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Pr10179 - Specification for Water Supply Temporary Bypass

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Version Review

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					numbering, Update Appendix A - Definitions & acronyms; appendix B references; updated references throughout; fixed typos & minor grammar
15.0	C. Colombo	N/A	N/A	Minor admin amend 14/10/2026	Update Pr8996 to Permit to Work Procedure

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1. Purpose

The purpose of this Specification is to outline Unitywater's minimum requirements for the design, installation, maintenance and removal of water supply temporary bypass systems.

This Specification will provide assistance to establish a consistent approach to water supply temporary bypass systems, enabling Unitywater to maintain its reputation as a water industry leader in customer service, health and safety.

2. Scope

This Specification nominates Unitywater's technical and customer service requirements for water supply temporary bypass systems that are to be installed when the permanent supply will be interrupted for a period of time greater than eight (8) hours.

This Specification applies to reticulation water supply mains ≤DN200.

Unitywater will audit the installation and maintenance of the water supply temporary bypass system to ensure it complies with this specification.

3. Technical Details

3.1. Bypass Design

In addition to other contract documentation requirements, the bypass design, materials, installation and maintenance of a water supply temporary bypass system shall comply with Pr9904 - Specification for Pressure Pipeline Construction.

In designing the bypass system, the Contractor shall consider appropriate work procedures to mitigate any hazards associated with the design.

These work procedures will form part of the bypass design and shall be submitted to Unitywater as part of the documentation required for the Planned Network Intervention (PNI) in accordance with Pr8996 – Permit to Work Procedure.

The bypass shall be designed to be in place for no more than 10 working days.

To enable designing of the bypass system, the following items shall be established, as a minimum and any limiting factors identified and considered in the design:

a. project's design drawings
b. proposed Planned Network Intervention (PNI) Plan showing locations of all existing and temporary pipelines, valves, hydrants and service connections, and the valve manipulation steps proposed for each stage of the intervention (PNI required to be submitted to Unitywater 28 days prior to planned shutdown/intervention)
c. number of properties to be connected to the temporary bypass
d. location of each Unitywater network connection to the bypass
e. existing water supply system limitations
f. location of all fire hydrants effected by the bypass
g. provision of temporary fire hydrants if applicable
h. identify all reticulation outside the immediate scope of works supplied through the bypass main
i. length of bypass main required

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j. driveway, footpath, road and other crossings

k. bypass pipeline restraint and all associated hazards and risks

l. dialysis patients (identified with a blue painted meter and/or meter box)

m. large meters, dual water supply, critical, key, and high dependent water customers

n. zone/boundary (Red) valves and dead-end mains

o. the need to install additional network valves to reduce the length of bypass main

p. the need to control water temperature for above ground pipelines.

3.2. Connection to existing water supply

The connection of the temporary bypass to the existing water supply is to be made by either:

- live tapping upstream of the water main isolation point utilising UPCIC, or
- connection to an existing fire hydrant upstream of the water main isolation point.

Details of the temporary connection arrangements shall be in accordance with the SEQ W&S D&C code and shall form part of the bypass design drawings to be submitted to Unitywater.

3.3. Hydraulic Design

A bypass design and drawings shall be submitted to Unitywater for assessment as part of the permanent water main design drawing set.

A copy of calculations and an RPEQ hydraulic design certification report is required to compliment the bypass design drawings.

The drawings shall include as a minimum, pipe sizes, materials, pipe restraint devices, position of temperature/pressure devices, connection details, type of bypass main protection, trip hazard mitigation, pipeline restraint and driveway crossing details.

In residential areas:

- Maximum length of any bypass system shall be 300m unless otherwise approved by Unitywater.
- All temporary bypass water supply systems shall be hydraulically designed to meet the requirements of the area to be bypassed and any downstream reticulation dependent on the bypass for its supply including Fire Flow Capacity.
- The hydraulic design shall also consider the impacts on surrounding areas that will indirectly be impacted by the bypass.
- These requirements shall be based on the requirements of AS3500.1 and capable of maintaining a minimum service pressure at the property boundary of 22m (a lesser level of service may be acceptable given consideration of existing mains pressure).
- Where the Concept Business Case (CBC) states that the static head is greater than 350kPa, this figure is to be used for hydraulic calculations, unless the Contractor can demonstrate that the actual system pressure is higher.
- Where the CBC states that the static head is less than 350kPa, the Contractor is to verify the system head and base hydraulic calculation on the actual figure.

