



**Unity**water

Serving you today, investing in tomorrow.

# Pr11231 - Unitywater Technical Specification Reference Guide



## Pr11231 - Unitywater Technical Specification Reference Guide

Document Sponsor	Infrastructure Standards and Products Approval Committee
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References	Refer Section 4 Glossary of the technical specifications

### Version review

Revision	Reviewed by	Approved by	Date approved	Revision type/summary
1	Y. Skinner T. Stewart M. Ahmed	Head of Asset Management	08/02/2024	New document
2	L. Bryson	N/A	N/A	25/03/2025 Minor admin amend to update hyperlink for WSA03 reference and update STP terminology to WWTP



# Pr11231 - Unitywater Technical Specification Reference Guide

## Contents

<b>1. Purpose</b>	<b>4</b>
<b>2. Scope</b>	<b>4</b>
2.1 Planning	4
2.2 Design	4
2.3 Construction	4
2.4 Commissioning and Handover	5
<b>3. Overview</b>	<b>5</b>
3.1 WSA National Codes & SEQ Code	5
3.2 Unitywater Technical Specifications	5
3.3 Unitywater Standard/Typical Drawings	6
3.4 Australian Standards	6
3.5 Request to deviate from a technical specification or the SEQ Code	6
<b>4. Glossary of the technical specifications</b>	<b>7</b>
4.1 Accepted Products and Material Lists	16
4.2 Civil and Structural	16
4.3 Commissioning and Handover	17
4.4 Conveyance	19
4.5 Drawing Management (Including BIM and CAD)	22
4.6 Electrical	23
4.7 Mechanical	25
4.8 Control Systems	26
4.9 Safety in Design	29
4.10 Water Quality	29
4.11 SEQ Code	30
4.12 Miscellaneous Specifications	31

## List of Tables

Table 1 - Specifications Applicable for each Asset location	8
Table 2 - Definition of asset descriptors used in this specification	18



# Pr11231 - Unitywater Technical Specification Reference Guide

## 1. Purpose

The purpose of this document is to provide a guide on which engineering specifications or documents to use when undertaking design, construction, commissioning and/or handover of assets to Unitywater.

This document should be used to provide an overall view of Unitywater's technical specifications to ensure the technical specifications cover off the minimum requirements of overarching Unitywater frameworks.

## 2. Scope

Unitywater has created a suite of infrastructure technical specifications and documents that:

- Assist Unitywater to operate and maintain cost effective, reliable and serviceable infrastructure for an appropriate operational life (i.e. total life cycle asset management).
- Are consistent with Unitywater's values, guiding principles and visions including the principles of ecologically sustainable development.
- Promote innovation or the introduction of new technologies.
- The scope of this document is to provide an overview only of relevant technical documents that may be used when undertaking works on of Unitywater's water supply or sewerage infrastructure, no matter the entity carrying out the works. The works may cover all aspects of an asset's lifecycle, including:
  - Planning
  - Design
  - Construction
  - Commissioning and handover
  - Operation and maintenance
  - Upgrading/refurbishment
  - Decommissioning, or
  - Demolition/abandonment.

### 2.1 Planning

This document should be referred to during the planning phase of projects to ensure works that move from planning to delivery consider all relevant specifications so that accurate cost estimations and recommendations may be developed.

This document may also assist with developing Business Cases to ensure projects are well planned to be delivered appropriately.

### 2.2 Design

This document should be referred to during the design phase to ensure all works meet the minimum technical requirements specified.

### 2.3 Construction

This document should be referred to during the construction phase to ensure all works meet the minimum technical requirements specified.



# Pr11231 - Unitywater Technical Specification Reference Guide

## 2.4 Commissioning and Handover

This document should be referred to during the commissioning and handover phases to ensure all works meet the minimum technical requirements specified.

## 3. Overview

### 3.1 WSAA National Codes & SEQ Code

The Water Services Association of Australia (WSAA) has developed a suite of 'Code of Practices' to manage asset creation of water supply and sewer network infrastructure. These documents form the basis of South East Queensland Design and Construct Codes (known as the SEQ Code) The SEQ Code is a consolidated set of design and construction standards for retail water supply and sewerage infrastructure in South East Queensland (SEQ).

The SEQ Code includes:

- Civil and Mechanical Accepted Infrastructure Products and Materials (IPAM) listings
- SEQ WSA 02 Gravity Sewerage Code
- SEQ WSA 03 Water Supply Code
- SEQ WSA 04 Sewage Pumping Station Code
- SEQ WSA 06 Vacuum Sewerage Code
- SEQ WSA 07 Pressure Sewerage Code
- SEQ Asset Information Specification.

The SEQ Codes are available on the following Watercooler page: [SEQ design and construction code \(unitywater.com\)](#)

The WSAA Codes of practice are available on the following Watercooler page: [WSAA national codes \(unitywater.com\)](#)

### 3.2 Unitywater Technical Specifications

The Unitywater standards, specifications and work practices have been developed to complement and expand upon SEQ Code requirements. These specifications are significant enough to be standardised across Unitywater and are subject to approval by the Infrastructure Technical Standards Committee.





## Pr11231 - Unitywater Technical Specification Reference Guide

### 3.3 Unitywater Standard/Typical Drawings

Unitywater has developed some standard/typical drawings for various disciplines. Where standard drawings have been developed it is recommended to use them wherever possible to minimise design reviews etc. This is because the drawing have the general overall requirements of Unitywater, however these drawings are not “For Construction” and further design work is required. Some of the standard drawings are listed below, however this list is incomplete and is slowly being developed as needs arise. Contact the Infrastructure Standards Team for more information.

- Civil:
  - Department of Transport and Main Roads (DTMR)
  - Large Diameter meters
  - Pressure Reducing Valve/Flow Control Valve (PRV/FCV).
- Mechanical:
  - Flange Adapters
  - Void Protection.
- Electrical:
  - Symbol Library
  - Single Line Diagrams
  - Distribution Diagrams
  - Motor Schematics.
- Process:
  - SPS PID.

### 3.4 Australian Standards

Unitywater has access to Australian Standards online. Refer to [SAI Global standards](#) on the Watercooler for more information and how to access them.

If an Australian Standard is locked or unavailable contact the Unitywater Administrator as detailed in the above link.

### 3.5 Request to deviate from a technical specification or the SEQ Code

If a particular project requires a deviation from a technical specification or the SEQ Code, the following form should be completed and submitted:

- [F10996](#) - Deviation to Unitywater Technical Specification or Standard Form.

Feedback and suggestions for improvement to the technical specifications can be lodged via this form: [Improvement Request Form](#).






## Pr11231 - Unitywater Technical Specification Reference Guide

### 4. Glossary of the technical specifications

Table 1 below lists the technical documents which may be involved with different assets classes. The table provides guidance only and the reader should assess their projects on a case-by-case basis to determine which (other) technical documents may be required.

