Plumbing Handbook

A guide to working with the Water Corporation

As endorsed by

MASTER BUILDERS WESTERN AUSTRALIA

WATER CORPORATION

Introduction

This handbook has been produced by the Water Corporation to assist plumbers and builders to work with the Corporation and our regulators to deliver the best possible outcomes for our customers, by protecting public health, as well as public and privately owned assets.

We recognise the need for government bodies, utilities and industry to work together to identify relevant areas of responsibility within the plumbing industry and the services delivered to the community.

In addition to their customer obligations, plumbers also have statutory obligations in protecting water and sewerage infrastructure. Laws and By-Laws relevant to Water Corporation's operations and assets that set out these obligations are listed within this publication, to guide plumbers and builders to other documents they need to understand, when delivering plumbing services.

Information provided within this handbook was accurate at the time of print. Content updates will be made to the online version as required, available at **www.watercorporation.com.au** go to Your Business, Builders and Plumbers and click on Building Services Publications.

To be notified of updates to the handbook email **building.services@watercorporation.com.au** with Plumbing Handbook Updates in the subject line.

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Definitions

Licensed Plumber

Is a person who holds a plumbing contractor's licence under the Water Services Licensing (Plumbers Licensing and Plumbing Standards) Regulations 2000.

Licensed Drainer

Is a person who holds a tradesperson's licence (drainage plumbing) licence under the Water Services Licensing (Plumbers Licensing and Plumbing Standards) Regulations 2000.

Flimsy

The term flimsy is used to describe the 'as constructed' plan of the internal plumbing constructed by a plumber to connect a house to the sewer mains. Plumbers are legally obliged to provide the Water Corporation with the 'as constructed' plan or flimsy within 5 days of completing plumbing work.

E-Plans

An e-plan is an extract from the Water Corporation's mapping system which contains detailed information about water, wastewater and drainage mains. E-plans are essential for plumbers when they need to locate sewer connection points.

Land owners proposing a building development or connecting to Water Corporation water, sewer or drainage lines are required by law to make an application to the Corporation. Applications can be lodged online, via fax, post or at one of our offices.

BuilderNet©

BuilderNet©, our online lodgement system, is the quickest and easiest way to lodge:

- building applications (including sewer connections);
- water service application;
- sewer application; and
- requests for e-plans and flimsies.

BuilderNet© is available free of charge, with the exception of standard Water Corporation fees and charges applicable to building and service applications, and requests for E-plans and Flimsies.

Please refer to Section 1 – Connection to Water Corporation Mains (pg 6), for further information about Water Corporation pre-connection requirements.

Building Applications

Submit quotations and approvals for:

- minor plans for non-habitable structures (e.g. swimming pools, patios, gazebos, garages,
- carports and retaining walls);
- alterations or additions to existing buildings; and
- multi-residential or commercial developments (including associated water service connections and sewer junctions).

These requests are typically submitted by builders, hydraulic consultants and architects.

Water and Sewer Applications

You can also request the following:

- new water meters or services (e.g. fire services, temporary services and sub-meters);
- work on existing water meters or services (e.g. relocations, modifications, disconnections);
- new sewer junctions;

- work on existing sewer services (e.g. alterations to access chambers, cutting and sealing pipes, and installing spigots); and l sewer conversions, connecting properties to main sewers.
- These requests are typically submitted by builders,plumbers, consulting engineers and developers.

E-Plans and Flimsies

Both types of application can be obtained via *BuilderNet*© for most properties, provided electronically in PDF format.

E-plans, show the location of water and sewer mains, system connections and other Water Corporation infrastructure near properties. They are particularly useful to plumbers,

surveyors, developers, builders, consulting engineers, hydraulic consultants, architects, local government officers and real estate agents.

Flimsys feature diagrams of property sewers and show the location of internal plumbing and are particularly useful for plumbers.

How to Register

Go to **www.watercorporation.com.au** under Quick Links click on *BuilderNet*©*,* select New Regular User and complete the form. Registration is recommended for customers that intend to use the system on a regular basis.

For further information, visit the website or contact **13 13 95**

1 Connection to Water Corporation Mains

It is an offence to interfere with, alter or connect to a Water Corporation water or sewer main without prior approval from the Corporation.

1.1 Water Supply Connections

Connections to Water Corporation mains are provided by a meter and builders standpipe, which must be installed by the Corporation. It is an offence to make a connection, or provide water to another property, without the approval of the Corporation.

Missing or damaged meters or damage to water services or pipe work must be reported to the Water Corporation on 13 13 75.

1.2 Fire Services

Fire services may be provided for the purpose of supplying water for fire fighting and the necessary testing of fire fighting equipment. These services are provided by the Corporation under concessional conditions and are subject to strict conditions of use specified under By-Law 6.4.6 of the Metropolitan Water Supply, Sewerage and Drainage By-Laws 1981 and By-Law 98 of the Country Areas Water Supply By-Laws 1957.

Unauthorised Use

Examples include washing down trucks and driveways, connecting domestic supply (including reticulation) via the fire service. If you have identified a cross connection, you must advise the customer that use of water from a fire service for purposes other than fire fighting is illegal.

Fire services are rated as a medium hazard for backflow protection (see Section 2).

1.3 Ornamental Fountains and Swimming Pools

Connection of a water service to an ornamental fountain, swimming pool, bathing or wading pool, fish pond, ornamental lake or receptacle of a similar nature is not permitted without written permission of the Corporation.

These types of connections may provide a backflow risk and require assessment and approval prior to installation.

1.4 Flow Control Devices

Flow control devices (FCDs) have been installed in water services for all non-residential services since 1991.

The device limits the water supply flow rate to a flow applied for by the property owner and what has been paid for through headworks contributions.

Note: FCDs control the volume of water (litres) to a property and will not reduce high water pressure, a pressure reducing valve (PRV) is required for this.

Typical flow control devices, image courtesy of Maric Flow Control

FCDs are located on the downstream face of a meter and it is the plumber's responsibility to ensure that it remains in place when the internal pipework is fixed to the meter.

It is an offence to tamper with a meter, including the removal of the FCD. FCDs may be the cause of a flow lower than is required by the property owner. In this case, the customer will need to apply to the Water Corporation for a larger flow and pay the appropriate headworks contributions.

FCDs can potentially cause turbulence that affects the accuracy of turbine type meters if they are placed upstream of the meter. To minimise the risk, the FCD must be placed a minimum of one metre from the meter. Prior to making an application for a water supply connection the builders/plumber must ensure there is adequate space to install the necessary pipework, between the property boundary and any buildings to accommodate the required spacing between the FCD and the meter.

1.5 Sewer Connections

Connections to Water Corporation sewer mains are provided via a connection point, which must be installed or supervised by a Water Corporation employee. It is an offence to make a connection without the approval of the Corporation. There is a risk of asphyxiation if the correct precautions are not taken.

In addition to obtaining Water Corporation approval to connect to mains prior to undertaking any plumbing work, a licensed plumber must submit the necessary documentation to the Plumbers Licensing Board, including:

- notice of intention
- compliance certificate
- plumbing fee

The Plumbers Licensing Board must also be advised once works have been completed. The licensed plumber must submit an 'as constructed' plan (flimsy) of major plumbing work to the Water Corporation within five days of completing the work. For minor plumbing work, plans must be submitted within five days of the end of the month works were completed in.

It is essential that the plumber/builder confirms there is adequate fall to the sewer main prior to starting building construction. The conditions a builder must comply with are included with the approval provided by the Water Corporation.

Other important requirements are:

- confirm location of the sewer connection point;
- provide for overflow relief;
- Corporation access chambers must be kept clear for ease of access;
- maintain minimum cover levels on Corporation sewer mains;
- exercise caution when changing site levels;
- verify the location of existing pipe work prior to construction or connection;
- obtain separate approval where industrial or commercial waste will be discharged; (see Section 6); and
- provide backflow prevention devices for specified industrial and commercial developments (see Section 2).

Boundary/Running Traps

Boundary traps shall be installed on all property connections where the junction is located on:

- sewers that are 300mm or larger in diameter;
- IO or IS sewers where the downstream sewer is 300mm or larger in diameter; and
- sewers, regardless of diameter, that convey a pumped discharge.

As per Wastewater Manual Volume 1 Part 4, Section 10.4.3. Refer to Water Corporation drawing AA01-61-2 and in accordance with AS/NZS 3500 Part 2, clause 4.4.

For further information about the provision of boundary traps on property connections please contact Water Corporation Building Services on **13 13 95**.

Gullies in Flood Prone Areas

All external gullies in flood prone areas, including the North West Region (North of 26¡ South), must be fitted with “pop up” covers.

1.6 Reporting of Lost Sewer Junctions

The builder/plumber is required to confirm the location and depth of a sewer connection point prior to work commencing. The Water Corporation provides a diagram showing the location of sewer connection points (junctions) at the time an application to connect is made. When establishing the position of the connection point you must be particularly careful where the connection is relatively long or where there are “in and up” measurements provided.

On occasions plumbers experience difficulty in locating the junction (see Section 3 for information on how to interpret Water Corporation plans). The following explains the process and any pre-requisite actions for reporting a lost sewer junction.

Prior to reporting a lost junction, you must confirm that:

1. You have valid and current approval from the Water Corporation to connect to the sewer.
2. You have the name of the licensed plumber responsible for the site.
3. You have excavated at least 1 metre either side of the given measurement and 0.6 meters deeper than the depth shown on the e-plan.
   Note: report of a lost junction will only be accepted from the licensed or registered plumber responsible for the site.

All reports shall be made by contacting the Water Corporation on **13 13 95**.

You will be asked to confirm that the pre-requisite steps have been undertaken.

You will be required to accept that the Corporation may seek to recover any costs should the junction be located within the correct limits.

Where the excavation can be safely secured you will be required to do so pending resolution.*

Where the excavation cannot be secured you will be required to backfill. **

On receipt of a Lost Junction Report the Corporation undertakes to expedite a resolution.

You will be advised at the time of making a report of the likely resolution date.

The Water Corporation will not be able to assist if the plumber/builder has not followed this process, there is no record of a current application to connect to the sewer and a copy of the plan is not available on site.

- The licensed plumber is responsible for the safety of site excavations at all times.

** Prior to backfilling the excavation it is recommended that photographs are taken to support of your Lost Junction Report.

1.7 As Constructed Plans (Flimsies)

The provision of flimsies detailing plumbing work assists in sewer maintenance and allows the Water Corporation to manage discharge of waste into sewer mains.

Plumbers have a legal obligation to provide this information, and while many regulatory responsibilities have been transferred to the Plumbers Licensing Board plumbers are still required to submit sewer flimsy information to the Corporation.

The following Water Corporation by-laws require plumbers to submit flimsy drawings of plumbing work to the Corporation within 5 days of completion of any major drainage

plumbing work:

- By-Law 30.9 of the Metropolitan Water Supply, Sewerage and Drainage By-Laws 1981
- By-Law 29A of the Country Towns Sewerage By-Laws 1952

Within the Perth metropolitan area, flimsies submitted to the Plumbers Licensing Board will be forwarded to the Water Corporation.

Care must be taken when preparing the flimsy plan to ensure the dimensions are accurate and legible. It is the plumber’s responsibility to ensure the accuracy of the plan, and it is good

practice to provide the land owsner with a copy of the plan with their copy of the Completion and Compliance certificate.

Preparation and Interpretation of Property Sewer Plans

Three important components required to interpret a flimsy property sewer plan:

- Abbreviations
- Datum points and
- Inspection openings.

Abbreviations

The following abbreviations are used by the plumbing industry to indicate plumbing fixtures and other important aspects of the drainage system.

WC Water closet

UVP Upstream vent pipe

S Kitchen sink

ORG Overflow relief gully

B Lavatory basin

IS Inspection shaft

Bth Bath

RS Rising shaft

Tr(L) Wash trough

Ur Urinal

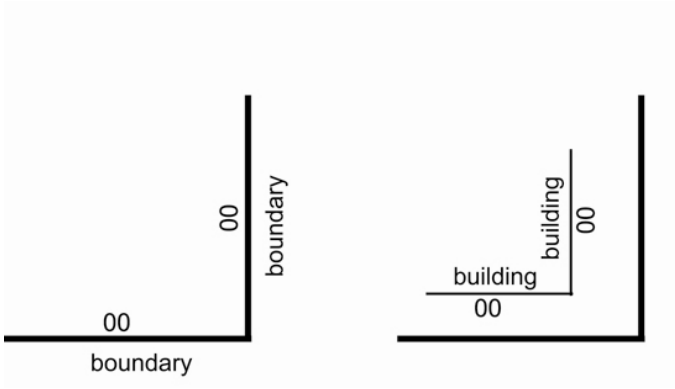
SOB Square on back

Datum Points

Fixed starting points for locating an opening in a property sewer. Although buildings may be used as datum points, it is preferred that the boundary is used and building offsets are shown together with the pipe locations.

- Datum points are indicated as 00
- There are always two datum points

Datum points must be taken from a permanent location, that is a main building or boundary fence, but the boundary is preferred.

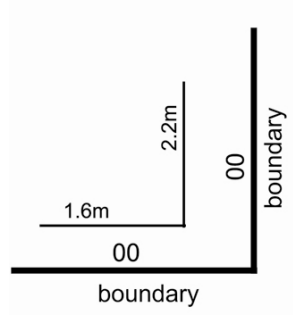


Inspection Openings

An opening in the property sewer for maintenance purposes

- Inspection openings are indicated as IO
- Rising shafts are indicated as RS
- Inspection openings can be located by reading the appropriate two measurements from the datum points.

Note: IS, RS, or IS SOB is the connection point to the Water Corporation main sewer. The 'cover' indicates the depth of the property sewer at that point.



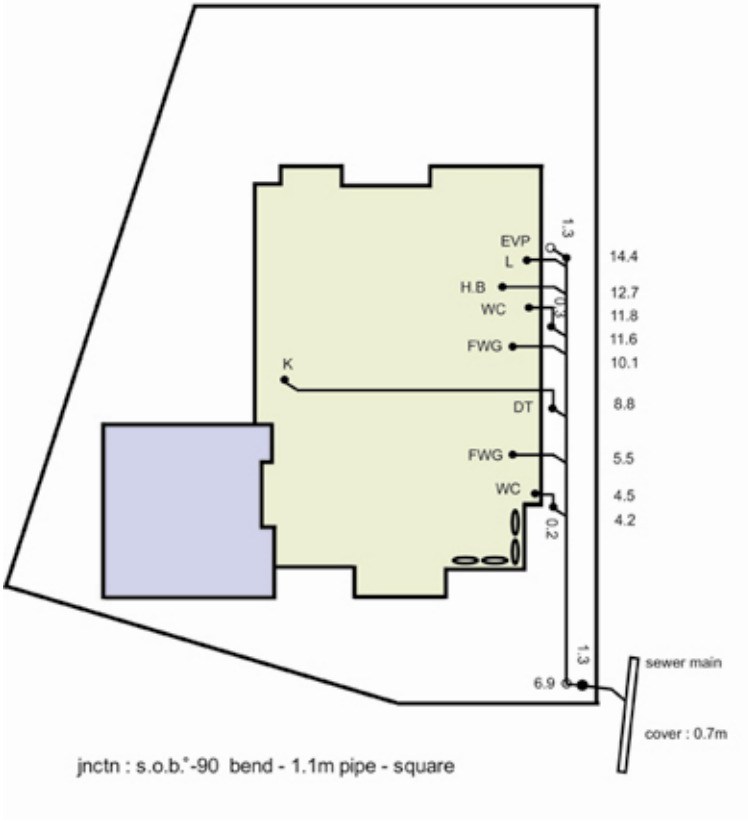
The diagram below should be read in conjunction with this instruction.

AS CONSTRUCTED

PLEASE PRINT CLEARLY	LICENSED PLUMBER'S NAME	FOR OFFICE USE ONLY
ST NO. HOUSE NO.		F.B FOLIO
STREET		PAGE
TOWN/ SUBURB		RATING DISTRICT
OWNER'S NAME	LICENSE NUMBER	ASSESSMENT No.
		CERTIFICATE No.

I CERTIFY THAT THIS PLAN SHOWS THE LAYOUT AND DIMENSIONS OF THE PROPERTY SEWER CONSTRUCTED BY ME OR UNDER MY SUPERVISION AT THE ABOVE ADDRESS SHOWN.

LICENSED PLUMBER'S SIGNATURE _____ DATE: __/__/__



1.8 Property Connections to Vacuum Wastewater Systems

Gravity sewerage systems are preferred to service properties. However, at times a gravity flow connection from a property is not possible. In such cases, the Water Corporation may allow an alternate method to connect the property to its wastewater system, such as a vacuum wastewater system.

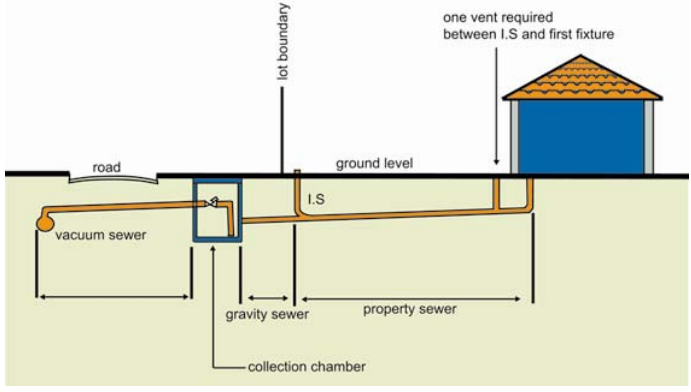
This type of wastewater system commences with conventional gravity house drainage, with a short length of gravity sewerage main that is connected to a collection chamber. The collection chamber has an interface valve connected to the vacuum main. When the depth of stored wastewater reaches a certain level a pneumatic sensor is triggered, allowing the contents of the chamber to pass into the vacuum sewer.

The application process for connecting a property to a vacuum wastewater system is the same as connecting a property to a gravity sewer.

However, the Australian Standard AS/NZS 3500 Part 2 clause 3.18 specifies installation requirements. Licensed plumbers are expected to be aware of these requirements.

The diagram below illustrates a connection where the collection chamber is located outside the property boundary.

If you intend to connect anything other than a single residence, such as commercial or industrial properties, to a vacuum wastewater system you should obtain advice from the Water Corporation on **13 13 95**.



2 Backflow Protection

An ongoing threat to the quality of Water Corporation's drinking water supply is the flow of water backwards from a customer's property through their property's water service connection (fire services included).

This water may be contaminated by the activities carried out at the property, and may cause death, health problems or an inconvenience to persons ingesting or using the water.

2.1 What Is Backflow?

A reversal of the normal direction of water flow in a water supply plumbing system. It occurs when the water delivery main is at a lower pressure than the internal plumbing system (backsiphonage). Backsiphonage can occur when there is a burst or ruptured main, or due to excessive demand during fire fighting operations or other periods of high demand.

Backflow can also occur if a pump (such as a bore pump) is cross connected to the internal water plumbing system, and is pumping bore water at a higher pressure than the water mains pressure (backpressure).

If a property's drinking water supply is inadvertently interconnected with a source of pollution, either through a cross connection or simply a hose submerged in a container of liquid, then these pollutants could enter the water supply when there is an overpressure on the private property side or a sudden drop in water mains pressure.

2.2 Backflow Flow Prevention Policy

Water Corporation's Backflow Flow Prevention Policy requires the installation of approved backflow prevention devices at the boundary of every water service connection to a property (including fire services). This Policy is supported by relevant legislation and plumbing standards.

2.3 Backflow Prevention for New Developments, Redevelopments and Changed Water Services

At the time of approval of a building development application, redevelopment or changes to existing water services the builder/developer will be informed of the property's risk rating.

Site-specific activity will determine the final level of backflow risk and for certain commercial and industrial processes may default the property risk rating to high.

The following building application types will be assessed for backflow risk:

- new developments;
- redevelopments of existing facilities;
- changes to any existing water service;
- additions/alterations (includes where no water service applications are included, applicable only if the property has existing meters);
- multiple residence and/or commercial (includes where no water service applications are included, applicable only if the property has existing meters);
- any applications that involve a fire service; and
- any applications where the minimum service size applied for is greater than 25mm service size (except fire services, where the advice applies regardless of the service size).
- Building application approvals also include:
- a backflow approval sticker as part of the approved site plan document;
- the applicable backflow information sheet (directed towards the applicant), based on the assessed backflow risk (high, medium or low); and
- a plumber's information sheet (directed towards the applicant, who should then provide this to their nominated licensed plumber and/or hydraulics consultant).

If a property owner considers the risk rating assigned to their property is higher than the risk of activities being carried out, then the property owner may appeal this rating.

The property owner must consult a licensed plumbing contractor or hydraulic consultant first and submit an appeal form to the Water Corporation within 28 days of being advised of the risk rating. The Corporation will advise the property owner of the outcome of the review.

Appeal forms are available on our website.

- The risk rating of a property determines the minimum requirement for the type of backflow prevention device(s).
- Irrespective of the risk rating of a property all fire services are rated medium risk and require (as a minimum) a medium rated device to be installed.
- If the future land use is unknown the risk rating will default to high.
- Where there is mixed use on a property the risk rating will default to high. l Changes in the activities within a property can result in a change of the backflow risk rating and the backflow device(s) required.

2.4 Backflow Prevention Device

The backflow prevention device must be installed on the customer's side of the drinking water connection at the property boundary and belongs to the owner of the property.

This is in addition to any zone or individual backflow prevention devices installed within the property.

The Water Corporation registers all testable backflow prevention devices installed at the boundary of the customer's property. The plumber installing the device must inform the

Water Corporation of the installation within 5 working days by submitting the backflow device test report.

The following conditions should be noted:

- Boundary containment backflow prevention devices are required to be installed as part of the plumbing system downstream and as close as practicable to the property's water meter (or property boundary if no water meter is available). Refer to the Appendix on page 43.
- Devices are to be adequately supported and no part of any fitting or containment device is to be installed closer than the greater measurement of 5 pipe diameters or 300 mm from the meter outlet, whichever is greater.
- No connections are permitted between the meter outlet and the containment device.
- If continuity of supply is critical to your client, consideration should be given to connecting duplicate devices in parallel.
- If the property has more than one new water service you will need to install a device/s at the connection point for each of those services.
- All fire services are rated as medium risk and the installation of a medium risk rated device is required, as a minimum.

- The installation of some forms of backflow prevention devices will reduce water pressure/ flow rate downstream of the device. If the water pressure and/or flow rate is critical to your client, then this should be discussed with your client prior to choosing and installing the final backflow prevention device.
- Work related to the installation of backflow devices is identified as plumbing work and is therefore covered by plumbing regulations. Compliance with the plumbing standards will therefore be monitored by the Plumbers Licensing Board and you are required to notify the Board of your intention to carry out the work.

Only licensed plumbers who are qualified to install, test and certify backflow prevention devices are permitted to carry out such works.

The Water Corporation will inspect properties to ensure ongoing compliance with its Backflow Prevention Policy.

2.5 Backflow Regulations and Standards

Water Corporation requirements relating to the installation, maintenance, and testing of a backflow prevention device are supported by legislation and plumbing standards.

Regulations for Backflow Prevention

The requirement to have and maintain backflow prevention devices at the boundary of a property is supported by legislation, including the following By-Laws:

- Metropolitan Water Supply, Sewerage and Drainage By-Law 1981 – Reg. 28.7 and 28.8
- Country Areas Water Supply By-Law 1957 – Reg. 61 and 62

Due to the potentially serious nature of a backflow incident, the Water Corporation can in accordance with these by-laws serve a notice on a property owner to install backflow devices.

The by-laws also provide for penalties for non compliance of a notice.

Under the by-laws the Water Corporation has the power to restrict or disconnect water services, to protect the drinking water supply from potential contamination caused by a backflow event from a property.

Standards for Backflow Prevention

In addition to all plumbing regulations, licensed plumbing contractors must also apply the following standards for backflow prevention:

- AS/NZS 3500.1:2003 Plumbing and Drainage Part 1: Water Services.
- AS/NZS 2845.1:1998 Water Supply-Backflow Prevention Devices Part 1: Materials, design and performance requirements.
- AS 2845.2:1996 Water Supply-Backflow Prevention Devices Part 2: Air gaps and break tanks.
- AS 2845.3:1993 Water Supply-Backflow Prevention Devices Part 3: Field testing and maintenance.

2.6 Ongoing Device Maintenance

Testable backflow prevention devices at the property boundary must be installed on high or medium risk properties. These require testing at commissioning, after any maintenance and every 12 months by a licensed plumbing contractor, permitted to test the devices. The Water Corporation will send an annual reminder letter to the property owner for these boundary devices. Failure to maintain a backflow device will result in the serving of a non compliance notice to the property owner.

Backflow test reports must be submitted to the Water Corporation no later than 5 working days after the test is carried out.

The level of detail of these test reports is critical to ensure the ongoing efficient and effective management of property boundary testable backflow prevention devices.

2.7 Completing the Backflow Device Report

1. Single use test forms can be printed from **www.watercorporation.com.au** select Builders and Plumbers, click on Backflow Prevention then related information, at the bottom of the page click on Backflow Device Test Form Report.
2. Complete all required fields, these are critical to allow compliance monitoring of all testable devices.
3. If a backflow device fails a test and is replaced by a different device then the complete device details of the old device and the replacement device must be provided on the test report form.
4. Lodge the correctly completed form either by fax, email or post to the contact details provided.

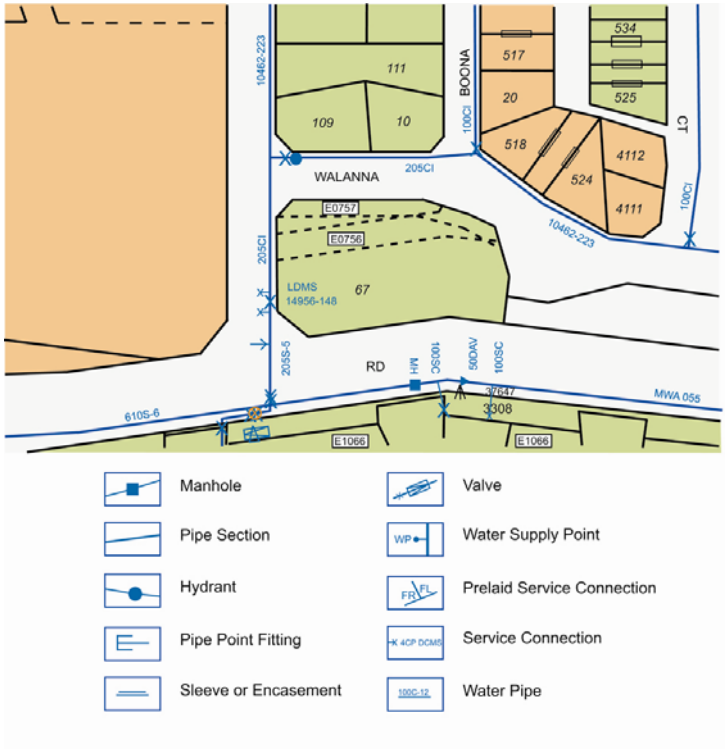
3 Interpretation of Water Corporation E-Plans

E-plans are extracts from Water Corporation's mapping system that among other things, show the location of sewer connection points. It is essential for all plumbers to be able to interpret e-plans.

