

Significant amendments and clarifications – July 2017

WSA 02-2002-2.2 Sewerage Code of Australia - Sydney Water edition version 4 2017 (the Code) is the technical standard for planning, design and construction of Sydney Water trunk, branch and reticulation sewers as well as maintenance structures.

The Code was released by Water Services Association of Australia (WSAA) in July 2017. To support the transition to the latest version, we've summarised the significant amendments and clarifications from the previous version. Major changes are:

- inclusion of Sydney Water's *Technical Specification for Leak Tight Sewer Systems* requirements
- a requirement that Design documents are prepared with sufficient details so all items can be constructed or procured from the market, without further interpretation or analysis by the Constructor.

Further amendments and clarifications are summarised in the following tables.

This document is intended to help you identify differences between the two versions. Users should familiarise themselves with the whole Code to ensure works meet our requirements.

Changes to code text

Topic	Description	Relevant section/clause
Code availability	<ul style="list-style-type: none"> The Code can be purchased as a download by visiting WSAA bookshop at https://www.wsaa.asn.au/shop. 	
Comments for this and future Code reviews	<ul style="list-style-type: none"> Users of the Code are invited to suggest amendments or improvements to the technical content and format or style of the document by emailing suggestions to standards@sydneywater.com.au. 	Introduction
Drawings for use with the Code	<ul style="list-style-type: none"> Standard Drawings illustrate Code requirements and consist of: <ul style="list-style-type: none"> WSA 02-2002-2.2 Edition WSAA Standard Drawings (unamended) WSA 02-2002-2.2 Edition WSAA Standard Drawings (amended to become new Sydney Water V drawings) Previous Version Sydney Water Drawings (V & S – amended) New Sydney Water S Drawings Some WSA 02-2002-2.2 Edition WSAA Standard Drawings have been marked “This drawing is not used by Sydney Water”. Some previous Version Sydney Water Drawings have been marked “Withdrawn – no longer used by Sydney Water”. Deemed to Comply Drawings are located on Sydney Water’s website. They are acceptable design solutions that are in accordance with Sydney Water requirements. They are not part of the Code. 	Introduction & Part 4 Standard Drawings
Terminology and website links	<ul style="list-style-type: none"> Updated. 	Throughout
Referenced documents	<ul style="list-style-type: none"> Listed additional documents available from Sydney Water to assist designers. 	Part 0 – III Referenced

Topic	Description	Relevant section/clause
		documents and several clauses throughout Code
Designer responsibilities	<ul style="list-style-type: none"> Design documentation to have sufficient detail so that all items can be constructed or procured from the market without further interpretation or analysis by the Constructor. Standard Drawings are illustrative and provide guidance to Designers. They are generally not in themselves adequate for construction. 	1.3.3, 9, 10.3.2, 27.2
Safety in design	<ul style="list-style-type: none"> Designers to comply with WHS Act and Regulations in regard to the duties of designers of structures and follow Model Code of Practice on “Safe Design of Structures” or other similar procedures. Emphasis on risk assessment and management. Also referenced Sydney Water HSP 058 Health & Safety procedure for Risk Assessment in Design. 	SW 1.4.4
Flow estimation and hydraulic design	<ul style="list-style-type: none"> Design flow to be contained by the sewerage system. Designers to use Leak Tight Sewer design approach. Design Flow = Dilution Factor * PDWF. PDWF = Peaking Factor (d) * ADWF. New curves showing d vs Area for different EP densities. ADWF = 150 L/d/EP. Sewerage Flow Schedule for Leak tight sewer design approach available on website. Maximum EP for reticulation sewers regardless of hydraulic analysis, new table inserted. Conventional sewer design approach still explained in document but requires Sydney Water approval for use. Use of Sewerage Flow Schedule limited to reticulation sewers. Initial pipe sizing and grading for larger 	CI 3.1, 3.2.1, SW 3.2.5.1, SW 3.2.5.2, SW 3.2.5.3, SW 3.2.5.4, 9.2.1 App B – CI B1, B2, SW B4.1, SW B4.2, SW B6, App SW4, 4.5.5 – Table 4.4