Key to symbols in Table 1:

#### KEY TO SYMBOL IN TABLE 1

Shape	Guidance
	Technical Specification may not be relevant to this particular asset type
	Technical Specification may be relevant to this particular asset type
	Technical Specification is relevant to this particular asset type

## Pr11231 - Unitywater Technical Specification Reference Guide

Table 1 - Specifications Applicable for each Asset location

Technical Specification	ACTIVE ASSETS			PASSIVE ASSETS	
	Complex/WWTP	Sewerage	Water	Sewerage	Water
<b>Accepted Products and Materials Lists</b>					
F10678 - Accepted Electrical Equipment List					
F10975 - Preferred Equipment List for Sewage Treatment Plants					
SEQCode Civil IPAM list					
SEQCode Mechanical IPAM list					
<b>Civil And Construction</b>					
Pr9769 - Specification for Concrete Surface Protection					
Pr9902 - Specification for Civil and Earthworks					
Pr9903 - Specification for Building and Structural Works					
Acid Sulfate Soil National Management Guideline					



## Pr11231 - Unitywater Technical Specification Reference Guide

Technical Specification	ACTIVE ASSETS			PASSIVE ASSETS	
	Complex/WWTP	Sewerage	Water	Sewerage	Water
<b>Commissioning &amp; Handover</b>					
Pr8701 - Specification for Asset Information					
Pr11211 - Specification for Commissioning and Handover of Active and Passive Assets					
SEQ Asset Information Specification					
Pr9032 - Procedure for Managing Water Quality During Mains Commissioning					
Dechlorination of Drinking Water to Discharged Waterways - National Guidance for the Urban Water Industry					
<b>Conveyance</b>					
<b>Reticulation</b>					
Pr9085 - Pressure Testing of Sewer Rising and Gravity Mains Work Instruction					
Pr9087 - Pressure Testing of Water Mains Work Instruction					
Pr9875 - Specification for Non-Pressure Pipeline Construction					
Pr9904 - Specification for Pressure Pipeline Construction					

## Pr11231 - Unitywater Technical Specification Reference Guide

Technical Specification	ACTIVE ASSETS			PASSIVE ASSETS	
	Complex/WWTP	Sewerage	Water	Sewerage	Water
<b>Reservoirs</b>					
Pr9821 - Specification for Reservoir Design and Construction	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
COMING SOON: Specification for Reservoir Refurbishment	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Sewer rehabilitation</b>					
Pr9770 - Specification for Sewer CCTV Inspection and Laser Profiling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Pr9774 - Specification for Sewer Lining and Patch Repair	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<b>Temporary Bypass</b>					
Pr10179 - Specification for Water Supply Temporary Bypass	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Pr10661 - Specification for Sewer Temporary Pumped Bypass	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<b>Trenchless construction</b>					
Pr9787 - Specification for Microtunneling and Pipejacking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Pr9788 - Specification for Horizontal Directional Drilling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Pr9789 - Specification for Auger Boring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

## Pr11231 - Unitywater Technical Specification Reference Guide

Technical Specification	ACTIVE ASSETS			PASSIVE ASSETS	
	Complex/WWTP	Sewerage	Water	Sewerage	Water
Pr9790 - Specification for Pipe Ramming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Pr9825 - Specification for Shafts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
<b>Trunk</b>					
Pr11034 - Specification for Trunk Water Mains Design and Construction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
TWM-A UWDSTD-C-DR-7020 Trunk Water Main Typical Drawings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
<b>Drawing Management (including BIM &amp; CAD)</b>					
Pr8843 - Specification for Drawing, Document and Equipment Tag Numbering	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Pr9080 - Specification for CAD/BIM Drafting and Modelling Standards	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr10360 - Project Information Requirements	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr10382 - Digital Engineering Execution Plan Template	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Pr11231 - Unitywater Technical Specification Reference Guide

Technical Specification	ACTIVE ASSETS			PASSIVE ASSETS	
	Complex/WWTP	Sewerage	Water	Sewerage	Water
<b>Electrical</b>					
Pr9380 - Electrical Installations at Network Sites	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr9835 - Electrical Installations at Treatment Plants	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr9913 - Acoustic Enclosed Generators at Unitywater Sites (Supply and Installation)	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr9914 - Solar Power Supply and Installation at Unitywater Sites	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr10618 - Specification for Power Systems Analysis and Arc Flash Studies	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Mechanical</b>					
Pr9693 - Specification for Mechanical Installations	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Dosing Systems</b>					
Pr10852 - Specification for Design and Construction of MHL Dosing Systems	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Pr10999 - Specification for Odour Control Unit Design and Construction (Network)	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Pr11053 - Specification for Chlorine Dosing Systems Design and Construction	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Pr11231 - Unitywater Technical Specification Reference Guide

Technical Specification	ACTIVE ASSETS			PASSIVE ASSETS	
	Complex/WWTP	Sewerage	Water	Sewerage	Water
<b>Water Meters</b>					
Pr10068 - Specification for Water Meters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Pr8132 - Specification for Sub-metering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
<b><u>Control System</u></b>					
Pr9833 - Specification for SCADA and PLC Architecture	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr9834 - Specification for SCADA Standard	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr9844 - SCADA and PLC Device Type - Siemens	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr10699 - SCADA and PLC Device Type – Schneider	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr10434 - Specification for SCADA and PLC Device Type Siemens OPC - PID Controller	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr9845 - SCADA and PLC Implementation	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr9846 - SCADA and PLC Historian and Reporting	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Pr11231 - Unitywater Technical Specification Reference Guide

Technical Specification	ACTIVE ASSETS			PASSIVE ASSETS	
	Complex/WWTP	Sewerage	Water	Sewerage	Water
<b><u>Safety in Design (SiD)</u></b>					
Pr8187 - Safety in Design Procedure					
Pr10883 - Safety in Design Guidelines					
<b>Water quality</b>					
Pr9032 - Procedure for Managing Water Quality During Mains Commissioning					
F10045 - Water Quality Mains Commissioning Form					
F9785 - Water Hygiene Field Guide (5 C's)					
<b><u>SEQ Code</u></b>					
<a href="#">SEQ Water Supply and Sewerage Design Criteria (February 2020)</a>					
<a href="#">SEQ Gravity Sewerage Code (SEQ-WSA02) ebook Including Drawings</a>					
<a href="#">SEQ Water Supply Code (WSA03) ebook Including Drawings</a>					
<a href="#">Sewage Pumping Station Code (WSA04 – 2005 V2.1) Including Drawings</a>					



## Pr11231 - Unitywater Technical Specification Reference Guide

Technical Specification	ACTIVE ASSETS			PASSIVE ASSETS	
	Complex/WWTP	Sewerage	Water	Sewerage	Water
<a href="#">Vacuum Sewerage Code of Australia (WSA06-2008 V1.2) Including Drawings</a>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<a href="#">Pressure Sewerage Code of Australia (WSA 07 – 2007 V1.1) Including Drawings</a>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<a href="#">SEQ Asset Information Specification V3.01</a>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
<a href="#">Queensland State Government Planning Guidelines for Water Supply and Sewerage (April 2010)</a>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
<b>Miscellaneous Specifications not Covered Above</b>					
Pr9727 - Unitywater Wastewater Treatment Plant Guidelines	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pr11186 - Design Review Procedure	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Pr10436 - Asset Management System Manual	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Pr10483 - Strategic Asset Management Plan	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Pr10545 - Asset Management Strategy and Framework	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Pr10666 - Spatial Data Capture Manual	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Pr10879 - Asset Condition Assessment Framework	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

# Pr11231 - Unitywater Technical Specification Reference Guide

## **4.1 Accepted Products and Material Lists**

### **4.1.1 F10678 - Accepted Electrical Equipment List**

The purpose of this list is to define acceptable and preferred electrical products that may be used for electrical installations at Unitywater. The List is not exhaustive; If a make and model is not specified in the list then check acceptability with Unitywater's Standards Team.

