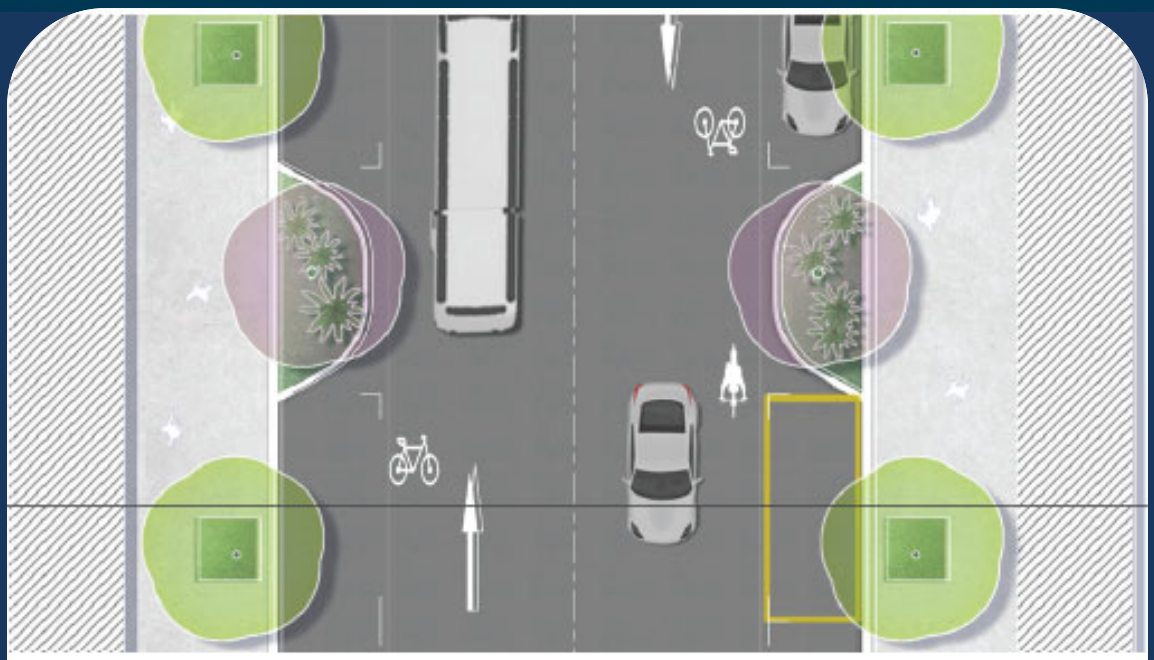
PLANNING SCHEME POLICY

GEOMETRIC ROAD DESIGN



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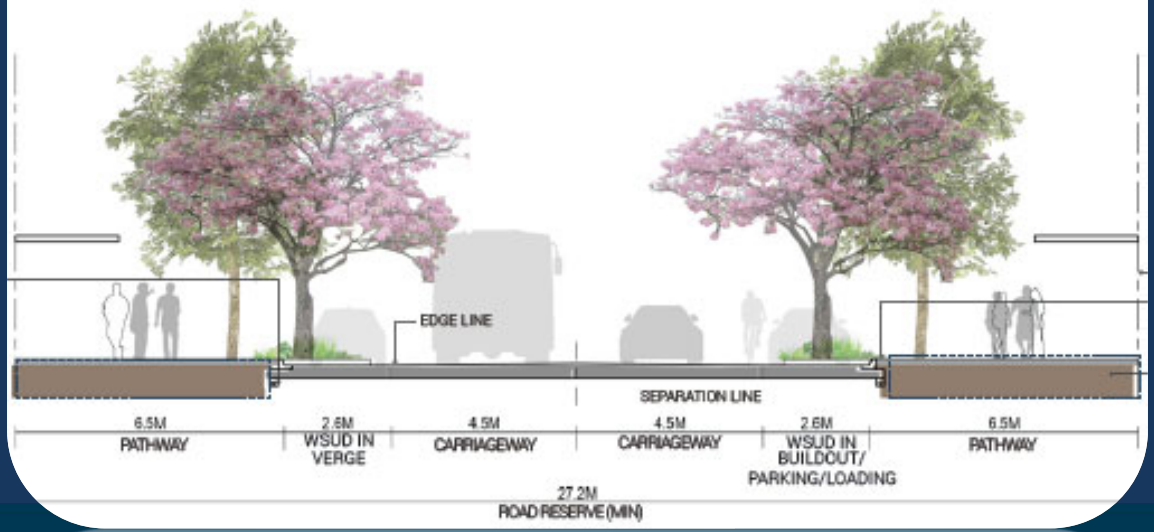

Mackay Region
PLANNING SCHEME

Mackay REGIONAL COUNCIL

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Amendment history

This planning scheme policy commenced on xxxxxxxxxxx as part of the Mackay Region Planning Scheme 2022. Amendments since this date are listed in the below table.

Version number	Amendment title	Summary of amendment	Date adopted and commenced
2.0	Proposed amendment	This amendment incorporates inclusions of Safe System design approaches, amendments to the Functional Road Hierarchy and Movement and Place principals for road design. This amendment introduces concept typologies as visual representation of accepted outcomes of the road form.	xxxxxxxxxx
1.0	Planning scheme administrative amendment 6, & Planning scheme policy administrative amendment 1	This amendment removed the planning scheme policies from Schedule 6 of the Mackay Region Planning Scheme 2017 and placed them in individual PDFs on Council's website. This amendment introduced standardised formatting, introductory sections and explanatory information regarding intent and legislative relationship for this planning scheme policy. It also updated numbering and cross references.	Adopted 11 December 2019 Commenced 3 February 2020

1 INTRODUCTION

1.1 Application

1.1.1 This planning scheme policy supports the Mackay Region Planning Scheme 2017, by providing information on: how to achieve compliance with assessment benchmarks; supporting information/studies required; and/or actions required under the development assessment process.

1.1.2 This planning scheme policy has been made by Mackay Regional Council in accordance with Chapter 2, Part 3, Division 2 of the *Planning Act 2016*.

1.2 Relationship with Planning Scheme

1.2.1 Mackay Region Planning Scheme 2017, refers to this planning scheme policy in assessment benchmarks in the following code/s or any other relevant part of the scheme:

a) Table 9.4.1.3.A – General development requirements code
b) Table 9.4.3.3.A – Reconfiguring a lot code

1.3 Purpose

1.3.1 The purpose of this planning scheme policy is to:

a) Guide the design of road networks and streets to ensure that they will provide for the safe and efficient movement of the desired road users and facilitate the desired community and land use outcomes.

b) Ensure that the road network is designed in conjunction with the policy requirements relating to the following design principles:
- Safe System.
- Movement and Place
- Functional Road Hierarchy

1.4 Terminology

1.4.1 The words “street” and “road” are interchangeable throughout all parts of this planning scheme policy, unless specifically defined.

1.4.2 For the purpose of this planning scheme policy the glossary of terms used to define the components of the road are identified in **Table 1-1**~~**Table 1-1**~~Error! Reference source not found..

Table 1-1: Glossary

Term	Definition
Brownfield sites	Existing developed areas that are undergoing change. Changes to a previously developed site may include road rehabilitation, reconstruction, reconfiguration or redevelopment.

Term	Definition
Carriageway	That portion of the road or bridge devoted particularly to the use of vehicles, inclusive of shoulders and auxiliary lanes.
Conspicuity	Signs, Marking and Lighting. The conspicuity and legibility of treatments (e.g. signs, markings and lighting, which is critical to road environment safety and functionality.
Designer	The practitioner undertaking road and road network design functions associated with this policy. This term is interchangeable and applies to similar professional titles, such as planner, engineer, practitioner etc.
emax	The maximum allowable superelevation (m/m).
Footpath	The paved section of a pathway (verge).
Form	The physical configuration of the road.
Function	The purpose of the road in how it is intended to operate.
Functional Road Hierarchy	Functional hierarchy of road network classifies individual roads into several levels by taking account of the priority for mobility, access or residential functions, in order to manage traffic efficiently.
GFA	Gross floor area
Greenfield sites	Greenfield sites are undeveloped parcels of land. These areas allow the construction of purpose-built developments and infrastructure.
Kerb	A raised border of rigid material formed at the edge of a carriageway, pavement or bridge. Kerb may be referenced interchangeably with kerb and channel in this document.
Kerb and Channel	The kerb and channel combine to form an open drain to capture and discharge run-off.
Landscaping	The planting of street trees or vegetation (shrubs, groundcovers, grasses) etc.
LTS	The concept of level of traffic stress (LTS) for bicycle riders, first developed through research in Portland, Oregon. LTS categorises cycle links and intersections into one of four LTS levels linked with a user's comfort cycling in that environment
Major Infrastructure	Infrastructure which provides a distribution function to service wider areas or catchments.
MCU	Material Change of Use
Micromobility	Transportation over short distances provided by lightweight, usually single-person vehicles (such as bicycles and scooters). The arrival of electric scooters and motor-assisted bicycles, are key devices associated with micromobility.
Mobility	The ability to move easily and efficiently.

Term	Definition
Modes	Transport options for movement of people or goods. Modes considered in this PSP include people walking, people cycling, people in private vehicles, public transport, people using micromobility devices, goods and freight by road, goods loading and servicing, people parking private vehicles, people parking bicycles and micromobility devices
MRC	Mackay Regional Council.
On-street corridor	The on-street road corridor is any part of the road (kerb to kerb, or to each edge of road formation) or the roadside on formed roads which caters for private vehicles, freight, on-road cycling, on-street parking or public transport
OW	Operational Works
Pathway	A path or shared use path reserved for the movement of pedestrians, cyclists and other personal mobility devices either manually propelled or powered by an electric motor.
Pavement	That portion of a carriageway placed above the subgrade for the support of, and to form a running surface for vehicular traffic.
Place intensity	A measure of human activity, or potential activity within a geographical area. Places where the most human activity occurs, or has the potential to occur, have the highest place intensity.
Place making	A multifaceted approach to the planning, design, and management of public spaces. Place making can involve physical form (design, property development), but centres on activity (governance, curation, management and maintenance, activation and programming), to enhance meaning (common value, social engagement).
PMD	Personal mobility device, inclusive of e-scooters, e-skateboards, electronic one-wheel.
PSP	Planning Scheme Policy
Recognised Practitioner	A suitably experienced person experienced in urban design, planning or engineering such as Architects, Designers, Engineers, Planners.
Relevant Authorities	An independent authority, asset owner or statutory body, authorised by legislation or regulation to issue determinations, orders or other instructions in respect of any subject covered by this Policy.
Road Transport corridor	The combined transport routes that are serviced by one or more modes of transport within the road, spanning from boundary to boundary including the on-street corridor and verges.
ROL	Reconfiguring a Lot
Safe System	An approach that acknowledges that road users make mistakes and advocates designing the street environment to not result in death or serious injury when users

Term	Definition
	make mistakes. Street design, speed, and vehicle design all contribute to avoiding a crash or reducing its impact.
SSA	Safe Systems Assessment
Splitter Island	A splitter island is a raised or linemarked traffic island that separates traffic in opposing directions of travel. They are typically used at roundabouts and on minor road approaches to an intersection.
RPEQ	Registered Professional Engineer of Queensland.
Shoulder	That portion of the carriageway beyond the traffic lanes and contiguous and flush with the surface of the pavement.
Through lane	A through lane is a traffic lane that facilitates the movement of vehicles and excludes parts of the on-street corridor for parking, stopping or turning. At intersections, the through lane may provide for stopping for the purpose of traffic control and may be indicated by arrows on the pavement pointing straight ahead.
Typology	The classification of characteristics common to the road form or urban spaces.
Verge	Roadside verges are defined as the strip of land between the on-street corridor and the property boundary.

1.5 Application and Documentation

1.5.1 This PSP applies for any planning, design approval, development application, or design activity associated with transport corridors, networks, street, roads, and other features associated with the movement of people or goods, considering all applicable modes of transport.

1.5.2 Supporting documentation shall be provided at each relevant design activity or planning application stage, which suitably reflects the nature and complexity of the accompanying planning application or proposed design, in accordance with **Error! Reference source not found.~~Table 1-2~~**.

1.5.3 Refer each **s2.5~~2.4~~ ,s 3.6~~3.5~~, s4.12~~4.11~~, s5.29~~5.30~~** for further documentation requirement details relative to each PSP design element and planning or design phase.

Table 1-2: PSP application and documentation

Geometric Road Design PSP Element	Development Application			Planning / Infrastructure Projects	
	ROL	MCU	OW	Business Case / Concept Design	Detailed Design
Safe Systems	See s2~~2~~ for Safe System Assessment requirements				
Functional Hierarchy	Essential	Consider	Desirable	Essential	Consider
Movement & Place	Essential	Essential	Essential	Essential	Essential
Road Design Guidelines	Desirable	Essential	Essential *	Essential *	Essential *

Definitions: Essential' is mandatory and a requirement under the Planning Scheme. 'Desirable' is not mandatory – however is strongly suggested this element is addressed to achieve best outcomes. 'Consider' signals consideration should be applied to achieve best outcomes.
* *Denotes mandatory RPEQ certification.*

1.5.4 At ROL stage, consideration of the functional hierarchy of the road network and transport corridor widths are required, to cater for all transport modes. An assessment of the functional hierarchy is required as well as an assessment of movement and place values to ensure nominated transport corridor widths are appropriate. Safe systems and road design guidelines should be considered although a detailed assessment is not required until Operational works stage.

1.5.5 ROL documentation requirements are as follows:

a) A short statement to demonstrate how safe systems (s2) have been considered.
b) A legible functional road hierarchy plan.
c) A statement to demonstrate how the proposed functional road hierarchy addresses requirements of Table 3-1~~Table 3-1~~ and Table 3-2~~Table 3-2~~.
d) A Movement and Place Framework Design Summary for each proposed street (s4.12.1).
e) Typology cross sections with mode priorities shown (Figure 4-16~~Figure 4-16~~).
f) A short statement to demonstrate how the road design guidelines (s5) have been considered and be appropriately accommodated in the future detailed design.

1.5.6 At MCU stage, land use changes may alter the level of activity of the land and the developments interaction with all transport modes, including to, from and within movements. An MCU application will

need to demonstrate how the application will address these anticipated changes in the built environment.

1.5.7 MCU documentation requirements are as follows:

a) A short statement to demonstrate how safe systems (s2) have been considered.
b) Demonstrate how the application accommodates the wider functional road hierarchy.
c) A Movement and Place Framework Design Summary (4.12.1) for each existing road that the development fronts, supported with a typical cross section with mode infrastructure allocations shown or concept typology drawing reference.
d) Detailed plans or drawings to demonstrate that all modal movements are accommodated, including, but not limited to property access, intersections, local area traffic management, parking, public transport stops, pedestrian and cycle paths, street trees (s5).

1.5.8 At Operational works stage (OW), detailed drawings and engineering certification must be provided that directly address incorporation of safe systems, alignment to the established functional road hierarchy, adherence to movement and place elements and requirements of the road design guidelines.

1.5.9 OW documentation requirements are as follows:

a) A safe system assessment report, in accordance with Austroads Safe System Assessment Framework (AP-R509-16), certified by an RPEQ or Road Safety Auditor.
b) A legible functional road hierarchy plan (will generally have been approved previously)
c) A Movement and Place Framework Design Summary for each proposed road, with mode infrastructure allocations.
d) Detailed engineering drawings including typical cross sections for each road.

2 SAFE SYSTEM APPROACH

2.1 Introduction

2.1.1 The Safe System approach to road network management is widely adopted within Australia through National and State level policies, strategies and action plans. The Safe System approach requires a holistic approach to the safety of the road system to consider how all elements of the road transport system can work together to prevent death or serious injury.

2.1.2 The Safe System approach recognises that people make mistakes and that there are physical limits to the forces that the human body can withstand, and the road system should be designed so that the forces in collisions do not exceed the limits of human tolerance.

2.1.3 Previous guidance and strategies (e.g., Austroads Guide to Traffic Management Part 13: Safe System Approach to Transport Management), presented four cornerstone areas of intervention, Safe roads, Safe speeds, Safe vehicles, Safe people.

2.1.4 This policy continues the Safe System approach to road safety and adopts it in line with the National Road Safety Strategy (2021-30), which has three main themes: Safe roads, Safe vehicles and Safe road use, with speed management embedded:

a) *Safe roads* – Roads and roadsides designed and maintained to reduce the risk of crashes occurring and the lessen the severity of injury if a crash does occur. Safe roads prevent unintended use through design and encourage safe behaviour by users.

b) *Safe vehicles* – Vehicles which not only lessen the likelihood of a crash and protect occupants, but also simplify the driving task and protect vulnerable users. Increasingly this will involve vehicles that communicate with roads and other vehicles, while automating protective systems when crash risk is elevated.

c) *Safe road use* – Encourage safe, consistent, and compliant behaviour through well-informed and educated road users. Licensing, education, road rules, enforcement and sanctions are all part of the Safe System.

d) *Speed management* underpins all three themes and is critical in managing the physical forces to which human bodies are subjected in any crash. It is important that there is an increase in the acceptance of the need to reduce speed limits to improve road safety outcomes.

Source: National Road Safety Strategy 2021-30

Figure 2-1: Safe System Themes

2.2 Application to this policy

2.2.1 Safe road environments are required to be provided by applying safe road principles in designing road and road networks and implementing traffic management principles. Children, the elderly, people with disabilities, or those who walk, cycle or ride scooters (micro-transport), are more likely to make mistakes. These vulnerable users are prioritised, so they are not relied upon to make the system safe.

2.2.2 The application of the Safe System addresses key elements of neighbourhood design, connecting pedestrian and cycle networks across streets and creating environments that make all users feel safe. Street design using the Safe System framework, is to ensure the physical tolerance limits of pedestrians, cyclists and riders become the controlling factor,

where desire lines interact with vehicle paths or streets, reinforcing the hierarchy to prioritise the needs of these more vulnerable users.

2.2.3 In providing Safe Systems, practitioners should consider the following guidance on how to achieve safety using safe road environment features for various road environment elements.

2.2.4 A safe road environment can be defined as one which provides for all road users the features listed below:

a) *Warn* road users of any approaching substandard, unusual or complex features in the road environment that pose an unexpected, elevated risk.

b) *Inform* road users of the way ahead, and of the type of unusual conditions likely to be encountered.

c) *Guide* road users along sections of a route and through unusual sections of a route.

d) *Control* road users at conflict points or areas of conflict, and manage their speeds.

e) *Forgive* errant road users and inappropriate behaviour or mistakes, with the severity of consequences being minimised.

f) *Contain* no surprises to the road user, where reliable and consistent responses and performance may be expected.

g) *Provide* a controlled release of information through avoidance of road user information overload.

h) *Repeat* information where necessary to ensure that crucial information is unlikely to be missed, overlooked, or forgotten by road users.

i) *Provide* adequate surface friction through reasonable and predictable surface friction requirements, and facilitate recovery from emergencies.

j) *Provide* opportunities for rest and recuperation for road users to avoid the effects of fatigue, particularly on longer trips on rural highways.

2.2.5 Safe road environment features in design should be implemented in accordance with the following:

a) Austroads Guide to Traffic Management Part 13: Safe System Approach to Transport Management:
   - Road geometry: Table A 2
   - Pavement: Table A 3
   - Roadside: Table A 4
   - Intersections: Table A 5
   - Traffic controls: Table A 6
   - Signs: Table A 7
   - Makings: Table A 8
   - Lighting: Table A 9

2.2.6 Speed management is not identified as a safe road environment feature. However, as speed management comprises the controlling of the speed, it is primarily catered for through the design of various road environment elements.

2.2.7 Implementing the best features of 'self-explaining' roads is important when considering treatment options in urban areas. The Movement and Place approach informs road design and takes speed management into consideration to ensure reductions in road trauma in urban and rural areas.

2.2.8 For all detailed road design projects a safe system assessment report shall be undertaken in accordance with Austroads Safe System Assessment Framework (AP-R509-16).

2.3 Principles considered in Roadside Design to Achieve the Safest System

2.3.1 Roadside design includes the design of all features and infrastructure that need to be accommodated in the area between the road reserve boundary and the nearest road shoulder (or kerb) and within medians.

2.3.2 A transparent, principles-based approach to decision-making should be adopted during design. This approach encourages independent designs tailored to particular situations and in compliance with engineering principles.

2.3.3 As well as providing robust engineering justification for many design decisions, standards and guidelines of jurisdictions, Austroads Guide to Road Design Part 6, provides discretionary principles to help designers deal with multi-objective integrated planning. A comprehensive approach should be adopted when applying discretionary principles, seeking technical advice from subject matter experts where appropriate. Safety performance must always be considered, especially the Safe System Principle (see s2.3.7~~2.3.5~~).

2.3.4 Each core principle applied to assist with decision making should have quantitative support where appropriate. For example, the *project benefits* of a design element or design decision should be quantified, as should the risks. Quantification provides a measure for later monitoring and evaluating the success of the design.

2.3.5 From a safety in design perspective, the following safe system principles should be applied in planning and design:

a) Apply general safe system practices in all stages of design.
b) Undertake appropriate safety in design assessments as per mandatory health and safety requirements for the construction, maintenance and operation of any network asset.
c) The safety of workers constructing and maintaining the network assets shall be considered in design decisions.

2.3.6 From an infrastructure perspective, the following Safe System principles should be applied in design:

a) Designing a road system through planning, programming, constructing and maintenance stages for roads, vehicles and operating conditions, so that forces on the human body generated in crashes do not result in fatality or serious injury.
b) Improving roads and roadsides to reduce the potential for crashes and minimises harm (by, for example, dividing the traffic, designing forgiving roadsides and providing clear driver guidance).
c) Setting speed limits that consider vulnerable road users and the variability of risks on different parts of the road system.

2.3.7 From a road network efficiency perspective, the following safe system principles should be applied in design:

a) Designs should not adversely affect the efficient movement of vehicles on roads designated as significant traffic or freight routes.
b) Transport network decisions should be aligned with land-use decisions so that transport infrastructure meets the accessibility and operational needs of all transport modes in both the present and the future.
c) Consideration should be given to vulnerable road users and those who may not directly use the road but whose transportation needs are to be withheld.

2.3.8 From a community wellbeing perspective, the following safe system principle should be applied in planning and design:

a) Transport infrastructure should support healthy liveable communities, provide high-quality roadside amenity and accommodate and encourage active travel, such as walking and cycling.

2.3.9 From an environmental sustainability perspective, the following safe system principle should be applied in planning and design:

a) The transport system should protect the natural environment, by enhancing the aesthetics of roadside amenities and implementing sustainable practices and technologies.
b) Preserve cultural heritage values and assets.

2.3.10 From a utility services perspective, the following safe system principle should be applied in planning and design:

a) Contain utility services within the road corridor without adversely affecting road safety.
b) Works should not make the roadside environment any less safe than it currently is (and provide appropriate mitigation if necessary).

2.3.11 From a sustainable investment benefit perspective, the following safe system principles should be applied in planning and design:

a) A proposed design element should be objectively reviewed to establish whether the associated capital expenditure represents the best use of community resources.
b) Any evaluation should be based on whole-of-life costs including the initial development costs, mitigation costs and maintenance costs.
c) Practitioners shall ensure the sustainability of proposals align with long-term strategic plans to provide a self-explaining and consistent level of treatment and to avoid redundant works in the future.

2.4 Safe Systems Assessment

2.4.1 A Safe Systems Assessment (SSA) is a framework that has been developed to assess the extent to which a proposed road infrastructure project aligns with Safe System principles and the objective to eliminate fatal and serious injuries.

2.4.2 The SSA process allows project options to be compared with a base case (i.e. existing conditions) and with any alternative options.

2.4.3 A SSA will identify areas where the risk of fatal and serious injury (FSI) crashes is high and identifies potential design changes which, if adopted, would improve alignment with the Safe System approach. If Safe System principles are being followed and applied correctly, there should be a trend towards zero in the SSA scores when progressing from existing conditions to the initial design options and, finally, to the adopted design.

2.4.4 SSAs are more valuable when conducted during the early stages of a project when adjustments to the design and / or scope of the project are more effectively capture SSA elements. E.g. for major projects, this is at the concept design, business case phase or options assessment stage of project design development. Benefits can also be realised at the preliminary or functional design stage and, to a lesser extent, beyond.

2.4.5 Business Case reports should provide detailed discussion to address how the project proposal aligns with Safe System and how recommendations from SSA have been considered in the development of project options. Project options should be developed considering multiple project objectives and design constraints.

2.4.6 SSA shall be undertaken in accordance with Austroads Safe System Assessment Framework (AP-R509-16). There are two alternative levels of detail to be considered for a SSA – full assessment or rapid assessment. The level of assessment undertaken is dependent principally upon cost and complexity of the project, but also influenced by the risk of high severity crashes. The scope of SSAs, full or rapid, are defined in Table 2-1~~Table 2-1~~.

Table 2-1: Safe System Assessment types and scope

Type of Assessment	Scope of Assessment
Full SSA	Completion of the following activities, as per Austroads (2016): • Commencement meeting • Project background & context • Workshop (optional) • Site inspections • Assessment of existing conditions and design options using the SSA Matrix • Consideration of other Safe System pillars • Identification of design changes to improve alignment with Safe System principles • Full SSA report • Consideration and adoption / rejection of suggested design changes • Advise council representative of any proposed design change, re-score if necessary • Amend the project design / scope

Rapid SSA	Completion of the following activities: • Commencement meeting (if required) • Project background & context • Assessment of existing conditions and design options using the SSA Matrix • Identification of design changes to improve alignment with Safe System principles • Rapid SSA report • Consideration and adoption / rejection of suggested design changes • Advise council representative of any proposed design change, re-score if necessary • Amend the project design / scope

2.4.7 SSAs shall be undertaken for relevant development applications, concept / business case preparation or design activities, as outlined in Table 2-2~~Table 2-2~~.

Table 2-2: Application of Safe Systems

Donated Asset / Development Application	SSA Requirements	Type of Assessment
MCU / ROL / OW		
Road or intersection works (including driveway crossovers)	A SSA must be undertaken	**Full** SSA for any of the following: • Complex projects • Projects impacting Major Collector or above hierarchy roads • Projects valued over **$250,000** • Projects with a significant risk of FSI crashes • Innovative projects **Rapid** SSA for any of the following: • Projects impacting only Access Street or below hierarchy streets • Projects with a low risk of FSI crashes • Repeat assessment for projects for which a Full SSA has been previously undertaken at an earlier stage
MRC Planning / Infrastructure Project	**SSA Requirements**	**Type of Assessment**
Business Case / Concept Design		
All road environment projects	A SSA must be undertaken	**Full** SSA for any of the following: • Complex projects • Projects impacting major collector or above hierarchy roads • Projects valued over **$250,000** • Projects with a significant risk of FSI crashes • Innovative projects **Rapid** SSA for any of the following: • Projects impacting only Access Street or below hierarchy streets

		• Projects with a low risk of FSI crashes • Repeat assessment for projects for which a Full SSA has been previously undertaken at an earlier stage
Detailed Design		
All road environment projects	A SSA must be undertaken	**Full** SSA for any of the following **and** if not previously undertaken at concept design: • Complex projects • Projects impacting major collector or above hierarchy roads • Projects valued over **$250,000** • Projects with a significant risk of FSI crashes • Innovative projects **Rapid** SSA may be undertaken where a Full SSA was previously undertaken in the project.

2.4.8 Generally a SSA will only need to be conducted at one stage of project development but continually utilised and revisited as design development proceeds. In the event of significant scope change, the SSA process should be reviewed and re-evaluated as required.

2.4.9 Additional risk factors to be considered in design, which may warrant an SSA include:

a) A history of FSI crashes
b) Repeated community complaints regarding safety
c) High numbers of vulnerable road users
d) High volume of heavy vehicles
e) Treatment options that are innovative or complex

2.4.10 SSA steps are briefly explained and general responsibilities defined in

~~2.4.10~~2.4.11 **Table 2-3**~~**Table 2-3**~~. Some steps may be omitted or simplified for a Rapid SSA.

~~2.4.11~~2.4.12 When undertaking SSAs, the following responsibilities are generally applied:

a) *Client* – MRC nominated Project Manager, project lead or asset owner, or the applicant's consulting engineer.
b) *Designer* – Lead civil designer

SSA Team – The nominated team to undertake the SSA, typically made up of diverse range of persons experienced in SSAs, road safety, risk assessment and civil design. The SSA Team requires the nomination of an RPEQ to certify the SSA report and any documentation

Table 2-3: SSA steps and responsibilities summary

Step No.	SSA Step	Responsibility
1	Determine SSA Type – Full or Rapid	Client
2	Select the SSA team	Client / Designer

3	Commencement meeting	Client, Designer & SSA team, Council to be invited and may attend
4	Define / understand project context	Client, Designer & SSA team
5	Inspect the site	SSA Team
6	Complete the Safe System matrix	SSA Team
7	Consider other Safe System Pillars	SSA Team
8	Identify treatment to improve Safe System alignment	SSA Team
9	Prepare & submit report	SSA Team
10	Accept / reject suggested treatments	Client / Designer
11	Update the Safe System matrix	SSA Team
12	Amend the scope / design	Designer

2.5 Documentation

2.5.1 The following documentation shall be provided for full or rapid SSAs, where ordered:

a) A safe system assessment report, in accordance with Austroads Safe System Assessment Framework (AP-R509-16).

2.5.2 SSAs, rapid or full, shall be certified by:

a) a suitably qualified RPEQ, or
b) an accredited Road Safety Auditor (RSA).

3 FUNCTIONAL ROAD HIERARCHY

3.1 Objectives

3.1.1 Roads and streets are a key component of the overall transport system and provide the conduits to move people, goods and services. They also provide physical spaces for recreation, social interactions and economic exchange.

3.1.2 Having an efficient and safe road network is critical to ensuring the liveability and prosperity of our communities and economy. For road and land use managers, a functional road hierarchy provides the framework for understanding the purpose and function of roads and streets within the wider network, to be able to plan, develop, manage and operate the road network efficiently and sustainably.

3.1.3 The functional road hierarchy is a planning tool that assists in decision making around:

a) Network planning
b) Traffic and access management
c) Asset management
d) Road design
e) Land use planning.

3.1.4 The high-level objectives of the MRC functional road hierarchy include:

a) To plan and develop a safe and efficient road network that is integrated with the existing road network and balances the competing functions of mobility and access.
b) Ensure the road network provides a legible and intuitive network that is based on the adopted functional classifications and road hierarchy types.
c) Integrate the planning of all transport modes and networks to ensure that the planned road network can achieve total transport outcomes for all users.
d) Utilise road network performance criteria that are aligned to the functional classifications as a key input into the network planning and the design of roads and streets.

3.2 Application to this policy

3.2.1 The MRC functional road hierarchy is to be used as an input for the planning of new road networks (see section 3.3) and also as an input into the road design process (see section 4.74~~.5~~) for the MRC local government-controlled road network.

3.2.2 The MRC functional road hierarchy does not replace the need to plan for other transport networks, such as the active transport or bus networks. The road hierarchy should be integrated with all transport modes to achieve broader transport outcomes.

3.2.3 The designer should note that whilst the functional road hierarchy will be a key input to the road design process, the road hierarchy classification is not the only consideration in determining the form of the road.

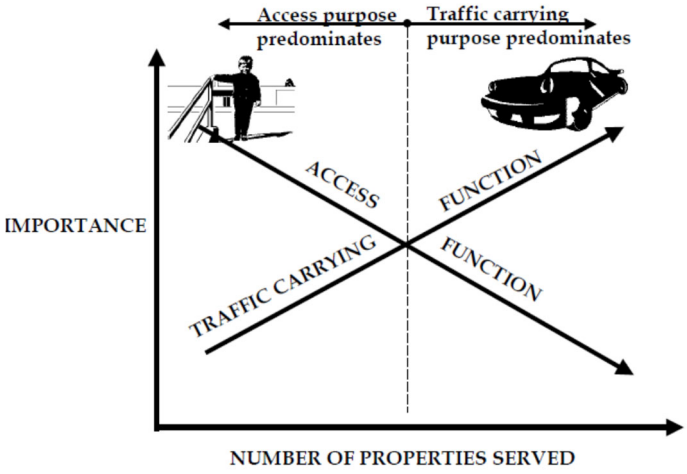
3.3 MRC Functional Road Hierarchy

3.3.1 The functional road hierarchy adopted by Mackay Regional Council and included as part of this PSP is based on a widely adopted model, premised around the differentiation between the mobility and access purpose of a road.

3.3.2 Mobility relates to how efficiently people and goods can move through the network (traffic-carrying function) and access, relates to the level of access provided to adjacent land uses and properties (accessibility). This hierarchy model recognises that all roads will operate with a combination of these two functions, but with varying degrees of importance. Refer

3.3.3

~~3.3.2~~3.3.4 **Figure 3-1**~~**Figure 3-1**~~ for a representation of the two functions and the relationship between mobility and access.



