

Supplementary information to the WSAA Water Supply Code of Australia

**Melbourne Retail Water
Agencies Edition**

WSA 03-2011-3.1

Revision history

Version	Date	Amendments	Approved
4.0	26 October 2022	Full review and update	26 October 2022
4.1	29 November 2023	Inclusion to dispensation (water property services)	29 November 2023

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Water Code and Standards

Introduction

Barwon Water's design and construction requirements for water mains required for the provision of services to subdivisions and other land development works is the Water Services Association of Australia (WSAA) Water Supply Code of Australia WSA 03-2011-3.1 Melbourne Retail Water Agencies (MRWA) Edition Version 2 with the exceptions listed in this supplement.

The numbering of this supplementary document matches the Melbourne Retail Water Agencies version of the WSAA Water Reticulation Code (WSA 03-2011-3.1) and the Standard Drawings.

Innovative solutions

WSAA Water Reticulation Code of Australia and this supporting documentation essentially provide "deemed-to-comply" solutions for the creation of Water Agency water and recycled water assets. Alternative solutions, practices, equipment and methodologies will continue to evolve and offer opportunities to improve the creation of these assets. Barwon Water encourages employment of any innovation that offers enhanced productivity and serviceability, but Barwon Water input should be sought before any innovative system is installed.

Responsibilities

Designers and constructors are responsible for their respective aspects of the design and construction process. It is the designer/constructor's responsibility to justify any variation and request dispensation from the requirements set out in the WSA 03-2011-3.1 MRWA edition and Barwon Water's supplement – plus any specific directions given by Barwon Water for a particular project. The designer/constructor is to obtain Barwon Water endorsement for any variation.

Order of Precedence

The Order of precedence for Barwon Water Design documents is the following:

- Barwon Water's Industry Alerts
- Barwon Water Supplementary information to the WSAA Water Supply Code of Australia WSA 03-2011-3.1 MRWA Edition – MRWA Water Supply Standards
- Barwon Water Supplementary information to the WSAA Water Supply Code of Australia WSA 03-2011-3.1 – WSAA Code MRWA Edition
- Barwon Water Standard Drawings
- MRWA Edition WSAA Water Code of Australia WSA 03-2011-3.1 – Standards (Greater Western Water's design limitations)

- MRWA Edition WSAA Water Code of Australia – WSAA Code (Greater Western Water’s design limitations)
- WSAA Water Code of Australia – WSAA Code
- Barwon Water Approved Product Supplement
- MRWA Products Portal for Barwon Water Region
- MRWA Products Portal for Greater Western Water Region
- Australian Standards.

Dispensation

The identification and need for dispensation (not able to or not practical to comply with standards) shall rest with the consultant.

The consultant shall identify and apply for dispensation prior to submission of design.

Designer to make a clear submission for dispensation in accordance with provision of the minimum information:

- Clearly state what is being asked for.
- Identify clause(s)/reference(s) of the standards applicable to the request.
- Clearly identify reasons for the request.
- Clearly identify and detail the alternatives and why the approach is considered preferable. This may require the provision of additional information such as maintenance, cost, construction or operation.

Where the water property service offset requirement on MRWA-W-110 cannot be practicably achieved, Barwon Water will accept water property services at alternate offsets provided they are clear of driveways, street trees, have a minimum 700mm clearance to other services, and are a minimum 300mm from a side property boundary. Barwon Water will require reasoning for any changes from the requirements of MRWA-W-110 standard offset to be submitted with the detailed design.

Refer to:

https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0027/215856/Dispensation-request-form.pdf

MRWA Water Supply Standards

Amendments to MRWA Standards. Refer to:

<http://www.mrwa.com.au/Pages/Standards.aspx>

MRWA-W-103

Notes Regarding Table 103-F

Add K:

PVC-O is not permitted

Table 103-C

DN40 and DN50 are not permitted for 'Dead End Sub Main Accepted'.

MRWA-W-104A

Figure 104A-B

Shrinkage restraint at end of PE mains is required at end of line unless calculations confirm otherwise.

MRWA-W-105

Bypass assemblies are to conform to Barwon Water standard drawing BW-SD-W012 Water Supply - Line valve with scour valve bypass.

MRWA-W-106

A hydrant is required after a stop valve on all offtakes \geq DN100.

MRWA-W-107

Applies to DN40PE, DN50PE property services and DN63PE submains and property services.

Figure 107-B

Not used by Barwon Water.

MRWA-W-108

Replace Figure 108-A to Figure 108-H with:

Court bowl detail refer to SK10 – Design Requirements for Reduced Sized Mains in Court Bowls, Cul-de-Sacs and Dead-Ends.

MRWA-W-109

Figure 109-E

Not used by Barwon Water.

Figure 109-A.

Valve is not required after offtake.

MRWA-W-110

Figure 110-A, 110-B, 110-C

Refer to Barwon Water standard drawings:

- 70112 – Pre-tapping Installation

Table 110-A: Property Services alignment & Tapping Preferences – Long Side Services 2nd preference not accepted by Barwon Water, use of pre-tap connectors not permitted.

Table 110-B: Property Service arrangements at different sizes & construction methods, replace the minimum 200mm end of service separation for DN25PE and DN32PE with 300mm.

General Notes: 2. Fire and general service and \geq DN80 property services are owned by the property owner and shall be constructed in accordance with AS3500.

Replace with:

For ownership of fire and general services \geq DN80 refer to Barwon Water's Metering Policy pp.58 and Customer Charter.

MRWA-W-111

Figure 111-A: Pre-tapped connector (Cut in Connection) – Not permitted by Barwon Water.

MRWA-W-201

Table 201-A

Add:

For Pipes \leq DN300

- Recycled glass, crushed concrete, and scoria not permitted.

MRWA-W-202

Replace cover requirements with:

Area	Zone	Residential or Rural	Commercial or Industrial
		Cover (mm)	Cover (mm)
Non-Trafficable Area	Footway Reserves (mains ≤DN225)*	600	600
	Open Reserves (mains ≤DN225)*	600	600
	Open Reserves (mains >DN225)	1000	1000
	Rural Footway reserves (Unsealed roads) (mains ≤DN225)*	750	750
	Rural Footway reserves (Unsealed roads) (mains >DN225)	1000	1000
Trafficable Area	Local Traffic Streets (mains ≤DN225)*	Refer to MRWA-W202	Refer to MRWA-W202
	Local Traffic Streets (mains >DN225)*	1000	1000
	Major Roadways (mains ≤DN225)*	Refer to MRWA-W202	Refer to MRWA-W202
	Major Roadways (mains >DN225)	1000	1000
	Freeways & Primary State Arterials i.e. VicRoads	Refer to MRWA-W202	Refer to MRWA-W202
	Unpaved Roads (unsealed roads) (mains ≥DN225, Feeder and Transfer mains)	1000	1000

*Includes Property Services and Main Size.

Add notes:

- The minimum cover is to be measured from lip of kerb.
- The maximum cover should not exceed 1500mm unless in areas to negotiate obstructions and only in short lengths.
- For water mains constructed in undeveloped land, the depth of the water main shall take into consideration maintaining both minimum cover within the undeveloped land and also future finished surface level (if known).

MRWA-W-205A

Add:

Shrinkage restraint at end of PE mains is required at end of line unless calculations confirm otherwise. Refer MRWA-W-104A.

