Summary Table of Information

Revision of Regional Standard for Water Services and Regional Specification for Water Services – Version 3.1

What are the Regional Standard for Water Services and the Regional Specification for Water Services?

The STD_0001 *Regional Standard for Water Services* (RSWS) incorporates the STD_0002 *Regional Specification for Water Services* (R.Spec). Together, these documents describe the minimum standards and specifications required for designing and constructing stormwater, wastewater and water supply systems that are, or will be, vested in the councils. The documents also include provisions for connecting to the networks as well as for maintaining, renewing, decommissioning and upgrading existing public infrastructure.

The standards and specifications provide a consistent method for designing and constructing water services, so that the assets transferred to the councils are of good quality and fit for purpose.

We encourage all developments where older versions are referenced to meet the most recent version where possible. This is because the most recent version include requirements that closely align with current best practices.

Why have we made this minor revision?

STD_0001 and STD_0002 were last revised in November 2021 and published as version v3.0. These documents are revised regularly to respond to the shifts in policies, best practices, and referenced standards and legislation.

This revision is a minor revision, and the majority of the changes are clarifications.

What are the key revisions?

The key revisions focus on the following topics:

- **Reference to legislation** – Deleted the reference to Water Reform. The references to drinking water regulations now refer to Taumata Arowai and the Water Services Act 2021.
- **Alternative solutions and dispensation** – STD_0001 and STD_0002 now refer to the use of the Dispensation Procedure.
- **Building over or near** – Clarification in STD_0001 and STD_0002 include the standard detail (DR09) that written approval is needed.
- **CIPP lining** – Rehabilitation is an alternative solution that requires dispensation. New specifications are provided in STD_0002 for CIPP lining of water pressure pipes.
- **Climate change** – Added a cross reference to design requirements for stormwater in the wastewater and water supply sections. Added information on use of adaptive pathways planning approach.
- **Sea level rise** – In accordance with the new guidance issued by the Ministry for the Environment, projections of sea-level rise in STD_0001 now refer to vertical land movement.
- **Wastewater residential design flows** – Added a new section for assessing wastewater flows in existing catchments with potentially high inflow and infiltration.
- **Backflow prevention** – Clarified the need for backflow prevention in water delivery design and installation in STD_0001.

- **Fire service connections** – deleted the standard drawing in STD_0002 for this type of connection.
- **Reservoirs** – Added the criteria for qualified reservoir designers in STD_0001 and numerous changes to the specifications in STD_0002.
- **Backfill compaction testing** – This testing now allows the use of Clegg Hammer instead of Scala.
- **PE welding of pressure pipe** – Added additional requirements for testing of PE welds.
- **Scour valves** – Amended standard detail WS06 for rider main scour valves and revised several of the clauses in the STD_0001.
- **Thrust blocks** – Added clarifications on standard detail WS03.

See the *Summary of Table Changes* below for detailed information on the revisions.

Summary Table of Changes in the revised STD_0001 version v3.1 Regional Standard and Regional Specification for Water Services

Underline is used to indicate new wording. ~~Strikeout~~ indicates deleted wording. Text in purple indicates changes agreed to post feedback and review.

Regional Standard for Water Services

Item	RSWS Topic	Clause	Description
1.RSWS	Reference to legislation	1 Introduction	This revision also reflects changes to legislative responsibilities since the introduction of Taumata Arowai (the national regulator for water services) and the Water Services Act 2021. ~~In July 2020, the Government launched the Three Waters Reform Programme – a three-year programme to reform local government three waters service delivery arrangements. From July 2024, New Zealand's three waters services will be managed by four, publicly-owned water service entities. After water reform, it is expected that a new Regional Standard will be produced, reflective of geographic arrangements~~.
2.RSWS	Reference to legislation	2.2.2 Definitions	Drinking water - Water that— (a) is safe to drink; and (b) complies with the drinking water standards made under section 47 of the Water Services Act 2021.
3.RSWS	Manifold	2.2.2 Definitions	Manifold - A fitting on a water supply service pipe that typically incorporates one or more sets of a service valve, backflow protection device and meter.
4.RSWS	Reference to legislation	2.2.2 Definitions	Potable water – same meaning as 'drinking water'. ~~Drinking water as defined in the Health (Drinking Water) Amendment Act 2007.~~
5.RSWS	Reservoirs	2.2.2 Definitions	Reservoir - a large, typically larger than 30 m^3, enclosed tank used to store drinking water associated with the public drinking water supply.
6.RSWS	Terminology	2.2.2 Definitions	Service pipe - The section of pipe between a public drinking water reticulation main and the service pipe valve.
7.RSWS	Reference to legislation	2.2.2 Definitions	Service valve – An isolation (water shut off) valve on a service pipe where a ~~potable water~~ connection is made between the ~~public~~ Drinking Water Supply (in the street) and the private dwelling or commercial building. Sometimes referred to as a "toby".
8.RSWS	Seismic	2.2.2 Definitions	Seismic criticality - The asset criticality following a seismic event. Seismic criticality is determined by the possible consequences of failure, both immediately after the event and during recovery.
9.RSWS	Formatting	2.3 References, Table 2-4.	The numbering convention for Wellington Water documents has been revised. Additional documents have been added to the reference Table 2-4.
10.RSWS	Reference to legislation	3.2 Legislative and regulatory requirements	… (f) ~~Health (Drinking Water) Amendment Act 2007~~ Water Services Act 2021 (g) Water Services (Drinking Water Standards for New Zealand) Regulations 2022 …
11.RSWS	Dispensation	3.3 Alternative solutions and dispensation	… Acceptance of alternative solutions will be at the discretion of Wellington Water in accordance with the Dispensation Procedure. The form of alternative solutions should be discussed with Wellington Water at an early stage of design. In addition to alternative solutions, any deviation from the minimum requirements in this document will be at the discretion of Wellington Water in accordance with the Dispensation Procedure.
12.RSWS	Pipe rehabilitation	3.3.2 Pipe rehabilitation	Pipe rehabilitation as an alternative to replacement requires approval in accordance with the Dispensation Procedure and is at the discretion of Wellington Water. Pipe rehabilitation using methods such as cured in place pipe (CIPP) lining, spiral wound lining, and fold and form lining typically would not achieve the design life requirements of a new pipe. Therefore rehabilitation should only be considered where replacement options are severely constrained and must consider other performance criteria, such as lifecycle costs, operations and maintenance needs, future network configurations and seismic resilience. (see **R.Spec Section 4.18 Lining as pipe rehabilitation).** Pipe rehabilitation of AC pipes should be considered only where there is no other practicable alternative because the AC host pipe constitutes an ongoing hazard for those working on the rehabilitated pipeline (see **R.Spec Section 4.4.1 Design for replacement of asbestos cement pipes**).

Item	RSWS Topic	Clause	Description
13.RSWS	Webpage address	3.4 Health and Safety in Design obligations	The requirements of the Health and Safety at Work Act 2015 and the Health and Safety at Work Regulations shall be observed at all times. Designers shall follow a Safety in Design Process approved by Wellington Water. Wellington Water's Safety in Design process is available on Wellington Water's website ~~online~~.
14.RSWS	Seismic resilience	3.6.6.2 Design of new resilient structure	The following applies when designing new resilient structures: … (e) Liquid-retaining, concrete structures shall be designed in accordance with NZS 3106, for liquid tightness: (i) Class 2 (i.e., leakage to be minimal and appearance not to be impaired by staining) for: 1. Reservoir walls, floors and roofs 2. Wastewater storage structure walls and floors (ii) Class 1 (i.e., leakage to be limited to a small amount. Some surface staining or damp patches acceptable) for: 1. Wastewater storage structure roofs. …
15.RSWS	Building over or near	3.8 Building in close proximity to public pipelines	Written approval is required from Wellington Water for any building work over or near a public pipe. Written approval must be supported by an assessment against the requirements of Sections 3.8.1(a) and (b) below. Written approval may be withheld if the function and operability of the public main are unduly compromised by the proposal. Written approval is typically not granted for works in Porirua City Council or Upper Hutt City Council as these councils do not support building over public mains. … (b) This section does not apply to: (i) Small buildings and decks that: 1. Do not exceed 1 storey or 10 square metres in floor area or total deck area; and 2. Do not contain sleeping accommodation, sanitary facilities, or facilities for the storage of ~~potable~~ drinking water ; and…\ …
16.RSWS	Building over or near	3.8.1 General requirements	**In addition to the requirements of Section 3.8.1(a) and Section 3.8.1(b) above, the following restrictions apply:** (c) It is **not permitted** under any circumstances to "build over" a service connection, change in grade or change in direction within the following distances (see **Figure 3 3**): (i) (Perpendicular to pipe alignment) 1.5 m horizontally from the outside of the pipe. (ii) (Longitudinally along the pipe alignment) The greater of: 1. 1.5~~0~~ m 2. Half the pipe depth to invert. (d) Building works will **generally not be permitted**: (i) from any height above a depth of 300 mm below the pipe invert and: 1. Within a horizontal distance of 1.5 m, measured from the outside of pipe perpendicular to the pipe alignment (see **Figure 3 4**), from: A. Pipelines that normally operate under pressure, such as water mains or drainage rising mains. B. Gravity pipes with diameters of 300 mm or greater. 2. Within a radius of 1.5 m along the horizontal plane from the centre of a manhole cover to provide access to the manhole (see **Figure 3 5**). (ii~~) Where foundations are located within 1 m to 1.5 m from the outside of a pipeline (perpendicular to the pipe alignment).~~ ~~1. Approval will require foundations to terminate at a depth of at least 300 mm below the invert of the pipe.~~ [Note: the clause above is covered in DR09]
17.RSWS	Building over or near	Figure 3-3 Restrictions for building over service connections, changes in grade/direction	Change 1.0 m horizontal to 1.5 m in diagram