When using e-plans, there are limitations in how the information may be used. Users must not rely soley on the plan. When the information is critical, the pipe position must be physically confirmed prior to any mechanical excavation or boring.

3.1 Water E-Plan

The following water e-plan is intended as a guide.



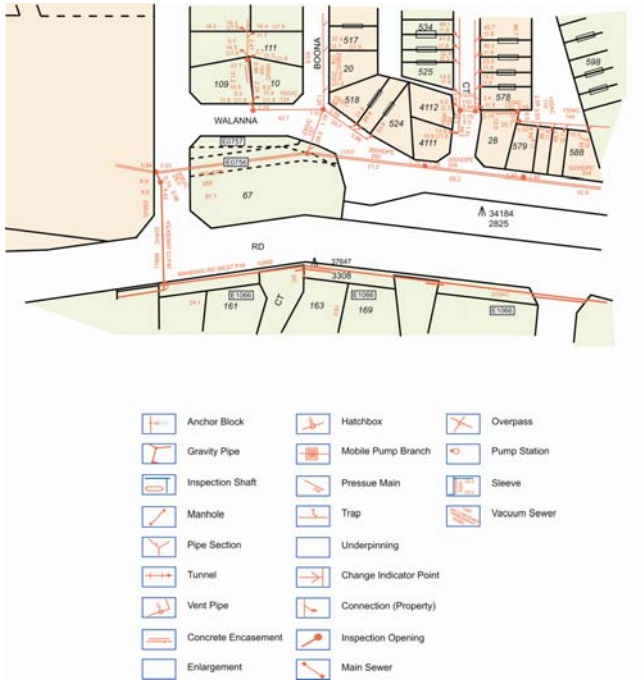
3.2 Sewer E-Plan

Some junctions in older areas (typically those prior to 1986) have not been brought into properties or up to one metre below ground level. Plumbers must not rely on previous experience or the graphical representation of e-plans when locating sewer connection points.

The example below illustrates why it is necessary to accurately interpret e-plans. While the connection for Lot 517 is shown outside the property line, the dimensions show the connection point has been brought in 2.7 metres and up 1.9 metres from the sewer line.

The graphic for Lot 111 reflects the measurement which indicates it has been brought in 2.7 metres and up 1.9 metres from the sewer line. Common in older suburbs, the sewer connection point may not be brought into the property, and it is the plumber's responsibility to correctly interpret the e-plan.Refer to Section 8 – Buildings, for direction on how to estimate depths to Water Corporation sewer pipes.

The following sewer e-plan is intended as a guide.



4 Disconnection from Water Corporation Mains - Demolitions

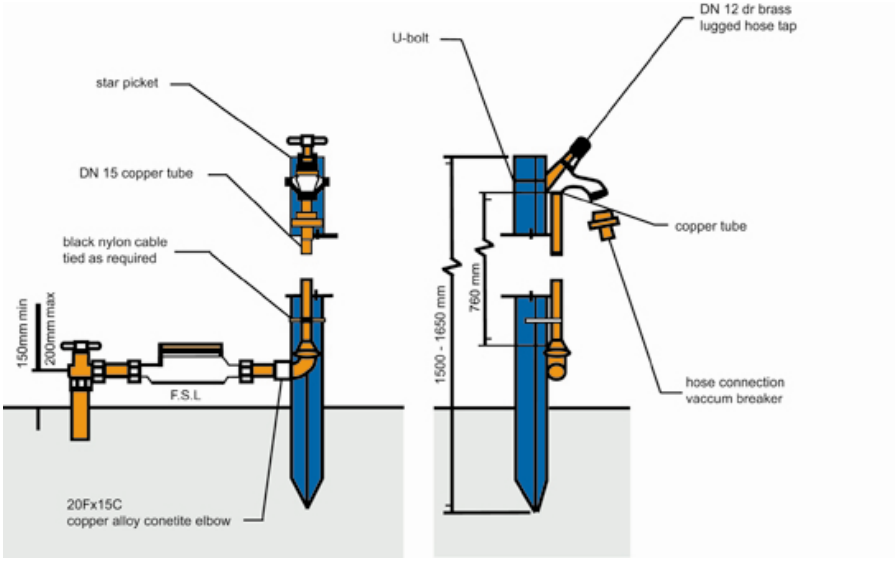
4.1 Water Supply

Prior to the demolition of any building the landowner is required to apply to the Corporation for the water service to be disconnected.

In cases where redevelopment is pending the water meter may be left, subject to the installation of a standpipe by a licensed plumber, compliant with AS/NZS 3500, Part 1 2003 and under By-Law 6.5.2.2 of the Metropolitan Water Supply, Sewerage and Drainage By-Laws

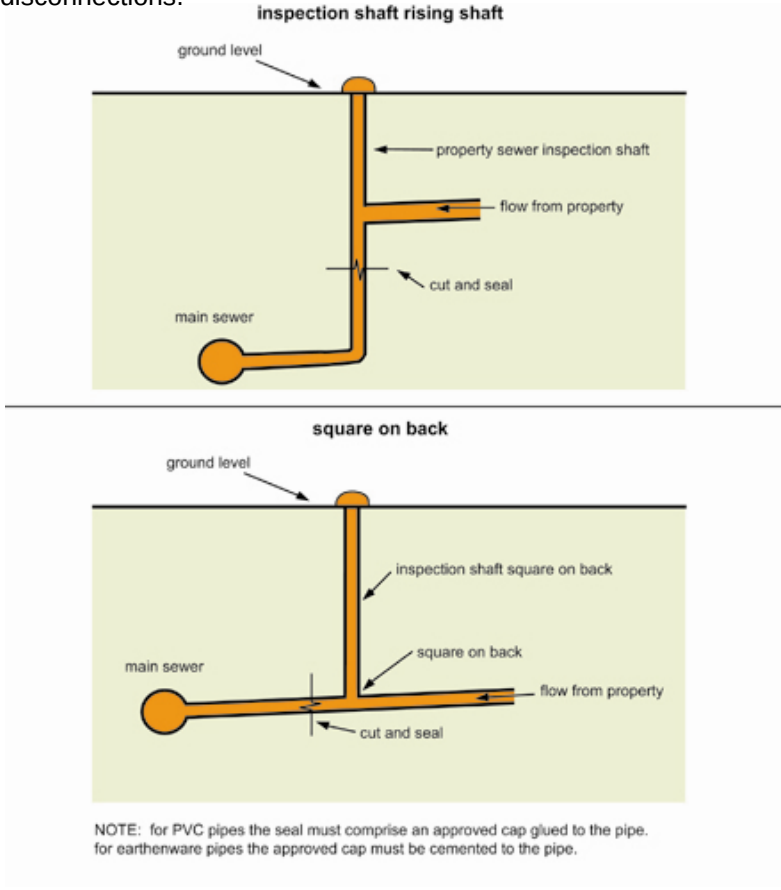
1981 and By-Law 96 of the Country Areas Water Supply By-laws 1957. Where a landowner, builder or plumber chooses to leave the water meter on site they will be responsible for any damage to the water service or water theft.

The diagram below illustrates how the connection for a temporary standpipe may be made as provided for under By-Law 6.5.2.2A



4.2 Sewerage

Prior to the demolition of any building the landowner is required to engage a licensed plumber to disconnect the building from the sewer main and ensure the sewer connection point is left sealed, compliant with Water Services Licensing (Plumbers Licensing and Plumbing Standards) Regulations 2000 and AS/NZS 3500 (Part 2 clause 4.11). The diagrams below illustrate correct sewer disconnections.



Note: For PVC pipes the seal must comprise an approved cap glued to the pipe.

For earthenware pipes the approved cap must be cemented to the pipe.

5 Maintenance Work

This section provides guidelines for customers and plumbers relating to maintenance responsibility for blockages in sewer property connections. The sewer property connection is the pipe between the inspection shaft and the junction on the Corporation's sewer main, shown as A and B on the diagram below.

The guidelines ensure that property owners will not be responsible for excavation to excessively deep sewers or for excavation in another property. They apply to the inspection shaft (IS sewers), long sewerage connections and jointly used property sewers (other than in strata schemes).

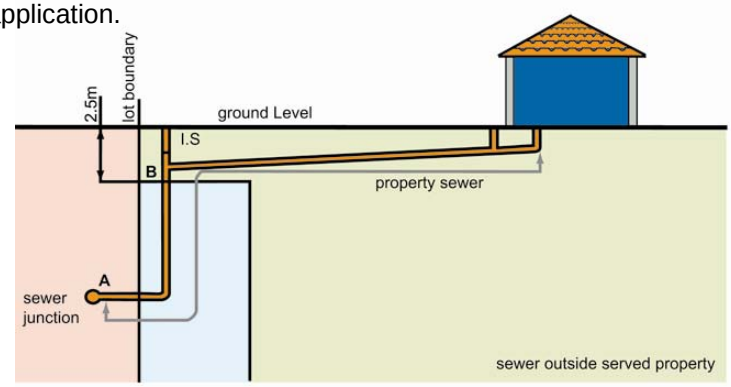
1. Property owners are responsible for the cost of clearing any blockage in their sewer property connection, where the blockage can be cleared from the inspection shaft.

The Corporation will not reimburse plumbers for reporting any blockage where it is found to be in the property connection and the Corporation subsequently clears from the inspection shaft.

2. If the Water Corporation determines that an excavation is required to repair the sewer property connection, the Corporation will assume responsibility for the repair if:

- the depth of the required excavation is 2.5 metres or more; and/or
- excavation is required outside the property.

The diagram below illustrates the intent and interpretation of this application.



Detailed below is the process to be followed when plumbers become aware of a blockage in a sewer connection, where it fits the circumstances outlined on page 23:

1. Contact Water Corporation's Service Faults and Emergency number on **13 13 75**.
2. Advise the Customer Service Representative of the situation.
3. Obtain a work order number from the Customer Service Representative. Keep a record of the number.
4. Invoice the Water Corporation referencing the work order number.

The Water Corporation will pay the plumber a standard fee, as agreed with the plumbing industry. The fee is intended to cover travel costs and the onsite assessment. The Corporation expects that **no costs** will be borne by the property owner.

6 Industrial Waste

Industrial waste or trade waste is any liquid, solid or gaseous refuse from a business, industry, warehouse or manufacturing premises, other than domestic sewerage or unpolluted water.

Generally, any wastewater discharge from business or industrial premises, other than discharge which comes from staff amenities or office facilities, is classified as industrial waste.

Not all industrial waste is compatible with our wastewater system.

Any Industry or business in Western Australia that wishes to discharge industrial waste to Water Corporation's sewer is required by law to obtain from the Water Corporation an Industrial Waste Permit.

Obtaining an Industrial Waste Permit

Complete an Industrial Waste Application form, along with any relevant supplement forms and submit to the Water Corporation with two copies of site hydraulic drawings (plumbing design drawings) for assessment prior to commencing any discharge of industrial waste.

6.1 Pre-Treatment Requirements

Most industrial waste discharges to sewer will require some form of pre-treatment. The most common pre-treatment device is a grease arrestor, which is required for wastewater generated from greasy waste producers such as restaurants, cafés or fast food businesses. See page 30 for guidance on sizing of grease arrestors.

Another common form of pre-treatment is the Coalescing Plate Separator (CPS) or Vertical Gravity Separator (VGS), used for wastewater that contains oily water generated from businesses like mechanical servicing and vehicle wash bays. Typical drawings of pretreatment apparatus are available on the Water Corporation website. More complex wastewater may require the producer of the waste to engage a wastewater treatment or plumbing consultant to design a suitable treatment system to meet Water Corporation acceptance criteria.

Only pre-treatment devices, which are accepted for use by the Water Corporation should be installed and connected to the sewer. Always check with your supplier prior to purchasing any pre-treatment product.

6.2 Sizing of Grease Arrestors – Retail Food Industry

The correct sizing of a grease arrestor is critical in ensuring the efficient removal of oil, grease and solids from the wastewater discharged from a greasy waste producer.

There are two methods, Fixture Unit Rating and Peak Flow Rate that can be used to determine the correct size of a grease arrestor. The Water Corporation has a minimum grease arrestor size of 540 litres and a maximum size of 2000 litres in effective capacity for any individual grease arrestor. Customers requiring larger grease arrestors need to obtain Water Corporation approval before installation.

Peak Flow Rates Method

Where the hourly peak wastewater flow rate is known, this can be used as the 'Calculated Grease Arrestor Size' (see Recommended Grease Arrestor Size table) to determine the recommended size.

Fixture Unit Rating Method

The grease arrestor size, in litres, is the sum of the fixture unit ratings of all fixtures that feed into the grease arrestor multiplied by 100 (see Fixture Rating table). Using the Peak Flow Rates Method determine the recommended grease arrestor.

Fixture Unit Ratings

Fixture	Fixture Unit Rating	Fixture	Fixture Unit Rating
Steamer	1	Kitchen sink	3
Wok (per burner)	1	Double kitchen sink	3
Hand Basin	1	Pot sink	5
Rinse sink	3	Double pot sink	5

Recommended Grease Arrestor Size

Maximum Number of Fixture Units	Calculated Grease Arrestor Size Range (litres)	Recommended Grease Arrestor Size (litres)
7	100 - 700	540
13	701 - 1300	1000
17	1301 - 1700	1500
26	1701 - 2600	2000
40	2601 - 4000	2 x 2000 in series

Shared Grease Arrestors

In circumstances where the Water Corporation approves businesses to share a grease arrestor the minimum size can be calculated using either method. If using method 1 the combined fixture unit rating of all businesses sharing the grease arrestor must be used. The minimum size for a shared arrestor is 1000 litres.

Where the fixture unit loading is too high for a single grease arrestor and it is not practical to connect grease arrestors in series, the waste streams are to be split and diverted to individual grease arrestors to accommodate the fixture loadings.

6.3 Non-Typical Grease Arrestors

The Water Corporation may accept the use of other types of grease arrestors, such as those that may include the use of filters. These types of grease arrestors may be subject to specific conditions or use restrictions. It is recommended that prior to the installation of such arrestors customers seek advice from the Water Corporation.

6.4 Discharge Restrictions

Dishwashers and Glasswashers

Dishwashers and glasswashers are not to discharge into grease arrestors due to their use of detergents, high water temperatures and surge loads. This can overload the arrestor or can liquefy or emulsify oil and grease, allowing it to be discharged to sewer.

Swimming Pools

The backwash and drainage from domestic swimming pools or spas must not be connected or discharged to the sewer.

Storm Water

Storm water from domestic or commercial premises must not be connected or discharged to the sewer.

Food Waste Disposal Units (Garbage Grinders)

The installation of garbage grinders on any service connected to the sewer is prohibited.

7 Development Issues

Plumbers need to be aware that issues affecting plumbing work may arise during the development of land. A development includes:

- amalgamation by subdivision of two or more lots;
- any green title or strata subdivision; and
- any building on a land parcel.
- The main areas that plumbers should be aware of are:
- internal sewer or water lines that extend into another lot when a lot is subdivided;
- water meters located in a new lot that is separated from an existing house;
- sub meters that may be required on a multi-residential development or strata scheme;
  and
- dormant sewer lines in a strata scheme.

It is advisable to rationalise the plumbing for any development, to minimise the number of meters and sewer connection points. This makes the property easier to manage and may reduce the annual service charges for the land.

The Water Corporation may require the developer of a survey or vacant strata subdivision to undertake plumbing works as a condition of subdivision approval.

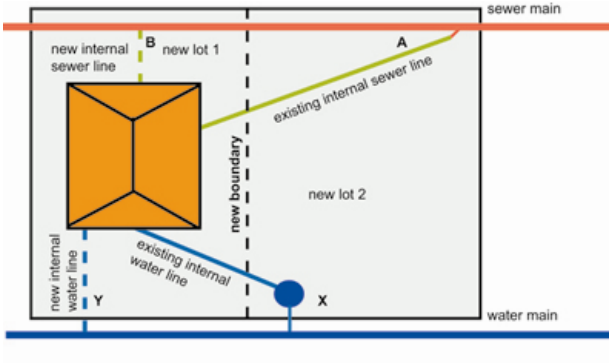
The Water Corporation aims to ensure that each strata lot owner has guaranteed access to a Corporation servicing point, including new sewer connection points.

7.1 Isolation of Internal Lines

At the time of subdivision internal water or sewer lines may be isolated from the building they are servicing. The problem is more severe if the sewer connection point or the water meter is isolated, as illustrated in the Isolation of Internal Lines diagram on page 29.

The example on the opposite page, where a single lot was subdivided into two, existing internal water and sewer lines extend into the new Lot 2. Prior to the subdivision being finalised it will be necessary to provide a new sewer connection point at B and realign the sewer line going to A so it is entirely within the new Lot 1 to a new connection point at B.

The water connection point at X would need to be relocated to Y and an additional meter provided for in the subdivision process.



7.2 Strata schemes

Where existing plumbing crosses one of the proposed strata lots you may be required to undertake a relocation to minimise the effect of the pipework on the new lot and maximise the development potential.

Two Lot Strata Schemes

Where it will be necessary for either water supply and/or wastewater plumbing to cross one of the proposed strata lots in order to provide a connection to another strata lot, a requirement to construct dormant (see Section 7.4) plumbing lines (preferably within 600mm of the boundary) will be included in the Land Development Agreement.

Three to Five Lot Strata Schemes

Where connection points for each of the proposed strata lots are not located within the boundary of the new lot (irrespective of whether common property exists), the following will apply:

- Wastewater - a requirement to construct dormant plumbing lines (preferably within 600mm of the boundary) will be included in the and Development Agreement.
- Water supply – no additional requirements apply.

Six Lot and Larger Schemes

For strata schemes of this size dormant plumbing will not be a requirement.

7.3 Metering

There are two metering options available to all residential properties and non-residential strata properties that require metering at an individual unit level.

When requested by an eligible strata company or single owner the Water Corporation will provide multiple unit developments with metering facilities under one of the options below.

Option 1

The Corporation fits individual meters at an agreed road frontage adjacent to a water main for individually subdivided or strata titled lots.

Option 2

Fit a master meter at an agreed road frontage adjacent to a water main to serve the whole property with the developer installing acceptable sub-meters to each unit at the developer's cost. This option applies to a minimum of 3 units and is not available to non-residential developments unless they are strata titled. Non-residential properties that are not strata titled cannot be sub metered.

Where necessary, the Water Corporation will provide advice and assist developers with establishing an automated meter reading (AMR) servicing arrangement for high-rise, multi-level residential developments or expansive developments, where normal metering arrangements are not practicable. Costs associated with use of sub-meters are available on request.

For all sub-meter installations the work must comply with the standards and instructions issued by the Water Corporation at the time of the work being carried out, and is subject to the terms of an agreement with the strata owners detailing the selected option.

7.4 Dormant Lines

Dormant sewer or water lines are sections of internal plumbing laid in the ground for future connection of a building to the sewer or water mains. The developer will be required to provide an 'as constructed' diagram of the dormant lines to obtain a clearance of the subdivision by the Water Corporation.

The dormant lines are laid during the development of a strata scheme to avoid the need for strata neighbours to intrude upon each other to install the lines after the scheme is established.

8 Buildings

8.1 Protection of Services

In processing building and construction plans the Corporation ensures that adequate protection and access to services is maintained.

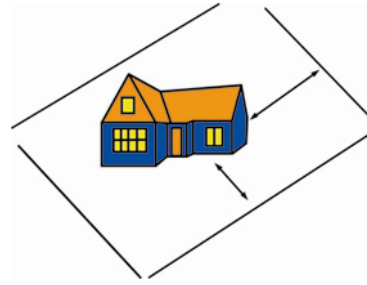
It is important to comply with the legislation and to be sensitive to the impact on affected landowners and developers. Protection of services action is taken where required and only

within the prescribed proximity to Corporation services.

To assess the impact on Water Corporation assets the following is required:

- a floor plan and site plan is required;
- measurements from a lot boundary are essential; and
- measurements from an existing shed, house, pool or clothesline will not be accepted.

The Zone of Influence



Is the restricted area around Water Corporations services.

Note: the further the structure is from the Corporation service, the depth of the pile is reduced.

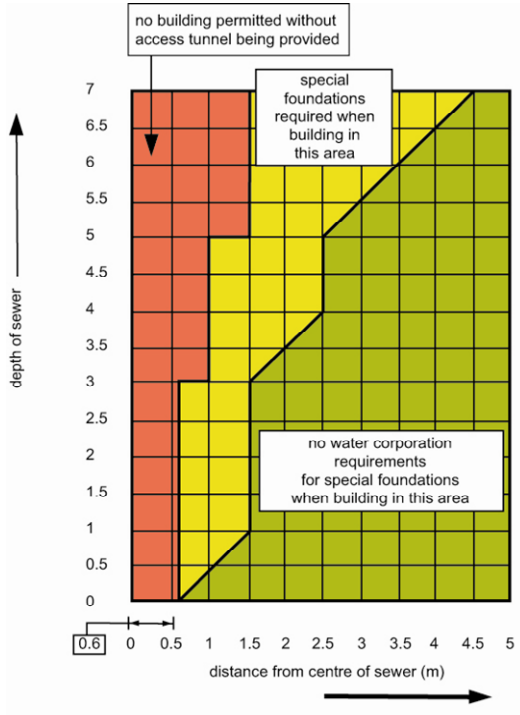
The graph on page 33 is an example from the Corporation's Protection of Services Manual, available on our website. The manual provides guidelines for the structural protection of Water Corporation's water, sewer and drainage services, and requirements for access to those services, where building or construction activities are carried out in their proximity.

The Protection of Services Manual contains a variety of graphs, depending on the type of material the pipe is made from and its size. The graphs are indicative only, if you require assistance contact us on **13 13 95**.

In cases where a structure has been erected and encroaches on the area that cannot be built on, the builder is required by law to underpin the structure. In extreme circumstances the Corporation may order the removal of the structure.

It is essential that any protection of services issues are addressed prior to construction commencement.

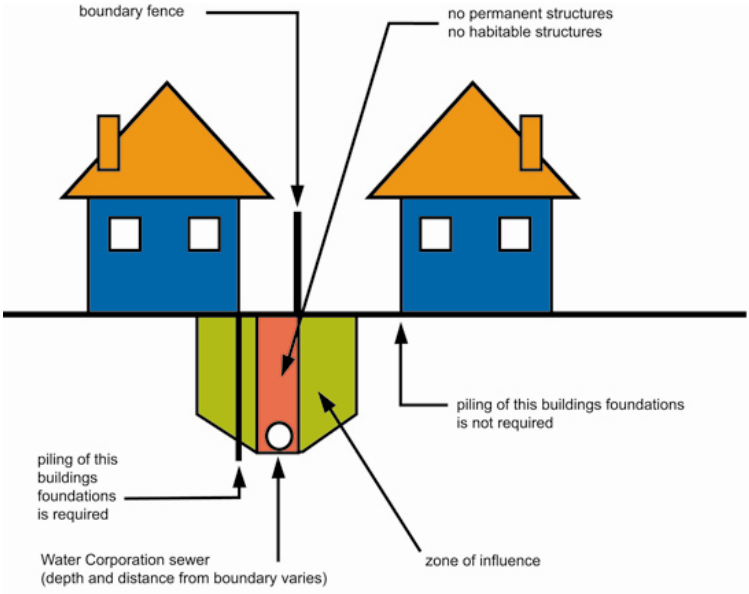
Example Protection of Services Graph

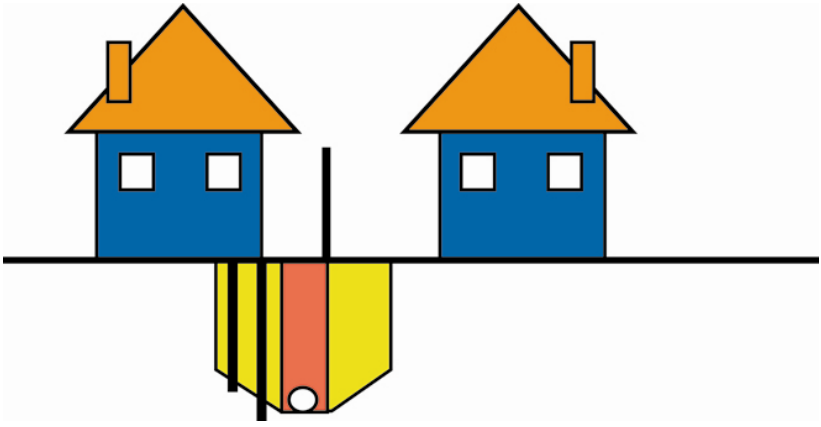


red zone - nothing to enroach in this area.
yellow zone - enroachment can be accepted with conditions, usually piles
green zone - no restriction
main size and type will determine distance

If the structure falls outside the ‘no restriction’ area building conditions are applicable. For further details refer to the Survey Requirements for Building Developments information sheet,

available on our website. It shows when additional survey information is required prior to boundary approval.





8.2 Depth of Services

The diagram on the following page explains how to calculate the depth of Water Corporation sewers and drains.

Guidance Notes

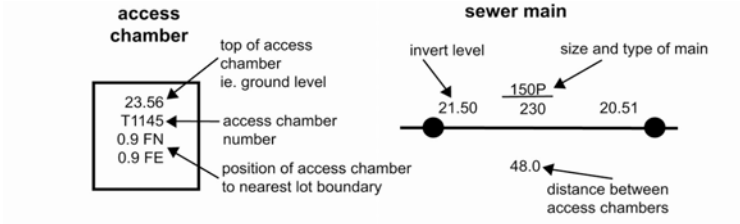
- Depth of sewer = 2.06m, go to the Graph that is relevant for 150 P un-encased main.
- At 2.06m deep, slide across Graph to where there are no building requirements.
- This is at 1.5m from the centre of the sewer line.
- Is the sewer inside the property or outside the property? For this example the main is inside the property, so:

1.5m from centre of sewer to boundary

+ 0.9m from fence line to sewer

= 2.4m from lot boundary to be clear of any requirements.

If the building encroaches into the zone of influence, but not into the red zone, piling is required.



from the top of access chamber (ground level) take away the invert level of the

23.56 m	ground level
21.50 m	depth the sewer was laid at
2.06 m	depth of sewer

✣ depth of sewer = 2.06m, go to the graph that is relevant for 150P unencased main.

8.3 Requirements on a Pile Diagram

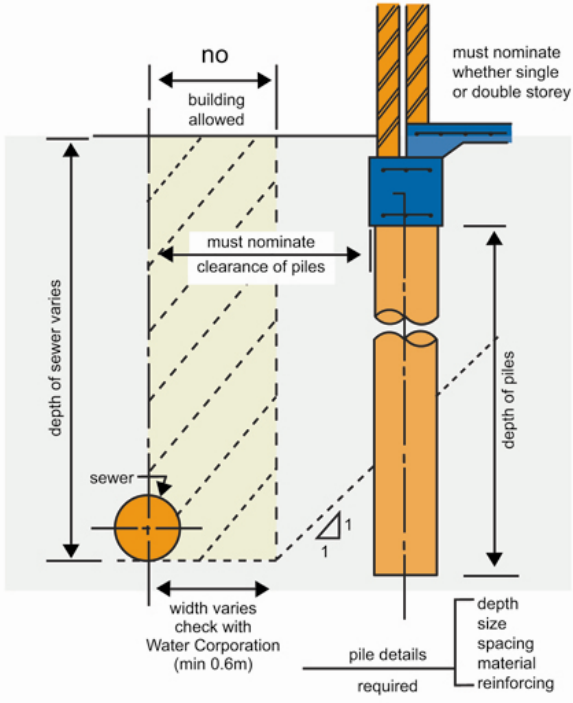
Where piling is required, the following detail must be provided with building plans (as detailed in the diagram on the opposite page):

- depth and width of pile indicated;
- date and signature of the structural engineer must be visible; and
- a site plan showing the position and spacing of the piles.

In all instances the builder must provide the Corporation with advance notice of when the piles will be installed. Further detail of this requirement is provided with the building plan approval

provided by the Water Corporation.

Typical Pile Layout
actual design to be by structural engineer must be signed by engineer and name printed
(diagrammatic representation only)



Note: pile locations must be shown on site plan

8.4 Proposals to Construct or Alter Buildings Acts and By-Laws

Any person proposing to build any structure in an area served by a Water Corporation water or sewer main must obtain approval from the Corporation and pay the prescribed application fees prior to commencing construction.

The following legislation supports this requirement:

- Section 148 Metropolitan Water Supply Sewerage and Drainage Act 1909;

- Section 41A Country Towns Sewerage Act 1948 ; and
- Section 43A Country Areas Water Supply Act 1947.

Approval is required to protect the public assets the Water Corporation is responsible for managing the assets at all times, including when buildings are not under construction. This has become more important due to the increased tendency for buildings to be built close to property boundaries and hence closer to the pipes.

The Corporation's assessment ensures:

- the pipes are clear of building developments to protect access for maintenance or replacement and ensure the building load does not damage the pipes;
- any industrial discharge does not damage or contaminate the water and sewer mains;
- the building has a fit for purpose water and/or wastewater service; and
- fees required under the above legislation are paid.

Builders and plumbers should also consider the following points when planning their building development:

1. The Corporation's water and wastewater services are adequate for the proposed building or development. In some circumstances it will be necessary to extend or enlarge the existing network and connections to the property.
2. Wherever possible all survey levels provided should be in Australian Height Datum (AHD) as it assists in ensuring the building can be adequately served by the sewer, and makes the design of piling easier. This is particularly important where the ground level has been altered.
3. Builders are responsible for establishing the location of sewer connection points prior to starting any works. In the event that the connection point cannot serve the proposed building or it is not located in the correct position the builder will be responsible for any additional works necessary. This is particularly important in the redevelopment of lots in older suburbs
4. In some circumstances the builder may need to have the location of the Corporation's pipe work confirmed by survey. If any proposed building is within 3 metres of a pipe it is recommended that you seek advice from the Corporation or a surveyor prior to any detailed design.
5. Plumbers are required by law to apply to the Water Corporation prior to connecting a property to the sewer mains. On some

occasions this application is made by the builder, however if it doubt plumbers are advised to contact the Corporation on **13 13 95**.

6. Plumbers are required to submit ‘as constructed’ plans of any work they do. Refer to Section 1.7 for further detail.

9 Electrical Risks

In August 2009 Western Power issued a bulletin as an update of an Operational Standard, due to a serious electrical safety hazard caused by underground directional drilling activities, resulting in electrical cables being cross bored into private, local government or Water Corporation sewers and drains.

Plumbers must exercise caution when clearing blockages in or near sewer lines particularly in the front verge. The safety of plumbers is at risk if cutting tools of any type are used to clear the blockage that is potentially caused by live electrical cables.

Western Power, Horizon Power and their electrical contractors are required to take all prescribed precautions to prevent the cross boring of electrical cables into sewers, drains and other pipes and conduits, however Western Power advises that live cables can often penetrate drainage pipes, storm water pipes, sewer mains and sewer connections to properties. This occurs due to high boring activity levels. In some instances this may be undetected until the property owner or tenant reports and seeks to clear a sewer or drain blockage.

Warning – sewer plumbers, contractors and drainers:

- Mechanical devices and high pressure cutters can cut into a cable,
- presenting serious of electric shock injury or electrocution (i.e.death).
- Never attempt to clear a blockage unless you are absolutely certain that a power cable is not the cause.
- Do not make assumptions about the installation or location of
- underground power cables.

Before commencing work determine if property in the vicinity of a blockage is connected to underground power. If you are unsure, the following may indicate that an underground power cable may have caused the blockage.

What to look for at the property

- Is there a green dome on the property boundary?
- Is there an underground pit within the property or on the verge?
- Are there any signs of recent excavations?
- Does the property have overhead or underground power from the street to the building?

What to look for in the street

- Is the area serviced by underground power to either multiple or single properties?
- Are there poles with cables attached that run from the top of the pole to the ground?
- Is there a green cabinet displaying a danger warning sign?
- Are there any signs of recent excavations?

Tools and Equipment

Consider the use of alternative blockage cleaning tools, such as lower pressure jet-washers. CCTV technology can also be used to positively identify the cause of blockages.

Assistance with locating underground power
Western Power on **13 13 51**
Horizon Power on **13 23 51**

10 Partnering with the Water Corporation

SewerSmart© Plumbers

Partnering with metropolitan plumbing companies, the *SewerSmart*© program works under a Memorandum of Understanding in accrediting *SewerSmart*© Plumbers, who are available 24 hours a day, 7 days a week, 365 days a year to answer and attend customer calls in relation to blocked drains. As 90% of calls coming into the Water Corporation for blocked drains are found to be the customer's responsibility, the process aids customer satisfaction.

SewerSmart© Plumbers undertake an accreditation course in understanding and reading sewer plans, have access to Water Corporation's mapping system, providing quicker and easier access to internal sewer connections, and are given a fast-tracked reimbursement in relation to SewerSmart¨ call outs. To obtain *SewerSmart*© Plumber details contact **13 13 75**.

Waterwise Plumbers

The Water Corporation has had a rewarding association with the plumbing industry through the Waterwise Plumbers program, developed in 2003. The Water Corporation offers a training course, hosted by the Master Plumber and Gasfitters Association, for plumbers who wish to join the program. The training covers all activities related to water efficiency and plumbing.

Training includes:

- domestic water auditing;
- installing and plumbing of domestic rainwater tanks;
- installing grey water systems;
- installing hot water circulation pumps and systems; and
- installing flow regulators and all other water efficient plumbing products.

The Corporation encourages customers to utilise the services offered by endorsed Waterwise Plumbers, with their contact details listed on our website.The Waterwise Plumbers program has become an integral component of the Enviro West plumber training and endorsement program facilitated by the Master Plumber & Gasfitters Association.

11 Legal Obligations

The Legal References table describes some of the responsibilities plumbers have under the following water legislation:

- Country Areas Water Supply By-Laws 1957 (CAWS);
- Country Towns Sewerage By-Laws 1952 (CTS); and
- Metropolitan Water Supply, Sewerage and Drainage By-Laws 1981 (MWSSDB).

These requirements recognise the plumber's role in protecting water and sewerage infrastructure and ensure that the interests of the all customers are protected.

The list is an indication of the processes to be followed in connecting or disconnecting services and plumber' obligations, including providing information to the Water Corporation.

The by-laws and the information contained in this handbook should be used in conjunction with the appropriate Australian Standards. While this handbook references Australian

Standards and the by-laws, it is not intended to replace them. Please refer to the applicable by-law for the full text.

Legal References

By-Laws			
Requirements/Activity	**CAWS**	**CTS**	**MWSSDB**
Plumbers to submit as constructed drawings of plumbing work to the Corporation within 5 days of completion of the work		29A	30.9
It is an offence to place anything over a pipe which affects the Corporation's ability to inspect or maintain it	67	231	
Plumbers must report damage done by themselves to pipes and take steps to make repairs	54	21	30.16
Plumbers to report certain matters	54A	21A	30.16A
Responsibility of landowners including the need to keep private plumbing in good order and conduct repairs or rectifications when required by the Corporation	59		15.8
No fittings to be installed within one metre	60		6.3

of the meter			
Not more than one house can be served by a single meter unless authorised by the Corporation	64		15.2
Items prohibited to be discharged to sewer		35	27.6
Requirement to lodge a building application	66		27.6
When a sewer is completed and ready to use		25	27.1
Circumstances where costs incurred by the Water Corporation may be recovered		232	31.4
Authority to enter property	84	234	31.5
The purposes for which water is supplied and water must not be wasted			
Misuse of water	70		6.2.2
Pipe not greater than 20mm			6.3.5
If an applicant requires the Corporation to reconnect a disconnected service the Corporation has the right to recover the current cost of the disconnected service	96		6.3.4
Fire hydrants are for fire fighting only	98(4)		6.4.6
Fire hydrants to be sealed	98(4)		6.4.6.3
Additional services	95		6.4,6.5
Unless the Corporation provides and installs a temporary building standpipe under by-law 6.5.2.2A or 66A, the builder shall engage a licensed plumber to provide and install an adequately supported stand-pipe complete with hose-tap situated not less than one metre horizontally from the proposed stop-cock position together with the connecting pipe before the Corporation will install its service pipe.			6.5.2.2
The Corporation may provide and install on a building or construction site a temporary building stand-pipe together with hose-tap and pipe connection on payment by the builder of the fee set out in Schedule C item 4.	66A		6.5.2.2A
Builder responsible for the security of the meter			6.5.4

Requirements/Activity	CAWS	CTS	MWSSDB
An existing water service is not to be used for a building construction until the proposed building has been approved by the Corporation			6.5.3
All hoses on construction sites to have tap			6.5.4
Supply may be disconnected if used in connection with any work in addition to that shown on the submitted plans on which the building fee was assessed			6.5.5
Meter may be fitted at the Water Corporation's discretion (circumstances & size)	77		6.7
Meters in multi residential			6.7.1
Meters may be required to be installed in a pit or cubicle	77A		6.7.2
Owner responsible for any damage to the meter and as such take care to protect and secure the meter	78		6.7.6.1
Access to meters - Meters must have a clear space around them. Where an owner changes the ground levels or causes other changes to the land the owner will need to meet the cost of any relocation to ensure the meter has adequate clearance and protection.	77B		6.7.3
Damage to meters must be reported	79		
Fire hose connection points to be metered			13.1.4
Swimming pools not to be connected to sewer without approval			15,9
Commercial laundries			18.23
Industrial Waste (Trade Waste) Requirements		36	28.0
Backflow prevention: owner or occupier required to install backflow prevention device when required to by the Corporation	61		28.7
Backflow prevention: Reporting, testing and maintenance	62		28.8

Acts			
Requirements/Activity	**CAWS**	**CTS**	**MWSSDB**
Owner must connect to sewer if sewer is completed and ready for use.		35	58
Owner or occupier required to repair and cleanse property sewers.		39	63

Explanation of notes to backflow boundary protection diagrams

Note 1 All backflow prevention devices internal to the property boundary or downstream of a Water Corporation service (metered or otherwise that shall be located just within a property boundary) must comply according to the following plumbing standards: AS/NZS 3500.1:2003, AS/NZS 2845.1:1998, AS 2845.2:1996 and AS 2845.3:1993.

Note 2(a) A suitably rated device must be installed at the boundary based upon the minimum level of backflow risk assigned to the Customer's property.

Note 2(b) If the water service is <=25 mm in size and the Customer's property is rated as a LOW form of backflow risk then the Water Corporation's water service meter shall provide the necessary level of low backflow protection as the service meter has an integral dual check valve as part of its design.

Note 2(c) If the water service is >25 mm in size and the Customer's property is rated as a LOW form of backflow risk then a low rated form of backflow prevention must be installed, as a minimum, downstream of the service meter.

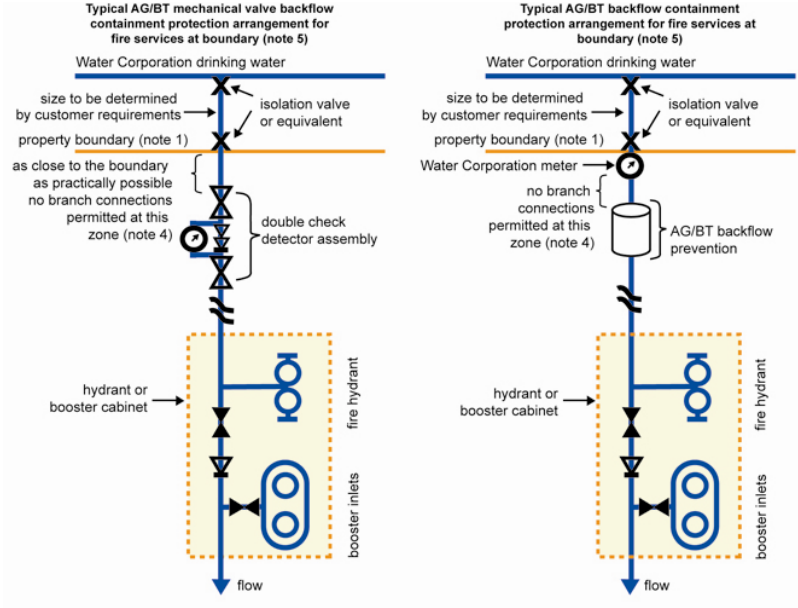
Note 2(d) Where testable mechanical valve type backflow prevention devices are installed, the isolation valve upstream of the line strainer and the isolation valve immediately after the device must be resilient seated.

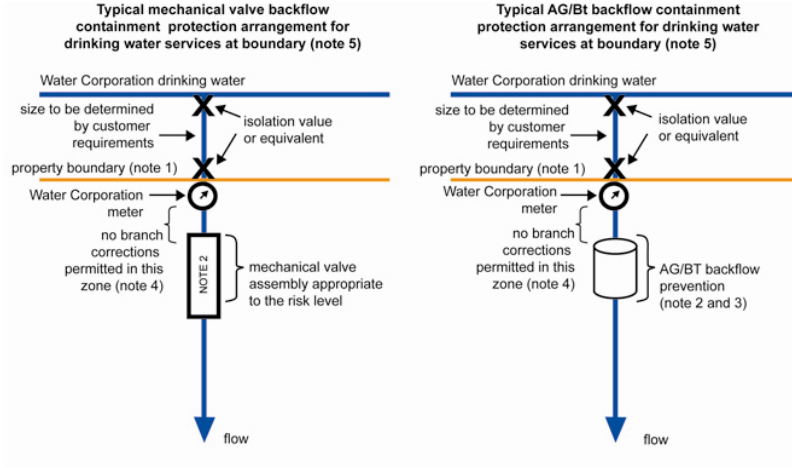
Note 2(e) Where flow rate and/or pressure does not allow the use of a mechanical valve type backflow prevention device then refer to **Note 3.**An Air Gap (AG) / Break Tank (BT) provides a low level form of backflow prevention protection. A Registered Air Gap (RAG) / Registered Break Tank (RBT) provides a high level form of backflow prevention protection and is commonly used as an alternative form of low / medium or high level of backflow prevention protection in scenarios where flow rate and / or pressure becomes a possible operational issue to a Customer and / or FESA.

Note 4 Except with the Corporation's written authority, no branch or fitting shall be connected to a private service pipe within a distance of one meter on the consumer's side of the Corporation's stop-cock or water meter.

Note 5 It is the responsibility of the licensed plumber to ensure compliant plumbing work internal to the private property boundary (see Note 1). Images shown in the diagrams on page 50 are for illustrative and informative purposes only. The Water Corporation does not acknowledge nor assume any responsibility or legal liability for any non-compliant internal plumbing work as required by the *Water Services Licensing (Plumbers Licensing and Plumbing Standards) Regulations 2000*.

Backflow Boundary Protection Diagrams





Contact Us

BuilderNet© is the most effective and efficient way of doing business with the Water Corporation.

Faults, Emergencies and Security	**13 13 75** 24 hours
Building Services and Subdivision Enquiries	**13 13 95** 8am - 5pm weekdays
Waterwise Helpline	**13 10 39** 24 hours
Website	**www.watercorporation.com.au**
Email	**building.services@watercoporation.com.au**

Lodgements by post:

Perth PO Box 100
LEEDERVILLE WA 6902

Albany PO Box 915
ALBANY WA 6330

Bunbury PO Box 305
BUNBURY WA 6231

Esperance PO Box 262
ESPERANCE WA 6450

Geraldton PO Box 43
GERALDTON WA 6530

Kalgoorlie Locked Bag 12
KALGOORLIE WA 6430

Karratha PO Box 84
KARRATHA WA 6714

Northam PO Box 265
NORTHAM WA 6401