MRWA-W-300

Add: For hydrants, the publication produced by the [CFA titled Identification of Street Hydrants for Firefighting Purposes](#) applies, in conjunction with [BW-SD-G021 - Valve and Hydrant Identification - Identification Markers](#) and Marker Posts. Where MRWA-W-300 differs CFA requirements takes precedence.

MRWA-W-300A

Table 300-A

Replace with:

B – Valve all offtakes mains at the tee.

D – Not used by Barwon Water.

J – Place a hydrant assembly adjacent to valve at each offtake and in a valve-hydrant-valve arrangement in each line.

Table 300-B

Replace with:

TABLE 300-B: Maximum SOB Sizes

Water main Size (DN)	Number of Properties Connected	Maximum Valve Spacing	Max. Number valves of SOB
≤DN225	40	300m*	6
DN300	N/A	750m	
DN375	N/A	1000m	
DN450	N/A	1150m	8
DN525/600	N/A	1500m	
DN675/750	N/A	1900m	10
>DN750	N/A	5000m#	

* Inline valves are require SV-FP-SV at 300m and in rural areas 500m spacings.

A hydrant is required after a stop valve on all offtakes ≥DN100.

#Valve spacings for larger mains shall be decided with consultation with Barwon Water.

Table 300-C

Replace with:

TABLE 300-C: Maximum Hydrant Spacing

Residential	Commercial Industrial	Urban High Density	Rural
200m	120m	50m	500m

The front of every property shall be no more than the maximum hydrant spacing /2 from the nearest hydrant.

MRWA-W-300B

Figure 300-B and Figure 300-A

Refer to MRWA-W-300A.

MRWA-W-301

Refer to MRWA-W-300

Add: Marker posts for stop valves only required for those that are designated “zone” valves.

MRWA-W-305

Figure 305-D, Figure 305-E, Figure 305-F

Not used by Barwon Water.

Add:

Air valves are to conform to Barwon Water standard drawings –

- [BW-SD-W020](#) Water Supply – Air Valve Details – Type ‘A’ and ‘B’ – Non Trafficable
- [BW-SD-W021](#) Water Supply – Air Valve Details – Type ‘C’ and ‘D’
- [BW-SD-W022](#) Water Supply – Air Valve Details – Type ‘E’ and ‘F’ – Non Trafficable

MRWA-W-306A

Replace MRWA-W-306A with:

[BW-SD-W030](#) Water Supply – Flange Arrangement Details

Add Note:

MRWA-W-306B on flange fastening requirements still applies.

MRWA-W-307

Figure 307-B

Replace with:

- [BW-SD-W010](#) Water Supply – Scour Valve Installation – Type ‘A’
- [BW-SD-W011](#) Water Supply – Scour Valve Installation – Type ‘B’

MRWA-W-308

Figure 308-A

Adopt configuration i) for temporary connections.

Add:

Disinfection facilities to conform to MRWA-W-308 and Barwon Water’s [Water Quality Guidance for the Commissioning of Assets in Contact with Potable Water April 2019](#). A copy can be provided upon request.

Barwon Water Supplementary information to the WSAA Water Supply Code of Australia is an amendment to WSA 03-2011-3.1 MRWA Edition version 2.0.

Sections of the code are only listed in this section when Barwon Water differs from the code, or when we have added our own design limitations. The numbering below matches that in the main Water Supply Code document for ease of finding.

Part 1: Planning and design

1. General

1.1 Scope

Barwon Water refers to “distribution” mains as “feeder” mains. Feeder mains may include water pump-stations. For the purpose of this document any reference to feeder mains means distribution mains.

1.2 Planning and design

1.2.3 Concept plan format

Add to the last paragraph:

- (e) Greenhouse gas emissions
- (f) Operational costs
- (g) Embodied carbon of supply chain
- (h) Barwon Water’s procurement requirements

2. System planning

2.3 Demands

2.3.1 General

Add:

- (iv) Potable backup requirements for the recycled water system.

2.4 System configuration

Figure 2.1(c)

Is preferred. Where dead-ends cannot be avoided looped mains are required.

2.5 System hydraulics

2.5.3 Operating Pressures

2.5.3.3 Minimum service pressure

Table 2.3

Minimum service pressure for all applications is to be 300 kPa (30 m head).

2.5.3.4 Average Service Pressure

2.5.3.4.3 Ensuring a suitable range of service pressures

Replace:

"In-line booster pumping stations may also be incorporated into the water supply network in accordance with Clause 2.8."

With:

"In-line booster pumping stations will not permitted unless discussed prior with Barwon Water.

2.7 Separation of drinking and non-drinking water supply systems

2.7.2 Temporary cross links

Add:

Temporary cross connections are to conform to Barwon Water standard drawings –

- 70202 – Potable and non-potable water cross connection
- 70203 – Drinking and recycled water cross connection telemetry wiring and architecture diagram.

2.8 Pumping stations

2.8.2 Design Factors

2.8.2.2 Site related factors

Add:

(f) – community consultation

(g) – consultation with traditional owners on land scaping design and pump station aesthetics

2.8.2.3 Service-related factors

Add:

(i) – effect on nearby properties (noise and odour and operation of emergency generation).

3. Hydraulic design

3.1 Sizing

3.1.4 Dual water supply systems

Unless stated otherwise in Barwon Water's offer for the provision of services to the subdivision, sizing of reticulation water mains for non-drinking water pipelines must be the same as the reticulation drinking water pipeline sizes; assuming there is no saving in pipeline sizing possible from dual supply. The savings are realised normally with feeder and distribution pipelines.

3.1.5 Fire flows (firefighting hydrants and fire services)

Replace:

Fire flows shall be connected to the non-drinking water system unless otherwise directed by the Water Agency

With:

Fire services shall be connected to the drinking water pipeline unless approved otherwise.

4. Products and materials

4.3 Ductile iron pipeline systems

4.3.2 Sizes and configurations

Replace:

“(a) Pre-tapped connectors are required for property services on all new DN 100 and DN 150 mains (Refer also to Clause 5.11) except where the use of pre-tapped connectors is determined to be impracticable, in which case mechanical tapping bands may be used.”

With:

“(a) Tapping saddles to be used on all pipe sizes where property tapplings are permitted”

4.3.5 Screw-on flanges for DI pipes

Screw on flanges are not permitted unless otherwise approved.

4.4 PVC pipeline systems

Replace:

“(a) Pre-tapped connectors are required for property services on all new DN 100 and DN 150 mains (Refer also to Clause 5.11) except where the use of pre-tapped connectors is determined to be impracticable, in which case mechanical tapping bands may be used.”

With:

“(a) Tapping saddles to be used on all pipe sizes where property tapplings are permitted”

4.8 Protection against degradation

4.8.8 Bolted connections

Replace drawing MRWA-W-306A with Barwon Water drawing - [BW-SD-W030](#) - Flange Arrangement Retails. MRWA-W-306B on flange fastening requirements still applies.

5. General Design

5.2 Reticulation design for water quality

5.2.4 Reduced size mains

Replace Table 5.1 with:

Table 5.1: Design Requirements for Reduced Sized Drinking Water Mains in Court Bowls, Cul-De-Sacs and Dead-End

PE Reduced Size Main	Min Service Pressure	Max Length of reduced size main	Limiting factor		
			Length	OR	Number of Property Connections
63	<50	50	50 max	OR	5 max
63	≥50	100	100 max	OR	10 max

Add Note:

3. Where it is not possible to loop mains or where there is equal or less than 3 properties serviced by end of line looping of mains is not required.