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In industrial, commercial and high-density residential areas:

- The maximum length of bypass system shall be 150m unless otherwise approved by Unitywater.
- The particular flow requirements will be provided on a case-by-case basis as part of the Unitywater scope documentation.

Should the design of the bypass system alter the functionality of existing fire hydrants (FHs), prior confirmation from QFES shall be provided to Unitywater.

Where existing fire hydrants (FHs) are made inactive due to the works, this information shall be provided to QFES and Unitywater with a plan showing where the nearest fully operational FHs are located.

Where temporary FHs are fitted to the temporary bypass main, they shall be indicated on an 'As-built' locality plan and a report shall be supplied as to the capacity obtained in litres per second and at what date and time the test was undertaken. This information shall be provided to Unitywater and QFES for information.

The Contractor shall submit a preliminary bypass design drawing along with the projects' preliminary design drawing for Unitywater review.

A final bypass drawing shall be submitted for Unitywater as part of the 'For Construction' issue drawing set.

As a minimum, the bypass design drawing shall identify:

- the size, type, class and route of each bypass and water service supply pipe
- any intermediate valves along the bypass
- staging of the bypass works
- details of bypass connections into the existing water main/s
- details of bypass connections to the existing water service/s
- details of how the bypass can be scoured, air released and water quality tested
- locations where the existing water main will be isolated for the duration the bypass is in place
- which fire hydrants are not in service while the bypass system is in place
- locations of the nearest in service fire hydrants
- locations of temporary fire hydrants
- which properties will be supplied from the bypass main
- details for flushing of any dead ends
- the position of the temperature and pressure control valves
- location of discharge of purge water from the temperature control valve
- the type of bypass/service pipe protection and access ramps to be used.

3.4. Materials

All materials used as part of the temporary bypass, connections and related appurtenance's that come into contact with drinking water must be compliant with SEQ WS&S D&C Infrastructure Products and Materials List (IPAM).

Preferred pipe material for the water main bypass is Polyethylene Pipe Blue Stripe (PE100) with minimum PN16 pressure rating.

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The Contractor shall take all care to maintain the condition of the equipment to ensure correct operation and prevent contamination.

All stored pipes shall be fitted with suitable end caps at all times when not in use. When not in use, all pipes and fittings shall be stored in uncontaminated surroundings, above ground level, in a storage area that is kept clean, uncontaminated and animal/rodent free.

3.5. Road Crossings

Roads shall not be open cut crossed unless otherwise approved by Unitywater and the relevant Road Authority.

3.6. Other Considerations

Other items for the Contractor to consider include the relocation of hydrants and valves or the provision of additional valves to assist in the efficient and economical use of the temporary bypass and permanent water supply system. It will be necessary to consult with the appropriate Unitywater personnel to understand the ongoing operation and maintenance requirements of the reticulation system as well as any additional costs that may be incurred.

For low risk, low demand situations, other external potable water sources such as insulated tanker may be considered by Unitywater where appropriate.

4. Communication

4.1. Customers

Customers who will be impacted by a bypass supply shall receive the *Unitywater Works Notification Letter* in their letterboxes which will include information on the temporary bypass. Refer to Unitywater communications guide for further information.

Critical, Key, Water Reliant and Dialysis Patient customers within the area will be impacted either directly or indirectly by the bypass system supply area shall be identified. These customers may require special connections, additional piping or may require specific times for connection and disconnection from the bypass system or reticulation system. The Contractor shall liaise with Unitywater regarding the requirements for these customers.