Item	RSWS Topic	Clause	Description
18.RSWS	Building over or near	Figure 3-4 Restrictions for building over pressure pipelines and gravity pipes >300 mm	Change 1.0 m horizontal to 1.5 m in diagram
19.RSWS	Building over or near	3.8.2 Laying new or upgraded pipelines near existing structures or retaining walls	(a) Public pipes shall not be laid within 1.5 m of the structure or retaining wall
20.RSWS	Climate change	4.2.5 Climate change	All systems shall be designed to accommodate the predicted impacts of climate change in terms of hydrology (refer to the Wellington Water Reference Guide for Design Storm Hydrology, which is available on Wellington Water's website~~online~~) and sea level rise (refer to **Section 4.3.2.5 Backflow effects and downstream level conditions**).
21.RSWS	Climate change	4.2.5.1 Climate change and adaptive pathways planning approach	The combined effects of climate change, sea level rise and land subsidence may put assets at risk of flooding. Designs should: (a) Take account of the predicted flooding effects including scoping future upgrades that may be required to mitigate climate change effects. (b) Where appropriate, designers should follow an Adaptive Pathways Planning approach (see MfE 2024[7]) to consider long-term viability of proposed assets. Adaptive approaches are likely to be most successful if applied at a larger scale than the individual project. [7] Ministry for the Environment. 2024. Coastal hazards and climate change guidance. Wellington: Ministry for the Environment.

<table>
<tr><th>Item</th><th>RSWS Topic</th><th>Clause</th><th>Description</th></tr>
<tr><td>22.RSWS</td><td>Climate change</td><td>4.3.2.5 Backflow effects and downstream level conditions</td><td>…
(a) To the coast, assumed sea levels shall be the sum of (shown in Table 0-1):
(i) Mean high water springs
(ii) Projected sea level rise through to ~~2110~~ 2130
(iii) Predicted land subsidence through to 2130 ~~and~~
(iv) Allowance for ~~barometric rise from storms~~ storm surge
(v) Local allowance for wave effect[9].
Table 0-1 – Design sea levels allowing for climate change
<table><tr><th></th><th>Wellington Harbour[10]</th><th>Porirua Harbour</th></tr><tr><td>Mean high water springs (~~MSL~~MHWS) (NZVD2016)[11]</td><td>~~0.921~~0.537 m</td><td>~~0.916~~0.581 m</td></tr><tr><td>+ Projected sea level rise (m)[12]**</td><td>~~1.0~~1.23</td><td>~~1.0~~1.23</td></tr><tr><td>+ Land subsidence (m)</td><td>0.47 (York Bay)</td><td>0.29 (Pāuatahanui)</td></tr><tr><td>+ ~~Barometric~~ Storm surge allowance[13] (m)</td><td>0.25</td><td>0.25</td></tr><tr><td>+ Wave effect allowance (m)</td><td>0.00</td><td>0.00</td></tr><tr><td>= Design sea level (NZVD2016~~MSL~~) (m)</td><td>~~2.172~~.49</td><td>~~2.172~~.35</td></tr></table>~~*an additional 1.0 m for sea level rise has been added to the design sea level to account for an increased sea level rise due to climate change through to 2110.~~
…
[9] Discharges, particularly to the beach face in open coastal areas, may need to consider additional elevated local water levels due to wave effects. Wave effects can generally be ignored for extended outfalls below MSL.
[11] Based on LINZ's Dec 2017 revision of Standard Port Datums, converted to 2016 vertical datum
[12] From NZSeaRise https://searise.takiwa.co, as referenced in Interim guidance on the use of new sea-level rise projections, Aug 2022 , SSP 5-8.5 M Scenario. See also Ministry for the Environment. 2024. Coastal hazards and climate change guidance. Wellington: Ministry for the Environment.
[13] Storm surge includes barometric and wind effects.</td></tr>
<tr><td>23.RSWS</td><td>Stormwater hydrology</td><td>4.3.2.6 Minimum stormwater velocity</td><td>Pipes shall be laid at a grade that reduces the potential for sediment build-up. ~~Where gradients are less than 0.5%:~~ The velocity shall be checked at half the 50% AEP design event flow:
a) For trapped drains, the minimum velocity shall be 0.75 m/s ~~at half the 50% AEP design event flow, and~~ noting:
(i) That a trapped drain is considered as one where influent passes through a sump or sediment trap before entering the drain.
…</td></tr>
<tr><td>24.RSWS</td><td>Stormwater laterals</td><td>4.4.4 Lateral connections to the public stormwater network</td><td>(g) Connection of the private drainage to the lateral (livening) shall require testing (dye testing or similar) to avoid the potential for cross-connections between the stormwater and wastewater systems.
Table 4-7 – Acceptable methods for lateral connection to public stormwater pipe
<table><tr><td>Twin wall polypropylene</td><td>Approved proprietary connector ~~Proprietary T-junction~~</td></tr><tr><td>Brick pipe, brick culverts or non-round culverts</td><td>Requires written approval from Wellington Water</td></tr></table></td></tr>
</table>

<table>
<tr><th>Item</th><th>RSWS Topic</th><th>Clause</th><th>Description</th></tr>
<tr><td>25.RSWS</td><td>Stormwater and wastewater laterals</td><td>4.4.4.2 Earthenware saddle connections to earthenware or concrete mains</td><td>~~(c)(i)(1) For stormwater connections, the earthenware saddle should be a minimum of 150 mm to allow better entry for inside finishing. Where required, reducers shall be installed on the incoming pipe.~~</td></tr>
<tr><td>26.RSWS</td><td>Stormwater lateral</td><td>4.4.5.2 Minimum cover</td><td>(d) Where dispensation is granted for a stormwater lateral laid up a legal road bank steeper than 45 degrees (1 vertical to 1 horizontal), the lateral shall be pinned to the bank and suitably protected from damage.</td></tr>
<tr><td>27.RSWS</td><td>Stormwater connection to manhole</td><td>4.4.7.1 Manholes</td><td>…
(c) ~~Branch~~ Stormwater branch pipelines 300 mm or smaller may be saddled onto pipes 1200 mm diameter or larger without the requirement for a manhole ~~(see Section 4.4.4.2 Earthenware saddle connections to earthenware or concrete mains)~~, provided
(i) a manhole is constructed on the branch line within 50 m of the junction.
(ii) where suitable fittings are not available, connections should be at a manhole
(iii) connection holes shall be core-drilled and follow one of the methods listed in Table 4 9.
Table 4-9 – Acceptable methods for 300 mm or smaller branch connections to stormwater pipes greater than 1200 mm
<table>
<tr><th>Public main material</th><th>Acceptable method</th></tr>
<tr><td>PE100</td><td>Electrofusion PE100 T-saddle or Y-saddle</td></tr>
<tr><td>Concrete</td><td>Earthenware saddle installed in accordance with Section 4.4.4.2 Earthenware saddle connections to earthenware or concrete mains
Direct connection and internal/external epoxy sealing for concrete branch pipes where written approval is obtained from Wellington Water.</td></tr>
<tr><td>Twin wall polypropylene</td><td>Approved proprietary connector</td></tr>
<tr><td>Brick pipe, brick culverts, non-round culverts, PVC, AC and other pipe materials</td><td>Requires written approval from Wellington Water</td></tr>
</table></td></tr>
<tr><td>28.RSWS</td><td>Manholes</td><td>4.4.7.4 Manhole size</td><td>(h) 600 mm diameter manholes may be considered where the pipe invert is less than 1 m from the finished ground level, the manhole is not located in the carriageway, ~~there are less than two connections per manhole,~~ and there are other special circumstances.</td></tr>
<tr><td>29.RSWS</td><td>Sumps</td><td>4.4.10 Sumps</td><td>…
(c)Use a rear entry and cycle friendly grate on the road surface.
…</td></tr>
<tr><td>30.RSWS</td><td>Climate change (wastewater)</td><td>5.2.2 Climate change</td><td>Please see Section 4.2.5 Climate change.</td></tr>
<tr><td>31.RSWS</td><td>Wastewater pumping stations</td><td>5.2.4[4] Level of service</td><td>…
(o)(i) (i) For new build public systems, 8 hours ADWF maintenance storage volume, and if required an additional ~~in addition to~~ 12 hours detention volume (see clause (q) below) shall be the target level of service where it can be achieved cost effectively and particularly where traffic management is required to access the station, as shown in Table 5 5.
…</td></tr>
</table>

