Pressure Sewerage Code of Australia WSA 07-2007

MRWA Supplement

Melbourne Retail Water Agencies

(Including City West Water, South East Water & Yarra Valley Water)

Supplementary Manual to the WSAA Pressure Sewer Code

DOCUMENT CONTROL INFORMATION

DOCUMENT HISTORY

Issue	Revision	Date Approved	Changes	Reasons for change	Comments
A	01		N/A	N/A	Initial draft for comment
A	02	25 Oct. 2012	Incorporates MRWA comments	Release of the supplement	N/A
A	03	30 Jan 2013	Incorporates MRWA pressure testing requirements	Clarification of MRWAs pressure testing requirements	N/A

ABOUT THIS SUPPLEMENTARY MANUAL

The requirements of this Melbourne Retail Water Agencies Supplementary Manual to the Water Services Association of Australia (WSAA) Pressure Sewerage Code of Australia, WSA 07-2007 shall take precedence over the requirements of the Water Services Association of Australia (WSAA) Pressure Sewerage Code of Australia, WSA 07-2007.

Where consultants wish to vary the requirements of this Melbourne Retail Water Agencies Supplementary Manual or the WSAA Pressure Sewerage Code, they are requested to contact Melbourne Retail Water Agencies who shall assess whether or not any variation is warranted.

Text in 'italics' is informative, while text in 'normal case' is normative or mandatory.

DISCLAIMER

"The Water Agencies exclude all liability to all persons and all conditions and warranties, which are expressed or implied at law (including under statute). Where liability and conditions and warranties cannot be excluded at law, the liability of the Water Agencies is limited at their choice, to resupplying MRWA Supplement to the Pressure Sewerage Code of Australia WSA 07-2007 or paying the cost of resupplying MRWA Supplement to the Pressure Sewerage Code of Australia WSA 07-2007."

Please note that MRWA Supplement to the WSAA Pressure Sewerage Code of Australia WSA 07-2007 or information contained within the Supplement shall only be used in conjunction with the MRWA Supplement to the WSAA Pressure Sewerage Code of Australia WSA 07-2007.

INFORMATION

For information and advice of possible errors, omissions and changes required for future revisions, please prepare a summary of identified amendments and submit, via email, to either standards@citywestwater.com.au. (City West Water), colin.paxman@sew.com.au (South East Water) or standards@yvw.com.au (Yarra Valley Water).

INTENDED AUDIENCE

This Melbourne Retail Water Agencies Supplementary Manual is intended for MRWA personnel, consultant engineers and contractors engaged in the design, construction and maintenance of MRWA pressure sewerage systems.

TABLE OF CONTENTS

PART 1 DESIGN

PREFACE

This Melbourne Retail Water Agencies Supplementary Manual to the WSAA Pressure Sewerage Code of Australia WSA 07-2007 is intended to disclose those issues where Melbourne Retail Water Agency requirements are not consistent with the WSAA Pressure Sewerage Code. The requirements of this Melbourne Retail Water Agencies Supplementary document shall take precedence over the WSAA Pressure Sewerage Code.

1.5.3 Design responsibilities

Replace (iv) (h) with:

(H) Locations of cleanouts, flushing points, isolation valves, air valves and odour control;

1.7.3 Detailed Design

Add to the end of Clause 1.7.3:

Pressure sewer detailed design shall be separated into two components, reticulation design and on-property design.

RETICULATION DESIGN concerns the design of the actual reticulation pressure sewer system including reticulation pressure pipes, pressure sewer laterals, boundary kits and appurtenances, e.g. valves and flushing points.

Refer to Standard Drawings : PSS-1110-M or PSS-1020-Y,
PSS-1111-M or PSS-1016-Y,
PSS-1112-M or PSS-1020-Y

ON-PROPERTY DESIGN concerns the design of the property pressure discharge line, collection tank / pump unit, control / alarm panel, electrical cables, detention tank (if required) and the customer's sanitary drains.

Each Water Agency shall define the interface between the two components. The on-property design may take place either before or some time after the reticulation has been designed and installed.

Refer to Standard Drawings : PSS-1110-M or PSS-1020-Y,
PSS-1111-M or PSS-1016-Y,
PSS-1112-M or PSS-1020-Y

2.9 ODOUR CONTROL

Additional Paragraphs:

The Designer shall provide evidence that odour generation and control has been considered. This will include calculations that demonstrate odour generating potential and how any odours generated will be treated.

The Designer will need to liaise closely with the relevant Melbourne Retail Water Agency on proposed ventilation and odour control measures.

2.9.1 Odour and Septicity Control (additional clause)

The Designer shall provide detention time calculations and design adequate odour and septicity controls. The Designer shall ensure that the sulphide generation potential in pressure reticulation sewer that discharge to standard manholes is kept to a level that is not likely to cause nuisance odour or have a detrimental effect on existing infrastructure.

3.2 DESIGN TOLERANCES

Replace (b) (i) with:

(i) Reticulation mains to meet minimum cover requirements shown on Drawing PSS–1013–M.

3.7.1 Reticulation sewers

Replace the 2nd paragraph – "Easements for pipelines may be located …." with:

All pressure reticulation sewers shall be located in a dedicated public road reserve or access way where possible, refer Appendix B, Clause B2.1.

Table B2.1 refers to Pressure Sewers and shall only apply to reticulation pressure sewers.

3.7.2 On-property Components

Replace paragraph with:

Easement requirements for on-property components must be in accordance with individual water agency requirements (refer Appendix B).

3.12.1 General

Add an additional paragraph:

The on-property design may take place either before or sometime after the reticulation has been designed.

3.12.3 Clearance from Structures

To enable future maintenance and protect the system, a minimum offset of 1m from the any buildings or structures is required.

