where controlled release or desiccation treatment and removal can be facilitated as a maintenance operation. Saline subsurface drainage should not be routinely discharged directly into natural watercourses.

Reference to water quality targets for downstream watercourses is essential and the designer shall provide advice on discharge operations and maintenance compatible with water quality targets and the requirements of the relevant land and water resource authority.

SC6.14.3 Foundation drains - warrants for use

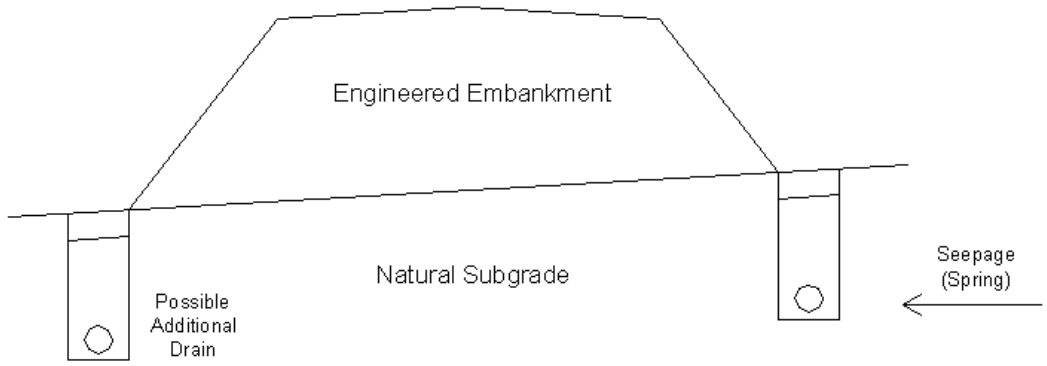
Foundation drains are designed to drain excessive ground water areas within the foundation of an embankment or the base of cutting, or to intercept water from entering these areas.

The need to provide foundation drains may be apparent from the results of the geotechnical survey along the proposed road formation alignment, and in this case the location shall be shown on the drawings. However, more commonly, the need to provide foundation drains is determined during construction, and hence in this situation requirements and locations cannot be ascertained at the design stage.

Where the road formation traverses known swampy, flood-prone, salt affected areas or watercharged strata, the Drawings shall be suitably annotated to the potential need for foundation drains at various locations, in addition to those shown on the drawings.

Typical cross-sections of foundation drains are shown below in Figure SC6.14.3.A.

Figure SC6.14.3.A – Foundation drains



The minimum desirable design grade shall be 1.0%. For non-corrugated pipes an absolute minimum grade of 0.5% is acceptable.

Foundation drains shall be a minimum trench width of 300mm, with a variable trench depth to suit the application and ground conditions on site.

Outlets shall be spaced at maximum intervals of 150 metres.

Where practicable, cleanouts are to be provided at the commencement of each run of foundation drain and at intervals not exceeding 80 metres. Where not practicable to provide intermediate cleanouts, outlets shall be spaced at maximum intervals of 100 metres.

SC6.14.4 Drainage mats (blankets) – warrants for use

Type A drainage mats are designed where there is a need to ensure continuity of a sheet flow of water under fills. It is intended to collect surface seepage from a wet seepage area or for protection of vegetation of habitat downstream of the road reserve where a fill would otherwise cut the flow of water.

Type A drainage mats are constructed after the site has been cleared and grubbed and before commencement of embankment construction.

Type B drainage mats are designed where there is a need to intercept water that would otherwise enter pavements by capillary action or by other means on fills and to intercept and control seepage water and springs in the floors of cuttings.

Type B drainage mats shall be constructed after completion of the sub-grade construction and before construction of the pavement.

The need to design for the provision of drainage mats should be apparent from the result of the geotechnical survey along the proposed road formation alignment.

SC6.14.5 Materials

SC6.14.5.1 Subsoil and sub-pavement drain pipe

Pipes designated for subsoil, foundation and sub-pavement drains shall be 100mm diameter slotted pipe. However, alternative design options may be considered by Council, subject to the provision of required design detail and justification.

Corrugated plastic pipe shall conform to the requirements of AS 2439.1. The appropriate class of pipe shall be selected on the basis of expected live loading at the surface. Joints, couplings, elbows, tees and caps shall also comply with AS 2439.1.

Slotted rigid uPVC pipe shall be of a type and class approved by Council.

All pipes shall be slotted, and fitted with a suitable geotextile filter tube, except for cleanouts and outlets through fill batters that shall be unslotted pipe.

SC6.14.5.2 Intra pavement drain pipe

Pipes designated for intra pavement drains with crushed rock sub-bases having layer thicknesses neither less than 150 mm nor more than 200 mm shall be slotted thick walled UPVC pressure pipe complying with AS/NZS 1477. Alternative design options may be considered by Council subject to the provision of required design detail and justification.

Pipes designated for intra pavement drains with crushed rock sub-bases having layer thicknesses exceeding 200 mm shall be slotted pipe of a type and class approved by Council.

Pipes for use in Type B drainage mats shall be slotted thick walled uPVC pressure pipe complying with AS.NZS 1477.

SC6.14.5.3 Filter material

The types of filter material covered by this Guideline include:

(a) Type A filter material for use in subsoil, foundation and sub-pavement (Trench) drains and for Type B drainage mats;

(b) Type B filter material for use in subsoil, foundation and sub-pavement (trench) drains;

(c) Type C filter material comprising crushed rock for use in Type A drainage mats; and

(d) Type D filter material comprising uncrushed river gravel for use in Type A drainage mats.

Material requirements and gradings for each type of filter material are included in Construction standard C230 – Subsurface drainage – general.

The type of filter material specified to backfill the sub-surface drainage trenches (subsoil, foundation and sub-pavement drains) shall depend on the permeability of the pavement layers and/or sub-grade and the expected flow rate.

Generally, Type A filter material is used for the drainage of highly permeable sub-grade or pavement layers such as crushed rock or coarse sands, while Type B filter material is used for the drainage of sub-grade and pavement layers of lower permeability such as clays, silts or dense graded gravels.

Further guidance to the selection of appropriate filter material is contained in ARRB Special Report 35.

SC6.14.5.4 Geotextile

To provide separation (i.e. prevent infiltration of fines) between the filter material in the trench and the sub-grade or pavement material, geotextile may be designated to encapsulate the filter material. The geotextile shall comply with the requirements included in Construction standard C230 – Subsurface drainage – general.

Geotextile shall also be designated for both Type A and Type B Drainage Mats.

SC6.14.6 Documentation

SC6.14.6.1 Drawings and calculations

The proposed location of all subsurface drains shall be clearly indicated on the drawings, including the nominal depth and width of the trench, and the location with respect to the line of the kerb / gutter or edge of pavement.

The location of outlets and cleanouts shall be indicated on the drawings.

Assumptions and / or calculations made in the determination of the need or otherwise for subsurface drainage in special circumstances or as a variation to the requirements of this Guideline shall be submitted to Council with the drawings.

All drawings and documentation to be submitted to Council for approval shall conform to the requirements of Council's Drawings and documentation guidelines. A copy of these Guidelines will be made available upon request.

Failure to comply with Council's Drawings and documentation guideline may result in the drawings and/or documentation being returned to the designer without consideration by Council.

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SC6.15 Engineering design guideline – water supply design

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SC6.15.1 Scope and general

SC6.15.1.1 Scope

This planning scheme policy sets out the requirements to be used in the design of water supply facilities within Mackay Region to met the required service standards, design life, environmental requirements and adherence to Council's preferred plant and equipment needs.

This planning scheme policy includes the design of a water supply system as either a stand-alone project or part of a development and its integration into the existing water supply system.

The design shall be undertaken under Council's Asset Creation process (as outlined in this planning scheme policy) and shall comply in all respects with relevant Legislation, Codes of Practice, Australian Standards and with Council's local laws, policies and Guidelines.

The designer shall ensure that all assets to be procured in the asset creation process shall comply in all respects with the requirements of and/or intent of this planning scheme policy and referenced documentation.

This planning scheme policy contains procedures for the design of the following elements of a water supply system:

(a) service reticulation;

(b) trunk mains; and

(c) pump stations, complete with all ancillary plant and equipment to effect a fully operational pump station.

SC6.15.1.2 Structure

This Guideline is based on the national Water Supply Code of Australia (WSA-03) and is complimented by the strategic product specifications and technical requirements contained within WS-SPEC.

In doing so, the Guideline is structured as follows:

(a) to nominate the Water Services Association of Australia (WSAA) codes and associated documents as the general requirements to be met for the asset creation process within the Mackay City Council Area of jurisdiction;

(b) to specify parameters, requirements and functions contained within the codes that the Council is to nominate or to amend;

(c) to specify additional technical and/or administrative matters (that are not otherwise specified within Australian Codes or Standards) pertaining to Operational Works applications made in accordance with the SPA;

(d) to specify any technical requirements not covered by the codes;

(e) to identify materials, solutions and methods permitted by the codes that are not acceptable to Council; and

(f) to specify preferred options where the Codes provide for several methods to deal with a particular issue.

WSA-03 is available from the Water Supply Association of Australia (WSAA), email: info@wsaa.asn.au. WS-SPEC is available from the Saiglobal Webshop at www.saiglobal.com/shop.

