

# Guidelines for Recycled Water and Rainwater in Medium to High Density Developments

September 2018





City West Water™



## Disclaimer

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## Metadata

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# Table of contents

|   |           |
|---|-----------|
| <b>Table of figures</b>   | <b>i</b>  |
| <b>Glossary</b>   | <b>ii</b> |
| <b>1. Introduction</b>  | <b>6</b>  |
| 1.1. The scope  | 7         |
| 1.2. Audience   | 7         |
| <b>2. Relevant guidelines and codes</b>                                 | <b>7</b>  |
| <b>3. Project specific requirements</b>                                 | <b>8</b>  |
| <b>4. Water sources, uses and treatment</b>                             | <b>9</b>  |
| <b>5. Common infrastructure for recycled water and rainwater</b>        | <b>10</b> |
| <b>6. Rainwater tanks</b>   | <b>12</b> |
| <b>7. Metering</b>  | <b>13</b> |
| 7.1. Recycled water   | 13        |
| 7.2. Remote meter reading requirements                                  | 13        |
| 7.3. Interconnection between drinking water and recycled water services | 13        |
| 7.4. Rainwater  | 14        |
| 7.5. Combined recycled water and rainwater                              | 14        |
| <b>8. Recycled water break tanks</b>                                    | <b>14</b> |
| <b>9. Inspections and commissioning</b>                                 | <b>15</b> |
| <b>10. Maintenance</b>  | <b>15</b> |
| 10.1. Rainwater infrastructure  | 15        |
| <b>11. Legislative requirements</b>                                     | <b>16</b> |
| 11.1. Acts  | 16        |
| 11.2. Regulations   | 16        |
| <b>12. Guidelines</b>   | <b>17</b> |
| 12.1. Australian Standards/Codes  | 17        |
| <b>Appendix A Consultation process</b>                                  | <b>17</b> |
| <b>Appendix B Overview of requirements</b>                              | <b>18</b> |
| <b>Appendix C Hydraulic services checklist</b>                          | <b>19</b> |
| <b>Appendix D</b>   | <b>20</b> |

## Table of figures

|          |  |    |
|----------|--|----|
| Figure 1 | Drinking, rainwater, and recycled water supplies in a typical apartment building | 6  |
| Figure 2 | Process of considering precinct and local requirements                           | 7  |
| Figure 3 | Classifying areas of a site for rainwater and stormwater treatment/harvesting    | 9  |
| Figure 4 | Typical water system and meter set up with common infrastructure                 | 10 |
| Figure 5 | Typical drinking water and recycled water interconnection                        | 13 |
| Figure 6 | Schematic of recycled water check meters   | 14 |

## Glossary

- **Alternative water sources:** Non-drinking water that is harvested, usually treated, and reused. Includes rainwater, stormwater, greywater, blackwater and recycled water (RCW).
- **Blackwater:** The wastewater/sewage from toilets and bidets.
- **Common infrastructure:** The pipes through which both recycled water and rainwater may be supplied to apartment buildings. Where common infrastructure is installed, it must be purple pipe to denote recycled water in accordance with AS3500.
- **End uses:** The type of appliances and uses of water in the home, business or factory. For example, washing machine, toilets, kitchen taps and irrigation systems.
- **Environmentally Sustainable Design:** The philosophy of designing the built environment and services to comply with the principles of social, economic, and ecological sustainability.
- **Greywater:** The wastewater generated from all appliances except the toilet, bidets and urinals.
- **High density residential development:** A number of individual dwellings in a single building and are four or more storeys in height.
- **Integrated water management:** A collaborative approach to planning that brings together all elements of the water cycle including sewage management, water supply, stormwater management and water treatment.
- **Mandated area:** An area designated by a water corporation that includes a third pipe distribution system.
- **Medium density housing:** ranges from about 25 to 80 dwellings per hectare, though most commonly the density is between 30 and 40 dwellings/hectare.
- **Onsite detention:** A stormwater management technique to control the runoff discharge rates of individual development sites.
- **Precinct structure plans:** The high-level master plans for whole communities that layout the location of roads, shopping centres, schools, parks, housing, employment, connections to transport and generally resolve the complex issues of biodiversity, cultural heritage, infrastructure provision and council charges.
- **Rainwater:** Water that falls on roofs and other appropriate rainwater harvesting surfaces can be collected and stored in a rainwater tank above or below ground.
- **Recycled water (RCW):** Blackwater, greywater or wastewater that has been treated in a central treatment plant (usually managed by a water corporation), classified according to the risk and treatment process into Class A (highest quality) to Class D (lower quality), and then distributed through recycled water mains to be reused in homes, open spaces, businesses or factories. For the purpose of these guidelines, recycled water shall mean reticulated and mandated Class A recycled water (Class A is produced by tertiary treatment).
- **Smart tank:** rainwater tanks that use weather forecasting data and water level control technology for the optimisation of the storage capacity of the tank.
- **Stormwater:** Water that falls on roads and hard surfaces. Stormwater includes rainwater collected from trafficable areas (including terraces, driveways, paths, and other impervious surfaces at ground level). Unless captured or diverted to a filtration system (natural or manmade), stormwater will flow into an urban creek, waterway or receiving water body. Appropriate levels of treatment to the satisfaction of relevant authorities is required before stormwater can be used for designated purposes.
- **Sustainability Management Plan:** A detailed sustainability assessment of a proposed design at the planning stage.
- **Tapping:** The connection of a new service to a water main.
- **Third pipe:** A term used to refer to a water pipe that carries recycled water and is coloured purple. Is also known as dual pipe.
- **Treatment:** The chemical, physical or biological filtering of water to reduce the concentration of pollutants and pathogens to allow its fit for purpose use or discharge to the environment.
- **Treatment plant:** Components and equipment designed to apply treatment to e.g. wastewater or harvested rainwater.
- **Water corporation:** A utility supplying its customers with water, wastewater and recycled water services. Within these guidelines, the water corporations referred to are City West Water, South East Water and Yarra Valley Water.

# 1. Introduction

Urban water systems need to be adaptive, resilient and responsive to the many needs of communities. Using alternative water sources such as rainwater and recycled water is one sustainable way of minimising reliance on drinking water supplies within an urban water environment.

As Melbourne's population grows to over 8 million, infill development will increase significantly. Ensuring alternative water sources are integrated in these developments will be essential. Water policy in Victoria recognises this and stipulates/encourages that integrated water management philosophy and practices be implemented.

Councils, water corporations and state government agencies are adopting integrated water management practices and have requirements for the design, construction and maintenance of recycled and rainwater services. These guidelines have been developed to assist developers, consultants, planners, builders and plumbers in complying with those requirements.