Topic	Description	Relevant section/clause
	sewers may be permitted using the Flow Schedule. Consult Sydney Water for design of all branch and trunk sewers.	
Preferred gravity sewer location	<ul style="list-style-type: none"> • Preference for location in private property. Optimum alignment to consider several factors. Recognition that smaller lot sizes may lead to location of sewers outside properties. • Sewers in basements. Recognition that re-development may lead to an alignment within a basement if there is no other suitable servicing option. "Reticulation sewers in basements – Technical guidelines" is available on the Sydney Water website. 	SW 4.2.3.2, SW 4.2.3.3, SW 4.2.3.4, SW 4.2.3.5
Design considerations to reduce risk of surcharge at properties	<ul style="list-style-type: none"> • Designers to consider implications of coastal/tidal areas, surcharge areas, basement sewer alignments, level at ERSs, and soffit requirements. Soffit requirements have been updated. 	4.6.5.2, SW 4.6.5.2.1, SW 4.6.5.2.2
Disused sewers	<ul style="list-style-type: none"> • Where sewers are to be dis-used and filled, grouting methods shall be used. 	4.2.6
Sewer dead-ends	<ul style="list-style-type: none"> • TMSs to be used unless an extension is planned soon. 	4.3.6
Clearance from structures	<ul style="list-style-type: none"> • Requirement for location to be clear of "zone of influence" of structure's foundation. 	4.4.4
Property connection	<ul style="list-style-type: none"> • 'IS' type connection arrangement. This precludes the need for Verticals. Prior Sydney Water approval needed for Verticals. Coverage of Verticals still included in case they are approved by Sydney Water for a specific project. • Property connections at new MHs not permitted. • Breaking-in to existing MHs for property connection not permitted. 	5.1, 5.2, 6.6.4
Method of property	<ul style="list-style-type: none"> • 'Modified buried interface' method to be used at Sydney Water. This is essentially the 'buried interface 	5.3.1, SW 5.3.4,

Topic	Description	Relevant section/clause
connection	method' except that the 'IS' property connection arrangement is used instead of a junction only.	SEW-1151-S
Property Connection Sewer (PCS)	<ul style="list-style-type: none"> Length of PCS or PCS off a PCS to be less than 25 m from sewer. 	5.8, Fig SW 5.1
Maintenance Chambers	<ul style="list-style-type: none"> Included MCs for reticulation sewers. 	6.1
Acceptable MH, MC, MS and TMS locations	<ul style="list-style-type: none"> Complete revision of table 6.1. Requirement to avoid location of maintenance structures in railway reserves and below maximum high tide levels. Depth limit of 4 m for MCs, MSs, TMSs. 	Table 6.1, 6.4
Special requirements for connection of a new sewer to an existing sewer	<ul style="list-style-type: none"> The structure to be used where a new sewer connects to an existing sewer of rigid material is to be a MH. This is to facilitate access for future lining of the existing sewer. Designer to verify suitability of existing structure, and detail connection requirements on Design drawings. 	6.5
Design parameters for MHs	<ul style="list-style-type: none"> Use of properly designed circular plain MHs (un-reinforced), and pre-cast MHs is permitted in certain situations subject to Sydney Water approval. 	6.6.3
Sewer connections to MHs	<ul style="list-style-type: none"> Designer to detail requirements on design drawings. 	SW 6.6.3.1
MH base layout	<ul style="list-style-type: none"> Details of drops to be shown on design drawings, some considerations listed. 	6.6.6
Step irons and ladders	<ul style="list-style-type: none"> Step irons to be plastic encapsulated steel or SS. Deeper MHs may require SS ladders and platforms. 	6.6.8, SEW-1307- V

Topic	Description	Relevant section/clause
MH covers	<ul style="list-style-type: none"> Class of covers to be used at locations listed. These are minimum requirements, Designers to specify higher classes depending on anticipated future loads. For new MHs, maximum of one make-up ring with maximum height of 100 mm. 	6.6.9
MH adjustments	<ul style="list-style-type: none"> Designer to address salient factors, including those listed, and provide details on Design drawings. 	SW 6.6.11
MCs, MSs and TMSs	<ul style="list-style-type: none"> Use proprietary products only. Only PE products to be used with PE pipe systems. Total change in sewer direction at base is maximum 90°, with or without an external variable bend. 	6.7.1
Design parameters for MCs, MSs and TMSs	<ul style="list-style-type: none"> Requirements include limit of two inlets to a MC/MS base, located between 90° and 270° measured clockwise from the outlet. Maximum depth to invert 4.0 m. Change in sewer size across a MC/MS base is not permitted. 	6.7.2
Connection to MC, MS and TMS risers	<ul style="list-style-type: none"> Not permitted for MCs. Riser to be DN 300, inlet to be DN 150, connection to be a proprietary fitting with an enlarged opening curved upwards for equipment access. Where no inlet sewer at base of MS with a high-level connection, MS to be of TMS type. 	6.7.3
Sewer connections to MCs, MSs and TMSs	<ul style="list-style-type: none"> Designer to detail requirements on design drawings, some considerations listed. 	SW 6.7.4
MC and MS adjustment	<ul style="list-style-type: none"> Designer to address salient factors, including those listed, and provide details on Design drawings. 	SW 6.7.5

Topic	Description	Relevant section/clause
Flow gauging MH	<ul style="list-style-type: none"> Requirements listed. 	SW 7.3.3
Infiltration checking MH	<ul style="list-style-type: none"> Requirements listed. 	SW 7.3.4
Design parameters for vents	<ul style="list-style-type: none"> Consecutive VSs to alternate between educt and induct type at nominal maximum spacing of 400 m. 	7.5.2
Design parameters for ERSs	<ul style="list-style-type: none"> Added option of duck bill type check valve on outlet. Special assessment needed for where these are to be used. 	7.9.2 (b)
Overflow pipe	<ul style="list-style-type: none"> Size requirements listed. 	SW 7.9.3
Overflow level	<ul style="list-style-type: none"> Designer to ensure level chosen doesn't result in overflows upstream of ERS, some requirements listed. 	SW 7.9.4
Structural design	<ul style="list-style-type: none"> Standard drawings are illustrative for guidance purposes and are not adequate for construction. A range of Deemed to Comply Drawings is located on Sydney Water's website. They are acceptable design solutions that are in accordance with Sydney Water requirements and are suitable for construction. 	8.1, 27.2, 30.1
Products and materials	<ul style="list-style-type: none"> Requirement to ensure products and materials conform to relevant product standards and specifications available on the Sydney Water website. Where the website does not list a relevant standard or specification, use the particular WSAA specifications and standards referenced in the Code. 	8.2, 10.3.2, 10.3.4, 10.4.2, 14.1
Structural design of MHs	<ul style="list-style-type: none"> Requirements given for cast in-situ and pre-cast MHs, load situations, concrete, internal corrosion protection, epoxy mortars (where used for pre-cast MH joints), pipe connections to MHs. 	SW 8.3.2, SW 8.3.2.1, SW 8.3.2.2, SW 8.3.2.3, SW 8.3.2.4, SW 8.3.2.5

Topic	Description	Relevant section/clause
Trench design including compaction requirements	<ul style="list-style-type: none"> • Compaction requirements, including testing requirements, to be the more stringent of that specified by the road owner, owner of a specific facility or site, other specification relevant to location of works, or the minimum requirements of this code. 	20, 21, 22.3, 25.6
Design Review	<ul style="list-style-type: none"> • All Design documentation to be prepared with sufficient details such that all items can be constructed or procured from the market, without further interpretation or analysis by the Constructor. 	9.1, 27.2
Design Drawings	<ul style="list-style-type: none"> • Many amendments including a requirement for a maintenance structure schedule, notation of Sewerage Code edition/version and other specifications applicable to the Design. 	9.2 and sub-clauses
App B - Flow estimation for undeveloped areas	<ul style="list-style-type: none"> • Added Leak Tight Sewer design approach and a worked example. 	App B – various clauses
Standard pipe sizes, classes, and jointing methods for gravity wastewater pipes and fittings	<ul style="list-style-type: none"> • Replaced guidance Table 10.1 with new guidance Table 10.1 to indicate the range of more common pipes used on projects at Sydney Water. 	Table 10.1
Recycled/waste materials for pipe embedment, trench fill or other purposes	<ul style="list-style-type: none"> • Materials to be free from hazardous substances and not to have carcinogenic substances such as asbestos or asbestos containing material in both friable and bonded forms. 	SW 13.5.6.8
Marking location of buried connection points and temporary sewer dead ends	<ul style="list-style-type: none"> • Use detectable marking tape to peg at surface. 	17.7, 17.9, 17.11.2
Marking location of pipelines	<ul style="list-style-type: none"> • Use non-detectable marking tape on top of pipe embedment for all pipelines. 	17.11.2

Topic	Description	Relevant section/clause
Internal coating of MHs	<ul style="list-style-type: none"> Coat new MHs in accordance with the Design, WSA 201 and Sydney Water's supplement, manufacturer's/supplier's specifications. 	18.8
Acceptance testing	<ul style="list-style-type: none"> Use vacuum testing for sewers and structures. Infiltration testing of each catchment and sub-catchment at the infiltration checking MH nominated in design plans. Weld testing requirements for PE pipe. Sydney Water may conduct performance validation that the system is leak tight by using the flow gauge MH. 	22.1, 22.4.1, 22.5, SW 22.10, SW 22.11
Description of existing environment, impacts and safeguards	<ul style="list-style-type: none"> Included "Worker and Public Safety". 	App SW1 – 5 (k)
Slip and potentially unstable areas	<ul style="list-style-type: none"> Design and construction for sewers to be determined/specified by appropriately experienced and qualified professionals in consultation with Sydney Water. 	App SW2 - 1
Drafting requirements	<ul style="list-style-type: none"> Updated text and figures to reflect use of TMs, MCs and the IS property connection arrangement/configuration. Use of IS property connection arrangement precludes need for Verticals. Coverage of Verticals still included in case they may be approved by Sydney Water for a specific project. Requirement of having a maintenance structure schedule on design drawings. A sample table is provided. Updated Sample Designs and Work As Constructed drawings. 	App SW3

Changes to drawings

Drawing number	Summary of change
SEW-1103	Not used by Sydney Water, shows features and references to other drawings not used by Sydney Water.
SEW-1104	Not used by Sydney Water, refer to SEW-1151-S
SEW-1105	Not used by Sydney Water, refer to SEW-1151-S
SEW-1106	Not used by Sydney Water, refer to SEW-1151-S
SEW-1107	Not used by Sydney Water, refer to SEW-1151-S
SEW-1108	Not used by Sydney Water, refer to SEW-1151-S
SEW-1109	Not used by Sydney Water, refer to SEW-1151-S
SEW-1151-S	New drawing showing property IS type property connection arrangement, redraw of Figure LT-2 from Leak Tight Sewer specification.
SEW-1205-V	Figure notation changed for location of dowel pin. Added Note 9 for provision means of accommodating differential settlement.
SEW-1251-S	Changed specification for granular embedment in Table 5. Minor change to Note 10.
SEW-1252-S	New drawing showing standard trench details for PE pipes, redraw of Table 4 from Leak Tight Sewer specification.
SEW-1300-V	Changed Note 5 for make-up rings (max of one on new MHs). Change to Note 8 for concrete requirements. Minor change to Note 9. Note 14 replaced by new Notes 14, 15 and 16 to address location of pre-cast MHs. Added Note 17 to require pre-cast MHs to satisfy exposure classification B2 (AS 3735).
SEW-1301-V	Change to Note 2 for concrete requirements. Added Note 16 for internal corrosion protection in certain situations.

