8800S Sewer Temporary Pumped Bypass

REVISED 06/06/2025

8800S.1 Introduction

This supplementary specification applies only to the planned works required to carry out installation of a temporary pumped bypass of a sewer main and associated infrastructure such as manholes or sewer pump stations and maintain the existing sewerage operations. It does not apply to unplanned or emergent works as a result of disaster or infrastructure failure.

The purpose of this specification is to outline MRC's minimum requirements for the design, installation, maintenance, and removal of any approved temporary sewer pumped bypass works.

8800S.1.1 Definition of Terms

This section describes any term which are specific to this specification or requires clarification due to an ambiguous understanding.

The terms used in this Technical Specification shall be as defined in Clause 2 of MRTS01 *Introduction to Technical Specifications* and the *CTM Water Alliance Design and Construction Code*. Additional terms used in this Technical Specification are defined in the Table below.

Term	Definition
MRC Water	For the purposes of this specification to mean the relevant Department within MRC to carry out sewerage planning and operations activities.
Bypass Design	The design of a sewer temporary pumped bypass to ensure MRC's desired level of service to customers and other parts of the reticulation is maintained.
Flow Management Plan (FMP)	Provides comprehensive details on how flow will be managed during the duration the works. An FMP is to be RPEQ Certified.
PNI (Planned Network Intervention)	MRC's planned process for managing activities impacting on MRC's sewer infrastructure. Required to be submitted to MRC Water four (4) weeks. prior to the planned shutdown/intervention.
PWWF	Peak wet weather flow
PDWF	Peak dry weather flow
ADWF	Average dry weather flow
Sewer temporary pumped bypass system	An approved pumping system which provides temporary sewer bypass across a work area within the gravity sewer system or a sewage pumping station.
SPS	Sewage Pumping Station

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8800S.2 Referenced Documents

This supplementary specification shall be read in conjunction with the following:

- MRS01 "Introduction to Specifications";
- MRTS01 "Introduction to Technical Specifications";
- MRS03 and MRTS03 "Drainage, Retaining Structures and Embankment Slope Protections";
- MRS04 and MRTS04 "General Earthworks";
- MRS05 and MRTS05 "Unbound Pavements";
- MRS50 and MRTS50 "Specific Quality System Requirements"
- MRS70 and MRTS 70 "Concrete";
- CTM Water Alliance Design and Construction Code;
- AS/NZS 2566.1 "Buried Flexible Pipelines" (Structural Design);
- AS/NZS 2566.2 "Buried Flexible Pipelines" (Installation);
- AS/NZS 2032 "Installation of PVC Pipe Systems"
- WSAA 02 "Sewer Code of Australia";
- WSAA04 "Sewer Pumping Station Code of Australia" (current version);
- WSAA 05 "Conduit Inspection Reporting Code of Australia" (current version);

- Work Health and Safety Act 2011 (Qld)
- Work Health and Safety Regulation 2011 (Qld)
- Water Supply (Safety and Reliability) Act 2008 (Qld)
- Environmental Protection Act 1994 (Qld)
- Queensland Building and Construction Commission Act 1991 (Qld)
- MRC Supplementary Specification 4878 "HDD, Auger Boring, and Pipe Jacking";
- The project Drawings; and
- Manufacturer's specifications.

8800S.3 Description of Work Items

Work items incorporated by this supplementary specification are identified in Sections 8800S.5, 8800S.6, and 8800S.7 with individual activities/tasks for measurement and payment sourced from the Bill of Quantities and listed in MRC Supplementary Specification Annexure 8800S_1 Alterations to Water and Sewerage Reticulation Infrastructure Section 1

8800S.4 Quality Systems Requirements

8800S.4.1 Std Test Methods (Testing Regime)

The following minimum testing regime applies to this specification:

Civil works activities associated with the floor of excavation, bed preparation, concrete pours, and backfilling shall be tested as per the WSAA Sewerage Code of Australia, WSAA Water Supply Code of Australia, CTM Water Alliance Design and Construction Code, where there is a lack of detail the relevant MRTS specification MRTS03, MRTS04, and MRTS70 shall apply unless otherwise approved by the Superintendent.

All reticulated sewer testing shall be carried out by the appropriate test method required as outlined in the relevant WSAA Code, including the Appendices.

- Sewer reticulation – vacuum testing for non-pressure network and manholes, hydrostatic testing for pressure mains, ovality testing of all sewers, & CCTV video testing of all lines and manholes.

8800S.4.2 Hold Points, Witness Points and Milestones

The following table represents the minimum inspection requirements for this specification;

Activity	Inspection Type	When	Clause Reference
PRELIMINARY			**8800S.5**
Construction Procedure and other submissions as required by Clause 8800S.5	Milestone	4 Weeks prior to works commencing	8800S.5
Test result submission	Hold Point	Prior to alteration or connection to the live sewer infrastructure	8800S.5.9
CONSTRUCTION			**8800S.6.0**
Site inspection of all delivered materials, fittings, and components	Hold Point	At time of delivery to site	8800S.6.2.1

Pre-bypass site meeting	Hold Point	Prior to initiating installation of temporary pumped bypass system	8800S.6.2.2
Excavation to foundation	Hold Point	During excavation and close proximity to existing live infrastructure	8800S.6.2.2
Disposal or stockpile for reuse of excavated materials	Witness Point	During excavation as required by Contractors Environmental plan and ESC measures	8800S.6.2.2
Carry out underboring as specified	Hold Point	As required by MRC Supplementary Specification 4878	8800S.6.2.4
Submission of preconstruction dilapidation report	Hold Point	Prior to site works commencing to install the temporary pumped bypass components	8800S.6.3
Installation of temporary pumped bypass components up to agreed location to enable connection to infrastructure	Hold Point	Prior to connection works being performed	8800S.6.3
Testing of temporary pumped bypass components prior to connection to infrastructure	Hold Point	Prior to site inspection and approval for connecting to existing infrastructure	8800S.6.3
Curing of insitu poured concrete	Hold Point	Approval to proceed no earlier than required curing time	8800S.6.4
Backfilling and testing	Witness Point	During backfilling of water and sewer infrastructure	8800S.6.4
Pavement and seal reinstatement, inspections and testing as required by relevant MRTS specification	Hold Point	During reinstatement	8800S.6.4
Reinstate surface to preconstruction condition	Witness Point	During Reinstatement	8800S.6.4
SEWER RETICULATION			**8800S.6.5**
Testing and submission of results of laid temporary sewer mains and house connection branches	Milestone	Prior to connecting to existing infrastructure	8800S.6.5
Sewer main concrete pours and testing of surrounds, bulkheads, trenchstops	Hold Point	Prior to approval to proceed with backfilling	8800S.6.5.1
Proving period testing of temporary pumped bypass components	Hold Point	Fist 24 hours after connection to live system	8800S.6.5.3
Daily inspection of temporary pumped bypass components	Hold Point	Twice daily or as required by Clause 8800S.6.5.4	8800S.6.5.4
Notification of repairs or rectification works	Hold Point	Immediately as defects or identified works are identified.	8800S.6.5.4
Decommissioning and disconnection of temporary pumped bypass components	Hold Point	MRC Water to carry out works after all test results comply.	8800S.6.5.5
Removal and cleaning of all temporary bypass components and equipment and reinstatement of surfaces	Hold Point	Completion of commissioning reliability trial	8800S.6.6
Submission of post construction dilapidation report	Hold Point	At completion of all temporary pumped bypass works activities	8800S.6.6
POST CONSTRUCTION			**8800S.7**