Figure 1 shows a typical medium to high density urban development in a mandated recycled water area in Melbourne. In these developments, recycled water is integrated with rainwater and stormwater systems. Both recycled water and rainwater are plumbed to indoor and outdoor appliances, through common infrastructure for suitable non-drinking purposes.

These guidelines provide references and instructions to assist practitioners working in medium to high density apartments and commercial developments. They also provide direction on where to find additional technical advice and information on the compliance and regulatory issues that need to be considered.

Information on how these guidelines have been developed is outlined in **appendix A – Consultation process**.

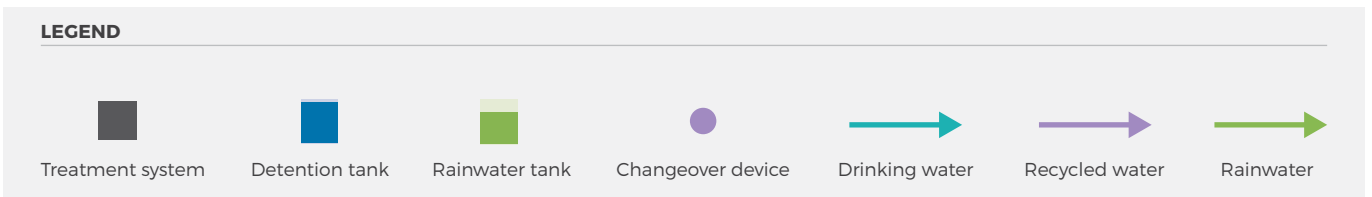
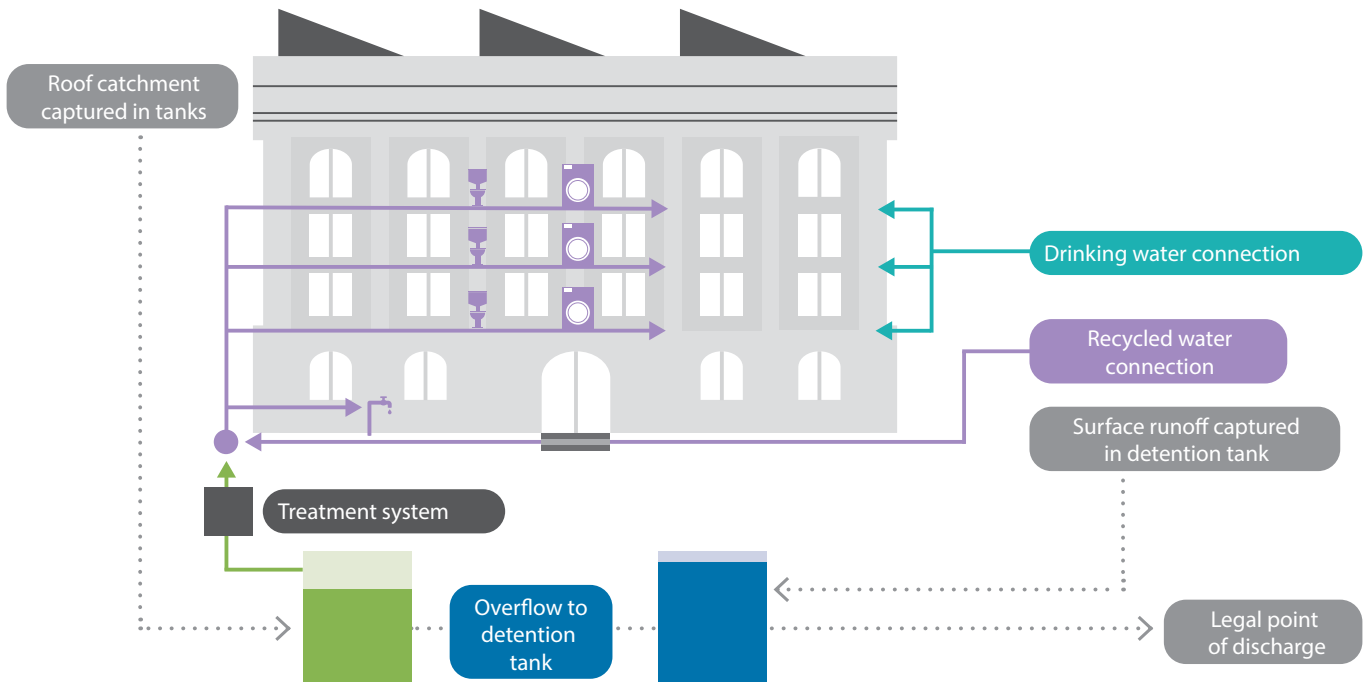


Figure 1. Drinking, rainwater and recycled water supplies in a typical apartment building in a mandated recycled water area.

## 1.1. The scope

These guidelines apply to developments within the Greater Melbourne area and include two types of requirements:

1. Council-specific requirements to improve onsite rainwater and stormwater management.
2. Recycled water connections that are mandated by a water corporation.

## 1.2. Audience

These guidelines have been written for:

- urban developers and consultants who act on behalf of developers
- officers in councils and water corporations who assess the applications from developers
- plumbers and builders
- facilities managers
- architects

## 2. Project specific requirements

Each precinct has different requirements, these are:

- Local precinct guidelines e.g. Fishermans Bend (2017) and Doncaster Hill (2004)
- Local planning policy frameworks:
  - Planning Scheme Clause 22.12 – City of Port Phillip
  - Planning Scheme Clause 22.13 – Manningham City Council
  - Environmentally Sustainable Development Clause 22.05 – Stonnington City Council
  - Environmentally Sustainable Development Clause 22.08 – Moreland City Council (seek further advice from relevant planning authority)
- State planning policy frameworks (e.g. Planning Scheme Clause 55.07-5 and 58.03-8)
- Water corporation requirements (City West Water, South East Water, Yarra Valley Water)

An overview of the project-specific requirements is detailed in Appendix B - Overview of requirements.

The process of considering requirements is illustrated below.