4.2. Fire Authority

Unitywater's service area comprises two Queensland Fire and Emergency Services (QFES) regions:

- **North Coast Region** (encompassing Sunshine Coast Council and Noosa Council areas)
    - email: firecom.kaw@qfes.qld.gov.au
    - phone: (07) 5390 4772
- **Brisbane Region** (encompassing City of Moreton Bay area)
    - email: qfrs.brisbaneregionreception@dcs.qld.gov.au
    - phone: (07) 3622 3722

The Contractor shall be responsible for providing prior notification to the specific QFES Region when the installation of a bypass will:

- prevent any fire hydrants being fit for purpose

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- will potentially reduce the delivery capacity of any fire hydrants
- Result in the installation of temporary fire hydrants.

Affected FH shall be clearly identified on the design.

The Contractor is to notify QFES by emailing drawings and details as specified in Section 3.3 of this document.

The Contractor shall obtain confirmation QFES accepts the reduced/relocated FH capacity during the designated time.

The Contractor shall forward QFES confirmation to Unitywater.

The Contractor shall ensure QFES and Unitywater is updated with exactly when the FH will not be fit for purpose and when service has been reinstated by contacting the relevant QFES Region.

If there is difficulty getting through to QFES or it is outside normal office hours, the Contractor must contact the water outage number on 1800 017 029 (24/7). The Contractor shall also follow up with an email to the relevant QFES and copy Unitywater in on the email.

5. Installation

5.1. Bypass Location and Alignment

The installed location of the Water Supply Temporary Bypass System shall:

- not obstruct pedestrian or vehicle traffic without the use of a suitable crossing structure
- be protected from vehicular traffic loadings
- be neatly laid as close to the property or fence line as is practical and not obstruct access
- be restrained at joints in pipeline and at locations necessary to maintain structural support
- have sufficient signage to ensure public safety
- have all connection points to the permanent water network fitted with lockable vandal proof valves.

The permanent water main construction works shall commence immediately after the installation of the temporary bypass main.

All cross kerb ramps, cable protectors, footpath and driveway ramps and crossings shall be vehicle, pedestrian, pram, wheelchair and bicycle safe and shall comply with all applicable Australian Standards.

Aerial bypass mains are not acceptable.

Once the existing main being bypassed is offline, all fire hydrant cats eyes shall be immediately removed and hydrant boxes, kerb and road hydrant markers shall be made non-visible.

If temporary fire hydrants are installed, they shall be marked and identified with road markers as per the SEQ W&S D&C Code.

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5.2. Pressure Testing

The Temporary Bypass System shall be hydrostatically pressure tested by the Contractor using the method stated below:

- existing mains pressure shall be measured and recorded (mains pressure, location, date, time)
- after installation of the temporary bypass system, pressure test to 1.25 times the existing mains pressure, or 550kPa, whichever is greater
- record all pressure testing information on the Contractors ITP.

5.3. Water Quality and Disinfection

The materials and equipment that form the Water Supply Temporary Bypass System shall be treated with the care and stored, flushed and cleaned in a hygienic manner to ensure the quality of the water supplied, in accordance with SEQ-WSA03 V1.4-2024 (SEQ WS&S D&C Code) Appendix I, Clause I4 - Preventative Measures and Unitywater's F9785 - Water Hygiene Field Guide (5C's).

Prior to the connection of individual properties, the bypass system shall be:

- flushed
- disinfected
- de-chlorinated
- filled
- water quality results assessed:

in compliance with Unitywater's Pr9032 - Procedure for Managing Water Quality During Mains Commissioning.

5.4. Electrical Safety

Before the temporary bypass system is installed the Contractor shall employ a licenced Electrician to check all the metallic water services to ensure there are no abnormalities including stray earthing currents in the household services or existing water main.

The Electrician shall provide a Certificate to the Contractor stating that this has been carried out.

The Contractor shall provide this certificate to Unitywater.

This does not preclude the Contractor from using appropriate SWMS when working on the water services

5.5. Connection to Property Water Service

The Unitywater preferred method for connection of a bypass line to a domestic meter is to connect to the inlet of the meter assembly, outside the meter box.