As-Constructed documentation	Hold Point	4 weeks prior to practical completion being requested.	8800S.7.1
Site ESC Measures in place	Hold Point	Ongoing and at end of project until approval to remove	8800S.7.2

8800S.4.3 Construction Tolerances

Construction tolerances shall comply with the design drawings unless otherwise stated in Annexure 8800S_1 Sewer Temporary Pumped Bypass Clause 2 or as approved by the Superintendent the following construction tolerances shall apply as to this Specification;

- Sewer Reticulation - Section 22 of the WSAA Sewerage Code of Australia, & CTM Code Addenda A2
- Concrete Manhole/s - Section 22 of the WSAA Sewerage Code of Australia, & CTM Code Addenda A2
- Where underboring is conducted tolerances shall be compliant with MRC Supplementary Specification 4878.

8800S.5 Preliminary

The Contractor is to submit the following documentation 4 weeks prior to commencing work or a prestart is conducted:

- Works procedure for temporary bypass, including safety in design to mitigate hazards;
- Design plan of temporary bypass system, including a flow management plan report, and monitoring and communication procedures/systems;
- Detailed plan and description of proposed pumping system. Indicate number, size, material, location and method of installation of suction and discharge piping, size of pipeline or conveyance system to be bypassed, staging area for pumps, site access point, and expected flow;
- Certification the sewer temporary pumped bypass system will meet requirements of codes, and regulatory agencies having jurisdiction.
- Appendix “A” Design and Submission Checklist;
- Certification for nominated product/s and materials including Prequalification of fittings, components, pumps, generators, and materials to design criteria requirements;
- Workplace Health and Safety (WHS) Plan including Work Method Statements (WMS);
- Contractor’s personnel experience, qualification, skills and training (updated 10 days prior to undertaking work on site);
- Programme for the works including projected timeframes and connection timing;
- Environmental Management Plan;
- Erosion and Sediment Control Plan (as required for site/s);
- Traffic Management Plan and Traffic Guidance Scheme (TGS), including pedestrian management during the temporary bypass works;
- Quality Plan detailing requirements of 8800S.4;

Other preliminary requirements unique to the project will be listed in the MRC Supplementary Specification Annexure 8800S_1 Alterations to Water and Sewerage Reticulation Infrastructure.

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8800S.5.1 Bypass Design

In association with other project requirements, the temporary bypass system design, materials, installation and monitoring and maintenance shall comply with the CTM Water Alliance Design and Construction Code, WSAA Water Supply Codes of Australia, this Supplementary Specification and Annexure 8800S_1 Water Supply Temporary Bypass.

Design calculations and checking shall be performed by persons with appropriate qualifications and experience. The calculations shall be signed by the designer, checker and RPEQ certified. The Contractor shall provide written evidence of their internal checks for drafting checks, design checks, reports and certification when these are submitted for review.

Connection to MRC's SCADA system may not be required for the temporary sewer bypass pump arrangements. However, it is the contractor's responsibility to manage and monitor that temporary sewer bypass pump arrangement to avoid sewer spills. The Contractor shall liaise with MRC Water to verify their telemetry requirements during the time of temporary bypass operations. This shall be included in the design documents for approval. In regard to remote monitoring if not hard wired to MRC's SCADA system a stand alone auto dialler shall be installed reporting to the Contractors' on call staff to enable rectification of any faults to prevent sewer surcharges.

During the sewer bypass design process, the Contractor shall take into account safety in design of their bypass system, the Contractor shall include appropriate work procedures (including a risk register) to mitigate any hazards associated with the bypass design. The safety in design risk register shall be compliant with Cl 5.2 of MRC D20 Design Drawing Presentation and Documentation Guide. The Safety in Design Report will be issued with the final design documents, updated during construction and then re-issued as part of the Practical Completion documents.

These work procedures will form part of the Contractors sewer temporary bypass design and shall be submitted to the Superintendent four (4) weeks prior to works commencing as part of the documentation required for the Planned Network Intervention (PNI). The design shall be reviewed by MRC Water to confirm it complies with the scope of the project.

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The bypass shall be planned to be in place a minimum number of days and aligned with other works and be designed to be in place for a maximum number of days as approved by MRC Water. The temporary bypass system shall stay in place and not be removed until the Superintendents approval.

8800S.5.1.1 Design Inclusions

To enable design of the temporary bypass system, the following items shall be established, and any other limiting factors identified and included in the design:

- Project's design drawings and documents showing;
  a) Size and location of manhole or access points for suction and discharge hose or piping.
  b) Sections showing suction and discharge pipe depth, embedment, select fill and special backfill, if buried.
  c) Temporary pipe supports and anchoring required.
  d) Thrust and restraint block sizes and locations.
  e) Sewer plugging method and type of plugs noting dual isolation required.

f) Bypass pump sizes, capacity, number of each size to be on site and power requirements. Pumps provided shall be appropriately sized operating in a duty/standby arrangements for redundancy purposes.

g) Backup pump, power and piping equipment.

h) Calculations of static lift, friction losses, and flow velocity. Pump curves showing pump operating range.

i) Design plans and computation for access to bypass pumping locations indicated on drawings.

j) Calculations for selection of bypass pumping pipe size.

k) Method of noise control for each pump and/or generator.

l) Method of protecting discharge manholes or structures from erosion and damage.

m) Schedule for installation and maintenance of bypass pumping lines.

n) Procedures to monitor upstream mains for backup impacts.

o) Procedures for setup and breakdown of pumping operations.

p) Emergency plan detailing contingency measures/procedures to be followed in event of pump failures, sewer overflows, service backups, and sewage spillage, (Approved copy to be maintained and available on site at all times).