SC6.15.1.3 Consultation

The designer is required to prepare one concept Water Master Plan of the proposed development and indicate how the water supply design for the proposed development relates to the current / proposed road layout, existing utility services, streetscape and water supply infrastructure. These services and infrastructure are to be plotted onto the plan and cross-sectional views.

The designer is encouraged to consult with the relevant authorities prior to, and during, the preparation of a design concept to ascertain service plans and specific requirements of the relevant authority as they relate to the proposed water supply design and installation.

The designer is strongly encouraged to discuss the master plan during initial consultation with Council (Mackay Water) officers to ensure planning and know constraints are considered by the designer prior to the lodgement of any Operational Works application. The plan may also be required to be prepared and consultation held with Council officers prior to lodgement of a MCU or RoL development application. As a minimum, the following aspects of the proposed development should be included on the plan:

(a) legend;

(b) all allotments;

(c) boundary of land;

(d) north point;

(e) location and size of existing mains;

(f) location, size of new mains;

(g) location of other services which cross the mains;

(h) details of connection to existing mains;

(i) the location of valves, hydrants, scours and caps, T's, reducers, etc.;

(j) road crossing conduit locations;

(k) water service connection locations;

(l) preliminary details of any pumping stations which may include electrical switchboard layout, pipe; and

(m) work details and pump details.

SC6.15.1.4 Environmental risk assessment

The designer shall ensure that the design of infrastructure shall be planned and executed to minimise risk to the environment. Where a choice of alternative solutions is possible, an objective environmental risk assessment shall be undertaken to give due weight to reducing the risks to the environment resulting from the construction and operation of the infrastructure.

SC6.15.1.5 Connections to Council's infrastructure

The connection of new water supply infrastructure to Council's existing system forms part of the infrastructure realisation to be carried out at the developer's expense. Generally, Council staff will undertake all connections to Council's water supply infrastructure. The contractor shall not carry out the connection unless prior approval is given by Council. This will only be given in exceptional circumstances.

When Council makes the connection, an estimate of cost will be provided to the developer and the connection will not be made until the payment is received.

Where the contractor is to make a connection, the designer is to co-ordinate the work and the processes for inspection and payment. Council shall be given 5 working days notice of the work to enable Council to provide staff to operate valves and isolate pumping stations as necessary and to monitor the Contractor's work.

An estimated cost of the monitoring shall be agreed prior to notice being given. The estimated cost and a signed undertaking to pay the actual costs of the work when completed shall accompany the notice.

Contractors are not permitted to operate Council's infrastructure unless written approval has been obtained from Council.

Council reserves the right, on advice of its authorised representative to stop, or take over a connection being undertaken by a contractor, if in the representative's opinion the contractor is incapable of completing the connection work in a reasonable time without causing damage to Council's infrastructure or undue inconvenience to the public.

Consumer requirements shall be met by providing a water main and allowing an appropriate point of connection for each individual property.

SC6.15.1.6 Definitions

Table SC6.15.1.6.A – Definitions used in SC6.15 – Engineering design guidelines – water supply design

Term	Definition
Asset creation	Means any or all aspects of the planning, design, construction, supervision of construction, testing and commissioning and eventual handover of water supply infrastructure.
Contractor	Means a private contractor approved by Council to construct water supply infrastructure on behalf of a Developer.
Council	Means Mackay Regional Council and its Mackay Water business unit
Designer	Means an experienced Professional Engineer who is certified as a Registered Professional Engineer Queensland (RPEQ) and is competent to perform the engineering works required for the Asset Creation process.

Term	Definition
Developer	Means the person who has submitted a planning application for the provision of infrastructure under the Asset Creation process or for the utilisation of existing water supply infrastructure.
Service reticulation	Means pipework less than DN300 and for which direct service connections are permissible. Includes allotment circulation.
Surveyor	Means a licensed surveyor, endorsed in the register of surveying associates, surveying graduates, surveyors (body corporate) and surveyors (individual), who is competent to perform the surveying work required for the asset creation process on behalf of a developer.
Switchgear and control gear assembly	Means main switchboard, main distribution board, distribution board, control board, electrical kiosk, electrical panel, control panel or similar enclosure.
The code	Means the Water Supply Code of Australia (WSA-03) published by the Water Supply Association of Australia (WSAA).
Trunk mains	Means pipework equal to or greater than DN 300, and for which no direct service connections are permissible.
WS-SPEC	Means the national standard water industry specifications.

SC6.15.1.7 Abbreviations

Table SC6.15.1.7.A – Abbreviations used in SC6.15 – Engineering design guidelines – water supply design

Abbreviation	Full term
ABS	Acrylonitrile butadiene styrene
AHD	Australian height datum
AOP	Allowable operating pressure
AS/NZS	Australian / New Zealand standard
DA	Development approval
DICL	Ductile iron cement lined
DIEL	Ductile iron epoxy lined
DN	Nominal diameter
EN	European standard

Abbreviation	Full term
EMP	Environmental management plan
FBPE	Fusion bonded polyethylene (“sintakote”)
GRP	Glass reinforced plastic
IDAS	Integrated development assessment system
ITP	Inspection and test plan
KL	Kilolitre
KPA	Kilopascal
KW	Kilowatt
L/S	Litres per second
MA	Milliamps
MAOP	Maximum allowable operating pressure
MEN	Multiple earthed neutral
MGA	Map grid of Australia
MH	Maintenance hole
MPA	Megapascal
NPSHA	Net positive suction head available
NPSHR	Net positive suction head required
PID	Process and instrumentation diagram
PLC	Programmable logic controller
PN	Nominal pressure class
PVC	Polyvinylchloride
PVC–M	Polyvinylchloride modified
PVC–O	Polyvinylchloride orientated
PVC–U	Polyvinylchloride unplasticised
RPEQ	Registered Professional Engineer Queensland
RPZD	Reduced pressure zone device
RRJ	Rubber ring joint
SCA	Switchgear and control gear assembly
SCADA	Supervisory control and data acquisition
SCL	Steel cement lined

Abbreviation	Full term
SEL	Steel epoxy lined
SPA	*Sustainable Planning Act 2009*
WSAA	Water services association of Australia
WS-SPEC	Water services specification
WWSS	Wastewater swirl separator

SC6.15.1.8 Order of precedence

Where discrepancy or contradiction in documentation may occur, the order of precedence for documents specifying the works to be undertaken (from highest to lowest order of precedence) shall be as follows:

(a) this planning scheme policy;

(b) Mackay Regional Council Standard Policies, specifications and drawings; and

(c) Water Supply Code of Australia (WSA-03).

SC6.15.1.9 Reference documents

Documents referenced in this planning scheme policy are listed below. The designer shall possess, or have access to, the latest edition of all documents required to comply with this planning scheme policy, including all current amendments and supplements of those documents. The designer shall include all relevant specifications and requirements of these documents into the design of the works.

(a) Council construction specifications:
  (i) Construction standard C401 – Water supply

(b) Council policy documents:
  (i) Mackay Regional Council Policy MW16 – Clearance to Water and Sewerage Assets

(c) WSA-03 – Water supply code of Australia

(d) WS-SPEC – Water services specification

(e) Australian Standards:
  (i) References in this planning scheme policy or the drawings to Australian Standards are noted by their prefix AS or AS/NZS. The designer shall use the latest edition of the Australian Standards, including amendments, supplements and replacement applicable thereto. Relevant Australian Standards are listed within WSA-03.

(f) Council standard specifications:
  (i) Council Standard Specification for Electrical Assets

(g) Other documents:

(i) Department of Natural Resources (1997) *Water Resources Guidelines for Planning and Design of Urban Water Supply*

(ii) Institute of Public Works Engineering Australia (IPWEA) *Streets Opening Conference Information Bulletin on Codes and Practices (Sections 3 and 4 detailing locations and depths of other services and preferred location for water reticulation pipes)*

(iii) ISO 5199 – Technical specifications for centrifugal pumps

(h) WSAA WSA-03 drawings (as amended by Council):