3.15.1 Septicity

Add the following:

Calculation of sewage age should take into account the staging of development in new development areas and staging of connections in backlog areas.

If all possible design parameters have been addressed to minimise the septicity of the sewage in the pressure main, and a problem of septicity still remains, it may be necessary to chemically dose the pressure main, collection tanks, and/or discharge maintenance hole.

The Designer shall consider the following odour control methods:

(a) Gas phase treatment
(b) Liquid phase treatment

Subject to the recommendation from an Odour Control Consultant or Water Agency Odour Control Specialist.

4.4.3 Peak flows from homes and required pumping rates

Any properties with a swimming pool will not be permitted to drain their pool directly to the pressure sewer unit. The customer will be required to either:

- Retain their existing drainage arrangement, council permitting (if a backlog property);
- Install a system to ensure that discharge from the pool does not exceed the capacity of the pressure sewer pump well, e.g. storage; or
- Install a soakage pit in order to drain the pool to stormwater, local regulations permitting.

Backlog properties with a swimming pool are to retain their existing pool drainage arrangement and will not be permitted to drain the pool to the pressure sewer unit.

Customers who install a pool after they have received a pressure sewer connection will not be permitted to drain their pool to their pressure sewer unit, and will be required to comply with local authority requirements. In cases where this is not possible, the customer will be required to install a system to ensure that discharge from the pool does not exceed the capacity of the pressure sewer pump well.

Customers with a spa are to install a flow restrictor to the drain which ensures the discharge rate does not exceed 0.5L/s. This flow restrictor shall be installed by a licensed plumber.

4.5.3.1 General

Additional clause:

For operational reasons Melbourne Retail Water Agencies have limited the sizes of PN16, PE100 pipe within its pressure sewer system to OD 40, 50, 63, 90, 125, 180, 280 and 315 (refer to Table 10.2).

5.1.4 Alignment of pressure sewers

Additional clause:

90º bends shall be avoided where possible. Alternatives to 90º bends include bending pipe (in the case of smaller diameters) and the use of 2 No. 45º bends.

5.3.4 Installation

Replace clause with:

Typical valve installation and chamber details are shown in Standard Drawing PSS-1010-M or PSS-1020-Y.

5.4.2 Isolation valve locations

Additional clause:

5.4.2 (d) at incoming reticulation pressure lines, i.e. at Tee's.

(e) one upstream and one downstream of scour valves or eduction points, when the system volume between scour points exceeds $9m^3$.

Delete the final paragraph:

~~Isolating valves shall be capable of being locked in the open and closed positions.~~

5.5 AIR RELEASE AND VACUUM BREAK VALVES

5.5.1 Installation design criteria

Additional requirements:

The designer shall submit plans of proposed air release valve locations for the relevant Melbourne Retail Water Agency approval prior to completing design plans.

Only air release valves authorised by the relevant Melbourne Retail Water Agency and listed in their Product Catalogues shall be specified.

In determining the location of the air release valve, the following factors are to be considered:

- proximity to properties;
- venting requirements; (i.e highpoints above the discharge MH invert level and subsequent odour issues); and
- aesthetics of vent.

Replace Standard Drawing PSS-1006 with Drawing PSS-1010-M or PSS-1020-Y.

5.5.5 Chambers

Replace first paragraph with:

Air release and vacuum break valves shall be located in covered concrete chambers or above ground cabinets so as to provide adequate clearances for servicing/replacement of the valves (refer Drawings PSS–1011–M, PSS–1016–M and PSS–1016–Y).

5.6.2 Flushing points and scours

Replace 2nd paragraph with:

All dead ends to pressure sewers shall be provided with a lockable, end flushing point.

Additional dot point:

(v). At high points for the manual release of air during maintenance activities if a dual orifice air is not provided.

Additional paragraph:

All flushing points shall be lockable.

5.7 FLOW METERS

Replace clause with:

Melbourne Retail Water Agencies shall determine whether flow meters are required and their locations.

Additional requirements:

Where specified the flow meter located to measure total system flow shall be of a magnetic flow type, located in a concrete chamber. The positioning of the flow meter shall take into account the required straight length of pipe upstream (minimum 10x diameter) and downstream (minimum 5x diameter) of the meter position graded to ensure there is no air trap. Other consideration in locating flow meters shall include the source of power

supply, method of data capture and downloading, and any need for telemetry.

The make and type of the flow meter shall be specified by the relevant Melbourne Retail Water Agency.

5.8 DISCHARGE MAINTENANCE HOLES

Where the receiving sewer is substantially deeper than the normal depth of the pressure main the pressure main shall be graded out to enter the base of the receiving MH in such a way that it can discharge directly towards the downstream gravity pipe, thereby minimising disturbance to flows and the likelihood of creating gases. If grading the pressure main out to enter the base of the MH is not practical an internal MH drop shall be designed in such a way that the flow is discharged directly towards the downstream gravity pipe as above. The minimum allowable distance for an internal MH drop is 600mm from the invert of the MH.

Where required, venting shall be provided to the receiving sewer MH.

Consideration should be given to coating internal exposed surfaces of the receiving structure with epoxy lining systems conforming to the requirements of APAS Specification 0213 – “Coatings for Steel Used in Sewage Works” and APAS Specification 0214 – “Coatings for Concrete Used in Sewage Works”, as applicable. Protective coating specifications shall be confirmed with the water company.

The receiving structure shall be located as far as possible from residential properties.

Properties connected to the receiving sewer shall be protected by a water seal (i.e. Boundary Trapped or Gas Check Maintenance Hole).

6 ON-PROPERTY DESIGN

6.2 Clearances

Additional requirement;

Minimum horizontal clearance between the property side boundary and any pressure sewer system component shall be at least 300mm.