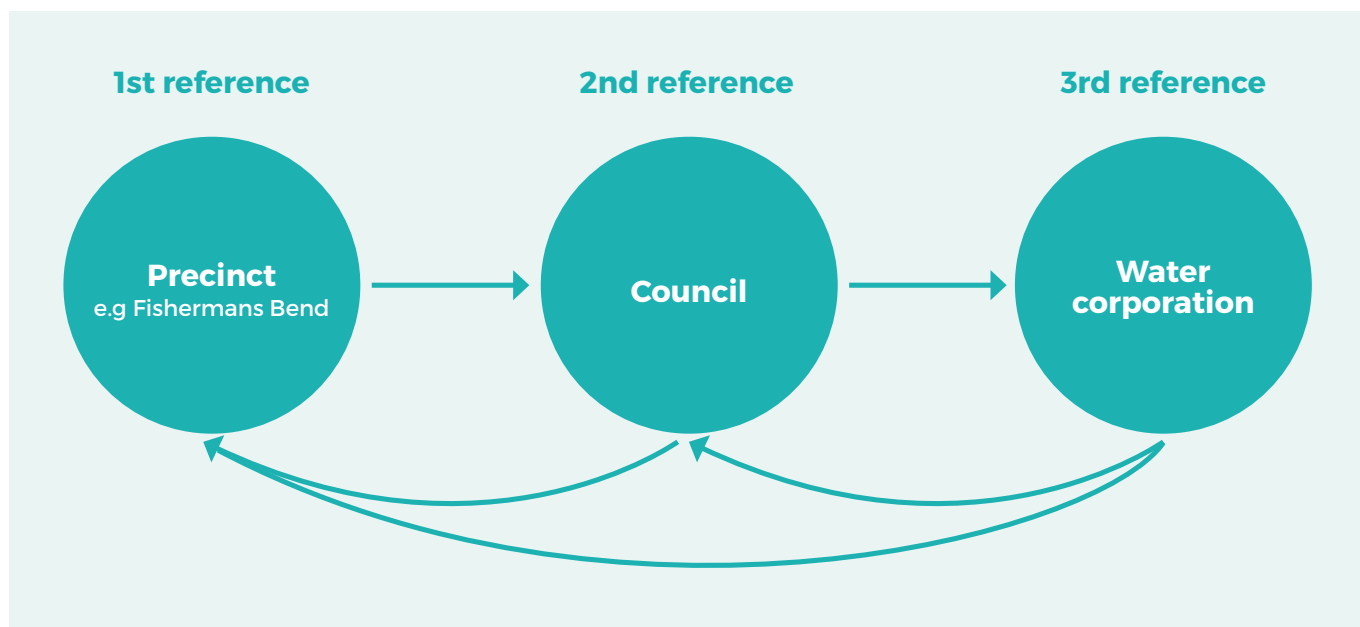


Figure 2. Process of considering precinct and local requirements.

Where the planning requirements of different authorities are conflicting, the requirement with the higher standard (or larger rainwater storage) should be adopted. Refer to the following scenario.

### Which requirement for tank sizing should I use?

A typical apartment building in South Melbourne needs to comply with City of Port Phillip's requirements for stormwater pollutant reductions, as measured by the STORM rating tool (a calculator to assess whether water quality objectives have been achieved for your site - see [storm.melbournewater.com.au](http://storm.melbournewater.com.au)). This requirement results in the need for an 8kL rainwater tank. The same development, when applying the requirement under the *Fishermans Bend Strategic Framework Plan (2017)*, would require a 23.4kL tank. As the Fishermans Bend requirements meet and exceed those of the City of Port Phillip, they should be adopted and applied.



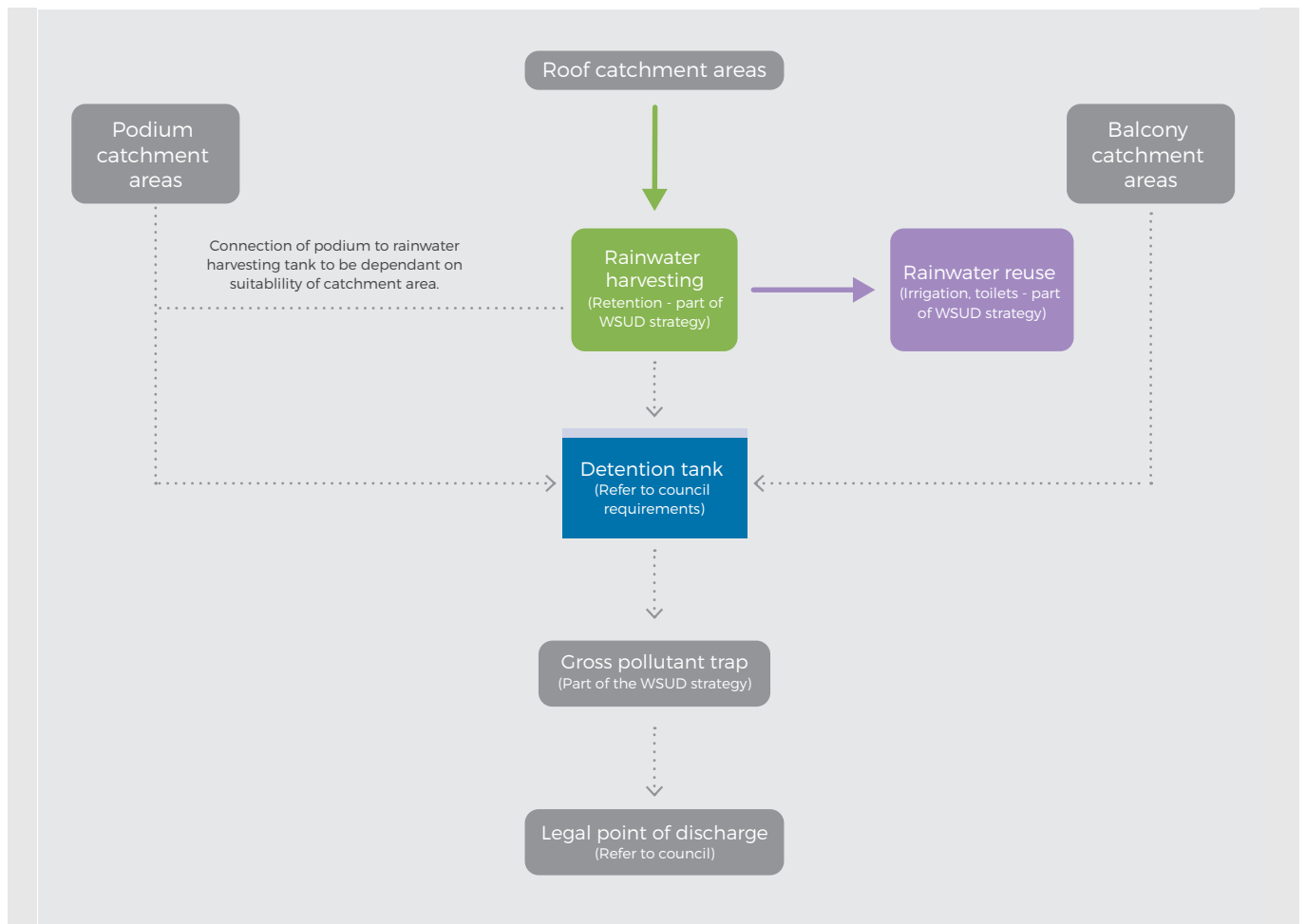
### 3. Water sources, uses and treatment

