



Pressure Sewer System

Planning & Development Guidelines

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1. Introduction

Coliban Water seeks to provide the best service at the least community cost. Generally this is achieved through the provision of conventional gravity sewer systems. However in areas where the topography or the environmental conditions prevent gravity systems being economically provided pressure sewers can provide an opportunity for an economical solution.

The purpose of these Planning and Development Guidelines is to set out the Coliban Water (CW) requirements for Pressure Sewer Systems (PSS) strategy development, design and reporting. This document should be read in conjunction with the Land Development Manual which sets out the Coliban Water requirements for sub-divisions and new connections. This document provides additional advice relevant to pressure sewer schemes but does not remove or reduce the requirements detailed in the Land Development manual

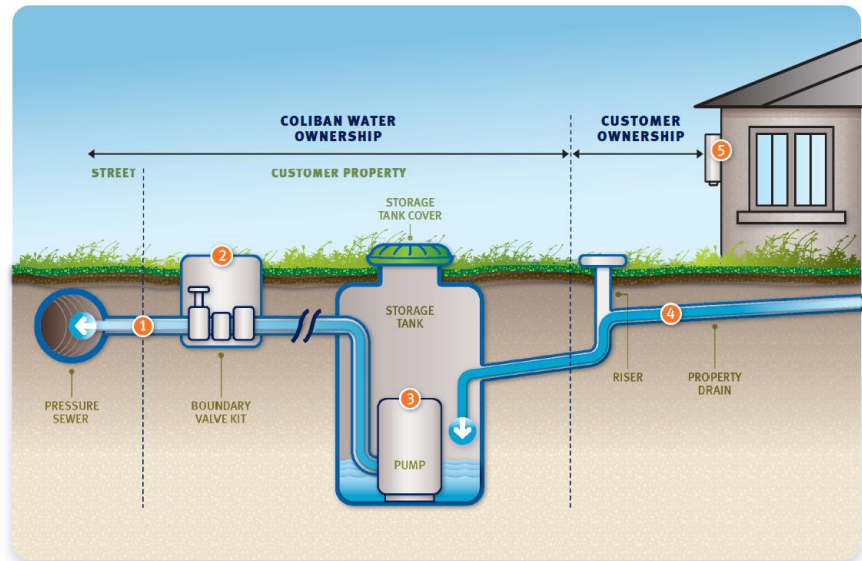
2. Definitions

- **Boundary Kit** On property asset installed at the front property boundary to provide connection to Coliban Water reticulated sewerage. Includes isolation valve.
- **CW** Coliban Regional Water Corporation (the Corporation)
- **Control Panel** Electrical control unit for the Pressure Sewer Unit located close to the electrical switchboard to remain accessible to Coliban Water for unrestricted access.
- **Developer Installed Works (DIW)** means the works to be designed and constructed according to Coliban Water's Letter of Conditions for the supply of water, recycled water (where applicable) and sewerage assets and infrastructure to service each Lot.
- **On-Property Assets:** Components of the PSS on the property, (refer to Figure 1 following), including:
 - Pump unit and associated electrics (PSU);
 - Property discharge line;
 - Boundary Valve Kit;
 - Telemetry connection (optional).
- **Letter of Conditions** is a response provided by Coliban Water that details the specific and minimum requirements for the provision of water, recycled water and sewerage infrastructure necessary to service a proposed development.
- **New Customer Contribution (NCC)** means an upfront payment levied by Coliban Water when a customer builds or develops a property and connects to Coliban Water's water, sewerage or recycled water network. Refer to [Land Development Manual](#) section 2.2 for further information.
- **PSS** Pressure Sewer System: This refers to the pressure sewer system as a whole, including the Pressure Sewer Unit, all related plumbing and electrical units including SCADA.
- **PSU** Pressure Sewer Unit: This refers to the pump unit and storage tank.
- **Reticulation Infrastructure:** Components of the PSS external to the property, including:
 - Pressure sewer lateral;
 - Pressure sewer pipeline (reticulation);
 - Tapping or connection point
 - Air valve and scour assemblies;
 - Outfall connection to gravity sewer.
- **SCADA:** Coliban Water's remote infrastructure monitoring system.
- **Serviced Property:** A property located within Coliban Water's sewer districts, fronted by a corporation main and the payment of relevant New Customer Contribution (NCC) and or pressure fees have been received by the Corporation.

PRESSURE SEWER SYSTEM COMPONENTS SCHEMATIC OVERVIEW

Pressure sewer systems are an economical and environmentally-friendly way of collecting, transporting and disposing of wastewater from households. This diagram outlines the key components of a pressure sewer system:

- 1 **House Service Line**
This is the line from the property that discharges to the pressure sewer system.
- 2 **Boundary Valve Kit**
This is the access point for maintenance and ensures wastewater cannot re-enter the property.
- 3 **Pumping Unit**
This is a below ground storage tank that manages waste from the property before it is pumped to the pressure sewer.
- 4 **Property Drain**
This pipe connects the house to the storage tank.
- 5 **Control Panel**
This electrical box controls the pumping unit.



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Figure 2-1 Typical Pressure Sewer System - Domestic Application

LEGEND

Property (House) Service Line

This pipe connects the pumping unit on the property to the pressure sewer in the street. It is the responsibility of the property owner to install this pipework from the pressure sewer unit to the boundary kit in accordance with AS 3500 and the Victorian Plumbing Regulations.

Boundary Valve Kit

Prevents wastewater which is already in the pressure sewer from re-entering the property, and enables maintenance staff to isolate individual properties from the system in the event of an emergency.

Pumping Unit (PSU)

This includes a small pump, storage tank and level monitors which are all installed underground so that only the top (or lid) of the storage tank is visible.

If required, a pressure sensor may also be fitted to the discharge pipeline and linked to the control panel to help control the operation of the pump.

Coliban Water prefers that the pump unit to be located at the front of properties for ease of future access for maintenance and repair. [See section 10 Easements](#)

Property Drain

This is the drainage pipework connecting the discharge from the dwelling to the pump system. It is the responsibility of the property owner to install and maintain this pipework up to the capped Inspection Opening (I/O) in accordance with AS 3500 and the Victorian Plumbing Regulations 1996.

Control Panel

This is a small box which is ideally mounted to the wall of the house containing all the electrical controls for the pumping unit. This will be connected to an in home alert system including both an audible and visual alarm systems.

The control panel must be accessible at all times by Coliban Water where its access shall not be hindered by any object (i.e. gates, fencing & vegetation).

Capacity is to be provided for the installation (now or in future) of telemetry and pressure sensor technology. This may require the installation of a suitable antenna. Details of the telemetry and the pressure sensors technology will be subject to a specification from Coliban Water's Data and Systems Operating Team.

Alarm System (not shown)

The alarm system for the unit must be located within the home, in a suitable position that will attract the attention of the property owner. The alarm should be able to be set to an unobtrusive level by the home owner and should include basic instructions on contact for Coliban Water.

3. General

3.1 Responsibility for service provision

In relation to the provision of a PSS, the developer is responsible for the provision of the reticulated assets and the costs of connecting these assets to Coliban Water. In this instance this includes the provision of:

- a) Reticulated PSS infrastructure to Coliban Water requirements
- b) Property Service Line
- c) Boundary Valve Kit

The developer is also responsible to make the home builder aware of the need to provide an appropriately designed:

- i) Property Drain and
- ii) The in home alarm system
- iii) Provision of electrical circuit to Control Panel location and underground power supply to Pumping Unit location

Ongoing power supply connection and costs are the responsibility of the property owner.

Generally the home builder will coordinate the installation of all assets however the cost of the gifted assets (a to c) is retained by the developer.

3.2 New Customer Contributions

The Developer shall pay a negotiated New Customer Contribution (NCC) charge, applicable at the time, in respect of all newly created allotments serviced by pressure sewer.

The negotiated NCC will include the cost to supply, install and commission all pressure sewer units for each allotment requiring pressure sewer in the development. The details regarding the value of this charge will be detailed within Coliban Water's 'Letter of Conditions' provided in response to a design submission by a consulting engineer registered with Coliban Water for the provision of developer installed works is discussed further in [Section 12.1](#).

3.3 Coliban Water Approval

Where a planning permit is required, Coliban water will consider the appropriateness of a Pressure Sewer Scheme (PSS). As a guide, Coliban Water will consider a PSS for the proposed development if any of the following conditions are met:

1. The development cannot drain utilising only a gravity pipe network to an adjacent or nearby system.

2. There are particular environmental constraints in the area to be sewered which could be mitigated through construction of a pressure sewer system. Examples are:
 - a) highly volatile soil conditions,
 - b) high water tables (with elevated risk of infiltration of groundwater),
 - c) topography that is very hilly so that design guidelines cannot be achieved or
 - d) very flat areas which may require very deep assets.
3. There are individual properties or small clusters of properties which cannot be economically serviced by the existing sewer system in that area.
4. Coliban Water's augmentation plans or servicing strategy specifies its use in a particular region.
5. The developer may request a Pressure Sewer Service:
 - a) as a uniform servicing option only, and/or
 - b) as a partial servicing option in combination with gravity sewers.

4. Existing Services

For existing developed properties, the property owner shall arrange the installation of the on-property PSS assets, at the cost of the property owner.

The property owner is required to apply to Coliban Water for connection to sewer with a pressure sewer system pursuant to Section 145 of the Water Act 1989.

The installation of the on-property PSS assets shall be performed by a contractor(s) approved by Coliban Water.

As there would not have been any previous contribution to the cost of installation of on-property assets by a developer, the Corporation will not contribute to the cost of the on-property works.

The Corporation requires the submission of a preliminary design plan showing the proposed location of the dwelling (serviced structure), pump unit, control panel and discharge pipeline with the request for connection to sewer. This is to be reviewed and endorsed prior to Coliban Water approving connection to sewer with a pressure sewer system.

The Corporation will, in turn, issue the property owner a notice under Section 145 of the Water Act 1989 which includes the Corporation's terms and conditions for connecting to sewer with a pressure sewer system.

The property owner will also be responsible for the installation of the property drain between the dwelling and the PSS collection pump assembly, which is to be installed by a licensed plumber in accordance with AS 3500 and the Corporation's requirements. Requirements include the submission of a drainage plan detailing all the property drains, the location of the PSS and the discharge pipeline to the property boundary.

4.1 Existing PSS Serviced Properties

For all existing pressure sewer serviced properties, the present conditions and/or agreement with Coliban Water still applies.

Landowners have the ability to transfer existing pressure sewers to Coliban Water to own and manage as its asset given that it meets Coliban Water's standards. This is at the discretion of Coliban Water.

Landowners have the ability to upgrade or replace existing pressure sewers to Coliban Water standards which may lead to Coliban Water taking ownership and maintenance of the asset.

4.1.1 Approval for Relocation

A property owner must obtain the written approval of the Corporation before any PSS assets are relocated and Coliban Water consents to the issuing of a PIC number. This will require the submission of a preliminary design plan showing the proposed relocation works

required, including dwelling (serviced structure), pump unit, control panel and discharge pipeline. All relocated assets are subject to an inspection to gain approval from Coliban Water.

4.1.2 Costs of Relocation

The Corporation will not contribute financially to the cost of any relocation.

4.1.3 Contractors

The relocation is to be completed by a licensed plumber and a qualified electrician, in accordance with the installation instructions.

An as constructed drainage plan showing the location of all internal drains, pump unit, control panel, discharge line and property boundary kit is to be provided by the plumber at the completion of the works. This is to include provision of tie distances, depths, off set distances, structure outlines, property boundaries, etc., to enable location of all pipework and fixtures in the future.

5. Residential Development or Subdivision

The WSAA code for pressure systems incorporates advice with respect to Septic Tank Effluent Drain (STED) and Septic Tank Effluent Pump (STEP) systems as well as the Pressure Sewer Schemes described here.

Management of the septic tank associated with STEP/D systems remains the responsibility of the home owner as per the Section 4.1 of the [Land Development Manual](#)

6. Industrial/Commercial

The provision of sewerage services using pumped systems is acceptable for commercial and industrial developments where the proponent can demonstrate that the available products meet the design requirements.

Trade waste customers may need to consider the effect of the discharge characteristics on the pumping unit along with the volume of flow. Coliban Water will consider each application on its merits and set appropriate conditions.

7. Multi-Unit Developments

See the [Land Development Manual](#) and the relevant WSAA and Coliban Water specifications.

8. High Rise

See the [Land Development Manual](#) and the relevant WSAA and Coliban Water specifications.

9. Boundary sewers and water mains that service two developments

See the [Land Development Manual](#) and the relevant WSAA and Coliban Water specifications.

10. Easements and Reserves

Coliban Water does not generally allow pressure mains on private property. Where there is evidence that the environmental benefit of sewerage provision is critical and there is no practical way to avoid the placement of a pressure sewer in private land refer to Section 3.7.1 of the Pressure Sewer Code of Australia, 2007, Part 1.

Easements may be provided on new lots covering the location for PSS and Boundary kit. Details of this requirement will be specified within a Letter of Conditions provided by Coliban Water to the developer. Clear access must be maintained by the property owner allowing Coliban Water and its contractor's unrestricted access to the PSS for maintenance purposes.

11. Connections

11.1 Pressure Sewer Connection

Connections to the reticulated pressure sewer should be undertaken in accordance with Pressure Sewer Code of Australia 2007 (WSA 07-2007-1.1) and Coliban Water's Supplement to that code.

11.1.1 Swimming Pools & Spas

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

Customers with a spa are to install a flow restrictor to the drain that limits the discharge rate to not more than 0.5L/s. This flow restrictor shall be installed by a licensed plumber.

Refer to section 4.4.3 Coliban Water Supplement to WSA 07-2007-1.1

11.2 Intervening Properties

Where reticulation infrastructure, installed by the developer, fronts properties outside the development that could benefit from the works, the owners of those properties will not be under an obligation to contribute to the cost of the works but shall be entitled to connect to the works (at their cost) in due course.

The developer is encouraged, however, to negotiate with intervening landowners to seek their cooperation in contributing to the cost of the works.

12. Developer Installed Works

12.1 Who pays for the work

In addition to all responsibilities described in section 11.3 of the Land Development Manual, the developer is responsible for the provision of the

- a) Reticulated PSS infrastructure in accordance with Coliban Water's developer installed works (DIW) process and including:
- b) Reticulated sewer rising main and connection to Coliban Waters sewer services according to Coliban Water requirements
- c) Property Service Line
- d) Boundary Valve Kit

For Coliban Water to consider lots in a proposed subdivision to "be serviced for sewerage" and consent to compliance being issued a charge must be collected from the developer which recovers the costs of installing the on property assets including pressure sewer pumping units at some time in the future when the property owner applies to connect to our services. This charge will be collected as part of a negotiated NCC with the developer as explained above in [Section 3.2](#).

Funding from the developer will be held by Coliban Water until the customers are ready to connect – at which time a Coliban Water nominated supplier to install the pumping unit, control box and internal house alarm would be engaged.

The value of the New Customer Contribution charge (as part of the negotiated NCC) will be dependent upon the contracted amount agreed with Coliban Water's nominated supplier plus a

management fee for the cost to install the on-property assets and the number of properties within the development to be serviced by the PSS.

New Customer Contribution (NCC) applicable to each lot within a development serviced by a pressure sewer system will be confirmed within a Letter of Conditions or Conditions of Connection provided by Coliban Water.

12.2 Registered Providers

Coliban Water reserves the right to stipulate a registered provider for the provision and installation of the PSS. The developer should make home builders clear that it is their responsibility to work with the registered provider to coordinate the installation in conjunction with the home builder's tradesmen.

In the event that Coliban Water does not have a registered provider list products that meet the WSA Pressure Sewer code, 2007 (WSA 07-2007-1.1) and Coliban Water's Supplement to that code will be acceptable, and will be stated in the letter of conditions.

13. Overview

See the Land Development manual and the relevant WSA and Coliban Water specifications

13.1 Strategy Development

The Developer shall develop a servicing strategy and present it to Coliban Water. The servicing strategy is to address the requirements in the Planning and Design Approach Table 1.3 of WSA-02 Part 1: Planning and Design, such as environmental constraints, overflows, septicity, odour control, grades, depth, sizing, connectivity and future expansion. The level of detail required for these depends on the size of the PSS and the capacity of the receiving system to take the flows as advised by the Letter of Conditions or similar. The level of detail required is to be sufficient such that minimal work is required to progress the strategy to concept design/drawings.

Minimum requirements are:

- a) The estimated flows are such that the network can be sized appropriately through static or dynamic modelling.
- b) The detention times in the network have been estimated so that septicity and potential odour issues and their locations can be identified.
- c) The extent of potential odour issues and the viable options for addressing these have been undertaken at the strategy phase in consultation with Coliban Water so that the costs associated with implementing mitigation measures can be included in the options assessment.
- d) A preliminary assessment of air entrapment and ventilation options has been undertaken.
- e) Review of development staging and associated issues to avoid the need for flushing has been clearly documented.
- f) Reliability of power supply and bushfire risks are presented.

As a minimum, the Developer must demonstrate to Coliban Water that the proposed PSS will:

- a) Satisfy the WSA 07-2007-1.1 – Pressure Sewerage Code of Australia and Coliban Water's WSA 07 Supplement.
- b) Remain full to avoid air entrapment issues.
- c) Achieve minimum pipe self-cleansing velocities of 0.6 m/s.
- d) Enable each property to drain to the collection chamber location which is to be located preferably at the front of the property within 3 m from the Council approved front property set-back; Coliban Water approval is required for any location other than described above.
- e) Have pump run times that remain within an acceptable range.