Source: Eppel, McClurg, Bunker (2001)

Figure 3-1 – Mobility and access

~~3.3.3~~3.3.5 The MRC functional road hierarchy includes four Functional Classifications:

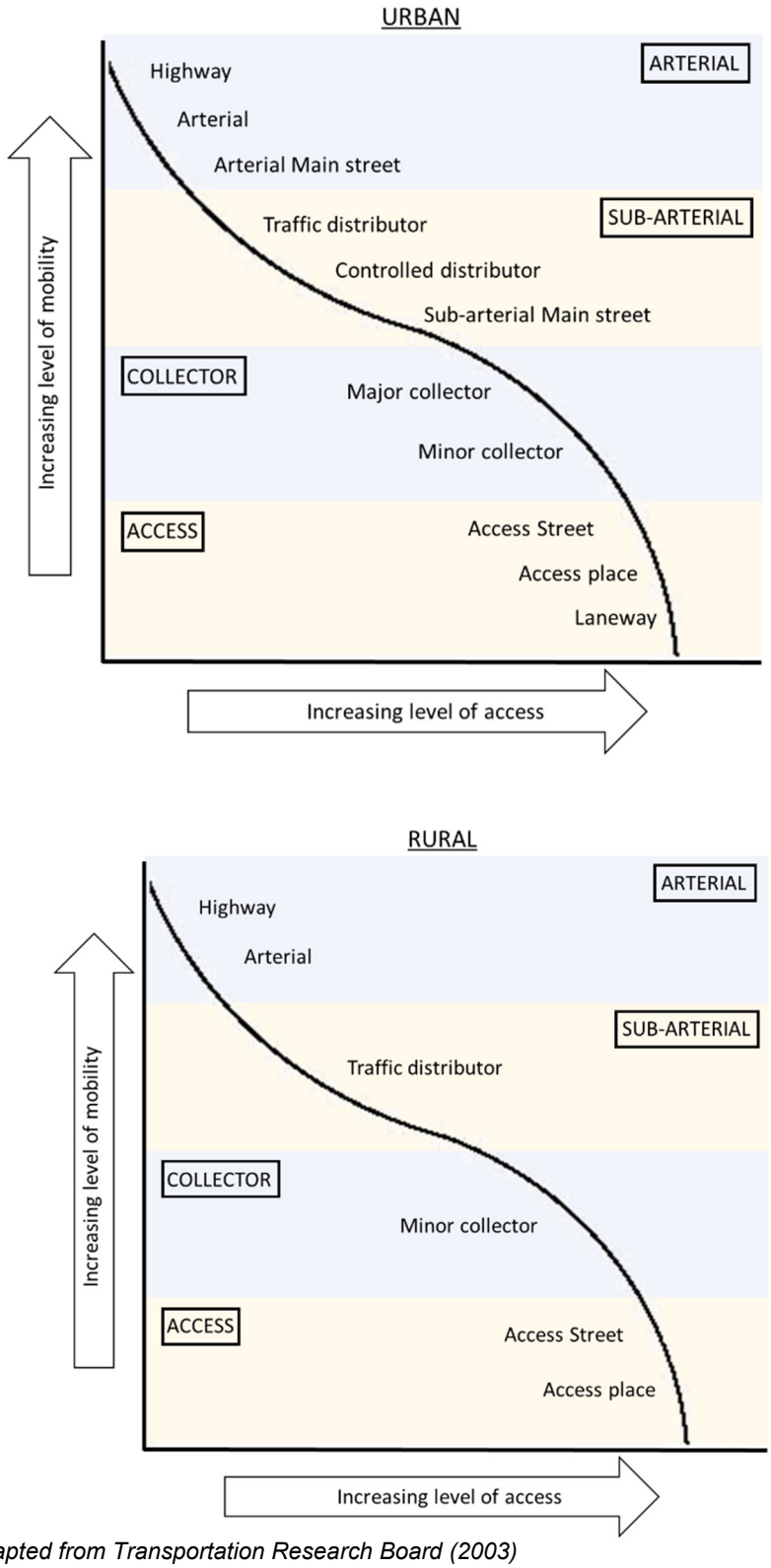
a) Arterial
b) Sub-arterial
c) Collector
d) Access

~~3.3.4~~3.3.6 The objective of the Arterial and Sub-arterial classes is to provide the key movement networks to support through-traffic movements with a higher traffic-carrying function.

~~3.3.5~~3.3.7 The objective of the Collector and Access classes is to provide higher level of accessibility between the road and adjacent land use, and circulation of traffic within a local area.

~~3.3.6~~3.3.8 In recognition that the urban and rural road networks are planned and managed differently, the MRC functional road hierarchy further defines Road Hierarchy Classifications for both the urban and rural road networks separately. There are 11 hierarchy types in the urban network and 6 in the rural network.

~~3.3.7~~3.3.9 The MRC functional road hierarchy is defined in Table 3-1~~Table 3-1~~ (urban) and Table 3-2~~Table 3-2~~ (rural). Refer Figure 3-2~~Figure 3-2~~ for a representation of the MRC functional road hierarchy.



Source: Adapted from Transportation Research Board (2003)

Figure 3-2 – MRC Road Hierarchy Classification - Urban and Rural

Table 3-1: Road Hierarchy Objectives – Urban Areas

1. PURPOSE										
Mobility ←----------→ Access										
• to move people and goods efficiently • to collect trips • to provide access to specific destinations										
2. FUNCTIONAL CLASSIFICATION										
Arterial			Sub-arterial			Collector			Access	
The broader objectives of the hierarchy include:										
• 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 route • freight and dangerous goods routes • regional cycle movements.			• through traffic between arterial roads • connections between local areas and arterial roads • through movement of public transport • regional and local cycle movements • pedestrian movements			• carry traffic having a trip end within the specific area • direct access to properties • potential public transport routes • local cycle movements and potential regional cycle movements • pedestrian movements.			• direct access to properties • local cycle movements • pedestrian movements.	
3. ROAD HIERARCHY CLASSIFICATION										
Highway	Arterial	Arterial Main Street	Traffic Distributor	Controlled Distributor	Sub Arterial Main Street	Major Collector	Minor Collector	Access Street	Access Place	Laneway
The management of these hierarchy types will seek to facilitate:-										
• longer distance traffic movements between towns • regionally and	• longer distance traffic movements between suburbs and other centres.	• longer distance traffic movements • access to commercial properties	• connection of local areas to arterial roads • through movements	• connection of local areas to arterial roads • access to properties - limited/controlled to maintain	• connection of local areas to arterial roads • access to commercial	• connection of local and/or Minor collector streets with Arterial and Sub-arterial roads • access to properties	• connection of local streets with Major collectors, Arterial and Sub-	• access to individual adjacent properties; • connection to other	• access to individual adjacent properties with • no through-connectivity	• rear access to individual adjacent properties • connection to other access

nationally significant movements.		• car parking • pedestrian movements	between arterial roads.	through movements	properties • on-street car parking • pedestrian access and movements.	limited/controlled to maintain through movements.	arterial roads • access to individual adjacent properties.	access streets and collectors	except for pedestrians and active transport modes	streets and collectors

Table 3-2: Road Hierarchy Objectives - Rural Areas

1. PURPOSE					
Mobility ←----------→ Access					
• to move people and goods efficiently • to collect trips • to provide access to specific destinations					
2. FUNCTIONAL CLASSIFICATION					
Arterial		Sub-arterial	Collector	Access	
The broader objectives of the hierarchy include:					
• 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 route • freight and dangerous goods routes • regional cycle movements.		• Provide for through traffic and freight movements as well as facilitate access to local business, services and retail	• carry traffic having a trip end within the specific area • direct access to properties • potential public transport routes • local cycle movements and potential regional cycle movements • pedestrian movements.	• direct access to properties • local cycle movements • pedestrian movements.	
3. ROAD HIERARCHY CLASSIFICATION					
Highway	Arterial	Traffic Distributor	Minor Collector	Access Street	Access Place
The management of these movement hierarchy types will seek 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 between towns or -peri urban areas • connection of local areas • through movement between arterial roads	• connection of local streets with Major collectors, Arterial and Sub-arterial roads • access to individual adjacent properties.	• access to individual adjacent properties; • connection to other local streets and Collectors	• access to individual adjacent properties; • connection to other local streets and Collectors

3.4 Road Network Performance Criteria

3.4.1 The road network planning performance criteria supports the MRC functional road hierarchy by providing additional guidance for different road hierarchy classifications in the urban and rural areas based on the following criteria:

a) Dominant linkage
b) Traffic carrying function
c) Modal priority
d) Access Function
e) Intersection Spacing
f) Desired Operating Speed

Refer Table 3-3~~Table 3-3~~ and Table 3-4~~Table 3-4~~ for functional road hierarchy performance criteria for urban and rural road networks.

3.4.2 The *Dominant Linkage* reflects the typical transport catchment for the specific road link and is an indicator of the average trip-length. These are defined based on the following:

a) Regional – longer distance routes connecting the region with other regions and wider economic markets and supply chains.
b) Intra-regional – longer distance routes connecting the region internally between key centralised destinations and to external regional routes.
c) Specific area – long distance routes that provide inter-connections between suburbs and destinations and link to Inter-regional routes
d) Local – access links servicing the first and last part of the trip that connect to Inter-connecting links or Inter-regional routes.

3.4.3 The *Traffic-carrying function* refers to the potential traffic demands on a specific link, typically in the forecast year. Traffic volumes are a useful indicator to the mobility function of a road link but are not intended to be used as the only measure. In considering the forecast traffic demands, the function of the specific link in the wider network should be considered as there may be other network interventions that change the future demands and function of the link over time. Other changes in travel behaviour and mode shift may also be relevant for specific links.

3.4.4 *Modal priority* is the assumed relative priority between users and transport modes on a particular link. The modal priority is presented in the relative order of priority and should be used as a guide

in the design process on how to approach conflicts between modes or decision-making that has different effects on particular modes. The transport modes are categorised as follows:

a) *Freight* – freight vehicles on-road that are facilitating longer distance movements on Regional or Intra-regional routes. This excludes local freight such as local deliveries which are assumed to occur across the network.
b) *Private vehicle* – motor vehicles associated with the movement of people for a range of trips.
c) *Bus* – scheduled bus transport routes. This excludes school bus services which may operate on all parts of the network where safely accommodated.
d) *Active* – refers to the range of potential active transport modes including cyclists, pedestrians and other wheeled modes (electric or self-propelled).

3.4.5 *Access function* is defined by the predominant land use type (residential, commercial, or industrial) and the type of access that is anticipated, as follows:

a) *Individual* – access between individual properties and the road
b) *Limited* – access is managed to reduce the impact of access to the mobility of the road. This could include sharing access between multiple properties, limiting certain vehicle movements, use of service roads or access tracks, or other appropriate alternatives
c) *Typically nil* – restricting access where there is an alternative.

3.4.6 *Intersection spacing* refers to the indicative distance anticipated between successive intersections along the road link. This should only be considered as a guide. Where necessary, a traffic impact assessment will be required to identify the appropriate intersection treatment and intersection spacing requirements.

The *Desired operating speed* is the typical operating speed anticipated for the road link. Note the operating speed identified is to be used for guidance only.

3.5 Evacuation routes

3.5.1 Evacuation routes shall be designed generally in accordance with the following:

a) 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.
b) 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.
c) 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.
d) The evacuation routes to which this requirement applies are shown in the relevant Evacuation maps referenced on the Mackay Regional Council website. <https://www.mackay.qld.gov.au/residents/emergencymanagement/evacuation_maps>

Table 3-3: Functional Road Hierarchy Performance Criteria – Urban Areas

Criterion	Highway	Arterial / Arterial Main Street	Traffic Distributor	Controlled Distributor / Sub Arterial Main Street	Major Collector	Minor Collector	Access Street	Access Place	Laneway
Functional Characteristics									
Dominant linkage	Regional	Intra-regional	Intra-regional	Specific area	Specific area	Specific area	Local	Local	Local
Traffic carrying function	Volumes not restricted	Volumes not restricted	Volumes not restricted	<10,000vpd	<6,000vpd	<3,000vpd	<750vpd	<150vpd	<300vpd
Modal priorities	Freight Private vehicle	Private vehicle Freight Bus Active	Private vehicle Bus Freight Active	Private vehicle Bus Freight Active	Private vehicle Bus Active	Private vehicle Bus Active	Active Private vehicle	Active Private vehicle	Private vehicle Active
Residential access function	Typically nil	Limited	Limited*	Limited*	Limited*	Individual	Individual	Individual	Individual
Commercial access function	Typically nil	Limited	Limited*	Limited*	Limited*	Individual	Individual	Individual	Individual
Industrial access function	Typically nil	Limited	Limited*	Limited*	Limited*	Individual	Individual	Individual	Individual
Intersection Spacing	1-2km highway, >=2km motorway, 4-8 km	> 1km	300m min.	300m	100m min.	100m min.	>100m	nil	nil
Desired Operating Speed (km/h)	100	70-80	60-70	60	60	50	<40	<30	<30

Table 3-4: Functional Road Hierarchy Performance Criteria - Rural Areas

Criterion	Arterial	Traffic Distributor	Minor Collector	Access Street	Access Place
Functional Characteristics					
Dominant linkage	Intra-Regional	Specific area	Specific area	Local	Local
Traffic carrying function	Volumes not restricted	Volumes not restricted	Typically <250vpd	Typically 100 < 250vpd	<100vpd
Modal priorities	Freight Private vehicle	Private vehicle Freight	Private vehicle Freight Active	Active Private vehicle	Active Private vehicle
Residential access function	Limited	Limited	Individual	Individual	Individual
Commercial access function	Limited	Limited	Limited	Individual	Individual
Industrial access function	Limited	Limited	Limited	Individual	Individual
Intersection Spacing	500-1000m >1km	300m	100m	<100m	nil
Desired Operating Speed (km/h)	100	80	60	60	40

3.6 Documentation

3.6.1 For any ROL planning application, or development of a Business Case or Concept design, the following documentation is required to demonstrate that appropriate functional road hierarchy design considerations have been undertaken:

a) A legible functional road hierarchy masterplan or layout drawing(s) shall be submitted as part of any relevant submission.

3.6.2 The submission of the functional road hierarchy plan should reflect the nature and complexity of the accompanying planning application or proposed design. The main role of the functional road hierarchy plan is to:

a) Address the objectives outlined in s3.

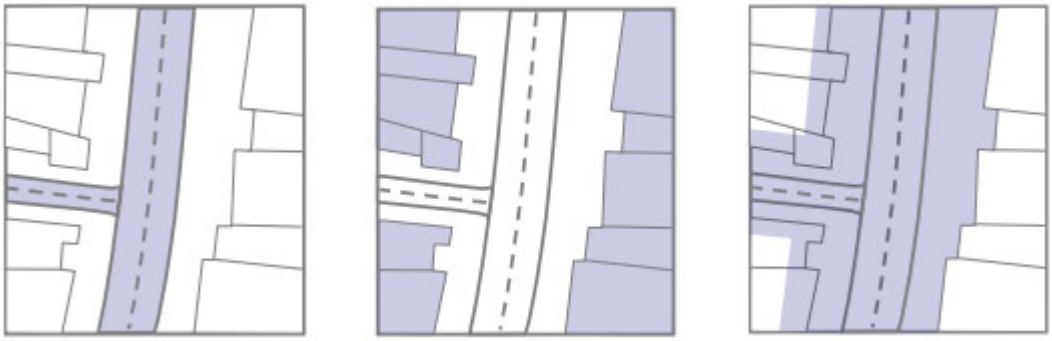
4 MOVEMENT & PLACE

4.1 Objectives

4.1.1 The Movement and Place approach to planning and design recognises that roads facilitate the movement of people and goods by various modes of transport, as well as provide places for people and activity.

4.1.2 This approach builds on the functional road hierarchy by incorporating modal priority with modal mobility and acknowledges that streets and roads provide public spaces that often do more than facilitate movement and access. Streets also provide the space and places for recreation, social and cultural exchange and often economic activity. This approach aims to facilitate greater enjoyment of the surrounding environment and amenity, as well as opportunities for economic activity and vitality.

4.1.3 The Movement and Place approach focuses on the future aspirations for a street and provides a framework to establish a shared vision that can balance both the transport and land use activity objectives to guide the planning and design process to get improved outcomes (Figure 4-1~~Figure 4-1~~).



Conventional scope of road design | **Conventional scope of land use planning** | **Scope of Movement and Place Design**

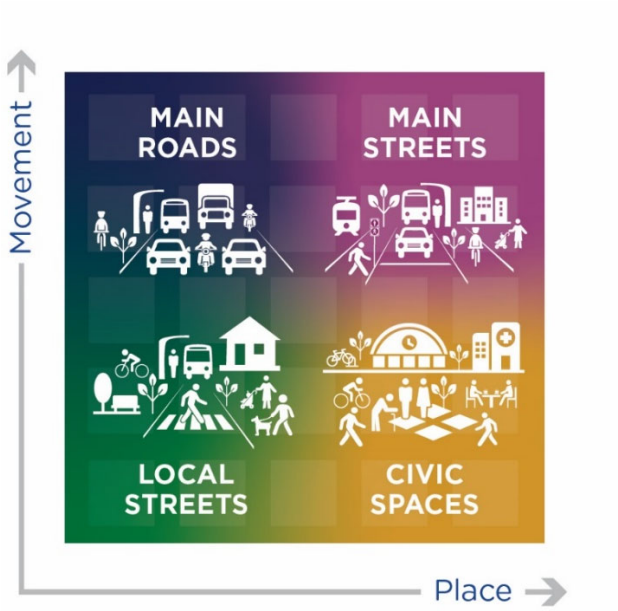
Source: Adapted from Jones & Boujenko (2007)

Figure 4-1: Conventional design and planning approaches compared to movement and place design scope

4.2 Classifying Street Environments

4.2.1 Movement and Place is typically implemented through a matrix framework, where place values are considered on one axis and movement on the other. In developing a vision for a specific location, the place outcomes are 'determined by the strategic significance and community value of a place' (Austroads, 2020: 6) and the movement outcomes are determined based on the desired mobility and access outcomes for all the various modes of transport. This is undertaken for the current state and then for the desired-vision state to clearly identify any change in vision and desired outcomes. There is no limit to the complexity of the matrix that can be adopted, however there is typically a categorisation of different street types based on the range of movement and place values. Figure

4-2~~Figure 4-1~~ provides an example of a 5x5 matrix from Transport for NSW with four broad categories.



Source: Transport NSW

Figure 4-2: Movement and Place Matrix Overview (Transport NSW)

4.3 Place Value

4.3.1 To establish the place value for either the current or future state, there needs to be consideration of what makes the place important and how it can be differentiated with other locations. Typically, places where the most activity occurs, or has the potential to occur, will have the highest place value. The metrics and data used to measure place value will be related to the typical activities of people in those places (living, working, visiting, moving to/ through/within via public and active transport), the physical form and capacity of those places (density, land uses), and those that have common community meaning and value (schools, hospitals, community centres, public spaces).

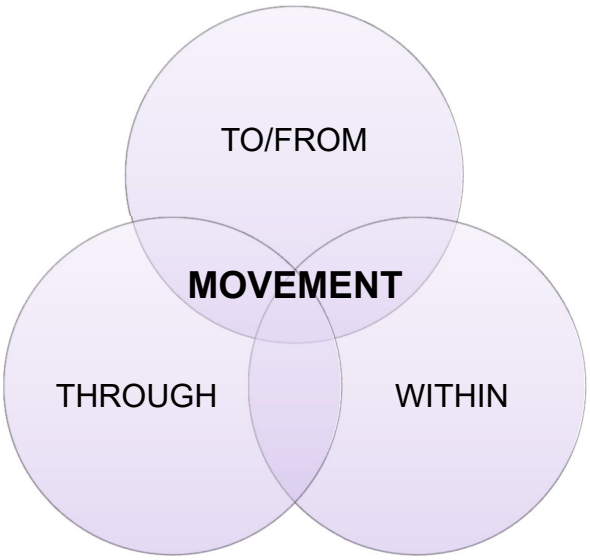
4.3.2 Measures of place intensity include population density (land use), growth projections (future use), visitor numbers, physical form characteristics, or place meaning value or recognition within the community (or broader catchments). Table 4-1~~Table 4-1~~ provides an overview of some of the metrics and measures used in NSW.

Table 4-1: Measures of place intensity (RMS Practitioner's Guide to Movement and Place).

PLACE INTENSITY ASPECT/DESCRIPTION		MEASURE
ACTIVITY	People – living	Population density (ppl/ha)
	Where do people live? (more/less)	Population projections (ppl/ha)
	People – working	Job density (jobs/ha)
	People – visiting	Number of visitors
	People – moving	
	People in areas most likely to use public transport	Public transport (catchments)
PHYSICAL FORM	Density – existing Potential to host activity	Building volume (footprint + height)
	Density – possible Potential to host activity	Floor space ratio (max floor area/site)
	Street layout Capacity to host walking	Intersection density Average pedestrian and cycle crossing spacing
	Land use – existing Where are the most v fewest uses?	% of single v multiple uses (land zoning) % of shade coverage and heat mitigate
	Land use – proposed Where are the highest intensity uses?	Business zones
MEANINING	Common spaces / destinations Where do people go?	Number of shops/other
	Places of common value Where people go?	Heritage places

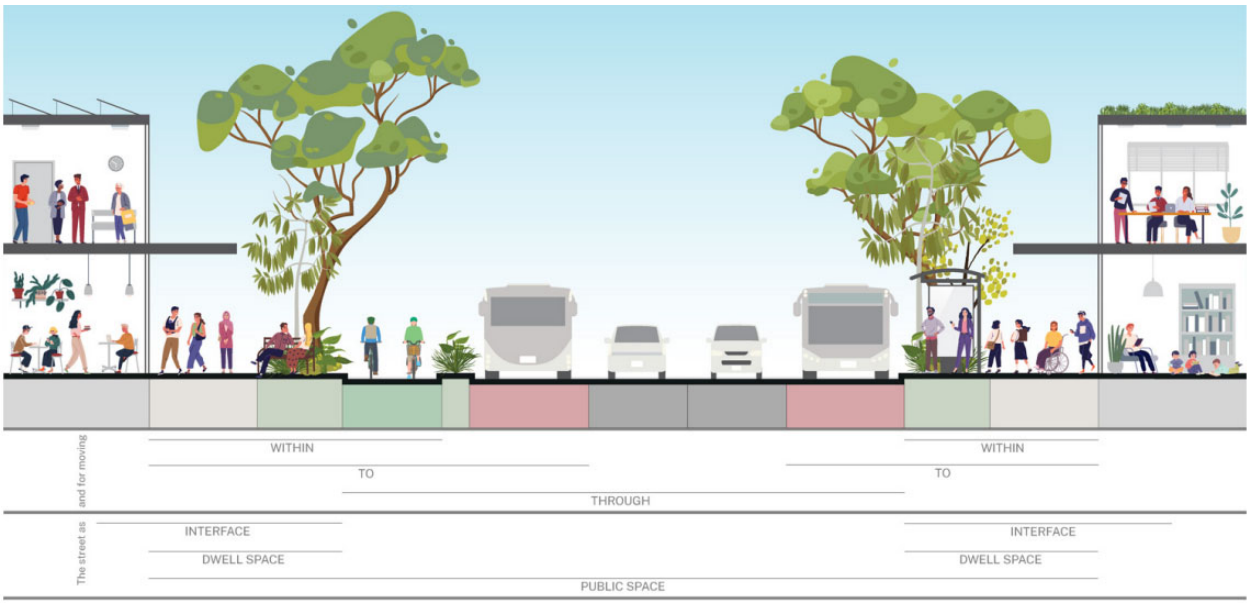
4.4 Movement Value

4.4.1 To establish the movement value for either the current or future state, there needs to be consideration of why people and/or goods are moving on the link and how. Understanding total demands (volumes and speed) is an important component, but so is the understanding of the purpose of the trip, the different transport modes and users and whether there are relevant temporal or seasonal factors that influence the demands. Movement may be to/from, through or within a transport corridor, see Figure *4-3*~~Figure 4-3~~ and Figure *4-4*~~Figure 4-4~~



Source: Adapted from Design of roads and streets (NSW)

Figure 4-3: Movement types



Source: Design of roads and streets (NSW)

Figure 4-4: Typical movement types with a transport corridor

4.4.2 Movement value example scenarios include, a higher-order road that is primarily for the movement of freight vehicles to a specific business could have the same movement value as a higher-order road that connects a school with a residential area, with the difference being what is moving (people and goods), the priority modes and users (pedestrians, cyclists, cars and trucks) and timing of peak demands (school times and 24-hour operations).

4.4.3 Measures of movement considers those through, to/from and within a street across multi modes. Indicators of movement for walking include large amounts or people walking on the street, the presence of destinations along the street segment that are accessed by foot, or opportunities for

people dwelling on the street segment. Table 4-2~~Table 4-2~~ provides an example of some of the modal measures for movement significance.

Table 4-2: Measures of movement significance

MODE	THROUGH	TO/FROM	WITHIN
WALKING	Large amount of people walking on the street segment to a destination outside the local area	Presence of destinations along the street segment that are accessed by foot	Opportunities for people dwelling on the street segment e.g. footpath dining
CYCLING	On a Principal Cycle Network route	Centre or place that connects directly to a PCN route	Opportunities for people cycling to move around the centre or place in a low stress/speed environment
PUBLIC TRANSPORT	Regional coach service	Centre serving route	Local or on-demand serviced
FREIGHT	On a designated strategic freight route	Connects to a logistics hub	Regular loading and deliveries occur
PRIVATE VEHICLES	Majority of vehicles travel through the segment without parking or loading	Majority of vehicles have a destination or origin in this segment	Presence of vehicles making trips that start and end within the neighbourhood

Source: RMS Practitioner's Guide to Movement & Place

4.5 Application to this policy

4.5.1 This Planning Scheme Policy integrates the MRC Movement and Place framework into the road design and planning process as part of section 4.7.

4.5.2 The adoption of a Movement and Place design approach aligns with Council's Corporate Plan vision 'to become the best region for liveability and livelihood', to be achieved through delivering well planned and designed places, facilities and infrastructure.

4.5.3 The Movement and Place framework does not change the fundamental design standards or safety requirements in relation to the design but is intended to influence the planning and design process to ensure the design and final form responds to and facilitates both the desired movement and place outcomes.

4.5.4 This PSP adopts a 4 x 4 grid matrix for urban areas, with P1 to P4 on the x-axis and M1 to M4 on the Y-axis. In rural areas a 3 x 4 grid matrix is adopted, with P1 to P3 on the x-axis and M1 to M4 on the Y-axis, see Error! Reference source not found.~~Figure 4-5~~. **Movement and Place classification is discussed further in s4.6.**

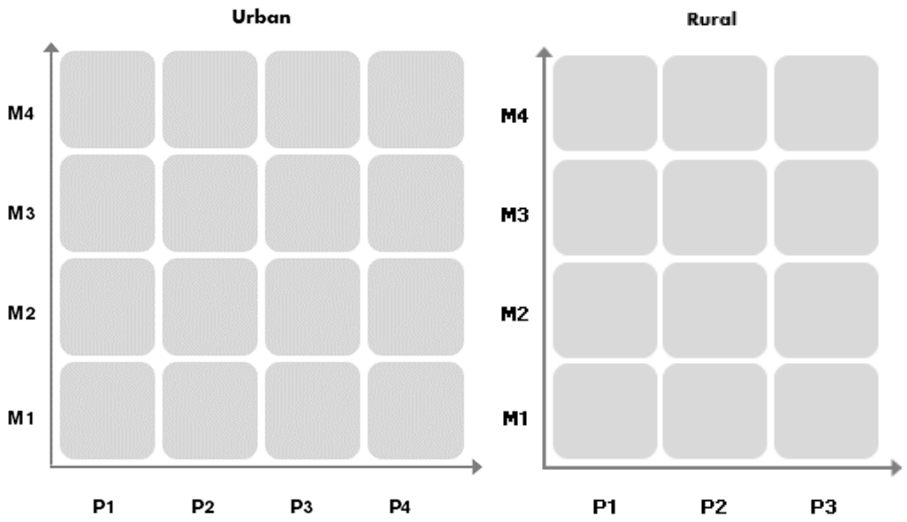


Figure 4-5: Movement and Place Matrix for Urban and Rural Roads

4.6 MRC Movement and Place Classification

4.6.1 In Urban areas the PSP defines five (5) Urban Movement and Place classes as follows:

a) Urban Connectors
b) Local Streets
c) Activity Streets
d) Civic Spaces
e) Main Streets

Refer Figure 4-6~~Figure 4-6~~ for Councils urban movement and place road class representation.

4.6.2 *Urban Connectors* are typically high-movement and low-place road environments and have a place value of P1 or P2 and movement value M3 or M4. They can be characterised by what would be typically recognised as Arterial or Sub Arterial roads within the functional hierarchy classification.

4.6.3 *Local streets* are typically residential streets which have both a low-*movement* and low *place* value with a *place* value of P1 or P2 and movement value M1 or M2. They can be characterised by what would be typically recognised as Collector and Access streets within the functional hierarchy classification.

4.6.4 *Activity Streets*, *Civic Spaces* and *Main Streets* have a higher place value of P3 or P4 but are differentiated by their movement values between M1 and M4. These three classes include streets

with greater levels of activity where the road form is required to take on a non-typical arrangement to cater for the different place and movement objectives.

4.6.5 *Activity Streets* have place value of P3 and a movement value between M1 and M3. These may be classed as Sub-arterial or Collector type roads within the functional hierarchy classification but also have higher activity and place outcomes with specific movement and modal requirements.

4.6.6 *Civic Spaces* have a high place value of P4 and lower movement value of M1 or M2. These will be mostly low-speed, high activity areas with a mix of users and modes, such as shared zones or public use areas that are located within a road reserve.

4.6.7 *Main Streets* are high-movement with a movement value of M4 or M3 and a high-place value of P3 or P4. These links will have a mix of high levels of activity with higher transport demands and importance. These streets may be classed as Arterial roads or Sub-arterial roads within the functional hierarchy classification that also are located within key business or activity centres.

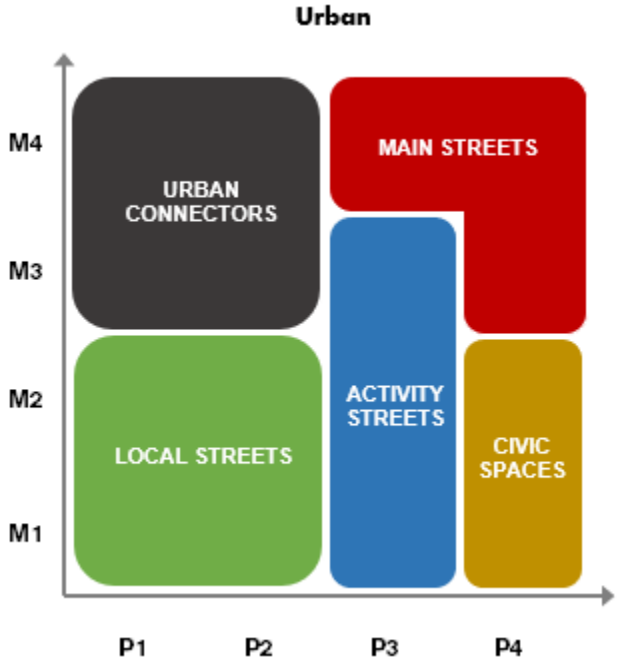


Figure 4-6: Urban Movement and Place classification

4.6.8 In Rural areas the PSP defines four (4) Urban Movement and Place classes as follows:

a) Regional Connectors
b) Rural Connectors
c) Rural Access
d) Points of Interest & Stopping Places

Refer Figure 4-7~~Figure 4-4~~ for Council's rural movement and place road class representation.

4.6.9 *Regional Connectors* provide a high movement function to connect townships across the region with a movement value of M4 and a place value of P1 or P2, depending on their location and the

predominant use. These roads can be characterised by what would be typically recognised as rural Arterial roads within the functional hierarchy classification.

4.6.10 *Rural Connectors* also provide for high movement function with a movement value of M3 and a place value of P1 or P2. These roads can be characterised by what would be typically recognised as rural Sub-arterial roads within the functional hierarchy classification.

4.6.11 *Rural Access* roads will have a lower movement value of M1 or M2 and a place value of P1 or P2. These roads will typically be providing a mix of rural access and connectivity functions and would be typically recognised as rural Collector and Access roads within the functional hierarchy classification

4.6.12 *Points of Interest & Stopping Places* have the highest place value within the rural areas with a place value of P3 and can be located on any road link with a movement value between M1 and M4. These roads will typically be formal or informal stopping places along a road link with some significance, such as a designated lookout, public amenities facility, shaded park or recreational area, or parking area near a local swimming area.