Specific water company on-property services clearances are defined in Appendix B.

7 COLLECTION/PUMP UNITS

7.1 General design requirements

Include the following:

Detailed design of the customer sanitary drains to the collection/pump units is the responsibility of the on-property designer.

Replace sentence “The volume that can be used for emergency storage…” with:

“The volume that can be used for emergency storage shall be the volume contained in the collection/pump unit from the high level alarm up to the lowest ground level at any point served by the chamber.”

7.7 CONNECTION TO CUSTOMER SANITARY DRAINS

Replace Standard Drawing PSS-1101 with Drawing PSS-1112-M and PSS–1111–M.

8 SERVICE CONNECTION PIPE WORK

8.1 Property discharge line

Additional requirement:

Detailed design of property discharge line is the responsibility of the on-property designer but the responsibility for the lateral design will depend on the interface between the reticulation design and on-property design decided by the relevant Water Agency.

8.1 Laterals

Additional requirement:

Pressure sewer laterals shall only be directly connected to pressure sewers that are less than or equal to DN225. Where connection to a pressure sewer greater than DN225 is necessary, a new reticulation pressure sewer main will be required.

8.4 Depth of pipework

Replace reference to “Standard Drawing PSS-1000” with “Drawing PSS–1013–M”.

9 STRUCTURAL DESIGN

9.2.2. Pipe cover

Replace reference to “Standard Drawing PSS-1000” with “Drawing PSS–1013–M”.

9.2.3. Trench Design

Replace reference to “Standard Drawing PSS-1000 and PSS-1001” with “Drawing PSS–1013–M”.

9.2.5. Pipe Embedment

Replace reference to “Standard Drawing PSS-1000” with “Drawing PSS–1013–M”.

APPENDIX B SPECIFIC WATER AGENCY REQUIRMENTS

B3 South East Water

B3.1 Vacant Lots

Additional clause:

For development projects, unless otherwise agreed to by South East Water, the developer is required to install all property services from the main to approximately 1.0 metre within the property terminating in a SS ball valve 300mm below the surface level, in addition to the reticulation pipeline system. The balance of all on-property design and installation will be arranged by South East Water after property owners make application to connect. This will generally be some time after the reticulation system has been designed and installed.

B3.2 Backlog Sewerage Areas

For designated backlog sewerage projects, it is South East Water's policy not to design or install pressure sewer service connections. (eg property service pipe from the pressure main, the boundary kit, the internal pressure property drains, the grinder pump unit, electrical panel and alarm device) until the property owner makes application to connect. Once the property owner's application for connection has been confirmed by South East Water, all on-property design and installation works will be undertaken by South East Water. This will generally be some time after the reticulation system has been designed and installed.

B3.3 Onsite storage tanks for Commercial and Owners Corporation properties

For the design and selection of onsite storage tanks, South East Water will determine the appropriate on-property design requirements based on expected peak flow data provided by the Property Owner or Designer.

B4 City West Water

For residential properties only, City West Water will arrange design and installation of the service connection and the on-property works, after application to connect has been made.

For industrial/commercial properties, City West Water will arrange design and installation of the service connection and the on-property works, after application to connect has been made.

For residential, commercial and industrial development projects the developer is required to install all pressure sewer laterals.

B5 Yarra Valley Water

B5.1 On property design – all areas

Minimum horizontal clearances shall apply as follows:

- 2.0 m from pump unit to any buildings
- 1.0 m from pump unit to any natural gas meter
- 3.5 m from pump unit to base of any LPG cylinders

Developers undertaking on-property designs shall use Yarra Valley Water's On Property Design Checklist which details criteria for locating on-property components and clearances from building footings, gas bottles, building openings and other property features. Any departures from the Design Checklist require Yarra Valley Water's approval.

In particular circumstances, Yarra Valley Water will specify that higher risk sites must have telemetry installed.

B5.2 On property design – backlog areas

On property designs for backlog properties are prepared during the reticulation design process.

Sewer laterals and boundary valve kits will be installed at the time of construction of the pressure sewer reticulation (including on vacant lots), in accordance with Arrangement #4 in Figure 6.1.

All other on-property components will be installed upon the property owner's application to connect to sewer.

B5.3 On property design – new developments

Developments to be serviced by pressure sewer shall provide a 1.2m easement in Yarra Valley Water's favour on the low side of each lot alongside the property boundary. This is to ensure that on-property pressure sewer components can be installed after the lot is developed.

Boundary valve kits shall be installed by the developer at the time of construction of the pressure sewer reticulation, in accordance with Arrangement #4 in Figure 6.1, using the standard boundary valve kit specified by Yarra Valley Water. The boundary valve kit shall be located approximately 1m inside the front property boundary in a non-trafficable area.

PART 2. PRODUCTS & MATERIALS

PREFACE

This Melbourne Retail Water Agencies Supplementary Manual to the WSAA Pressure Sewerage Code of Australia WSA 07-2007 is intended to disclose those issues where Melbourne Retail Water Agency requirements are not consistent with the WSAA Pressure Sewerage Code. The requirements of this Melbourne Retail Water Agencies Supplementary document shall take precedence over the WSAA Pressure Sewerage Code.

10.7.2 Polyethylene (PE) pipes and fittings

Add to the end of clause:

For operational reasons Melbourne Retail Water Agencies have limited the sizes of PN16 PE100 pipe within its pressure sewer system to OD 40, 50, 63, 90, 125, 180, 280 and 315 (refer to Table 10.2).

10.7.3 Pipeline identification

Replace clause with:

PE pipes shall be black and PE100 complying with WSA PS–207S. PE fittings shall be black PE100 mechanical and/or electrofusion fittings complying with WSA PS–208S or fabricated fittings suitable for butt welding complying with WSA PS–208S.