- Proposed Planned Network Intervention (PNI) Plan required to be submitted to the Superintendent four (4) weeks prior to planned shutdown/intervention showing locations of all existing and temporary sewer pump stations, manholes, pipelines, pumps, generators, property connections, and any other infrastructure affected by the proposed temporary bypass works;
- Safety (and emergency) controls, telemetry and communication procedures;
- Location and number of properties affected to the temporary bypass;
- Operational risks of the temporary sewer pumped bypass;
- Existing sewer system flow requirements i.e. flow management plan;
- Power supply for any pumped system, including generators for emergency purposes;
- Identify all reticulation outside the immediate scope of works supplied through the bypass main;
- Length of bypass main required, including maximum allowable length approved by MRC Water;
- Driveway, footpath, road and other crossing requirements;
- Bypass pipeline restraint and all associated hazards and risks;
- Property/s temporary service/connection requirements;
- The contractor shall also verify details such as survey, geotechnical, DBYD information, CCTV and other information as required for design and construction;
- The location of all services (electrical services, gas mains, telecommunications services, water services, sewers, overhead services, etc.) along the route, including levels at which they are laid, are to be confirmed at detail stage design.

8800S.5.1.2 Flow Management Plan Design

As part of the bypass design the Contractor shall produce a detailed Flow Management Plan (FMP) providing details of the capability to fully control the management of the specified temporary pumped bypass flows which shall be endorsed by an experienced RPEQ Engineering Consultant and submitted to the Superintendent for approval. The approved FMP shall be complied with by the Contractor.

Where the Contractor requires a sewage pumping station(s) to be switched off they shall submit a request to the Superintendent at least fourteen (14) working days prior to their planned shutdown date. Only with confirmation from MRC Water shall the Superintendent nominate the period of time that the pumping station(s) can be switched off. This shall only be undertaken in and following a period of dry weather and by MRC Water, **not** the Contractor.

8800S.5.1.3 Design Plan Requirements

The submitted design plans for the water supply temporary bypass shall be in the format of MRC Document D20, address all issues as noted in Clause 8800S.5.1.1 and 8800S.5.1.2, and those detailed in MRC Supplementary Specification Annexure 8800S_1, as well as those listed below;

- The temporary bypass system shall be modelled and sized dependent on the flows required to service the existing sewer system upstream of the connection point and capacity of downstream discharge point, all calculations, modelling, and design drawings shall be RPEQ endorsed and submitted by the Contractor to the Superintendent for approval.
- Calculations for the pumps including built in redundancy, type of pumps, noise suppression, expected pump engagement time each day when in operation, and power supply (24 hour requirement). Pumps provided shall be appropriately sized operating in a duty/standby arrangements for redundancy purposes.
- The approved safety in design risk assessment submitted by the Contractor shall set out the frequency of inspections to verify integrity of the bypass system, these checks and their frequency shall be included as part of the submitted construction procedure's and logged with site documentation.
- Discharge pipework to gravity sewer systems shall be designed in such a manner as to prevent discharge from being directed onto maintenance hole walls or benching, with the full discharge going into the downstream pipe with as minimal turbulence as possible.

8800S.5.2 Pre-Bypass Meeting

Prior to initiating bypass pumping, the Contractor shall conduct a pre-bypass site meeting with the Superintendent and relevant MRC Water staff. This meeting shall ensure all requirements for bypass pumping are fully met and allows for assessment and additional required arrangements that may be deemed necessary.

This meeting is to be held after the Contractor has carried out installation of the required temporary bypass system including pump/s prior to MRC Water carrying out connection to the live sewerage system and isolating the identified infrastructure requiring planned works.

8800S.5.3 Bypass Pumping

Where MRC Water has identified the requirement for temporary bypass pumping of sewage the Contractor shall be responsible for but not limited to the following;

- Pumps capable of delivering a range of flows from Average Dry Weather Flow (ADWF) to Peak Wet Weather Flows (PWWF), and be capable of being maintained at this rate with a safety redundancy for the duration of the bypass requirement, MRC to supply the flow requirements for the specific site,
- Pumps provided shall be appropriately sized operating in a duty/standby arrangements for redundancy purposes.
- Obtaining and confirming the sewer main size and details of the receiving and discharging points,
- Scheduling of works to maintain pumping and Council operations and maintenance,
- To provide temporary services and equipment for maintaining service provision,
- Carry out all works (mechanical and civil) to enable the bypass pumping to operate as required.

- Maintain the pumped bypass system.

MRC shall have prepared and included bypass arrangements details as part of the design drawings and documentation. The Contractor shall refer to these drawings when preparing their bypass management plans and methodology. This shall include details of proposed equipment and reactive time in the event of breakdown and should be in line with MRC's Environmental Authority as applicable and any relevant permit requirements or third party conditional approvals.

8800.5.4 Road Crossings (if applicable)

Temporary bypass alignment shall follow the approved route of the design drawings, roads shall not be crossed by open cut construction method unless otherwise approved by the Superintendent and the relevant Road Authority.

The temporary bypass pipeline shall be placed along the shoulder of the road or street, unless otherwise approved by the Superintendent **NO** pipeline or components shall be placed along streets or pathways.

Where the temporary bypass pipeline crosses streets, property driveways, or pathways, ramps shall be installed at and over the pipeline to ensure no load is placed on the temporary bypass pipeline.

Only in extenuating circumstances or at the approval of the relevant road authority shall the temporary bypass pipeline be trenched across the street/road formation and covered with pavement material to carry the load, all conditions of trenching shall be complied with by the Contractor. Road vehicle loads shall be calculated in accordance with AS/ANZ 2566.1 Clause 4.7.2. Where such installation occurs within a State Controlled road corridor applicable design and applications in accordance with the following requirements shall be followed - ***Non-Transport Utility Management and Design Manual***.