This list should be read in conjunction with Unitywater Specifications Pr9835 - Electrical Installations at Treatment Plants and with Pr9380 - Electrical Installations at Network Sites.

### **4.1.2 F10975 - Preferred STP Equipment List**

The purpose of this list is to define acceptable and preferred products that may be used for installations at Wastewater Treatment Plants. The List is not exhaustive. If a make and model is not specified in the list then check acceptability with Unitywater's Standards Team.

### **4.1.3 SEQ Code Civil IPAM List**

The Infrastructure Products and Materials (IPAM) detailed in the following lists are acceptable (in the appropriate situations) to the SEQ water service providers. Only approved products shall be used, unless specific concession is obtained from the relevant water service provider. In general, the water service providers do not give preference to any particular make or type of product in the lists.

### **4.1.4 SEQ Code Mechanical IPAM list**

The Infrastructure Products and Materials (IPAM) detailed in the following lists are acceptable (in the appropriate situations) to the SEQ water service providers. Only approved products shall be used, unless specific concession is obtained from the relevant water service provider. In general, the water service providers do not give preference to any particular make or type of product in the lists.

## **4.2 Civil and Structural**

### **4.2.1 Pr9769 - Specification for Concrete Surface Protection**

The purpose of this Specification is to detail Unitywater's minimum requirements for the application of concrete surface protection to existing and new sewerage network assets.

Unitywater will consider new and innovative technologies for the successful completion of these services.

The services encompass the minimum requirements for the surface preparation, coating application, inspection and testing of protective coatings to concrete surfaces and applies to the following:

- Maintenance Structures
- Sewage Pumping Station wet wells
- Wastewater Treatment Plant structures, or
- Other concrete surfaces as required.

## Pr11231 - Unitywater Technical Specification Reference Guide

Unitywater will nominate the service to be provided:

- Applied coating system:
  - to new or existing uncoated concrete surface
  - to replace failed coating (patch repair or full coating replacement)
  - to rebuilding of lost concrete or surface restoration.
- HDPE and PVC Cast-in Protective Liners.

### **4.2.2 Pr9902 - Specification for Civil and Earthworks**

The purpose of this Specification is to set down minimum requirements for undertaking all civil and earth works, associated civil and earth works activities and testing relating to a nominated project.

This Specification shall be read in conjunction with relevant project drawings (where applicable), Job Specification and supplementary specifications.

### **4.2.3 Pr9903 - Specification for Building and Structural Works**

The purpose of this Specification is to set down the minimum requirements for the construction of building and structural work to ensure satisfactory quality of materials and workmanship in order to achieve strength, durability, performance and quality of finish. This Specification shall be read in conjunction with relevant project drawings (where applicable), Project Specification and supplementary specifications.

### **4.2.4 Acid Sulphate Soil National Management Guideline**

Link to external website (Water Quality Australia) that gives guidance to help you understand and manage the effect of acid sulphate soils on water quality in Australia.

## **4.3 Commissioning and Handover**

### **4.3.1 Pr8701 - Specification for Asset Information**

The purpose of this Specification is to define Unitywater's requirements for the asset information documentation to be provided to Unitywater upon completion of construction and commissioning of projects undertaken for and on behalf of Unitywater.

Asset information comprises a suite of design, construction, commissioning, operating and maintenance documentation related to an asset or assets presented in a specified format.

In addition to providing information on operation and maintenance of an asset, the asset information provides a reference inventory for any future augmentations, operational modifications and assets that have been decommissioned.

Asset Information consist of two parts:

- Design Documentation
- As Built Documentation.

### **4.3.2 Pr11211 - Specification for Commissioning and Handover of Active and Passive Assets**

The purpose of this specification is to define Unitywater's requirements for commissioning and handover of assets including but not limited to the asset types in Table below.

# Pr11231 - Unitywater Technical Specification Reference Guide

Table 2 - Definition of asset descriptors used in this specification

Asset Type/Scope	Description
Complex Assets	Waste Water Treatment plants (WWTP)
	Recycled Water Treatment Plants
Active Assets	Sewage pump stations
	Water booster pump stations including potable and recycled water
	Reservoirs
	Chemical Dosing Facilities (not within a complex asset)
	Odour Control Facilities (not within a complex asset)
	Vacuum or low pressure sewer
Passive Assets	Trunk sewer mains
	Rising mains
	Reticulation sewer mains
	Recycled water mains
	Trunk water mains
	Reticulation water mains

### Active and Complex Assets

To ensure that all equipment and systems are installed, are compliant with the requirements of the scope of works and can operate in accordance with relevant specifications prior to operation of the plant under service conditions.

### Passive Assets

Demonstrate that passive assets will hold the required pressure as per the scope of works and manufacturers specifications and are SEQ Code compliant.

#### 4.3.3 [SEQ Asset Information Specification \(externally controlled\)](#)

The SEQ Code inherently needs a common standard for the submission of design and as-constructed information. This Asset Information Specification details the requirements of the SEQ Service Providers (SEQ-SPs) with respect to the quality, type, format and completeness of information to be submitted by project proponents and their agents.

#### 4.3.4 [Pr9032 - Procedure for Managing Water Quality During Mains Commissioning](#)

Refer to Section 4.10 Water Quality.

#### 4.3.5 [Dechlorination of Drinking Water to Discharged Waterways - National Guidance for the Urban Water Industry](#)

This document is for any water utility that manages waterways or discharges chlorinated water to the environment. It is also intended to guide Regulators in understanding the drivers, barriers and opportunities facing organisations around the subject of chlorinated water discharges. Chlorinated water refers to both free and combined forms of chlorine in discharges (i.e. chlorine and chloramines).

These guidelines are not intended to replace existing procedures that have been implemented by utilities to the satisfaction of their respective Regulators.

## Pr11231 - Unitywater Technical Specification Reference Guide

### 4.4 [Conveyance](#)

#### RETICULATION

##### 4.4.1 [Pr9085 - Pressure Testing of Sewer Rising and Gravity Main](#)

This work instruction details the process of pressure testing of sewer rising mains and sewer gravity mains.