Figure 5.2 Replace with BW-SD-SK10 – Design Requirements for Reduced Sized Mains in Court Bowls, Cul-de-Sacs and Dead-Ends.

5.4 Location of water mains

5.4.1 General

Add:

In residential zoned court bowl heads and rural zoned areas the offset of a water main can be reduced to 1.5 metres assuming required clearances from other authority services can be maintained.

Add:

(v) not located within an open drain. Where a water fitting cannot avoid an open drain, the surface level cover shall be constructed at top of drain level and the drain shaped around the water fitting

(vi) for residential developments, including commercial and industrial, water mains are to be extended across the entire frontage of each lot.

(vii) where land is designated LDRZ, the water main may extend to the midway point of the last allotment.

(viii) land zoned rural (RLZ) requires the water main to be extended a minimum 6.0m past the side boundary and clear of any proposed or existing driveway.

5.4.2 Water mains in road reserves

5.4.2.2 Location in footway

Add:

Water mains are not permitted to be constructed longitudinally under a footpath.

5.4.2.3 Location in carriageway

Any existing water main that is to be located under a new road pavement is to be replaced on a new alignment.

5.4.4 Water mains in easements

Replace:

Default easements are given in Table 5.2

With:

Default easements refer to Barwon Water's Land Development Servicing Requirements 6.2 Easements and Reserves.

5.4.9 Crossings

5.4.9.1 General

Replace:

(ii) concrete encasement (refer to Clause 7.6 and Drawing MRWA-W-203)

With:

(ii) concrete encasement (refer to Clause 7.6 and Drawing MRWA-W-203) if Barwon Water is consulted prior to design submission.

5.4.9.2 Requirements for encased pipe installations

Replace:

(a) Bare steel butt welded as required

With:

(a) Lined steel pipe butt welded as required

5.4.13 Water mains in conjunction with landscaping and/ or other development

Replace (d) with:

The initial installed depth of the main shall be within the cover limits of this code prior to or after landscaping and/ or other work.

For pipelines in reserves and easements Barwon Water follows [Melbourne Water's Planting near Sewers, Drains and Water Mains Guide February 2019](#):

- a) Only mown grass should be directly over or around an asset,
- b) Ground cover species should be at least 2 m from the edge of assets
- c) Trees and shrubs should be planted at least 5 m from the edge of assets

5.8 Rider mains

A rider main will be required where a distribution or feeder main DN300mm and above already exists, or will exist in the road reserve.

5.10 Termination points

Water mains shall terminate within 1.0 metre inside the development boundary.

5.11 Property Services

5.11.2 Connections to water mains

Connections for property services shall only be installed on drinking and non-drinking water mains up to and including DN225mm.

Pre-tapped connectors are not permitted.

5.11.3 Services, outlets and meters

Each water service must be a straight line from tapping point to end of service. No bends on a water service are permitted.

5.12 Obstructions and Clearances

5.12.4 Clearance from structures and property boundaries

The minimum offset from property boundaries shall be 2.1 m for \geq DN100 mains. Reduced offsets shall be approved by Barwon Water.

5.12.5 Underground obstructions and services

5.12.5.2 Clearance Requirements

Replace Table 5.5 with:

Table 5.5 Water Main Clearances

Other service (existing or proposed)	Minimum horizontal clearance (mm)		Minimum vertical clearance (mm) ¹
	New main size		
	\leq DN 200mm	> DN 200mm	
Water mains > DN 375mm ²	600	600	300 ¹⁵
Water mains \leq DN 375mm ²	500 ¹⁴	600	150 ¹⁵
Gas mains	300	600	150
Telecommunication conduits and cables	300 ³	600	150
Electricity conduits and cables	1000	1000 ¹²	225 ^{7,8}
Stormwater drains	300 ³	600	150 ⁴ (any pipeline < DN300mm) 300 (pipeline DN300 - DN375mm)
Sewers - Gravity	1,000 ⁵ /600	1,000 ⁵ /600	500 ⁴
Sewers – Maintenance Structures	400	600	N/A

Sewers - Pressure	1000 ⁵ / 600	1000 ⁵ / 600	500 ⁴
Kerbs	300 ⁶	600 ⁶	Refer to MRWA-W-202 (i.e. min. cover)

Add Notes:

8. Minimum vertical clearance of 500mm from high voltage electrical installations.
9. Minimum vertical clearance to any pipelines \geq DN450mm to be 500mm.
10. All pipelines located a minimum of 300mm from any existing and proposed concrete footpath.
11. Horizontal clearances to any pit (e.g. stormwater) to be minimum 150mm to outside of pipe.
12. For mains above > DN200mm, approval is to be sought from Barwon Water on the minimum clearance to electricity as this may vary depending on pipe size and material.
13. These clearances shall apply to surface covers as well as underground assets.
14. Clearances between drinking water and recycled water mains can be further reduced to 300mm for DN100 and DN150 if sufficient quality assurance is provided (for details please refer below to Clearances between drinking water and recycled water mains).
15. Vertical clearance of 500mm for AC pipe and any boring over or under any pipe material pipeline.
16. Valve and hydrants should be located 1.0m clear of any existing or proposed driveways.

Clearances between drinking water and recycled water mains

Barwon Water is willing to accept 300mm barrel to barrel separation for drinking and non-drinking water mains sizes DN100mm and DN150mm pipes if, and only if, sufficient quality assurance is conducted to verify and demonstrate that 300mm is maintained for the entire pipeline alignment. Construction tolerances resulting in pipes coming closer together than 300mm will not be accepted as it causes future maintenance issues.

In order to demonstrate that 300mm clearance is maintained along the alignment, the consultant shall submit documented evidence with their completion of works package. The format of this evidence should be approved in advance by Barwon Water but could include one of the following measures:

- A 3D scan of the entire alignment (open trench) which allows Barwon Water to take clearance measurements as required (scan format to be agreed with Barwon Water).
- Photographic evidence of separation along the alignment with a tape measure shown in each photo and evidence showing chainage along alignment. This would require a photo every 15 metres along the alignment.
- A Polystyrene spacer that ensures pipes are separated by a minimum of 300mm and placed at least every 15m. Photographic evidence that spacers are installed is required along entire alignment.

Specification for Polystyrene spacer

Use of polystyrene as physical spacers is accepted by Barwon Water the following conditions:

- Product is compliant with AS1366.3 – Physical Properties of Rigid Cellular Polystyrene (1992)
- Polystyrene is pre-cut to correct size off-site to reduce waste and environmental issues
- Polystyrene spacers are secured in place

6. System pressure management

In-line boosting of the reticulation system is not preferred. Any proposal is to be discussed with Barwon Water prior to any design.

6.2 In-Line Pressure Booster Pumping Stations

6.2.5 Booster Design

6.2.5.8 Booster pipework and manifold design

Add paragraph:

All booster pipe work shall be from grade 316 stainless steel, although Barwon Water may consider the use of MSCL or galvanised steel pipe work, upon request.

7. Structural Design

7.9 Pipeline Anchorage

7.9.4 Thrust and anchor blocks for dual water supply systems

Consultant to retain evidence of Quality Assurance documentation to demonstrate inspection of thrust block pour.

7.9.6 Restraint requirements for special situations

7.9.6.1 Above-ground mains with unrestrained flexible joints

Flexible above ground joints are not permitted. Fully welded or flanged joints are required.