(i)	WAT 1100	Design layouts	A3-04266 B
(ii)	WAT 1101	Design layouts	A3-04267B
(iii)	WAT 1102	Typical mains construction	A3-04268B
(iv)	WAT 1103	Typical mains construction	A3-04269B
(v)	WAT 1104	Typical mains construction	A3-04270B
(vi)	WAT 1105	Typical mains construction	A3-04271B
(vii)	WAT 1106	Property services	A3-04272B
(viii)	WAT 1107	Property services	A3-04273B
(ix)	WAT 1108	Property services	A3-04274B
(x)	WAT 1109	Property services	A3-04275B
(xi)	WAT 1200	Soil classification guidelines	A3-04276B
(xii)	WAT 1201	Embedment and trenchfill typical arrangement	A3-04277B
(xiii)	WAT 1202	Standard embedment rigid and flexible pipes	A3-04278B
(xiv)	WAT 1203	Special embedment inadequate foundations	A3-04279
(xv)	WAT 1204	Special embedment support utilising piles	A3-04280B
(xvi)	WAT 1205	Thrust block details	A3-04281B
(xvii)	WAT 1206	Thrust block details	A3-04282B
(xviii)	WAT 1207	Thrust and anchor blocks	A3-04283B
(xix)	WAT 1208	Restrained jointing system	A3-04284B
(xx)	WAT 1209	Trench drainage	A3-04285B
(xxi)	WAT 1210	Trench drainage	A3-04286B
(xxii)	WAT 1211	Buried crossings	A3-04287B
(xxiii)	WAT 1212	Buried crossings	A3-04288B
(xxiv)	WAT 1213	Buried crossings	A3-04289B
(xxv)	WAT 1214	Buried crossings	A3-04290B
(xxvi)	WAT 1300	Valves and hydrants	A3-04291B
(xxvii)	WAT 1301	Valves and hydrants	A3-04292B
(xxviii)	WAT 1302	Valves and hydrants	A3-04293B
(xxix)	WAT 1303	Valves and hydrants	A3-04294B
(xxx)	WAT 1304	Valves and hydrants	A3-04295B
(xxxi)	WAT 1305	Valves and hydrants	A3-04296B
(xxxii)	WAT 1306	Valves and hydrants	A3-04297B
(xxxiii)	WAT 1307	Typical appurtenances	A3-04298B
(xxxiv)	WAT 1308	Typical appurtenances	A3-04299B
(xxxv)	WAT 1309	Typical appurtenances	A3-04300B
(xxxvi)	WAT 1310	Aerial crossings	A3-04301B
(xxxvii)	WAT 1311	Aerial crossings	A3-04302B
(xxxviii)	WAT 1312	Aerial crossings	A3-04303B
(xxxix)	WAT 1313	Flanged joints	A3-04304B
(xl)	WAT 1400	Typical steel pipe jointing	A3-04305B
(xli)	WAT 1401	Typical steel pipe jointing	A3-04306B
(xlii)	WAT 1402	Typical steel pipe jointing	A3-04307B
(xliii)	WAT 1403	Typical steel fabrication	A3-04308B
(xliv)	WAT 1404	Typical steel fabrication	A3-04309B
(xlv)	WAT 1405	Typical steel fabrication	A3-04310B
(xlvi)	WAT 1406	Typical steel fabrication	A3-04311B
(xlvii)	WAT 1407	DI installation	A3-04312B
(xlviii)	WAT 1408	Joint corrosion protection	A3-04313B
(xlvix)	WAT 1409	Hydrant installation	A3-04314B

(i) Council standard drawings

(i)	A3-04321	Location of assets
(ii)	WA3-840	Water service connections / meters
(iii)	WA3-832	Air valve pit
(iv)	WA3-833	Typical water reticulation layout drawing
(v)	WA3-834	Backflow prevention device
(vi)	WA3-835	Bedding and backfill details
(vii)	WA3-836	Thrust block details
(viii)	WA3-837	Hydrant and valve installation
(ix)	WA3-838	CI hydrant and valve boxes
(x)	WA3-839	Valve scour details
(xi)	A3-04320	Flowmeter pit

SC6.15.1.10 Code variations

The designer shall ensure that the design of water supply system elements shall comply with the Code unless specified otherwise in this planning scheme policy. Variations to the Code made by Council are included below.

SC6.15.2 Variations to Water supply code of Australia (WSCA) WSA-03

SC6.15.2.1 Variations to "1.2.1 – Planning overview" in WSCA WSA-03

Based on the initial inputs from Council, the designer shall undertake and provide a network analysis of the water supply system as part of the system planning process and shall incorporate the results of such analysis in the Water Master Plan. The network analysis shall be sufficient to determine the impact of the proposed development on the distribution of system pressures, flows and pipe velocities throughout the existing and proposed water supply system.

In addition to the network analysis, the designer shall provide an electronic copy of a concept development layout detail in DWG format showing road layout, allotment boundaries, land use definition, water infrastructure alignments, contours, land allocations and easements for water infrastructure. Such drawings shall be sufficiently detailed to assess the proposal. All drawings are to be prepared to Australian Height Datum (AHD) and to Map Grid Australia (MGA 55) co-ordinates.

SC6.15.2.2 Variation to "1.5 – Design responsibilities" in WSCA WSA-03

Except where specified otherwise, the division of responsibility between Council and the designer shall be in accordance with Council's Construction standard C401 – Water supply.

SC6.15.2.3 Variations to "2.1.1 – System upgrade" in WSCA WSA-03

Council shall assess the impacts of the proposed development on the existing water supply system by reviewing the water supply network simulation model developed by the designer and the concept development layout plan. Assessment of the proposal shall be based on the details provided by the designer.

SC6.15.2.4 Variations to "2.2 – Demands" in WSCA WSA-03

The designer is required to consult with Council regarding industrial and commercial demands. Submit the demand forecasts as part of Water Master Plan.

The designer shall use for residential development the average demand of 400 l/EP/day

The maximum day, maximum month (MDMM) Factor shall be 1.5.

The maximum day factor shall be 2.0, with the assumed density (detached dwellings) of 2.7 EP/ET.

SC6.15.2.5 Variations to "2.3 – System configuration" in WSCA WSA-03

The designer shall take into account the special requirements for dual water supplies where required by Council, including but not limited to, demand, size and location for each pipe system. Dual services shall not be installed unless part of a dual supply.

SC6.15.2.6 Variations to "2.4.3 – Operating pressures" in WSCA WSA-03

The designer shall ensure that the design provides for a minimum allowable service pressure shall be 22 metres of water head at the customer's meter at peak instantaneous demand. Reticulation systems shall be designed to supply peak instantaneous demand by gravity while maintaining this minimum allowable service pressure. The maximum allowable operating pressure at any point in the system is 80m of water head.

SC6.15.2.7 Variations to "2.6 – Pumping stations" in WSCA WSA-03

New pumping stations

Where the Designer cannot provide 22m of head.

General Requirements

The designer shall take into account site access, site maintenance and restoration, easement requirements, power supply and construction laydown working areas when locating pump stations. Council shall advise following lodgement by the designer whether the option to confer on the locations and land allocations is required.

Small booster pumping units may be housed in underground pits or aboveground buildings. Underground pumping installations shall be provided with watertight covers, approved access arrangements, adequate provision for maintenance and provision of drainage. Where required, larger pump units shall be secured within an aboveground purpose-designed building. Aboveground buildings and structures shall be subject to development approval (DA) by Council. The building shall match the aesthetics of the surrounding land use and shall accommodate any need for climate and/or acoustic control. For all pump stations structures and buildings, Occupational Health and Safety requirements shall be met, especially with regard to ease of access, clearances for maintenance, lifting equipment, and avoidance of trip hazards. The designer shall provide lifting equipment, including gantry cranes, monorails or permanently installed davits, as necessary, to comply with operational health and safety requirements.

Structural steelwork in pumping stations for ladders and access platforms, and brackets shall be SS316 or marine grade aluminium.

For above ground buildings, preformed components or system may be used in lieu of in-situ concrete, providing:

(a) preformed concrete wall units are to be manufactured to AS 4058. The Designer shall take into account the cover requirements for the reinforcing steel;

(b) joints shall be internal flush; and

(c) the designer shall ensure components make a watertight system and have a satisfactory surface finish.

The designer shall provide for the floor of the pump station or, in the case of underground booster pump stations, the roof of the pit to be a minimum of 300mm above the 1% Annual Exceedance Probability (including climate change factor) flood level or to such other level as provided by Council's planning instruments. All electrical equipment shall also be located one metre above the 1% Annual Exceedance Probability (including climate change factor) flood level or higher if required by Council or Ergon Energy.

The designer shall provide for alarms and signals systems in consultation with Council and compatible with Council's existing control system.

The design shall provide for dismantling joints in the pipework to facilitate removal of the pumps and valves for maintenance.

The designer shall ensure that the design of belowground water structures are capable of resisting floatation both during the construction/installation stage and whilst operating under flood conditions. The minimum factor of safety against uplift shall be 1.5 excluding any frictional resistance between the soil and the structure.

The designer shall undertake surge analysis as part of the pumping station design and shall provide surge control equipment as required by the analysis to maintain maximum transient operating pressures (positive and negative) within an allowable range, compatible with the design of the associated rising main.

The designer shall consult with Council with respect to the provision of suitable arrangement for access into underground structures and statutory requirements for the entry of personnel into confined spaces.

Sizing of Pump Station

The pumping station, power supply and control cubicle shall be designed for ultimate projected requirements as advised by Council.

Hydraulic Design

The pumps shall be designed to deliver the required transfer capacity over a period of 20 hours per day, assuming the level in the receiving reservoir is midway between the top and bottom operating water levels.

The hydraulic design of the pumping machinery and the pressure main shall be considered together. System curves shall be developed to calculate the pump duty point for the capacity requirement. System characteristics shall be based on analysis using the Darcy Weisbach formula for friction loss. The friction factor (f) within this formula shall be based on an absolute pipe roughness value (k) of 0.3mm. Form losses due to pipe fittings, valving and other pipeline equipment shall also be taken into account in determining the system characteristic curves.

Pump data and selection criteria shall be documented in Appendix B – Pump asset registration data.

Pumping systems

Pumping equipment – for standardization of equipment, Council's preferred suppliers of pumping equipment are:

(a) Grundfos; and

(b) KSB Ajax.