##### 4.4.2 [Pr9087 - Pressure Testing of Water Mains](#)

This work instruction details the process of pressure testing water mains.

##### 4.4.3 [Pr9875 - Specification for Non-Pressure Pipeline Construction](#)

The purpose of this Specification is to define Unitywater's requirements for the construction of non-pressure pipelines, maintenance holes and house drains within Unitywater's sewerage network.

These requirements shall also apply to non-pressure and low pressure pipelines associated with the transport of stormwater, sewage and sludge under gravity typically found at Unitywater's sewage treatment facilities. This Specification does not apply to the construction of pressure pipelines other than gravity flow pipelines where the water pressure head does not exceed 10 metres.

The Specification applies to non-pressure and low pressure pipelines of ductile iron cement lined (DACL), poly-vinyl chloride (PVC), glass filament reinforced thermosetting plastic (GRP), mild steel cement lined (MSCL), Acrylonitrile Butadiene Styrene (ABS), polyethylene (PE), polypropylene (PP) and concrete.

##### 4.4.4 [Pr9904 - Specification for Pressure Pipeline Construction](#)

The purpose of this Specification is to define Unitywater's requirements for the construction of pressure pipelines and associated fittings for use in water, recycled water and sewerage pressure mains within Unitywater's network.

These requirements shall also apply to other pressure pipelines associated with the transport of water, sewage and sludge typically found at Unitywater's Sewage Treatment Facilities.

The Specification applies to pressure mains constructed from ductile iron (DI), poly-vinyl chloride (PVC), glass filament reinforced thermosetting plastic (GRP), mild steel (MS), Acrylonitrile Butadiene Styrene (ABS), polyethylene (PE).

#### RESERVOIRS

##### 4.4.5 [Pr9821 - Specification for Reservoir Design and Construction](#)

The purpose of this Specification is to set out minimum requirements for the design, supply, construction, installation, testing, commissioning and hand-over to Unitywater of new ground level reinforced, prestressed or post-tensioned concrete water supply reservoirs. This specification does not cover Unitywater's requirements on steel reservoirs nor elevated reservoirs.



## Pr11231 - Unitywater Technical Specification Reference Guide

### SEWER REHABILITATION

#### **4.4.6 Pr9770 - Specification for Sewer CCTV Inspection and Laser Profiling**

The purpose of this Specification is to detail the minimum requirements for CCTV inspection and laser profiling of existing Unitywater sewers, and the inspection of existing sewer maintenance structures to enable full condition assessment.

Unless specifically amended by this Specification the requirements of WSA 05 Conduit Inspection Reporting Code of Australia shall apply. This Specification includes the requirements for:

- a) Performing CCTV inspection
- b) Conducting laser profiling of existing sewer pipelines (where requested)
- c) Inspection of existing sewer maintenance structures and
- d) Provision of reports (including electronic data such as video) of these inspections.

#### **4.4.7 Pr9774 - Specification for Sewer Lining and Patch Repair**

The purpose of this Specification is to detail Unitywater's minimum requirements for rehabilitation of existing sewer network pipelines up to and including 1000 mm internal diameter and up to 10 m depth. Unitywater will consider new and innovative technologies for the successful completion of these services.

The Works encompass the minimum requirements for the rehabilitation of Unitywater's sewer network inclusive of gravity mains, pressure mains and house connection branches. Generally the works shall encompass:

- design of lining system
- preparation works
- rectification of faults that may impede lining works
- installation of liners and patches
- rehabilitation of house connection branches
- final conduit inspection and testing
- additional works may include
- replacement and/or raising of Inspection Openings
- replacement of house connection branches.

### TEMPORARY BYPASS

#### **4.4.8 Pr10179 - Specification for Water Supply Temporary Bypass**

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

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  $\leq$ DN200.



## Pr11231 - Unitywater Technical Specification Reference Guide

### **4.4.9 [Pr10661](#) - Specification for Sewer Temporary Pumped Bypass**

The purpose of this Specification is to outline Unitywater's minimum requirements for the design, installation, maintenance and removal of a temporary pumped bypass system for diverting sewage flows around a work area for the duration of a project.

This Specification nominates Unitywater's operational and technical requirements for a sewer temporary pumped bypass system that would be required when sewer flows cannot be addressed using mobile tankers or where flows will be interrupted for an unacceptably long time.

This Specification applies to gravity sewers or sewage pumping stations requiring temporary pumped bypass.

## TRENCHLESS CONSTRUCTION

### **4.4.10 [Pr9787](#) - Specification for Microtunneling and Pipejacking**

The purpose of this Specification is to ensure consistency across all projects delivered by Unitywater and that the safety, quality, environmental and design objectives required by Unitywater are achieved on Microtunnelling/Pipe Jacking projects.

This Specification shall be read in conjunction with relevant project drawings (where applicable), Job Specification and supplementary specifications.

### **4.4.11 [Pr9788](#) - Specification for Horizontal Directional Drilling**

The intent of this Document is to outline the minimum deliverables and standards that the contractor needs to comply with when performing Horizontal Directional Drilling (HDD) works on Unitywater projects. The document also specifies additional requirements if a crossing is classified as critical.

Its purpose is to ensure consistency across all projects delivered by Unitywater and that the safety, quality, environmental and design objectives required by Unitywater are achieved.

### **4.4.12 [Pr9789](#) - Specification for Auger Boring**

The intent of this document is to outline the minimum deliverables and standards that the contractor needs to comply with when performing Auger boring works on Unitywater projects. Its purpose is to ensure consistency across all projects delivered by Unitywater and that the safety, quality, environmental & design objectives required by Unitywater are achieved.

### **4.4.13 [Pr9790](#) - Specification for Pipe Ramming**

The intent of this document is to outline the minimum deliverables and standards that the contractor needs to comply with when performing pipe ramming works on Unitywater projects.

This Specification shall be read in conjunction with relevant project drawings (where applicable), Job Specification and supplementary specifications.

### **4.4.14 [Pr9825](#) - Specification for Shafts**

The intent of this Specification is to outline the minimum deliverables and standards that the contractor needs to comply with when constructing shafts/pits on Unitywater projects.

Shafts/pits are constructed to provide access below ground level which can be of permanent or temporary nature to suit the project requirements. A range of different shaft/pit construction techniques are available and will be selected to best suit the ground conditions and if applicable the trenchless construction methodology.

## Pr11231 - Unitywater Technical Specification Reference Guide

### TRUNK

#### **4.4.15 Pr11034 - Specification for Trunk Water Mains Design and Construction**

This Trunk Water Main Design and Construction Code (TWM Code) is an Unitywater addendum to the SEQ Water Supply Design and Construction Code (SEQ Water Code). The purpose of this specification is to assist engineering consultants prepare design documentation for proposed trunk water mains to be owned and operated by Unitywater.

The purpose of this specification is to define Unitywater's requirements for the design, construction, commissioning, and handover for any new Trunk Water Mains to be located within Unitywater's water network.

This document must be read in conjunction with the current version of the SEQ Water Code [which at the time of writing this document is the SEQ Service Providers Edition of the WSA Water Supply Code – Version 1.3 (August 2019)]. This Specification shall also be read in conjunction with relevant project drawings (where applicable), project specification and supplementary specifications.

#### **4.5 Drawing Management (Including BIM and CAD)**

##### **4.5.1 Pr8843 - Specification for Drawing, Document and Equipment Tag Numbering**

The purpose of this document is to specify a numbering and naming convention system to be applied across all of Unitywater's Wastewater Treatment Plants (WWTPs), Sewage Pump Stations, Water Pump Stations, Water Reservoirs and other significant infrastructure.

This Specification shall apply to all of Unitywater's Wastewater Treatment Plants (WWTPs) except where an existing numbering system is to be retained as directed by Unitywater.

This Specification shall progressively apply to all of Unitywater's Sewage Pump Stations, Water Pump Stations, Water Reservoirs and other significant infrastructure except where an existing numbering system is to be retained as directed by Unitywater.

The numbering system is used to develop OPERATIONAL/HANDOVER DOCUMENTATION ONLY including:

- Drawing and document identification numbers.
- Tag numbers for wastewater treatment plant areas, process units, structures, mechanical equipment, electrical equipment, control equipment, valves and instruments.
- Identification numbers for pipes and cables.
- PLC and SCADA tag numbers.
- This document does not consider numbering systems for general project management requirements.

This Specification shall be used to develop the following at each site/facility:

- Drawing and document numbers – drawings, manuals, procedures.
- Equipment tag numbers – process, mechanical, electrical, PLC/SCADA, structures, pipes.

This Specification can be used in parallel with online project collaboration software. Project specific documentation may be named and numbered in alignment with this specification, however operational documents must follow the requirements of this specification.

## Pr11231 - Unitywater Technical Specification Reference Guide

### 4.5.2 [Pr9080](#) - Specification for CAD/BIM Drafting and Modelling Standards

This manual is a standard specification that applies to all consultants, designers, contractors and their sub-contractors (collectively called the Delivery Team), producing 2D CAD, 3D CAD and BIM data and drawings for Unitywater. This document supports Unitywater Project Information Requirements (PIR) and shall be read referencing the requirements of the PIR as defined in Pr10360 - Project Information Requirements.

The purpose of this manual is to document and define:

- The procedures, presentation and standards to be used in all documentation produced for Unitywater projects, ensuring that all documents are produced consistently. This approach enhances the clarity, readability, and the ease with which they can be searched, accessed, viewed and shared among all parties involved with Unitywater projects.
- The document properties, digital formats, content, and data requirements to ensure that the information provided can be utilised by Unitywater and integrated into its systems.

### 4.5.3 [Pr10360](#) – Project Information Requirements

This asset information, produced by the Delivery Team, includes Building Information Model's (BIM/s), smart Process and Instrumentation Diagrams (P&ID), drawings, schedules, specifications, Operation and Maintenance manuals (O&M) and other asset-related data defined as Level of Information (LOI). This data is collectively known as the Project Information Model (PIM).

The Project Information Requirements (PIR) document defines Unitywater information requirements when using Building Information Modelling (BIM) and Digital Engineering (DE). The PIR must be used by the Delivery Team (Designers/Contractor/Trades) as the basis for determining how, when and what information shall be created using Digital Engineering (DE) processes.

The PIR explains how information must be structured, managed and delivered by each Appointed Party within the broader Delivery Team.

Unitywater requires the organisation and digitisation of information for buildings, and civil engineering works using BIM (ISO 19650 series) are implemented for the design, construction and commissioning phases of the Project.

### 4.5.4 [Pr10382](#) - Digital Engineering Execution Plan Template

This is a word document template used to assist at project hand over.

The document should be read and used in conjunction with Pr10360 - Project Information Requirements.

## 4.6 [Electrical](#)

### 4.6.1 [Pr9380](#) - Electrical Installations at Network Sites

The purpose of this Specification is to define Unitywater requirements for manufactured electrical equipment and electrical installation works at all sites within the Unitywater network excluding major treatment plants. This includes but is not limited to water supply and sewerage infrastructure including pump stations, reservoir sites and auxiliary equipment deemed to be electrical by the functionality of the equipment installed.

## Pr11231 - Unitywater Technical Specification Reference Guide

The Specification defines quality, performance, reliability, durability, safety and appearance requirements for these installations.

The scope of this Specification applies for complete and partial electrical design and installation works at Unitywater sites. This includes, but is not limited to, the following:

- Design, manufacture, supply, installation, testing and commissioning of electrical equipment including switchboards, motor control centres, control systems, network and communications equipment, auxiliary equipment and panels, control panels, instrumentation, cabling and cable supports.
- Documentation associated with the equipment including single line diagrams, three-line diagrams, schematic diagrams, schedules, general arrangements, workshop drawings, inspection and testing, operations and maintenance, data sheets, lists, manuals, reports.

### **4.6.2 Pr9835 - Electrical Installations at Treatment Plants**

The purpose of this Electrical Specification is to define Unitywater requirements for manufactured electrical equipment and electrical installation works at Wastewater Treatment Plants (WWTPs) and other major treatment plants as appropriate.

The Specification defines quality, performance, reliability, durability, safety and appearance requirements for these installations.

The scope of this specification applies to both complete and partial electrical design and installation works at Unitywater's WWTPs. This includes, but is not limited to, the following:

- Electrical, instrument and control system design and documentation, preparation of workshop drawings, as constructed drawings, inspection and test plans, etc.
- Design, supply and installation of all electrical switchboards, control panels and local control stations.
- Supply and installation of all electrical cabling, including power, control, fibre optic, data and communication, and cable supports, including cable ladder and conduit.
- Supply and installation of all electrical equipment including test results.
- Supply and installation of PLC/SCADA and site control networking equipment.
- Electrical Hazardous Area Certification and verification documentation.

### **4.6.3 Pr9913 - Acoustic Enclosed Generators at Unitywater Sites (Supply and Installation)**

The purpose of this Specification is to define Unitywater requirements for manufacturing and installation of fixed permanent generating sets at Unitywater sites.

This Specification defines quality, performance, reliability, durability, safety and appearance requirements for these installations.

The generating sets are required to provide standby power during a mains power failure or for load shedding requirements of the electricity Supply Authority or Unitywater's electricity retailer. Generating sets shall start automatically and operate all the site processes and facilities with the voltage at the alternator terminals not falling below 0.9 pu.

## Pr11231 - Unitywater Technical Specification Reference Guide

### **4.6.4 Pr9914 - Specification for Solar Power Supply and Installation at Unitywater Sites**

The purpose of this Specification is to define Unitywater requirements to achieve functional performance, time objectives and cost objectives for the supply, design, installation and testing of solar power supplies.

This Specification defines quality, performance, reliability, durability, safety and appearance requirements for these units. Emphasis is placed on Photovoltaic (PV) solar powered systems.