SDR ratings are incorrect in Table 10.2 Internal Diameter of PE Pipes. Replace table 10.2 with the following:

Table 10.2 Internal Diameters of PE Pipes

Pipe Size OD	Internal Diameter
	PE 100 SDR 11 / PN 16
40	32
50	40
63	51
90	73
125	100
180	146
280	228
315	256

MRWA 10.10 Approved Products and Materials

Only pipes and fittings listed in the relevant Melbourne Retail Water Agency's Products Catalogue and the associated purchasing specification shall be used. Pressure mains shall comply with colour and marking requirements of the purchasing specification to differentiate pressure sewerage mains from drinking water and non-drinking water pressure mains.

Pipe type, size, class and series shall be clearly notated on design and as-constructed drawings.

PART 3. CONSTRUCTION

PREFACE

This Melbourne Retail Water Agencies Supplementary Manual to the WSAA Pressure Sewerage Code of Australia WSA 07-2007 is intended to disclose those issues where Melbourne Retail Water Agency requirements are not consistent with the WSAA Pressure Sewerage Code. The requirements of this Melbourne Retail Water Agencies Supplementary document shall take precedence over the WSAA Pressure Sewerage Code.

13.5.3 Disused / Redundant sewers, drains and tanks

Replace clause with:

It is the Owner's responsibility to take action regarding disused sewers, sanitary drains, septic tanks and sand filters e.g. pumpout, removal, filling, capping at points of disconnection and removing surface fittings as specified etc.

The decommissioning works are to be carried out by a licensed plumber in accordance with the requirements of EPA Victoria.

18.5 Trenchless Installation

Replace paragraph 6 – Allow the installed PE… with:

Allow the installed PE pipe to relax after insertion in order to encourage any creep to occur prior to connection of the pipe ends. Depending on temperature, the method of installation, etc the length of time required for the pipe to relax can be quite significant, eg 24-48 hours.

18.6 Jointing

Add to the end of the clause:

Mechanical couplings with "grippers" shall be used on PE pipes ≤ 63 OD.

Electrofusion welding shall only be permitted where it is not practical to butt weld.

Electrofusion jointing shall be undertaken in accordance with Plastics Industry Pipe Association of Australia Limited document (POP001) 'Electrofusion jointing of PE pipe and fittings for pressure applications'.

Butt fusion jointing of PE pressure conduit shall be undertaken in accordance with AS 2033 – 2008 'Installation of Polyethylene Pipe Systems' and then Plastics Industry Pipe Association of Australia Limited's

document 'Butt Fusion jointing of PE pipes and fittings - Recommended Parameters'.

All jointing shall be performed under controlled conditions by skilled and experienced operators utilising approved equipment. All operators to be used on the work shall be accredited by a registered training organisation.

The weld test requirements of WSAA Polyethylene Pipeline Code WSA 01-2004 for butt and electrofusion welding are to be strictly enforced, including destructive testing.

18.8 Pressure Sewer Laterals, Property Assemblies

Add after the 1st paragraph:

Pressure sewer laterals shall only be connected to existing pressure sewers that are less than or equal to DN225. Where connection to a pressure sewer greater than DN225 is necessary, a new reticulation pressure sewer main will be required.

Where a pressure sewer lateral is to be retrofitted to an existing pressure sewer >50 OD this shall be done using an approved plastic tapping band (gun-metal tapping bands are not permitted on sewers). Where a pressure sewer lateral is to be retrofit to an existing pressure sewer 50 OD this shall be done by cutting in a Tee joined with approved compression fittings (slip couplings).

Electrofusion tapping saddles are not approved for use for wet tappings.

Only stainless steel ball valves may be used on services (brass or plastic valves are not acceptable) within South East Water & City West Water's areas.

Either stainless steel or plastic ball valves may be used with Yarra Valley Water's area.

18.15 Location Markers

Location markers are also required where pressure sewer pipes are installed at varying offsets or in locations that may make it difficult to locate the pipes in the future. Location markers are required at changes of direction, valves, fittings and at max. 200m centres.

20 Fill

Include the following:

Where differences occur between the requirements of MRWA Specification No. 04-03.1 Backfill Specification and the Pressure Sewer Code, the MRWA Specification No. 04-03.1 Backfill Specification shall take precedence over this section.

21.3 Compaction Testing

Include the following:

Where differences occur between the requirements of MRWA Specification No. 04-03.1 Backfill Specification and the Pressure Sewer Code, the MRWA Specification No. 04-03.1 Backfill Specification shall take precedence over this section.

21.4.2 System Test Pressure

Add the following:

In South East Water's area the maximum operating pressure shall be taken as 80m, i.e. a maximum STP of 100m shall be adopted.

21.5.2 Test procedure selection

Include the following:

All construction projects containing polyethylene mains > 20 lineal metres in length (including reticulation and property laterals) shall be tested using the general pressure test method set out in Clause 21.5.4.

The MRWA Water Supply Pressure Testing PE Pipe calculator on the MRWA web site at (http://www.mrwa.com.au/Pages/Standards.aspx) may be used to determine the pressure testing limits necessary to confirm pressure testing acceptance requirements for a pressure sewer system.

All construction projects containing polyethylene mains ≤ 20 lineal metres in length (including reticulation and property laterals) shall be tested for 15 minutes at the nominated system test pressure. (No loss method) Accept the pressure test if there is no loss (0 kPa) of pressure for the duration of the test period.

If this no loss pressure test fails , retest the polyethylene main(s) using the general pressure test method set out in Clause 21.5.4.

Compressed air testing shall not be permitted for pressure sewer pipelines.