Item	RSWS Topic	Clause	Description
32.RSWS	Wastewater	5.3.1.3 Residential design flows	The following design methodology has been adopted to provide realistic estimates for new and upgraded networks and may under-estimate flows in existing catchments with high infiltration and inflow. Designers should follow the additional steps in **Section 5.3.1.5 Application to existing network** where applicable. … Direct inflow = 0.55 L/s/km of pipeline ~~in catchment upstream of point of analysis~~. … (a) The pipe length for inflow and infiltration rates is the length of pipeline in the catchment upstream of the point of analysis, excluding laterals.
33.RSWS	Wastewater flows	5.3.1.5 Application to Existing Network	**5.3.1.5 Application to existing network** Many existing areas have levels of inflow and infiltration that exceed the estimation method in **Section 5.3.1.3 Residential design flows**. Conservative estimates of existing inflow and infiltration rates can be obtained by adopting a figure of 0.8 km of pipeline per hectare of catchment, irrespective of the actual pipeline length. Estimates should then be compared to WWL calibrated model results (where available) and adjusted if appropriate. Designers should consider scenarios to ensure: (a) The sewer network has adequate capacity for the current population and high inflow/infiltration rates. (b) The sewer network has adequate capacity for the future population and an upgraded network with inflow/infiltration as estimated in **Section 5.3.1.3 Residential design flows**.
34.RSWS	Wastewater lateral	5.4.2 Lateral connection to the wastewater network	(e) Connection of the private drainage to the lateral (livening) shall require testing (dye testing or similar) to avoid the potential for cross-connections between the stormwater and wastewater systems.
35.RSWS	Wastewater lateral	5.4.3.2 Minimum cover	(a) Where dispensation is granted for a wastewater lateral laid up a legal road bank steeper than 45 degrees (1 vertical to 1 horizontal), the lateral shall be pinned to the bank and suitably protected from damage.
36.RSWS	Climate change (water supply)	6.2.2 Climate change	Please see **Section 4.2.5 Climate change**.
37.RSWS	Reference to legislation	6.2.3[4] Functionality	(a) The system shall at all times comply with the provisions of the ~~Health (Drinking Water) Amendment Act 2007 and the Drinking Water Standards for New Zealand.~~Water Services Act 2021.
38.RSWS	Reference to legislation	6.2.6[7] Contamination of the network	The network and its components shall be designed to reduce any risks of contamination of the water supply as required by ~~the Health (Drinking Water) Amendment Act 2007~~ Taumata Arowai and the Water Services Act 2021.
39.RSWS	Reference to legislation	6.2.8[9] Point of supply	The following applies to the point of supply for a ~~potable water system~~ drinking water supply (see also Section 6.4.13 Residential service connections): (a) The point of supply for a ~~potable~~ drinking water connection is the boundary where the council responsibility ceases and private ownership begins
40.RSWS	Surface box	6.2.8[9] Point of supply	(f) Service valves (or meters) must be installed within a surface box that can accommodate and allow the safe operation of the required service (i.e. service valves, manifolds, meters and associated fittings) and meet the minimum traffic loading requirements. (g) Service valves (or meters) should not be located in driveways or areas where vehicle traffic is likely without consideration of traffic loading**.** (h) If the service valve (or meter) will be located in a driveway or where vehicle traffic is likely, approval from Wellington Water is required and traffic loading must be considered **[Move next sentence to RSWS 6.4.23 Meters]** ~~Where a meter cannot be accessed safely, a remote display shall be installed in a location that is safe and has ready access for meter readers and is either on the boundary or public land.~~
41.RSWS	Water supply	6.3.1.1 Peak demand	Equation 2 Qpeak = 0.0162 L/s x Population
42.RSWS	Reference to legislation	6.3.1.2 Operating pressure	(a) The maximum operating pressure for any reticulation pipeline delivering ~~potable~~ drinking water to domestic or commercial properties shall be 90 m. (b) Any new pipeline required to operate at greater than 90 m to supply drinking ~~potable~~ water to elevated areas remote from the supply reservoir, shall be constructed as dedicated high pressure trunk mains, and:

Item	RSWS Topic	Clause	Description
43.RSWS	O&M plans	6.4.1.3 Asset operations and maintenance plan	…The plan shall include as a minimum: … (f) How the asset can be taken offline for maintenance or repair, outlined in detail, including any requirements to maintain continuity of supply.
44.RSWS	Reference to legislation	6.4.2 Network layout	The following applies to the ~~potable~~ drinking water network layout…
45.RSWS	Reference to legislation	6.4.12 Commercial service connections	(a) Require a separate, single ~~potable~~ drinking water service connection…
46.RSWS	Surface box	6.4.13 Residential service connections	(e) Service valves-should not be placed in driveways without consideration of traffic loading. … g) Where dispensation is granted for a service pipe laid up a legal road bank steeper than 45 degrees (1 vertical to 1 horizontal), the pipe shall be pinned to the bank and suitably protected from damage.
47.RSWS	Reference to legislation	6.4.14 Backflow prevention	(a) The council's policy and bylaw on backflow prevention shall be compiled with at all times. (b) ~~Where required~~, Bbackflow preventers must be ~~installed,~~ appropriate to the hazard classification ~~of the user type~~. … (d) All commercial and industrial services shall require a testable backflow prevention device ~~preventer~~ installed downstream of the service valve and meter and as close as practicable to the point of supply. (i) A second shut-off valve shall be installed on the downstream side of the back-flow preventer and meter to allow the backflow ~~preventer~~ prevention device to be isolated for maintenance purposes. (e) All fire service connections require a double check detector check backflow prevention device, including specific backflow prevention requirements in compliance with NZBC, and NZS 4541 or NZS 4517, as appropriate … (g) Wellington Water, at its discretion, may also request additional backflow prevention to meet their obligations under the Water Services Act 2021 and Taumata Arowai requirements ~~Health (Drinking Water) Amendment Act.~~
48.RSWS	Fire services	6.4.15 Fire services	(a) Fire services for firefighting networks and automatic fire suppression sprinkler systems require specific consideration and design, and must comply with the NZBC and relevant fire standards. ~~and approval and shall be applied for, and designs completed, outside the provisions of this document.~~
49.RSWS	Backflow protection	6.4.16 Secure connections	(a) Secure connections may be in the form of: (i) A dual connection from the same main, separated by a line valve and a minimum horizontal separation of 1 m, unless the connections have lateral restraint (flanged or welded connections), in which case they can be laid closer together (as per the minimum clearances between adjacent/parallel utilities as specified in the Regional Specification for Water Services. Both lines require backflow prevention to ensure continuity of service and backflow protection during testing and maintenance of one line. (ii) Connections to two separate individual principal mains. Both lines require backflow prevention to ensure continuity of service and backflow protection during testing and maintenance of one line, and ~~both with backflow preventers on them~~ to avoid cross-connection.
50.RSWS	Reservoirs	6.4.18 Reservoirs	(c) Only designers that have been approved by Wellington Water are permitted to design reservoirs. The designer shall approach Wellington Water prior to preliminary design to ascertain the current Wellington Water specifications for reservoirs, which will supersede any requirements outlined in the Regional Specification for Water Services. Wellington Water will approve designers for a typical reservoir who are Chartered Professional (CPEng) Civil or Structural Engineers as appropriate with a minimum of 5 years relevant experience and with a minimum of 3 specific, seismically-resilient, water retaining structures in their project history. Proposed peer reviewers shall be a Structural Engineer with a CPEng qualification, a minimum of 7 years relevant experience and with a minimum of 4 specific, comparable jobs in their project history.
51.RSWS	Reference to legislation	6.4.20 Valves	…be installed within the ~~potable~~ drinking water supply network…

<table>
<tr><th>Item</th><th>RSWS Topic</th><th>Clause</th><th>Description</th></tr>
<tr><td>52.RSWS</td><td>Air valves/scour valves</td><td>6.4.20.5 Air valves</td><td>~~Air valves and their installation shall comply with the requirements of the Regional Specification for Water Services.~~

Generally, air valves shall not be installed on ~~distribution~~ reticulation mains that are not trunk mains, or bulk mains. Hydrants and scour valves may ~~shall~~ be used to manually introduce or release air in these cases.</td></tr>
<tr><td>53.RSWS</td><td>Scour valves</td><td>6.4.20.7 Scour valves</td><td>6.4.20.7 Scour valves
Scour valves are generally required to drain the pipe for maintenance purposes, release air from pipes or to flush potentially stagnant water from ‘dead end’ mains.
(a) Backflow prevention is required at all scour valves.
(b) Written approval from Wellington Water is required for design details of scours larger than 50 mm in diameter and for scours on rider mains that cannot comply with Standard Detail WS06 Rider main scour detail.
~~(a)~~(c) Scour valves are required at:
(i) The end of all public and private rider mains.
(ii) For rider mains, scour valves are required at the highest point of the rider main where there is more than 20m change in elevation. This is to facilitate the release of air during recharge operations.
(iii) The end of all terminal reticulation mains (hydrants are acceptable) (see Section 6.4.2.3 Mains with no through flow (dead ends)).
(iv) The low point between line valves of all mains with a nominal diameter greater than 200 mm.
(~~b~~)(d) Scour pipes must not discharge to a kerb, open channel, or a closed stormwater structure such as a stormwater pipe.
~~(c) Scour pipes shall discharge to a visible location such as a stream, kerb, open channel, or pump-out chamber, to reduce the risk of the valve being inadvertently left open without detection. Additionally;;~~
~~(i) Scour pipes must not discharge to a closed stormwater structure such as a stormwater pipe.~~
~~(ii) If discharge is to a stream or other water body, then potential impacts on water quality must be addressed.~~
~~(iii)~~(i) ~~Scour pipes must discharge to an approved outlet and facility shall be provided to prevent damage, channel scour or flooding due to operation of the scour valve.~~
~~(d)~~(e)Scour valves on reticulation larger than 50 mm shall include a chamber downstream of the scour valve for the pressure pipe to transition to gravity and to facilitate de-chlorination, before the water is discharged.
(i) The chamber must not discharge to a closed stormwater structure such as a stormwater pipe.
(ii) The chamber must discharge to an approved outlet and facility shall be provided to prevent damage, channel scour or flooding due to operation of the scour valve.
(iii) If discharge is to a stream or other water body, then potential impacts on water quality must be addressed.
~~(e)~~(f) Valves shall be sized to drain the main by gravity over a period not greater than 1 hour. Minimum scour sizes shall follow Table 6 4.
Table 6 4 – Minimum scour sizes
<table>
<tr><th>Main size</th><th>Scour size</th></tr>
<tr><td>50 mm</td><td>50 mm</td></tr>
<tr><td>100 to 200 mm</td><td>100 mm</td></tr>
<tr><td>250 to 300 mm</td><td>150 mm</td></tr>
<tr><td>350 to 375 mm</td><td>200 mm</td></tr>
</table>
~~(d) Backflow prevention shall be provided immediately upstream of the scour valve. A double spring check non-return valve shall be used for scour valves up to and including 50 mm (see Standard Detail WS06 – Rider Main Scour Detail). Check valves shall be used for scour valves larger than 50 mm.~~</td></tr>
<tr><td>54.RSWS</td><td>Water meters</td><td>6.4.23 Water meters</td><td>Where a meter cannot be accessed safely, either a remote display shall be installed in a location that is safe and has ready access for meter readers and is either on the boundary or public land or be set up to be read remotely on the council system.</td></tr>
</table>

Item	RSWS Topic	Clause	Description
55.RSWS	Reference to legislation	6.4.24.1 Pipes [commissioning water mains]	(iv) Drinking water is compliant with the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 ~~The water main is free from pathogens as specified in the drinking water standards.~~
56.RSWS	Reference to legislation	6.4.24.3 Reservoirs [commissioning]	All water reservoirs shall be tested, disinfected and certified in accordance with the Regional Specification for Water Services, and drinking water is with the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 ~~Drinking Water Standards~~ before being commissioned.
57.RSWS	Climate change	Appendix 2 Porirua design sea-level determination	Appendix 2 is deleted
58.RSWS	Geofabric	Appendix ~~6~~ 5 Migration of fines	… The standard mitigation for migration of fines is installation of filter fabric in accordance with the requirements of the *Regional Specification for Water Services* around the pipeline embedment, which allows groundwater movement and prevents the unwanted transportation of fine-grained components. ~~Filter fabric shall be selected to match the material grading. Typically, filter fabric with the following properties will be suitable:~~ ~~(a) Pore size of 75 microns~~ ~~(b) Permeability 90 L/m2/s~~ ~~(c) CBR (California Bearing Ratio) puncture resistance 1500 N~~ ~~(d) Terram 1000 or Bidim A29 (or A39 for more robust applications)~~

Item	R.Spec Topic	Clause	Description
1.R.Spec	Reference to legislation	1 Introduction	This revision also reflects changes to legislative responsibilities since the introduction of Taumata Arowai (the national regulator for water services) and the Water Services Act 2021. ~~In July 2020, the Government launched the Three Waters Reform Programme – a three-year programme to reform local government three waters service delivery arrangements. From July 2024, New Zealand's three waters services will be managed by four, publicly-owned water service entities. After water reform, it is expected that a new Regional Standard will be produced, reflective of geographic arrangements~~. … The document is to be used in conjunction with STD_0001 ~~the Regional Standard for Water Services (RSWS)~~ and DESR_0001, the Register of Approved Products for use in the Water Services Infrastructure (Approved Products Register or APR), which are available on the Wellington Water webpage.
2.R.Spec	Dispensation	2.1 ~~Departures from this specification~~ Alternative solutions and dispensation	Departures from this specification will be at the discretion of Wellington Water in accordance with the Dispensation Procedure and require the written permission of Wellington Water.
3.R.Spec	Reference to legislation	2.2.2 Definitions	Drinking water - Water that— (a) is safe to drink; and (b) complies with the drinking water standards made under section 47 of the Water Services Act 2021
4. R.Spec	Test pressure	2.2.2 Definitions	Maximum design pressure - Maximum operating pressure of the system or of the pressure zone considering future developments, all other foreseeable operating conditions and including an allowance for surge.
5. R.Spec	Manifold	2.2.2 Definitions	Manifold - A fitting on a water supply service pipe that typically incorporates one or more sets of a service valve, backflow protection device and meter.
6. R.Spec	Reference to legislation	2.2.2 Definitions	Potable water – The same meaning as 'drinking water'. ~~Drinking water as defined in the Health (Drinking Water) Amendment Act 2007.~~
7. R.Spec	Reservoirs	2.2.2 Definitions	Reservoir - a large, typically larger than 30 m^3, enclosed tank used to store drinking water associated with the public drinking water supply.
8. R.Spec	Seismic	2.2.2 Definitions	Seismic criticality - The asset criticality following a seismic event. Seismic criticality is determined by the possible consequences of failure, both immediately after the event and during recovery.
9. R.Spec	Terminology	2.2.2 Definitions	Service pipe - The section of pipe between a public drinking water reticulation main and the service pipe valve.
10. R.Spec	Reference to legislation	2.2.2 Definitions	Service pipe valve - An isolation (water shut off) valve on the service pipe where a ~~potable water~~ connection is made between the public drinking water supply (in the street) and the private dwelling or commercial building. Sometimes referred to as a "toby".
11. R.Spec	PE welding	Table 2-2 Abbreviations	BRT- batch release test Units for MSL and NCD deleted Footnote * Local sea levels vary around the coast, hence tide tables have to be referenced specific to the location…
12. R.Spec	CIPP lining	Table 2-4 Referenced documents and standards	Several additional documents added to this table, to reflect the documents referenced in the R.Spec.
13. R.Spec	Reference to legislation	3.2 Legislative and regulatory requirements	(e) ~~Health (Drinking Water Amendment) Act 2007~~ Water Services Act 2021
14. R.Spec	Webpage address	4.1 Health and safety obligations	Designers, contractors and construction staff working for Wellington Water on assets under Wellington Water's control must comply with Wellington Water's minimum health and safety standards, which are available on the Wellington Water website ~~online~~.
15. R.Spec	Geofabric	4.7.3 High groundwater environment	(d) If AP65 is being used above 10 mm drainage material with a typical grading curve, no fabric or other separation is required between these materials. Geotextile filter fabric requirements for other material combinations are to be checked using the procedure outlined in Appendix 6 of the Regional Standard for Water Services. ~~The minimum standard of fabric for this application is Bidim A29 or equivalent~~ Geotextile materials and construction requirements shall be in accordance with Transit New Zealand F/7 specification. For trench surround, Wellington Waters specific requirements are Strength Class C, non-woven fabric with pore size less than or equal to 180 micrometres and flow rate greater or equal to 50 L/m2/s. The minimum overlap shall be 500mm.
16. R.Spec	Geofabric	4.7.4 Extremely poor ground	(b)(iv)(1) ~~The minimum standard of fabric for this application is Bidim A29 or equivalent~~ Geotextile materials and construction requirements shall be in accordance with Transit New Zealand F/7 specification. For trench surround, Wellington Waters specific requirements are Strength Class C, non-woven fabric with pore size less than or equal to 180 micrometres and flow rate greater or equal to 50 L/m2/s. The minimum overlap shall be 500mm.