8. Appurtenances

8.2.2.2 Gate valves

Add Table:

Table: Valve Seating

Rating	Resilient Seated	Metal Seated
PN16	≤ DN600	>DN600
PN25	≤ DN300	>DN300
PN35	All Diameters	

8.2.2.3 Butterfly valves

Add Paragraph:

- Butterfly valves are to be seal on disk for sizes DN600mm and above, seal on body for sizes below DN600mm.
- By-pass arrangements are required on mains greater than and equal to DN450mm where a butterfly valve is proposed.

MRWA 8.2.3.1 Bypass of a stop valve

Add Paragraph:

Bypass assemblies are to conform to Barwon Water standard drawing – [BW-SD-W012](#)
Water Supply – Line valve with scour valve bypass

MRWA 8.2.4.1 Stop valves spacing

Replace Table 8.2 with:

Water Main Size DN	Number of properties connected (nominal)	Maximum Spacing m
≤ 225	40	300*
300	N/A	750
375	N/A	1000
450	N/A	1150
525/600	N/A	1500
650/750	N/A	1900
>750	N/A	5000 [#]

* 500m spacings in rural areas.

8.2.7 Stop valves—location and arrangements

8.2.7.1 General

Add Paragraph:

(e) Stop valves are not to be located within a driveway or any other area where a rigid pavement (e.g. concrete) exists, is proposed, or likely to be proposed.

8.2.10 Crossing mains – interconnection

Replace Part (a) and Figure 8.16 with:

Barwon Water will provide design advice on interconnection details upon application.

8.3 Control valves

8.3.3 Pressure reducing valves (PRV)

Add Paragraph:

If required, please request a copy of BW Design Guide – Pressure Reduction Valves and Pressure Monitoring Point Installations.

8.4 Air Valves

8.4.6 Use of hydrants as an alternative to air valves

Add Paragraph:

Spring head hydrants can be used on mains up to and including DN300mm.

8.4.7 Water sampling via air valves

Not permitted.

8.6 Scours and Pump-Out Branches

8.6.3 Scour application

Replace Paragraph:

Scours shall be provided on distribution and transfer mains \geq DN375. For mains \geq DN375 and $<$ DN750, a single scour valve shall be provided on the scour branch. For all mains \geq DN750, two gate valves, closely spaced in series, shall be installed on each scour branch, with the upstream valve left open and the downstream valve closed.

With:

Scours shall conform to [BW-SD-W10](#) and [BW-SD-W011](#) and be provided on distribution and transfer mains \geq DN300mm. Mains \geq DN450 require a double scour valve arrangement.

8.8 Hydrants

8.8.3 Hydrant operational principles

Hydrants on feeder and transfer mains shall conform to [BW-SD-W005](#).

8.8.4 Hydrant types

Part (b), (c) and (d) do not apply.

8.8.7 Hydrant size

Replace Paragraph with:

All hydrants shall be DN80 hydrants in size.

8.8.9 Hydrant location

Add Paragraph:

(e) Hydrants are not to be located within a driveway or any other area where a rigid pavement (e.g. concrete) exists, is proposed, or likely to be proposed.

8.11 Appurtenance location marking

For hydrants, the publication produced by the [CFA titled Identification of Street Hydrants for Firefighting Purposes](#) applies, in conjunction with Barwon Water standard drawings listed below.

8.11.2 Marker posts and plates

Shall conform to Barwon Water standard drawing [BW-SD-G021](#) – Valve and Hydrant Identification.

8.11.3 Pavement markers

Shall conform to Barwon Water standard drawing [BW-SD-G021](#) – Valve and Hydrant Identification.

8.11.4 Kerb markers

Shall conform to Barwon Water standard drawing [BW-SD-G021](#) – Valve and Hydrant Identification.

9. Design Review and Drawings

9.4 Recording of work as constructed information

Replace references to MRWA Survey Manual with:

[Barwon Water's Survey Manual "For Land Development November, 2022.](#)

Add Paragraph:

As constructed notes to be provided within 10 days of completing works.

Part 2: Construction

11. General construction

11.1 General

Replace Paragraph:

Do not commence work until detailed Specifications and Design Drawings marked “construction issue” are available.

With:

Do not commence work until detailed Specifications and Design Drawings marked “construction issue” are available and have been audited and accepted by Barwon Water.

11.2 Order of construction, testing and commissioning

Barwon Water follows the approach by Greater West Water and Yarra Valley Water.

Add paragraph to Part (d):

Any by-pass connection required for testing purposes must be from the same water source only.

Add paragraph to Part (h):

Accredited testers only are permitted to undertake testing.

Add paragraph to Part (k):

Water services in dual pipe areas to be visually checked prior to testing and each visual check to be recorded on the test sheets, titled [Recycled Water and Drinking Water Audit Checklist](#), provided by Barwon Water.

Replace paragraph (n) with:

Part (n) – ‘As constructed’ information is to be in accordance with [Barwon Water’s Survey Manual “For Land Development November, 2022.](#)

11.4 Customer focus

11.4.1 General

Replace paragraph:

Complete the notification legibly and deliver between eight (8) and fifteen (15) working days prior to the works commencing to:

With:

Notify (in writing) each property Owner and resident who will be affected by the works.

Complete the notification legibly and deliver 14 calendar days prior to the works commencing.

Add Paragraph:

Where necessary, approval required by a land-owner is to be forwarded to Barwon Water.

11.5 Protection of property and environment

11.5.2 Disused/Redundant water mains

Add Paragraph:

The developer or party causing a pipeline to be made redundant is required to abandon or dispose of mains in accordance with the Developer Deed or Barwon Water requirements.

Any works on asbestos pipe is to be undertaken using a licensed removalist. Certificate of safe disposal is to be provided upon request.

Any redundant pipes are to be included with the 'as constructed' notes. Details will include location and type of disconnection.

12. Products and materials

12.6 Supply of water to the works

Add Paragraph:

Only metered hydrants registered with Barwon Water are permitted to be used to extract water. Water can only be extracted from designated/ approved hydrants. A list of these can be provided upon request.

13. Excavation

13.4 Blasting

Obtain prior authorisation from Barwon Water if assets are within 1000m vicinity of proposed work site before undertaking blasting.

15. Pipe Laying, Jointing and Connecting

15.5 Under Pressure Cut-In Connection to Pressure Pipes \geq DN 80

15.5.4 Installation of flanged off-take clamp (non steel mains)

MRWA 15.5.4.1 Installation of flanges to steel mains

The steel flanged off-take welded to the host pipe is to be pressure tested. Details of the pressure test will be supplied by Barwon Water with the Developer Deed.

15.12.3 Tracer wire

Add Paragraph:

To prevent dissimilar-metal corrosion only insulated tracer wire is allowed and it should terminate 100mm from ferrule bend and other fittings made of different metals.

17. Fill

17.1 Trench Fill (backfill)

Add Paragraph:

Barwon Water uses [MRWA Specification No. 04-03.1](#).

19. Acceptance Testing

19.1 General

Add Paragraph:

(f) As part of the Inspection and Test Plan (ITP), Barwon Water requires the constructor to include hold and witness points for the installation of thrust /anchor blocks. These are to be accepted by the consulting engineer or accredited tester.

19.4 Hydrostatic pressure testing

Add Paragraph: For pipelines > DN300mm, hydrostatic pressure testing is to conform to:

Field Pressure Test – General

Testing: Field pressure-test all pipelines as soon as possible, and, unless otherwise directed or approved in writing, before joints are covered with refill.

Test pressure: As shown on the drawings

Supervision: Where specified the Superintendent or their nominated Representative shall supervise the testing of each test section. Apply the test pressure for acceptance only between 8.00 a.m. and 3.00 p.m. on each working day or such other time as approved. Arrange the program to satisfy this condition.

Plant and materials: Supply all necessary plant labour, materials and water, and approved measuring device to determine the quantity of makeup water.

Test lengths: Unless otherwise specified or approved, maximum length of a test section:

- In urban areas: 300 m
- In rural areas: 1000 m

Barricades: Provide sufficient barricades, safety webbing, and lights etc. for the test sections of trenching to remain part filled as specified during the field pressure tests.

Sealing: Seal the ends of each pipeline test section with gibaults blank ends supplied by the Contractor. Obtain prior written approval of the Superintendent or their nominated Representative to seal a test section with a main line stop valve.

Anchors: Do not test until at least seven days after concrete thrust and anchor blocks have been poured.

Refilling: Prior to filling the pipeline with water and applying the test pressure, backfill the trench to the limits defined below or as directed.

Type of backfill (refer MRWA-W-201)	Type of pipeline	
	Rubber ring jointed	Other than rubber ring
Pipe cover	Leave top half of each joint exposed	Complete
Trench backfill	To within 1.0m of each joint and not less than 0.5m deep	Complete

Filling test sections: Fill the test section with water at the following maximum rates of filling. Provide a suitable flow metering arrangement to monitor the rate of filling.

Pipeline diameter	Maximum filling rate
100	5 L/s
150	5 L/s
200-250	15 L/s
300-375	20 L/s
>375	0.05m/s

Constant Pressure Test (Water Loss Method)

Requirement: Use this test method for PVC, GRP, ductile iron and steel pipelines. Conduct the test generally in accordance with AS/NZS 2566.2 except as modified by this clause.

Initial period: Apply the test pressure to each test section for the initial period set out below:

Pipe type	Initial period
PVC and GRP	19 hours
Cement lined ductile iron: <ul style="list-style-type: none"> up to 300 metres test length more than 300 metres test length 	19 hours 43 hours
Cement lined mild steel: <ul style="list-style-type: none"> up to 300 metres test length more than 300 metres test length 	19 hours 43 hours

Two hours test: At the end of the initial period apply a two hours test irrespective of the pipe material. Apply the test pressure at the start of the two-hour period and add no water till the completion of the two hours. At that time raise the pressure to the test pressure by the addition of a measured quantity of makeup water. The quantity of makeup water, measured by a suitably calibrated device in the presence of the Superintendent or their nominated Representative shall not exceed the allowable makeup water rate. Should the limit be exceeded, locate the fault(s) and make good to approval, and retest the test section.

Allowable makeup water rate: $Q < 0.14LDH$, where:

Q = allowable makeup water in L/hr

D = nominal diameter of the test length, in metres

L = length of test section, in km

H = average test head for section, in metres

Join up and making good: Within two days of the acceptance of the last test section of the pipeline:

- Complete the "join up" of the test sections.
- Make good any joint and/or pipe work that leaks or sweats.
- If directed by the Superintendent or their nominated Representative, retest any faulty work.

Acceptance criteria: The criteria for acceptance of a test section are:

- a) The makeup water rate does not exceed the allowable limit.
- b) There is no visible leak/weep or failure of any pipe, fitting valve, joint, anchorage or other component of the test section.

The criterion for acceptance of each "join up" is (b) of this Sub Clause.

Constant Pressure Test (Water Loss Method) for Visco-Elastic Pipes

Requirement: Use this test method for PE, PP and ABS pipelines. Conduct the test generally in accordance with AS/NZS 2566.2 except as modified by this clause.

Procedure:

- Apply the test pressure to each test section.
- Shut off the section and allow the pressure to settle for 12 hours.
- Reapply the test pressure hourly over five hours by adding measured quantities of makeup water.
- Measure and record the volume of makeup water required between hour 2 and hour 3 as V1.
- Measure and record the volume of makeup water required between hour 4 and hour 5 as V2.

Allowable makeup water rate: $V2 < (0.55V1 + 0.14LDH)$, where:

V2 = allowable makeup water in L/hr

D = nominal diameter of the test length, in metres

L = length of test section, in km

H = average test head for section, in metres

Join up and making good: Within two days of the acceptance of the last test section of the pipeline:

- Complete the "join up" of the test sections.
- Make good any joint and/or pipe work that leaks or sweats.
- If directed by the Superintendent or their nominated Representative, retest any faulty work.

Acceptance criteria: The criteria for acceptance of a test section are:

- a) The makeup water rate does not exceed the allowable limit.
- b) There is no visible leak/weep or failure of any pipe, fitting valve, joint, anchorage or other component of the test section.

The criterion for acceptance of each "join up" is (b) of this Sub Clause.

19.4.3 Property Services

Add Paragraph:

1. In addition, the following procedure also applies for dual pipe areas and assets provided by the developer:
2. Close any cross connection between drinking and recycled water systems.
3. Charge drinking water system with potable water.
4. Have each gate valve on the drinking water system physically checked to ensure it is OPEN.
5. Open, successively, all hydrants/fire plug and scours on drinking water system. Check that all outlets run with water.
6. Check that all hydrants/fire plug covers, hydrants/fire plugs/valve surrounds and marker posts, reflective pavement markers are marked in accordance with this Supplement and the MRWA Edition of the WSAA Water Supply Code.
7. Check that all property services and ball valve handles on the drinking water system meet the requirements of this Supplement and the MRWA Edition of the WSAA Water Supply Code and are not coloured purple.
8. Check that all property service pipes and ball valve handles on recycled water system are coloured purple.

9. Drain the non-drinking water system by successively opening all hydrants/fire plug and scours on the recycled water system.
10. Open, successively, all termination ball valves on the drinking water property services. Check that all outlets run with water.
11. If no water is detected through the termination ball valves on the drinking water system ensure the property service is connected to the drinking water system and/or main tap ball valve is in open position.
12. Open, successively, all termination ball valves on the recycled water property service line. All outlets should run dry after a short time.
13. If any of the tests prove to be unsatisfactory, detect and rectify the fault, and re-test.
14. Continue to rectify and re-test until a satisfactory test result is achieved.
15. Recharge recycled water supply system.
16. Repeat process for recycled water system.

During pressure testing of the reticulation mains, the TPFNR Ferrule Cock or electro fusion tapping saddle (with integral cutter and service isolation valve) must be open for each service connection. For each property service, the ball valve at the property shall be closed. The appropriate ball valves at each property need to be temporarily opened to allow water to flow through the service. This will ensure any trapped air can escape, and to check that service connections are to the correct water supply main (drinking or non-drinking).

The consultant is required to submit an ITP for Barwon Water approval prior to works beginning. The ITP will establish hold and witness points during the installation and commissioning of non-drinking water mains, including non-drinking water main-to-meter services. The ITP needs to specifically address commissioning procedures to identify any possible cross-contamination (refer to EPA Victoria Document: Dual pipe water recycling schemes – health and environmental risk management.). This system integrity inspection should be conducted as part of the commissioning of the dual water supply system by Barwon Water's Quality Auditors, the consultant and the contractor. The system integrity inspection is designed to eliminate the potential for cross contamination caused when a drinking water service is connected to a non-drinking water main.

The consultant and the contractor must coordinate the timing of the commissioning process with Barwon Water, and only proceed with the commissioning process with a Barwon Water Quality Auditor present. Failure to do so will result in the works being rejected and the testing will need to be repeated. If a Barwon Water Auditor is not available at the time the contractor wishes to conduct the commissioning, this will not be accepted as a reason for not having the commissioning witnessed. Barwon Water will bear no cost for

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the commissioning and/or repeating of the commissioning testing, to comply with this requirement.

19.7 Water quality testing

Replace Paragraph with:

Refer to Barwon Water's Water Quality [Requirements for Commissioning Assets in Contact with Potable or Class A Recycled Water April 2019](#).

20 Disinfection

20.1 Application

Replace Section with:

Refer to Barwon Water's [Requirements for Commissioning Assets in Contact with Potable or Class A Recycled Water April 2019](#).

22 Connections to existing water mains

22.3 Inserted tee connections

22.3.1 Shutdown of existing water mains

Add to (b) (i) Shutdown period can be maximum of 4 hours and must occur between 9am and 3pm.

Add Paragraph:

Non-Barwon Water personnel are not permitted to operate any part of the water system.

22.3.3 Re-charging the shutdown water main

Add Paragraph:

Non-Barwon Water personnel are not permitted to operate any part of the water system.

24 Work as constructed details

Replace Section with:

Refer to Barwon Water's [Survey Manual For Land Development, February 2017](#).

As constructed records are to be submitted within 10 working days after Completion of Works.

Referenced Documents

For location of References, Drawings, Guidelines and Standards referenced in this document. Refer below.

Title	Updated	Published by	Location
MRWA Standards	N/A	MRWA	http://www.mrwa.com.au/Pages/Standards.aspx
Backfill Specification MRWA Specification No. 04-03.1	September 2006	MRWA	https://mrwa.com.au/Shared%20Documents/Standards/MRWA_Backfill_Specification_04-03.1.pdf
WSA 01-2004 Polyethylene Pipeline Code Version 3.1	August 2018	WSAA	https://www.wsaa.asn.au/shop/product/27066
WSA 03-2011-3.1 Water Supply Code of Australia (Melbourne Retail Water Agencies (MRWA) Edition Version 2	August 2018	WSAA	https://www.wsaa.asn.au/shop/product/27026
Identification of Street Hydrants for Firefighting Purposes	July 2019	CFA	https://www.cfa.vic.gov.au/ArticleDocuments/550/identification-street-hydrants-for-firefighting-purposes_july-2019.pdf.aspx
Dual pipe water recycling schemes – health and environmental risk management.	February 2015	EPA	https://www.epa.vic.gov.au/-/media/epa/files/publications/1015-1.pdf
Supplementary product catalogue for pressure pipeline systems	September 2021	BW	https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0016/6631/BW-Supplementary-Catalogue-for-Pressure-Pipeline-Systems-Sep-2021.pdf
Design Guide Pressure Reduction Valves and Pressure Monitoring Point Installations.		BW	Available on request
Survey Manual for Land Development	November 2022	BW	https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0016/6505/Survey-manual-for-land-development-Nov2022.pdf
Barwon Water Alliance PRV Design Guide - Pressure Reduction Valves and Pressure Monitoring Point Installation		BW	Available on request
Water Quality Requirements for commissioning assets in contact with Potable Water or Class A Recycled Water	April 2019	BW	https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0021/109245/Water-Quality-Requirements-for-commissioning-assets-in-contact-with-Potable-Water-or-Class-A-Recycled-Water.pdf
70112 – Pre-tapping Installation		BW	See Appendix 1 – 70112 - Pre-tapping Installation of this supplement
70202 – Potable and non-potable water cross connection		BW	See Appendix 2 - 70202 - Potable and non-potable water cross connection of this supplement

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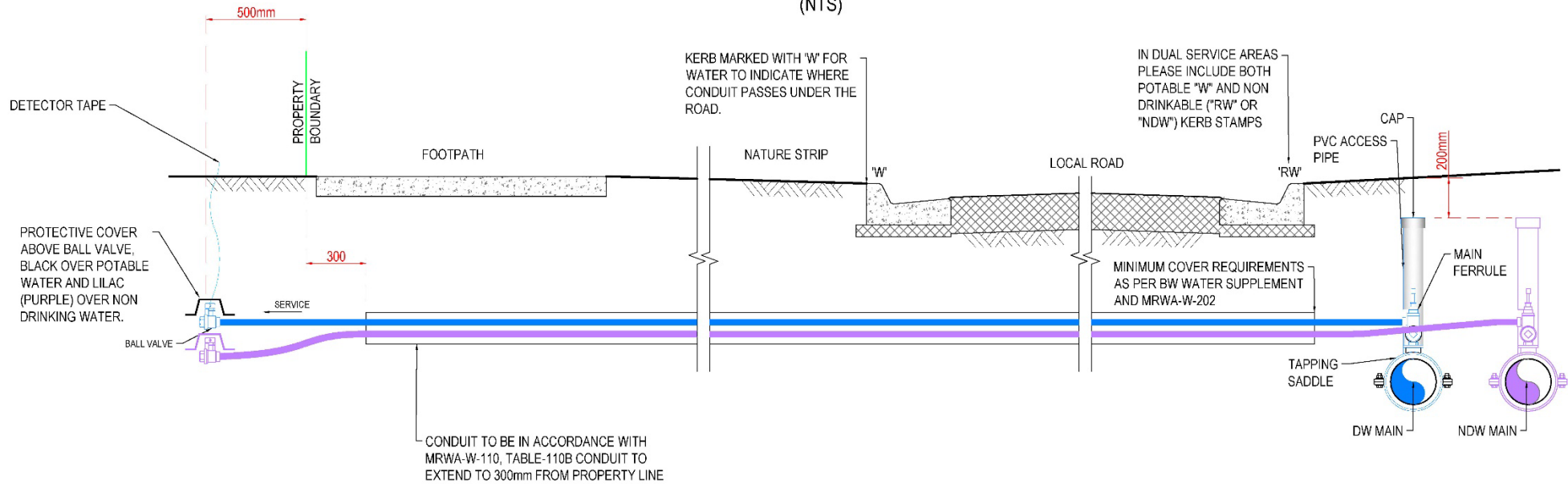
70203 – Drinking and recycled water cross connection telemetry wiring and architecture diagram			See Appendix 3 - 70203 - Drinking and recycled water cross connection telemetry wiring and architecture diagram of this supplement
BW-SD-SK10 – Design Requirements for Reduced Sized Mains in Court Bowls, Cul-de-Sacs and Dead-Ends		BW	See Appendix 4 - BW-SD-SK10 – Design Requirements for Reduced Sized Mains in Court Bowls, Cul-de-Sacs and Dead-Ends of this supplement
BW-SD-W010 Water Supply – Scour Valve Installation – Type ‘A’	September 2014	BW	https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0018/6660/BW-SD-W010-R0-Water-supply-scour-valve-installation-type-A.pdf
BW-SD-W011 Water Supply – Scour Valve Installation – Type ‘B’	September 2014	BW	https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0026/6659/BW-SD-W011-R0-Water-supply-scour-valve-installation-type-B.pdf
BW-SD-W012 Water Supply – Line valve with scour valve bypass	September 2014	BW	https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0025/6658/BW-SD-W012-R0-Water-supply-line-valve-with-scour-valve-bypass.pdf
BW-SD-W020 Water Supply – Air Valve Details – Type ‘A’ and ‘B’ – Non Trafficable	September 2014	BW	https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0024/6657/BW-SD-W020-R0-Water-supply-air-valve-details-type-A-and-B-non-trafficable.pdf
BW-SD-W021 Water Supply – Air Valve Details – Type ‘C’ and ‘D’	September 2014	BW	https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0022/6655/BW-SD-W021-R0-Water-supply-air-valve-details-type-C-and-D.pdf
BW-SD-W022 Water Supply – Air Valve Details – Type ‘E’ and ‘F’ – Non Trafficable	September 2014	BW	https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0021/6654/BW-SD-W022-R0-Water-supply-air-valve-details-type-E-and-F-non-trafficable.pdf
BW-SD-W030 Water Supply – Flange Arrangement Details	September 2014	BW	https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0017/6650/BW-SD-W030-R0-Water-supply-flange-arrangement-details.pdf
BW-SD-G021 Valve and Hydrant Identification – Identification Markers and Marker Posts	September 2014	BW	https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0019/6670/BW-SD-G021-R0-Valve-and-hydrant-identification-markers-and-marker-posts.pdf
BW-SD-C020 Pit covers for Circular Pits – Aluminium and Steel	September 2014	BW	https://www.barwonwater.vic.gov.au/_data/assets/pdf_file/0024/6675/BW-SD-C020-R0-Pit-covers-for-circular-pits-aluminium-and-mild-steel.pdf
WAT 1304 WSA 03-2002-2.3 Water Supply Code of Australia MELBOURNE RETAIL WATER AGENCIES (MRWA) EDITION Version 1.0	July 2004	WSAA	https://www.wsaa.asn.au/shop/product/5606