24.2 Work As-constructed Details

Add to the end of the clause:

Where pipelines are installed by directional drilling, the contractor shall supply copies of the borehole profiles recorded by the drilling rigs. The borehole profiles shall form part of the as-constructed information, recording depths along the main.

If the drilling rig is not equipped with a system for producing these profiles the contractor shall take depth readings to the "sonde" at a maximum of

20m intervals and include the depths and chainages on the as-constructed information.

PART 4 STANDARD DRAWINGS

25 MRWA Supplementary Standard Drawings

The requirements of the supplementary drawings shall take precedence over the WSAA Standard Drawings.

25.3 Varied Standard Drawings

From time to time some WSAA Pressure Sewer Standard Drawings may experience changes to notes and/or technical detail to ensure the Drawings conform to MRWA requirements. Such varied drawings will replace the original WSAA Pressure Sewer Standard Drawings. The varied drawing will bear the same PSS or WAT prefix and number but with an added “V” suffix.

No WSAA Pressure Sewer Standard Drawing has been varied if the only necessary change is the addition of a “V” suffix to the number of another drawing cross-referenced within the notes or elsewhere on that Drawing. Notwithstanding, in such cases the varied MRWA version of such cross-referenced drawing shall be followed.

25.4 Supplementary (Additional) Drawings

The WSAA Pressure Sewer Standard Drawings have been supplemented with a number of additional Drawings. Such Drawings address aspects not otherwise covered by the WSAA Pressure Sewer Standard Drawings. Supplementary drawings complement and in some instances replace WSAA Pressure Sewer Standard Drawings. Supplementary drawings are differentiated from PSS or WAT drawings by number and a “M” or “Y” suffix. The “M” denotes a drawing generally accepted by MRWA, while “Y” denotes a drawing used only by Yarra Valley Water. Refer to the following Listing of Standard Drawings for a complete reference of when the supplementary standard drawings should be used.

LISTING OF STANDARD DRAWINGS

The following Supplementary Standard Drawings shall be added to the index:

Drawing Number	Activity	Title	City West Water Preference	South East Water Preference	Yarra Valley Water Preference
Pressure Sewer System Configuration					
PSS–1000	Embedment and Trench Fill	Typical Arrangement	Replace with PSS-1013-M	Replace with PSS-1013-M	Replace with PSS-1013-M
PSS–1001	Special Embedment	Concrete and Cement Stabilised Systems	Accepted	Accepted	Accepted
PSS–1002	Buried Crossings	Major Roadways	Accepted	Accepted	Accepted
PSS–1003	Buried Crossings	Under Obstructions	Accepted	Accepted	Accepted
PSS–1004	Buried Crossings	Railways	Accepted	Accepted	Accepted
PSS–1005	Typical Valve Installation	Shroud Pipe and Fittings Assembly	Replace with PSS-1010-M	Replace with PSS-1010-M	Replace with PSS-1020-Y
PSS–1006	Typical Appurtenance	Valve and Vent Shaft Details	Replace with PSS-1016-M	Replace with PSS-1016-M	Replace with PSS-1016-Y
PSS–1007	Typical Appurtenance	Details – Flushing Point	Replace with PSS-1012-M	Replace with PSS-1012-M	Replace with PSS-1012-M
PSS–1010–M	Typical Valve Installation	Isolation Valves	Accepted	Accepted	Replace with PSS-1020-Y
PSS–1011–M	Air Valve Installation	In Ground	Accepted	Not used. Contact SEW for up to date Air Valve drawings.	Replace with PSS-1016-Y
PSS–1012–M	Typical Appurtenance	Flushing Points for PE Mains < 180 OD	Accepted	Accepted	Replace with PSS-1020-Y
PSS–1013–M	Trench Details	Dimensions and Materials	Accepted	Accepted	Accepted
PSS–1014–M	Marker Posts and Marker Blocks	Typical Arrangement	Accepted	Accepted	Replace with PSS-1014-Y
PSS–1014–Y	Marker Posts	YVW Typical Arrangement	Refer to PSS-1014-M	Refer to PSS-1014-M	Accepted
PSS–1015–M	Pressure Sewer Laterals	Typical Tapping Installation	Accepted	Accepted	Accepted

Drawing Number	Activity	Title	City West Water Preference	South East Water Preference	Yarra Valley Water Preference
PSS–1016–M	Offset Air Valve Installation	In Ground	Accepted	Not used. Contact SEW for up to date Air Valve drawings.	Replaced with PSS-1016-Y
PSS–1016–Y	Typical Appurtenance	YVW Typical Offset Air Valve Details	Refer to PSS-1016-M	Not used. Contact SEW for up to date Air Valve drawings.	Accepted
PSS–1017–M	Typical Appurtenance	Typical Scour Valve Details	Accepted	Accepted	Accepted
PSS–1018–M	Maintenance Structures	New Maintenance Hole Connection over Existing Sewer	Accepted	Accepted	Accepted
PSS–1019–M	Maintenance Structures	Drop Structure in Existing Maintenance Hole	Accepted	Accepted	Accepted
PSS–1020–Y	Typical Appurtenances	YVW Air Valves, Flushing Points & Isolation Valves	Refer either PSS-1010-M, PSS-1012-M or PSS-1016-M	Refer either PSS-1010-M or PSS-1012-M	Accepted
On-Property Components					
PSS–1100	Design Layout	Typical Locality and Site Plain	Replace with PSS-1110-M	Replace with PSS-1110-M	Replace with PSS-1110-M
PSS–1101	On-Property Layout	Typical Arrangement and Sanitary Drainage Details	Replace with PSS-1111-M and PSS-1112-M	Replace with PSS-1111-M and PSS-1112-M	Replace with PSS-1111-M and PSS-1112-M
PSS–1102	Property Boundary Assembly	Typical Installation	Replace with PSS-1113-M and PSS-1114-M	Replace with PSS-1113-M and PSS-1114-M	Replace with PSS-1113-M and PSS-1114-M
PSS-1110-M	Design Layout	Typical On Property Components	Accepted	Accepted	Accepted
PSS–1111–M	On-Property Layout	Commercial / Industrial	Accepted	Accepted	Accepted
PSS–1112–M	On-Property Layout	Residential	Accepted	Accepted	Accepted
PSS–1113–M	Property Boundary Assembly	Typical Industrial / Commercial Installation	Accepted	Accepted	Accepted
PSS–1114–M	Property Boundary Assembly	Typical Residential Installation	Accepted	Accepted	Accepted
PSS–1115–Y	Property Service Details	Pump Control Box Arrangements	-	-	Accepted