For commercial properties, an inspection must be carried out to ensure that backflow prevention is in place. If not, a suitably sized non-return valve shall be provided and installed by the Contractor in the supply line at installation.

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5.6. Temperature and Water Quality Control

A designed for purpose water temperature control device must be fitted on any aboveground bypass system that is installed during the hot months between 1 October and 1 April, and/or on any other day forecast to exceed 30°C. The device shall be set so that water is automatically purged from the system when it reaches a temperature of 30°C.

The system shall also include a full diameter manually operated and lockable flushing valve.

The Contractor shall ensure that the layout and positioning of temperature and pressure control device, and flushing points is conducive to effective control of the bypass main and that discharge is in a controlled manner and in accordance with *Water Services Association of Australia (WSAA) Guideline: Dechlorination of Drinking Water to Discharged Waterways, National Guidance for the Urban Water Industry 2019.*

6. Maintenance

The Contractor shall be responsible for the safety, protection, maintenance and for carrying out inspections of the bypass system. As a minimum this is to be undertaken on a twice daily basis whilst work is being performed on the site, and on a daily basis, regardless of whether works are occurring on site, i.e. weekends, rostered days off, etc.

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 Unitywater's officer immediately on request.

Any repairs or rectifications necessary are to be performed by the Contractor and must commence within one (1) hour of identification when the site is active and within four (4) hours at other times.

Temporary bypass mains shall not be kept in place over the Easter or Christmas Eve to New Year holiday break. The Contractor is required to make arrangements to remove bypass mains and restore water services to normal prior to these holiday periods.

The primary and secondary contacts nominated on the PNI application must be contactable by the Unitywater Control Room 24/7.

7. Removal

Following the receipt of successful bacterial and pressure test results of the permanent water main works (Pr9032) and acceptance by Unitywater, the Contractor shall immediately disconnect the temporary bypass, remove all temporary facilities from site and reconnect all water services to the new water main.

Any temporary bypass connection made to the permanent reticulation that cannot be completely removed when finished, shall be converted into a fire hydrant or flushing point in accordance with standard drawing SEQ-WAT- 1104-1 or SEQ-WAT-1302-1. (Burying a Closed Valve or Blanked Off TEE is NOT an acceptable solution)

Prior to disconnecting the bypass, the Contractor shall notify the effected customers of impending works affecting the water supply. The Contractor is then to reconnect the meter to the new permanent system.

Following connection to the permanent supply, the Contractor shall check flow and pressure to each effected customers' premises. The Contractor shall also check for leaks at the meter connection and adjacent joints and repair any faults immediately.

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Immediately preceding the bypass removal, the Contractor shall resubmit the drawings previously issued to QFES and nominate that the permanent system has been restored and is operational as per the 'As Constructed' plans.

8. Appendices

Refer to following pages.

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Appendix A – Definitions/Acronyms

The following definitions, abbreviations and acronyms are used throughout this specification.

Term	Meaning
5C's	Acronym for water hygiene practices supporting the protection of drinking water quality
Bypass design	The design of a water supply temporary bypass to ensure Unitywater's desired level of service to customers and other parts of the reticulation is maintained.
CBC	Concept Business Case
FN	Fire Hydrant
IPAM	Infrastructure Products and Materials List (IPAM) The mechanical and civil IPAM lists are available from the SEQ Code website; https://www.seqcode.com.au/products-seq-code
ITP	Inspection and Test Plan
PNI (Planned Network Intervention)	Unitywater's planned process for managing activities impacting on Unitywater's infrastructure. Required to be submitted to Unitywater 28 days prior to the planned shutdown/intervention.
SEQ WS&S D&C Code or SEQ Code	South East Queensland Water Supply and Sewerage Design and Construction Code (or SEQ Code) provides a consolidated set of design and construction standards for new distributor retail water supply and sewerage reticulated infrastructure including: • Water Supply Code • Design Criteria • Infrastructure Products and Materials • Asset Information Specification. Refer to https://www.seqcode.com.au/
Temporary Fire Hydrant	A fire hydrant installed as a temporary measure to ensure firefighting capacity is maintained.
UPCIC	Under Pressure Cut In Connection (also called "under pressure tapping" or "under pressure tee & valve")
Unitywater	The contract Superintendent (as defined in the General Conditions of Contract called up in the Contract Document, such as AS2124-1992 or AS4000) or the Unitywater representative authorised to issue instructions to the Contractor(s)
Water supply temporary bypass system	An approved water supply system providing temporary water supply to customers and other parts of the reticulation during existing mains shutdown for replacement, relining etc. It involves installing a parallel main along the section of existing water main that is temporarily shut down including temporary water service supply to customers.