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Appendices

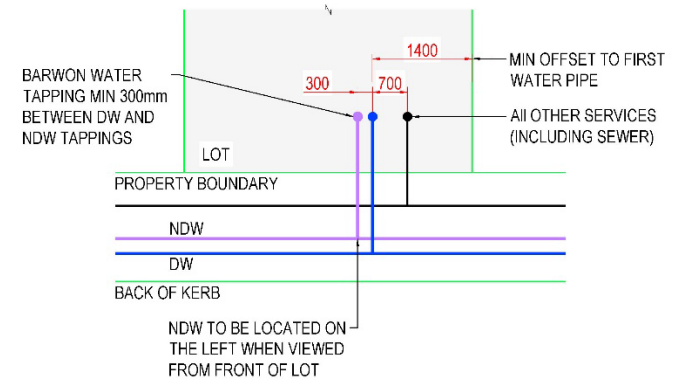
Appendix 1 – 70112 – Pre-tapping Installation

TYPICAL ELEVATION - PROPERTY SERVICE FROM NON PE MAIN ACROSS A ROAD RESERVE FOR 25 & 32mm PE (NTS)



GENERAL NOTES

1. ALL LOTS ARE TO BE TAPPED USING A TAPPING SADDLE AND PRESSURE FERRULE.
2. A MINIMUM SIZE SERVICE (IE 20mm COPPER, 25mm PE) IS THEN TO BE EXTENDED TO A POINT 500mm WITHIN THE PROPERTY.
3. SERVICE PIPE BETWEEN MAIN FERRULE AND BALL VALVE TO BE A CONTINUOUS LENGTH (IE NO JOINS)
4. SERVICE TO BE TYPE 'B' COPPER OR CLASS 16 TYPE 100 PE.
5. IN THE CASE OF PE OR ANY OTHER NON-METALLIC SERVICE BEING INSTALLED, A COPPER TRACE WIRE IS TO BE INCORPORATED.
6. A BURIED BALL VALVE IS TO BE PLACED AT THE END OF THE SERVICE.
7. DETECTOR TAPE IS TO BE RUN TO SURFACE LEVEL.
8. BALL VALVE TO BE IN ACCORDANCE WITH AUSTRALIAN STANDARDS (IE STAMPED "W") BRASS FITTING WITH STAINLESS STEEL BALL.
9. "DW" AND "NDW" TAPPINGS TO HAVE 700mm CLEARANCE FROM OTHER SERVICES.
10. WHERE PROPERTY SERVICES CROSS UNDER FOOTPATH, THEY ARE TO BE IN CONDUITS.
11. IN DUAL WATER AREAS BOTH POTABLE AND RECYCLED WATER SERVICES CAN BE IN THE SAME CONDUIT.



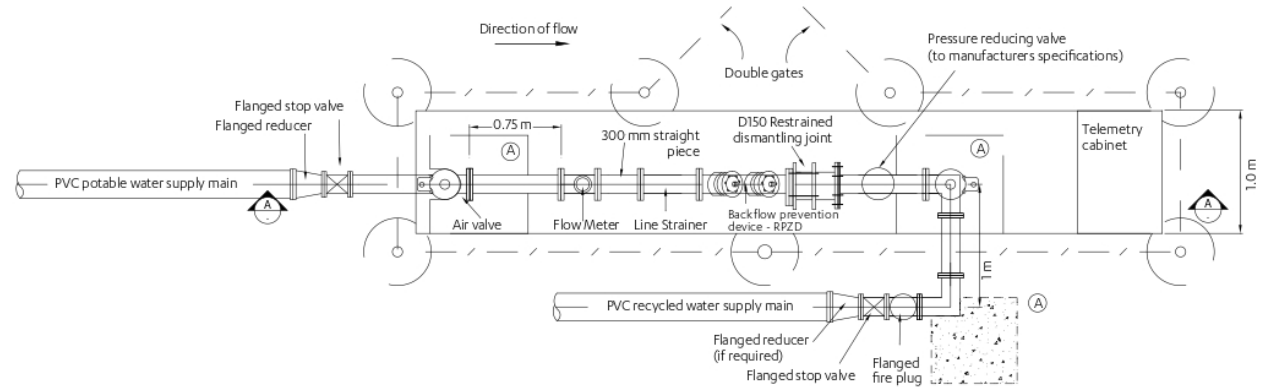
PLAN: SERVICE SEPARATION SCHEMATIC
(NTS)

Appendix 2 – 70202 – Potable and non-potable water cross connection

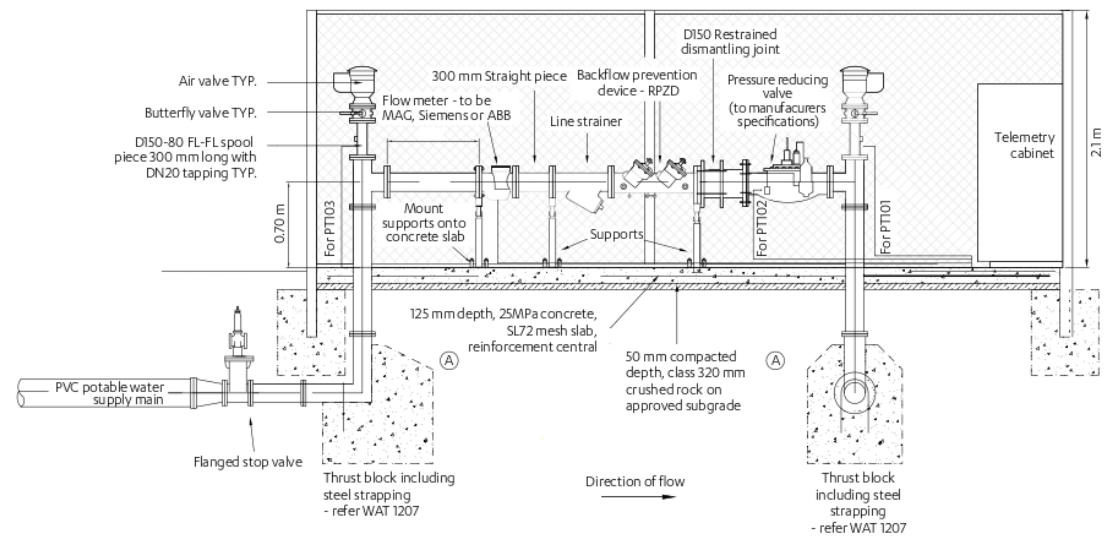
Standard Drawing - Drinking and recycled water cross connection detail