(This is to minimize Council's maintenance costs in regard to provision and storage of spare parts).

Notwithstanding, pumping equipment shall be:

(a) Subject to Council approval;

(b) Readily available in the market place servicing the Council; and

(c) Interchangeable with other Council approved makes/models.

Final selection of the pump model and size shall be subject to Council approval.

Pump Selection

The designer shall select a pump to be consistent with the minimum whole-of-life (NPV) cost of the pumping station based on the calculated mean system curve. Each pump and its drive unit shall be suitable throughout the specified range of station requirements such as flow rates, heads and duty points.

Pumps shall be End Suction Centrifugal or Split Casing Axial type. All end suction pumps shall be arranged for back pull out. If either of these pump types is not suitable for the application, other pumps may be considered with Council approval.

Pumps shall be designed to meet the following requirements:

To give prolonged running at the required output under site conditions.
To have a stable 'head-quantity' characteristic and show sufficient rise from the duty point to closed valve to avoid large changes of output with small changes of head.
To be suitable for use with a modified impeller that will give the required output against 110% of the specified head.

The selected pump H-Q performance curve shall extend to intersect all system curves. The pump motor shall be rated for the maximum power required at the H-Q system curve intersection point.

Selection of the pumps shall be based on:

(a) system head for ultimate flow requirements;

(b) capable of operating near optimal efficiency within the range of operating conditions;

(c) continuous operation;

(d) having non-overloading characteristics beyond the duty point close to zero head;

(e) having starting characteristics acceptable to the electricity supply company and the Council;

(f) having a minimum of 4 pole unless approved otherwise by Council.

Waterways through pumps shall be smooth in finish and free from recesses and obstructions.

Pumps up to and including 80mm branch diameter will be single shaft with flange mounted drive motors. Pumps over 80mm branch diameter shall be close coupled with spacer coupling to enable pump rotating element removal with minimum disturbance of the drive motor. The pump casing shall be supported independent of the pipework.

The direction of pump rotation shall be clearly and permanently marked on the pump casing.

Standby

Standby pumping capacity shall be provided such that if one pump is out of service, the pump station will remain able to supply the required transfer capacity.

Electrical standby

Unless otherwise approved by Council the designer shall provide for a permanent on-site generator for each site and shall provide for connection of same. Also refer to SC6.15.4 Electrical Works.

Operating range

The pumping units selected by the Designer shall have steadily falling head / quantity curves from no-flow to maximum flow. The selected pump shall have an upper limit of the operating range (where stated) not exceeding 90% of the shut-off head for that pump/impeller combination. The duty point head should not exceed 85% of the shut-off head.

Where there is negative suction head at the pump inlet, provision shall be made to facilitate priming of each pump.

The net positive suction head available (NPSHA), shall exceed the net positive suction head required (NPSHR) by the pump for satisfactory operation over the full range of operation by a minimum of one metre.

The designer shall select the best efficiency point for each pump to be as close as possible to the specified duty point.

Impellar

Pump impellers shall be keyed to the shaft. Pumps shall be fitted with substantial renewable impeller and/or casing eye rings. Impellers, greater than 200 mm diameter, shall be provided with substantial eyes to permit the future fitting of wear rings.

With the exception of single vane impellers, the impeller shall be dynamically balanced in two planes to prevent the pumpset exceeding the maximum vibration levels specified. Balancing shall be achieved by machining, not by addition of weights.

The impeller shall be fitted with a replaceable inlet wear ring.

Casing

The casing (and bearings) shall be capable of withstanding the closed valve system pressure. The pump casing shall be provided with lifting lugs or eyebolts for lifting purposes.

Shaft

Pump shafts shall be fitted with sleeves, where they pass through stuffing boxes. The rotating element shall be statically and dynamically balanced before final assembly. The shaft seals shall effectively prevent the ingress of the pumped liquid to the bearings or the motor.

Glands

Glands shall be fitted with conventional water lubricated soft packing. The water shall be taken from the pump discharge.

Bearings

The shaft shall be fitted with grease lubricated ball and roller bearings, no thrust shall be transmitted to the drive unit on close coupled pumpsets.

Bolts and nuts

All nuts and bolts shall be manufactured in accordance with AS/NZS 1111 and AS/NZS 1112 IS0 metric series and fitted with washers beneath bolts heads and nuts.

(a) all bolts shall be stainless steel Grade 316 and all nuts and washers shall be stainless steel Grade 304;

(b) all threads are to be rolled;

(c) all bolt heads and nuts shall be hexagonal;

(d) all bolts, studs, set screws and nuts for bolting flanges and other pressure containing purposes shall conform to AS 2528;

(e) all nuts and bolts subjected to vibration shall be fitted with lock washers or lock nuts;

(f) all concrete anchor bolts, nuts, locking nuts and large series washers required for the bolting down of pump set discharge bends shall be provided. These anchor bolts shall be as recommended by the equipment designer with a minimum diameter of 16mm; and

(g) concrete anchor bolts shall be chemical masonry anchor type, set to their full depth, suitable for the required duty.

Bolts shall not protrude less than 0mm nor more than 10mm past the face of the nut when tightened.

Protective coatings

The pumps, motors and guards shall be supplied with painted finish to the pump manufacturers' standard specifications. The base plate, where applicable, is to be hot dipped galvanised.

Installation

Pumps shall be fitted with air release cocks at the highest point of the casing and with a drain cock at the lowest point. Copper or suitable plastic drain pipes shall be provided from the air release cock and the glands to a common tundish. Horizontal close coupled pumps and their drive motors shall be mounted on a common cast iron or fabricated steel baseplate.

Pressure gauges and transducers

The Designer shall provide one direct mounted bottom connected pressure gauge, minimum gauge face 100mm diameter, complying with AS 1349, per pump installation.

Gauges and fittings shall be screwed into the pipe wall of steel and ductile iron pipes of DN150mm and larger. In steel and ductile iron pipework less than DN150mm, gauges and fittings shall be screwed into a tapping band. In pipes other than steel or ductile iron, tapping bands shall be used.

The Designer shall provide a pipe tee on the main to install the pressure gauge. An isolating ball valve shall also be provided to allow release of pressure prior to removal of the gauge.
The pressure gauge range for single or parallel pumps duty shall be 0 to 1.7 times the closed valve head of the pumps.

A minimum of two (2) pressure transducers shall be provided at each pump station. One (1) pressure transducer shall be provided on the suction side of the pump station and one (1) pressure transducer shall be provided on the discharge side of the pump station. The signals from both pressure transducers shall be connected to the site telemetry system.

For pressure gauges and transducer details refer to Council Standard Specification for Electrical Assets.

Electromagnetic flowmeter and flow switches

An electromagnetic flowmeter must be provided at each pumping station. The flowmeter shall be housed within the pumping station or in a separate dedicated concrete structure. The flowmeter converter shall be housed in the pump station electrical switchboard and shall provide an input into the site telemetry system. For the flowmeter details refer to Council Standard Specification for Electrical Assets.

Each pump shall be provided with IFM Effector flow switch for the flow detection. For details refer to Council Standard Specification for Electrical Assets.

Electrical design

Electrical equipment design and telemetry shall comply with the requirements of Council Standard Specification for Electrical Assets.

Upgrades to existing pumping stations

The provisions of this Guideline for new pumping stations as detailed above shall also be applicable to the upgrade of any existing pumping stations that may be required to be undertaken as a result of the development works.

SC6.15.2.8 Variation to "2.7 – Service reservoirs" in WSCA WSA-03

Service reservoirs are not within the scope of this planning scheme policy.

SC6.15.2.9 Variations to "3.2 – Sizing of trunk mains" in WSCA WSA-03

Trunk mains directly supplying reticulation system shall be designed as part of the reticulation system to carry peak instantaneous demands.

Trunk mains feeding service reservoirs shall be designed to carry mean day maximum month demands over 24 hours in the case of gravity mains and 20 hours in the case of rising mains.

Generally (or unless not possible), a development shall be serviced from two or more mains as a looped main system to avoid the loss of supply in the event of maintenance or breakage.

The minimum diameter of all pipes shall be DN100mm unless otherwise approved by Council. In commercial, industrial or high-rise building areas as zoned in Council's Planning Scheme, the minimum pipe size shall be DN150mm. Duplicate mains are required for all industrial / commercial uses. In all cases, sizes and residual pressures shall be designed to cater for fire fighting flows.

SC6.15.2.10 Variations to "3.2.4 – Fire flows" in WSCA WSA-03

Allowance for fire flows shall be in accordance with the DNR&M Guidelines for Planning and Design of Urban Water Supply Schemes Chapter 21A – Fire Fighting, as released in Technical Bulletin TB No.3/1997 September 1997. Council does not allow the direct connection of pump systems to water mains for the purpose of fire fighting.

Maximum hour flow shall be used as the base demand for fire flows.

SC6.15.2.11 Variations to "3.5 – Surge and fatigue" in WSCA WSA-03

The designer shall provide for surge control by specifying appropriate pipe material and class / wall thickness selections. The pipe wall thickness shall accommodate the maximum anticipated surge pressure against pipe burst (allowing for cyclic fatigue derating for plastic pipes) and a minimum possible surge pressure of -100kPa (buckling collapse under full vacuum)

Other means of surge control are only acceptable with prior approval of Council.