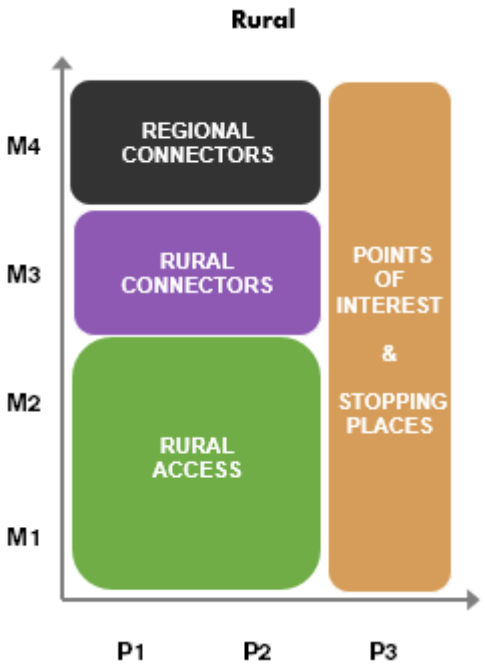


Figure 4-7: Rural Movement and Place classification

4.7 Movement and Place Design Framework

4.7.1 The MRC Movement and Place Design Framework has four (4) key inputs which all contribute to determining the design outcome and final design form of the street. The four (4) key inputs which will need to be considered to inform the design process include:

a) Place value
b) Movement value
c) Modal priority assessment
d) Design environment

4.7.2 The *Place value* is a key input into the determination of the MRC Movement and Place classification. *Place value.* Place values are categorised between P1, through to P4 for urban areas and P1, through to P3 for rural areas.

4.7.3 The *Place value* is to be determined through a subjective assessment of the project area and the level of activity within the street, how any use of the street interacts or is engaged with the adjoining land uses, and the scale of which the place attracts activity. This will primarily be based on the relative catchment of users and/or activity and its importance at either a local, neighbourhood, locality/suburb or at a regional scale. Refer Error! Reference source not found.~~Figure 4-8~~ for typical urban place value characteristics and Error! Reference source not found.~~Figure 4-9~~ for typical rural place value characteristics.

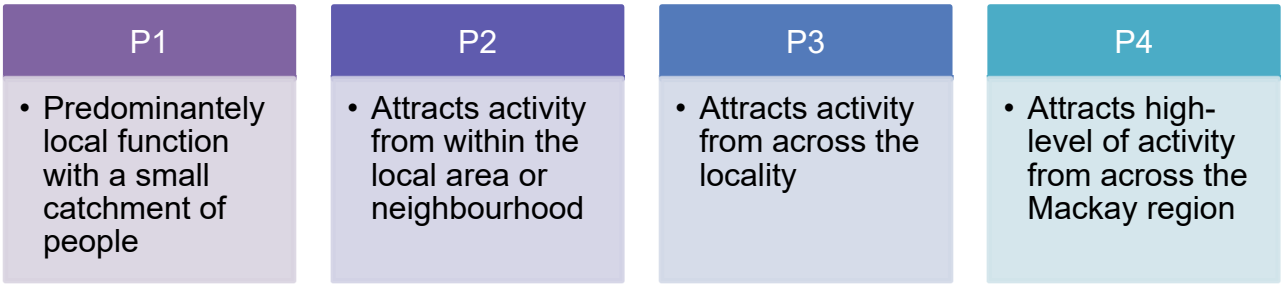


Figure 4-8– Typical Urban Place Value Characteristics (PX)

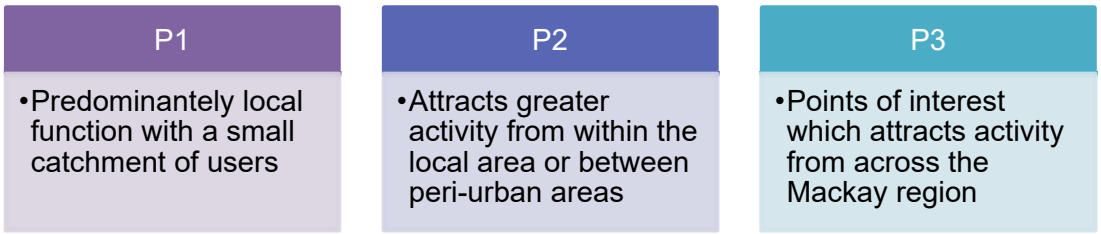


Figure 4-9 – Typical Rural Place Value Characteristics (PX)

4.7.4 Place values are to be established through a review of a range of relevant information and should be identified for the Existing state for Brownfield sites and the *Desired future state* in all locations. Refer Error! Reference source not found.~~Table 4-4~~Error! Reference source not found.Error! Reference source not found. for a range of potential measures that inform the identification of the appropriate place value for any project.

Table 4-3: Measure of place values and significance

	Measure	Description	Source
Uses	Existing use	Understanding of existing land uses adjacent to the road link and within the verge, to understand how they interact with the space and what are the key uses.	Site surveys Aerial photos
	Future uses	Planning scheme zoning is an indicator of land use / development potential of the adjacent land into the future.	Mackay Region Planning Scheme
	Density	Population, employment, GFA density over a given area can be an indicator of concentration of activity.	Site surveys Aerial photos
	Attractors / Activation	What attractors or activation activities are undertaken within the area and how do they attract people to the location and what do people do.	Site surveys Aerial photos High-activity land uses or facilities
	Road verge	Understand specifically how the area of the road link between the property boundary and the roadway is utilised.	Site surveys Aerial photos
Accessibility	Surrounding land uses	Understanding of how the adjacent land use interacts with the surrounding area.	
Development	Planned growth	Understand what changes are anticipated over time to land use types and scale/density of uses.	Mackay Growth Allocation Model State demographic forecasts (QGSO)
	Approved development	Indicator of land uses that could be developed and any required changes to the road or verge areas	Development approvals
Amenity	Tree planting arrangement & planting frequency, shade coverage, aspect/solar orientation, prevailing wind direction, landscaping	Understanding of how much amenity is provided which makes the place attractive for use. The level of amenity could be measured by the amount of 'dwell time', where the higher the perceived amenity, the longer a person will dwell within.	Landscape corridors Species shade coverage potential & urban cooling benefit, site orientation

4.7.5 Strategies to enhance place values as a part of road design include:

a) Providing attractive and safe places for people walking and riding, such as a street trees and shading.
b) Identification and promotion of key gateways and nodes.
c) Alignment with distant viewpoints and site features.
d) Provide for both visual and physical connection to open space areas.
e) Provide opportunities to highlight special characteristics of the neighbourhood (e.g. existing vegetation, cultural and heritage elements, architectural features).
f) Provide for enhanced landscaping, street tree planting and shading benefit within the verge.

The *Movement value* is one of the key inputs into the determination of the MRC Movement and Place class. *Movement value* is scored between M1, though to M4 and is determined through a subjective assessment of the function of the link. This assessment will need to consider all transport modes and their modal priority (as outlined in section Error! Reference source not found.~~4.7.4~~) and is based around its strategic importance in the network, the size or scale of the service catchment and the level of demand. The final movement value may be determined by the outcomes a single transport mode/user on the link. Refer Figure 4-10~~Figure 4-10~~ for the typical movement value characteristics.

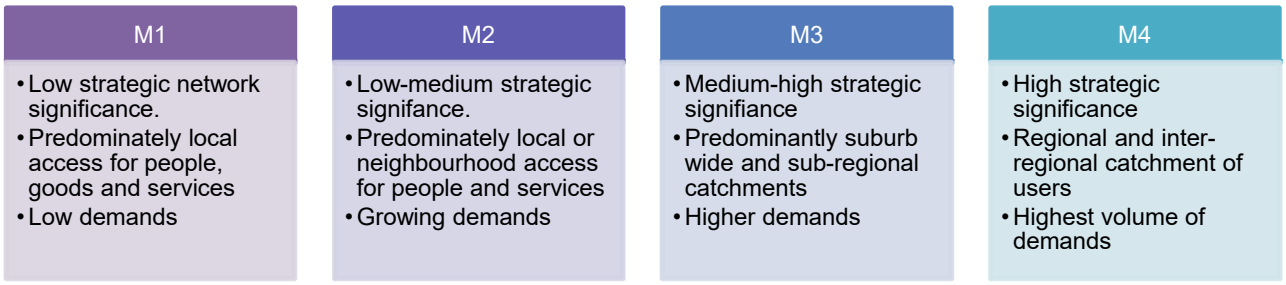


Figure 4-10 – Typical Urban and Rural Movement Value Characteristics (MX)

4.7.6 Movement values are to be established through a review of a range of relevant information and should be identified for the *Existing state* for Brownfield sites and the *Desired future state* in all locations. Refer Table 4-4~~Table 4-3~~ for a range of potential measures that inform the identification of the appropriate movement value for any project.

Table 4-4: Measure of movement values and significance

	Measure	Information	Source
Networks	Road hierarchy	Guidance on the intended road function based on traffic-carrying and access functions of the link.	MRC Road Hierarchy
	Active transport	Strategic cycle network and key routes.	Principal Cycle Network MRC Cycle Network Designated PMD or micromobility parking areas
	Scheduled bus routes / services	Passenger bus routes and services. School bus services	Translink Mackay Transit Coaches/Kinetic
Infrastructure	Existing infrastructure	Identify existing infrastructure and capacity, condition and service level provision	As-constructed plans Traffic signal phasing diagrams Aerial photos Site survey Dial Before You Dig mapping
	Road space allocation	Understand the current use of the road reserve and space allocated for movement of people by each mode and the other uses within the road reserve.	Aerial photos Site survey

Demands	Current demands	Actual demands for specific modes	Traffic / intersection count surveys (including pedestrians/cyclists) Site observations
	Travel patterns/behaviours	Understand transport demands linked to trip generation, origin-destinations, mode choice, accessibility to private vehicles, demographics.	Census data Travel surveys (household/business) Origin-destination surveys
	Traffic impacts	Undertaken to understand the future demands and impacts from specific development proposals.	Traffic impact assessments
	Traffic modelling	Traffic models refer to operational aspects of road-based systems and modes, in particular movement of vehicular traffic on the road network, such as, mesoscopic, microscopic and intersection models. Traffic models can also consider impacts of active transport and public transport modes.	Land use / growth modelling Transport modelling – at network, corridor, route and link level
	Transport modelling	Transport models refer to overarching strategic models which can forecast and plan for the whole transport system (all modes) but do not inform detailed operational aspects of the transport system. Transport models are used to represent potential future land use and transport scenarios to test a range of potential interventions or options (policy, land use, behaviour, infrastructure).	Land use / growth modelling Transport modelling – at network, corridor, route and link level

4.7.7 Once Movement value (MX) and Place value (PX) has been assigned, the associated Movement and Place classification can then be determined by looking up the MRC Classification matrix shown on Figure 4-6~~Figure 4-3~~ or Figure 4-7~~Figure 4-4~~.

4.7.8 The assignment of a Movement and Place classification provides guidance on the road form, either directly associated with the MX/PX matrix, or similar, which aligns to the movement and place values identified for the road link.

4.7.9 Modal priority is about understanding who uses the road link, for what purpose and by which transport mode and then having some relativity between modes. This enables planners, designers and decision makers to consider and develop options through the design process that will respond appropriately to each mode and better understand how certain design outcomes will benefit or impact specific modes. For example, a mode with a higher level of priority is considered more

important than another with lower priority and therefore is afforded greater weight in the design process.

4.7.10 The modes defined in the MRC Movement and Place Design Framework that are required to be considered in the assessment include:

a) People walking
b) People cycling and using micro-mobility
c) People using public transport
d) Goods by road freight
e) People in private vehicles
f) Goods loading and servicing
g) People parking private vehicles
h) People parking bicycles and other micromobility.

4.7.11 For people parking private vehicles, bicycles and micromobility devices, requirements for charging stations should also be considered.

4.7.12 Using the available information for the project (see Table 4-4~~Table 4-3~~ for guidance) a *Modal priority assessment* is to be completed for the *Existing state* and Desired *future state* for each mode. The assessment may be presented on chart allowing for comparison between modes.

4.7.13 Modal priorities are to be generally ranked from highest priority to lowest, in terms of *which mode has priority when considering allocation of space and function within the transport corridor.* By assigning and understanding mode priorities, the design form should achieve the intended movement and place outcome. Refer Error! Reference source not found.~~Figure 4-8~~ which show people on bicyles as the highest priority and would be considered first when allocating space within the tranport corridor, ahead of people walking and people in private vehicles.

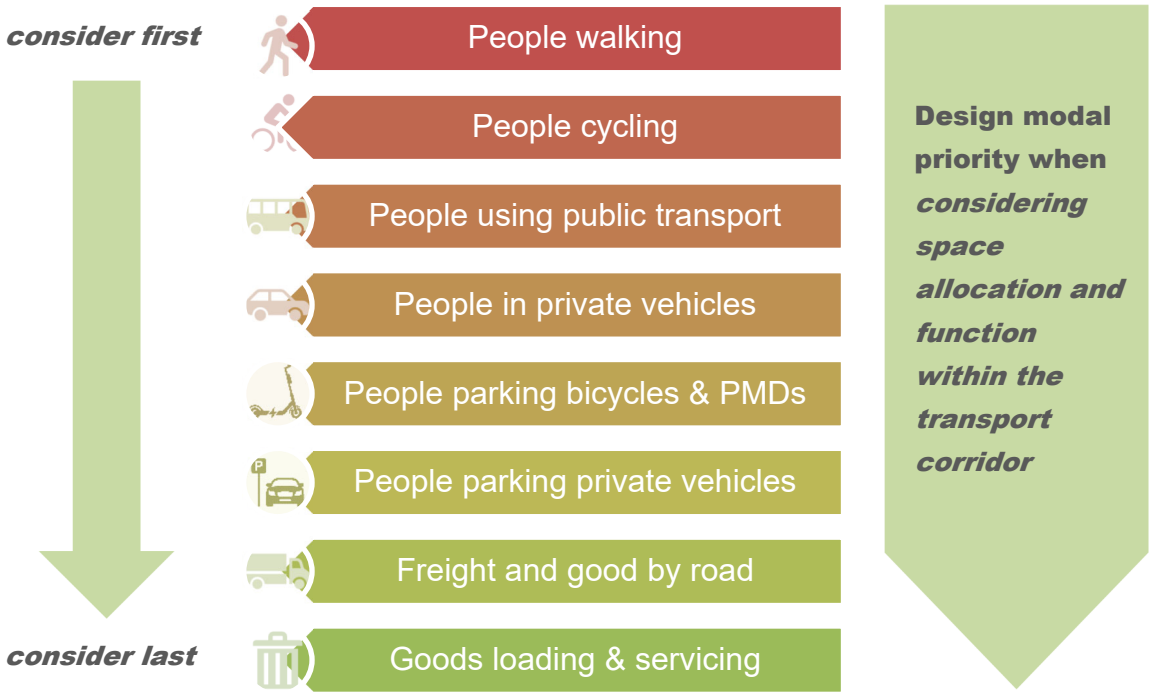


Figure 4-11: Example modal priority assignment

4.7.14 Modal priority assessments can be recorded and documented using MRC *Movement and Place Framework Modal Priority Template* (see Figure 4-12~~Figure 4-6~~).

4.7.15 Assessment of the modal priorities in the *Existing state* will be applicable to Brownfield sites only and will reflect the current observed priorities when considering the existing infrastructure. Existing deficiencies in the existing form of the infrastructure may be identified at this point.

4.7.16 For the *Existing Modal Priority (Network Review),* the Designer will need to identify the existing optimal modal priority as per Council's existing strategic network and facilities (i.e. Freight network, active transport network, road network). The purpose of this step is to understand what the modal priority should be, compared to what it current is.

4.7.17 For the *Desired future state*, the Designer will need to nominate a future design year to which the future scenario assumptions are applicable to. The future modal priority will represent the desired modal priorities in the design year and will need to consider any change in future demands and modal networks. The *Desired future state* will be used to inform the design process to ensure that modal priorities are addressed in the design year.

4.7.18 In Brownfield sites a comparison between the *Existing state* and *Desired future state* may highlight deficiencies or opportunities within the existing form and specifically where a design response is required to achieve the desired modal priorities for the future.

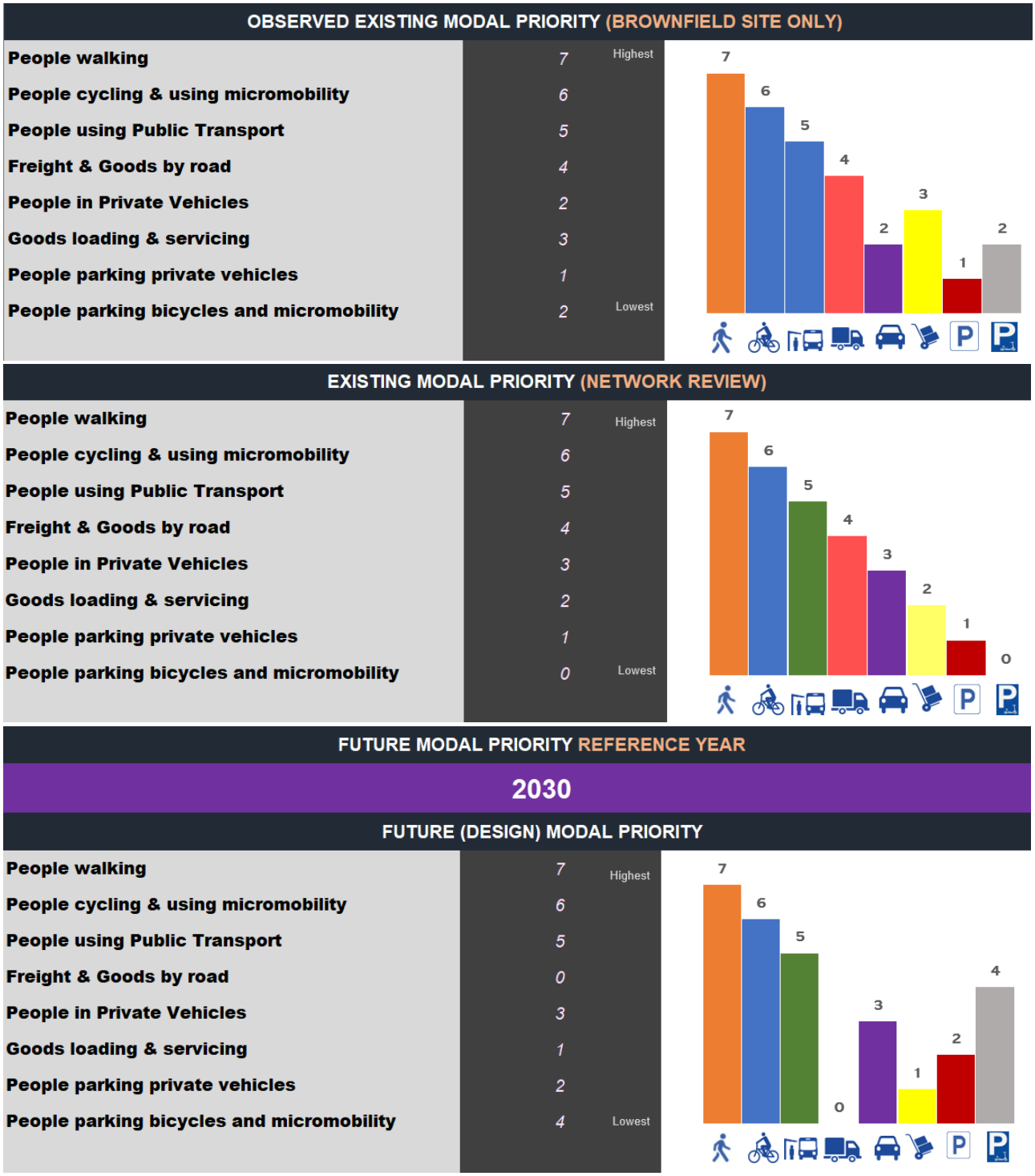


Figure 4-12: Example Modal Priority chart templates

4.7.19 The final input in the process is to understand the *Design environment* and how it can influence the design process and project outcomes. This is achieved through identification and appreciation of the constraints within and adjacent to the road and by better linking the project objectives to other values that do not sit directly with movement or place. Refer

~~4.7.19~~4.7.20 **Table *4-5*** ~~**Table 4-5**~~ for an overview of some the potential design environment measures that need to be considered in context of the overall design framework.

Table 4-5: Design environment measures

	Measure	Information	Source
Services	Service corridors	Identify key service corridors to understand priority service corridors	Service providers MRC MiMaps
	Service locations	Identify design constraints and inform options development	Dial Before You Dig MRC MiMaps Feature survey DTMs
	Access	Driveways and recognised lot access locations	
Environmental	Significant trees	There may be trees that are established within an area that provides value to the movement or place values. This could be through their habitat value, shading, rarity, historical associations or contribution to the landscape.	Biodiversity – Environmentally significant vegetation overlay MRC Significant Tree Register Feature survey DTM Site photographs State Vegetation Mapping
	Landscapes	Some places will provide amenity, social, economic or environmental value as a result of their geographic features and amenity values which need to be incorporated or enhanced as part of the design.	MRPS Surveys
Heritage	Heritage register	Some places may have significant heritage value that need to be protected and/or enhanced through planning and design.	MRC Local Heritage Places MRPS Queensland Heritage Register
	Cultural heritage	Some places have significant cultural heritage significance to Traditional Owners and need to be protected through planning and design.	Cultural heritage database and register Recognised Traditional Owner groups

~~4.7.20~~4.7.21 One of the key factors in the design will be the presence of, or the provision for public utility plant (PUP) or recognised assets. These different types of infrastructure and services require

provision for space, clearances, and offsets within the road corridor and are a key constraint to the final road design. The typical PUP services to be considered within the road corridor includes:

a) Gravity sewer reticulation
b) Sewer rising mains
c) Electrical services (including pits, pillars, and poles, HV services)
d) Telecommunication services (including pits and pillars)
e) Watermains
f) Gas reticulation
g) Street lighting
h) Street trees

4.8 Concept Typologies

4.8.1 MRC have prepared a suite of concept typologies, which represent acceptable design outcomes of the typical road form in several scenarios. For each concept typology, information is provided to outline the assumed Movement and Place values, modal priority assessment, the Movement and Place Road classification and alignment to the MRC Road Hierarchy Classification (where applicable). A suite of concept road typologies are provided in Error! Reference source not found.~~**Appendix A – Concept Typology**~~ **Examples**.

4.8.2 The concept typologies have been developed to be used as a reference point in the design process. The Designer may use the concept typologies where the scenario assumptions align to their project. Alternatively, the Designer may use the concept road form as an input into their design process to achieve the Movement and Place outcomes for their project scenario.

4.8.3 **Figure 4-13**~~**Figure 4-10**~~ and **Figure 4-14**~~**Figure 4-11**~~ show a graphical representation of each concept typology and an example Movement and Place value and Movement and Place Road class.

4.8.4 Where the concept typologies are not suitable for the project, or an alternative design outcome is sought, then section 4.9 or the PSP for further guidance on acceptable outcomes for an alternative typology.

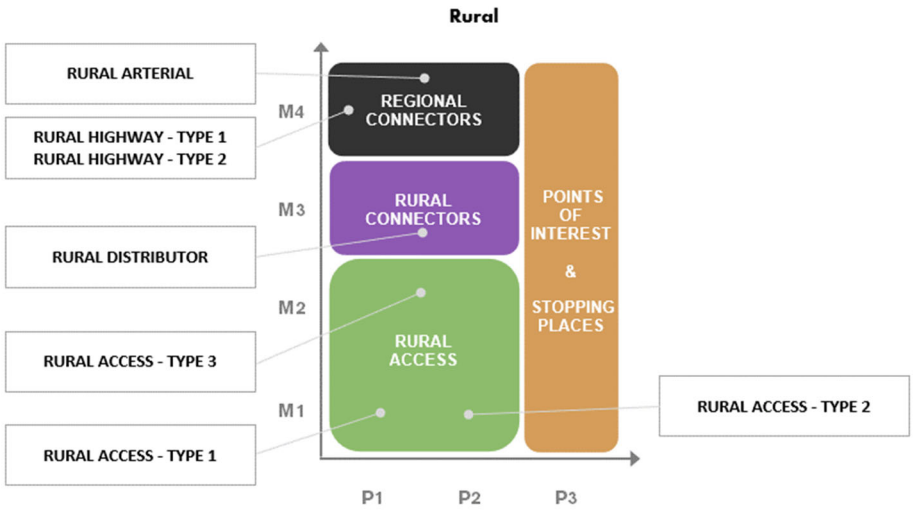


Figure 4-13: Movement and Place mapped matrix of acceptable concept typologies - Rural

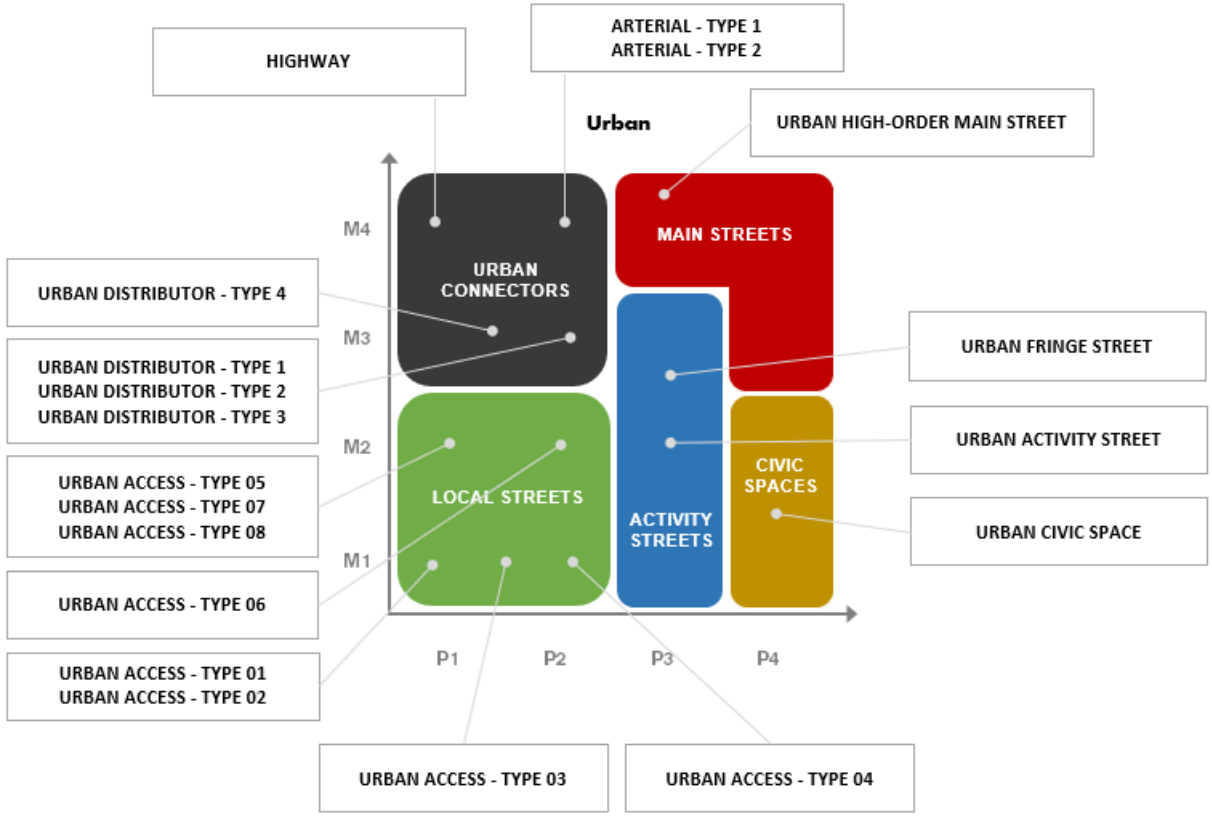


Figure 4-14: Movement and Place mapped matrix of acceptable concept typologies – Urban

4.9 Alternative Typology Design

4.9.1 Where the *Concept typologies* are not suitable for the project, the Designer may propose an alternative street typology design.

4.9.2 Alternative typology designs shall address the minimum requirements defined in section 4.7, as follows:

a) Defined movement value
b) Defined place value
c) Defined modal priorities

4.9.3 By applying the *Build-a-Street* concept (IPWEA SDM), the Designer can develop a unique cross-section for the project that addresses the specific project scenario. The cross-section can then be used to guide the overall design of the project. This approach will allow for innovation in the design process to achieve an optimal transport corridor width and design that will meet the project objectives.

4.9.4 The design of the cross-section will need to be undertaken for the *Transport corridor* which includes the *On-street corridor* (kerb to kerb) and the *Verge*, see Figure 4-15~~Figure 4-15~~. Guidance on the performance outcomes for the design of the *Transport corridor* is provided in

4.9.5

~~4.9.4~~4.9.6 Table *4-6*~~Table 4-8~~.

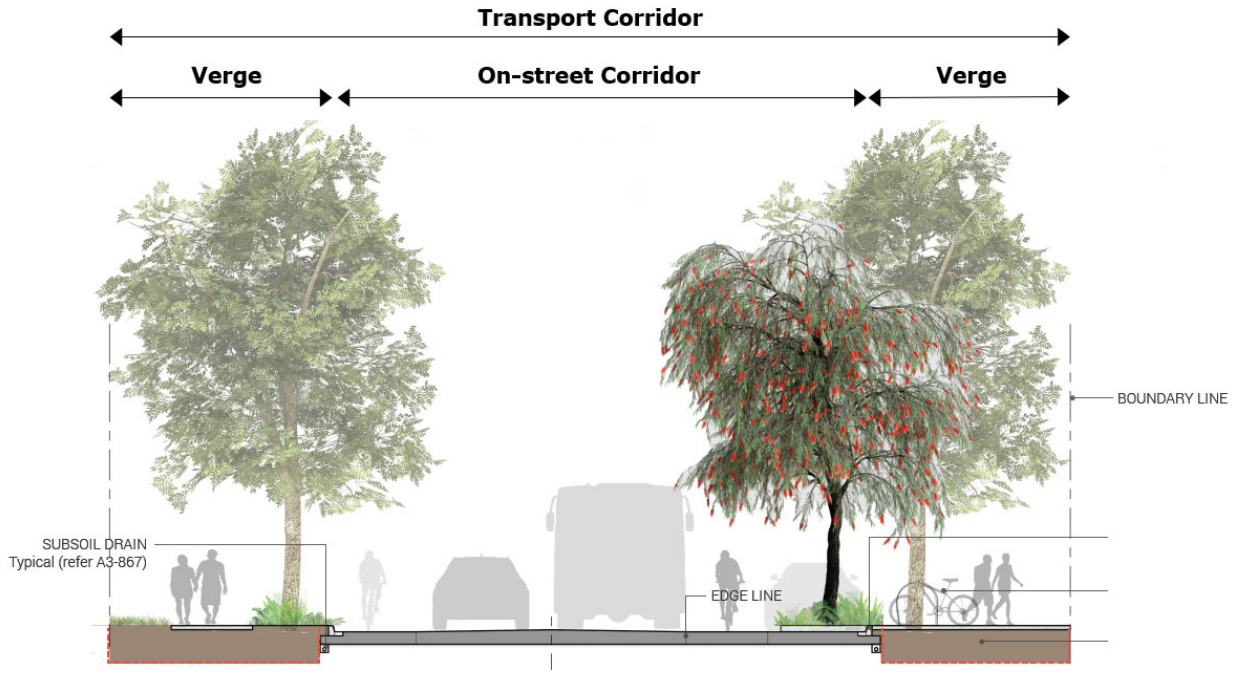


Figure 4-15: 'Build a street' typology design elements

~~4.9.5~~4.9.7 Alternative cross-section arrangements shall be developed in accordance with design standards and guidelines within this PSP and shall be:

a) Certified by an RPEQ.

Table 4-~~6~~8: Transport Corridor Design Elements

Element	Description	Performance Outcomes
Transport Corridor	The total transport corridor width ('road reserve') is the sum of the on-street corridor width and verge widths.	Road designers should maintain a constant transport corridor width for continuous road links and avoid having distinct variations to accommodate specific elements within the corridor. Where there is a need to accommodate varying the widths, these should be achieved through appropriate transitions.
On-Street Corridor	The on-street corridor is principally about the movement function and caters for modal throughputs.	The on-street corridor design should consider various road design elements associated with identified modal priorities and movement and place characteristics. Design elements such as lane widths, number of carriageways, shoulder widths (if any), or medians (if any) are to be considered, as well as any modal specific requirements such as on-street cycles lanes, physical separation or on-street parking. The arrangement of these elements forms the 'on-street corridor'.

Verge	The verge is the public off-street corridor between the on-street corridor and adjacent road-property boundary.	The verge typically caters for pedestrian and cyclist movement on shared pathways and supports place functions that relate to the use of the verge relating to surrounding land use or within the verge itself. The verge may also cater for specific place activities which support the adjacent land use such as driveway crossings or full-width hard paved surfacing for pedestrians' typical adjacent active frontages. The verge also provides a critical role for location of PUP, such as water reticulation, communications, power, gas as well as above ground infrastructure such as street lighting and overhead powerlines. These services are assigned designated service corridors within the road reserve. The verge design shall also consider identified modal priorities, and movement and place characteristics. The verge design shall consider modal priority such as cycling and walking and how these modes are to be catered for within the verge while integrating with other functions. For the purposes of the verge cross section design and modal priority, this generally relates to walking and cycling modes only. On-street parking, bus set-downs areas (and shelters), good and servicing loading, private vehicles and freight movement requirements are considered as part of the on-street corridor design process above. Notwithstanding, there may be other design elements not listed which may influence the verge width and are to be considered.

4.10 Reallocation of brownfield space

4.10.1 Often projects will be undertaken in the existing road and street networks. Achieving specific Movement and Place outcomes via reallocation of space and mode priority in brownfield sites will present specific challenges. These can be due to constraints within the existing transport corridor, competing demands of users and land uses, or the impact and cost of widening are disruptive and prohibitive.

4.10.2 When developing an alternate cross-section in brownfield sites (section 4.9), see

~~4.10.2~~4.10.3 **Table *4-7*~~Table 4-9~~** for acceptable outcomes.

Table 4-~~7~~9: Accepted outcomes for reallocated brownfield site use

Element	Possible Action	Performance Outcomes
On-street parking	Reduction of parking lane width	Minimum width 2.4m
	Removal and reallocation of parking space width	From one side of the road only or from both sides
Verge	Reduction or reallocation of verge immediately adjacent to the property boundary	Minimum 4.0m verge width and subject to service corridor requirements
Street Trees	Planting of street trees within parking lane	As per Council Standard Drawings
	Preservation of existing landscaping and trees (including roots and limbs)	Minimising ground disturbance through under boring or hydro-excavation, raising footpath structures with pier foundations or other innovative solutions, where approved by Council
Footpath	Reduction of footpath width	Minimum 1.5m footpath width, whilst maintaining a minimum 4.0m verge width, subject to service corridor requirements
Cycle lanes	Reduction of on-road cycle lane width	Minimum cycle lane with 1.5m, for streets with a posted speed limit of 50km/h or less
	Reallocation of on-road cycle lanes to Cycle Awareness Zones	Refer TMR Guideline – Bicycle awareness zones and AS2890.5
Carriageway lane widths	Reduction of two-way lane widths	Reduce lane widths to 3.3m, subject to compliance with Austroads – Guide to Road Design Part 3: Geometric Design

~~4.10.3~~4.10.4 Where a high demand or priority for people cycling or using PMD's has been identified, refer section 4.4 of Cycling Aspects of Austroads for guidance on techniques available to reallocate space in transport corridors.

4.11 Stopping Places

4.11.1 Stopping places are recognised as a rural area destination place within the transport network, where people stop either enroute or as an end destination.

4.11.2 Typical stopping places include either natural environment places of significance or recognised service stops or rest areas. Stopping Places examples include lookouts, viewing points, boat ramps,

beaches etc. which require suitable transport infrastructure to cater for the various transport modes being attracted to, and stopping within.

4.11.3 Types of stopping place infrastructure typically includes access and parking facilities for various transport modes (private vehicle, vehicle trailers, freight, cyclists and pedestrians).

4.11.4 Stopping places shall be designed generally in accordance with the following:

a) The detailed design of stopping place transport facilities is typically site specific. Each design element shall comply with the this Policy.

4.12 Documentation

4.12.1 For any MCU, ROL or OW planning application, or any design project, the following documentation is required to demonstrate that appropriate Movement and Place design considerations have been undertaken:

a) The Movement and Place Framework Design Summary (MPFDS) table shall be completed and submitted as part of any relevant submission which involves the planning or design of a typology or road cross section. Refer Error! Reference source not found. ~~**Appendix C – Movement and Place Design Framework Summary table..**~~

b) The submission shall also include legible typical cross sections of each street showing which modal priority is serviced within the cross section (see ***Figure 4-16*** ~~**Figure 4-16**~~). Alternative documentation may be presented, so long as the relevant Movement and Place design considerations have been appropriately explored and demonstrated.

c) The submission of the MPFDS, or similar documentation, should reflect the nature and complexity of the accompanying planning application or proposed design.

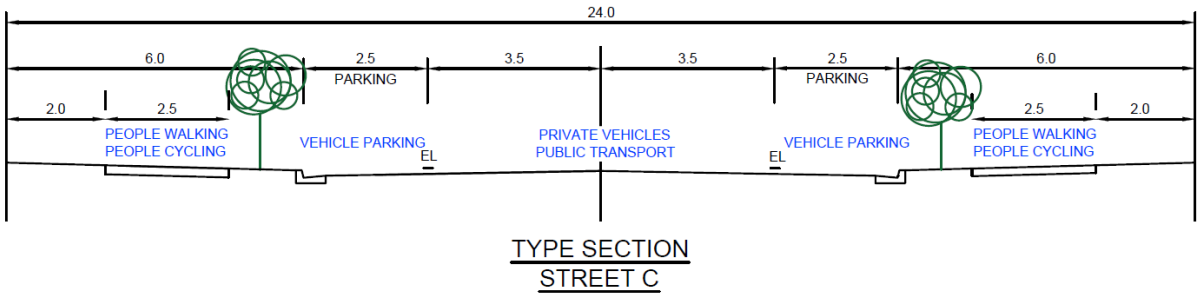


Figure 4-16: Example typical cross section/typology with transport mode details

4.12.2 The main role of the MPFDS, and supporting documentation, is to:

a) Ensure that the design responds to the Place value and the Council's Planning Scheme Policies have been addressed

b) Demonstrate how the objectives of best practice design for Movement and Place have been applied and existing and future user needs have been incorporated

c) Show how access needs have been designed and are responsive to adjacent land uses

~~c)~~d)

Provide for a legible typical cross section of the street and demonstrate how transport modes are catered for.

4.12.3 A suitably experienced practitioner or professional engineer (RPEQ) may endorse the applicable MPFDS submission, and any supporting documentation. The MPFDS is found in Appendix B –

Movement and Place Framework Design Summary~~Appendix B – Movement and Place Design Framework Summary~~.

5 ROAD DESIGN GUIDELINES

5.1 Objectives

5.1.1 This section sets out the acceptable solutions specifically for geometric road design and to incorporate the principles of the Safe Systems approach, Movement and Place and the Functional Road Hierarchy.

5.1.2 This section aims to provide the appropriate technical guidance for Designers to implement sound engineering solutions which meet the broader aims of the PSP

5.1.3 The geometry of a road is to be designed to achieve the following aims:

a) Provide appropriate and safe operational performance and capacity for movement of all identified transport modes
b) Where required, provide convenient and safe access to allotments and active frontages, for all identified transport modes
c) Provide appropriate service corridors within the verge for public assets and utilities
d) Provide an opportunity for street landscaping and Placemaking
e) Define an efficient transport corridor width only wide enough to provide for the identified movement, place and service corridor requirements

5.2 On-street corridor

5.2.1 *On-street corridor* configurations shall be designed generally in accordance with Austroads Guide to Road Design Part 3: Geometric Design.

5.2.2 The following requirements shall be addressed as part of the design of each *On-street corridor*:

a) Through lanes (carriageway) shall accommodate movement for all modal priorities identified (e.g., cycling lanes, on-street parking facilities, bus stops etc.).
b) Where pedestrian and cyclist use of the through lanes is identified, Safe system and Movement and Place design approaches are to be adopted to ensure adequate lane and clearance width and visibility is achieved.
c) The through lane width must allow vehicles to proceed safely at the design operating speed and level of service.
d) The through lane width should provide for unobstructed access to individual allotments (as appropriate). Drivers should be able to enter or exit from an allotment in a single movement, taking into consideration, reversing egress movements and the possibility of a vehicle being parked on the carriageway opposite the driveway.

5.3 Verge

5.3.1 Verge widths and configurations shall be designed generally in accordance with the following:

a) Austroads Guide to Road Design Part 3: Geometric Design.
b) Councils Concept Typology Acceptable Outcome Drawings
c) Councils Service Corridor Standard Drawings.
d) Councils Standard Drawings

5.3.2 The following requirements shall be addressed as part of the design for each verge:

a) Verge widths will typically be no wider than necessary and provide for all functions that the road is expected to fulfill in terms of Movement, Place and modal priorities, in a safe and efficient manner.
b) Verge widths should enable the safe location, construction and maintenance of paths and public utility services (as appropriate),
c) Verges shall typically be graded towards the road at 2%.
d) Wider verges are acceptable where adjacent to traffic calming devices, at intersections or cul-de-sacs, or where constrained by infrastructure or protected assets.
e) Where alternative verge widths or arrangements are proposed (which are not identified as an acceptable outcome), the design shall demonstrate how all services can be accommodated within the verge in accordance with Council and service provider requirements. Wherever possible services should be in common trenches.
f) At intersections sight lines must be considered in identifying the verge width.
g) Verges shall make appropriate provision for street trees and landscaping as appropriate to the project.
h) Refer MRC Typical Boundary Truncations Corner Lots Standard Drawings for allotment boundary truncation details.

5.4 Services

5.4.1 PUP and infrastructure alignments, offsets and clearances shall be designed in accordance with relevant service provider requirements, as shown in Table 5-1~~Table 5-1~~.

Table 5-1: Asset Design Standards and Guidelines

Asset Owner	Reference Guideline
Service Corridor Arrangements	Council's Service Corridor Standard Drawings
MRC – Water & Sewer Assets	Council's *Planning Scheme Policy – Water and Sewerage (CTM Alliance)*
Ergon Energy	Ergon Energy guidelines and manuals, including Ergon Energy Standard Drawings, Lighting Construction Manual for further details.
Telecommunication Providers / NBN	Relevant telecommunication provider design guidelines and standard drawings, including *G645:2011 Fibre Ready Pit and Pipe Specification for Real Estate Development Projects / NBN Co Installing Pit and Conduit Infrastructure – Guidelines for Developers guidelines for further details.*

5.4.2 The following requirements shall be addressed as part of each service design and corridor arrangement:

a) The alignment and depths of any existing services are to be confirmed through consultation with the relevant service provider and or subsurface investigations.
b) Utility service design locations shall be in accordance with the relevant authorities' requirements. Should there be a conflict with Council's standard drawings and utility service requirements, the Designer shall bring this to the attention of Council.

5.5 Drainage

5.5.1 Road drainage shall be designed generally in accordance with the following:

a) Council's Planning Scheme Policy – Stormwater drainage design.

5.6 Design speed

5.6.1 The following requirements shall be addressed as part design speed considerations:

a) Design speeds shall consider desired operating speeds associated with the nominated hierarchical function (see **Table *3-3*: Functional Road Hierarchy Performance Criteria – Urban Areas**Table 3-3~~Table 3-3~~ and Table 3-4~~Table 3-4~~).
b) The design speed shall be considered in the calculation and adoption of various geometric design parameters (e.g., sight distance, application of superelevation, horizontal and vertical curve radii).
c) The design speed should not be less than the anticipated operating speed for the road (85th percentile). If the operating speed varies along the road, the design speed may vary accordingly.
d) Adopted design speeds shall be documented..

5.7 Horizontal alignment

5.7.1 Horizontal alignments shall be designed generally in accordance with the following:

a) Austroads Guide to Road Design Part 3: Geometric Design.

5.7.2 The following requirements shall be addressed as part of horizontal alignment design:

a) The horizontal alignment shall ensure adequate sight distances are provided with reasonable consideration made to mitigate any obstruction imposed from potential future fences, streets trees and other physical obstructions

5.8 Longitudinal gradient

5.8.1 Longitudinal grades are to be designed generally in accordance with the following:

a) Austroads Guide to Road Design Part 3: Geometric Design.
b) Councils Planning Scheme policy – stormwater drainage design.

5.8.2 The following requirements shall be addressed as part of longitudinal gradient design:

a) A minimum gradient of 0.5% should be adopted for all roads which include kerb and channel.
b) A desirable minimum gradient of 1.0% should be adopted for all roads, which have roadside drainage table drains, except where otherwise approved by Council.
c) Whenever the longitudinal grade is less than 1.5%, the depth of stormwater surface flow should be checked to ensure that the flow depths and velocities do not exceed requirements of Council's Planning Scheme policy – stormwater drainage design.
d) Turning areas in cul-de-sac on steep grades should have grades less than 5%.
e) Maximum grades shall be as nominated in Austroads Guide to Road Design Part 3: Geometric Design.

5.9 Vertical curves

5.9.1 Vertical curves are to be designed generally in accordance with the following:

a) Austroads Guide to Road Design Part 3: Geometric Design.

5.9.2 The following requirements shall be addressed as part of vertical curve design:

a) Junctions of roads should be located at a safe distance from a crest, determined by visibility from the side road.
b) Location of a side road at a crest is not preferred, however may be considered with Council approval.
c) A minimum grade of 0.2% shall be maintained in the kerb and channel to avoid water ponding in excessively flat sections of kerb and channel.
d) A maximum length of 15 times the algebraic sum of the intersecting vertical grades is permitted at sag curves.
e) Warping of road cross sections at sag points may be adopted to achieve suitable positive drainage outcomes.

5.10 Superelevation

5.10.1 Superelevation is to be designed generally in accordance with the following:

a) Austroads Guide to Road Design Part 3: Geometric Design.
b) TMR's Supplement to Austroads Guide to Road Design Part 3: Geometric Design.

5.10.2 The following requirements shall be addressed as part of superelevation design:

a) The desirable maximum superelevation (emax) for roads of higher design speeds is 6%. Any increase in the longitudinal grade leading to excessive crossfall at intersections should be considered with caution.
b) Negative crossfall should be limited to 3% for crowned cross-sections on sealed surfaces.
c) On urban roads, offset crowns may be applied in accordance with TMR's Supplement to Austroads Guide to Road Design – Part 3, subject to Council approval.
d) A rate of change of kerb line of no more than 0.3% relative to the centre line should be achieved.
e) Superelevation transitions should be used at all changes in crossfall.

5.11 Pedestrians and Cyclists

5.11.1 Provision for pedestrians and cyclists shall be designed generally in accordance with the following:

a) Austroads Guide to Road Design Part 3: Geometric Design.
b) Austroads Guide to Road Design Part 6A: Guide to Road Design Part 6A: Paths for Walking and Cycling.
c) Austroads Level of Service Metrics (for Network Operations Planning) (2015).
d) Council's Planning Scheme Policy - Cycle facilities and pathway design.
e) TMR's Guideline – Selection and design of cycle tracks
f) TMR's Guideline – Bicycle awareness zones.
g) Australian Standard 1428.1.
h) Australian Standard 2890.5.
i) TMR's Principal Cycle Network.
j) Manual on Uniform Traffic Control Devices
k) Mineta Transportation Institute - Low-Stress Bicycling and Network Connectivity (2012)

5.11.2 The following requirements shall be addressed as part of making provision for pedestrians and cyclists in design:

a) Adequate facilities should be provided to cater for the anticipated or desired movement demand of pedestrians and/or cyclists, to/from, within or though the road corridor.
b) Pedestrian and cyclist movement and connectivity to adjacent land uses shall also be considered.
c) Appropriate cycling facilities shall be provided where the project site is identified as a priority route, or mapped on TMR's Principal Cycle Network, or as required by Council.
d) Cycle facilities shall be design in accordance with Austroads Guide to Road Design Part 3 and 6A.
e) For signing and pavement marking requirements for the purposes of establishing cycle paths, designers shall refer to AS 1742.9.
f) Bicycle awareness zone (BAZ) advisory treatments may be applied, at the discretion of Council, to indicate or 'advise' road users of the potential presence of people riding bikes and the

position where people riding bikes may be expected to ride on the road. Refer TMR's guideline – Bicycle awareness zones.

g) BAZs are not suitable treatments in the following situations:
   - in greenfield applications – higher-order bicycle facilities, such as bicycle lanes and paths, should always be provided in newly-developing areas.
   - on roads with posted speeds greater than 70 km/h.
   - where bicycle lanes are achievable through minimal infrastructure works (for example, lane width reallocation after resurfacing program), and
   - as a wayfinding device or 'gap-filling' in mixed off-road / on-road routes.

h) Any reduction in cycle lane width or adjacent parking bay widths must consider adequate buffering to ensure vehicle doors to not cause conflict with cyclists travelling within the cycle lane.

i) A minimum vertical clearance of 2.5m, from the path surface level, should be achieved for all potential obstructions over cycle paths. This applies to tree branches, underpasses, doorways, sign structures and any other overhead structure.

j) Paths widths shall be applied in accordance with Table 5-2~~Table 5-2~~ for the relative movement volume and design application.

Table 5-2: Path width acceptable outcomes for pedestrians, cyclists & micromobility devices

Movement Priority or Scenario	Path Width	Intended User & Facility	Comments & Application
Generally low volume, low priority	1.5m	Pedestrian Footpath	• Minimum standard and accepted path width • Generally desirable that path width can facilitate movement of two pedestrians' side by side • Clear width required for one wheelchair. Min. 1.8m for wheelchairs to pass (refer AS1428.1) • Not adequate for higher movement or active frontages (e.g., commercial or shopping environments, higher recreation use)

Moderate to high volumes, moderate to high priority	2.5m	Pedestrian, Cyclist, PMD and micromobility
		
		Shared Pathway
			• Applicable for moderate to high movement links or active frontages, or where known active transport or micromobility demand exist (e.g., commercial and shopping environments, active transport routes)
			  ◦ TMR's mapped Principal Cycle Network
			  ◦ Austroads Level of Service Metrics (for Network Operations Planning) (2015) &
			  ◦ Austroads Guide to Road Design Part 6A: Guide to Road Design Part 6A: Paths for Walking and Cycling
			• Where movement volumes are significant it may be necessary to provide adequate paved congregation areas, or parking facilities clear of the path
			• Signage required along the route start and end in accordance with MUTCD

High volumes, high priority	3.0m or greater	Pedestrian, Cyclist, PMD and miccomobility
		
		Shared Pathway (3.0m or greater)
			• Applicable for high volume or high priority movement scenarios, shared pathways 3.0m or greater, or suitable for high demand and high priority areas such as priority civic spaces or shared zones, where high volumes of pedestrians, cyclists and mircomobility devices are anticipated.
			• Applicable to regional significant recreational, community or commercial precincts where high volume of users are anticipated such as sport and recreation facilities, stadiums, entertainment venues, regionally significant active frontages, or where deemed suitable by the designer to meet demand.
			• Paths wider than the minimum width (e.g. up to 5m) may also be necessary at locations where pedestrian flows are high or where pedestrians gather such as active frontages at schools, recreation facilities and at high volume bus stops. For further guidance see;
			  • TMR's mapped Principal Cycle Network
			  • Austroads Level of Service Metrics (for Network Operations Planning) (2015) &
			  • Austroads Guide to Road Design Part 6A: Guide to Road Design Part 6A: Paths for Walking and Cycling

k) Refer Table 5-9~~Table 5-7~~ and Table 5-10~~Table 5-8~~ for design form acceptable outcomes relative to movement demands and functional hierarchy.

5.12 Crossfall

5.12.1 Geometric requirements for crossfall shall be designed generally in accordance with the following:

a) Austroads Guide to Road Design Part 3: Geometric Design.
b) Australian Standard 2890.1.

5.12.2 The following requirements shall be addressed as part of crossfall design:

a) Road crossfalls on straight sections of road shall be in accordance with ~~a)~~b)**Table 5-3**~~**Table 5-3**~~**.**

~~b)~~c) The crossfall on a higher order street should take precedence over the grade in minor side streets.

~~c)~~d) The crossfall in side streets should be transitioned to a crown or a uniform crossfall depending on the configuration of the side street.

~~d)~~e) A rate of change of grade of 0.3% minimum in the kerb line of the side street, relative to the centre line grading should be adopted.

Table 5-3: Typical design crossfalls

Pavement surface type	Typical crossfall (without horizontal curve)
Gravel	5%
Bituminous seal coat	3%

Asphalt pavement	3%
Concrete pavement	2%

5.13 Property access

5.13.1 Property access shall be designed to enable efficient ingress and egress across the verge for vehicles, at recognised access points to the adjoining land use.

5.13.2 Property access design shall consider the following guidance document for treating vehicle and path user conflicts at access driveways:

a) Council Standard Drawing A3-0773.
b) TMR (February 2021) – Treatment options to improve safety of pedestrians, bicycle riders and other path users at driveways.
c) Austroads Guide to Road Design: Part 3 – Safe Sight Intersection Distance requirements

5.13.3 The following requirements shall be addressed as part of property access design:

a) Property access shall accommodate clearance to utility services, and new or existing street trees.
b) Where property access locations are constrained or alternatively where options for alternative access points exist, the Designer shall include nominated access locations as part of design considerations to ensure utility or street tree conflict is avoided.
c) Any differences in level between the road reserve boundaries may be accommodated by:
    - cutting at the boundary on the high side and providing the verge at normal level and crossfall.
    - a uniform crossfall across the carriageway.
    - The above measures can be used singularly or combined. The verge formation should extend with a 1m berm beyond the road reserve boundary, where applicable.
d) Vehicles must be able to gain access and traverse the property access free of obstruction, which includes satisfactory vertical clearance across crests and vertical curves, for the critical design vehicle.
e) Council may require the Designer to produce scaled engineering drawings to demonstrate suitable property access geometry and vehicle clearance.

5.14 Intersections

5.14.1 The selection of appropriate intersection treatments is critical to achieving the Road Design Guidelines objectives of this PSP. The design of intersections shall be undertaken with consideration of the following:

a) Austroads Guide to Traffic Management Part 6 - Intersections, Interchanges and Crossings Management
b) Council's Functional Road Hierarchy and the relevant Movement and Place Road classification
c) TMR's Technical Guideline - Raised priority crossings for pedestrians and cycle paths.

5.14.2 All intersections shall be designed in accordance with the following:

a) Austroads Guide to Road Design Part 3: Geometric Design
b) Austroads Guide to Road Design Part 4: Intersections and Crossings
c) Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections
d) Austroads Guide to Road Design Part 4B: Roundabouts.

5.14.3 The following requirements are to be addressed as part of each intersection design (as appropriate):

a) The intersection spacing complies with the requirements of Table 3-3~~Table 3-3~~ and Table 3-4~~Table 3-4~~ of Council's Functional Road Hierarchy. Where this spacing cannot be achieved, 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.
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) An assessment of the future capacity for the proposed intersection to demonstrate that the intersection will operate safely and efficiently over a minimum ten (10) year design horizon or as approved in a development approval. If required, the design shall make provision for potential future improvement or upgrade options, such as signalisation.
h) The preferred road network for the junction between a new lower order movement street and a higher order road, is for a three (3) way intersection, in a 'right-left' stagger arrangement.
i) Where this is arrangement is not possible, a 'left-right' stagger arrangement may be accepted, subject to sufficient spacing to allow the implementation of any required auxiliary turning lanes on the major road to cater for the anticipated vehicle queues. Figures and discussion on staggered-T treatments are given in Austroads Guide to Road Design Part 4: Intersections and Crossings – General.
j) Where major intersections are required to provide access to a new development, complete reconstruction of the existing road pavements will be necessary.
k) Intersections with State-controlled roads or national highways are to be designed in accordance with and approved by TMR. It is the responsibility of the Designer to gain approval from TMR for such intersections and provide evidence of this approval to Council.
l) Demonstrate that the Austroads speed/sight distance requirements for each of the sight distance criteria are achieved. This includes ensuring the intersection and associated road

layout design consider and are free of any future obstructions which may impact sight distance requirements, such as property fences.

m) Submit a plan of the area indicating any existing features or services, such as existing property accesses, drainage and underground services, survey marks, or any other significant feature, to identify how the proposed design will address these.

n) Demonstrate that the proposed intersection will not adversely impact the accessibility of safety of adjacent property accesses. Where impacts to adjacent property access cannot be avoided, the proponent is required to consult with affected property owners to obtain written agreement about any changes.

o) Identify and demonstrate how pedestrians and cyclist movements will be accommodated to, from and within the intersection.

p) Identify the locations of street ~~tress~~ trees and demonstrate compliance with Council requirements.

q) No median breaks will be permitted at intersections on major collector streets, sub-arterial or arterial roads, except at approved intersections.

r) Any new rural subdivision layout shall be designed to prevent direct property access onto a Distributor and higher order roads.

5.14.4 The following requirements are to be addressed as part of threshold and intersection treatment design:

a) Threshold treatments should aim to alert drivers that they are entering a road environment that is different from the one they have just left by using visual and/or tactile cues and inform the driver of the presence potential vulnerable road users.

b) Where there is high pedestrian and/or cycling demand at intersections, refer TMR's technical guideline - *Raised priority crossings for pedestrians and cycle paths* for guidance on possible treatments for pedestrians and cyclists.

c) Threshold treatments may incorporate either raised or flush median treatments.

d) Threshold treatments may extend to cover the entire intersection area.

e) Surface treatments should contrast with the adjacent road-building material

f) Relevant lighting requirements shall be achieved at intersections.

g) Tactile Ground Surface Indicators should be used where there is no difference in level where the footpath meets the street, to differentiate the edge of the roadway.

h) Coloured and tactile threshold treatments shall extend a minimum 5.5m back from kerb line of the higher order road.

i) Contrasting pavement material shall have similar skid resistance to surrounding pavement for the benefit of bicycles, motorcycles and pedestrians.

j) Alternative approved equivalent intersection threshold treatments are subject to Council approval.

k) Threshold treatment specifications are detailed in **Table *5-4*~~Table 5-4~~**.

l) Accepted threshold treatment types at intersections and accepted solutions are detailed in **Error! Reference source not found.~~Table 5-5~~** and align with A4-00185.

Table 5-4: Threshold treatment specifications

Threshold Treatment Type	Specification	Application	MRC Standard Drawing
Coloured concrete	Full depth colour treatment, 2-coats of coloured ochre, colour R52 terracotta in accordance with AS2700, skid resistant. 2-coats of approved polymer sealer to be applied following initial curing of ochre surface.	Typically applied to new or reconstruction applications	A4-00040 A4-00186 A4-00184
Surface paint	Skid-resistant, coloured coating, using epoxy modified, acrylic, water-borne marking paint confirming to AS4049.3, colour R52 terracotta as per AS2700 concrete finish. Two (2) coats of coloured ochre meeting the requirements of R52 terracotta, in accordance with AS2700. Painted edge with 300 x 200 panels using epoxy modified, acrylic, water-borne marking paint conforming to AS4049.3, colour Y12 wattle or Y14 golden yellow in accordance with AS2700	Typically applied to existing pavement surfaces	

Table 5-5: Acceptable Threshold Treatment Applications at Intersections

Threshold Treatment Type	Intersection Hierarchy Scenario	Treatment Description	Suitable for anticipated Pedestrian & Cyclist Movements?	MRC Standard Drawing	Comments
-	Access Place Street / Access Place Street	Nil treatment	Yes	n/a	Nil treatment required
Linemarking or Rollover island Type A Coloured and tactile surface treatment	Access Place / Access Street & Access Street / Access Street Access Street / Access Street Minor Collector / Access	Coloured concrete or painted treatmentLinemarking or Rollover island	Yes	A4-00156 A4-00040	A linemarked treatment as per A4-00156 is acceptable in most instances. Refer Table 5-4 treatment specification details Raised concrete rollover islands may be required to prevent corner cutting in certain instances at the discretion of the engineer. Refer A4-00156. In retrofit scenarios rumble bars may be used in accordance with A4-00156.

~~**Type B**~~ ~~Coloured and tactile surface treatment with linemarking~~	~~Access Place / Access Street &~~ ~~Access Street / Access Street~~	~~Type A with linemarking~~	~~Yes~~	~~A4-00040 with linemarking~~	~~Coloured or tactile concrete mix design shall extend for the full depth of the concrete. Refer **Table 5.4** treatment specification details.~~ ~~Surface texture shall be skid resistant, suitable for all transport modes.~~ ~~Linemarking shall be in accordance with **s5.16**~~
~~**Type C**~~ ~~Linemarked median island with/without rumble bars~~	~~Access Street / Minor Collector~~	~~Linemarked median island~~ ~~Linemarked median island with rumble bars*~~	~~No~~	~~A4-00156~~	~~Refer Council Standard Drawing A4-00156~~ ~~Suitable treatment to help address driver behaviour and compliance issues relating to excessive speed or corner cutting at intersections.~~ ~~*Note rumble bar treatments may be acceptable solution where pedestrian or cyclist movement across the intersection are not anticipated.~~
~~**Type D**~~ ~~Raised median and threshold treatment~~Raised traffic island and pedestrian refuge	Any combination of Minor Collector and / or Major Collector or Access / Collector	Raised traffic island and pedestrian refuge	Yes	~~A4-00040~~ A4-00186 ~~A4-00184~~	Median widths (midblock) shall be 2.0m minimum. Design vehicle swept paths shall be maintained and adequate width for cyclists shall be maintained midblock to avoid 'pinch-points'
Raised median and threshold treatment	Distributor or Arterial in combination with any other category	Standard threshold	Yes	A4-00040 A4-00184	A4-00040 for reconstruction projects. A4-00184 for new projects. Median widths (midblock) shall be 2.0m minimum. Design vehicle swept paths shall be maintained and adequate width for cyclists shall be maintained midblock to avoid 'pinch-points'

5.14.5 The following requirements are to be addressed as part of each intersection access design:

a) Demonstrate that the intersection, including auxiliary and turning lanes can accommodate the minimum design vehicle access in ~~Table 5-6~~ using Austroads Design Vehicles and Turning Templates Guide. Turning radii at intersections shall accommodate the intended movements without allowing desired operating speeds to be exceeded.

b) 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)~~c) Temporary turnaround facilities shall be suitably designed to facilitate either a single turning movement, or a three-point turn for a 9.8m garbage truck.

~~c)~~d) Where no raised median is provided, and a risk-assessment confirms it is appropriate, a design vehicle can cross the centre line

~~d)~~

~~**Table 5-6: Intersection Access Design Vehicles**~~

~~Functional Hierarchy~~	~~Minimum Access Requirement~~
~~Access Place~~	~~9.8m garbage truck~~
~~Access Place - Cul-de-sac head~~	~~9.8m garbage truck [1] – 3-point turn acceptable [1 2]~~
~~Access Street, Minor Collector~~	~~12.5m single unit truck/bus with R12.5 turning radius~~
~~Major Collector and higher~~	~~19m semi-trailer with R15 turning radius [3]~~

Table 5-6: Intersection Access Design Vehicles

Functional Hierarchy	Design	Check
Residential		
All Access Place / Street	9.8m garbage truck with R9.5 turning radius	12.5m single unit truck/bus with R12.5 turning radius
Access Place - Cul-de-sac head	9.8m garbage truck [1] – 3-point turn acceptable [1 2]	12.5m single unit truck/bus with R12.5 turning radius
Collector/Access	9.8m garbage truck with 12.5 turning radius	12.5m single unit truck/bus with R12.5 turning radius
Collector/Collector	12.5m single unit truck/bus with R12.5 turning radius	19m semi-trailer with R15 turning radius [3]
Arterial/Access	9.8m garbage truck with R12.5 radius	12.5m single unit truck/bus with R12.5 turning radius
Industrial		
All Access / Collector	Retrofit: 19m semi-trailer with R15 turning radius [3] New: 36.5m PBS3A @ R15 turning radius	25m B-double or Prime mover and long semi-trailer with R15 turning radius
All		
Arterial/Collector	12.5m single unit truck/bus with R12.5 turning radius	19m semi-trailer with R15 turning radius [3]

Arterial/Arterial	19m semi-trailer with R15 turning radius [3]	25m B-double or Prime mover and long semi-trailer with R15 turning radius?

[1] Where driveway entrances are to be used for turning movements, the designer shall ensure that the required area is to be designed to withstand the relevant loads.
[2] In the case where a vehicle is required to undertake a three-point turn in the "turning area", the following points are to apply:

- The maximum leg length shall be 20m (centreline to end).
- Driveways to all frontage lots is to be provided at the time of construction; and
- The pick-up point for garbage bins, pathways and parking is to be considered in the design.

[3] On designated multi-combination vehicle routes, the design vehicle will be the relevant vehicle combination

5.14.6 The use of roundabouts in the overall transport network design is to be approved by Council. Roundabouts. Where approved, the roundabout shall be designed in accordance with Austroads Guide to Road Design – Part 4B: Roundabouts.

5.14.7 The following requirements shall be addressed as part of each roundabout design:

a) Provision for pedestrian and cyclist movement in accordance with Austroads Guide to Road Design: Part 4B Roundabouts. Refer
b) Entry width to provide adequate capacity
c) Adequate circulation width, compatible with the entry widths and design vehicles e.g., buses, trucks, cars
d) Central islands of diameter sufficient only to give drivers guidance on the manoeuvres expected
e) Deflection of the traffic to the left on entry to promote gyratory movement
f) Adequate deflection of crossing movements to ensure low traffic speeds
g) A simple, clear and conspicuous layout
h) Vehicle approach speeds to be designed in accordance with Austroads Guide to Road Design: Part 4B Roundabouts.
i) Provide safe multi-modal movement including pedestrians and cyclist movements.
j) No streetlights shall be placed inside the roundabout. All light poles to be located on the street verge/footpath. Consideration for approval of alternate light pole locations (e.g., 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.
k) The internal area of the roundabout shall be landscaped with suitable plants and serviced by an approved underground irrigation system.
l) Raised splitter islands are to be provided on the approach to all roundabouts, unless otherwise approved.
m) Barrier kerb and channel is to be provided on the outside kerbs at all roundabouts.
n) Subsoil drainage, including flush points, shall be installed at the back of the kerb and channel of the roundabout with such subsoil drainage connected to the stormwater drainage system adjacent to the roundabout.
o) Designers should also note requirements in the Traffic Planning and Coordination Regulation regarding clearances to the design vehicle swept path and acceptable road typologies for application of mountable centre islands.