Notes

1. All dimensions are in metres unless otherwise noted and subject to Barwon Water approval.
2. Unless specifically noted otherwise, all installation details are to WSAA and authority requirements.
3. All NDW mains and fittings shall be coloured lilac or alternatively sleeved with lilac coloured polyethylene. Colour shall be shade P23 as defined in AS2700.
4. DW and NDW mains shall be laid in a common trench. The DW main shall be laid closest to the property line.
5. NDW water mains shall be installed below DW mains at crossings.



Section A-A not to scale



Enclosure details:

DN80 powder coated (black or dark green), galvanised post. DN32 rails (top and bottom) to be connected to fence posts. Fencing to include bracing and strainer wires.

45 mm diamond mesh 3.15 mm wire infill for wall and roof of enclosure. Wire mesh to be black or dark green, PVC coated.

Hinged double gates to be installed along front face of enclosure, including provisions for lock installation. Lock to be provided by Barwon Water.

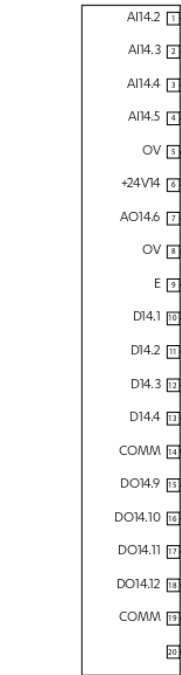
Note: All mains to be 150 mm diameter DI1L class K9 unless otherwise noted.

Appendix 3 – 70203 – Drinking and recycled water cross connection telemetry wiring and architecture diagram

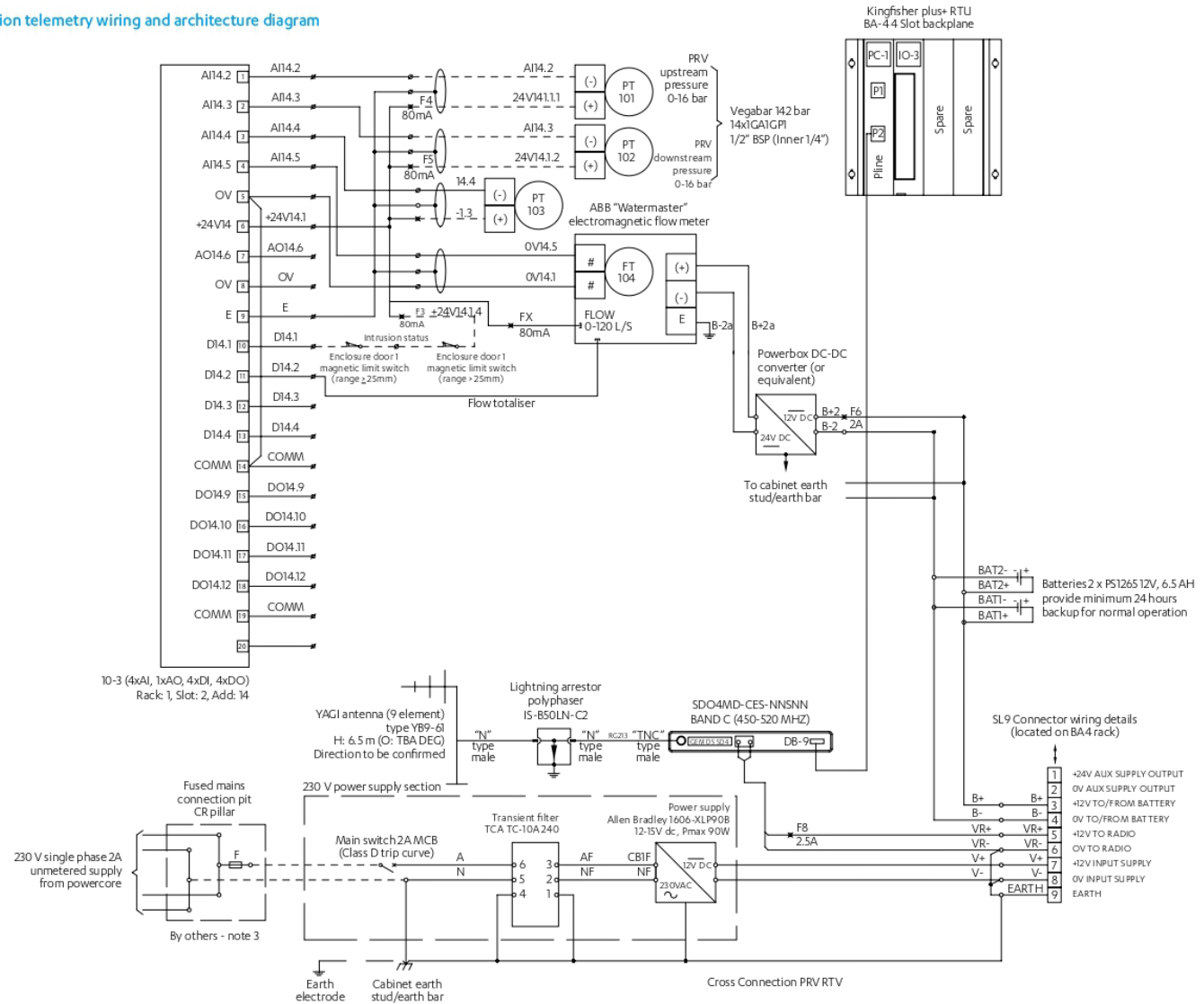
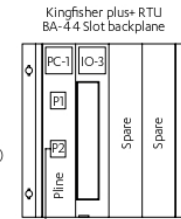
Standard Drawing - Drinking and recycled water cross connection telemetry wiring and architecture diagram
not to scale



PC-1 (Processor)
Rack: 1, Slot: 1, Add: 13



10-3 (4xAI, 1xAO, 4xDI, 4xDO)
Rack: 1, Slot: 2, Add: 14



Legend

- Switchboard terminal
- Instrumentation terminal (SAK-R)
- ✕ RTU or PLC I/O terminal
- Fuse terminal

Notes:

1. Miniature circuit breakers shall be NHP/TERASAKI dint type, minimum 6KA
2. Refer drawing 3004735-CO12 for panel details
3. Fused main connection point and consumer sub-mains will be supplied and installed by others. Powercor will supply and install fuse in the connection pit or pillar and terminate supply side cables

Note: This drawing is to be read in conjunction with drinking and recycled water cross connection detail and subject to Barwon Water approval.

Appendix 4 - BW-SD-SK10 – Design Requirements for Reduced Sized Mains in Court Bowls, Cul-de-Sacs and Dead-Ends