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Appendix B – References

General

All works shall be completed in accordance with this Specification, the Project Specification and stated supplementary specifications.

Reference to specific clauses of the various codes is intended to highlight those points and shall not be taken to imply a lesser importance for all other applicable clauses. All the works shall conform to the Rules and Regulations of the Statutory Authorities having jurisdiction over the Site.

If the requirements of this Specification do not comply with the minimum requirements of the statutory regulations and standards, the Statutory regulations and standards shall apply. If the requirements of this Specification are more exacting than the minimum requirements of the statutory regulations and standards, this Specification shall apply.

All Materials, fittings, accessories, and equipment supplied by the Contractor shall be new and the best obtainable of their kind and shall comply in all respects with the requirements of the relevant Unitywater and Standards Australia specifications.

All Contractors have an obligation to comply with all relevant legislation and regulations. As a minimum the following legislation, related Regulation and Codes apply to this specification:

- Building Act 1975 (Qld)
  - Building and Other Legislation Amendment Regulation 2026 (Qld)
  - *Environmental Protection Act 1994* (Qld)
  - *Professional Engineers Act 2002 (Qld)*
  - *Queensland Building and Construction Commission Act 1991* (Qld)
  - *Water Supply (Safety and Reliability) Act 2008* (Qld)
  - *Work Health and Safety Act 2011* (Qld)
  - *Work Health and Safety Regulation 2011* (Qld)
  - *Managing Noise and Preventing Hearing Loss at Work Code of Practice 2021 WorkSafe Qld*
  - *Scaffolding Code of Practice 2021, WorkSafe Qld*
  - *National Construction Code (NCC)*
  - *Queensland Development Code*
  - *Work Health and Safety Queensland Codes of Practice*
  - *South East Queensland Water Supply and Sewerage Design and Construction Code* (SEQ WS&S D&C Code) including:
    - SEQ WSA03 – Water Supply Code of Australia
    - SEQ IPAM List (SEQ approved Infrastructure Products and Materials List)
    - SEQ Asset Information Specification
    - SEQ WSA03 V1.4-2024 Appendix I Disinfection of Water Mains, Water Quality Compliance Specification.

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The SEQ WS&S D&C Code is available via the SEQCODE website: www.seqcode.com.au

- the latest relevant Australian (AS), British (BS) and IEC Standards
  - Water Services Associated of Australia (WSAA) national codes including WSA 201 Manual for selection and Application of Protective Coatings
  - Water Services Association of Australia (WSAA) Guideline: Dechlorination of Drinking Water to Discharged Waterways, National Guidance for the Urban Water Industry 2019.

Relevant Unitywater documents that relate to this specification

Relevant Unitywater documents that relate to this specification are listed in Pr11231 – Unitywater Technical Specification Reference Guide.

Document No.	Title
Pr9904	Specification for Pressure Pipeline Construction
Pr10764	Controlling Electrical Hazards in Metallic Pipe and Water Meter Repairs or Replacement Work Instruction
Pr8996	Permit to Work Procedure
Pr9032	Procedure for Managing Water Quality During Mains Commissioning
F10045	Water Quality Mains Commissioning Form
F9785	Water Hygiene Field Guide (5C's)

International and Australian Standards referenced within this specification

Standard	Title
AS3500	Plumbing and Drainage - Part 1: Water Services

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