### **4.6.5 Pr10618 - Specification for Power Systems Analysis and Arc Flash Studies**

The purpose of this Standard Electrical Specification is to define Unitywater requirements for Power System Analysis (PSA) and Arc Flash Analysis (AFA). This standard specification outlines the general requirements and provides guidelines on how to meet Unitywater requirements on PSA and AFA but is not a site-specific document.

This specification applies to both complete and partial electrical design and installation works at Unitywater's sites. This includes, but is not limited to, the following:

- Design, supply and installation of all electrical switchboards.
- Design of switchboard workshop drawings.
- Supply and installation of electrical power cabling.
- Modification to existing plant.

This technical specification forms part of the learning content in uLearn module: 1OARFA – Arc Flash Awareness Course (UW).

## **4.7 Mechanical**

### **4.7.1 Pr9693 - Specification for Mechanical Installations**

The purpose of this Specification is to set down minimum requirements for mechanical equipment to ensure quality of materials, equipment and workmanship.

## **DOSING SYSTEMS**

### **4.7.2 Pr10852 - Specification for Design and Construction of MHL Dosing Systems**

The purpose of this specification is to define Unitywater's requirements the design, construction, commissioning, and handover for Magnesium Hydroxide Liquid (MHL) Dosing system at Sewage Pumping Stations within Unitywater's sewer network.

This Specification shall be read in conjunction with relevant project drawings (where applicable), Project Specification and supplementary specifications.

### **4.7.3 Pr10999 - Specification for Odour Control Unit Design and Construction (Network)**

The purpose of this specification is to define Unitywater's requirements for design, supply, construction, installation, and commissioning of odour control units within the sewer reticulation network and pumping stations.

This specification applies to oxidant cartridge, carbon, and biofilter odour control units installed within the sewer reticulation network and pumping stations. Consideration is provided for both naturally ventilated (or passive) units and mechanically ventilated (or fan forced).



## Pr11231 - Unitywater Technical Specification Reference Guide

While general design aspects of this specification may apply to Treatment Plants, the scale and complexity of odour control for Treatment Plants requires further consideration. The intent of this specification is not to limit the scope of Treatment Plant control units which may employ other technologies.

### **4.7.4 [Pr11053](#) - Specification for Chlorine Dosing Systems Design and Construction**

The purpose of this specification is to define Unitywater's minimum technical requirements for the design, construction, commissioning, and handover of Chlorine Dosing system within Unitywater's drinking water network inclusive for the purposes of maintaining chlorine residual throughout the network. Chlorination Dosing Systems covered by this standard include:

- Liquid - Sodium Hypochlorite or Calcium Hypochlorite.
- Gas - Chlorine Gas.

#### NOTES:

The intent of this specification is to apply to new and/or upgraded sites. This specification may not apply to existing infrastructure.

This specification is for chlorine dosing systems that are generally co-located with other assets on the water supply network. Installations at other locations, such as wastewater treatment plants, are not covered by this document but the document may be used as guidance.

## WATER METERS

### **4.7.5 [Pr10068](#) - Specification for Water Meters**

The purpose of this Specification is to detail the minimum requirements for the supply, testing and delivery of water meters and spare parts.

### **4.7.6 [Pr8132](#) - Specification for Sub-metering**

The purpose of the technical specification is to help ensure that any decisions in respect to sub-metering are consistent and in line with the intent of the Unitywater Sub-Metering Policy (OP8131). The technical specification may be amended from time to time. Any decision made by Unitywater in connection with a particular development takes precedence over the technical specifications.

Sub-meters installed to these specifications shall become the property of Unitywater. Where legislation requires, property owners shall be billed from these sub-meters and occupants shall receive a water advice notice.

## **4.8 [Control Systems](#)**

***The following Telemetry and SCADA technical specifications are only to be released to any person outside Unitywater with prior approval from the Operational Technology team.***

Unitywater has produced a set of specifications for the supply, development, and implementation of SCADA and PLC systems for its Wastewater Treatment Plants (WWTPs). The specifications have been developed to align with Unitywater's Water Supply and Sewerage Telemetry SCADA system where appropriate and with due regard for the international ASM Consortium Guidelines – Effective Operator Display Design.

Figure 1 shows the structure of the document set.



## Pr11231 - Unitywater Technical Specification Reference Guide

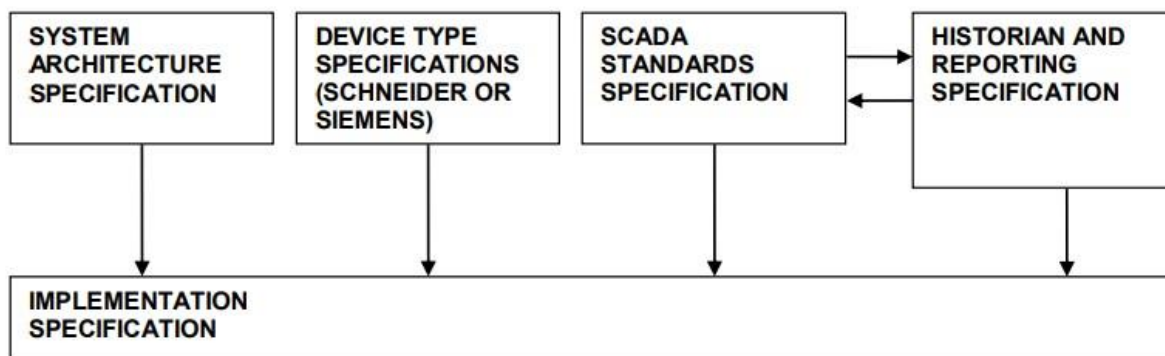


Figure 1 - Control Systems document framework structure

### 4.8.1 [Pr9833](#) - Specification for SCADA and PLC Architecture

This Specification defines the intended architecture of the control systems that is to be implemented. This includes the type of PLC, SCADA, and other devices that are to be used.

The required network architecture is detailed from the corporate network connection to the field devices. Also detailed is:

- The required security measures for the system.
- The equipment naming scheme.
- Who is responsible for the supply, configuration and installation of the various categories of equipment.

### 4.8.2 [Pr9834](#) - Specification for SCADA Standard

This Specification details the standards to be followed within the SCADA system, including the following requirements:

- Colours and font types.
- Common symbols and icons that form part of the common SCADA library.
- The structure of the SCADA system, including displays, navigation and the underlying database structure.
- Information displays to the SCADA operator, including alarm information, trends and standard displays.
- Security measures.

### 4.8.3 [Pr9844](#) - SCADA and PLC Device Type - Siemens

This specification details each standard software object within both PLC and SCADA environments for the Siemens PLC architecture.

Each control device in the standard library shall have a PLC Derived Function Block (DFB). This specification describes the requirements of each DFB, including block pins, block functionality and Derived Data Types (DDTs).

Each control device in the standard library shall have a SCADA template. The requirements of each template, including mimic representations, Faceplates and historical storage and display are described.

## Pr11231 - Unitywater Technical Specification Reference Guide

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### **4.8.4 Pr10699 - SCADA and PLC Device Type - Schneider**

This specification details each standard software object within both PLC and SCADA environments for the Schneider PLC architecture.

Each control device in the standard library shall have a PLC Derived Function Block (DFB). This specification describes the requirements of each DFB, including block pins, block functionality and Derived Data Types (DDTs).

Each control device in the standard library shall have a SCADA template. The requirements of each template, including mimic representations, Faceplates and historical storage and display are described.

### **4.8.5 Pr10434 - Specification for SCADA and PLC Device Type Siemens OPC - PID Controller**

This specification details each standard software object within both PLC and SCADA environments for the Siemens PLC architecture. Standard software objects manage external devices and instruments (such as drives, valves and flowmeters), or internal PLC functions (such as scaling, filtering and rate of change limiting functions).

Standard software objects are implemented on the PLC as either Function Blocks (FBs) if there is a requirement to hold data between PLC scans, or Functions (FCs) if there is no such requirement.

This document describes the requirements of each standard software object, including block pins and block functionality. If the standard software object utilises a SCADA interface, the corresponding SCADA template, including mimic representations, faceplates and historical storage and display are described as well.

### **4.8.6 Pr9845 - SCADA and PLC Implementation**

This Specification defines the methodology involved with implementing and managing all PLC and SCADA library standards throughout the control systems lifecycle of a WWTP. This document along with all others in the SCADA series as per Figure 1 above shall be referenced to produce a fully compliant system library.

Depending upon the location and project specific requirements there are two sets of specifications and libraries that suit two vendors being Schneider Electric and Siemens. Unitywater shall determine which vendor equipment is to be utilised generally via the project specific specification.

The Device Type Specification and related PLC code library are specific to the vendor selected, with the overall documentation set and library sharing the same dependencies.

### **4.8.7 Pr9846 - SCADA and PLC Historian and Reporting**

This Specification details the historian database and reporting functionality. This includes the required components of the systems, including SQL Tables, Stored Procedures and jobs. Reporting components, including common visual elements of reports and required reports, as well as required functionality of report delivery and access security are also detailed.

## Pr11231 - Unitywater Technical Specification Reference Guide

### 4.9 Safety in Design

#### 4.9.1 [Pr8187](#) - Safety in Design Procedure

This Procedure outlines the framework pertaining to Safety in Design (SID) principles and techniques applied during the delivery phases of all Unitywater projects.

This Procedure has been developed to assist Contractors and Unitywater persons with the continuous improvement of all SID processes, by:

- A more integrative approach to SID, as depicted in Figure 1 within the Procedure. For guidance on implementation of early hazard prevention strategies for design, i.e. finally towards more efficient SID delivery.
- To meet the minimum regulatory obligations relating to safe design, in terms of the given Unitywater WUC requirements. For guidance on the selection of appropriate design review techniques, towards more effective SID delivery.

NOTE This Procedure reflects Unitywater's minimum expectations and any additional SID processes, which may be required by local legislation or practice, must also be complied with.

This procedure shall be read in conjunction with the reporting templates and the SID Guidelines (Pr10883).

#### 4.9.2 [Pr10883](#) - Safety in Design Guidelines

This document has been prepared to provide guidance on safety in design for water and wastewater networks and wastewater treatment facilities being constructed, operated and maintained by Unitywater or their Contractors, in compliance with standards, regulatory requirements and Unitywater's safety policy.

Section B of this guideline highlights the most common causes of injury or risk of injury in Unitywater. Designers should demonstrate that they have reviewed and mitigated these risks as far as reasonably practicable.

### 4.10 Water Quality

#### 4.10.1 [Pr9032](#) - Procedure for Managing Water Quality During Mains Commissioning

The purpose of this Procedure is to define the process for commissioning potable water mains in order to manage public health risks in accordance with Unitywater's approved Drinking Water Quality Management Plan (DWQMP).

This Procedure applies to the 'commissioning', including connection, of water mains to Unitywater's network inclusive of:

- newly constructed mains, or
- existing mains that have been disconnected for more than 10 days.

This includes new water mains that are constructed by Unitywater or on behalf of Unitywater, donated water mains from Developers or mains commissioned by Unitywater internal team members.

## Pr11231 - Unitywater Technical Specification Reference Guide

### 4.11 SEQ Code

#### [4.11.1 SEQ Water Supply and Sewerage Design Criteria \(A1302014\)](#)

The objective of this guideline is to establish the key criteria to be applied in the design of water supply and sewerage reticulation infrastructure to meet current and future needs of the SEQ region. Adoption of these criteria across the region should ensure application of consistent strategic thinking in the process. These guidelines have been developed by the SEQ Water Service Providers (SEQ-SPs) for application to non-trunk distribution networks and have not been developed for the bulk components of the water grid.

It is important to clearly understand the intent and application of the design criteria contained within this guideline. In all instances, the criteria provided relate to future additions to the water/sewer distribution networks within SEQ and are not to be confused with existing customer standards of service.

#### [4.11.2 SEQ Gravity Sewerage Code \(SEQ-WSA02\) \(A6847168\)](#)

This Code focuses on technical requirements for design and construction of sewerage infrastructure and specifications for infrastructure products. WSA members operate under various state/regional legislative and regulatory constraints; they generally have organisation-specific asset creation processes and contract documentation that take precedence over the Code.

The Gravity Sewerage Code of Australia covers the planning, design and construction of trunk, branch, reticulation and property connection sewers up to and including DN 1200. The scope of the SEQ Code Edition is restricted to sewers up to and including DN 300 for SEQ SPs. Concepts that apply to larger sized mains are provided for guidance only.

Includes Typical Drawings.

#### [4.11.3 SEQ WSA 03 Water Supply Code](#)

This Code focuses on technical requirements for design and construction of water infrastructure and specifications for infrastructure products. WSA members operate under various state/regional legislative and regulatory constraints; they generally have organisation-specific asset creation processes and contract documentation that take precedence over the Code.

The Water Supply Code of Australia covers the planning, design and construction of transfer, distribution and reticulation drinking and non-drinking water mains and service pipes nominally up to DN 1200. Concepts apply to larger sized mains. SEQ Amendments sets out the SEQ-SPs requirements for water reticulation mains up to and including 300 mm ID. References to mains larger than 300 mm are provided for information only.

Includes Typical Drawings for both drinking and non- drinking water.

#### [4.11.4 Sewage Pumping Station Code \(WSA04 – 2005 V2.1\)](#)

The Sewage Pumping Station Code of Australia covers the planning, design and construction of pumping stations and rising mains up to and including 200 L/s and DN 375, respectively. The Code does not specifically address privately owned pumping stations used in residential, commercial, industrial and community title developments that are connected to a Water Agency's sewer system.

Includes Typical Drawings.