Drawing Number	Activity	Title	City West Water Preference	South East Water Preference	Yarra Valley Water Preference
Pipeline Layout					
WAT–1102	Typical Mains Construction	Reticulation Main Arrangements	Not used	Not used	Not used
WAT–1106	Property Services	Single Service Main to Meter	Not used	Not used	Not used
WAT–1107	Property Services	Split Service Main to Meter	Not used	Not used	Not used
WAT–1108	Property Services	Connection to Main	Not used	Not used	Not used
WAT–1109	Property Services	Above Ground Meter Assembly Arrangement	Not used	Not used	Not used
Embedment / Trenchfill and Restraints					
WAT–1200	Soil Classification Guidelines	And Allowable Bearing Pressures for Anchors and Thrust Blocks	Accepted	Accepted	Accepted
WAT–1205	Thrust Block Details	Concrete Blocks	Accepted	Accepted	Accepted
WAT–1206	Thrust Block Details	Timber & Recycled Plastic Blocks	Accepted	Accepted	Accepted
WAT–1207	Thrust and Anchor Blocks	Gate Valve and Vertical Bends	Not used	Not used	Not used
WAT–1208	Restrained Joint System	DN 100 to DN 375 DI Mains	Not used	Not used	Not used
WAT–1209	Trench Drainage	Bulkheads and Trenchstop	Accepted	Accepted	Accepted
WAT–1210	Trench Drainage	Typical Systems	Accepted	Accepted	Accepted
Installation Practices / Structures					
WAT–1307	Typical Appurtenance Installation	Scour Arrangements	Replace with PSS-1017-M	Replace with PSS-1017-M	Replace with PSS-1017-M
WAT–1312	Aerial Crossings	Bridge Crossing Concepts	Accepted	Accepted	Accepted
Fabrication Details					
WAT–1409	Hydrant Installation Fittings	PE Assemblies	Replace with PSS-1012-M	Replace with PSS-1012-M	Replace with PSS-1020-Y

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PSS–1010–M & PSS-1020-Y – Typical Valve Installation, Isolation Valves

PSS–1010–M & PSS-1020-Y show typical arrangements for installing stop valve and shroud pipes.

PSS–1010–M represents the stop valve requirements for SEW & CWW.

PSS-1020-Y represents the stop valve requirements for YVW.

Different types of resilient seated valve may be used depending on the size of pressure sewer e.g. gate or ball. End connections that permit the valve to be removed and/or replaced should be specified, e.g. mechanical compression jointed or flanged.

A shroud or sleeve should be provided at each valve to prevent the trench fill affecting the operation parts. The shroud or sleeve should be sized to provide adequate access to remove the valve.

Plastic identification covers should be used on valve spindles where specified by the Water Agency.

The specified clearance between the valve spindle cap and the finished surface level should be within the tolerances shown. Variations to these clearances may result in operational problems.

PSS–1011–M & PSS–1016–Y – Air Valve Installation, In Ground

PSS–1011–M & PSS-1016-Y shows a typical arrangement for installing sewage gas release and vacuum break valve in a concrete valve pit, which is to be provided with a drainage sump and a vent shaft to control release of odours.

PSS–1011–M represents the air valve & ground vent requirements for CWW.

PSS-1016-Y represents the air valve & ground vent requirements for YVW.

SEW should be contacted for the most up to date drawings representing SEW requirements for air valves & ground vents, which may include options for above ground air valves and odour control measures.

Provision for scouring the line is also provided by means of isolation and non-return valves.

All pipe, fitting and valve items should have flanged or other mechanical connections to enable dismantling and replacement and pipe work penetrating the pit walls should be provided with stainless steel pipe wall penetration modular seals. All pipe work and valves should be supported

Suitable access facilities should be provided to meet OH&S requirements. Pits should be covered with gas and watertight solid covers to prevent ingress of surface water, escape of odours and prevent falls.

The drainage sump should be drained to an appropriate discharge location.

If the pit is cast in-situ, internal and external formwork should be locked together during pouring and vibration and other restraint as necessary to prevent movement.

The height and location of the educt vent should be carefully considered with respect to potential odours causing complaints from neighbouring property occupants. In some instances, odour control measures such as biofilters should be included in the design to treat odorous gases.

PSS–1012–M & PSS-1020-Y – Typical Appurtenance, Flushing Points

PSS–1012–M & PSS-1020-Y shows typical installation configurations flushing points in various parts of the pressure reticulation system including in-line and end-of-line using electrofusion fittings designed for use with PE pipe.

PSS–1012–M represents the flushing point requirements for SEW & CWW.

PSS-1020-Y represents the flushing point requirements for YVW.

The electrofusion components nominated show deemed-to-comply solutions that are being used at South East Water. Alternative designs may be equally applicable. Detailed design drawings for installation should be provided to the Constructor following verification that all components are readily available at local suppliers.