SC6.15.2.12 Variations to "3.7 – Minimum pressure class" in WSCA WSA-03

The designer shall ensure that the minimum pipes and fittings pressure class shall be Class 16 (PN16). Under no circumstances shall the maximum operating pressure (including surge) exceed the safe working pressure / pressure class rating of the pipe material used (accounting for derating of the safe working pressure for cyclic fatigue where plastic pipes are used).

All pipes shall be capable of resisting a minimum operating pressure of -100 kPa (vacuum). The factor of safety against buckling failure under vacuum shall be 2.5 in accordance with the provisions of AS2566.1.

SC6.15.2.13 Variations to "3.8 – Pipeline materials" in WSCA WSA-03

Council's minimum requirements for pipe materials are as follows:

(a) mPVC, uPVC or oPVC: rubber ring jointed, minimum Class 16 Series 2, blue in colour, fittings for all pvc pipes shall be DI;

(b) PE: electrofusion or butt fusion or compression fittings, minimum PN16 pressure class;

(c) DI: rubber ring jointed or flanged, polyethylene sleeved, cement or epoxy lined, minimum Class 21;

(d) Steel: rubber ring jointed, flanged or welded, FBPE or epoxy coated, cement or epoxy lined, minimum steel barrel wall thickness of 6mm or diameter/120 whichever is the greater;

(e) GRP: rubber ring jointed couplings, minimum SN10000 stiffness, PN16 pressure class;

(f) ABS: pipes and fittings to AS3518, solvent welded to AS3691, minimum PN16 pressure class; and

(g) Cu: copper pipes shall be to AS1432 in the range of DN6 to DN200 Type A. Compliance with AS3500.

All products and materials used for the creation of infrastructure shall comply with the relevant sections of WS-SPEC as applicable for the respective pipe materials.

SC6.15.2.14 Variations to "4.3.1 – Location of water mains" in WSCA WSA-03

The location and alignment of water mains shall be generally in accordance with Council Standard drawing

All mains and reticulation pipes shall be located on alignments shown on the drawing the mains and reticulation pipes shall be located on the side of the road as prior approved by Council. Trunk mains and reticulation pipes shall be laid in compliance with the Council's standard footpath allocation.

Pipes are to be colour coded or otherwise identifiable as water supply pipes for maintenance purposes.

SC6.15.2.15 Variation to "4.3.3 – Water mains in easements" in WSCA WSA-03

Water mains that are to be constructed in roads shall be in accordance with Mackay Regional Council Standard Drawings and Council's Construction standard C401 – Water supply.

SC6.15.2.16 Variations to "4.4 – Shared trenching" in WSCA WSA-03

All watermains that are not sited within a road reserve or on Council owned land shall be located within a dedicated easement of minimum 5m width.

Easements shall be located centrally over the pipeline, or in the case where a pipeline is laid on standard alignment near a property boundary, the boundary of the lot and one boundary of the easement may be coincident.

Where it is necessary for water mains to be located on private property outside of the proposed development, the *Local Government Act 2009* requires the designer to obtain written approval from the affected property owner or tenants to enter and / or undertake any construction work on such private property. The designer shall provide satisfactory evidence of the land owners approval with the design.

The designer shall obtain easements over any works to be constructed within private property at no cost to Council prior to commencement of works.

A registered surveyor shall survey easement reserves for pumping stations and pipelines.

SC6.15.2.17 Variation to "4.5 – Duplicate mains" in WSCA WSA-03

Shared trenching for utility services is not permitted without prior written approval from Council.

SC6.15.2.18 Variation to "4.8 – Termination mains" in WSCA WSA-03

Minimum DN150 duplicate mains are required for all industrial and commercial areas.

SC6.15.2.19 Variations to "4.9 – Property services" in WSCA WSA-03

The designer shall ensure that dead end reticulation shall only be permitted to provide for future extension from staged development, in which case the end shall be fitted with a stop valve, hydrant bend and hydrant. Otherwise, reticulation pipework shall be looped to eliminate dead ends.

SC6.15.2.20 Variations to "4.10.5.1 – Utility services" in WSCA WSA-03

For residential properties a maximum of two can be serviced by an individual service, of minimum 32mm, from the service reticulation pipe and extending 300mm inside the lot boundary.

For industrial and commercial properties, the minimum service size is 100mm.

SC6.15.2.21 Variations to "4.10.5.2 – Clearance requirements" in WSCA WSA-03

The designer, shall all ensure all reasonable care is taken during the design and construction of the works to ensure that existing utility services are protected against damage or interference whatsoever.

If existing utility services are damaged by the developer and / or its contractors during the course of the works, through any cause whatsoever, the developer and / or its contractors shall be fully responsible for all costs associated with rectification of the utility services, to the satisfaction of the Council or the utility service owner as appropriate, regardless of the accuracy of any prior location advice given by Council, the utility service owner or its agent.

Where it is necessary to relocate or alter existing utility services, the designer shall make all necessary arrangements with the appropriate authorities concerned at no cost to council.

The designer shall ensure that all known utility services are detailed on the engineering drawings by Dial Before You Dig (DBYD) investigations and accurately located by non-destructive field location, and it is the contractor's responsibility to have such services confirmed in the field prior to any excavation or underbore commencing in their vicinity of the works.

SC6.15.2.22 Variation to "4.10.7 – Devisitations of mains around structures" in WSCA WSA-03

This clause within WSA-03 is superseded by the provisions of Council Policy MW16 – Clearance to Water and Sewerage Assets.

SC6.15.2.23 Variations to "4.12.2 – Corrosion protection against aggressive environments" in WSCA WSA-03

Notwithstanding compliance with all other design requirements and specifications, deviate above structures wherever possible

Where the minimum clearances over structures cannot be achieved, the main shall be 100mm flanged DICL.

SC6.15.2.24 Variations to "4.4.2 – Pipe cover" in WSCA WSA-03

Ductile iron pipework shall be provided with protective polyethylene sleeving installed in accordance with the pipeline manufacturer's instructions or epoxy coating.

Steel pipe work shall be protected by fusion bonded polyethylene (FBPE, known commercially as Sintakote) or epoxy coating. At welded joints, the pipeline shall be protected from corrosion by the application of either polyethylene heat shrink sleeves or by a suitable tape wrap system in accordance with the manufacturer's installation requirements.

The designer shall assess the need for cathodic protection (sacrificial anode or impressed current) for metallic piping systems based on the aggressivity of the soil and groundwater characteristics along the alignment of a proposed pipeline and with particular reference to construction through old landfill sites, low lying anaerobic wetlands and coastal/tidal areas. The assessment of the aggressivity of the soil will be part of the geotechnical investigations for the work and the designer will assess the geotechnical advice to determine whether cathodic protection is required.

SC6.15.2.25 Variations to "5.4.2 – Trench width" in WSCA WSA-03

The minimum depth of cover to be provided for water supply pipework measured vertically from the finished ground level to the top of any socket shall be in accordance with Council drawings.

Lesser cover may be permitted only with Council approval and special protection of the pipelines is provided for in the approved design as.

Greater cover may be provided where special situations occur, such as where there is conflict with other services or to meet grading requirements, provided that the provisions of AS2566 Buried Flexible Pipe Part 1 Structural Design are met.

Table SC6.15.2.25.A – Minimum trench width

Nominal size of pipe (DN)(mm)	Minimum clear width of trench (mm)(inside timbering or sheet piling, if any)
100	450
150	450
200	600
225	600
250	600
300	900
375	900
400	900
450	950
500	1200
525	1200
600	1200

SC6.15.2.26 Variations to "5.5 – Geotechnical considerations" in WSCA WSA-03

The designer shall undertake geotechnical investigations to determine any considerations which will impact upon the design and / or construction of the works.

In particular, the geotechnical investigations will include, where appropriate, any necessary consideration of soil conditions relating to:

(a) the presence, impact and management of acid sulphate soils;

(b) the presence, impact and management of soil or other material at any contaminated sites;

(c) the presence and impact of reactive soils;

(d) the impact of soil and groundwater aggressivity on the durability of underground concrete structures and pipework;

(e) the impact of saline / marine environments or tidal flats on the design of structures and pipelines; and

(f) chemical analysis to determine the need for protective coatings of concrete structures or cathodic protection of pipelines.

All geotechnical investigations shall be undertaken by a suitably qualified geotechnical engineer (RPEQ, Geotechnical) and shall be documented in a geotechnical report submitted to Council by the designer a copy provided to the contractor.

SC6.15.2.27 Variations to "5.5.4 – Mine subsidence" in WSCA WSA-03

The designer shall accommodate the movement in pipe jointing systems associated with the ground strain in proclaimed Mine Subsidence Areas, as advised by the Mine Subsidence Board, or in a known or expected area of subsidence or slippage. The design ground strain for the development shall be detailed on the drawings.

The pipe jointing system selected shall be capable of accepting ground movements, without impairing the water tightness of the joint, for the ground strain as advised by the Mine Subsidence Board. For areas with high ground strains a pipe jointing system using shorter effective length pipes and / or deep socket fittings shall be used.