- f) Have adequate system failure recovery performance.
- g) Accommodate a range of inflows above and below the adopted 'design' values.
- h) Have pipeline detention times been calculated and odour and septicity management requirements established and costed.
- i) Reasonably accommodate the requirements for on-site emergency storage.
- j) Demonstrate that system operation constraints at each foreseeable stage of development will not make implementation of the PSS impractical.
- k) Establish that system performance remains within acceptable limits with sensitivity testing of key assumptions (scenarios to be agreed with Coliban Water).

13.2 Odour Control

All feasibility reports submitted are to address the generation of odour from the pressure sewer system and provide approved engineering solutions at the developer's expense, to mitigate any odours. This may also include a contribution to the ongoing maintenance of these systems.

To assist with odour control, the preferred discharge point for a pressure sewer main is to be directly into the wet well of an existing sewage pump station or at the discretion of Coliban Water. The connection shall be designed and built to minimise the drop into the wet well and make the flow path as smooth as practicable. It must also allow access for jetting/cleaning if required and may also include surface treatment of corrosion resistant coating.

13.3 Inflow and Infiltration (I&I) Monitoring

New reticulation rising mains required to service a PSS development will be subject to Inflow and Infiltration analysis. Monitors will be installed by Coliban Water to monitor I&I in the network at the discretion of Coliban Water's Data and Operations System Team.

In the event that there is an issue, Coliban Water reserves the right to monitor each individual household for the cause of I&I in the network.

14. Pre-Construction

See the [Land Development Manual](#) and the relevant WSAA and Coliban Water specifications

15. Construction

For a PSS the requirements for the concept and detail design phases are identified in the flow chart that is **Figure 15-1** below.