Item	R.Spec Topic	Clause	Description
17. R.Spec	Backfill testing	4.8.2 Compaction and testing for general backfill	… (b) The level of compaction testing and minimum compaction targets to be achieved in ~~a non-trafficable area~~ outside of the transport corridor will be determined by Wellington Water. The compaction achieved must be at least equal to that recorded in the adjacent in situ ground, tested by a Scala penetrometer or Clegg Hammer.
18. R.Spec	Reinstatement	4.11.2.1 Hydrants	(c) Include using yellow paint on the hydrant box lid and any concrete surround, the triangle near the carriageway centreline pointing at the hydrant and a circle if required.
19. R.Spec	Reinstatement	4.11.2.2 Gate (sluice) valves	The following applies to marking of the surface box lids for gate valves: (a) The entire top block of valves in ground shall be marked using non-slip, reflective, road marking paint that complies with NZTA M/07. ~~Normally shut valves and fire service valves shall be marked with non-slip reflective paint that complies with NZTA M/07 excepting colour.~~ (b) "Normally Shut" valves shall be painted red. (b) "Fire Service" valves shall be painted green. (c) Scour valves shall be painted blue. (d) Wastewater valves shall be painted orange, in a shade similar to RAL 2009, Traffic Orange. (e) Gate valves shall be painted within 24 hours of commissioning of the pipeline.
20. R.Spec	Reinstatement	4.11.2.3 ~~Service valves~~ Kerb markings	… (c) They shall be identified by a "V" painted or cut into the top of the kerb with the point of the "V" pointing towards the valve location (it shall point toward the carriageway for valves in the carriageway and the opposite direction for valves in the berm). (d) The cut "V" shall be a minimum of 100 mm long and be cut a minimum of 5 mm deep into the kerb. The painted "V" shall be marked by a 50 mm wide white painted "V" painted on the top of the kerb.
21. R.Spec	Building over	4.12 Building in close proximity to public pipelines	Written Approval is required from Wellington Water for any building work over or near a public pipe. Written Approval must be supported by an assessment against the requirements of **RSWS Sections 3.8.1(a) and (b)**. Written approval may be withheld if the function and operability of the public main are unduly compromised by the proposal. Written approval is typically not granted for works in Porirua City Council or Upper Hutt City Council as these councils do not support building over public mains. Where approval is granted the following applies: (a) ~~The following applies to~~ Bbuilding in close proximity to public pipelines ~~as~~ is defined in **Section 2.2.2 Definitions**. …
22. R.Spec	Rehabilitation	4.18 Lining as pipe rehabilitation	Pipe rehabilitation is an alternative design solution that needs project-specific approval from Wellington Water in accordance with the Dispensation Procedure (see **RSWS Section 3.3.2 Pipe rehabilitation**). ~~At this time, the Regional Specification for Water Services does not contain specifications~~ For pipe rehabilitation using cured in place pipe (CIPP) lining, spiral wound lining, and fold and form lining, please contact Wellington Water for the latest guidelines ~~on these trenchless technologies~~.

Item	R.Spec Topic	Clause	Description
23. R.Spec	Rehabilitation	4.18.1 CIPP lining of pressure water pipes	**4.18.1 CIPP lining of pressure water pipes** In addition to the manufacturers requirements, the following applies to CIPP lining of pressure water pipes: a) All work associated with lining of AC pipe must comply with the Approved Code of Practice for the Management and Removal of Asbestos and the Health and Safety at Work (Asbestos) Regulations 2016 (see s4.4.2 Working with AC pipes). b) Curing processes using heat or steam must consider and plan for potential odour and release of volatile organic compounds, including requirements for discharges to air under the regional plan. c) The material properties of the CIPP liner must meet the requirements outlined in WSA 150-2021 and AS/NZS 4020. d) The product test requirements in WSA 150-2021 shall be used for both cured and uncured conditions. e) The quality assurance requirements in WSA 202 shall be used for installation and acceptance testing f) Mechanical clamps that primary seal to the outside of the host pipe shall not be used where the host pipe is in poor condition or is at risk of further deterioration. g) Rider mains are preferred over reinstating service connections to the lined pipe. h) Detailed requirements for suitable fittings and valves are influenced by the specific lining product and therefore must be based on advice from the manufacturer, as well as meeting other requirements in this specification for fittings and valves. i) The physical dimensions of the host pipe shall be confirmed by direct measurements to confirm the size of the required liner. j) Consideration shall be given to the need to remove valves, hydrants and other fittings before installing the liner and reconfiguration or replacement following lining. k) Pressure testing at the maximum design pressure should be done prior to and after reconnection of service connections.
24. R.Spec	PE welding	4.19.5 Welding PE pressure pipe	Footnote added to (c)(i) (i) The single pressure-low pressure parameter specified in ISO 21307:2011[9] [9]Although this standard was revised in 2017, the R.Spec refers to the 2011 standard. In particular the 2011 standard requires a longer cool time for welds. To comply, the welding machine parameter for cooling time needs to be set manually.
25. R.Spec	PE welding	4.19.7 Work method statement	Convert Table 4-13 Information required for WMS into an Appendix that can be filled in
26. R.Spec	PE welding	4.19.8 ~~Butt~~ PE fusion welding framework	The framework is relevant to both butt fusion and electrofusion welding. Similar revision to the wording dalso made to Figure 4-9 ~~Butt~~ PE fusion welding framework
27. R.Spec	PE welding	4.19.8.1 Pre-qualification welding ~~and weld testing~~	Separated out “weld testing” into its own section as this is relevant to construction welding also (a) (ii) Weld three pre-qualifying electrofusion socket welds for each size and type of fitting with electrofusion sockets (e.g. couplers, tees, bends, transition couplers, etc.) to be used in the contract works – except for electrofusion socket fittings ~~couplers~~ smaller than 63 mm where prequalification welding shall not be required.
28. R.Spec	PE welding	4.19.8.2 Butt weld testing	The welds for testing shall be: a) Cut-out as specified and marked with: i. The Council and contract name. ii. Test weld number (each weld shall be sequentially numbered so it can be individually identified). iii. The welder's name and certification number. iv. Butt fusion welds shall be marked to show their orientation in the welding machine. b) ~~The test welds shall be~~ Sent to an IANZ registered laboratory for destructive testing. c) And an additional test piece shall be cut from the unaffected pipe wall and tested.

Item	R.Spec Topic	Clause	Description
29. R.Spec	PE welding	4.19.8.3 PE weld test report	~~(a)The welds shall be tested and the performance requirements of the welds shall conform with requirements outlined in Table 4-14.~~ (a) All test reports shall be copied directly to Wellington Water, who will confirm if the weld is a pass or fail. In addition to the reporting required by the standards outlined in **Table 4-14**, the following information must be provided: (i) Identification of the pipe including: 1. Mean OD 2. Average wall thickness 3. Manufacture (if known) 4. Details of any banding visible (ii) The weld identification (should be written on the pipe by the welder), including test weld number in the case of a test weld. (iii) High resolution colour photographs of: 1. The welder's marking of the weld sample 2. Profile view of all test piece after machining and before testing 3. Front view of all test pieces after testing (iv) A plot of load versus displacement of the cross-head with all test pieces and pipe wall sample on the same axis. (v) The rupture strength of each test piece expressed as a percentage of the rupture strength of unaffected pipe wall. (b) In addition to examination of the rupture surface as required by the standards outlined in **Table 4-14**, any rupture surface suspected of not being 100% ductile shall be re-examined as follows: (i) The rupture surface shall be re-inspected under 60 power magnification (ii) Magnification shall be optical magnification, not digital magnification. (iii) Where possible a scale shall be included in the view. (iv) The view shall show the surface as close as possible to true colour and appearance. (v) Where relatively deep profile is present, focus shall be adjusted to clearly show the most important structures on the surface. (vi) Magnified views hall be included in the test report.

Item	R.Spec Topic	Clause	Description
30. R.Spec	PE welding	4.19.8.4 Weld acceptance and Table 4-14 Weld performance and test requirements	(a) ~~A pass result shall occur when~~ To be acceptable all pre-qualifying welds ~~are~~ shall be shown by destructive testing to meet or exceed the performance requirements specified in **Table 4-14**. … **Table 0-1 – Weld performance and test requirements** Electrofusion socket weld – DN63 | ISO 13955 | % brittle decohesion shall be equal to or less than L/3 [1]. ~~% brittle decohesion shall be 0%~~ The weld shows no visual defect[4] All test pieces after sectioning show no visual defect[4] Electrofusion saddle weld – DN63 | ISO 13955 OR ISO 13956 | % brittle decohesion shall be equal to or less than L/3 [1] The weld shows no visual defect. [4] All test pieces after sectioning show no visual defect. [4] Electrofusion saddle weld – ≥DN125 | ISO 13956 | Maximum brittle decohesion Ld =/< 50% 2 Ad =/< 25% 3 The weld shows no visual defect.[4] [Footnote] 4(ii)(d) Visible misalignment across an electrofusion ~~coupler~~ socket fitting (d) Normal construction welding (see **Section 4.19.8.5 Construction welding**) shall not commence until the welding contractor has successfully completed a satisfactory pre-qualifying weld. (e)The contractor shall note that the results of weld testing will not be available for a period of approximately one week. The contractor shall allow for this hold point in the programming of their work. … ~~(i) When specifying the reporting of test results, Wellington Water shall require additional information to that specified by the standard. The test report shall detail the following information:~~ ~~(i) Date of the test~~ ~~(ii) Laboratory conducting the test~~ ~~(iii) Full identification of the pipe, including the nominal size, SDR rating, material and manufacturer~~ ~~(iv) Dimensions of the pipe before cutting the specimens, including diameter, ovality and wall thickness~~ ~~(v) Weld beads are symmetrical~~ ~~(vi) Identification of the sample by number or other~~ ~~(vii) Number of specimens tested~~ ~~(viii) Temperature of specimen at time of test~~ ~~(ix) Cross head speed~~ ~~(x) Maximum breaking load~~ ~~(xi) Printout in graphical form of extension of the cross head versus load~~ ~~(xii) Whether rupture occurred in the weld plane~~ ~~(xiii) Nature of the rupture in the weld plane (ductile or brittle) and~~ ~~(xiv) Any special observations made during or after the test.~~

Item	R.Spec Topic	Clause	Description
31. R.Spec	Dispensation	5 Drainage specifications	The following specifications pertain to technical aspects of general drainage construction. These may be superseded by specific specifications issued by Wellington Water for Wellington Water construction contracts. All other construction must comply with the following specifications unless dispensation in accordance with the Dispensation Procedure is given in writing by Wellington Water.
32. R.Spec	Approved products	5.3 Materials	… (c) Current approved ~~materials~~products are listed in DESR_0001, the Approved Products Register, published on the Wellington Water~~'s~~ website. Approvals are subject to change and care shall be taken that ~~designers and specifiers are using~~ the most current version of the Approved Products Register is used. …
33. R.Spec	Shutdowns	5.4 Stormwater and wastewater shutdowns	Please refer to the Wellington Water Shutdown Request process, available on the Wellington Water website.
34. R.Spec	Dispensation	6 Water supply specifications	The following specifications pertain to technical aspects of general water supply construction. These may be superseded by specific specifications issued by Wellington Water for Wellington Water construction contracts. All other construction must comply with the following specifications unless dispensation in accordance with the Dispensation Procedure is given in writing by Wellington Water.
35. R.Spec	Reference to legislation	6.1 Hygienic practices and immunisations	All personnel working on the drinking water supply network must follow the Hygiene Code of Practice (WQMG_0001), which is available on the Wellington Water website.
36. R.Spec	Reference to legislation	6.1.1 Cleanliness	(e) An antibacterial lubricant suitable for use with drinking ~~potable~~ water must be used on all gaskets and rubber rings coming into contact with ~~potable~~ drinking water (see **Section 6.2.1.1 Suitability for contact with drinking water**).
37. R.Spec	Approved products	6.2.1 Materials compliance	… (b) Current approved ~~materials~~products are listed in the Approved Products Register published on Wellington Water's website. Approvals are subject to change. Care shall be taken that the most current version of the Approved Products Register is used~~. designers and specifiers are using the most current version.~~ …
38. R.Spec	Reference to legislation	6.2.4 Polyethylene pipes	… (c) For PE pressure pipelines pipe compliance to AS/NZS 4130 shall be demonstrated by providing copies of the batch release test (BRTs) specified in Table A-1 of AS/NZS 4130. … (g) PE pipe should not be used where hydrocarbons are detected as it may result in tainting of ~~potable~~ drinking water or long-term weakening of the pipe and reduction in the factor of safety. …
39. R.Spec	Reference to legislation	6.2.10.1 Bulk water pipeline access manholes	(c) The 600 mm nominal diameter cover plate shall be prepared and coated with 300 microns of Carboguard 690 in two layers or an approved alternative ~~potable~~ drinking water protective coating.
40. R.Spec	Water supply	6.2.10.2 Manhole covers	… (c)(iii) The cover shall be a minimum 600 mm x 1200 mm opening to allow full body entry and working space and with a maximum lifting weight of 40 kg. Consideration shall be given to the cover design and weight in regards to conditions that enable safe lifting ~~a heavy duty ductile iron Sika 1200 x 600mm or similar cover with hinged joints, bolted to the concrete top, to allow access to manually operated fittings e.g. air valves, flow meters~~. …
41. R.Spec	Surface boxes	6.2.11.5 Service pipe valves	The following applies to services pipe valves (tobies): (a) Service pipe valves (tobies) for residential properties requiring a DN 20 service pipe or less shall be an approved manifold as listed in the Approved Products Register. (i) They shall be housed in an approved ~~manifold~~ surface box (see **Section 6.2.12 Surface box systems for service pipe valves and manifolds** and **Standard Detail WS08 – Typical Domestic Manifold and Water Meter**). ~~(ii) The box shall be high density PE if in the berm or footpath or cast or ductile iron if in a residential driveway.~~ … (d) See **Section** Error! Reference source not found. ~~**Service valves**~~ **Kerb markings** for information on ~~service valve markings~~ reinstatement.
42. R.Spec	Surface boxes	~~6.2.11.6 Valve markings~~	This section is deleted and clauses combined with **Section 4.11.2.3 Kerb markings**

Item	R.Spec Topic	Clause	Description
43. R.Spec	Surface boxes	6.2.12 ~~Service covers, boxes and blocks~~ Surface box systems for service pipe valves and manifolds	The following applies to all surface box systems for service pipe valves and manifolds: a) The system shall be rated to AS 3996 Class B when located in the berm, ~~Class C when located in the~~ footpath ~~and~~ or driveway~~s~~ with appropriate concrete surround, and Class D in the carriageway. b) Where a service pipe is replaced, or the existing service valve excavated, see **Section 6.2.11.5 Service pipe valves.** c) Where the surface box system is located in a metalled or asphaltic concrete driveway, and the surface box is high density PE, the surface box shall be set with a 20 MPa concrete surround a minimum 100 mm thick and 150 mm wide. This is to prevent the surface box from being "squeezed" by the weight of the traffic onto the flexible surface. Adequate care must be taken by the installer for the concrete surround not to affect the safe opening and closing of the surface box. d) All surface box systems shall: i. Use a base to spread vertical loads onto the bedding. ii. Contain enough metallic material to enable a potentially buried box to be located, using a metal detector, under at least 100 mm of soil. iii. Be large enough so the service valve or manifold can be centrally located within the plan area of the box, and so that access to the fittings is practicable without excavation. iv. Be deep enough so the base is at least 20 mm below the service valve or manifold, and that a meter can be installed into the manifold port without adjustment of the box.
44. R.Spec	Surface boxes	~~6.2.12.1 Service valve boxes~~	This section is deleted and clauses combined into Section 6.2.12
45. R.Spec	Surface boxes	~~6.2.12.2 Manifold boxes~~	This section is deleted and clauses combined into Section 6.2.12
46. R.Spec	Surface boxes	[6.2.13] Surface box systems for area meters ~~meter boxes~~	The following applies to area or district area meter ~~boxes~~ surface box systems: (a) Meters shall be housed in an approved system rated to AS 3996 Class D. ~~(a)~~(b) The box ~~that provides~~ shall provide adequate space for removal of the meter, access to the isolation valve and visual inspection of the joints. ~~(b)~~(c) The box shall be able to be drained to natural ground and in a position that is safe for meter readers to read. (c)~~(d)~~ ~~The lid shall be light and durable enough to be opened with a single person lift with a lifting weight of no greater than 15 kg and using a simple lifting key (e.g., a hinged 30 kg lid would be acceptable~~ The cover shall be a be minimum 600 mm x 1200 mm opening to allow full body entry and working space with a maximum lifting weight of 50kg. Consideration shall be given to the cover design and weight in regards to conditions that enable safe lifting).
47. R.Spec	Surface boxes	[6.2.14] Surface box systems for valve blocks	The following applies to surface box systems for valve block~~s~~: …
48. R.Spec	Surface boxes	[6.2.15] Surface box systems for hydrant blocks	The following applies to surface box systems for hydrant block~~s~~: …
49. R.Spec	Electrofusion	6.2.12.3 [6.2.16.3] Electrofusion ~~reducing~~ couplers and elbows	Delete the word “reducing” from the header.
50. R.Spec	Mechanical couplings	6.2.16.6 Mechanical couplings	(a) Are considered to be a repair fitting; use on new mains is to be minimised as much as practical through the use of socketed joints, welding or fusion jointing. Examples of permitted connection methods between new and existing mains are provided in Standard Detail ~~WS14~~ WS13 – Examples of Water Main Connections. … (i) Where mechanical couplings are joining a PVC pipe to a more rigid pipe (cast-iron, ductile iron or steel pipe), the end ring with the tightening nuts shall be tightening on the rigid pipe. This provides a more even compression and seal. The sealing ring shall be lubricated with a ~~potable~~ drinking water approved lubricant. (j)… (k) For bulk water pipelines, the exposed steel shall be prepared and coated with 300 microns of Carboguard 690 in two layers or approved alternative ~~potable~~ drinking water protective coating.
51. R.Spec	Water meters	6.2.20 Water meters	*Advice note: Please ask Wellington Water for latest advice on commercial and residential metering.*

Item	R.Spec Topic	Clause	Description
52. R.Spec	Backflow	6.2.21.2 ~~Detector check meters~~ Double check detector assembly	The following applies to ~~detector check meters~~ double check detector assemblies: (a) Double check detector assemblies ~~Detector check meters~~ are required on all ~~non-return valves that are on~~ fire-services ~~or~~ and other non-revenue connections. (b) The ~~non-return device shall be a~~ double check detector assembly ~~as a minimum that complies~~ shall comply with AS/NZS 2845.1, which requires a bypass line, water meter and secondary double check valve. …
53. R.Spec	Thrust blocks	6.3.6 Thrust and anchor blocks	(c) Pipes larger than DN 300 require specific design including but not limited to ~~regarding~~ reinforcement and concrete strengths due to the large loads.
54. R.Spec	Thrust blocks	6.3.6.1 Thrust Blocks	See revisions to WS03 in table below
55. R.Spec	Thrust blocks	6.3.6.4 Allowable bearing pressure	(c) (i) The vertical bearing pressure of the soil can be taken as: 1. 65 kPa for 2 blows per 100 mm 2. 100 kPa for 3 blows per 100 mm 3. 150 kPa for 5 blows per 100mm and 4. 200 kPa for 7 blows per 100 mm.
56. R.Spec	Reference to legislation	6.3.7 Fittings	All fittings shall be swabbed with a 50 mg/L chlorine solution and maintained as hygienically clean until installed within the pipeline. Only the surfaces which will come into contact with ~~potable~~ drinking water need to be swabbed and maintained.
57. R.Spec	PE welding	6.4.3 Polyethylene butt fusion and electrofusion welding	… (a) Where polyethylene pipes are connected to existing or new ~~copper pipes~~ metal fittings, electrofusion transition couplings shall be used to join the two materials. …
58. R. Spec	Gaskets	6.4.4.1 General reticulation pipes	(c) 3 mm fibre reinforced EPDM gaskets shall be used with all flanges. ~~NBR gaskets may be considered where the ground has, or may potentially have, hydrocarbons present~~
59. R.Spec	Flanges	6.4.4.3 Bulk water pipelines and trunk pipelines and general reticulation greater than DN 500	The following applies to bulk water pipelines, and trunk pipelines and general reticulation pipelines greater than DN 500:
60. R.Spec	PE testing	6.5.2 Testing of polyethylene pipes	PE pipes shall be tested by either the pressure rebound method for pipes that meet the criteria in Table 6-8 or the pressure decay method for pipes that don't meet Table 6-8. Use of the pressure decay method for pipes smaller than 250 mm requires the written approval of Wellington Water.
61. R.Spec	Water supply shutdowns	6.8 Water supply shutdowns (cut-ins)	*Wellington Water's Shutdown Request process (available on Wellington Water's website) is also relevant to stormwater and wastewater shutdowns*. The following applies to temporary water supply shutdown (cut-ins): (a) Temporary interruptions to the water supply network shall only be carried out in accordance with Wellington Water's ~~supply~~ Shutdown Request process (available on Wellington Water's website), including: (i) A Shutdown Request (available on Wellington Water's website) shall be submitted to Wellington Water for approval. ~~(b)~~(ii) All personnel carrying out shutdowns of the water supply must be under the supervision of a water qualified person on site at all times (Level 4 Water Reticulation) and must follow the Water NZ "Good Practice Guide ¬– Hygiene Practices to prevent Water Supply Contamination". ~~(c)~~(iii) The shutdown plan shall use the ~~correct~~ template for water supply network shutdowns (available on Wellington Water's website). ~~(i) Level 1~~ ~~(ii) Level 2 or~~ ~~(iii) Level 3.~~
62. R.Spec	Water supply shutdowns	~~6.8.1 General~~	~~The following applies to planned water supply interruptions:~~ ~~(a)~~(b) A shutdown plan… … (e) ~~Section 695 of the Health Act 1956~~ Part 2 Section 25(A) of the Water Services Act 2021 requires approval from ~~the medical officer of health~~ Taumata Arowai for any planned restriction or interruption of the provision of drinking water by a network supplier or a bulk supplier that is expected to exceed 8 hours . (f) Notifications to affected residents and businesses shall be carried out in accordance with Wellington Water's shutdown request process.

Item	R.Spec Topic	Clause	Description
63. R.Spec	Water supply shutdowns	~~6.8.2 Notifications~~	~~Interruptions shall be notified to the affected residents and business, as follows:~~ ~~(a) Level 1 – Approved shutdown letters to domestic customers 24 hours prior to shutdown.~~ ~~(b) Level 2 – Approved shutdown letters to affected business customers 5 working days prior to shutdown and to affected domestic customers 24 hours prior to shutdown.~~ ~~(c) Level 3 – Approved shutdown letters to affected business customers within 5 working days prior to trial and shutdown and to affected customers 24 hours prior to trial and shutdown.~~ ~~(d) Email shutdowns@wellingtonwater.co.nz 24 hours prior to any trial or actual shutdown. The Customer Hub will then advise the Client Council Call Centre and the New Zealand Fire Services. (This email address includes the Network Controller, all Customer Planning Engineers, the Customer Hub and Community Engagement Team.~~ ~~(e) Email to the Project Engineer or Contracts Officers 24 hours prior to any trail or actual shutdown confirming that the shutdown is ready to proceed.~~ ~~(f) Critical customers (dialysis patient, hospital, school or early childhood education facility) shall be notified 5 working days prior to any planned interruption of supply.~~
64. R.Spec	Water supply shutdowns	~~6.8.3~~ 6.8.1 Critical and key account customers	(a) (i) The ~~designer~~ person managing the shutdown shall contact Wellington Water (Customer Hub) to check for any dialysis patients within the planned shutdown area.
65. R.Spec	Water supply shutdowns	~~6.8.4~~ 6.8.2 Trial shutdown	Trial shut downs shall be carried out in accordance with Wellington Water's shutdown request process. ~~A trial shutdown will be required for all Level 3 shutdowns. In addition, Level 1 and Level 2 shutdowns may require checking to ensure all valves and hydrants are operable, and that there are no incorrectly closed valves in the network~~
66. R.Spec	Water supply shutdowns	6.8.5 6.8.3 Reactive shutdown	… c) In addition to following the Wellington Water shutdown request process ~~Supply Process~~, reactive shutdowns shall follow the Wellington Water COG Standard Operating Procedures (SOP). d) Affected customers shall be personally notified prior to the water being shut-off. ~~Where customers are not present, a notice shall be left with the customer informing them of the interruption.~~ Where it is not practical to notify customers individually, the use of a clear and concise message broadcast over a vehicle mounted public address system may be used. This message shall be broadcast along the full length of all affected streets. e) Alternative supplies shall be arranged for critical and key account users where practicable. ~~f) Where it is not practical to notify customers individually, the use of a clear and concise message broadcast over a vehicle mounted public address system may be used. This message shall be broadcast along the full length of all affected streets.~~ …
67. R.Spec	Water supply shutdowns	~~6.8.5~~ 6.8.3.1 Emergency shutdown during planned construction works	Where the water supply network is inadvertently damaged during planned construction works, the contractor undertaking the works shall notify the Wellington Water Customer Operations Group (COG) Operational Planning Engineer ~~Engineer to the contract~~, and the Wellington Water Customer Hub. The Wellington Water COG shall undertake a reactive shutdown and carry out any required repairs.
68. R.Spec	Water supply shutdowns	~~6.8.5~~ 6.8.4 Temporary supplies	Any shutdown that requires a temporary supply into the network (such as trailer mounted temporary PRV, hydrant feed, tanker supplies, temporary pipes etc.) shall be classified as a Level ~~3~~ 2 shutdown, as defined in the Wellington Water shutdown request process, and follow the appropriate processes. ~~These~~ Alternate supplies may require hydraulic calculations and trialing to confirm they are suitable.
69. R.Spec	Reference to legislation	6.12.1.1 Chlorination [new or lined pipelines]	(a)The pipeline shall be thoroughly flushed with ~~potable~~ drinking water to clear any debris. … (f) Prior to completion of the pipeline end connections, the highly chlorinated water shall be flushed from the pipe and replaced with ~~potable~~ drinking water.
70. R.Spec	Hygiene Code of Practice	6.12.1.2. Bacteriological testing	(e) The pipeline shall be deemed acceptable for commissioning in accordance with the water quality clearance requirements in the WQMG_0001 *Hygiene Code of Practice*, which require residual chlorine to be ≥0.2 mg/L ~~if residual chlorine~~ and < 1 mg/L and E. coli to be < 1 per 100 mL.
71. R.Spec	Reference to legislation	6.12.2 Repairs	(c) After the repair is made, and where practicable, the repaired pipe shall be flushed such that ~~potable~~ drinking water is drawn both ways through the repair location.

Item	R.Spec Topic	Clause	Description
72. R.Spec	Reservoirs	6.12.3.1 Chlorination [Reservoirs]	(a) The standard chemicals used for chlorine dosing of ~~potable~~ drinking water reservoirs are calcium hypochlorite in the form of HTH granules and sodium hypochlorite in the form of a solution. … ~~(d) Previous experience has shown that the introduction of undissolved HTH granules or SHS solution through the reservoir hatches and allowing circulation by filling the reservoir is effective.~~
73. R.Spec	Reservoirs	6.12.3.3 Dosing procedure	(c) Where mixing of chlorine is to occur within the reservoir, the quantity of chlorine shall be determined and introduced into the reservoir in 33% increments as the reservoir fills, to enable mixing. Concentrations will be added evenly from both hatches in a method to avoid overconcentration, which may damage internal metalwork ~~Flow of water into the reservoir shall be maintained for a minimum of ½ hour following the addition of chlorine or until the reservoir is full. Inflow into the reservoir shall stop before the reservoir top water level reaches the overflow level.~~ ~~(d) The quantity of Chlorine shall be determined and introduced into the reservoir by uniformly scattering over the water surface over as large an area as possible via the reservoir entry hatches.~~ ~~(e) Reservoirs having separate inlet and outlet pipelines shall have the Chlorine added through the hatch at the opposite end of the reservoir to the outlet pipeline~~
74. R.Spec	Reservoirs	6.12.3.7 De-chlorination - Filling and dosing	Change to sub-header wording
75. R.Spec	Reservoirs	6.12.3.11 Pre and post-commissioning sample	(b) ~~The drinking water assessor (Regional Public Health)~~ Wellington Water shall be given at least two days advanced warning of the filling to ensure the drinking water assessor is aware of the sampling programme. … (d) The samples shall be sent immediately to the laboratory (if the samples were not collected by lab staff), where they shall be tested for: (i) Total coliforms (ii) E.Coli (<1) (iii) Free available chlorine (<1 mg/L) (iv) pH (v) Temperature (e) The sample results shall be sent to ~~the drinking water assessor~~ Wellington Water who will advise of any concerns they may have with the results.
76. R.Spec	Reservoirs	6.12.3.12 Commissioning	(a) The reservoir outlet valve can only be opened by Wellington Water on approval of testing results ~~on the advice of Regional Public Health . The outlet valve will be operated by Wellington Water staff.~~
77. R.Spec	Reservoirs	6.13 Reservoirs	(d) The minimum standard for fencing shall be a 1.8 m high, 50 mm diamond, 2.5 mm wire diameter chain link fence with rails top and bottom. Fence posts will be fitted with a spiked cap and access gates will provide padlock protection from vandalism. However, any fence must be agreed with Wellington Water to complement the surrounding environment.
78. R.Spec	Reservoirs	6.13.2.1 General requirements	(b) All overflows and air vents shall have mesh barriers that prevent vermin from entering the reservoir. … ~~(e) The use of water stops and sealants shall be avoided or minimised where possible.~~ ~~(i) This is important, as many jointing materials have only limited lives of 15 to 20 years. That replacement can be costly involving isolation of the reservoir and uncovering of the reservoir.~~ ~~(ii) Careful detailing of joints is required, as the financial cost of retesting the structure for watertightness is considerable.~~ ~~Additional measures to mitigate leakage should be incorporated in the structure. Measures could include additives to the concrete to promote autogenous healing at cracks, bandages on interior joints and membrane coatings on the interior~~. (e) All construction joints are to have a minimum of two lines of defence against leakage … (g) The lowest roof beam must be designed to avoid uplift forces from sloshing waves and be a minimum of 1000 mm above the ~~be 300 mm above~~ top water level (TWL) or 50 mm above the maximum water level expected when the reservoir is overflowing (250 mm above TWL). The minimum level of the roof slab shall be at least 450 mm above the TWL. The beams must be away from the overflow. … (i) Perimeter guttering or concrete nib upstands are not permitted due to their maintenance requirements and the potential to result in roof ponding.

Item	R.Spec Topic	Clause	Description
79. R.Spec	Reservoirs	6.13.2.2 Reservoir testing	New section – The following tests are required: a) A roof leakage test will be undertaken upon project completion and involve saturation of the roof surface with a minimum of 25 mm over a period of at least 6 hours. A second test will be undertaken using a drone or boat at the end of the defects period b) A 7-day reservoir hydrostatic drop test is required prior to reservoir disinfection. The reservoir will be filled to 50 mm below the overflow level and monitored to within 1 mm of accuracy.
80. R.Spec	Reservoirs	6.13.2.2[3] Buried reservoirs	Buried reservoirs are typically not permitted due to maintenance accessibility issues and increased contamination and vandalism risks. Dispensation is required from Wellington Water for any buried reservoirs. … (f) Drainage material and subsoil drain are ~~is~~ required to be laid against the walls and must be of a grading and size such that the surface seal coat is not damaged
81. R.Spec	Reservoirs	6.13.3.2 Inlet pipework	(d) The inlet shall enter the reservoir at a lower level, through the floor or wall of the reservoir, and rise as a standpipe to ~~at least 80% of the height of the reservoir~~ 75% of the TWL. This is to provide a non-return function to prevent the reservoir from emptying in the event of an inlet main failure and to maximise mixing velocities within the reservoir. Alternatively, the inlet may rise up the outside of the reservoir and enter through the wall ~~at the 80% level~~ or roof at a level above the TWL . ~~(c) The stand-pipe shall have a return pipe to the reservoir floor to ensure the final discharge enters is below the 25% level and opposite to the outlet to encourage turnover and maintain chlorine residual. An anti-siphon orifice approximately 25% of the standpipe diameter shall be positioned at the top of the standpipe to prevent back siphoning in the event of a failure.~~
82. R.Spec	Reservoirs	6.13.3.5 Overflow pipe and stormwater assessment	The overflow pipe shall: … c) Connect to a manhole outside the reservoir which will subsequently connect to the stormwater network. The overflow pipe ~~shall have a non-return valve on it to prevent rodent entry into the overflow pipe. The non-return valve shall be accessible from the manhole. The scour pipe may connect to this manhole also. The overflow manhole~~ and subsequent drainage system shall comply with **Section 5 Drainage Specifications**. d) The reservoir is to be designed to prevent vermin entry via the overflow pipe. This shall be achieved using 316 stainless steel mesh with a 1 mm opening aperture installed over the bell mouth. The overflow pipe must be designed for losses associated with the mesh. The overflow bell mouth and mesh must be visible for inspection from a reservoir hatch, without entering the reservoir.
83. R.Spec	Reservoirs	6.13.3.7 Under drainage	(e) The upstream end of the underfloor drains will have a rodding eye to the surface level, or be connected to a buried chamber to allow for bi-directional flushing and inspection.
84. R.Spec	Reservoirs	6.13.4 Roof hatches and ladders	(b) Hatch hinges and padlocks must be covered to protect them from vandalism. (c) Hatch covers should weigh 20 KG or less. Where this is not possible lifting struts must be provided. … (e) Full perimeter roof edge protection barriers to be designed and constructed. Barriers to be 1.2m in height and include a bottom footplate and fabricated from mild steel and hot dip galvanised. --- (h) (i) Internal steelwork shall be stainless steel 316 ~~or galvanised steel.~~ … (j) Fixed full height access stairs are to be provided for external access. It is preferable that stairs are to be designed as ‘wrap around’ design. External staircases to be fabricated from mild steel and hot dip galvanised. (k) The requirement for internal staircases are to be discussed with Wellington Water. Internal staircases are to be stainless steel and designed so that they could be disassembled through the reservoir hatch opening.

Number	Name	Description
DR04	Baffled sump	Add NOTE that sumps also require council RCA approval
DR09	Building over	Add warning note in red **Written Approval is required from Wellington Water for any building work over or near a public pipe. Written approval may be withheld if the function and operability of the public main are unduly compromised by the proposal.**
WS03	Typical thrust block details	Add to notes: a. The table of calculations should delete the line for diameter 375 as this is subject to specific design. b. The table of calculations should match the formula below the table. c. Note 5 – Minimum cover to pipe crown shall be 600mm, or specific design is required. e. New table: Vertical bearing pressure of the soil for pipe DN 300 and smaller can be taken as: 1. 65 kPa for 2 blows per 100 mm 2. 100 kPa for 3 blows per 100 mm 3. 150 kPa for 5 blows per 100 mm and 4. 200 kPa for 7 blows per 100 mm.
WS06	Rider main scour	This is a new drawing that replaces the WS06 drawing in v3.0. Key changes include isolation valves on both sides of the backflow prevention device and the use of two surface boxes plus a valve box.
WS08	Typical Domestic Manifold and Water Meter	Amend notes: 4. SERVICE VALVE (OR METER) SHOULD NOT BE LOCATED IN DRIVEWAYS OR AREAS WHERE VEHICLE TRAFFIC IS LIKELY WITHOUT CONSIDERATION OF MINIMUM TRAFFIC LOADING REQUIREMENTS. 5. WHERE THE SERVICE VALVE CANNOT BE INSTALLED OUTSIDE OF THE ~~MOTORCROSSING,~~ DRIVEWAY, AND A ~~VALVE AND METER~~ HIGH DENSITY PE SURFACE BOX ~~BE~~ IS USED, IT SHALL BE SET WITH A 20MPa CONCRETE SURROUND A MINIMUM 100mm THICK AND 150mm WIDE. ~~ALTERNATIVELY, THE VALVE AND METER SHALL BE INSTALLED IN AN APPROVED DUCTILE IRON OR CAST IRON BOX COMPLETE WITH CONCRETE PACKER BLOCKS; SIZE OF BOX MUST BE SUFFICIENT TO ENABLE METER TO BE SERVICED WITHIN BOX.~~ ADEQUATE CARE MUST BE TAKEN BY THE INSTALLER FOR THE CONCRETE SURROUND NOT TO AFFECT THE SAFE OPENING AND CLOSING OF THE BOX LID.
WS09	Below ground commercial meter and above ground backflow installation (32mm to 40mm)	Minor edit to title. Remove the word “top” from Notes (Enclosure) No. 3
WS10	Above ground commercial meter and above ground backflow installation (32mm to 40mm)	Minor edit to title. Remove the word “top” from Notes (Enclosure) No. 3
WS11	Below ground commercial meter and above ground backflow installation (50mm and larger)	Minor edit to title. Remove the word “top” from Notes (Enclosure) No. 3. Revise table header to match title of the drawing.
WS12	Above ground commercial meter and above ground backflow installation (50mm and larger)	Minor edit to title. Remove the word “top” from Notes (Enclosure) No. 3
WS13	Fire service connection and metered supply	Delete standard drawing WS13
WS14	Examples of water main connections	Renumber to be WS13