Where the Mines Subsidence Board does not cover an area of known, or suspected, subsidence or slippage, the above requirements shall still apply, unless stipulated otherwise by Council.

SC6.15.2.28 Variation to "5.7 – Above ground water mains" in WSCA WSA-03

Piers shall be designed to WSA-03 Drawings WAT-1310 and WAT-1311.

SC6.15.2.29 Variations to "5.8 – Trenchless installation" in WSCA WSA-03

Trenchless installations, including an enveloper, shall be provided at existing roads unless otherwise approved by Council. Where such construction is required, the designer shall document the design of each trenchless construction installation on the project drawings compliant with requirements of WSA-03.

SC6.15.2.30 Variation to "5.9.2 – Thrust blocks" in WSCA WSA-03

The designer shall design thrust blocks to resist the force resulting from the maximum pressure commensurate with the pressure class of the pipe, not the estimated maximum pressure due to surge.

SC6.15.2.31 Variations to "6.1 – Valves general" in WSCA WSA-03

The designer shall take into account the location and type of valve required considering maintenance and repair requirements.

Valves equal to or greater than DN375 shall be housed in valve chambers and shall be provided with bypasses.

Metal access covers to valve chambers shall be manufactured in accordance with AS 3996. The designer shall ensure that air valve covers have adequate openings for air exchange.

The designer shall show on the drawings the type of cover and how the covers shall be seated.

The designer shall provide for ease of maintenance within valve chambers. Valve types shall be selected such that servicing of the valve can be effected without removal from service, wherever possible. A minimum clearance of 600mm shall be provided from the edge of valving or pipework to the wall of a valve chamber. Pipework adjacent to valves shall be fitted with dismantling joints to facilitate valve removal when required.

SC6.15.2.32 Variations to "6.1.3 – Valve selection" in WSCA WSA-03

Valves shall be provided complete with bypass pipework, actuators, positioners, pilot valves, solenoid valves, internal piping, strainers and the like, so that they are complete and operable units.

The number of different types and makes of valves used shall be kept to a minimum. All valves of the same size, duty and type supplied shall be identical. The designer shall select such valve materials as are best suited for the service conditions and resistant to corrosion. All ferrous alloy (cast iron, spheroidal graphite cast iron, plain carbon and alloy steel) valves shall have protective epoxy coatings complying with WS-SPEC Section SP-30 Protective Coatings for Valves.

All valves shall have a minimum pressure class rating of PN16. Flanges to valves shall be to AS4087, drilled off centre.

Fasteners for valves shall be SS316 for bolts and SS304 for nuts and washers.

All valves shall be anti-clockwise closing.

SC6.15.2.34 Variation to "6.2.1.2 – Sluice / gate valves" in WSCA WSA-03

Sluice valves shall be resilient seated compliant with WS-SPEC Section SP-21.

SC6.15.2.35 Variation to "6.2.1.2 – Knife-gate valve" in WSCA WSA-03

Knife Gate valves shall comply with WS-SPEC Section SP-23.

SC6.15.2.36 Variations to "6.2.1.3 – Butterfly valves" in WSCA WSA-03

Butterfly valves shall only be used with prior written approval of Council. If approved, butterfly valves shall comply with WS-SPEC Section SP-24.

SC6.15.2.37 Variations to "6.2.5.2 – Location of valves and hydrants" in WSCA WSA-03

Valves shall be connected on the branch line directly to the straight water main tee using a flanged connection.

Valves shall be located to avoid conflict with driveways, telephone house service pits, underground electrical boxes and any other street side furniture. Stop valves shall be located so that a maximum of 40 properties can be isolated for shutdowns on DN100 and DN150mm reticulation pipes and 50 properties can be isolated for shutdowns on DN200mm reticulation pipes and larger.

Hydrants shall be located on all reticulation mains at all high and low points of the main and at intervals between hydrants not exceeding 80 metres. (Guidelines for Planning and Design of Urban Water Supply Schemes Chapter 21A -Fire Fighting Clause 9.02).

Location of valves and hydrants shall be marked with a Council approved marking post or alternatively a stainless steel kerb marker. The location of pipes crossing roads shall be indicated by a stainless steel kerb marker as detailed in standard drawing.

SC6.15.2.38 Variations to "6.3.2 – Pressure reducing valve" in WSCA WSA-03

Pressure reducing valves shall comply with AS/NZS 4020 at a scaling factor of 0.1. Valves shall be lined and coated with a fusion bonded polymer in accordance with AS/NZS 4158.

Pressure reducing valves shall be of the type as shown on Council drawing.

Pressure reducing valves shall be installed with isolating valves upstream.

SC6.15.2.39 Variations to "6.4 – Air valves" in WSCA WSA-03

Air valves shall comply with WS-SPEC Section SP-27.

All air valves shall be Ventomat brand or Council approved equivalent.

SC6.15.2.40 Variations to "6.5 – Reflux valves" in WSCA WSA-03

Reflux valves shall comply with WS-SPEC Section SP-25.

Reflux valves shall be Flexichek Resilient Sealed Non-Return Valves without level arm and without counterweight.

Council's nominated brand of reflux valves is Crevet.

For vendor supply pumping packages, the vendor nominated reflux valves system shall be acceptable.

SC6.15.2.41 Variations to "6.6 – Scours and pump outs" in WSCA WSA-03

The designer shall allow for adequate working area, waste removal and transport arrangements where scouring points or pipe inspection locations are nominated.

Scour valve assemblies shall be as shown on the drawings. Scour valves shall comply with the requirements for sluice valves as above.

SC6.15.2.42 Variation to "6.7 – Swabbing points" in WSCA WSA-03

Swabbing points shall be provided where specified by Council.

SC6.15.2.43 Variations to "6.8.3 – Hydrant type" in WSCA WSA-03

Hydrants shall be DN100 flanged spring type (SWASH) hydrants without isolating valves. Pillar type hydrants shall be installed where directed by Council. Hydrants shall be epoxy coated.

Spring hydrant valves shall be compliant with SP28 of WS-SPEC.

SC6.15.2.44 Variations to "6.8.4 – Hydrant installation" in WSCA WSA-03

The top of spring hydrants shall be between 100mm and 200mm below finished surface level as detailed in WSA 03 Part 4, WAT-1302. If necessary, this shall be achieved by the use of hydrant risers of various heights.

SC6.15.2.45 Variation to "6.8.7 – Hydrant spacing" in WSCA WSA-03

Maximum spacing between hydrants shall be 80 metres.

SC6.15.2.46 Variations to "6.8.8 – Hydrant location" in WSCA WSA-03

Hydrants shall be located at the boundaries between adjacent properties and at the end of all mains. Hydrants shall be located such that existing or future development lots are, or will be, within 40 metres of the nearest hydrant. Bi-directional blue fire hydrant raised reflective pavement markers (otherwise known as blue "cats eyes") complying with the Guidelines provided by the Queensland Department of Transport and Main Roads shall be provided to indicate the location of fire hydrants.

SC6.15.2.47 Variations to "7 – Design review and drawings" in WSCA WSA-03

Pipelines and pumping stations

In addition to the requirements of WSA-03, the Design Drawings shall show to scale:

(a) plan showing:
- (i) lot boundaries and lot numbers;
- (ii) location and size of all mains, appurtenances and pump stations;
- (iii) existing mains;
- (iv) existing and proposed features and services;
- (v) north point and scale bar;
- (vi) easement locations; and
- (vii) arrangement of or for other utilities;

(b) longitudinal section, for all pipelines of DN150 or larger, showing:
- (i) reduced levels for natural surface and design surfaces at all changes of grade;
- (ii) mains, appurtenances and pump stations;
- (iii) appurtenances numbered in accordance with Council's Asset Register;
- (iv) invert levels where necessary;
- (v) size, type, class and grade of pipe;
- (vi) location, invert level and size of all drainage lines, water mains, and other utility services crossing the main;
- (vii) notation regarding all joining lines;
- (viii) property ownership; and
- (ix) note "In road" trench conditions;

(c) general arrangement of pump stations with site plan; concrete and/or building outlines; number, make, model and details of pumps; inlet and outlet pipework details and levels; pump control levels and/or pressures; switchboard location; pump station access details;

(d) details of corrosion protection required for pipes and fittings; and

(e) areas designated for trench less pipe installation.

Detail plans shall be drawn to a scale of 1:500 and longitudinal sections to a horizontal scale of 1:1000 and a vertical scale of 1:100. The designer shall show locations of hydrants, stop valves, non-return valves, air valves and scour valves, tees, tapers, creek crossings, trench dimensions and backfill, thrust blocks, and other existing and proposed services and installations including chambers and covers and items of construction which are project specific.

Drawings shall be 'A3' and/or 'A1' size after consultation with Council. One (1) copy of A1 size and three (3) copies of A3 size drawings shall be provided.

Drawings shall also be provided in electronic form compatible with Council's systems.

All drawings and documentation to be submitted to Council for approval shall conform to the requirements of Council's *Drawings and Documentation Guidelines*. A copy of these Guidelines will be made available upon request.

Failure to comply with Council's *Drawings and Documentation Guidelines* may result in the drawings and / or documentation being returned to the Designer without comment.