15.1 Construction Process

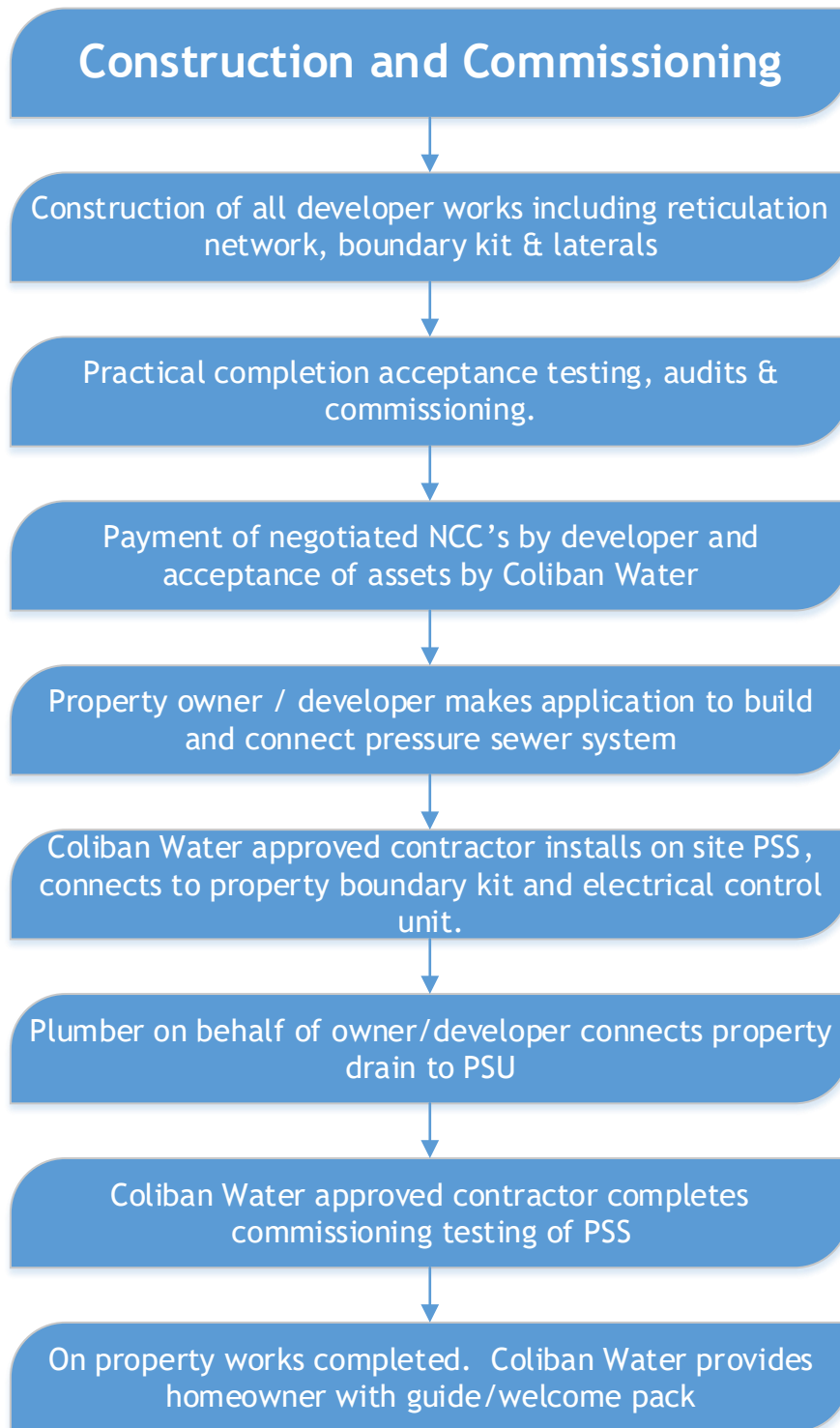


Figure 15-1 Construction Process

15.2 Properties in New Developments

For newly developed properties, the status of the provision of sewer to the property at the time of application for each property to connect is:

- The developer has installed the pressure sewer pipeline that fronts the property and it is connected to the Coliban Water sewer reticulation system;
- The developer has paid both the negotiated New Customer Contribution (NCC) including the contribution to Coliban Water for future installation of the pressure sewer unit on the property by the owner;
- The property is regarded as a serviced property by Coliban Water and as such the property will attract a service availability charge for sewer services.
- Coliban Water's information statement provided for the sale of the property to a prospective owner will have indicated that the property is to be serviced by a pressure sewer system when connected to the sewer in the future; and
- The status of the property connection should be identified on the Corporation's customer relationship database and GIS systems as being a vacant lot, pressure sewer terms and conditions applying, with the status of charges previously paid for the negotiated New Customer Contribution (NCC).

To arrange for the installation of the pressure sewer unit and connection to the Corporation's sewer reticulation system the following is required:

- The property owner shall apply to Coliban Water for connection to sewer with a pressure sewer system pursuant to Section 145 of the Water Act 1989 by accessing our [Water & Sewer Connection online application form](#);
- The property owner shall provide Coliban Water with a design for the installation of the pressure sewer unit by a contractor(s) approved by Coliban Water;
- The owner's licensed plumber takes out a Plumbing Industry Commission (PIC) consent number for the installation of the property drains for the property and provides a preliminary design plan showing the proposed location of the dwelling (serviced structure), pump unit, control panel and discharge pipeline.
- Upon Coliban Water approving the design plan for installation the Corporation will approve connection to sewer to proceed.
- The property owner is responsible for the installation of the property drain between the dwelling and the PSS collection pump assembly, which is to be installed by a licensed plumber in accordance with AS3500 and the Corporation's requirements.
- To finalise the connection of the property to sewer an as-constructed drainage plan showing the location of all internal drains, pump unit, control panel, discharge line and property boundary kit shall be provided to Coliban Water. This is to include provision of tie distances, depths, off set distances, structure outlines, property boundaries, etc., to enable location of all pipework and fixtures in the future.

Upon receipt of this information, Coliban Water will in turn:

- Issue a notice under Section 145 of the Water Act 1989 to the property owner which includes the Corporation's terms and conditions for connecting to sewer with pressure sewer; and
- Approve connection of the property.
- The isolation valve in the boundary connection kit is not to be opened until this process is finalised.

16. Defects Liability

It is likely that the defects liability period may be extended in the event of a PSS

17. Responding to faults

See the [Land Development Manual](#) and the relevant WSAA and Coliban Water specifications.

18. Shared Assets

18.1 Residential and Commercial Properties

All residential and commercial properties shall have separate on-property assets upstream of the property boundary box. The Corporation will not allow the sharing of on-property assets for residential and commercial properties.

18.2 Unit-Type Developments

The Corporation however, may consider the sharing of pump units for unit type developments. The ownership, loadings, subdivision easements, reserves, etc., need to be included in the feasibility report provided for the proposal.