The ball valves on all flushing points are to be lockable using an approved Water Agency key lock.

The height of the flushing point assembly will determine the depth of the pit. The flushing point end connection should be located to afford ease of connection and be well supported to resist forces imposed during connection and flushing.

Flushing points should be carefully located considering operational requirements, the need for tanker access and drainage and neighbourhood amenity issues.

Pits may be constructed from pre-cast concrete items or cast in-situ. Other proprietary moulded or reinforced plastic pits may also be suitable. Pipe penetrations through concrete walls should be provided using modular seals, of which a number of proprietary brands are available. Only corrosion resistant models using 316 stainless steel metallic components should be used.

Step irons are optional to Water Agency requirements. Lockable access covers may be required in some locations to prevent unauthorised access.

PSS–1013–M – Trench Details, Dimensions and Materials

PSS–1013–M shows the typical arrangement for embedment and trench fill. It also identifies the terminology used for the key support areas that are discussed in the design and construction sections of the Code.

Embedment and trench fill materials, placement, compaction and testing requirements are as specified on this drawing.

Correct haunch support is the key to providing adequate support for flexible buried pipes. Before compacting, it is important to manually work the embedment material into the haunches to ensure all voids are filled.

Trench fill comprises the material installed above the embedment zone up to the finished surface level, as shown in the Standard Drawings.

PSS–1014–M & PSS-1014-Y – Marker Posts and Marker Blocks, Typical Arrangement

PSS–1014–M & PSS-1014-Y shows deemed-to-comply identification and marker post systems for all valves, flushing points and air valves.

PSS–1014–M represents the identification and marker post requirements for SEW & CWW.

PSS-1014-Y represents the identification and marker post requirements for YVW.

The most important aspect of marker posts or marker block is to allow easy identification by contractors, utility service providers or operation and maintenance personnel. Positive identification of appurtenances on reticulation pressure mains is achieved once the surface fitting has been located and the surface fitting markings is noted.

Marker blocks are to be used for fittings adjacent to sealed roadways, whereas marker posts are used for fittings adjacent to unsealed roads.

PSS–1015–M – Pressure Sewer Laterals, Typical Tapping Installation

PSS–1015–M shows deem-to-comply alternative connection arrangements for pressure sewer laterals only that are being used at South East Water. Alternative designs may be equally applicable. Detailed design drawings for the installation should be provided to the constructor following verification that all components are readily available.

This Drawing has been created for MRWA requirements.

Typically PE is used for pressure sewer systems.

The method of connection is dependent on the pipeline material diameter and whether it's a dry or wet tapping. Direct tapping of pressure sewer reticulation main (i.e. without use of a tapping band/saddle/tee) is not permitted.

The tappings may be performed at surface level before the section of pipe is lowered into the trench.

Tee Insertion Method Dry Tappings

Electrofusion tees shall be used for all connections for 40 OD PE pressure sewer laterals to 50 OD PE and 63 OD PE pressure reticulation sewers. Ball valves are required to be located at the pressure sewer reticulation main as the pressure sewer laterals can be isolated using the squeeze off techniques. Where squeeze off techniques are used to isolate sections of pipe work during construction, it shall be performed using methods and equipment approved by the pipe manufacturer.

Tee Insertion Method Wet Tappings

For wet tapping off 50 OD PE pressure reticulations sewers obtain Water Agency approval for the use of compression tees for pressure sewer laterals only. Ball valves are required to be located at the pressure sewer reticulation main as the pressure sewer laterals can be isolated using the squeeze off techniques.

Mechanical Tapping Method - Dry Tappings

Only use approved Water Agency tapping bands on PE pipe. Stainless steel tapping band clamps should not be used on PE pipes if tapping is conducted under pressure, since there is a risk that once depressurised the clamp type tapping bands will not reseal to provide a watertight connection.

For dry tapping on 90 OD PE, ball valves at the pressure sewer reticulation are required to enable isolation of the pressure sewer laterals.

Mechanical Tapping Method – Wet Tappings

Only use approved Water Agency tapping bands on PE pipe. Stainless steel tapping band clamps should not be used on PE pipes if tapping is conducted under pressure, since there is a risk that once depressurised the clamp type tapping bands will not reseal to provide a watertight connection.

For dry tapping on 90 OD PE, ball valves at the pressure sewer reticulation are required to enable isolation of the pressure sewer laterals.

Electrofusion Tapping Method – Dry and Wet Tappings

Only use approved Water Agency Electrofusion welded tapping saddles for new installations of PE pipe.

Tapping of curved PE pipe should take place only at the top of the pipe to minimise stress around the tapping hole. Where dry tapping is performed, a plug cutter should be used, and all swarf removed. Under pressure tapping should be used only with systems that utilise plug cutters that retain the PE pipe wall plug within the cutter. Where welded tapping systems are used, the assembly should be allowed to fully cool naturally before cutting the mainline PE plug.

For dry tapping on 90 OD PE, ball valves at the pressure sewer reticulation main are not necessary where electrofusion tapping saddles are used, since electrofusion tapping systems have an integral service isolation valve.

PSS–1016–M & PSS-1016-Y – Offset Air Valve Installation, In Ground

PSS–1016–M and PSS-1016-Y shows a typical arrangement for installing a sewage gas release and vacuum break valve within a concrete pit structure. Offset Air Valves may be used in locations where the installation of an air valve directly along the pressure sewer main alignment is not suitable.

PSS–1016–M represents the air valve requirements for CWW.

PSS-1016-Y represents the air valve requirements for YVW.

SEW should be contacted for the most up to date drawings representing SEW requirements for offset air valves, which may include options for above ground air valves and odour control measures.