5.15 Local Area Traffic Management

5.15.1 The selection of appropriate local area traffic management elements is critical to achieving the Road Design Guidelines objectives of this PSP, and shall be undertaken with consideration of the following:

a) Austroads Guide to Traffic Management Part 8: Local Street Management.
b) IPWEAQ's Street Design Manual: Walkable Streets.
c) Council's Standard Drawings.
d) Council list of furniture and materials for approved surface treatments.
e) Australian Standard 1742.13
f) Australian Standard 1158.

5.15.2 The following requirements shall be addressed as part of vehicle speed management in the local area traffic network design:

a) The road network design should provide a road network which achieves the desired operating speed environment through road alignment design in the first instance, before considering the use of traffic calming devices.
b) The road network layout and design of any traffic calming measures should result in an operating speed environment (measured by the 85th percentile) no greater than the posted speed limit.
c) Speed reduction can be achieved using calming devices which safely shift vehicle paths laterally (slow points, roundabouts, blister islands, strategic landscaping treatments) or vertically (raised platform, speed cushion, wombat crossings).
d) The traffic network design shall achieve a visual environment conducive to lowering speeds as desired. Speed reduction can be facilitated by using any or a combination of the following, but not limited to;
    - Segmenting local streets into relatively short lengths (preferably less than 250 metres),
    - Using appropriate devices, streetscapes, or street alignment to create short sight lines.
    - Applying suitable threshold treatments to indicate a change in road environment.

5.15.3 The following requirements shall be addressed as part of streetscape design:

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 (e.g., kerb lines).

5.15.4 The following requirements shall be addressed as part of LATM device design:

a) Traffic calming measures shall comply with the schedule of acceptable solutions shown on Council Standard Drawing A3-08415 - Typical LATM devices.
b) Devices other than at intersections should be located to be consistent with streetscape requirements.
c) Devices shall be located with suitable clearance from existing or proposed street lighting power poles, street trees, drainage pits, driveways and services.
d) Calming devices are to be located at 80m to 100m intervals, or otherwise approved by Council.
e) Calming devices shall be designed to enable a single unit 9.8m 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 verge, landscaped areas, parking bays, or conflicting with any road furniture.

f) Calming devices shall facilitate through movement of buses without mounting any kerb, where located on bus routes.

5.15.5 The following requirements shall be addressed as part of local area traffic access:

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, or diminished level of service.
c) In newly developing areas, resilient LATM treatments shall be provided and consider access of construction vehicles.

5.15.6 The following sight distance requirements shall be addressed as part of the local area traffic network design:

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 design operating speed.
b) Sight distance shall consider all modes including 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 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. Refer Section 5.20 for lighting design guidance.

5.16 Linemarking

5.16.1 Linemarking provision shall be designed generally in accordance with the following:

a) Manual of Uniform Traffic Control Devices
b) Australian Standard 1742
c) Council's Standard Specification
d) TMR Specification MRTS110 – Coloured Surface Treatments

5.16.2 The following requirements shall be addressed as part of linemarking design:

a) Linemarking includes longitudinal limes, augmentation of line markings, chevrons and islands with retroreflective pavement markers.
b) Paint material shall be applied for the following applications:
    - Edge lines
    - Continuity lines
    - Diagonals or chevrons
    - Cycle lanes in accordance with Transport and Main Roads Specification MRTS110 – Coloured Surface Treatments
c) Thermoplastic or cold applied plastic materials shall be applied for the following applications:
    - Cycle lane symbols
    - Turn/direction arrows
    - Zebra crossings
    - Stop bars and give way lines
    - Holding and exit lines (roundabouts)
    - Turn lines
d) Linemarking at any other high turning (shear stress) environments should have thermoplastic materials applied.

5.17 Parking

5.17.1 Parking provision shall be designed generally in accordance with the following:

a) Austroads Guide to Road Design Part 3: Geometric Design
b) Australian Standard 1428.1.
c) Australian Standard 2890.5.

5.17.2 The following requirements shall be addressed as part of parking design:

a) On-street parking should only be provided where a parking modal priority has been identified and there is a recognised insufficient supply in the area.
b) All off-street parking should be designed to allow convenient and safe access and usage, in accordance with the relevant Australian Standard.
c) Parking layouts shall take into consideration desired pedestrian movements and appropriate separation between vehicles and pedestrians.
d) 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.
e) Any parking space provided shall consider Movement and Place aspects and maintain the safe passage of vehicular or pedestrian traffic and access to adjacent properties.
f) 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.
g) 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, as directed by Council.
h) Linemarking of individual on-street parking bays shall generally be provided only in the following circumstances:
    - Anywhere inside the Mackay City Centre Local Plan area (see MRPS Local Plan Map - CC – 1), or
    - Adjacent to, or near, areas of high demand – e.g., convenience stores, schools, churches, community facilities, as determined by Council.
i) Parking bays should be delineated with the use of the non-wearing surface material, rather than with the use of painted pavement markings.
j) For non-residential land uses, the opportunity for joint use of parking should be maximised by being shared with a number of complementing uses.
k) Wearing surfaces for all verge spaces and indented parking areas shall be either concrete, interlocking pavers, or asphalt.
l) Where built out on-street parking bays are proposed, the build out form is to be the same width as the parking bay, unless otherwise specified.
m) Where formalised parking bays/lanes and build outs are required on both sides of a through lane, the overall width of a reserved is to be widened by the required width of the parking bay, unless otherwise agreed to by Council.
n) 90-degree angled kerb-side parking will generally only be permitted on access places and access streets, where an on-street parking modal priority has been identified and then only where the posted speed limit does not exceed 40 km/h.
o) Where 90-degree kerb-side parking is proposed 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:
    - There is a demonstrated modal need for a high level of parking (inclusive of existing parking supply in the broader area), and
    - The parking bays shall be linemarked, and
    - The edge line of the adjacent traffic lane must be marked, and

- A vehicle must be able to enter and exit the parking space without the need to cross over in any adjacent travel lane. and
- There is suitable provision for people walking, cycling and e-mobility to and from the proposed parking spaces.

p) 90-degree angled kerb-side parking is not permitted in a street with a 60 km/h, or higher, posted speed limit.
q) Where short-term stopping for purposes of loading or unloading goods vehicles is required, this shall be provided for by means of loading zones.
r) Loading zones should be provided where it is necessary to allow vehicles to stand for the picking up or setting down of goods.
s) Loading zones should allow stopping parallel to the kerb and should have a length which will accommodate the vehicles which normally use them, near the premises being served.
t) Consideration should be given to placing loading zones at the beginning or end of a section of parking, rather than in the middle, to reduce the need for awkward vehicle manoeuvring, especially the reversing of large vehicles.
u) Refer Table 5-9~~Table 5-7~~ and Table 5-10~~Table 5-8~~ for design form acceptable outcomes in relation to functional hierarchy.

5.18 Buses

5.18.1 Bus access and network design shall be designed generally in accordance with the following:

a) Council Standard Drawings.
b) Traffic Planning & Coordination Regulation.
c) Federal Government's Disability Standards for Accessible Public Transport Guidelines 2004 (No. 2).
d) TransLink's PTIM manual.

5.18.2 The following requirements shall be addressed as part of bus access and movement design:

a) Bus routes shall be identified in consultation with Translink.
b) Where a public transport (bus) modal priority has been identified, the road form and network layout shall suitably cater for buses.
c) Bus routes and stops should be located so that no more than 5% of residents are serviced within 400m of a bus route or stop, or otherwise directed by Translink.
d) All new bus stops and shelters and adjacent footpaths must comply with the Commonwealth Government's Disability Standards for Accessible Public Transport Guidelines 2004 (No. 2), or otherwise advised by Council.
e) All new bus shelters shall comply with Council's standard drawings and TransLink's PTIM manual requirements. Suppliers must demonstrate that shelters meet the level of service, shape, materials, colour and standard of finish, to the satisfaction of Council.
f) Minimum lane dimensions for bus routes and stops contained shall be designed generally in accordance with the Traffic Planning & Coordination Regulation.
g) Refer Table 5-9~~Table 5-10~~ and Table 5-10~~Table 5-11~~ for acceptable outcomes regarding bus route and facilities in relation to functional hierarchy.

5.19 Service and heavy vehicles

5.19.1 The following requirements shall be addressed as part of service and heavy vehicle access and movement design:

a) Each road must provide access for the relevant service vehicle or heavy vehicle, where typical road network access designations and adopted vehicle parameters for service and heavy vehicles are listed in Table 5-6~~Table 5-7~~. For minimum intersection access requirements see ~~Table 5-6~~.

b) Where the road is part of a multi-combination vehicle route, or a has an identified road-freight modal priority, the road form and geometry shall adequately provide access for the relevant vehicle combination.

c) Streets requiring access for a garbage collection vehicle shall be designed to ensure a 9.8m garbage vehicle can safely service the lot and or both ingress / egress the street when not a through road.

Table 5-6~~7~~: Design Vehicle and Access

Vehicle Attributes		Typical Network Access Designations per Typology					
Vehicle Access Class	**Vehicle Length & Turning Radii**	**Industrial Areas [1]**	**Local Streets & Rural Access**	**Urban, Rural & Regional Connectors**	**Main Streets**	**Activity Streets**	**Civic Spaces**
PBS1 (General Access Vehicle)	9.8m garbage truck	✓	✓	✓	✓	✓	✓*
	12.5m single unit truck/bus, R12.5	✓	✓	✓	✓	✓	✓*
	19m semi-trailer, R15	✓	✓	✓	✓	✓	✗
PBS2A (B-double)	Class A 26m Class B 30m	✓	✗	✓**	✓**	✗	✗
PBS 3A (Type-1 Road Train)	Class A 36.5m Class B 42m	✓**	✗	✓**	✗	✗	✗

* Site-specific

** Approved heavy vehicle routes only

[1] Industrial areas are land parcels developed for industrial purposes e.g. Paget, Rosella investigation area (refer Mackay Region Planning Scheme).

5.20 Street lighting

5.20.1 Street lighting shall be designed generally in accordance with the following:

a) Council Service Corridor Standard Drawings
b) Councils Concept Typology Acceptable Outcome Drawings
c) Ergon Energy Public Lighting Design Manual.
d) Australian Standard 1158.
e) Australian Standard 4282.
f) TMR's Road Planning and Design Manual – Edition 2: Volume 6.
g) Queensland Transmission and Supply Commission Corporation (QTSC) standard conditions.
h) National Light Pollution Guidelines for Wildlife Including marine turtles, seabirds, and migratory shorebirds.

5.20.2 The following requirements shall be addressed as part of street lighting design:

a) Street lighting shall be provided on all urban streets, including the lighting of any existing or proposed roundabouts, traffic calming or traffic management devices.
b) Lighting of intersections shall be provided on rural roads where either intersecting road's functional hierarchy is classified as a 'Sub-Arterial', or higher movement function, or where a lighting warrants assessment deems lighting is required, in accordance with TMR's Road Planning and Design Manual – Edition 2: Volume 6.
c) Street lighting in new civic spaces, Access streets/places, Collector and Distributors shall be designed to a P category in accordance with AS1158.3.1. The minimum lighting category for new developments is to be PR3.
d) Arterial and Sub-arterial roads shall be designed to a V-category in accordance with AS1158.1.1, including all relevant aspects of AS1158.1.1 or AS1158.3.1.
e) Where streetlighting is being retrofitted to an existing street, installation of new lighting on existing power poles shall be prioritised. The addition of new poles shall only be considered where the use of existing poles is impractical or results in an inefficient outcome.
f) The implications of the removal of one, or more, existing poles to maintain the current amenity in the street shall be considered, in liaison with Ergon Energy.
g) The alignment of street lighting poles, conduits and associated infrastructure shall be as per Council's service corridor standard drawings and in accordance with service provider requirements.
h) New streetlights shall be the luminaire types which meet requirements of Ergon's Public Lighting Design Manual. Sustainable and energy efficient lighting initiatives should be adopted wherever possible.
i) Council does not approve the use of Nostalgia luminaries.
j) All luminaires are to be fitted with Aeroscreen lamps to assist in complying with glare control.
k) 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 1 or 2 installations.

l) 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.

m) All street lighting design drawings, including isolux drawings and documentation shall be provided to Council to demonstrate compliance with this PSP. Isolux diagrams shall illustrate lighting on both horizontal and vertical surfaces where these are critical to the design.

n) 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.

o) Urban laneways shall be a maximum length of 100m where streetlighting is provided and a maximum length of 65m where no street lighting is provided.

5.20.3 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). Other species sensitive to the impact of urban lighting includes migratory shorebirds and seabirds.

5.20.4 The following requirements shall be addressed as part of lighting design near foreshores:

a) Light-pollution impact on nesting turtles shall be mitigated where works are within or adjacent coastal foreshores, or areas likely to be frequented by nesting turtles.

b) A best practice approach in the design of the street lighting, generally in accordance with the National Light Pollution Guidelines for Wildlife Including marine turtles, seabirds, and migratory shorebirds.

c) Long wavelength, low-pressure sodium lighting shall be adopted.

d) Other acceptable mitigation measures include:

- Timed lighting switches
- Reduced volume of luminaires and total wattage
- Minimised luminaire mounting heights
- Utilisation of surrounding environment such as, vegetation, shields, or recesses to mitigate light pollution of the beach

5.21 Roadside environment, road furniture & barriers

5.21.1 Street furniture and barriers shall be designed generally in accordance with the following:

a) Austroads Guide to Road Design Part 3: Geometric Design.
b) Austroads Guide to Road Design Part 6: Roadside Design, Safety and Barriers
c) Austroads Guide to Road Design Part 6B: Roadside Environment
d) Council Standard Drawings
e) TMR's Road Planning and Design Manual – Volume 3, Part 6: Roadside Design, Safety and Barriers.
f) Manual for Uniform Traffic Control Devices
g) Council's list of furniture and materials
h) Council specification C263

5.21.2 The following requirements shall be addressed as part of street furniture and barrier design:

a) Roadside facilities, furniture and infrastructure design shall be in accordance with Austroads Guide to Road Design Part 6: Roadside Design, Safety and Barriers and Austroads Guide to Road Design Part 6B: Roadside Environment.
b) The need for road safety barriers for hazards shall be assessed and designed in accordance with TMR's Road Planning and Design Manual – Volume 3, Part 6: Roadside Design, Safety and Barriers and Austroads Guide to Road Design Part 6: Roadside Design, Safety and Barriers.
c) Guideposts shall be provided at intervals as outlined in MUTCD.
d) Guidepost material shall be as per Council specification C263

5.22 Street trees

5.22.1 Street tree provisions shall be applied generally in accordance with the following:

a) Council's Planning Scheme Policy – Landscape.
b) Council's Standard Drawings.
c) Council's Service Corridor Standard Drawings.
d) Austroads Guide to Road Design Part 6: Roadside Design, Safety and Barriers.

5.22.2 The following requirements shall be addressed as part of making provision for street trees:

a) Street tree planting within the verge and road corridor, including spacing intervals, soil preparation and offsets to back of kerb etc. are to be in accordance with *Council's Planning Scheme Policy – Landscape* and Council Standard Drawings.
b) Street tree species are as per *Council's List of plant species*.
c) Any augmentation of in-ground soil area or volume around trees to increase growth potential shall have suitable clearance to infrastructure services.
d) Street tree planting frequency, location, species, growth potential, and diversity shall be implemented to achieve the required shading and urban cooling benefits sought.
e) Where landscaping in medians, roundabouts, entry statements and within streetscapes, refer to Councils Planning Scheme Policy – Landscape.
f) Road safety risk assessments may be required were warranted. Refer Guide to Road Design Part 6: Roadside Design, Safety and Barriers for guidance.
g) Refer Table 5-9~~Table 5-7~~ and Table 5-10~~Table 5-8~~ for acceptable outcomes relative to functional hierarchy.

5.23 Medians

5.23.1 Medians shall be designed generally in accordance with the following:

a) Austroads Guide to Road Design Part 3: Geometric Design.
b) Council Standard Drawings
c) Council's list of furniture and materials

5.23.2 The following functions or requirements shall be addressed as part of the provision of medians:

a) separate and reduce conflict between opposing traffic flows, effectively reducing the possibility of head-on collisions
b) prevent indiscriminate crossing and turning movements
c) shelter right-turning movements and crossing vehicles at intersections
d) shelter road furniture and traffic control devices, such as signs, traffic signals and street lighting
e) provide a pedestrian refuge which enables pedestrians to cross the road one carriageway at a time
f) reduce the impact of headlight glare and air turbulence from opposing streams of traffic
g) provide scope for improvement of visual amenity and cooling by landscaping and street trees
h) accommodate level differences between carriageways
i) provide a safety barrier
j) provide an emergency stopping area on multi-lane roads
k) provide a recovery area for errant vehicles.
l) Medians shall be provided, where required to improve the safety and operation of major urban and rural roads with multiple lanes in each direction, or where deemed necessary by the designer for road safety.
m) Medians shall take the form of landscaping (planting, street trees, turf) in the first instance, or concrete infill where landscaping solutions are not practical (e.g. small traffic medians).
n) The median kerb profile shall be in accordance with Council's Standard Drawing A3-00865.
o) Refer Councils list of Furniture and materials for approved surface treatments.
p) Raised traffic islands and medians less than 12 m^2, or narrower than 2m between kerb faces, shall be infilled with concrete, or approved sustainable alternative.
q) Median treatments shall be in accordance with Table 5-7~~Table 5-8~~.
r) Refer Table 5-9~~Table 5-10~~ and Table 5-10~~Table 5-11~~ for acceptable outcomes relative to functional hierarchy.

Table 5-7~~8~~: Median treatment requirements

Application	Recommended Median Treatment
Movement and Place Framework Mapped Activity Streets[1]	Landscaped planting & street trees
Image corridor overlay[2]	
Landscape corridor overlay[2]	
Other areas	Landscaping, street trees, turf, or concrete infill

[1] Refer Error! Reference source not found.~~Appendix C – Movement and Place Framework Mapping~~
[2] Refer Mackay Region Planning Scheme Image corridor and landscape character overlay mapping

5.24 Kerb

5.24.1 Kerb shall be designed generally in accordance with the following:

a) Austroads Guide to Road Design Part 3: Geometric Design
b) Austroads Guide to Road Design Part 4: Intersections and Crossings - General.

c) Council Standard Drawings
d) Council's list of furniture and materials
e) TMR Standard Drawings

5.24.2 The following functions or requirements shall be addressed as part of the provision of kerbs:

a) Collect surface drainage and to convey it to a point of discharge
b) Delineate the edges of carriageways
c) Separate carriageways from areas used by other modes of transport, such as pedestrians
d) Separate carriageways from areas to be put to other uses, such as landscaping
e) Support the edge of the base course of pavement
f) Reduce the width of cut by substituting an underground drainage system in place of table drains.
g) Kerb and channel profiles shall be in accordance with Council's Standard Drawing A3-00865.
h) In lieu of kerb and channel, table drains shall be provided for longitudinal drainage purposes, where required (e.g. in rural areas).
i) Subsoil drainage shall be provided under any kerb and channel placed within the on-street corridor, or where there is potential for water ingress to the road pavement. Subsoil drainage shall be in accordance with Council Standard Drawing A3-00867.
j) Centre median kerbs on high movement roads shall be a TMR type 10 or 11 kerb profile.
k) The use and application of kerb and channel shall be as per Table 5-8~~Table 5-9~~.

Table 5-8~~9~~: Kerb and channel application

Type	Use	Restriction on use
Semi-mountable	• Preferred for use on medians, traffic islands and outer kerb lines of all intersections, particularly where the speed zone ≥ 80km/h • Trafficable by slow moving vehicles passing a broken down vehicle, where insufficient width is available on the road surface	
Barrier	Shall be considered: • At recreational park frontages and other road interfaces recognised as having high pedestrian demand Should be considered: • Where it is essential to prevent vehicles from moving upon areas used by pedestrians, typically during on-street parking manoeuvres, but also at sharp left-turn kerb returns. • as protection for traffic signal poles • in car parks	Not recommended for use: • under guardrail on high speed routes because the rail deflects on impact and the barrier kerb and rail combination may form a ramp to launch errant vehicles • on high-speed roads (i.e. > 80km/h, as it is more likely to trip and overturn

	• in shopping areas • when matching into Council kerbing • under or close to a bridge barrier • where it is more suitable for drainage behind a safety barrier	a vehicle which is out of control
Fully mountable	May be used: • On the leading nose of a median or traffic island in order to extend the island nose where space or funding is limited • For heavy vehicle over-run areas within an intersection • At the interface of indented bus bays with the adjacent traffic lane	• Use to delineate encroachment areas for heavy vehicles may not be supported
Channel	• Channel of semi-circular cross-section may be provided at the rear edge of the shoulder in some rural situations. • May be used along the edge of the through lane opposite a bus embayment	Not to be provided: • Where vehicle wheels may become trapped in a semi-circular channel

5.25 Scour protection

5.25.1 Scour protection shall be designed generally in accordance with the following:

a) Council Planning scheme policy – stormwater drainage design
b) IECA Best Practice Erosion and Sediment Control.
c) Queensland Urban Drainage Manual (QUDM).
d) Council Standard Drawings.

5.25.2 The following functions or requirements shall be addressed as part of the provision of scour protection:

a) Scour protection of road drainage and table drains is required. The level of protection will depend on the material properties of soil, flow velocity, drain grade and volume of stormwater runoff, as required by best practice.
b) Where the table drain will have a flow velocity greater than 2.5m/s or the table drain exceeds 5%, or is likely to scour, a suitably lined table drain is to be constructed along the invert.
c) For constrained sites where the table drain grade are less than 0.1% the inverts of the table drain shall be concrete lined to prevent siltation and facilitate on-going maintenance.
d) Protection treatments may include concrete lined channels, turfing, rock pitching, grass seeding, structural diverse vegetation and approved proprietary products, applied individually or any combination of these.
e) Geotechnical investigations should be carried out to determine soil properties and its potential for scour or dispersive properties.
f) On-going maintenance requirements shall be considered in design, 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.

5.26 Surfacing

5.26.1 Road surfacing shall be designed generally in accordance with the following:

a) Council's Planning Scheme Policy – pavement design.

5.27 Residential Estate entrances

5.27.1 Any entry statement shall meet the following requirements:

a) The entry statement shall be located within private property.
b) Council will not assume any maintenance responsibility for these features.
c) The entry statement shall demonstrate that suitable on-going maintenance arrangements are in place prior to any approval for entrance statements.
d) Council may require separate approval for the erection of such signage or structure.

5.28 General environmental considerations

5.28.1 General environmental considerations in design shall be generally in accordance with the following:

a) Council Planning Scheme Policy – Healthy Waters

5.28.2 The following functions or requirements should be addressed as part of general environmental design:

a) Air quality:
   - Consider separation of heavy vehicle traffic from residential areas.
   - Make provision for sealed road surfaces to mitigate dust nuisance where practical.
   - Road planning should aim to achieve air quality levels listed in TMR Road Traffic Air Quality Management guideline, Table 3.3.1 at existing or proposed sensitive locations at 20 metres or greater from the edge of the nearest traffic lane.

b) Water quality:
   - Minimise waterway crossings and disturbance of the existing catchment.
   - Provide for water sensitive urban design practices. See Council's Planning Scheme Policy - Heathy Waters.

c) Land:
   - Minimise land disturbance, include avoidance of potential acid sulphate soils.
   - Incorporate erosion prevention measure, including avoidance of highly dispersive (sodic) soils. See Council's Planning Scheme Policy - Heathy Waters.

d) Noise:
   - Noise generation from new and upgrade roads shall be considered in road design and planning as per General Environmental Duties required by the *Environmental Protection Act (1994).* Refer TMR Transport Noise Management Code of Practice for reasonable noise attenuation strategies and attenuation treatment guidance.

e) Biodiversity:
   - Road alignment should avoid existing impact to existing vegetation to preserve existing biodiversity.

f) Fauna:
   - Provision for safe fauna crossings on roads should be provided where prevalent or significant fauna species, populations or wildlife crossings have been identified.

Table 5-9~~10~~: Indicative Road Hierarchy Acceptable Outcomes - Urban Areas

Criterion	Highway	Arterial / Arterial Main Street	Traffic Distributor	Controlled Distributor / Sub Arterial Main Street	Major Collector	Minor Collector	Access Street	Access Place	Laneway
Design Form									
Parking provision (if priority)	nil	Typically nil	Clear of through lanes	Clear of through lanes	Clear of through lanes	On-street	On-street	nil	nil
Pedestrian Path	Both sides	Both sides	Both sides	Both sides	Both sides	Both sides	Both sides	One side (min.)	Shared
Cycle Path (if priority): - Cycle lanes on carriageway - Off carriageway shared paths - Separated cycle track	Possibly Yes [3] Yes [3]	Possibly Yes [3] Yes [3]	Possibly Yes [3] Yes [3]	Yes [3] Yes [3] Yes [3]	Yes [3] Yes [3] Yes [3]	Yes [3] Yes [3] Yes [3]	Shared [4] Yes [3] Possibly [3]	Shared No [4] No	Shared No No
Bus route	Yes	Yes	Yes	Yes	Yes	Yes	Possibly	No	No
Bus stop (where route or priority identified)	Dedicated bays	Dedicated bays	Dedicated bays	Dedicated bays	Dedicated bays, where appropriate	Kerbside stop	Kerbside stop	nil	nil
Median	Acceptable 6 to 10 m wide	Acceptable 6 to 10 m wide	Acceptable 3m min. wide	Acceptable 3m min. wide	Acceptable 3m min. wide	nil	nil	nil	nil
Linemarking	Yes	Yes	Yes	Yes	Yes	Yes	Possible	nil	nil
Lighting Category	In accordance with AS1158. Refer s5.20.								
Street Trees	Both sides	Both sides	Both sides	Both sides	Both sides	Both sides	Both sides	Both sides	Possibly

1. For concept planning purposes, a guide for traffic generation is 8 vpd/dwelling.
2. Linemarking requirements subject to detailed design
3. Dependent upon the desired lines, cycle hierarchy plan, road speed and estimated pedestrian and cyclist demand

4. Unless required as part of the cycling movement network or in the near vicinity of community facilities, parks, or schools where the circumstances indicate this is a preferred solution

Table 5-1011: Indicative Road Hierarchy Acceptable Outcomes - Rural Areas

Criterion	Arterial	Traffic Distributor	Minor Collector	Access Street	Access Place
Parking provision (if priority)	Typically nil	Clear of through lanes	On-street	On-street	On-street
Pedestrian Path	Typically nil	One side - if walking or cycling priority identified			
Cycle Path (if priority) - Cycle lanes on carriageway - Off carriageway shared paths - Separated cycle track	Possibly Yes [3] Yes [3]	Possibly Yes [3] Yes [3]	Yes [3] Yes [3] Yes [3]	No [4] Yes [3] Possibly [3]	Shared No [4] No
Bus route	Yes	Yes	Yes	Possibly	No
Bus stop - if bus route or demand identified	Clear of on-street corridor (carriageway)	Clear of on-street corridor (carriageway)	Indented of within on-street corridor (carriageway)	Within on-street corridor (carriageway)	Typically nil
Median	Acceptable 6 to 10 m wide	nil	nil	nil	nil
Linemarking	Yes	Yes	Yes	Possible	Typically nil
Lighting	In accordance with AS1158. Refer 5.20.				
Street Trees	Site specific				

1. For concept planning purposes, a guide for traffic generation is 8 vpd/dwelling.

2. Linemarking requirements subject to detailed design. Provision for linemarking not applicable where road is unsealed

3. Dependent upon the desired lines, cycle hierarchy plan, road speed and estimated pedestrian and cyclist demand

4. Unless required as part of the cycling movement network or in the near vicinity of community facilities, parks, or schools where the circumstances indicate this is a preferred solution

5.29 Documentation

5.29.1 For any OW planning application, or development of a Business Case or Concept design, or detailed design, the following documentation is required to demonstrate that appropriate road design guideline considerations have been undertaken:

a) Operational Works applications, or detailed design submissions undertaken as part of Council's road and drainage Capital Works Program, shall be documented in accordance with *Council's Planning scheme policy – quality assurance requirements for design.*

b) Design works shall be certified by a suitably qualified Registered Professional Engineer of Queensland (RPEQ). Submissions may require multiple RPEQ certification subject to the design elements involved (i.e. an electrical, structural, geotechnical or civil RPEQ signoff for associated electrical, structural, geotechnical and civil design components).

6 REFERENCES

6.1 Referenced Documents

This planning scheme policy shall be read in conjunction with the reference and source documents listed below:

6.1.1 Council Planning scheme policies:

a) Planning scheme policy – cycleway facilities and pathway design
b) Planning scheme policy – landscape
   - List of furniture and materials
   - List of plant species
c) Planning scheme policy – pavement design
d) Planning scheme policy – quality assurance requirements for design
e) Planning scheme policy – stormwater drainage design
f) Planning scheme policy – subsurface drainage design
g) MRC Supplementary Specifications and Notice to Consultants

6.1.2 Council documents – other:

a) Drawings
b) Planning Scheme Road hierarchy overlay
c) Storm tide and Pioneer River Evacuation Maps
d) Mackay Regional Council – D20 Drawings and Documentation Guideline
e) Mackay Regional Council Corporate Plan, 2022-2027
f) Construction Specifications (Donated Assets)

6.1.3 Queensland Department of Transport and Main Roads requirements:

a) TMR Standard Drawings and technical specifications
b) TMR Supplement to Austroads Guide to Road Design – Part 3
c) TMR Supplement to Austroads Guide to Traffic Management – Part 13
d) TMR Queensland Guide to Traffic Management – Part 13: Safe System Approach to Transport Management (2020), July 2021
e) TMR - Road planning and design manual
f) TMR - Guide to Traffic Impact Assessment
g) TMR - Guidelines for road design on brownfield sites
h) TMR - Design Guide for Roadside Signs
i) TMR - Manual of Uniform Traffic Control Devices (MUTCD)
j) TMR - Traffic and Road Use Management Manual (TRUM)
k) TMR - Road drainage manual
l) TMR - Treatment options to improve safety of pedestrians, bicycle riders and other path users at driveways
m) TMR - Raised priority crossings for pedestrians and cycle paths
n) TMR – Guideline Bicycle awareness zones
o) TMR – TN197 – Provision of shade along paths

6.1.4 Queensland Government - other:

a) State Planning Policy
b) Queensland Government - Model Code for Neighbourhood Design: A Code for Reconfiguring a Lot
c) Queensland Government - Planning (Walkable Neighbourhoods) Amendment Regulation 2020 and associated supporting information.
d) Queensland Government – Public Transport Infrastructure Manual (PTIIM)
e) Queensland Department of Transport and Main Roads – Treatment options to improve safety of pedestrians, bicycle riders and other path users at driveways
f) Queensland Government - Transport Planning and Coordination Regulation 2017

6.1.5 ADAC Requirements:

a) ADAC - How to use the As Constructed Documents
b) ADAC 4.1 - As Constructed and ADAC Survey Pick-up
c) ADAC 4.1 - Creation of XML using 12d Model
d) ADAC 4.1 - Guidelines for Creation and Submission of XML Files
e) ADAC 5.0.1 - As Constructed and ADAC Survey Pick-up
f) ADAC 5.0.1 - Creation of ADAC XML using 12d Model
g) ADAC 5.0.1 - Guidelines for Creation and Submission of XML Files

6.1.6 Other:

a) Australian Road Research Board – Best Practice Guide Sealed roads;
b) Australian Road Research Board – Best Practice Guide - Unsealed roads;
c) Australian Road Research Board – Best Practice Guide – Road Materials;
d) Australian Road Research Board – Best Practice Guide – Bridge Management
e) Austroads - Cycling Aspects of Austroads
f) Austroads – Guide to Pavement Technology: Part 1 to Part 10
g) Austroads – Guide to Road Safety: Part 1 to Part 7
h) Austroads – Guide to Bridge Technology: Part 1 to Part 8
i) Austroads – Guide to Traffic Management: Part 1 to Part 13
j) Austroads – Guide to Road Design: Part 1 to Part 7

k) Austroads – Level of Service Metrics (for Network Operations Planning)
l) Austroads - Integrating Safe System with Movement and Place for Vulnerable Road Users
m) Austroads - Design Vehicles and Turning Path Templates Guide
n) Cycling Aspects of Austroads Guides
o) IPWEAQ – Complete Streets
p) IPWEAQ – Lower Order Road Design Guidelines
q) IPWEAQ – Complete Streets: Guideline for Urban Street Design
r) IPWEAQ – Street Design Manual: Walkable Neighbourhoods & Practice Notes
s) Commonwealth - Disability Standards for Accessible Public Transport Guidelines 2004, (No.3)
t) Commonwealth – National Road Safety Strategy (2021-30)
u) Ergon's Public Lighting Design Manual
v) NSW - Practitioner's guide to Movement and Place
w) NSW – Design of roads and streets
x) Auckland Transport – Roads and Streets Framework
y) Commonwealth Department of the Environment and Energy - National Light Pollution Guidelines for Wildlife Including marine turtles, seabirds, and migratory shorebirds
z) IECA Best Practice Erosion and Sediment Control
aa) Queensland Urban Drainage Manual (QUDM)
bb) Jones & Boujenko - 'Link' and 'place': A new approach to street planning and design, 2007

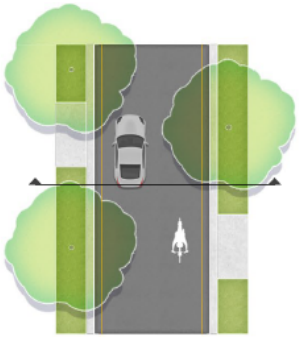
6.1.7 Australian Standards:

a) AS/NZS 1158 (Set) – Lighting for Roads and Public Spaces
b) AS 1428 (Set)- Design for access and mobility
c) AS 1742 (set) - Manual of uniform traffic control devices
d) AS 1743 – Road signs - Specifications
e) AS 1744 – Standard alphabets for road signs
f) AS/NZS 1906 (Set) - Retro-reflective Materials and Devices for Road Traffic Control Purposes
g) AS/NZS 2890.1 - Parking facilities - Off-street car parking
h) AS 2890.2 - Parking facilities - Off-street commercial vehicle facilities
i) AS 2890.3 - Parking facilities - Bicycle parking
j) AS 2890.5- Parking facilities - On-street parking
k) AS/NZS 2890.6 Parking facilities - Off-street parking for people with disabilities
l) AS/NZS 3845 – Road safety barrier systems
m) AS4049 (Set) - Paints and related materials
n) AS4282 – Obtrusive effects of outdoor lighting

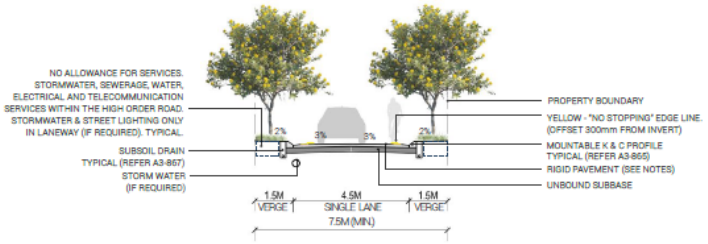
Appendix A – Typology Acceptable Outcomes

Urban Typologies

LOCAL STREET - URBAN ACCESS - TYPE 01



PLAN



TYPICAL CROSS SECTION

TECHNICAL NOTES:

STREET ACCESS
ACCESS TO LANEWAY AT EACH END FROM THE CONNECTING STREETS BY INVERT TYPE VEHICLE CROSSING, PAVEMENT TO MATCH LANEWAY PAVEMENT. INVERT TYPE VEHICLE CROSSING, REFER A3-773.

PAVEMENT
PLAIN CONCRETE RIGID PAVEMENT, WITH UNBOUND SUBBASE. EDGE PROFILE TO MATCH MOUNTABLE K&C. PAVEMENT DESIGN IS TO BE SITE SPECIFIC. ALTERNATIVE PAVEMENT & SURFACING MATERIAL WILL REQUIRE COUNCIL APPROVAL.

STREET LIGHTING
NO STREET LIGHTING BASED ON MAXIMUM LANEWAY LENGTH OF 65m. STREETLIGHT LOCATED WITHIN THE CONNECTING ROADWAYS AT EACH END OF THE LANEWAY.

ROOFWATER CONNECTION
TO KERB AND CHANNEL WITH ALUMINIUM KERB ADAPTORS.

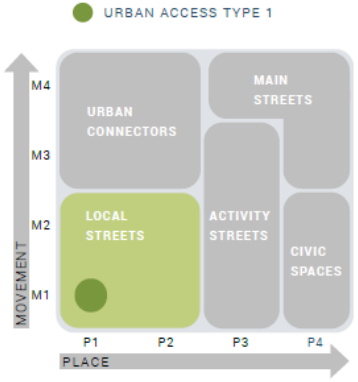
ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides predominately local access for private vehicles • Either single 4.5m through lane or 5.5m 2-way dual through lanes (measured to invert of kerb) • Private vehicles share the through lane(s) with pedestrians and cyclists
Cycle	• Provides predominately local access for cycling • Cyclists share the through lane(s) with private vehicles and pedestrians
Pedestrian	• Provides predominately local access for pedestrians • Pedestrians share the through lane(s) with private vehicles and cyclists

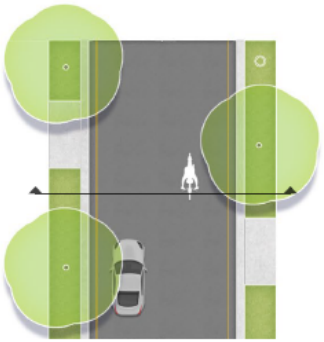
This street typology is not intended to service:

On Street Parking | Goods + Services | Buses | Cycling + Micromobility Parking or Charging | Freight

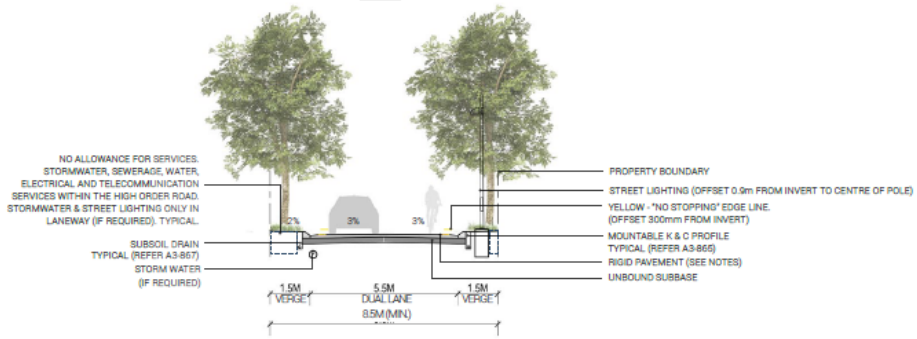


MOVEMENT & PLACE CLASSIFICATION

LOCAL STREET - URBAN ACCESS - TYPE 02



PLAN



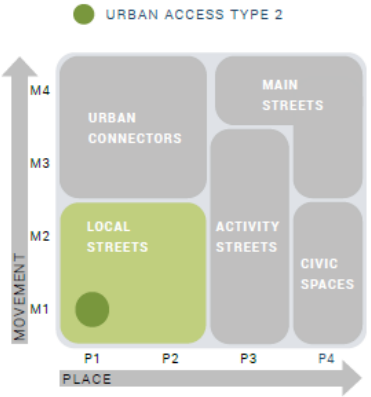
TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides predominately local access for private vehicles • Either single 4.5m through lane or 5.5m 2-way dual through lanes (measured to invert of kerb) • Private vehicles share the through lane(s) with pedestrians and cyclists
Cycle	• Provides predominately local access for cycling • Cyclists share the through lane(s) with private vehicles and pedestrians
Pedestrian	• Provides predominately local access for pedestrians • Pedestrians share the through lane(s) with private vehicles and cyclists

This street typology is not intended to service:

On Street Parking | Goods + Services | Buses | Cycling + Micromobility Parking or Charging | Freight



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

STREET ACCESS
ACCESS TO LANEWAY AT EACH END FROM THE CONNECTING STREETS BY INVERT TYPE VEHICLE CROSSING, PAVEMENT TO MATCH LANEWAY PAVEMENT.
INVERT TYPE VEHICLE CROSSING, REFER A3-773

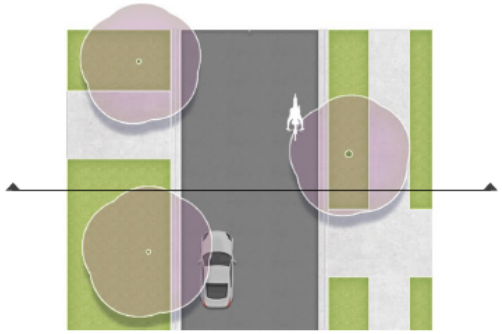
PAVEMENT
PLAIN CONCRETE RIGID PAVEMENT, WITH UNBOUND SUBBASE. EDGE PROFILE TO MATCH MOUNTABLE K&C.
PAVEMENT DESIGN IS TO BE SITE SPECIFIC. ALTERNATIVE PAVEMENT & SURFACING MATERIAL WILL REQUIRE COUNCIL APPROVAL.

STREET LIGHTING
IN ACCORDANCE WITH AUSTRALIAN STANDARD 1158. CARRIAGEWAY WIDTH TO BE ERGON COMPLIANT.

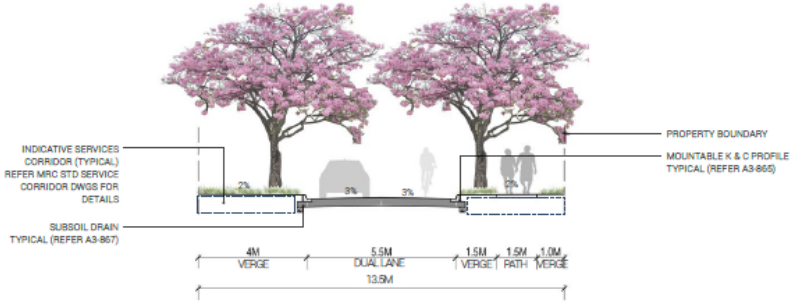
ROOFWATER CONNECTION
TO KERB AND CHANNEL WITH ALUMINUM KERB ADAPTORS.

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT

LOCAL STREET - URBAN ACCESS - TYPE 03



PLAN



TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides predominately local access for private vehicles • 5.5m through lane (2-way), measured to the invert of kerb • Private vehicles share the through lanes with cyclists
Cycle	• Provides predominately local access for cycling • Cyclists share the through lane(s) with private vehicles
Pedestrian	• Provides predominately local access for pedestrians • 1.5m minimum pathway is provided on at least 1 verge. An additional pathway on the other verge is possible.

This street typology is not intended to service:

On Street Parking | Goods + Services | Buses | Cycling + Micromobility Parking or Charging | Freight

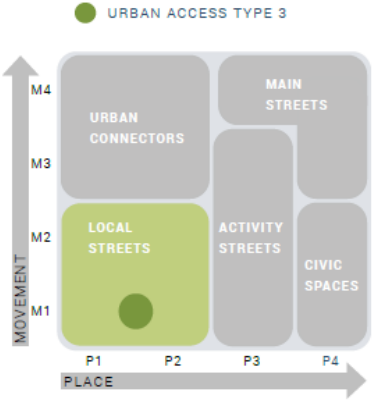
TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

SURFACING
ASPHALT AC10M - MINIMUM THICKNESS 35 mm. UNDERLAID WITH 7mm PRIMERSEAL.

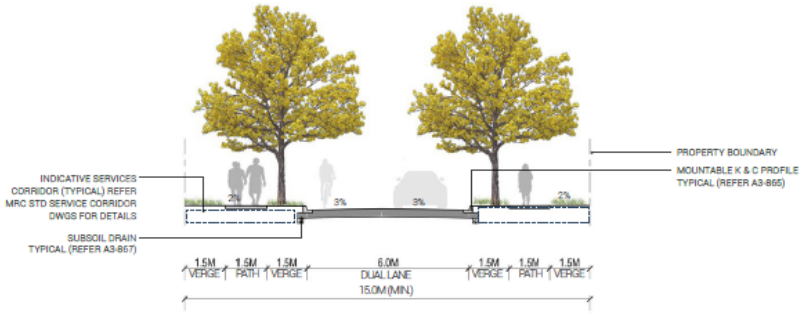
ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT



MOVEMENT & PLACE CLASSIFICATION

LOCAL STREET - URBAN ACCESS - TYPE 04

PLAN



TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides local access for private vehicles • Two through traffic lanes, 3.0m minimum width (measured to the invert of kerb) • Private vehicles share the through lanes with cyclists
Cycle	• Provides local access for cycling • Cyclists share the through lane(s) with private vehicles
Pedestrian	• Provides local access for pedestrians • 1.5m minimum pathway is provided on each verge.

This street typology is not intended to service:

On Street Parking | Goods + Services | Buses | Cycling + Micromobility Parking or Charging | Freight

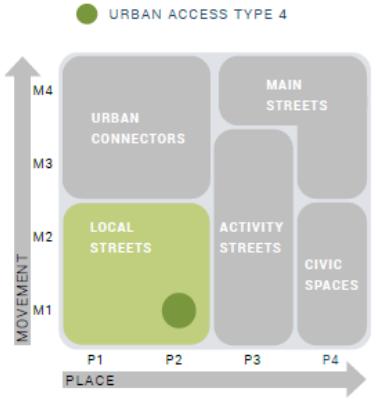
TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

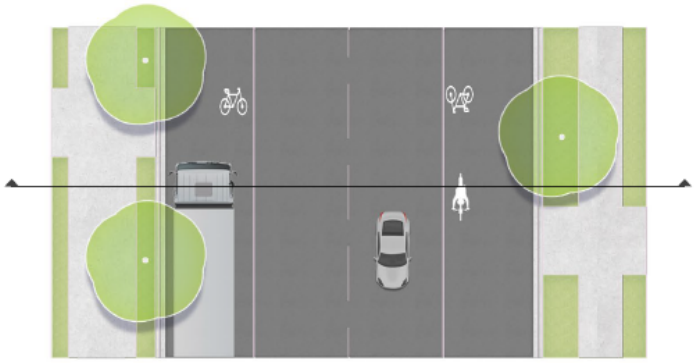
SURFACING
ASPHALT AC10M - MINIMUM THICKNESS 35 mm. UNDERLAID WITH 7mm PRIMERSEAL.

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT

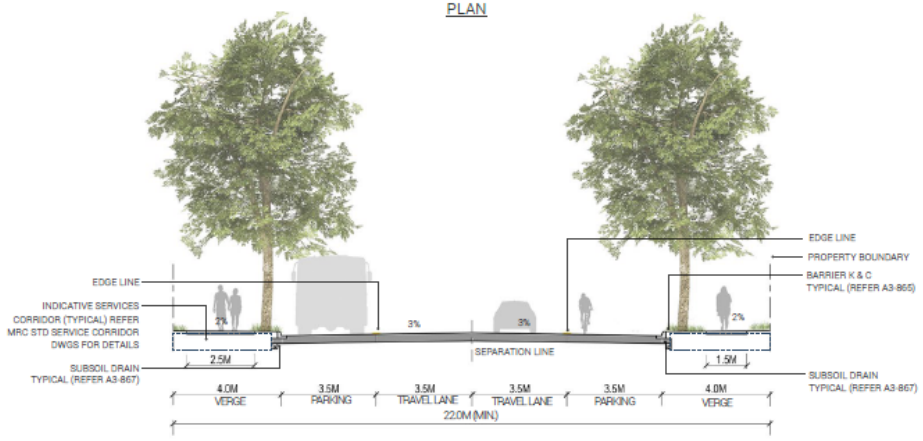


MOVEMENT & PLACE CLASSIFICATION

LOCAL STREET - URBAN ACCESS - TYPE 05 (INDUSTRIAL AREAS)



PLAN



TYPICAL CROSS SECTION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

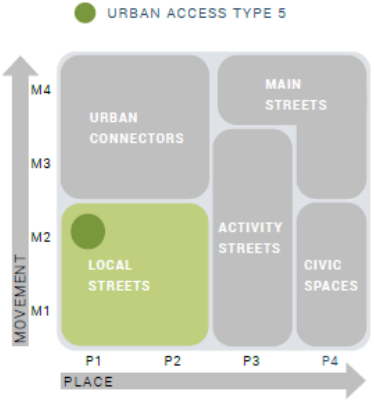
SURFACING
ASPHALT AC14M - MINIMUM THICKNESS 50 mm. UNDERLAID WITH 7mm PRIMERSEAL, PMB BINDER

CYCLING
BICYCLE PAVEMENT SYMBOLS SHALL BE IN ACCORDANCE WITH AS 1742.9 - MUTCD

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT

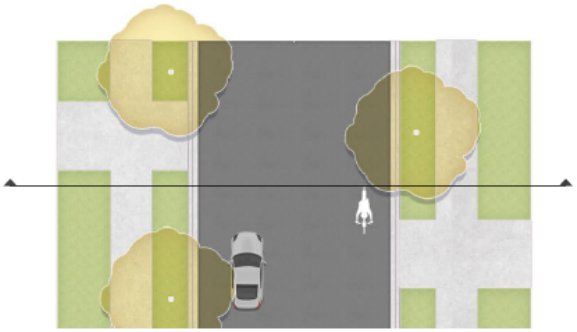
MODAL ATTRIBUTES

PRIORITY ORDER	
Freight	• Provides strategic access for freight distribution.
On Street Parking	• Local or neighbourhood on-street parking access is allowed for, each side of through lane • 3.5m wide parking lane provided
Goods + Services	• Provides for goods and services access and loading requirements
Private Vehicles	• Provides neighbourhood access for private vehicles • Two through traffic lanes, 3.5m width
Bus	• Local neighbourhood bus routes can be serviced • Bus stopping bays are to be incorporated within the road shoulder, subject to detailed design
Cycling and Micromobility Parking	• The street typology may service cycling and micromobility parking or charging
Cycle	• Provides neighbourhood access for cycling • Cyclists have access to a 3.5m wide parking lane with provision for bicycles. • Minimum 1 x 2.5m shared pathway on verges • Dedicated on-road cycle lane(s) are acceptable outcomes if increased modal priority is identified, subject to detailed design
Pedestrian	• Provides neighbourhood access for pedestrians • Footpaths provided each verge, a 2.5m wide path (min.) required at-least on one verge

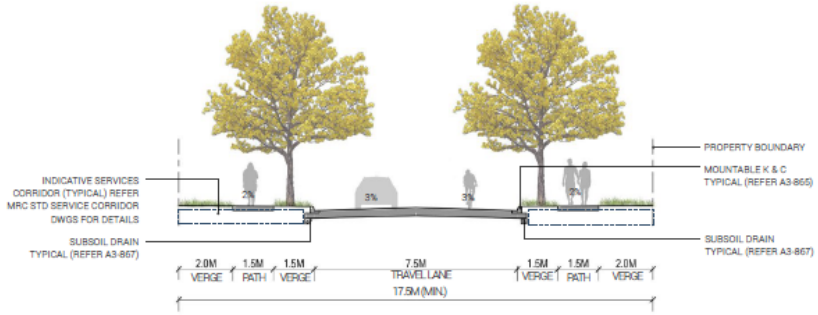


MOVEMENT & PLACE CLASSIFICATION

LOCAL STREET - URBAN ACCESS - TYPE 06



PLAN



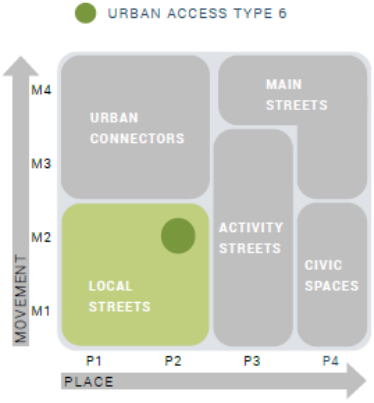
TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides local or neighbourhood access for private vehicles • Two through traffic lanes, 3.75m width (measured to invert of kerb) • Private vehicles share the through lanes with cyclists
Cycle	• Provides local or neighbourhood access for cycling • Cyclists share the through lane(s) with private vehicles, or 1.5m pathways may be widened to 2.5m, if cycling priority identified
Pedestrian	• Provides local or neighbourhood access for pedestrians • 1.5m minimum pathway is provided on both verges. 2.5m shared pathways are possible solutions, if walking priority identified
Bus	• Local neighbourhood bus routes may be serviced • Bus stopping bays are to be incorporated within the on-street corridor, subject to detailed design
Cycling and Micromobility Parking	• The street typology may service cycling and micromobility parking or charging

This street typology is not intended to service:

On Street Parking | Goods + Services | Freight



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

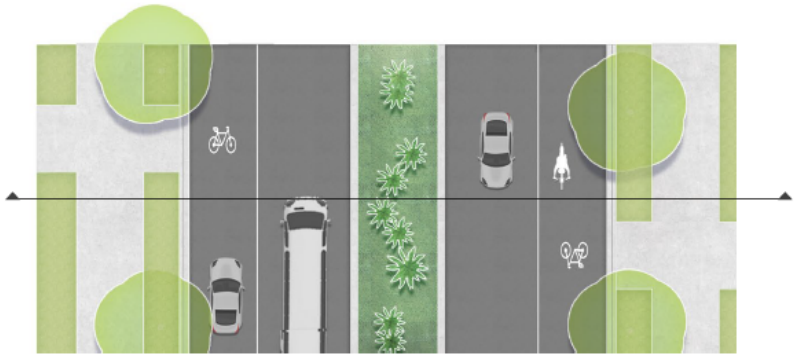
STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

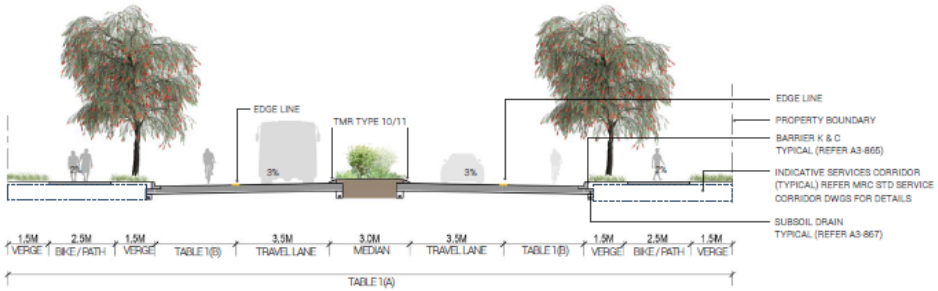
SURFACING
ASPHALT AC10M - MINIMUM THICKNESS 35 mm UP TO $3x10^5$ ESAs. ASPHALT AC14M - MINIMUM THICKNESS 50 mm FOR ESAs GREATER THAN $3x10^5$ UNDERLAID WITH 7mm PRIMERSEAL.

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT

LOCAL STREET - URBAN ACCESS - TYPE 07 (MEDIAN - DIVIDED)



PLAN



TYPICAL CROSS SECTION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

SURFACING
ASPHALT AC10M - MINIMUM THICKNESS 35mm UP TO $3x10^5$ ESAs. ASPHALT AC14M - MINIMUM THICKNESS 50 mm FOR ESAs GREATER THAN $3x10^5$
UNDERLAID WITH 7mm PRIMERSEAL, PMB BINDER

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT

CYCLING
CYCLE LANES TO BE DESIGNED IN ACCORDANCE WITH AGRD PART 3&6A,
BICYCLE PAVEMENT SYMBOLS SHALL BE IN ACCORDANCE WITH AS 1742.9 - MUTCD

TABLE 1	
(A)	26 m ROAD RESERVE (MIN.) WHERE NO DIRECT LOT ACCESS. 27 m ROAD RESERVE (MIN.) WHERE DIRECT CONSOLIDATED LOT ACCESS APPROVED.

NOTE: SHOULDER WIDTH MAY BE REDUCED TO MIN. 1.5M SHOULD ON-STREET PARKING DEMAND BE LOW, OR WHERE ON-STREET PARKING PROVISION IS NOT DESIRED OR REQUIRED. ANY CHANGE IN SHOULDER WIDTH TO ALSO CONSIDER ANTICIPATED CYCLING DEMAND.

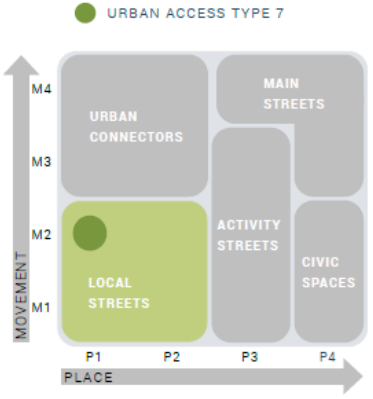
MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides neighbourhood access for private vehicles • Two through traffic lanes, 2.5m width
Cycle	• Provides neighbourhood access for cycling • Cyclists have access to a 2.5m min. wide shoulder shared with parked vehicles • 2.5m wide shared pathway on verges available • Dedicated on-road cycle lane(s) are acceptable outcomes if increased cycling priority is identified
Pedestrian	• Provides neighbourhood access for pedestrians • 2.5m wide shared pathways provided on each verge
On Street Parking	• Local or neighbourhood on-street parking access is allowed for, each side of through lane • Shoulder width may be reduced to min. 1.5m should on-street parking demand be low, or where on-street parking provision is not desired. Any change in shoulder width to also consider anticipated cycling demand
Bus	• Local neighbourhood bus routes can be serviced • Bus stopping bays are to be incorporated within the road shoulder, subject to detailed design
Cycling and Micromobility Parking	• The street typology may service cycling and micromobility parking or charging

This street typology is not intended to service:

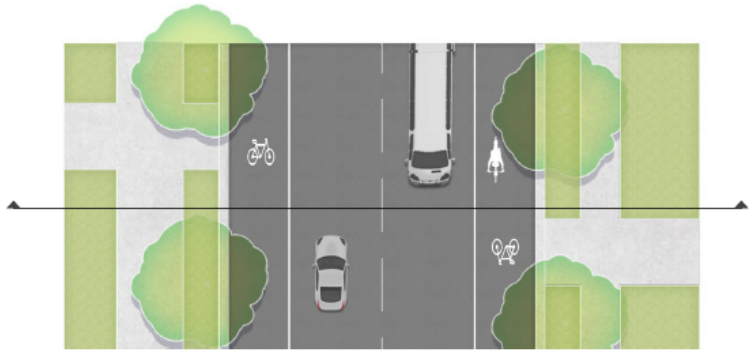
Goods + Services

Freight

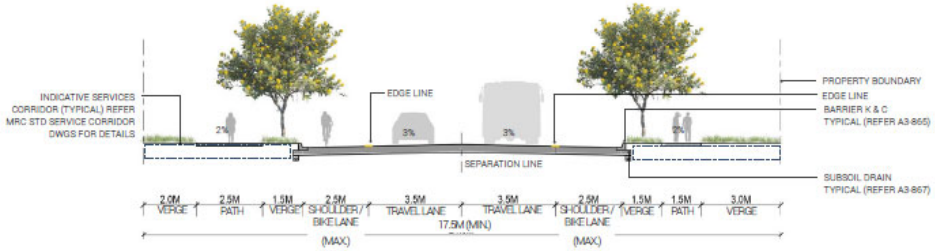


MOVEMENT & PLACE CLASSIFICATION

LOCAL STREET - URBAN ACCESS - TYPE 08 (UNDIVIDED)



PLAN



TYPICAL CROSS SECTION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

SURFACING
ASPHALT AC10M - MINIMUM THICKNESS 35mm UP TO $3x10^5$ ESAs. ASPHALT AC14M - MINIMUM THICKNESS 50 mm FOR ESAs GREATER THAN $3x10^5$
UNDERLAID WITH 7mm PRIMERSEAL, PMB BINDER

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT

CYCLING
ANY CYCLE LANE TO BE DESIGNED IN ACCORDANCE WITH AGRD PART 3&6A.
BICYCLE PAVEMENT SYMBOLS SHALL BE IN ACCORDANCE WITH AS 1742.9 - MUTCD

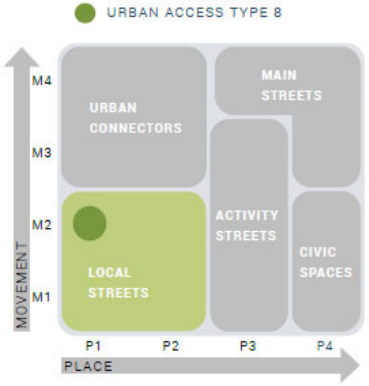
MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides neighbourhood access for private vehicles • Two through traffic lanes, 3.5m width
Cycle	• Provides neighbourhood access for cycling • Cyclists have access to a 2.5m wide shoulder shared with parked vehicles • A single 2.5m wide shared pathway is provided on the verge • Dedicated on-road cycle lane(s) are acceptable outcomes if increased modal priority is identified
Pedestrian	• Provides neighbourhood access for pedestrians • A single 2.5m minimum and a single 1.5m minimum pathway is provided on both verges. Widening of the 1.5m pathway is a possible solution if pedestrian modal priority is identified
On Street Parking	• Local or neighbourhood on-street parking access is allowed for, each side of through lane • 2.5m wide parking lane provided. Shoulder width may be reduced to min. 1.5m should on-street parking demand be low, or where on-street parking provision is not desired. Any change in shoulder width to also consider anticipated cycling demand
Bus	• Local neighbourhood bus routes can be serviced • Bus stopping bays are to be incorporated within the road shoulder, subject to detailed design
Cycling and Micromobility Parking	• The street typology may service cycling and micromobility parking or charging

This street typology is not intended to service:

Goods + Services

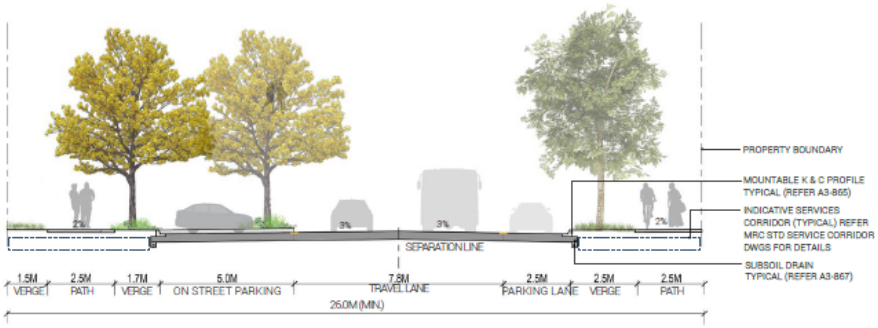
Freight



MOVEMENT & PLACE CLASSIFICATION

ACTIVITY STREET - URBAN ACTIVITY (PARKING PRIORITY)

PLAN



TYPICAL CROSS SECTION

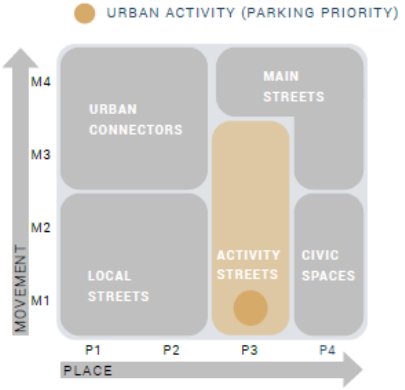
MODAL ATTRIBUTES

PRIORITY ORDER	
P	**On Street Parking** • Local or neighbourhood on-street parking access is allowed for each side of through lanes • Reverse angled parking (indented) provided on active frontages adjacent Community facilities, Open Space, or Sport and Recreation zones, or similar zoning (parallel parking alternative available) • 2.5m wide parallel parking provided on opposite side of on-street corridor
	Private Vehicles • Provides local access for private vehicles • Two through traffic lanes, 3.75m and 4.05m width (measured to the invert of kerb & edge of parking lane)
	Pedestrian • 2.5m pathway provided on both verges • Pathway connectivity provided from the parking lanes to the verge pathway • Pram ramps provided for crossroad pedestrian access • Threshold treatment and widened invert crossing provided for crossroad cyclist access
	Cycle • 2.5m shared pathways provided on both verges for cyclists • Pram ramps provided for crossroad cyclist access
	Cycling and Micromobility Parking • The street typology may service cycling and micromobility parking or charging
	Bus • Local neighbourhood bus routes can be serviced • Bus stopping bays are to be incorporated within the road shoulder, subject to detailed design

This street typology is not intended to service:

Goods + Services

Freight



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

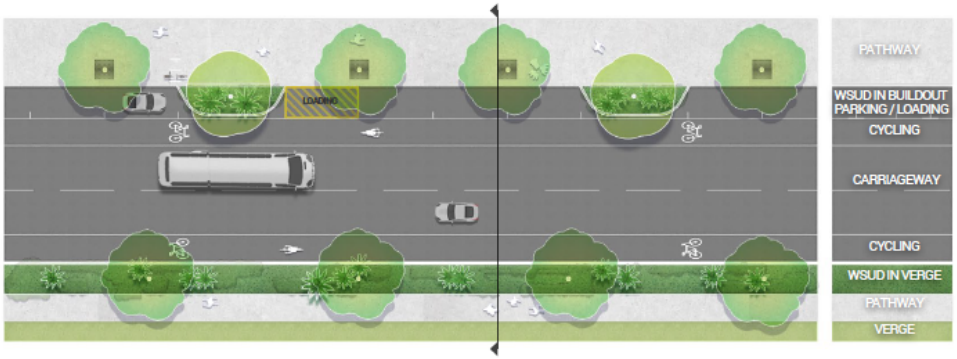
STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