Electrical and control documentation

The designer shall submit, to the Council for approval, prior to commencement of the manufacture of any switchboards and control equipment, three copies of all drawings as required in Council Standard Specification for Electrical Assets

SC6.15.2.48 Variations to "7.3 – Recording of works as constructed information" in WSCA WSA-03

When provided the designer shall provide asset schedules and drawings in a form consistent with Council's Asset Data Register.

"As constructed" information shall be incorporated onto the design drawings at the completion of the constructed works. Submission of the "As constructed" information is a pre-requisite of works completion as per the Asset Creation process outlined in this planning scheme policy.

SC6.15.2.49 Variations to "8 – Products and materials overview" in WSCA WSA-03

All products and materials used for the creation of infrastructure shall comply with the relevant sections of WS-SPEC as applicable for the respective pipe materials.

Steel pipes and fittings

Steel pipes and fittings shall be compliant with WS-SPEC Section SP1.

Steel pipes shall be provided with cathodic protection if required in accordance with geotechnical recommendations.

The designer shall take account of congested service corridors, poor soil conditions and the need for additional security for strategic mains with regard to the provision of restrained joints.

The designer shall avoid the positioning of continuously welded steel pipelines in parallel with high voltage power lines.

Ductile iron pipe and fittings

Ductile iron pipes and fittings shall be compliant with WS-SPEC Section SP2.

PVC pipes and fittings

PVC Pipes and Fittings shall be compliant with WS-SPEC Section SP4 and the following specific details:

(a) The designer shall ensure that PVC pressure pipe specified is compatible with ductile iron pipe where necessary;

(b) Pipes and fittings are to be handled and stored protected from sunlight. The contractor shall provide protection for the pipes and fittings from ultraviolet light and damage. The contractor shall take account of the time for storage and type of shelter. All exposed uPVC pipework shall be painted to protect it from UV light using a water based acrylic paint.

(c) Selection of pipe class shall take into account cyclic loading and fatigue.

GRP pipes and fittings

GRP pipes and fittings shall only be used with prior written approval of Council.

If approved, GRP pipes and fittings shall be compliant with Section SP5.

Pipes and fittings shall be handled and stored protected from sunlight. The contractor shall provide protection for the pipes and fittings from ultra violet light and damage. The contractor shall take account of the time for storage and type of cover. All exposed GRP pipework shall be painted to protect it from UV light using water based acrylic paint.

Polyethylene pipes and fittings

PE Pipes and Fittings shall be compliant with Section SP6.

PE pipes shall be manufactured in either PE80B or PE100 polymer material.

Selection of pipe class shall take into account cyclic loading and fatigue.

ABS pipe and fittings

ABS pipes and fittings shall be specified to be manufactured in accordance with AS 3518.1 and AS 3518.2 and joined in accordance with the manufacturer's instructions using solvent cement to AS 3691. Selection of pipe class shall take into account cyclic loading and fatigue.

Copper pipe and fittings

Copper tube shall be specified to be manufactured in accordance with AS 1432 in the range of DN6 to DN200 for Type A or Type B. The Designer shall take into account the requirements of AS 3500.

Capillary and compression fittings shall be specified to comply with AS 3688 and de-zincification resistant. Capillary fittings shall have silver brazed joints or solder insert capillary joints.

Concrete works

All concrete work shall be compliant with WS SPEC Sections SP43, 44 & 45 and TR10. Classes of concrete used for the construction of the works shall be as follows:

Table SC6.15.2.49.A – Classes of concrete

Application	Grade (F'c at 28days)	Min cement content (kg/m^3)	Max w/c ratio
Blinding concrete, mass concrete.	N15	–	–
Surface footpaths and driveways.	N25	–	–
Unreinforced thrust blocks, anchor blocks, bulkheads, and conc. encasement in all environments.	N25	–	–
Reinforced thrust blocks, anchorblocks, bulkheads, and concrete encasement in all environments.	N32	–	–
Valve chambers and flowmeter pits in non–aggressive environments.	N32	–	–
Valve chambers and flowmeter pits in aggressive soil and groundwater environments.	S40	380	0.50
Underground booster pump stations, building foundations, in non-aggressive environments.	N32	–	–
Underground booster pump stations, building foundations, in aggressive soil and groundwater environments.	S40	380	0.50

Aggressive environments are defined as exposure to :

(a) seawater, anaerobic waters, swampwater, tidal flats and the like, including exposure to intermittent saturation.

(b) relatively high levels of chlorides and /or sulphates, relatively high or low pH levels, as defined within Appendix B of SW-SPEC Section SP-43, exposure classification 3 (moderate) and above.

Cementitious materials for concrete shall comply with Appendix B of WS-SPEC SP-43.

Cover to reinforcement shall comply with the relevant Exposure Classifications within AS3600 but shall not be less than B1, or C for aggressive conditions.

Concrete surfaces exposed to aggressive environments shall be provided with a protective coating compliant with WS-SPEC Section TR-20. The protective coating applied shall be in addition to the concrete cover requirements.

SC6.15.2.50 Variation to "WSA-03 Standard drawings" in WSCA WSA-03

All amendments to WSA-03 Drawings are detailed on Council's standard drawings.

SC6.15.3 Electrically operated actuators

The designer shall be responsible for the design, manufacture, supply, and performance of the actuators.

Electric motor actuators shall be 3 phase with a rated voltage 415, 50 Hz and shall be suitable for operation over a phase voltage range of 400 to 440 V. Phase rotation protection shall be provided integral with 3 phase actuators.

The actuators shall be suitable for indoor and outdoor installation. The actuator enclosures, including all auxiliary enclosures, shall be a minimum of IP56 to AS 60529

Actuator motors for penstocks and valves shall be specifically designed for penstock or valve actuator service and winding insulation shall be Class F. It shall be the contractor's responsibility to determine the rated output (kW) of the motor, in conjunction with the gear reduction unit used, to suit the operational requirements of the respective penstock or valve.

The rated speed and the direction of rotation of the motor, in conjunction with the gear reduction unit used, shall suit the operational requirements of the penstock or valve. The time to operate the penstock from fully closed to fully open and visa versa shall range between 2 to 3 minutes. The time to operate a valve from fully closed to fully open and visa versa shall range between 4 to 6 minutes.

Where possible, actuators shall be selected to be interchangeable with existing actuators at the plant.

The designer shall have the valve and penstock suppliers prepare calculations of the maximum opening and closing torques for each penstock and valve. These calculations shall be submitted to the Council as verified design for acceptance. Actuators shall be sized for non-overload operation at these loadings.

Electric actuators shall be mounted directly on the valve or penstock capstan so that all forces are confined to the valve or penstock. All electric actuators shall be suitable for remote operation from the PLC. All electrical connections, controls, and the like shall be accessible from platforms or walkways.

The actuators shall be fitted with integral adjustable position and torque switches which shall be arranged to stop the actuator at the extremes of travel.

All actuators shall be provided with a manual override which shall be a handwheel. Hand wheels shall be located not more than 1000mm or less than 700 mm above the operating floor level and shall not exceed 600mm diameter. The hand wheels must be of a diameter which shall require a force of no more than 130 newtons at the rim to operate the penstock or valve from fully open to fully closed under all operating conditions. Where this cannot be achieved due to the limit on the hand wheel diameter, a gear reduction unit shall be used. Minimum handwheel size shall be 500 mm and minimum clearance 150 mm for penstocks.

Hand wheels shall be rotated clockwise to close the valve, and shall be clearly marked with the words “open " and "close" and arrows in the appropriate directions. The rims of the hand wheels shall be machined to a smooth finish.

Each actuator shall have integral open and close contactors, local open/close/emergency stop control pushbuttons and Local / Remote control selector switch together with all ancillary equipment such as control transformers, relays etc. Contactors for modulating duty actuators shall be solid state type.

Each actuator shall be supplied with an integral reversing DOL starter and associated control equipment. It shall be possible to control electrically actuated valves and penstocks either locally manually or remotely.

Operation of the emergency stop push button shall stop the valve or penstock regardless of selector switch position.

The actuators shall be fitted with open, close and stop interposing relays which shall enable the actuators to be opened and closed by the control system when remote is selected.

The actuators shall be provided with voltage free contacts for remote connection of monitoring signals including the following:

(a) open and close status;

(b) actuator available (i.e. voltage present and remote selected);

(c) actuator fault – e.g. overtorque, motor overload/over temperature fault; and

(d) actuators shall have a local mechanical position indicator. Where specified the actuators shall have a position signal transmitter with an isolated 4 to 20mA output suitable for connection to the PLC.

Each actuator shall be fitted with a Grade 316 stainless steel nameplate,

Actuators shall be fitted with temperature sensing devices which shall be embedded in the motor phase windings and shall be arranged to prevent motor overload. Non-modulating actuators shall be rated for 60 starts (reversals) per hour.

Actuators shall be fitted with 240 V ac anti-condensation heaters.

SC6.15.4 Electrical works

SC6.15.4.1 Compliance with authorities, statutes regulations and standards

All electrical works shall be carried out in accordance with the requirements of:

(a) AS/NZS 3000 and other relevant Australian Standards;

(b) power Supply Authority Service Rules and Regulations;

(c) other relevant Statutory Authorities; and

(d) Council Standard Specification for Electrical Assets.