Within medium and high density developments the appropriate non-drinking end use is dependent on the water source used. Refer to Section 10 and 11 for relevant guidelines for the installation of rainwater, recycled water and stormwater services. Note: onsite treatment for recycled water is not necessary, as treatment is generally managed at a centralised treatment plant upstream of the development.

| Combined rainwater and recycled water infrastructure  | Recycled water only   | Stormwater only (with appropriate treatment)   | Rainwater only (with appropriate treatment)  |
|---|---|--|--|
| <p>Appropriate end uses:</p> <ul style="list-style-type: none"> <li>toilet flushing</li> <li>washing machine</li> <li>garden irrigation</li> </ul> <p>Recycled water must be used in all mandated recycled water areas.</p> <p>Please consult with the relevant water corporation or local council for design and treatment requirements of the rainwater system.</p> | <p>Appropriate end uses:</p> <ul style="list-style-type: none"> <li>toilet flushing</li> <li>washing machine</li> <li>garden irrigation</li> </ul> <p>Recycled water must be used in all mandated recycled water areas.</p> | <p>Please consult with the relevant council to establish design, treatment requirements and permissible end-uses for treated stormwater.</p> | <p>Please consult with the relevant council to establish design, treatment requirements and permissible end-uses for treated rainwater.</p> <p>Please note – recycled water must be used in all mandated recycled water areas.</p> |

Table 1: Appropriate end uses for different water sources

A critical step in determining how to integrate water sources and treatment is determining which surfaces in the development are classified as collecting rainwater or stormwater. A site plan should clearly describe how the rainwater and stormwater systems are designed and how they comply with council requirements (as shown in Figure 3).



- Podium/multi use area runoff to be confirmed by water corporation/council on case by case basis.
- Onsite detention with max. 72 hours to drain rainwater tanks – minimum size set through BESS/STORM/MUSIC calculations.

Figure 3. Classifying areas of a site for rainwater and stormwater treatment and harvesting.

Rainwater treatment should be undertaken according to the Department of Health and Human Services' 2013 publication *Rainwater use in urban communities – Guidelines for non-drinking applications in multi-residential, commercial and community facilities*.

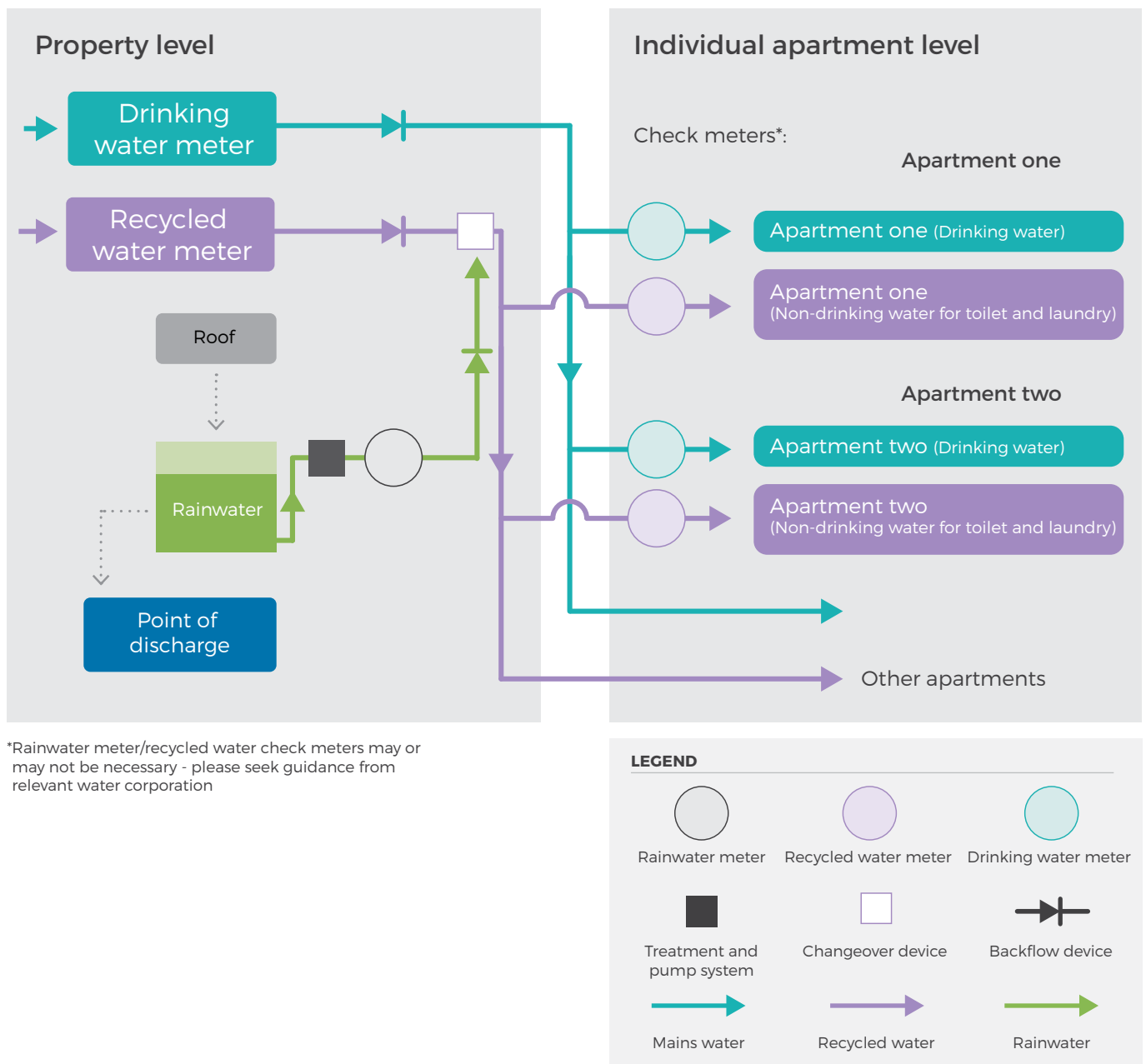
A risk assessment should be conducted by a suitably qualified water treatment professional and take into account the potential hazards to the quality of the harvested rainwater, and the applicable controls for those risks. The assessment will also determine the appropriate method/s of treatment.

Treatment options can include:

- pre-treatment, including selection, management and maintenance of harvesting areas.
- first flush devices.
- post-storage treatment, including filtration (usually cartridge or backwash types).
- disinfection, including UV or chlorination.