The Contractor shall carry out an inspection of the bypass route and road crossings with the relevant road authority and the Superintendent prior to sewer pumping connection and operations commence.

The drawings, management plans, and construction and operations methodology shall be submitted for approval by the Superintendent four (4) weeks prior to the site prestart meeting being held.

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8800S.5.5 Materials

All fittings and components to carry out connection to MRC sewerage reticulation system/s must be supplied with compliance certification to the relevant Australian Standard appropriate for the component or fitting unless otherwise noted within the design drawings or approved by the Superintendent.

Designs which include pumped sewer bypass shall include pumps which are sized based on the calculated flows and pressure required to provide a continuous supply. The calculations and layout of the pumped system shall be included as part of the design drawings and documents submitted to the Superintendent for approval.

Supply of materials, equipment, and consumables (fuel/oil) to site is the responsibility of the Contractor at their cost, where items are Principal supplied the nominated storage site shall be obtained from MRC Supplementary Specification 8800S_1 Sewer Temporary Bypass Annexure Section 3 and shall be the point of supply.

Where existing pipes, fittings, or pumps have been identified for salvage MRC Supplementary Specification 8800S_1 Sewer Temporary Pumped Bypass Annexure Section 4 will detail the items to be salvaged and the nominated storage site. This will also include any reuse of existing items. MRC Water shall identify components to be salvaged and stored or reused.

Where the temporary sewer pipe is laid above ground in direct sunlight the contractor shall carry out UV protection against solar degradation in accordance with the Manufacturers requirements, this may

require the pipe to be painted with a white or light-coloured water-based paint as per AS/NZS 2032 Cl 3.4.5.

With the disconnection of temporary sewer bypass system, new pipes, fittings and components not part of a hire agreement but procured by the Contractor at Principals cost and deemed to be recoverable shall remain the property of the Council and be salvaged and stored at the site nominated by MRC Supplementary Specification 8800S_1 Water Supply Temporary Bypass Annexure Section 4 or disposed of as directed by the Superintendent.

The Contractor shall supply all plugs required to carry out the temporary pumped bypass works, these shall be selected and installed according to size of line to be plugged, pipe and manhole configurations, and based on specific site. Additional plugs shall be available on site at all times in the event a plug fails. The Contractor shall carry out an inspection of the plugs with MRC Water prior to their use, any plugs containing defects which may lead to failure shall not be used and immediately removed from site by the Contractor.

All civil items/works, and materials shall be supplied, installed, and works carried out in accordance with the CTM Water Alliance Design and Construction Code, WSAA Sewerage Codes of Australia, relevant MRTS Specification, and MRC Supplementary Specification 4878 - HDD, Auger Boring, and Pipe Jacking.

8800S.5.5.1 Piping materials

Bypass piping and fittings shall be as approved by MRC Water, the Contractor shall provide details of the bypass piping with the submitted bypass design. This shall include but not limited to the following:

- Piping minimum pressure rating meeting the flow management plan pressure requirements, including redundancies;
- Lay flat hoses only to be used if approved as part of the design drawings and documents, the Contractor shall liaise with MRC Water prior to design submission;
- All gaskets, nut and bolt sets shall be new, not reused;
- Discharge piping determined according to flow calculations and system operating calculations.
- Suction piping determined according to pump size, flow calculations, and manhole depth following manufacturer's specifications and recommendations.
- Piping shall be homogenous throughout, free of visible cracks, discoloration, pitting, varying wall thickness, holes, foreign material, blisters, or other deleterious faults.
- Assembled and joined at site using couplings, flanges or butt-fusion method to provide leak proof joint in accordance with manufacturer's instructions and relevant ASTM Standard applicable to the pipe material.
- Threaded or solvent joints and connections are not permitted.
- Where fused jointing is approved the following shall apply;
    a) Fusing carried out by personnel certified as fusion technicians by manufacturer of HDPE pipe and/or fusing equipment.
    b) Fused joints are watertight and have tensile strength equal to that of pipe.
- Where approval to incorporate flexible hoses and associated couplings and connectors into the temporary pumped bypass design, the following shall apply;
    a) Abrasion resistant.
    b) Suitable for intended service.
    c) Rated for external and internal loads anticipated, including test pressure.
- The installation of the bypass pipework is not permitted in waterway areas unless approved by MRC Water under their Environmental Authority.

- Valves and Fittings shall be designed and incorporated according to flow calculations based on pump size determination and system operating pressures.
- Aluminium “irrigation type” piping or glued PVC piping will not be permitted.
- Discharge hose shall only be incorporated into the pumped bypass design where short sections are planned and approved by MRC Water.

8800S.5.5.2 Bypass Pumps and Power Requirements

Pump and electrical requirements shall incorporate but not limited to the following design and operational requirements;

- Be sized in accordance with the flow management plan for the individual site/s, including system redundancies.
- Pumps selected shall be compatible with pumping raw sewage.
- Be fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in priming system.
- Be electric or diesel powered, preferably electrical operation with diesel generator compatibility backup system. Where diesel pumps are approved, procedure for diesel storage on site and refilling.
- Manufactured to allow dry running for long periods of time to accommodate cyclical nature of effluent flows.
- The necessary stop/start controls for each pump linked to the remote telemetry system.
- One standby pump of each size maintained on site, on-line and isolated from the primary system by a valve.
- Quiet flow pumps.
- Adequate hoisting equipment for each pump and accessories shall be maintained on site.

8800S.5.5.3 Remote Telemetry Unit (RTU) System

The design and construction of the temporary pumped bypass shall include a remote telemetry unit and system which will contain the following monitoring requirements as a minimum;

- Floats in the manhole/s to manage sewage levels.
- A built in SMS Alarm System to manage any issues while bypassing.
- Alerts and notifications of standby pumps starting in the case of the primary pump failing.
- The two pumps consist of a primary pump and secondary pump setup. The primary diesel pump will run on a duty cycle format which is fed from a telemetry system built into the manhole manifold.
- A start / stop cycle for the bypass pumps, and these will run as per a duty / standby cycle setup.
- The back up pump (secondary) shall be set up to run off start / stop floats set above the primary pump levels.
- The back up pump shall be set to start on the primary duty cycle if the primary pump does not start or cannot keep up with the incoming flows.
- There is an emergency SMS alarm float setup at the same height as the back-up pump to ensure that on call staff are notified and can attend site in the event the primary pump fails to start or is not keeping up with incoming flows.
- The SMS emergency system and telemetry once installed, and correct operation confirmed prior to the temporary bypass system commences operations.
- During the proving run both pumps will be run and double checked for self-priming and to ensure secondary pump floats trigger the starting of secondary pump.