## Pr11231 - Unitywater Technical Specification Reference Guide

### **[4.11.5 Vacuum Sewerage Code of Australia \(WSA06-2008 V1.2\) \(A6545198\)](#)**

The Vacuum Sewerage Code of Australia covers the planning, design and construction of reticulation up to and including DN 300, vacuum service connections and property connection sewers. The Code does not specifically address sanitary drains used in private and community title developments that are connected to a Water Agency's collection chamber.

Includes Typical Drawings.

### **[4.11.6 Pressure Sewerage Code of Australia \(WSA 07 – 2007 V1.1\) \(A6545136\)](#)**

The Pressure Sewerage Code of Australia covers the planning, design and construction of reticulation pressure sewers and laterals up to and including DN 250, discharge lines, collection/pump units and other appurtenances. The Code does not specifically address sanitary drains used in private and community title developments that are connected to a collection/pump unit.

Includes Typical Drawings.

### **[4.11.7 SEQ Asset Information Specification V3.01 \(A7356460\)](#)**

One of the key deliverables of the SEQ Code is the need for a common standard for the submission of design and as-constructed information. This Asset Information Specification details the requirements of the SEQ Service Providers (SEQ-SPs) with respect to the quality, type, format and completeness of information to be submitted by project proponents and their agents.

### **[4.11.8 Queensland State Government Planning Guidelines for Water Supply and Sewerage \(April 2010\) \(A6543780\)](#)**

The primary purpose of these guidelines is to facilitate strategic thinking in the planning process. The planning guideline has an emphasis on integrated system planning incorporating water, sewerage and stormwater. The planning phase of the asset lifecycle provides the greatest opportunity for delivering water and sewerage services at the lowest lifecycle cost while also meeting social and environmental requirements. The document focuses on the planning process and attempts to promote consideration of a wide range of infrastructure, source substitution and 'non-asset' solutions to meet community needs. The planning principles/processes outlined in this document are applicable to planning for other municipal services.

## **4.12 Miscellaneous Specifications**

### **[4.12.1 Pr9727 - Unitywater Wastewater Treatment Plant Guidelines](#)**

The WWTP Guidelines provide the guiding principles for the planning, design, delivery and management and operation of existing wastewater treatment plants, proposed wastewater treatment plant upgrades and proposed new wastewater treatment plants. The Guidelines aim to build on existing Unitywater systems, procedures and processes and provide guidance for the implementation of the TSP. The audience will be Unitywater Stakeholders including planners, designers, managers, and project delivery personnel as well as consultants that may be involved in any planning design or project delivery of wastewater treatment plants. The document is not for customers.



## Pr11231 - Unitywater Technical Specification Reference Guide

The guidelines are primarily focused on requirements for the provision of new treatment plants or the upgrading of existing treatment plants. However, as renewal and optimisation of existing assets will play a significant role in the future, the opportunity has been taken to incorporate guidance on these areas as well.

The guidelines are meant to support but not replace Unitywater specifications. They are meant for “guidance” only and during the design and tendering of a project Unitywater may consider alternatives to what is outlined in the guidelines if considered “value for money” and fit for purpose.

Of particular strategic importance will be the issues and opportunities related to:

- Safety
- Operational excellence
- Whole of life cost
- Energy and resource recovery
- Critical asset sizing
- Total water cycle management planning principles.

### 4.12.2 [Pr11186](#) - Design Review Procedure

The purpose of this procedure is to define Unitywater’s process for undertaking review of design deliverables. Design deliverables to review typically consist of, but are not limited to:

- Drawing sets.
- Design reports.
- Subconsultant reports and briefs, such as transient analysis, geotechnical reports etc.
- Flow management plans.
- Commissioning plans and construction methodologies.
- Safety in Design assessments against Unitywater guidelines and procedures.
- Requirements for site specific Operations and Maintenance provisions.
- BIM reviews for space-proofing and tolerance.

### 4.12.3 [Pr10436](#) - Asset Management System Manual

This Manual provides an overview and description of Unitywater’s approach to the management of its infrastructure assets over the asset life-cycle. It also provides a description of Unitywater’s Asset Management System (AMS) and how it ensures that asset management activities are aligned to and support the achievement of the organisation’s strategic goals and priorities.

Unitywater has adopted a systematic, structured and formalised approach to the management of its assets and associated services in order to provide safe and reliable water supply and sewerage services at the lowest sustainable cost to its customers.

This manual provides guidance for understanding the structure and operation of the AMS. It describes the relationships and linkages with other core management systems and business processes.



## Pr11231 - Unitywater Technical Specification Reference Guide

The manual provides a description of each of the components and elements of the AMS and how they are addressed at Unitywater.

The AMS has been developed in accordance with the requirements of the international standard ISO 55001: 2014 Asset Management - Management Systems - Requirements.

### **4.12.4 Pr10483 - Strategic Asset Management Plan**

The Strategic Asset Management Plan (SAMP) translates Unitywater's corporate vision, goals, priorities and strategies into a set of Asset Management Objectives.

It is focussed on strategic issues relevant to the management of our assets and describes the organisation's approach to achieving these Asset Management Objectives.

The Strategic Asset Management Plan is a key document in Unitywater's Asset Management System (AMS) which has been developed to deliver the best value from our physical assets and is aligned to the international standard ISO 55000 Asset Management – Overview, Principles and Terminology.

### **4.12.5 Pr10545 - Asset Management Strategy and Framework**

The Asset Maintenance Management Strategy and Framework (AMMSF) describes Unitywater's approach to maintenance of infrastructure assets in line with the Strategic Asset Management Plan (SAMP) to ensure that assets are adequately maintained and risks to the business are well managed and in accordance with the risk appetite of the business.

Accordingly, Unitywater will be able to justify to its customers and the economic regulator that its maintenance practices are prudent and efficient.

This document outlines the risk based maintenance strategy methodology and optimisation methodology that will be applied to the Preventative Maintenance planning at Unitywater across the asset lifecycle to ensure an effective balance of cost and risk over the life-time of the asset.

### **4.12.6 Pr10666 - Spatial Data Capture Manual**

The purpose of this Data Capture Manual is to provide Unitywater Spatial Data Entry team members with guidelines around the creation and capture of assets in the GIS. It is not intended to replicate the ArcFM or ArcGIS Desktop Help documentation but rather to outline and highlight any information specific to Unitywater business processes for asset creation in the GIS.

This manual is intended to be used in conjunction with the Unitywater Data Dictionaries for Water, Sewer and Recycled Water.

### **4.12.7 Pr10879 - Asset Condition Assessment Framework**

Understanding asset condition is critical to making appropriate asset management decisions. Asset condition is a predictor of asset performance and is used to inform repair and/or replace decisions and to understand the businesses asset risk profile.

Clearly different assets deteriorate at different rates and with different degradation curves. While most assets, particularly passive assets, have a theoretical useful life, actual remaining useful life is influenced by a variety of environmental and operational factors. The condition assessment process aims better understand current asset condition and remaining useful life for specific assets, and to better understand asset degradation curves in general.