## 4. Common infrastructure for recycled water and rainwater

In many developments, recycled water and treated rainwater may be supplied to apartment buildings through a common pipe. Practitioners should have sufficient knowledge on how to connect the two water sources, manage backflow, prevent storage of recycled water in a rainwater tank and label pipes that are deemed common infrastructure (refer to Figure 4).



\*Rainwater meter/recycled water check meters may or may not be necessary - please seek guidance from relevant water corporation

Figure 4. Typical water system and meter set up with common infrastructure.

**There are a number of considerations when designing and constructing common infrastructure:**

- Determine location to install backflow devices, noting one will be required at the connection point between the recycled water and rainwater systems (see Figure 4). The type of device will be determined by the water corporation, in conjunction with the licenced plumber/hydraulic consultant as per AS/ NZS 3500.1 2018.
- Pipework labelling. Requirements as per Victorian Building Authority's Technical Solution Sheet 91.02 must be followed:
  - All common piping must be coloured purple or identified by means of close-fitting, durable, purple-coloured sleeving, netting or spirally-wrapped tape.
  - All products and materials must be certified under the WaterMark certification scheme, where required.
  - Labelling must be in accordance with Australian Standard 3500.1 - Section 9.

## 5. Rainwater tanks

Refer to the following key guidelines for rainwater tank designs and connections:

- *Rainwater use in urban communities - Guidelines for non-drinking applications in multi-residential, commercial and community facilities*, Department of Health and Human Services (2013).

When planning the design and installation of rainwater tanks, practitioners should consider the following:

- Tank materials should be in accordance with reference guidelines and proximity to groundwater; sea levels should be noted.
- Tank location should be considered carefully – with preference given to above ground tanks. Above ground tanks avoid potential soil or groundwater contamination, can be easier to access, clean and maintain, and may allow for gravity overflow and pre-rain event discharge.
- The tank overflow is to be connected to the council's legal point of discharge, or to onsite detention in accordance with council requirements.
- **Access:**
  - Ensure space allocated for tanks is sufficient to provide safe access for installation, maintenance and cleaning.
  - Ensure adequate facilities for draining (emptying) of tanks for maintenance.
- **Tank size**
  - In accordance with requirements (see Section 3).
  - Clearance should be provided around tank for access and maintenance.
- **Treatment**
  - See Section 3 for further information on rainwater treatment. Also refer to Department of Health and Human Services' guidelines *Rainwater use in urban communities – Guidelines for non-drinking applications in multi-residential, commercial and community facilities*.
- **Smart and dynamic tank management**
  - Smart tanks may be required in flood-prone zones to reduce high water flows to drains and stormwater. The council and the water corporation will advise if this requirement is applicable. Smart tanks automatically release water in advance of predicted rain based on weather data inputs. This creates storage capacity and reduces overflows to stormwater drains. The smart tanks can be manually configured based upon on the location's requirements.
- **Labelling**
  - Pipes that take ONLY rainwater (see Figure 1 and Figure 4) should be labelled green, as per AS/NZS 3500.1 Water Services. Pipes receiving recycled and rainwater should be labelled purple.

## 6. Metering

### 6.1. Recycled water

Recycled water meters must be provided in accordance with the metropolitan water corporations' Water Metering and Servicing Guidelines (2017). If the recycled water infrastructure is unavailable at the time of construction, the recycled water supply will be serviced via a drinking water connection until recycled water is available. The connection will then be altered to receive recycled water only.

Recycled water check meters must be installed in accordance with the Water Metering and Servicing Guidelines, as shown in Figure 6.

### 6.2. Remote meter reading requirements

Where remote recycled water check meters are installed it may be necessary to install additional meter reading equipment. Please check with the relevant water corporation for specific requirements.

### 6.3. Interconnection between drinking water and recycled water services

In some mandated recycled water areas, recycled water (RCW) mains may not yet have been installed by the water corporation. However, it is still a requirement to provide a building connection point for RCW to allow for future connection from the water corporation. In the interim, the RCW (third pipe) infrastructure within the building may require a connection from the drinking water supply. See **appendix - D** for a typical interconnection. Please consult the relevant water corporation for their specific requirements and interconnection design.