Drawing number	Summary of change
SEW-1302-V	Change to Note 6 to provide means of accommodating differential settlement. Minor change to Note 7.
SEW-1307-V	Removed several figures. Renumbered some Notes. Changed Note 2 for step iron product requirements. Changed figure distance for clearance of step iron rung from MH wall. Changed figure and Note 3 for tread spacing. Added Note 9 for Designer to specify insertion depth of step irons.
SEW-1308-V	Removed Note 6 about pre-cast MH location (not relevant to drawing). New Note 6 addressing cover selection. New Note 7 requiring covers to comply with Sydney Water Product Specifications.
SEW-1309-V	Change to Note 2 for concrete requirements. Change to Note 4 for internal surface protection.
SEW-1311-V	Change to Note 3 for concrete requirements. Added Note 14 for internal surface protection (MHs of this depth usually involve sewers \geq DN 375)
SEW-1312-V	Withdrawn – no longer used by Sydney Water, design required.
SEW-1313-V	Removed figure showing PE connection to PVC pipe socket. Added Note 3 to provide means of accommodating differential settlement.
SEW-1314-V	Change to Note 2 for MS product requirements. Change to Note 3 for maximum depth. Figure changed to show high-level connection to be max DN 150 and riser to be DN 300. Added Note 6 and changed figure notation for high-level connections. Added Note 7 for connections to base unit. Added Note 8 for use of PE MSs with PE pipe systems. Added Note 9 about connections to existing MSs.
SEW-1315-V	Note 3 moved to Note 6. New Note 3 for details of variable bends. Added Note 4 and changed figure for bends to be immediately upstream of MSs. Added Note 5 to limit change in sewer direction at MS bases to max 90°.
SEW-1316-V	Removed figures showing property connections to MSs (not permitted). Remaining figure changed to show situation of a high-level connection (sewer). Changed Note 2 for connections to base unit. Changed Note 3 to require use of PE MSs with PE pipe systems. Figure changed to show high-level connection to be max DN 150. Note 7 added for TMS riser to be DN 300 when a high-level connection is used. Note 8 added for min height requirements of high-level connections. Note 9 added for cover requirements. Note 10 added for TMS product

Drawing number	Summary of change
	requirements.
SEW-1317-V	Note 4 moved to Note 5. New Note 4 for requirements when riser is DN 300. Note 2 changed for cover selection (location). Note 3 changed for product requirements.
SEW-1402-V	Changed Note 3 for jointing of reinforced concrete encasement pipe in horizontal boring situation.
SEW-1407-S	Not used by Sydney Water.
SEW-1452-S	New drawing showing flow gauging MH requirements, redraw of Figure LT-1 from Leak Tight Sewer specification.
SEW-1500-V	Extensive changes to Notes for repair and replacement of pipe, including coverage of lined sewers, from “Technical Requirements and Work Instructions for Minor Works (sewer)”.
SEW-1501	Not used by Sydney Water, refer SEW-1550-S, SEW-1551-S and SEW-1552-S.
SEW-1550-S	New drawing showing insertion of SS junction clamp on un-lined sewer with pipework and riser for a single property connection, redraw of MWS-101 from “Technical Requirements and Work Instructions for Minor Works (sewer)”.
SEW-1551-S	New drawing showing insertion of SS junction clamp on lined VC sewer with pipework and riser for a single property connection, redraw of MWS-102 from “Technical Requirements and Work Instructions for Minor Works (sewer)”.
SEW-1552-S	New drawing showing cut-in of junction on un-lined sewer with pipework and riser for a single property connection, redraw of MWS-103 from “Technical Requirements and Work Instructions for Minor Works (sewer)”.