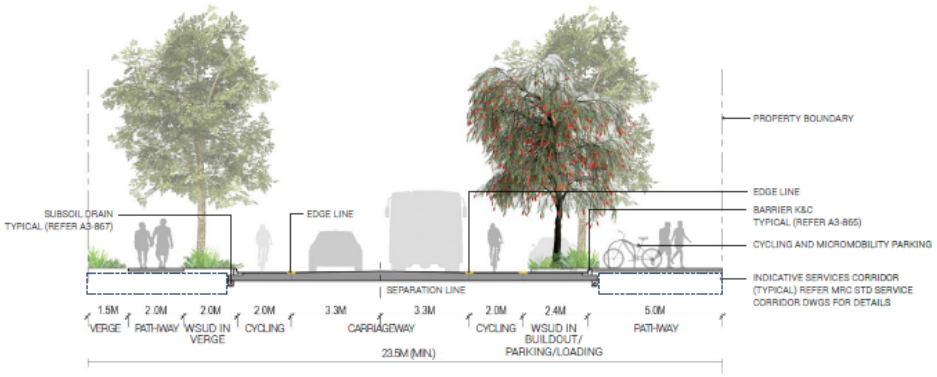
SURFACING
ASPHALT AC10M - MINIMUM THICKNESS 35mm.UNDERLAID WITH 7mm PRIMERSEAL

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT

ACTIVITY STREET - URBAN FRINGE STREET



PLAN



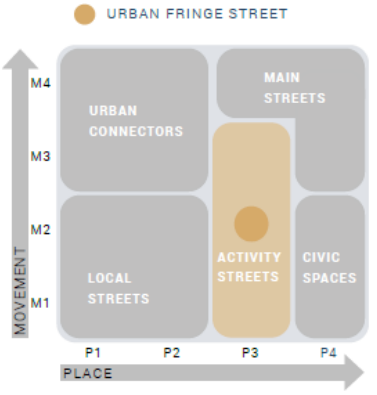
TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides predominately local or neighbourhood access for vehicles • Two through traffic lanes, 3.3m minimum width
Pedestrian	• Provides predominately local or neighbourhood access for pedestrians, attracts activity from across the locality • 5m minimum pathway on active frontage of Principal Centre, District Centre or Community facilities zone (or similar zoning) • 2m minimum pathway on other zone frontage of corridor
Cycle	• Provides predominately local or neighbourhood access for cycling • 2m wide cycle lane, each side of the through lane • A single 2.0m wide shared pathway provided on verge
On Street Parking	• Parallel parking provided on active frontages within the Principal Centre, District Centre or Community facilities zones, or similar zoning (angled parking is an alternative possible outcome)
Goods + Services	• Local goods and services requirements are to be considered (e.g. loading zones within parking lanes)
Cycling and Micromobility Parking	• The street typology may service cycling and micromobility parking or charging
Bus	• Attracts acrivity from across the locality - Primary bus route • Possible indented bus parking bay

This street typology is not intended to service:

Freight



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

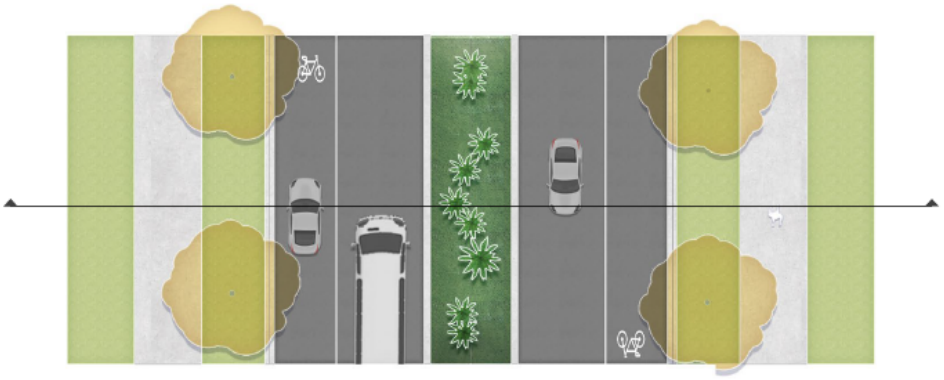
SURFACING
ASPHALT AC10M - MINIMUM THICKNESS 35mm UP TO $3x10^5$ ESAs. ASPHALT AC14M - MINIMUM THICKNESS 50 mm FOR ESAs GREATER THAN $3x10^5$
UNDERLAID WITH 7mm PRIMERSEAL, PMB BINDER

LOADING & PARKING
LOADING ZONES SHALL BE DESIGNED IN ACCORDANCE WITH AS2890.5

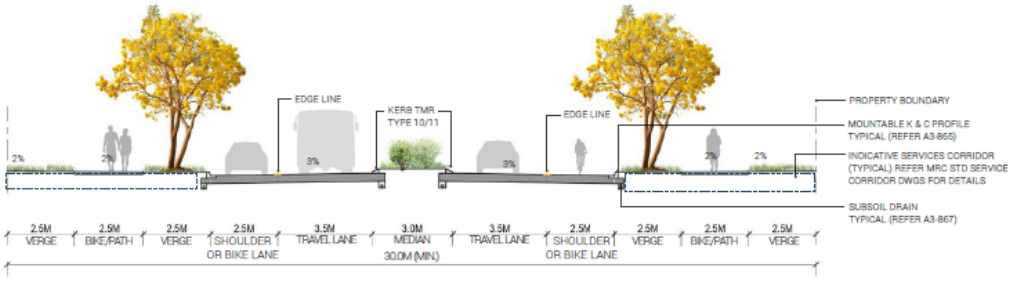
CYCLING
ANY CYCLE LANE TO BE DESIGNED IN ACCORDANCE WITH AGRD PART 3&6A, BICYCLE PAVEMENT SYMBOLS SHALL BE IN ACCORDANCE WITH AS 1742.9 - MUTCD

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT

URBAN CONNECTOR DISTRIBUTOR - TYPE 1 (TWO LANES DIVIDED)



PLAN



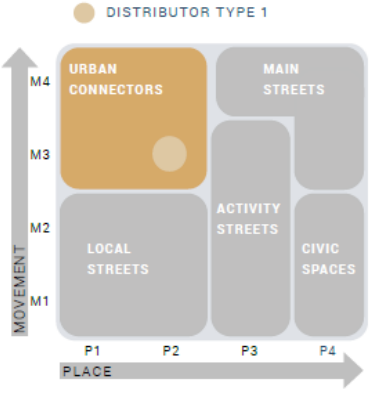
TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides for medium-high strategic significant volume of private vehicles • Two through traffic lanes, 3.5m width
Cycle	• Provides medium-high strategic significant access for cycling • Cyclists have access to 1.5m on-street cycling lanes each side of through lanes • Cycling access to 2.5m shared pathways on verge
Pedestrian	• Provides medium-high strategic access for pedestrians • 2.5m minimum shared pathways provided on each verge
On Street Parking	• Provides medium-high strategic significant activity access with on-street parking access, each side of through lane
Goods + Services	• Local goods and services requirements may be considered (e.g. loading zones within parking lanes)
Bus	• Strategic bus routes can be serviced • Bus stopping bays are to be clear of through lanes, subject to detailed design
Cycling and Micromobility Parking	• The street typology may service cycling and micromobility parking or charging

This street typology is not intended to service:

Freight



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

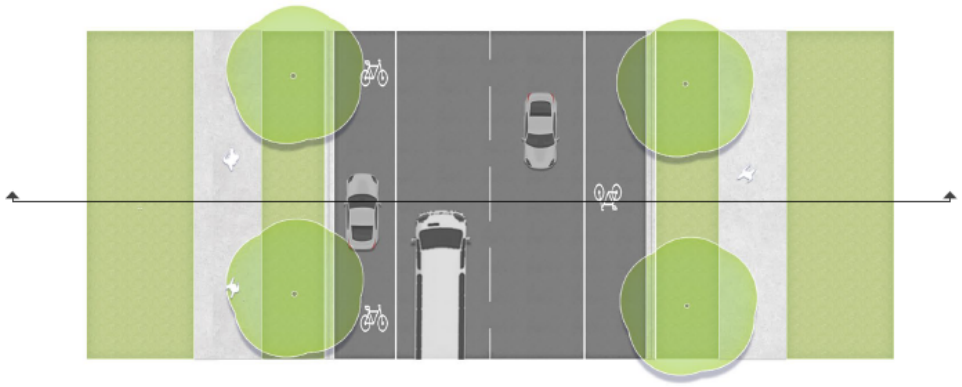
VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

SURFACING
ASPHALT AC14M - MINIMUM THICKNESS 50 mm. UNDERLAID WITH 7mm PRIMERSEAL. PMB BINDER

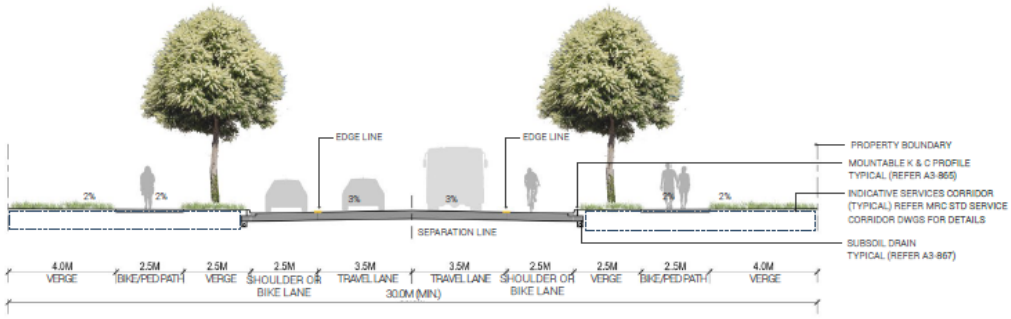
CYCLING
CYCLE LANES TO BE DESIGNED IN ACCORDANCE WITH AGRD PART 3&6A, BICYCLE PAVEMENT SYMBOLS SHALL BE IN ACCORDANCE WITH AS 1742.9 - MUTCD

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT.

URBAN CONNECTOR DISTRIBUTOR - TYPE 2 (TWO LANES UNDIVIDED)



PLAN



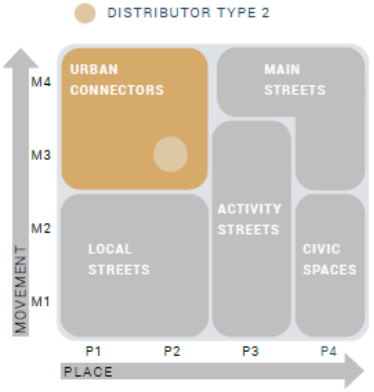
TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides for medium-high strategic significant volume of private vehicles • Two through traffic lanes, 3.5m width
Cycle	• Provides medium-high strategic significant access for cycling • Cyclists have access to 2.5m on-street cycling lanes each side of through lanes • Cycling access to 2.5m shared pathways on verge
Pedestrian	• Provides medium-high strategic access for pedestrians • 2.5m minimum shared pathways provided on each verge
On Street Parking	• Provides medium-high strategic significant activity access with on-street parking access, each side of through lane
Goods + Services	• Local goods and services requirements may be considered (e.g. loading zones within parking lanes)
Bus	• Strategic bus routes can be serviced • Bus stopping bays are to be clear of through lanes, subject to detailed design
Cycling and Micromobility Parking	• The street typology may service cycling and micromobility parking or charging

This street typology is not intended to service:

Freight



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

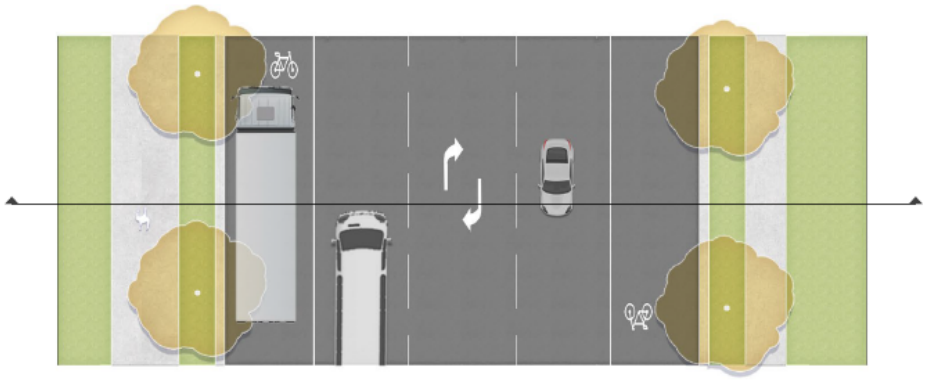
VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

SURFACING
ASPHALT AC14M - MINIMUM THICKNESS 50 mm. UNDERLAID WITH 7mm PRIMERSEAL. PMB BINDER

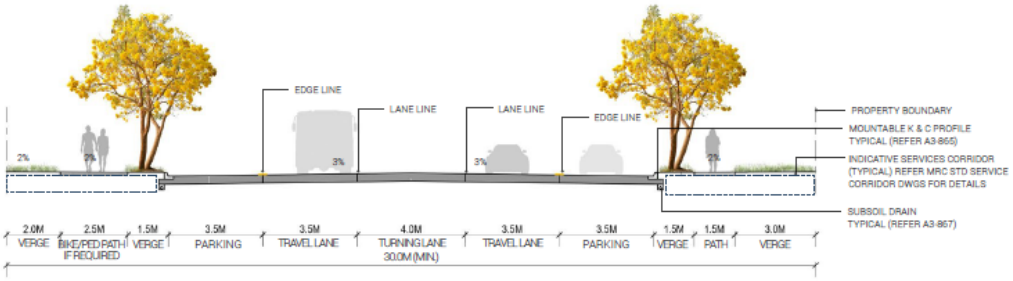
CYCLING
CYCLE LANES TO BE DESIGNED IN ACCORDANCE WITH AGRD PART 3&6A. BICYCLE PAVEMENT SYMBOLS SHALL BE IN ACCORDANCE WITH AS 1742.9 - MUTCD

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT. VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT.

URBAN CONNECTOR DISTRIBUTOR - TYPE 3 (INDUSTRIAL AREA ACCESS)



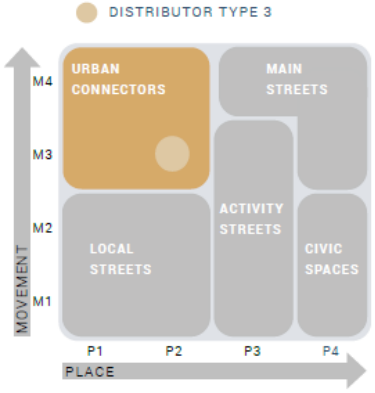
PLAN



TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Freight	• Provides medium-high strategic access for through freight. • Provides central turning lane for heavy vehicle access.
On Street Parking	• Provides medium-high strategic significant activity access with on-street parking access, each side of through lane
Goods + Services	• Local goods and services requirements may be considered (e.g. loading zones within parking lanes
Private Vehicles	• Provides for medium-high strategic significant volume of private vehicles • Two through traffic lanes, 3.5m width
Bus	• Strategic bus routes can be serviced • Bus stopping bays are to be clear of through lanes, subject to detailed design
Cycle	• Provides medium-high strategic significant access for cycling • Cyclists have access to parking lane with provision for bicycles • Cycling access to 2.5m shared pathways on verge
Pedestrian	• Provides medium strategic access for pedestrians • 2.5m minimum shared pathways provided on verge
Cycling and Micromobility Parking	• The street typology may service cycling and micromobility parking or charging



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

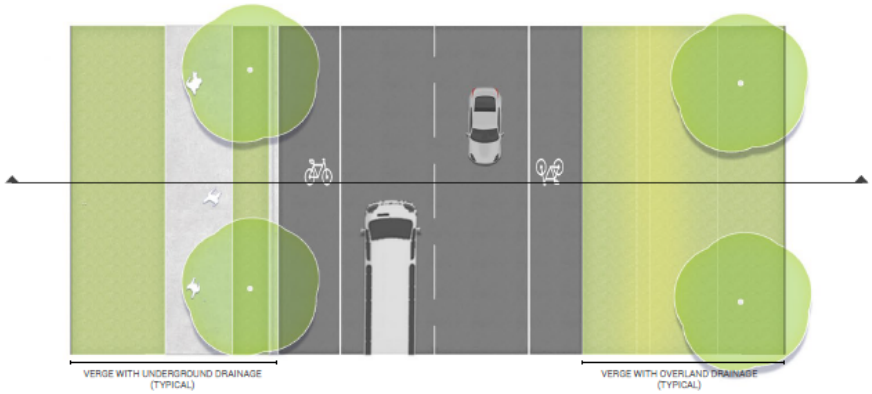
VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

SURFACING
ASPHALT AC14M - MINIMUM THICKNESS 50 mm. UNDERLAID WITH 7mm PRIMERSEAL. PMB BINDER

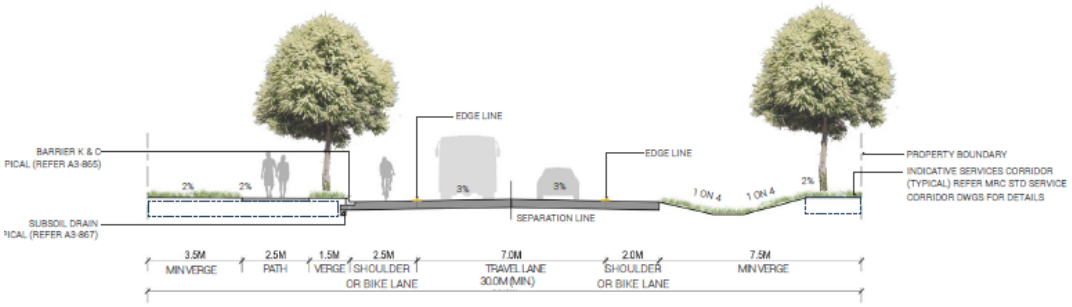
CYCLING
CYCLE LANES TO BE DESIGNED IN ACCORDANCE WITH AGRD PART 3&6A, BICYCLE PAVEMENT SYMBOLS SHALL BE IN ACCORDANCE WITH AS 1742.9 - MUTCD

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT.

URBAN CONNECTOR DISTRIBUTOR - TYPE 4 TWO LANES (UNDIVIDED)



PLAN



TYPICAL CROSS SECTION

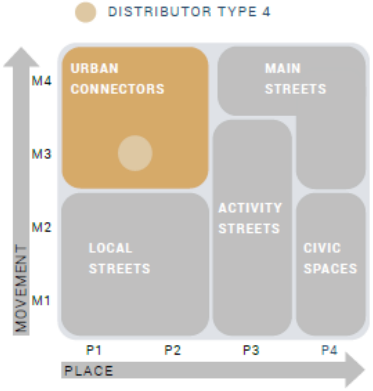
MODAL ATTRIBUTES

PRIORITY ORDER	
	Private Vehicles • Provides for medium-high strategic significant volume of private vehicles • Two through traffic lanes, 3.5m width • Through lane shoulders, 2.5m width (discretionary vehicle stopping)
	Cycle • Provides medium-high strategic access for cycling • Cyclists have access to a 2.5m wide shoulder with provision for bicycles • 2.5m shared pathway on each verge
	Pedestrian • Provides medium-high strategic access for pedestrians • 2.5m minimum shared pathways provided on each verge
	Bus • Strategic bus routes can be serviced • Bus stopping bays are to be clear of through lanes, subject to detailed design
	Goods + Services • Provides for medium-high strategic movement of goods and services, subject to detailed design (e.g. loading zones or parking bays clear of through lanes)
	Cycling and Micromobility Parking • The street typology may service cycling and micromobility parking or charging

This street typology is not intended to service:

Freight

On Street Parking



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

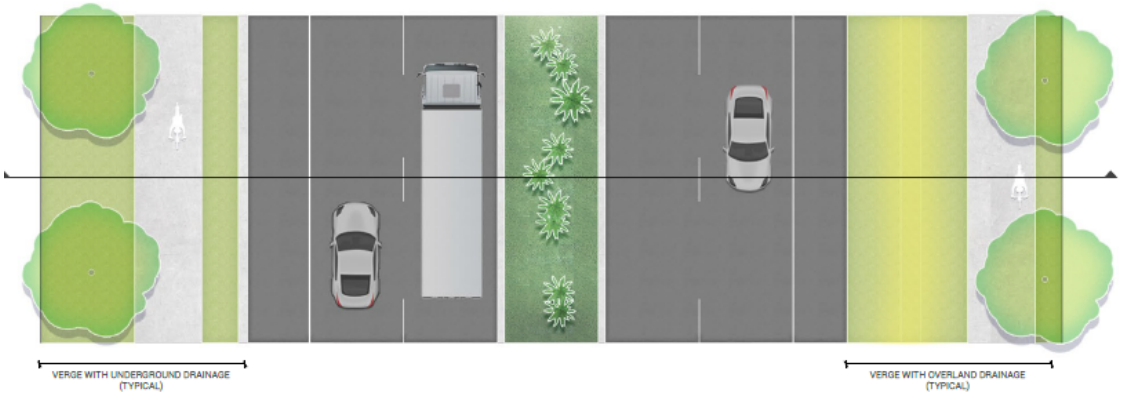
VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

SURFACING
ASPHALT AC14M - MINIMUM THICKNESS 50 mm. UNDERLAID WITH 7mm PRIMERSEAL. PMB BINDER

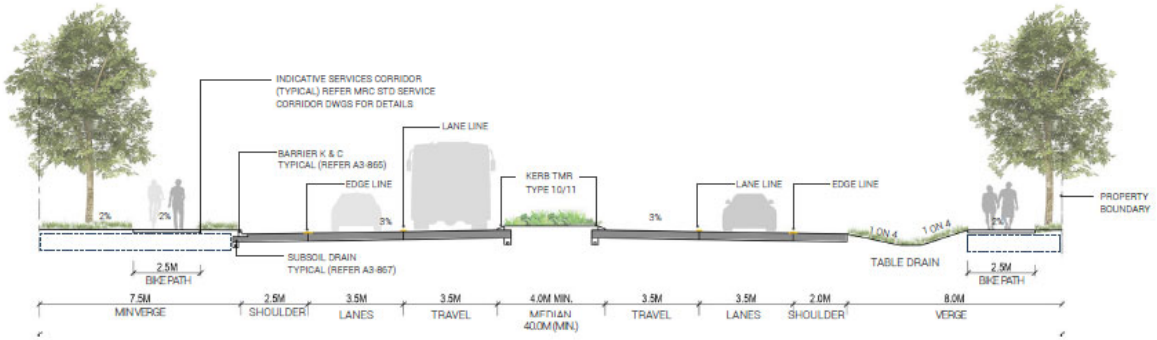
CYCLING
CYCLE LANES TO BE DESIGNED IN ACCORANCE WITH AGRD PART 3&6A, BICYCLE PAVEMENT SYMBOLS SHALL BE IN ACCORDANCE WITH AS 1742.9 - MUTCD

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT KERB AND CHANNEL INVERT.

URBAN CONNECTOR ARTERIAL - TYPE 1 FOUR LANES (DIVIDED)



PLAN



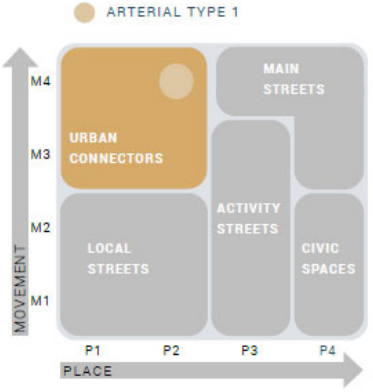
TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides for medium-high strategic significant volume of private vehicles • Two through traffic lanes, 3.5m width • Through lane shoulders, 2.5m width (discretionary vehicle stopping)
Freight	• Provides medium-high strategic access for through freight
Bus	• Strategic bus routes can be serviced • Bus stopping bays are to be clear of through lanes, subject to detailed design
Cycle	• Provides medium-high strategic access for cycling • 2.5m minimum shared pathways provided on verge
Pedestrian	• Provides medium-high strategic access for pedestrians • 2.5m minimum shared pathways provided on verge
Goods + Services	• Provides for medium-high strategic movement of goods and services, subject to detailed design (e.g. loading zones or parking bays clear of through lanes)
Cycling and Micromobility Parking	• The street typology may service cycling and micromobility parking or charging

This street typology is not intended to service:

On Street Parking



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

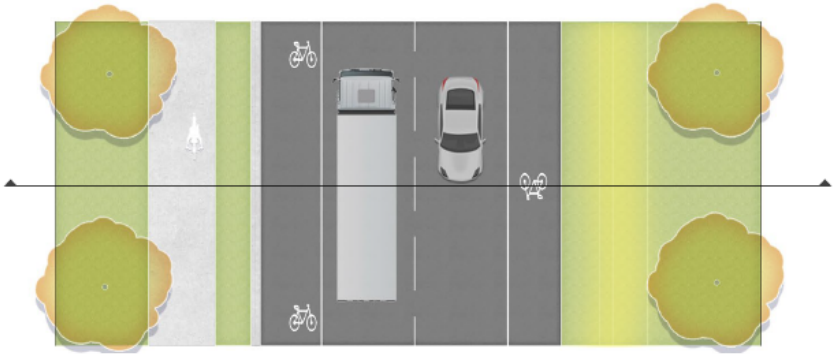
VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

SURFACING
ASPHALT AC14M - MINIMUM THICKNESS 50 mm. UNDERLAID WITH 7mm PRIMERSEAL PMB BINDER

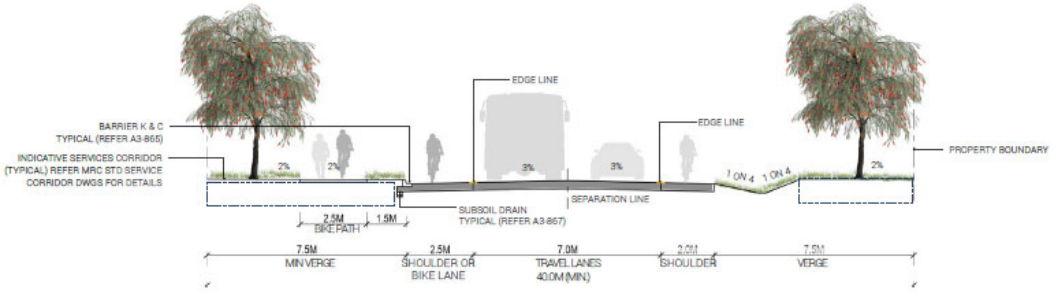
CYCLING
CYCLE LANES TO BE DESIGNED IN ACCORDANCE WITH AGRD PART 3&6A, BICYCLE PAVEMENT SYMBOLS SHALL BE IN ACCORDANCE WITH AS 1742.9 - MUTCD

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT ROAD EDGE DRAINAGE TREATMENT.

URBAN CONNECTOR ARTERIAL - TYPE 2 TWO LANES (UNDIVIDED)



PLAN



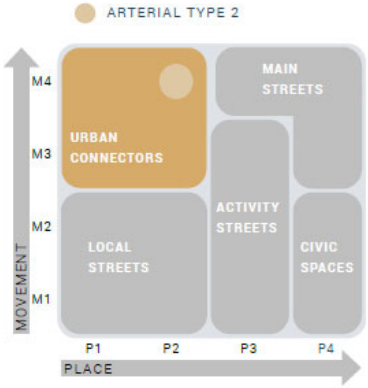
TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
	Private Vehicles • Provides for medium-high strategic significant volume of private vehicles • Two through traffic lanes, 3.5m width • Through lane shoulders, 2.5m width (discretionary vehicle stopping)
	Freight • Provides medium-high strategic access for through freight
	Goods + Services • Provides for medium-high strategic movement of goods and services
	Bus • Strategic bus routes can be serviced • Bus stopping bays are to be clear of through lanes, subject to detailed design
	Cycle • Provides medium-high strategic access for cycling • 2.5m minimum shared pathways provided on verge
	Pedestrian • Provides medium-high strategic access for pedestrians • 2.5m minimum shared pathways provided on verge
	Cycling and Micromobility Parking • The street typology may service cycling and micromobility parking or charging

This street typology is not intended to service:

P On Street Parking



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

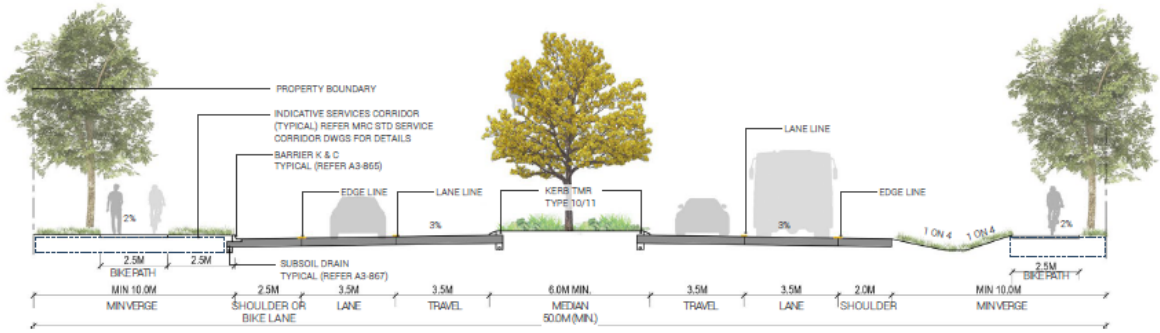
SURFACING
ASPHALT AC14M - MINIMUM THICKNESS 50 mm. UNDERLAID WITH 7mm PRIMERSEAL PMB BINDER

CYCLING
CYCLE LANES TO BE DESIGNED IN ACCORNANCE WITH AGRD PART 3&6A. BICYCLE PAVEMENT SYMBOLS SHALL BE IN ACCORDANCE WITH AS 1742.9 - MUTCD

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT ROAD EDGE DRAINAGE TREATMENT.

URBAN CONNECTOR HIGHWAY (MULTILANE DIVIDED)

PLAN



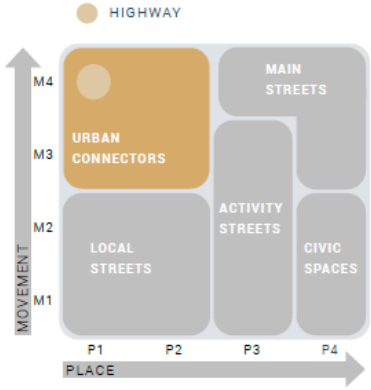
TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Freight	• Provides high strategic access for through freight
Private Vehicles	• Provides for high strategic significant volume of private vehicles • Two through traffic lanes, 3.5m width • Through lane shoulders, 2.5m width (discretionary vehicle stopping)
Bus	• Strategic bus routes can be serviced • Bus stopping bays are to be clear of through lanes, subject to detailed design
Cycle	• Provides high strategic access for cycling • 2.5m minimum shared pathways provided on verge
Pedestrian	• Provides high strategic access for pedestrians • 2.5m minimum shared pathways provided on verge
Goods + Services	• Provides for high strategic movement of goods and services
Cycling and Micromobility Parking	• The street typology may service cycling and micromobility parking or charging

This street typology is not intended to service:

P On Street Parking



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

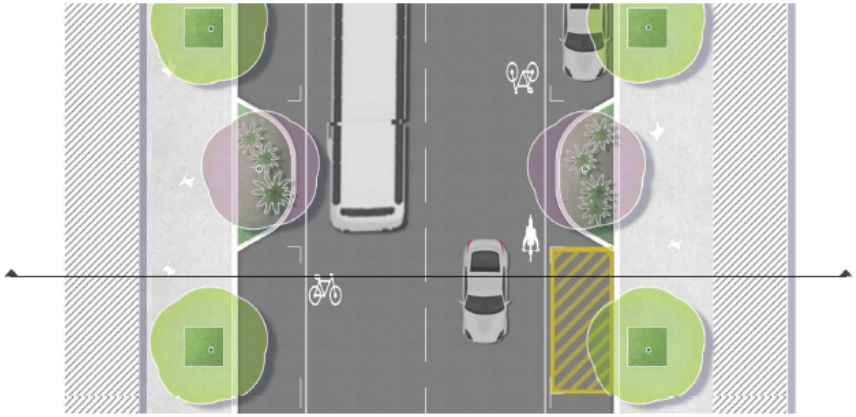
SURFACING
ASPHALT AC14M - MINIMUM THICKNESS 50 mm. UNDERLAID WITH 7mm PRIMERSEAL. PMB BINDER

DRAINAGE
KERB AND CHANNEL OR OPEN TABLE DRAINS ARE ACCEPTED ROAD FORMATION DRAINAGE TREATMENTS

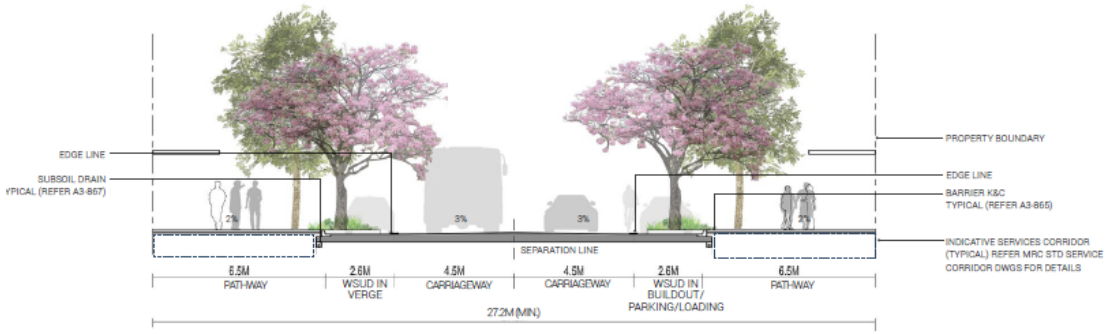
CYCLING
CYCLE LANES TO BE DESIGNED IN ACCORDANCE WITH AGRD PART 3&6A,
BICYCLE PAVEMENT SYMBOLS SHALL BE IN ACCORDANCE WITH AS 1742.9 - MUTCD

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT ROAD EDGE DRAINAGE TREATMENT.

MAIN STREET URBAN HIGH - ORDER MAIN STREET



PLAN



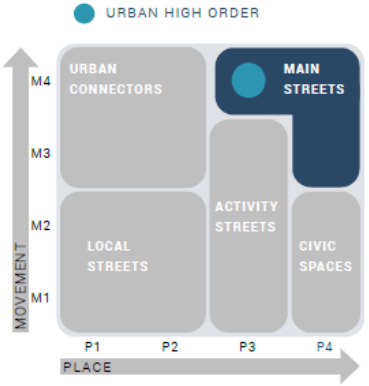
TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
	Private Vehicles • Provides for medium-high strategic significant volume of private vehicles and activity • Two through traffic lanes, 4.5m width, with provision to share through lanes shared with cyclists
	Pedestrian • Provides high strategic access for pedestrians • 6.5m minimum fully constructed verge access
P	**On Street Parking** • The street typology services medium-high strategic volume of vehicles and activity • Parellel parking each side of through lanes provided, formalised by street tree build outs
	Cycle • The street typology services medium-high strategic volume of cyclists and activity • Cyclists have access to 4.5m wide through lanes, shared with vehicles
	Bus • Strategic bus routes can be serviced • Bus stopping bays are to be clear of through lanes
	Goods + Services • Provides for high strategic movement of goods and services
	Cycling and Micromobility Parking • The street typology may service cycling and micromobility parking or charging

This street typology is not intended to service:

Freight



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

VERGE TREES
PLANTED IN ACCORDANCE WITH PLANNING SCHEME POLICY - LANDSCAPING. ONE (1) TREE PER RESIDENTIAL LOT, OR SPACED AT APPROX. 15m INTERVALS, WHICHER ACHIEVES THE GREATER RATE OF PLANTING. MACKAY CITY CENTRE LOCAL PLAN MINIMUM RATE IS ONE (1) TREE PER 10m

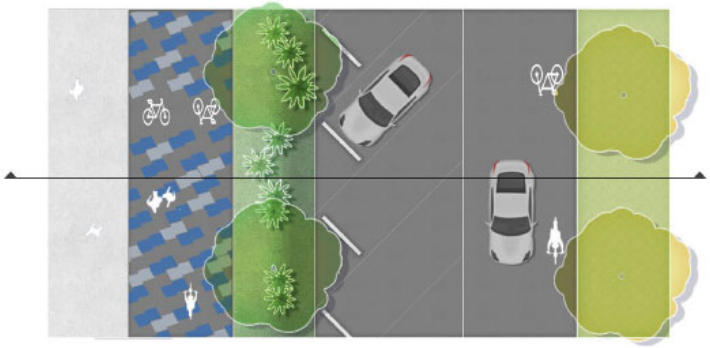
SURFACING
ASPHALT AC14M - MINIMUM THICKNESS 50 mm. UNDERLAID WITH 7mm PRIMERSEAL. PMB BINDER

CYCLING
CYCLE LANES TO BE DESIGNED IN ACCORDANCE WITH AGRD PART 3&6A.
BICYCLE PAVEMENT SYMBOLS SHALL BE IN ACCORDANCE WITH AS 1742.9 - MUTCD

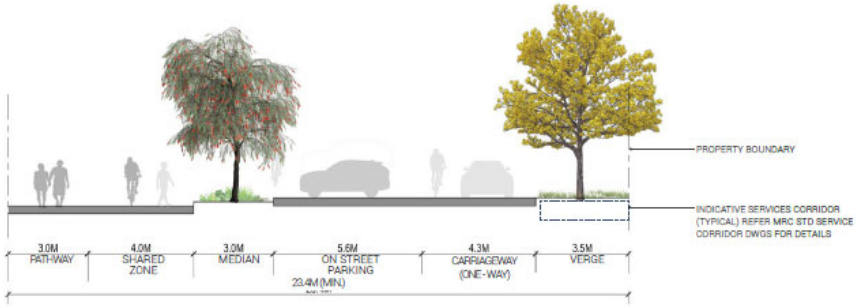
LOADING & PARKING
LOADING ZONES SHALL BE DESIGNED IN ACCORDANCE WITH AS2890.5

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT ROAD EDGE DRAINAGE TREATMENT.

URBAN CIVIC SPACE



PLAN



TYPICAL CROSS SECTION

NOTE: THIS URBAN SPACE CONCEPT TYPOLOGY ARRANGEMENT SHOWN IS AN EXAMPLE ONLY.

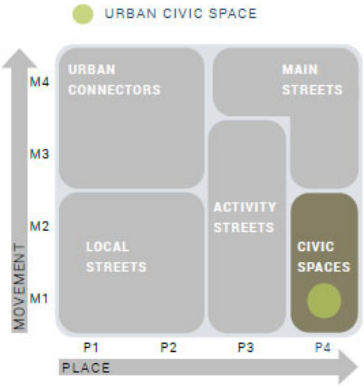
URBAN SPACES ARE TYPICALLY NON-STANDARD DESIGN ARRANGEMENTS, DESIGNED TO SUIT THE PROJECT REQUIREMENTS. CIVIC SPACES ARE HIGH ACTIVITY AND HIGH PLACE VALUE SETTINGS

MODAL ATTRIBUTES

PRIORITY ORDER	
Pedestrian	• Provides for high pedestrian activity • Dedicated pedestrian pathway (width varies) provided adjacent active frontage • 4.0m shared zone provided, shared with cyclists
Cycle	• The street typology services high cyclist activity • 4.0m shared zone provided, shared with pedestrians • 4.3m wide through lane with provision for cyclists, shared with vehicles
On Street Parking	• The street typology services low strategic volume of vehicles • 5.6m angled parking adjacent through lane and activated frontage
Cycling and Micromobility Parking	• The street typology may service cycling and micromobility parking or charging
Private Vehicles	• Provides for high activity but low strategic significant volume of private vehicles • Single through traffic lane (one way), 4.3m width
Goods + Services	• Provides for low strategic movement of goods and services • Parking/loading bays may be provided
Bus	• Strategic bus routes can be serviced • Bus stopping bays are to be clear of through lanes

This street typology is not intended to service:

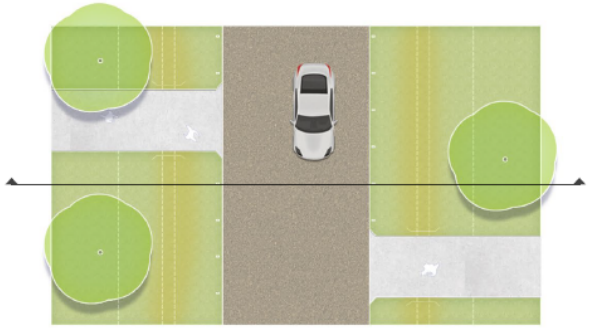
Freight



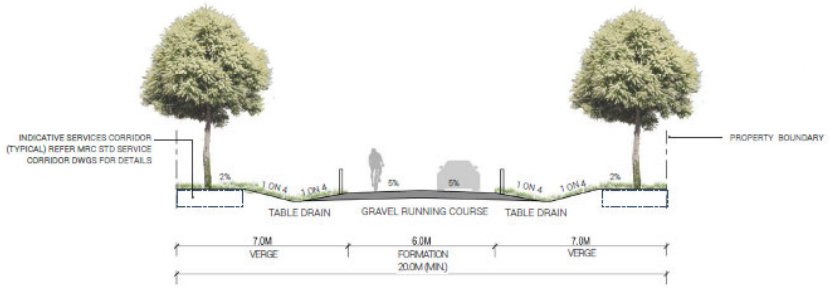
MOVEMENT & PLACE CLASSIFICATION

Rural Typologies

RURAL ACCESS TYPE 1



PLAN



TYPICAL CROSS SECTION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

STREET TREES
THE PROVISION OF STREET TREES IN RURAL SETTINGS IS SUBJECT TO A ROAD SAFETY RISK ASSESSMENT, AS PER AUSTROADS GTRD PART 6: ROADSIDE DESIGN, SAFETY AND BARRIERS

SURFACING
GRAVEL UNSEALED FORMATION - MG2 GRAVEL BASECOURSE

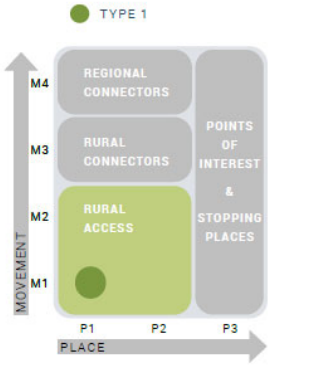
ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT TABLE DRAIN

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides predominately local access for private vehicles • Two through traffic lanes, 3.0m minimum width, with 1.0m minimum width sealed shoulders • Private vehicles share the through lanes with cyclists
Cycle	• Provides predominately local access for cycling • Cyclists share the through lane(s) with private vehicles

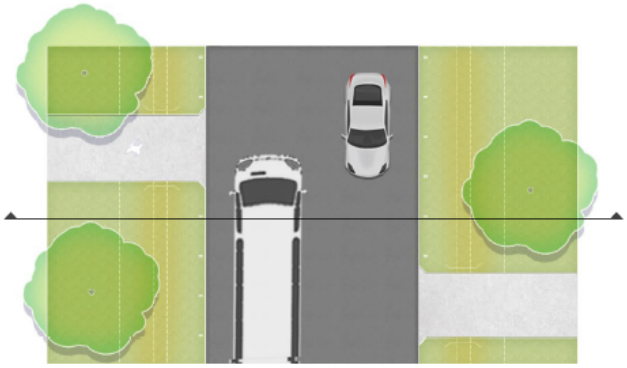
This street typology is not intended to service:

Pedestrian | On Street Parking | Goods + Services | Buses | Cycling + Micromobility Parking or Charging | Freight



MOVEMENT & PLACE CLASSIFICATION

RURAL ACCESS TYPE 2



PLAN

TYPICAL CROSS SECTION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

STREET TREES
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SURFACING
8.0m WIDTH, 16mm & 10mm TWO COAT BITUMEN SEAL

ANNOTATION
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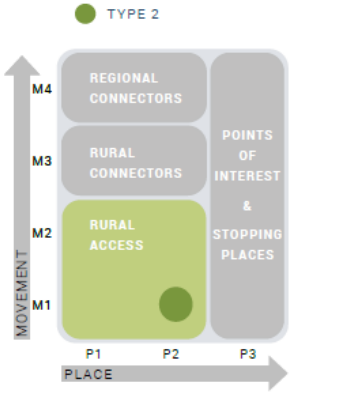
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT TABLE DRAIN

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides predominately local access or peri-urban access for private vehicles • Two through traffic lanes, 3.0m minimum width, with 1.0m minimum sealed shoulders • Private vehicles share the through lanes with cyclists
Bus	• Local or peri-urban access for bus routes is provided for • Bus stopping bays are to be incorporated within the on-street corridor

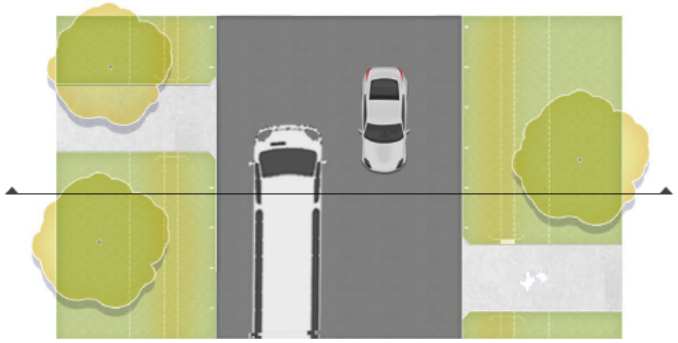
This street typology is not intended to service:

Pedestrian | On Street Parking | Goods + Services | Cycling + Micromobility Parking or Charging | Freight | Cycle

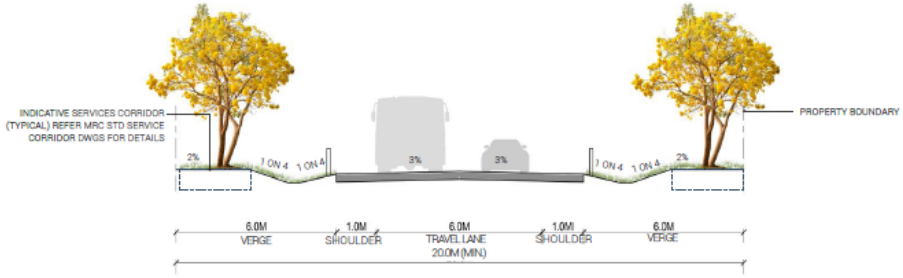


MOVEMENT & PLACE CLASSIFICATION

RURAL ACCESS TYPE 3



PLAN



TYPICAL CROSS SECTION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

STREET TREES
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SURFACING
8.0m WIDTH, 16mm & 10mm TWO COAT BITUMEN SEAL

ANNOTATION
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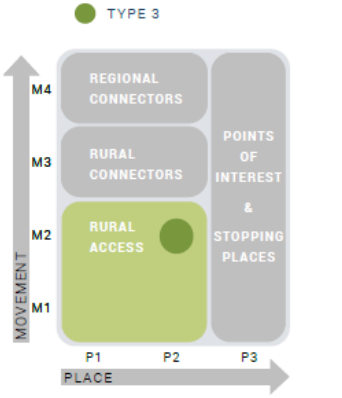
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT TABLE DRAIN

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides neighbourhood access for private vehicles • Two through traffic lanes 3.0m minimum width, with 1.0m minimum sealed shoulders
Bus	• Local access for bus routes is provided for • Indented bus stopping bays clear of through lanes
Goods + Services	• The street typology may cater for goods and services

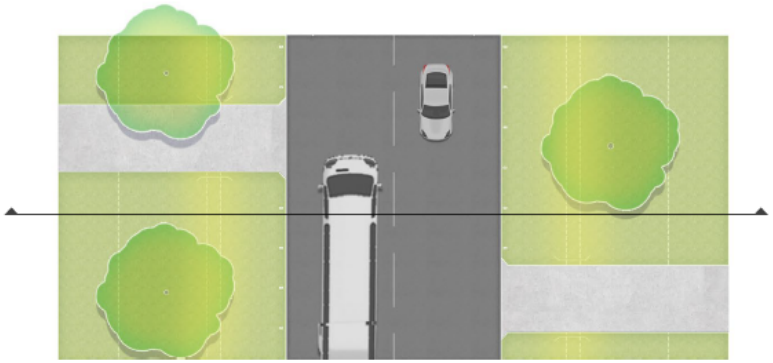
This street typology is not intended to service:

Pedestrian | On Street Parking | Cycle | Cycling + Micromobility Parking or Charging | Freight

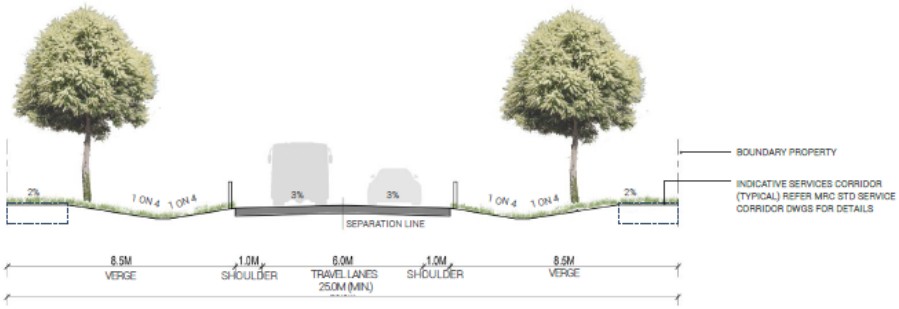


MOVEMENT & PLACE CLASSIFICATION

RURAL CONNECTOR DISTRIBUTOR (TWO-LANE UNDIVIDED)



PLAN



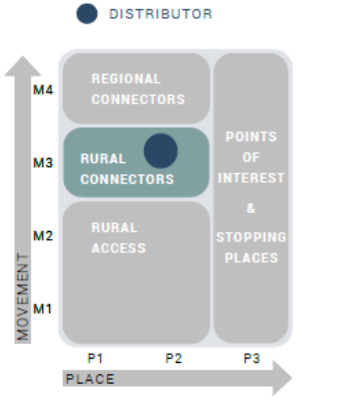
TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides local or Perl-Urban access for private vehicles • Two through traffic lanes 3.0m minimum width, with 1.0m minimum width sealed shoulders
Bus	• Local access for bus routes is provided for • Bus stopping bays to be clear of through lanes
Freight	• Peri-urban access for through freight provided
Goods + Services	• The street typology may cater for goods and services

This street typology is not intended to service:

Pedestrian | On Street Parking | Cycling + Micromobility Parking or Charging | Cycle



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

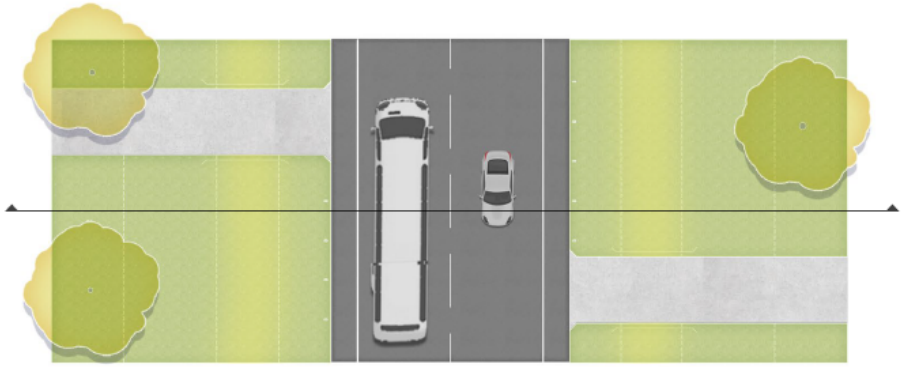
STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

STREET TREES
THE PROVISION OF STREET TREES IN RURAL SETTINGS IS SUBJECT TO A ROAD SAFETY RISK ASSESSMENT, AS PER AUSTROADS GTRD PART 6: ROADSIDE DESIGN, SAFETY AND BARRIERS

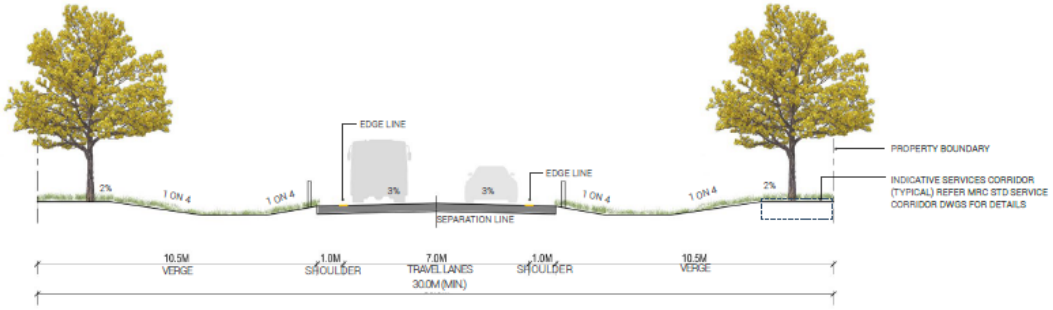
SURFACING
8.0m WIDTH, 16mm & 10mm TWO COAT PMB BITUMEN SEAL

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT TABLE DRAIN

REGIONAL CONNECTOR RURAL ARTERIAL (TWO-LANE UNDIVIDED)



PLAN



TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides high strategic volume access for private vehicles • Two through traffic lanes, 3.5m minimum width, with 1.0m minimum width sealed shoulders
Freight	• High-strategic access for through freight provided
Bus	• Regional access for bus routes is provided for • Bus stopping bays to be clear of through lanes
Goods + Services	• The street typology may cater for goods and services

This street typology is not intended to service:

Pedestrian | On Street Parking | Cycle | Cycling + Micromobility Parking or Charging

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

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SURFACING
9.0m WIDTH, 16mm & 10mm TWO COAT PMB BITUMEN SEAL

ANNOTATION
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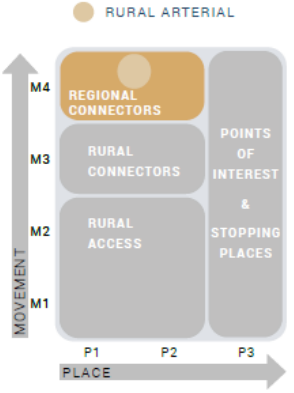
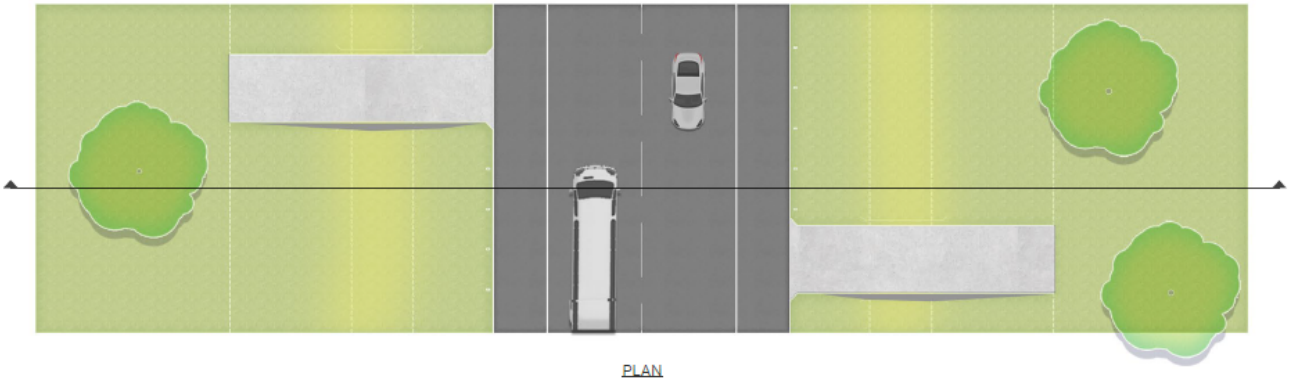
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT TABLE DRAIN

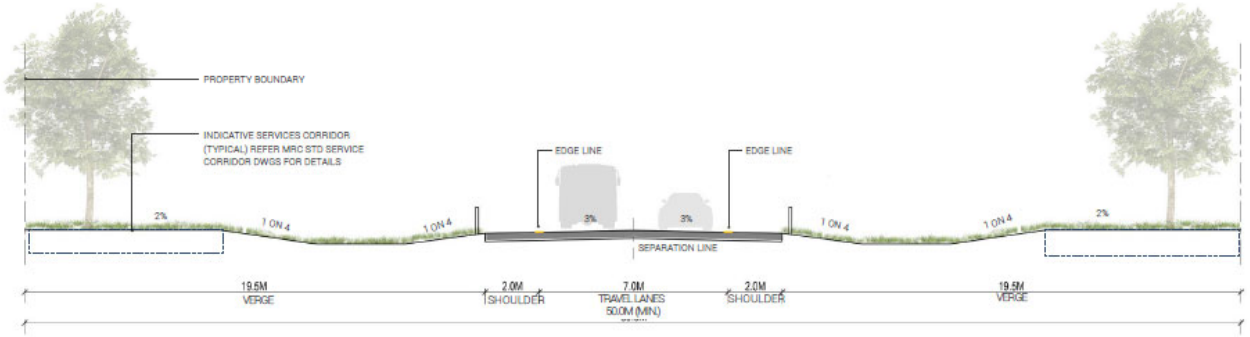


MOVEMENT & PLACE CLASSIFICATION

REGIONAL CONNECTOR RURAL HIGHWAY - TYPE 1 (TWO-LANE UNDIVIDED)



PLAN



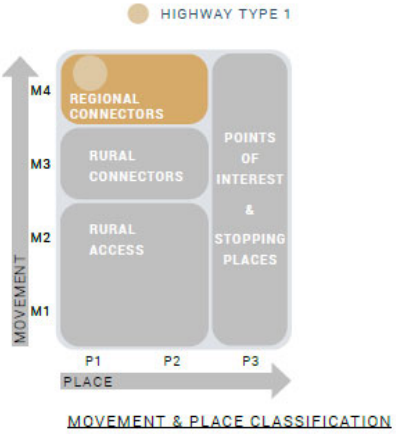
TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides high strategic volume access for private vehicles • Two through traffic lanes, 3.5m minimum width, with 1.0m minimum sealed shoulders
Freight	• High-strategic access for through freight provided
Bus	• Local access for bus routes is provided for • Bus stopping bays to be clear of through lanes
Goods + Services	• The street typology may cater for goods and services

This street typology is not intended to service:

Pedestrian | On Street Parking | Cycle | Cycling + Micromobility Parking or Charging



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

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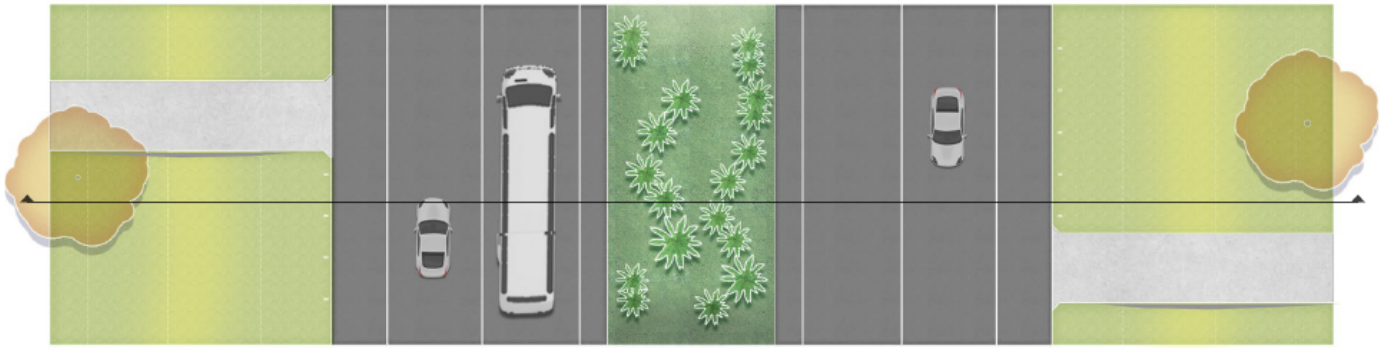
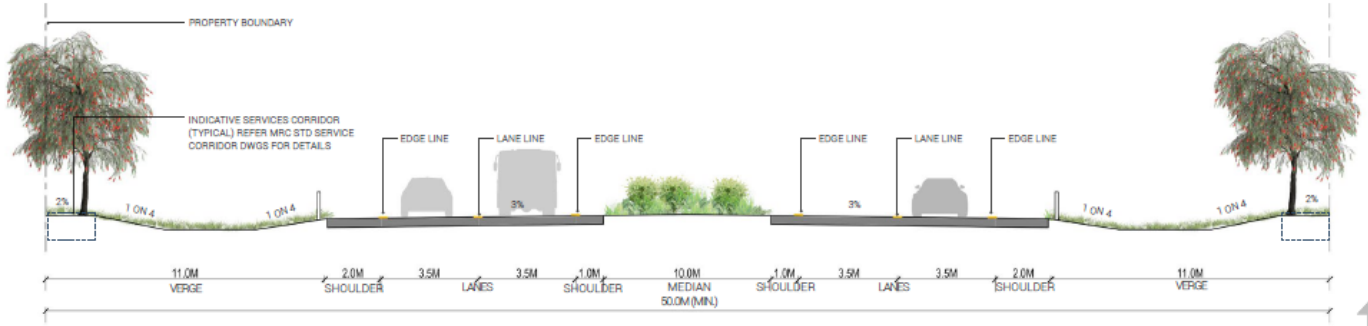
SURFACING
11.0m WIDTH, 16mm & 10mm TWO COAT PMB BITUMEN SEAL

ANNOTATION
CARRIAGEWAY AND VERGE DIMENSIONS ARE MEASURED TO CHANNEL INVERT.
VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT TABLE DRAIN

REGIONAL CONNECTOR RURAL HIGHWAY - TYPE 2 (FOUR-LANE DIVIDED)



PLAN



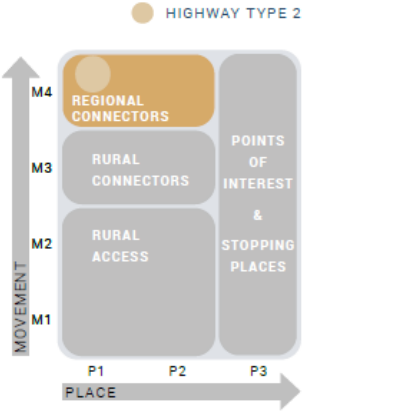
TYPICAL CROSS SECTION

MODAL ATTRIBUTES

PRIORITY ORDER	
Private Vehicles	• Provides high strategic volume access for private vehicles • Two through traffic lanes, 3.5m minimum width, with 2.0m minimum sealed shoulders
Freight	• High-strategic access for through freight provided
Bus	• Regional access for bus routes is provided for • Bus stopping bays to be clear of through lanes
Goods + Services	• The street typology may cater for goods and services

This street typology is not intended to service:

Pedestrian | On Street Parking | Cycle | Cycling + Micromobility Parking or Charging



MOVEMENT & PLACE CLASSIFICATION

TECHNICAL NOTES:

STREET ACCESS
INVERT TYPE VEHICLE CROSSING, REFER A3-773

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SURFACING
16mm & 10mm TWO COAT PMB BITUMEN SEAL

ANNOTATION
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VERGE CROSSFALL TO GRADE AND DIRECT SURFACE FLOWS AWAY FROM THE PROPERTY BOUNDARY.
CARRIAGEWAY CROSSFALL TO GRADE TOWARDS ADJACENT TABLE DRAIN

Appendix B – Movement and Place Framework Design Summary

Movement & Place Framework Design Summary - *Example Greenfield Subdivision*

Street	PX	Function	MX	Modal Priority	PX/MX Possible Typologies	Adopted Typology	Adopted Reserve Width
Street A	*P1*	*Access*	*M1*	*People walking, people cycling, private vehicles*	*Local Street | Urban Access Type 01, 02, 03*	*Adopt an **alternative urban access typology** proposed as a 5.0m wide verge with a 2.5m path on northern verge & 5.0m wide southern verge with a 1.5m wide path.*	*16.0m*
Street B	*P1*	*Access*	*M1*	*People walking, private vehicles*		*Adopt **Urban Access Type 04** typology*	*15.0m*
Street C	*P2*	*Access / Collector*	*M2*	*People walking, private vehicles, vehicle parking, people cycling, public transport*	*Local Street | Urban Access Type 06*	*Adopt **Urban Access Type 08** typology with shoulder space reallocated to allow for parallel on-street parking and adopt a 2.5m wide shared path on both verges.*	*24.0m*
Street D	*P3*	*Access / Collector*	*M2*	*People walking, private vehicles, vehicle parking, people cycling, public transport*	*Activity Street | Urban Activity Street*	*Adopt **Urban Fringe Street** typology with a 2.5m pathway in lieu of 2.5m wide pathway & remove provision for WSUD.*	*23.5m*
Street E	*P1*	*Access*	*M1*	*People walking, private vehicles, people cycling, public transport*	*Local Street | Urban Access Type 01*	*Adopt **Urban Access Type 06** typology with increased southern verge path from 1.5m to 2.5m wide.*	*17.5m*
Street F	*P1*	*Access*	*M1*	*People walking, private vehicles*		*Adopt **Urban Access Type 03** typology.*	*13.5m*