- The by-pass system shall be fitted with a telemetry system for duty cycle with a high level alarm and also has an emergency SMS notification alert.
- A SMS notification alert shall be sent to the specified persons in case the primary pump fails, the secondary pump doesn't engage, or the system is not functioning properly.

8800S.5.6 Handling and Storage of Material on Site

Materials and components must be stored in accordance with the manufacturer's requirements including the following:

- In dry conditions not exposed to direct sunlight, not in contact with a damp floor or ground,
- Uncontaminated surroundings, kept clean, and animal/rodent free,
- Within the specified maximum and minimum temperature range,
- In their original, sealed moisture resistant bags or containers,
- All stored pipes, fittings, and valves shall be supplied and stored fitted with sealed end caps.

All materials and components shall be brought to site in the original sealed bags or unopened containers clearly labelled with the appropriate manufacturer's name, product type, reference number and batch number. Upon delivery materials shall be inspected with damaged and opened containers returned to the manufacturer.

8800S.5.7 Personnel

Personnel, sub-contractors and suppliers utilised in the alteration and connection to MRC sewer reticulation infrastructure shall have the skills, capacity, and experience to alter or connect sewer infrastructure under the direct supervision of an MRC licenced occupational plumber and drainer, the Contractor shall provide documented evidence for the Superintendent's approval to demonstrate the experience, qualification, skills and training of proposed personnel, sub-contractors, and suppliers. This shall also include the qualifications of all testing agencies proposed to be engaged.

MILESTONE

The Contractors nominated contacts (primary and secondary) shall be submitted with the Works Procedure and Environmental Plan must be contactable by MRC Water at all times, 7 days a week, 24 hours a day.

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8800S.5.8 Sewerage Temporary Connection and Disconnection Works

All temporary connections and disconnection of temporary pumped bypass system shall be carried out by MRC Water in accordance with MRC Supplementary Specification 8800 Alterations to Water and sewerage Reticulation Infrastructure. This also includes removal and reinstatement of manhole lids, plugging and unplugging manholes/entering sewers, opening of SPS access lids and electrical boards.

The Contractor must **not** access any MRC sewerage infrastructure without MRC Water permission or presence on site.

8800S.5.9 Testing and Records

The Contractor shall carry out testing as required prior to MRC altering or connecting to the existing live sewer network by Clause 8800S.4.1 and Annexure 8800S_1 Sewer Temporary Pumped Bypass and submit to the Superintendent for review and approval to proceed with the alterations or connection to the existing sewer infrastructure.

HOLD POINT

Timing of the testing and submission of the results is the responsibility of the Contractor to ensure there are no delays in proposed timeline. Council will **not** carry out any connection or alterations unless all test results are compliant with the requirements of the relevant Australian Std and/or WSAA Water Supply or Sewerage Codes of Australia, and the CTM Water Alliance Design and Construction Code.

8800S.5.10 Contractors Responsibility for Overflows and Spills

The Contractor is responsible for and liable for all overflows and spills that occurs during the temporary bypass works and shall ensure their works program and procedures does not cause or contribute to incidence of overflows, releases or spills of sewage from existing sewer system or bypass operation.

The Contractor shall be aware of and carry out all works in accordance with MRC's Environmental Authority. Should an overflow occur, the Contractor shall be responsible to:

- Notify the Superintendent immediately the Contractor becomes aware of the overflow.
- Take immediate action to stop or mitigate the overflow.
- Report the overflow in accordance with the requirements of MRC Environmental Authority.

Undertake all necessary clean up, restoration or remedial actions ordered by the Superintendent or the relevant State Government Department.

8800S.5.11 Council Work Health Safety Contractor Requirements

As a minimum, the Contractor must ensure they and their workers (including all Contractor's sub-contractors etc.) comply with the following work health and safety requirements:

- Undertake Council Contractor and site inductions prior to commencing work.
- Ensure all workers are competent, and provide proof of competencies, licenses, and training on request.
- Have an approved safe system of work (including risk assessment) for the task and ensure the work is completed according to this safe system of work.
- Provide adequate supervision for all high-risk construction tasks.
- All incidents and near misses are to be reported to their Council representative within 60 minutes.
- Participate in Contractor pre-start meetings, safety interactions, site meetings and site inspections.
- Review information provided by Council such as site-specific hazards, risks and interaction issues and implement controls to, so far as reasonably practicable, eliminate, or if that is not possible, mitigate the risk.
- Take required measures to protect workforce against sewer gases and/or combustible or oxygen-deficient atmosphere.
- Supply safe plant and equipment with pre-start checks maintenance/ service records and manufacturer's manual.
- For all hazardous chemicals, ensure current Safety Data Sheets (SDS) are available and that appropriate controls (including as required under SDS requirements) are implemented.
- Comply with Council Safety, Drug and Alcohol and Fitness for Work policies.
- Be familiar with applicable site emergency procedures, closest emergency assembly point and sign in and out of site registers where required.
- Compliance with any reasonable direction given by Council relating to work health and safety.

8800S.5.12 Safe Systems of Work / Risk Assessment

The Contractor must prepare and submit a safe method of work (risk assessment) and relevant controls prior to commencement of work.

The completed risk assessment is to be provided to the Superintendent for review and approval prior to works commencing. Safe Work Method Statements (SWMS) are required for all high-risk construction activities (e.g. entry and work within manholes or sewer pump station) and Job Safety Analysis (JSA), or similar risk assessments are required for other tasks. The risk assessment (whether SWMS, JSA or other) must be reviewed and signed by the workers prior to undertaking the work.

MILESTONE

8800S.6 Construction

This section lays out the works operations with more detail based on specific requirements of this supplementary specification. Some activities may appear to include items which are stated within other specifications, the purpose is to reinforce the requirements specific to this supplementary specification.

The Contractor is to utilise the checklist in Appendix "B" as a guide to installation and decommissioning of the temporary pumped bypass system. The checklist may not include all activity checks; it is the responsibility of the Contractor to include additional items for inclusion in their works procedure.

8800S.6.1 Works Operations

The Contractor shall, through their works procedures and scheduling, be responsible to carry out the sewer temporary pumped bypass activities so as not to cause overflows, or spills of sewage from the gravity sewer or the pumped bypass system.

Work operations incorporated in this item are those included in Clause 2.1.5 of MRS01 "Introduction to Standard Specifications' and the following work scope activities and associated sub activities.

8800S.6.1.1 Scope of Works

All works shall be carried out as required by the design drawings and documentation in accordance with the CTM Water Alliance Design and Construction Code, this Supplementary Specification and Annexure 8800_1 Alterations to Water and Sewerage Reticulation Infrastructure;

- Procure, supply, and store materials, fittings, and components;
- Carry out Prestart meetings as required;
- Excavate, backfill (and compact) to infrastructure, including reinstatement of site as required by design drawings and approved Contractors Works Procedure;
- Carry out installation and removal of temporary sewer pumped bypass works, including remote monitoring system/s;
- Carry out testing of bypass system as required, including proving period;
- Alter or connect, and disconnect to existing sewer infrastructure, to be arranged by Contractor and carried out by MRC Water;
- Maintain bypass system for duration of operation;

8800S.6.2 General Works Preparation Prior to Installation

8800S.6.2.1 Supplying all Materials Inclusive of Fittings;

All materials, plant, and labour required to carry out the works under this Specification is to be supplied by the Contractor, where it has been agreed the pipes and fittings are Principal supplied the designated storage site will be the point of supply for the purposes of this Specification.

Storage of all materials shall be in accordance with Clause 8800S.5.6 and the manufacturers requirements at the agreed location/site.

All items shall be inspected at delivery to site prior to use. Inspection of pipes and fittings shall be carried out by the Contractor as required by Section 3 AS/NZS 2566.2. Any items which are damaged are not to be used and are to be returned to the supplier.

HOLD POINT

8800S.6.2.2 Pre-Bypass Site Meeting

Prior to initiating the installation of the temporary pumped bypass system, the Contractor shall conduct a pre-bypass site meeting (including site inspection) with the Superintendent and relevant MRC Water staff. This meeting shall ensure all requirements for bypass pumping can be fully met and allows for assessment and additional required arrangements that may be deemed necessary.

HOLD POINT

8800S.6.2.3 Carry Out Excavations, Bed Preparation, and Disposal of Excavated Material

(As required Only)

Where excavation is required and approved as part of the works procedure, the Contractor shall ensure all services are located prior to excavation commencing. All excavation of material, foundation compliance, and installation of bedding shall be to level, grade, and dimensions as per design drawings and as agreed by the Superintendent, with all works carried out in accordance with design drawings and AS/NZS 2566.2. Tolerances, testing, and inspections shall comply with WSAA Water Supply or Sewerage Codes of Australia, and CTM Water Alliance Design and Construction Code unless otherwise approved by the Superintendent.

HOLD POINT

Excess excavated materials shall be disposed of by the Contractor as required by their Environmental Plan or utilised as per Superintendents instructions. Material stockpiled shall ensure that all Environmental ESC measures are in place and maintained.

WITNESS POINT

Groundwater shall be kept below the bottom of the cut. Where dewatering is required as part of these works operations excavations shall be kept free of water to maintain the stability of the surrounding soil and to provide suitable working conditions until the pipeline has been installed and embedment and fill materials placed and compacted to a sufficient height to prevent flotation occurring.

8800S.6.2.4 Underboring of Conduits/Pipes (as required)

All underboring shall be carried out in accordance with the design drawings and MRC Supplementary Specification 4878 HDD, Auger Boring, and Pipe Jacking, and relevant sections and clauses of WSAA 02 and WSAA 03 relating to this activity. All inspections, testing, and construction tolerances shall comply with the requirements of Supplementary Specification 4878 unless otherwise stated in Annexure 4878_1 HDD, Auger Boring, and Pipe Jacking.

HOLD POINT

8800S.6.3 Install Temporary Sewer Pumped Bypass Works

The temporary pumped bypass installation shall be planned and constructed with a minimum of three days clear weather forecast and there being no impact from upstream wet weather events.

During installation of the temporary pumped bypass system and required property connections the Contractor must take care to prevent damage to existing structures and all third party utilities. Any damage attributed to the temporary bypass works shall be rectified by the Contractor at no cost to the Principal. A dilapidation report of MRC infrastructure shall be submitted to the Superintendent prior to commencement of and at the completion of temporary bypass works.

HOLD POINT

Prior to MRC Water carrying out alterations or connection to the existing "live" infrastructure the Contractor shall carry out all temporary bypass works up to the connection point, discharge point, and property connections as required by the design drawings and documentation, and any further requirements as a result of the Pre-Bypass Meeting. These works shall be carried out in accordance with the approved Contractors Works Procedure which shall include all requirements of this specification and design drawings and documents.

HOLD POINT

Testing of the temporary pumped bypass system shall be carried out by the Contractor, this shall be as required by Clause 8800S.4.1 with test results submitted to the Superintendent for approval. At the approval of the test results the Contractor shall carry out an inspection of the bypass route, property connections, and road crossings with the relevant road authority and the Superintendent prior to approval for sewer pumping connection and operations commence.

HOLD POINT

Where a Sewer Pump Station bypass is proposed and a flanged valve connection to the sewer rising main is installed as depicted in the design drawings and documents, the valve shall remain in place after the temporary bypass has been removed and be documented as a permanent connection point for future sewer pumped bypass operations. This shall be captured as part of the "As Constructed" drawings and documentation.

8800S.6.3.1 Collect As Constructed Details Prior to Backfilling

Where components of the temporary pumped bypass system are to become permanent as required by the design drawings or as directed by the Superintendent, the Contractor shall make arrangements for "As Constructed" details to be collected prior to the approval to commence backfilling, this shall include required survey data capture of the works.

8800S.6.4 Backfill and Reinstate Surface

Do not place trench fill material within 24 h of placing concrete restraining blocks, embedment, or encasement concrete, or longer period if shown in the Design Drawings or Specification. The superintendent shall grant approval to proceed with trench backfilling.