SC6.15.4.2 Scope of work

The scope of electrical work shall include but shall not be limited to the following:

(a) negotiations with the relevant power supply authority unless another power supply authority is nominated in the project specification. The name and the phone number of the relevant power supply authority contact shall be as indicated in the project specification. The contractor must fill all relevant application forms and pay all relevant fees;

(b) supply and installation of consumer mains;

(c) supply and installation of electrical switchboard;

(d) supply and installation of all instrumentation and field mounted control equipment;

(e) supply, installation and termination of all cabling;

(f) supply and installation of all telemetry equipment including aerial and aerial mast;

(g) supply and installation of all junction boxes, conduits, cable trays, cable ladders and fittings;

(h) supply and installation of a standby diesel generator set for backup power to ensure continuity of service, or provision of connection facilities for same, as required by Council at the development approval stage;

(i) carry out factory testing of the switchboard;

(j) carry out site testing and commissioning;

(k) provide “As Constructed” design documentation and also operation and maintenance manuals;

(l) provision of defects liability period;

(m) liaison with Council;

(n) any other work as required in the project specification.

SC6.15.4.3 Incoming power supply

The contractor must carry out all works as required by the relevant power supply authority to provide 3 phase 415V, 50 Hz power supply to site.

The contractor must upgrade or provide new metering facilities at each site as required by the relevant power supply authority.

The contractor must ensure the minimum power factor of 0.9 at each site. The prospective fault level of each electrical installation shall be as nominated by the relevant power supply authority but in any case the minimum fault level shall be as follows:

(a) not less than 15kA for 1 second for the Main Switchboards rated 100 Amp or less;

(b) not be less than 25kA for 1 second for the Main Switchboards rated over 100 Amp;

(c) if VSD drives are used the level of total harmonics distortion (THD) at the point of common coupling (PCC) must be as required by the relevant power supply authority;

(d) the consumer mains with a cross section greater than 120mm^2 shall consist of single core XLPE/PVC cables;

(e) the current carrying capacity of the consumer mains shall suit the maximum demand plus 30% spare capacity;

(f) the consumer mains shall be sized to ensure the voltage drop at the incoming terminals of the switchboard does not exceed 2.5% under maximum demand conditions plus 30% spare capacity;

(g) power supply metering must be provided as required by the relevant power supply authority.

SC6.15.4.4 Standby diesel generator

For the diesel generator details refer to Council Standard Specification for Electrical Assets.

Where provisions only are required for the standby diesel generator these provisions must be in a form of external weather and vandal proof socket inlet or a junction box rated for the full load of the relevant switchboard and as required in the Project Specification.

Sufficient space shall be allowed for the mobile diesel generator installation.

SC6.15.4.5 Power supply change-over arrangement

Where a permanent diesel generator is required to be provided on site, the main switchboard shall be fitted with an automatic transfer switch (ATS) to facilitate an automatic transfer between the power grid and the generator supplies. For all other sites where only provisions for connection of mobile diesel generators are required the changeover switch shall be manual switch. For details of ATS refer to Council Standard Specification for Electrical Assets.

SC6.15.4.6 Earthing

The Contractor must provide M.E.N. earthing system at each site. The earthing system must comply with requirements of AS/NZS3000 and the service rules of the relevant power supply authority.

Each earthing rod must be a minimum 16mm stainless steel copper clad rod with a minimum length of 3 metres. Each earthing cable must be provided with a PVC sleeve. Bare earthing conductors must not be used. All earthing cable connections to earthing rods must be by means of approved earthing clamps.

The contractor must provide an earth inspection pit at each rod. Each pit must be marked for easy identification.

SC6.15.4.7 Lightning and surge protection

The need for lightning protection shall be assessed for each site and shall comply with the requirements of AS1768.

Suitable surge protection must be provided at each site to protect equipment against lightning strikes, motor starting and stopping or sudden loss or application of power supply. Surge protection devices must be provided as follows:

(a) inside each Main SCA or Switchboard/Panel/Distribution Board across incoming power supply;

(b) across power supply to all instrumentation loops mounted outside in the field;

(c) all signal lines run to and from outside. Instrument surge diverters must be provided on both ends of each loop; and

(d) on all data and cable communication lines.

Minimum size surge protection earth cable must comprise stranded, 16mm² or as recommended by the manufacturer, green/yellow PVC insulated cable installed such that it is segregated from all other cables.

For details of surge protective devices refer to Council Standard Specification for Electrical Assets.

SC6.15.4.8 Starting of pumps

DOL starting of the pump motors shall be with Ergon Energy approval only. Otherwise, all motor starters must be either soft starter or VSD (Variable Speed Drive) as required by the process.

The maximum number of starts per hour shall be 12 starts.

Where electronic starters are used the disturbance to the electrical supply system shall not exceed limits set down in AS61000.3.6 and AS61000.3.7. Radio interference external to the electronic starters shall not exceed limits set down in AS/NZS CISPR 11:2004. A suitable R.F.I. filter shall be provided to ensure compliance with AS/NZS CISPR 11:2004.

The level of total harmonic distortions at the point of common coupling (PCC) must be limited to planning levels as set by the relevant power supply authority. Appropriate harmonic filters shall be provided on each VSD unit to comply with the requirements of the relevant power supply authority.

SC6.15.4.9 Nominated subcontractors

Refer to Council Standard Specification for Electrical Assets for the details of nominated equipment suppliers and service providers.

Appendix 1 Index and glossary of abbreviations and acronyms

Table AP1.1 – Abbreviations and acronyms

Abbreviation/ acronym	Description
AD	Average day
ADA	Aquaculture development area
ADWF	Average dry weather flow
AEP	Annual exceedance probability
AHD	Australian height datum
ALCAB	Agricultural land classification A and B
ANEF	Australian noise exposure forecast
ANZECC	Australian and New Zealand Environment Conservation Council
AO	Acceptable outcome
AS	Australian Standards
AS/NZS	Australian and New Zealand Standards
AV	Articulated vehicle
B99	Vehicles with physical dimensions at the 99.8th percentile of all cars, utes, light vans and 4 wheel drive vehicles
BPEM Guidelines	Queensland Best Practice Environmental Management Guidelines
BW	Building works
CASA	Civil Aviation Safety Authority
City Centre	Mackay City Centre
CMD	Coastal management district
CPESC	Certified professional in erosion and sediment control
CPSS	Certified practising soil scientist
CPTED	Crime prevention through environmental design
dB	Decibels
DFE	Defined flood event
DME facility	Distance measuring equipment facility
DSS	Desired standards of service
DSTE	Defined storm tide event
DTMR	Department of Transport and Main Roads
e.g.	for example
EME	Electromagnetic emissions
EP	Equivalent persons
EPA	Environmental Protection Agency

Abbreviation/ acronym	Description
ESCP	Erosion and sediment control plan
FTE (employee)	Full-time equivalent
GFA	Gross floor area
GPT	Gross pollutant trap
Ha *or* ha	hectares
HAT	Highest astronomical tide
HRV	Heavy rigid vehicle
Hz	Hertz
IAA	Important agricultural areas
ICOMOS	International Council of Monuments and Sites
km	kilometres
kPa	kilopascal
KRA	Key Resource Area
kL	kilolitres
kV	Kilovolts
LIAA	Locally importance agricultural areas
m	metres
mm	millimetres
m^2	metres squared
m^3	cubic metres
m/s	metres per second
MATM	Mackay Area Transport Model
MCU	Material change of use as defined in the *Act*
MRC	Mackay Regional Council
MSES	Matters of State environmental significance
NA	Not applicable
NDB facility	Non-directional beacon facility
NHMRC	National Health and Medical Research Council
no.	number
NRAS	National Rental Affordability Scheme
OLS	Obstacle limitation surface
OMP	Outermost projection
OW	Operational works as defined in the *Act*
PFTI	Plans for trunk infrastructure
PIA	Priority infrastructure areas

Abbreviation/ acronym	Description
PIP	Priority infrastructure plan
PO	Prescribed outcome
PWWF	Peak wet weather flow
QCCCE	Queensland climate change centre for excellence
QPP	Queensland Planning Provisions
ROL	Reconfiguring a lot as defined in the *Act*
RPEQ	Registered professional engineer of Queensland
RSTE	Recommended storm-tide event
RSTEL	Recommended storm-tide event level
SPA	*Sustainable Planning Act 2009*
SPP	State Planning Policy
sqm	square metres
SQMP	Stormwater quality management plan
SQID	Stormwater quality intervention device
SRV	Small rigid vehicle
the Act	*Sustainable Planning Act 2009*
the Regulation	*Sustainable Planning Regulation 2009*
TWCMP	Total water cycle management plan
UHF	Ultra high frequency
VHF	Very high frequency communication facility
VOR	VHF omni-directional rangefinder
WQO	Water quality objectives
WSAA	Water Services Association of Australia
WSUD	Water sensitive urban design
WWMP	Waste water management plan

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Appendix 2 Table of amendments

Table AP2.1 – Table of amendments

Date of adoption and effective date	Planning scheme version number	Amendment type	Summary of amendments

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