**NOTE:**  
ALL PIPEWORK REMAINS THE RESPONSIBILITY OF THE OWNER. WATER METERS MAINTAINED BY THE WATER CORPORATION

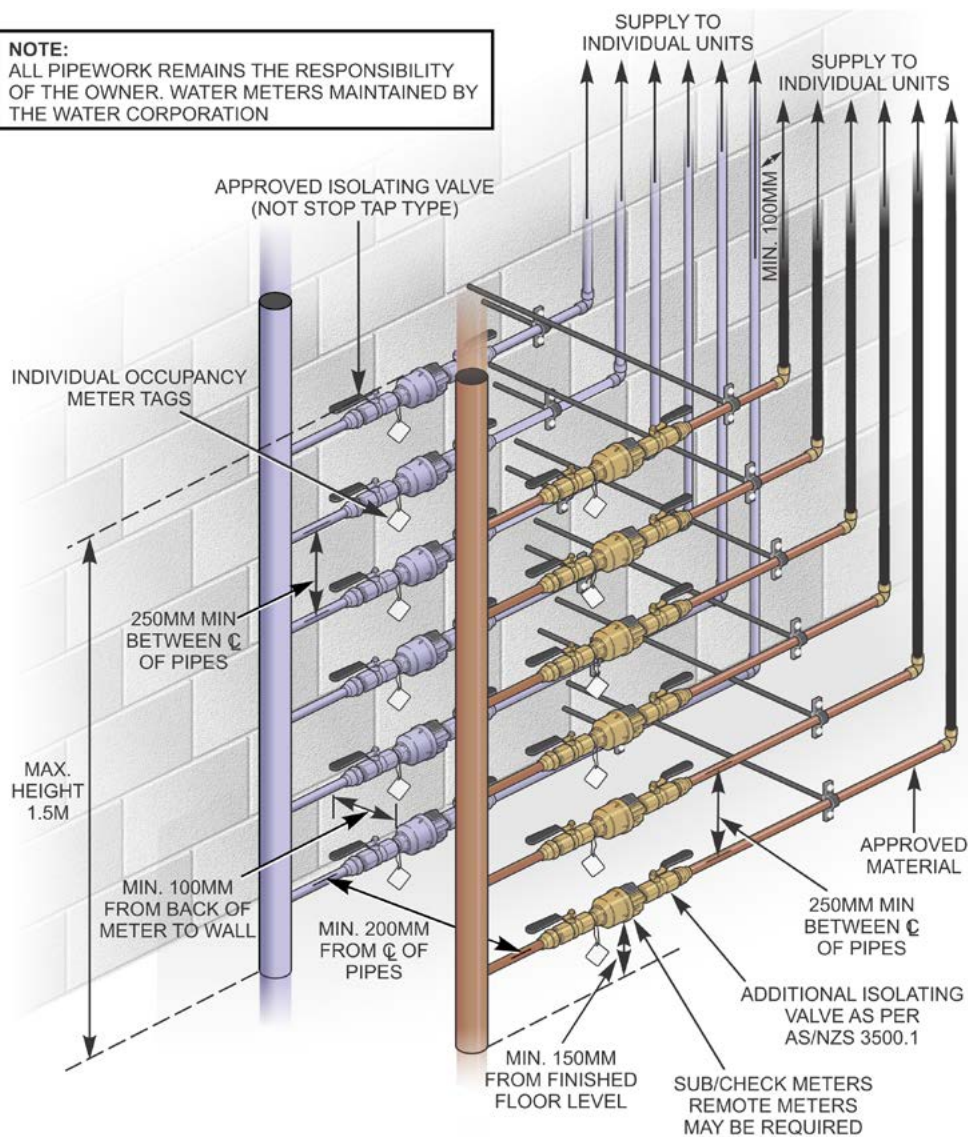


Figure 6. Schematic of recycled water check meters.

## 6.4. Rainwater

Rainwater may be metered (see Figure 4 on page 11) at the tank outlet, however rainwater metering to individual apartments is not currently a requirement.

The relevant water corporation determines meter locations and requirements.

## 6.5. Common recycled water and rainwater pipework

Metering provisions for the common infrastructure should include all requirements as shown in Section 4.

## 7. Recycled water break tanks

Where recycled water is to be supplied to multi-storey developments, there may be a requirement for either inline pumping or recycled water break tanks. The chosen solution is at the discretion of the water corporation, subject to their assessment of the system and the water corporation infrastructure available. During the design stage of these installations, contact the relevant water corporation for guidance.

## 8. Inspections and commissioning

Where Class A recycled water is used for units or industrial/commercial buildings, mandatory recycled water inspections are required. Note that multiple inspections may apply and are usually required at the following stages:

- main to meter and meter installation
- meter to structure/building
- recycled water risers, rainwater connection and rough-ins
- shut down tests, and
- commissioning.

Additional ongoing risk based inspections may be required for staged developments.

Some water corporations will assemble recycled water meters with a locking device until the recycled water plumbing is commissioned. The locking device will be removed at the final commissioning inspection. Penalties will apply if the locking device is removed prior to commissioning. Use of locking devices varies among water corporations, so further consultation with the water corporation is required to determine if this is applicable.

Council inspections and approvals are also required at the following stages:

- An initial **application for legal point of discharge** needs to be made to council, which will provide the developer with a design specification in order to connect to the council's system.
- A **Sustainability Management Plan** should be prepared and items agreed, prior to commencing construction.
- Drainage plans are to be submitted for approval/review and endorsement prior to construction. Note that staged approval may be possible to allow any basement/earthworks to commence while architectural details are being finalised. The relevant council will need to confirm this.
- A site meeting prior to commencement is needed to **confirm the locations of items** as detailed in the endorsed plans.
- During construction: confirm the size and levels of pipes and overflows in accordance with endorsed plans; and confirm that backfill and reinstatement is to council's satisfaction.
- Upon completion, confirm that all ancillary components are installed correctly in accordance with endorsed plans, including accessibility for maintenance and integration with other water systems (e.g. recycled water).
- Check against the Sustainability Management Plan at the final inspection (planning).
- Ensure the drainage plans have been inspected/approved as part of the legal point of discharge.

## 9. Maintenance

### 9.1. Rainwater infrastructure

Regular inspection and maintenance of the rainwater supply system (i.e. pipes, tanks, pumps and other elements) is required. Refer to Department of Health and Human Services' *Rainwater use in urban communities (2013)* for procedures.

Note that often in the development planning process, a council requires a maintenance and monitoring plan to be submitted. This plan should be referred to for ongoing maintenance of the associated rainwater and stormwater infrastructure on the site.

Water corporations are not responsible for the monitoring, maintenance or repair of rainwater infrastructure; this responsibility rests with the building owner/s or their approved delegate.

## 10. Legislative requirements

It is important to be aware of the legislative and regulatory requirements that apply to developments that include alternative water sources. These are summarised here:

### 10.1. Acts

The following acts apply to all rainwater and recycled water systems. This list is not exhaustive, and it is the responsibility of the developer and designer to ensure that all relevant regulatory requirements are met.

- **Water Act 1989 (Vic).** This Act governs water management in Victoria, and has several purposes. In the context of rainwater and recycled water systems, the purpose of the Act is: “(c) to promote the orderly, equitable and efficient use of water resources”; and “(h) to foster the provision of responsible and efficient water services suited to various needs and various consumers”.
- **Building Act 1993 (Vic).** The objectives of this Act relevant to rainwater and recycled water systems are: “(c) to promote plumbing practices which promote the safety and health of people and the integrity of water supply and waste water systems”; “(d) to facilitate the adoption and efficient application of national building standards and national plumbing standards”; and “(f) to facilitate the construction of environmentally and energy efficient buildings”.
- **Environmental Protection Act 2017 (Vic).** This Act stipulates that discharges to the environment must be managed so that they do not adversely affect the receiving environment (e.g. land, surface water or groundwater). This Act includes the mechanism for the Environment Protection Authority Victoria to oversee works approval and licensing requirements to ensure the appropriate control of discharges (Source: *Guidelines for environmental management – use of reclaimed water*). Part 5 S. 38 of this Act reads: “The discharge or deposit of wastes into waters of the State of Victoria shall at all times be in accordance with declared State environment protection policy or waste management policy specifying acceptable conditions for the discharge or deposit of wastes into waters in the environment and shall comply with any standards prescribed therefor under this Act.” *Planning and Environment Act 1987 (Vic)*. Planning in Victoria aims to “provide for the fair, orderly, economic and sustainable use, and development of land;”. This Act established a framework, the objective for which includes: “(a) to ensure sound, strategic planning and coordinated action at State, regional and municipal levels”; “(b) to establish a system of planning schemes based on municipal districts to be the principal way of setting out objectives, policies and controls for the use, development and protection of land” and “(c) to enable land use and development planning and policy to be easily integrated with environmental, social, economic, conservation and resource management policies at state, regional and municipal levels”. A number of councils now require these provisions to be achieved through approved Environmentally Sustainable Design policies.

### 10.2. Regulations

The following regulations apply to all rainwater and recycled water systems:

- **National Construction Code 2016 (latest version)** Volume Three. This is a uniform set of technical provisions for the design and installation of plumbing and drainage systems throughout Australia. The *National Construction Code (latest version), Volume Three – Plumbing Code of Australia* (PCA) contains the technical performance requirements for plumbing and drainage works for all classes of buildings.
- **Plumbing Regulations (latest version)** This document defines the meaning and specifies classes of plumbing work. Several Australian Standards are referenced by the *Plumbing Regulations*. These referenced standards form part of the plumbing regulatory framework and are therefore part of the legal requirements for plumbing practitioners in Victoria. Rainwater systems fall under ‘water supply work’ within the *Plumbing Regulations*, which also includes cold water, heated water and non-drinking water service work. The Victorian Building Authority regulates this space.



## 11. Guidelines

- **Department of Health** (Now known as **Department of Health and Human Services**) - *Rainwater use in urban communities – Guidelines for non-drinking applications in multiresidential, commercial and community facilities* (2013)
- **Victorian Building Authority** – *Technical Solution Sheet 91.02: Recycled Water* (2015)
- **Standards Australia** – *HB 230-2008: Rainwater tank design and installation handbook* (2008)
- **EPA Victoria** – *Dual Pipe Water Recycling Schemes - Health and Environmental Risk Management* (2015)
- **EPA Victoria** – *Guidelines for Environmental Management - Use of Reclaimed Water, Publication 464.2* (2003)

### 11.1. Australian Standards/Codes

- AS 1273 Unplasticised PVC (UPVC) downpipe and fittings for rainwater, Standards Australia, 1991
- AS/NZS 2179 Specifications for rainwater goods, accessories and fasteners, Standards Australia, 2014
- ATS 5200 Technical Specification for plumbing and drainage products, Standards Australia.
- AS/NZS 4766 Polyethylene storage tanks for water and chemicals, Standards Australia, 2006
- Rainwater tank design and installation handbook, Standards Australia HB 230-2008
- AS/NZS 4130 Polyethylene (PE) pipes for pressure applications, Standards Australia, 2009
- AS 2845.1 Water supply – Backflow prevention devices, Standards Australia, 2010
- AS/NZS 3500 Plumbing and Drainage, Standards Australia, 2018
- Water Supply Code of Australia Version 3.1 (WSA 03-2011,WSAA)

## Appendix A - Consultation process

The consulting project team was made up of Wave Consulting, Lucid Consulting, and Subgreen Design. They designed and delivered a comprehensive consultation process to assist the development of these guidelines. Key water corporations, catchment management authorities, state government departments, local government, industry groups, and consultants (as representatives of developers) were all involved in the consultation.

The consultation process consisted of five stages:

- **Stage 1** – consultation with industry groups (March 2017).
- **Stage 2** – development of four case studies to describe different alternative water systems and the learnings gained from them (April to June 2017). The four case studies were 'Meridian, Dandenong', 'Hepburn Road, Doncaster', 'Federation Square, Melbourne', and 'Gladstone St, South Melbourne'.
- **Stage 3** – draft guidelines (June to July 2017).
- **Stage 4** – consultation on guidelines through a series of workshops with representatives from local councils, water corporations, state government, and industry associations (July to August 2017).
- **Stage 5** – finalise guidelines and communications material (August 2017).

The governance structure for these guidelines were as follows:

- **Control group:** Andrew Allan, Manningham City Council and Paul Galvin, South East Water.
- **Steering committee:** Victorian Building Authority, Association of Hydraulic Services Consultants Australia, City of Melbourne, City of Port Phillip, City West Water, South East Water, Yarra Valley Water.
- **Reference group:** Melbourne Water, Department of Health and Human Services, Rainwater Harvesting Association of Australia, Council Alliance for a Sustainable Built Environment Strata Corporation Victoria, Municipal Association of Victoria, Sustainable Design Consultants, Department of Environment, Land, Water and Planning.

## Appendix B - Overview of requirements

|                                  | <b>Precinct</b><br>(e.g. Fishermans Bend)   | <b>Councils</b>   | <b>Water corporations</b>  |
|----------------------------------|---|---|--|
| <b>Process</b>                   | 1st reference   | 2nd reference   | 3rd reference  |
| <b>Water types</b>               | Rainwater, stormwater, recycled water and greywater   | Rainwater and stormwater  | Drinking, recycled water and sewage  |
| <b>Planning requirements</b>     | New buildings must install a third pipe to supply non-potable uses within the development, and rainwater  | Comply with Sustainability Management Plan to outline strategy for water sensitive urban design, onsite detention, and WELS (Water Efficiency Labelling and Standards) appliances   | Connection point and meter must be installed, irrespective of availability   |
| <b>End uses</b>                  | Third pipe for toilet flushing, fire services and irrigation. Rainwater suitable (pending risk and treatment review) for cooling and hot water  | Rainwater tank for toilet, laundry, irrigation, car washing and vegetable garden use  | Recycled water for toilet, irrigation, car washing, outdoor, fountains, laundry (Yarra Valley Water only), fire fighting (City West Water only) use  |
| <b>Storage</b>                   | Rainwater tanks with a capacity of 0.5 cubic metres per 10 sqm of roof area   | Onsite detention with a drain time specified by council. Rainwater tanks with a minimum size set through built environment sustainability scorecard (BESS), STORM and model for urban stormwater improvement conceptualisation (MUSIC) calculations | No onsite storage of recycled water except for recycled water break tanks  |
| <b>Metering</b>                  |   | Stormwater not metered  | Recycled water should be individually metered. Check meters may also be required. Consult water corporation. Drinking and recycled water to be metered at property boundary.                 |
| <b>Treatment</b>                 | Rainwater treatment may be specified and usually includes particulate filtering and UV. Stormwater treatment to satisfy best practice environmental management targets including total nitrogen, total phosphorus, total suspended solids | Rainwater treatment may be specified and usually includes particulate filtering and UV. Stormwater treatment to satisfy best practice environmental management targets including total nitrogen, total phosphorus, total suspended solids           |  |
| <b>Maintenance and reporting</b> | Annual maintenance  | Annual maintenance. No reporting required   |  |
| <b>Inspections</b>               |   |   | Inspections are required throughout the construction and commissioning stages. Typically this includes: main to meter and meter installation. Meter to structure rough-in and commissioning. |

All parties should contact their relevant water corporation to confirm requirements. All developments must comply with:

- Building Code of Australia.
- Plumbing Code of Australia (including regulations regarding cross connections).
- Department of Health and Human Services guidelines on rainwater use in urban communities. Guidelines for non-drinking applications in multi-residential, commercial and community facilities.
- Treatment methods; please consult with the relevant water corporation for appropriate treatment requirements.

## Appendix C – Hydraulic services checklist

Practitioners can use this checklist for assistance in delivering hydraulic services when developments include mandated recycled water and rainwater requirements.

Table 2. Checklist

|   | Theme                 | Question  | Relevant section in these guidelines |
|---|-----------------------|---|--------------------------------------|
| ✓ | Planning requirements | Have you confirmed that your development is within a mandated recycled water area?  | 1                                    |
| ✓ | Planning requirements | Have you downloaded all planning authority and water corporation requirements and engaged an expert to advise on how to comply?             | 1                                    |
| ✓ | Planning requirements | Have you classified all hard surfaces into roof, stormwater, and other impervious areas?  | 5                                    |
| ✓ | Planning requirements | Have you checked that tank storage sizes comply with both precinct and council requirements?  | 5                                    |
| ✓ | Design                | Have you reviewed the treatment requirements according to the end uses?   | 4                                    |
| ✓ | Design                | Have you confirmed with the water corporation that the treatment for any rainwater and stormwater systems are appropriate for the end uses? | 5                                    |
| ✓ | Metering              | Have you discussed the number, type and location of meters with the water corporation?  | 8                                    |
| ✓ | Inspections           | Have you scheduled the first inspection?  | 10                                   |

# Appendix D

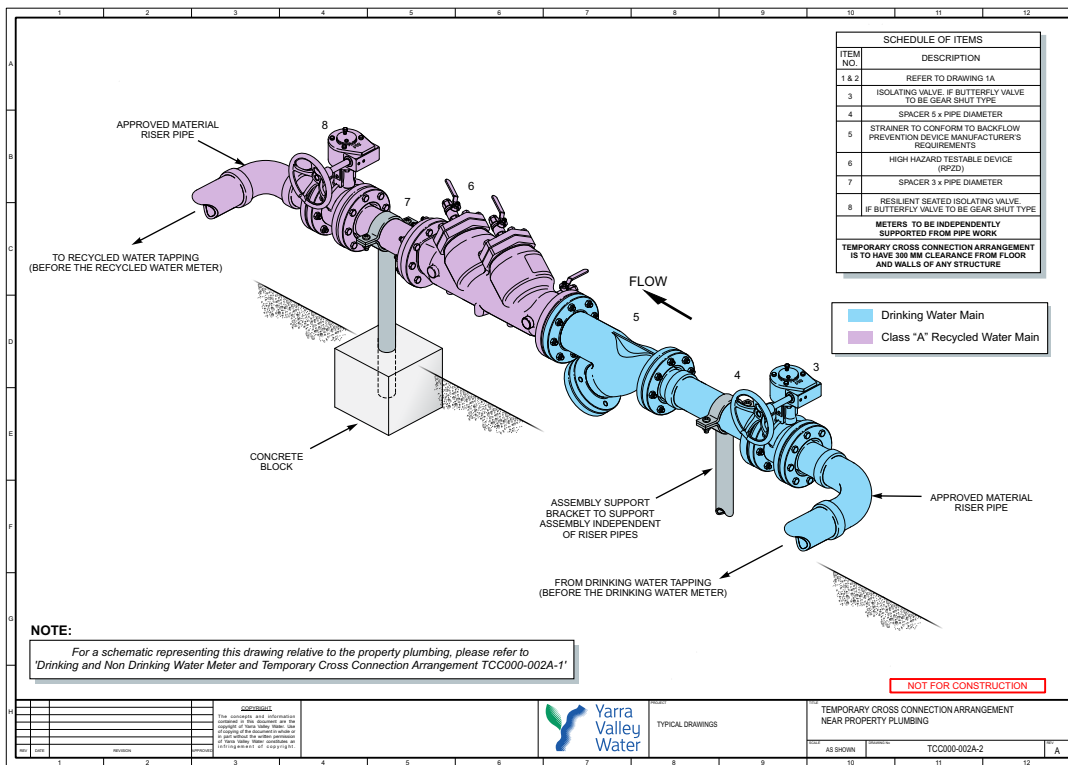
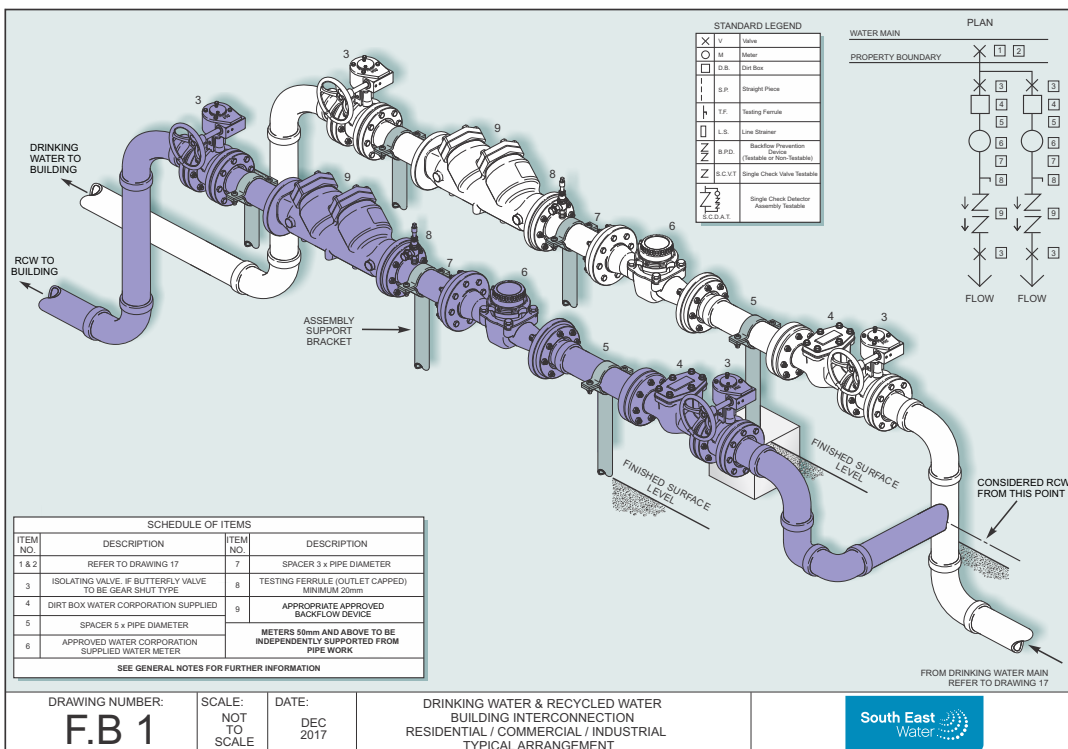


Figure 5: Typical drinking water and recycled water interconnection



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