HOLD POINT

Backfilling shall be carried out, compacted and tested, with testing frequency and compaction standard shall be as required by WSAA Water Supply or Sewerage Codes of Australia, and the CTM Water Alliance Design and Construction Code unless otherwise approved by the Superintendent.

WITNESS POINT

Reinstatement of pavement and surfacing shall comply with MRTS04, MRTS05, and the appropriate TMR Specification for asphalt or bitumen aggregate seal. All testing, tolerances, and inspections for these activities shall comply with the respective TMR Specification.

HOLD POINT

Where the works occur in the verge area or outside of the road reserve the reinstated surface shall be returned to the state existing prior to works commencing or as noted on the design drawings.

WITNESS POINT

8800S.6.5 Sewer Reticulation

Prior to the temporary pumped bypass system being commissioned and alterations or connection to an existing sewer, manhole, or pump station the Contractor shall ensure all temporary sewer mains, property

connections, pumps, and property connections have been tested as required by Clause 4.1 of this Supplementary Specification or as required by Annexure 8800S_1 Sewer Temporary Pumped Bypass, this includes vacuum testing, ovality testing, and CCTV (as required) to enable the Superintendent to review the test results a minimum 2 days prior to MRC being scheduled to connect to live sewer infrastructure.

HOLD POINT

8800S.6.5.1 Temporary Restraining Measures

The Contractor shall install all restraining measures as required by the design drawings, with the pipe and fittings maintaining their integrity at test pressures above the normal operating conditions of the bypass. All restraints shall be NATA certified pressure tested in accordance with the flow management plan certified design.

HOLD POINT

Where insitu poured concrete is proposed this shall comply with MRTS 70, with all reinforcing as detailed in the design drawings or as required by WSAA Sewerage Code of Australia, and the CTM Water Alliance Design and Construction Code Standard Drawings.

General non-structural concrete works with batch sizes of 1 m3 or below may be accepted on the basis of project testing certification indicating all concrete provided to the project per month lies within the parameters as per Clause 12.4 of MRTS70 in relation to Standard Deviation and Average 28 day strength, provided by the concrete supplier. This shall provide the verification of quality/strength of the concrete as required by the design drawings.

The insitu poured restraining block/s shall be allowed to cure for a minimum time as designated in the design drawings and documents, where there is a lack of detail MRTS 70 shall apply, request for approval to proceed shall only be submitted after this period has expired.

HOLD POINT

8800S.6.5.2 Alter or Connect to Sewer Infrastructure

Alterations and/or connections to “live” sewer infrastructure shall be carried out as required by MRC Supplementary Specification 8800 Alterations to Water and Sewerage Reticulation Infrastructure, this includes property connections.

Works at or around a pump station shall be carried out by MRC Water, the Contractor shall supply materials, plant and equipment, and labour as required for the connection to be carried out.

The Contractor is **NOT** to carry out any form of isolation of the infrastructure including plugging of manholes, MRC Water shall carry out all isolating requirements of the live sewer.

Plugging or blocking of sewage flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance of work, remove in a manner that permits the sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

Where over-pumping of a gravity sewer is approved and to be conducted, the discharge maintenance hole shall have double isolation plugs installed by MRC upstream of the maintenance hole to provide a safe workplace upstream of the operational sewer.

It is the Contractors responsibility to ensure MRC Water carry out the required works to enable connection and disconnection of the temporary bypass system to the live sewer system, this shall include but not be limited to the following;

- Required double plugging of sewers (primary and secondary).
- Modifications to sewer pump station or manholes to enable pump and suction connection and at discharge point locations.

- Modifications to manholes to support bypass suction conduiting and discharge restraints.
- Connection and disconnection/reinstatement to sewer mains and property services (as required).
- Electrical and remote telemetry connection requirement to MRC infrastructure.

8800S.6.5.3 Proving Period of Bypass System

The Contractors design shall include continuous '24/7' remote level monitoring of upstream gravity sewer system, the plugged section and bypass pumps including 'High Level' and 'Pump Fault' communications to the Contractor and MRC Water Control System/s (as required). A proving period of 24 hours (minimum) is required for the temporary pumped bypass system, this includes testing of the telemetry and communication system in case of emergency.

This to be clearly identified in the submitted Works Procedure Plan and requires the Superintendents acceptance and approval to commence the temporary pumped bypass operation.

HOLD POINT

8800S.6.5.4 Maintenance and Monitoring of Temporary Pumped Bypass System

The Contractor shall be responsible for the safety, protection, maintenance of the operational bypass pumping system. To ensure the continued operation of the temporary pumped bypass system the Contractor shall carry out regular daily inspections. As a minimum this is to be undertaken at commencement of site work and prior to leaving the site at the completion of the work day whilst work is being performed on the site, and on a daily basis where no works are occurring on site, i.e. weekends, rostered days off, etc.

HOLD POINT

The inspections shall check for safety and trip hazards, leaks, damage, and that the system is operating as intended. Documentation of each inspection shall be made available to the Superintendent immediately on request.

Any repairs or rectifications necessary for the operation of the bypass pumping operation are to be performed by the Contractor and must be in line with MRC's Environmental Authority conditions and shall be documented. The Superintendent shall be immediately notified of the repairs and/or rectification works.

HOLD POINT

8800S.6.5.5 Bring back On Line

When all submitted test results and reports comply with the requirements of WSAA Water Supply or Sewerage Codes of Australia, and the CTM Water Alliance Design and Construction Code the Contractor shall engage MRC Water to disconnect the temporary bypass system and reconnect the existing sewer reticulation system to normal live flow conditions as required by MRC Supplementary Specification 8800 Alterations to Water and Sewerage Reticulation Infrastructure.

HOLD POINT

8800S.6.6 Removal, Cleanup, and Restoration

Prior to removal the Contractor shall flush clean the bypass line, fittings, components, and pumps before removal. All sewage from the bypass pipes, pumps and fittings shall be discharged to the specified sanitary or sewer system.

Upon approval by the Superintendent at the completion of the bypass pumping operations and at the completion of the commissioning reliability trial, the Contractor shall remove all piping and fittings, restore all properties, restore all roadway pavement, kerbing, pathways, and verge areas to pre-bypass condition to the approval of the Superintendent.

HOLD POINT

Where backfilling to any excavation is required, compaction and testing standards, and inspection requirements shall be as required by this specification (Clause 8800S.6.4), WSAA Sewerage Codes of Australia, and the CTM Water Alliance Design and Construction Code unless otherwise approved by the Superintendent.

The Contractor shall submit a post dilapidation report to the Superintendent showing before and after construction documentation/photos of the site and carry out an inspection as part of the "On Maintenance" works inspection.

HOLD POINT

8800S.7 Post Construction

Works will not be considered complete until all test results, including CCTV where required, are submitted and accepted for approval by the Superintendent.

8800S.7.1 Collection and submission of all As Constructed data including QA data requirements.

Contractor is to supply and submit Works As-Constructed documentation as required by *MRC D20 - Drawings and Documentation* for approval by the Superintendent 4 weeks prior to requesting a practical completion inspection.

Where the nature of the works is **temporary and removed** at decommissioning of the temporary pumped sewer bypass system MRC **does not** require an "As Constructed" Drawing submission. Photos, test results, signed off ITPs, and an updated Safety in Design Report shall form the basis of the "As Constructed" documentation submission.

Where components of the temporary sewer pumped bypass system become permanent or abandon in place the contractor shall include these within the "As Constructed" drawing submission noting their status or purpose.

Format of submitted "As Constructed" documentation shall be compliant with MRC Supplementary Specification 8919.

HOLD POINT

8800S.7.2 Environmental Control Plan

Environmental measures are to be kept in place and maintained until the Superintendent approves of the removal of such measures. The Contractor shall maintain such ESC measures for the duration of the works until approved to be removed by the Superintendent.

HOLD POINT

8800S.8 Measurement and Payment

Payment for these works will be on a lump sum basis (excluding the live connection works) as outlined in Clause 8800S.3. All works shall be deemed part of the scheduled item, and no separate payment will be made.

The contractor is not responsible for expenses related to the cut-in works performed by Mackay Water on Capital works projects. However, any costs incurred by the contractor while assisting Mackay Water shall be the contractor's responsibility and included in the specific projects scheduled items, i.e. sewer pump station refurbishment/s.

Version Control:

Version	Description	Reviewed / Endorsed	Date
1.0	New Specification	C. Sultana	03.07.2025

APPENDIX "A" Design and Submission Checklist

The following checklist shall accompany the cover letter and be referenced and compliant to the requirements of 8800S.5.1.

Included (circle appropriate)

Yes/No Cover Letter.

Yes/No Site Details.

- Site location indicated on the development map showing street names and major intersections in the affected area
- Location and access of pumps and suction/discharge manholes
- Route of piping with flow direction arrows complete with dimensions

Yes/No Design Considerations.

- Calculations of static lift, friction losses, TDH, velocity, air valves, etc.
- Calculations for pump size selection and piping sizes

Yes/No Flow Design management.

- Anchorage design (pipe supports, thrust blocks, restraints)
- Methods of noise control for pumps and generators

Yes/No Suction Manhole Detail.

Yes/No Pump Curves and System Information (Capacity, Head, Model, Power, Voltage, Amperage, NPSHA and NPSHR values).

Yes/No Piping information (diameter, material, length, pressure rating, etc.).

Yes/No Redundancy Plan.

Yes/No Emergency Spill Response Plan.

Yes/No Risk Assessment and Mitigation Plan.

Yes/No Bypass Pumping Schedule (set-up, operation, maintenance and removal).

Yes/No Methods to protect suction/discharge manholes and appurtenances.

Yes/No Traffic Control Plan (if applicable).

Yes/No Others, please specify _____ .

APPENDIX "B" Temporary Sewer Pumped Bypass Installation Checklist

The following checklist shall be utilised by the Contractor to reflect the requirements of the installation and decommissioning of the sewer temporary pumped bypass as required by Clause 8800S.6;

1. Pre-Installation Planning

- MRC has reviewed and approved bypass design drawings and hydraulic calculations.
- Confirm flow rates and peak flow conditions of design documents.
- All necessary permits and approvals have been obtained.
- MRC has notified stakeholders (e.g. Qld transport, residents, businesses).
- Site risk assessments and Safe Work Method Statements (SWMS) confirmed.
- Emergency Response Plan confirmed and compliant with design documents.
- MRC given appropriate notice for modifying/connecting to live sewer infrastructure.

2. Equipment Preparation

- Inspection and testing of all pumps (primary and backup) carried out.
- Suction and discharge hose/piping sizes and lengths verified .
- All fittings, valves, and couplings are compatible and leak-free.
- Power supply availability (generator or mains) confirmed.
- Flow meters, alarms, and telemetry systems checked and confirmed operational.

3. Site Setup

- MRC carried out isolation of manhole, connection to live sewer network.
- Install suction piping at upstream manhole or access point.
- MRC carried out isolation of discharge point manhole, connection to live sewer network.
- Install discharge piping to downstream manhole or discharge point.
- All piping, fittings restrained to prevent movement or damage.
- Required check valves and isolation valves installed and tested as required.
- Containment bunds installed and spill kits stored on site as required.
- Approved traffic and pedestrian management plan implemented (if applicable).

4. System Testing (Initial and 24 Hour Proving Period)

- Prime pumps and test for initial proper operation.
- Simulate peak flow conditions to verify capacity.
- Check for leaks, vibrations, or unusual noises.
- Test alarm and monitoring systems.
- Record initial flow readings and system pressures.
- Carry out 24 hour proving period testing.

5. Operation and Monitoring

- Nominated contacts (primary and secondary) have been made aware of their roles and responsibilities for site monitoring and remote telemetry.
- A log of pump operation, flow rates, and inspections is recorded and maintained throughout the bypass operations.
- Regular inspections of hoses, pumps, and fittings are carried out and records kept of all inspected components.

- Where pumps are not electrically powered, fuel is refilled and stored on site, and maintenance of the pumps/generators is carried out as needed.
- Alarms or failures are responded to immediately in line with MRC environmental Authority.

6. Decommissioning

- MRC notified and disconnected bypass system, sewer system back on line to normal operations.
- Temporary bypass components removed.
- All equipment cleaned with discharge to the sewer system prior to removal from site.
- Site restored to preconstruction condition, including sewer system infrastructure.
- As Constructed documentation submitted, this includes any drawings, final report including logs, incidents, and lessons learned.