The concrete pit is to be provided with a drainage sump and a vent shaft to control release of odours. The drainage sump should be drained to an appropriate discharge location. Pit covers are to be a solid top type in accordance with the drawing and Water Agency approved products list. If the concrete pit is constructed as a cast in-situ type, internal and external formwork should be locked together during pouring and vibration and other restraints applied as necessary to prevent movement.

A suitable access area around the concrete pit shall be provided to meet OH&S requirements. The height and location of the educt vent should be carefully considered with respect to potential odours causing complaints from neighbouring property occupants. In some instances, odour control measures such as bio-filters should be included in the design to treat odorous gases.

PSS–1017–M – Typical Appurtenance, Typical Scour Valve details

PSS–1017–M shows a typical arrangement for the installation of a scour valve on pressure transfer mains ≥ 90mm OD within the pressure sewer network.

The overall design shall be in accordance with section 5.6.2 of the Pressure Sewage Code and MRWA Supplementary Manual requirements.

PSS–1018–M – Maintenance Structures, New Maintenance Hole Connection over Existing Sewer

PSS–1018–M shows a typical arrangement for installation of a new sewer Maintenance Hole over an existing gravity sewer main, as the discharge point of the pressure sewer main.

The general design and installation details for the discharge Maintenance Hole shall be in accordance with MRWA version of the Sewerage code of Australia (WSA02-2002-2.3).

Where the receiving sewer is substantially deeper than the normal depth of the pressure main, a vertical bend shall be provided on the pressure main adjacent to the receiving Maintenance Hole. This enables the pipe obvert of the pressure sewer main to be placed at either the same level or slightly elevated level above the outlet pipe obvert within the Maintenance Hole.

All Internal exposed concrete surfaces within the Maintenance Hole shall be coated with an approved Water Agency protective lining or coating system for corrosion protection purposes.

Where required, appropriate ventilation shall be provided to the Maintenance Hole in accordance with the Design parameters outlined in the MRWA version of the Sewerage code of Australia (WSA02-2002-2.3).

PSS–1019–M – Maintenance Structures, Drop Structure in existing Maintenance Hole

PSS–1019–M shows a typical arrangement for the discharge point of the pressure sewer main into an existing gravity sewer Maintenance Hole. This drop pipe arrangement shall only be used for the discharge point of pressure sewer main that is servicing less than the equivalent of 50 residential properties.

The general design and installation details for the discharge Maintenance Hole shall be in accordance with MRWA version of the Sewerage code of Australia (WSA02-2002-2.3).

All Internal exposed concrete surfaces within the Maintenance Hole shall be coated with an approved Water Agency protective lining or coating system for corrosion protection purposes.

Where required, appropriate ventilation shall be provided to the Maintenance Hole in accordance with the Design parameters outlined in the MRWA version of the Sewerage code of Australia (WSA02-2002-2.3).

PSS–1110–M – Design Layout, Typical On Property Components

PSS-1110-M shows a schematic of typical arrangements for the on-property components for pressure sewerage. There are many other variations of this arrangement which may be more suitable to particular sites, especially in providing services to existing properties.

The items shown are only typical and may vary from supplier to supplier. Collection pump units may by shaped and sized to suit a range of site specific requirements and may be installed in multiple units.

PSS–1111–C – On-Property Layout, Commercial / Industrial

PSS–1111–M shows a section of the typical arrangements for the on-property components for pressure sewerage for industrial and commercial properties. There are many other variations of this arrangement which may be more suitable to particular sites, especially in providing services to existing properties.

The items shown are only typical and may vary from supplier to supplier. Collection pump units may by shaped and sized to suit a range of site specific requirements and may be installed in multiple units.

PSS–1112–M – On-Property Layout, Residential

PSS–1112–M shows a section of the typical arrangements for the on-property components for pressure sewerage for residential properties. There are many other variations of this arrangement which may be more suitable to particular sites, especially in providing services to exiting properties.

The items shown are only typical and may vary from supplier to supplier. Collection pump units may by shaped and sized to suit a range of site specific requirements and may be installed in multiple units.

PSS–1113–C – Property Boundary Assembly, Typical Industrial / Commercial Installation

PSS–1113–M shows typical arrangements for the installation of property boundary assemblies below-ground in moulded plastic surface boxes. This arrangement would not be suitable in trafficable areas. Assemblies should be located away from driveways or potential driveways/access way e.g. in the middle section of the front lot boundary.

The surface box should provide sufficient clearances to allow the property boundary assembly to be removed for maintenance and/or replacement. In some locations it may by necessary to provide lockable box lids.

PSS–1114–M – Property Boundary Assembly, Typical Residential Installation

PSS–1114–M shows typical arrangements for the installation of property boundary assemblies below-ground in moulded plastic surface boxes. This arrangement would not be suitable in trafficable areas. Assemblies should be located away from driveways or potential driveways/access way e.g. in the middle section of the front lot boundary.

The surface box should provide sufficient clearances to allow the property boundary assembly to be removed for maintenance and/or replacement. In some locations it may by necessary to provide lockable box lids.

DOCUMENT IMPROVEMENT REQUEST

MRWA Pressure Sewerage Code of Australia WSA 07-2007

FROM:		
Name:		
Position/Title:		
Section/Company:		
Address:		
Email:		
Phone:	Fax:	Date:
Signature:		
TO:		
City West Water	standards@citywestwater.com.au	
South East Water	Colin.paxman@sew.com.au	
Yarra Valley Water	Kevin.dawson@yvw.com.au	

PROPOSED IMPROVEMENT

Part	Clause	Page No	Proposed Improvement

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Outcome of Review:	
Comment/Decision:	
Name and signature of approving authority:	Date: