



# **WESTERN WATER DESIGN AND CONSTRUCTION PROCEDURES FOR SUBDIVISION WATER AND SEWERAGE WORKS**

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## **WESTERN WATER DESIGN AND CONSTRUCTION PROCEDURES FOR SUBDIVISION WATER AND SEWERAGE WORKS**

The following outlines Western Water's requirements for the design and construction of subdivision water and sewerage works.

### **1 PROCEDURES AND RESPONSIBILITIES**

Western Water will, in some circumstances, allow suitably qualified and experienced consultants to design and supervise the construction of water and sewerage reticulation extensions ("the works") necessary to serve subdivision land development on the proviso that:

- 1.1 Terms and Conditions for water supply and sewerage services must be applied for in writing before design of the works is commenced.
- 1.2 The proposed consultant is approved by Western Water and has a minimum of \$2,000,000 professional indemnity insurance and \$10,000,000 public liability insurance.
- 1.3 The works are designed and constructed to Western Water's standards.
- 1.4 Construction works are not to commence until Western Water has issued written approval for both the design plans and proposed contractor.

Approval for construction will not be granted until Western Water has received a digitised (DXF format) copy of the plan of subdivision relating the title boundaries to MGA coordinates zone 55.

- 1.5 The design and construction of reticulated water and sewerage works must be generally in accordance with the Water Services Association of Australia codes listed below with the exceptions listed in this document:
  - Sewerage Code of Australia  
WSA 02-2002-2.3 Melbourne Retail Water Agencies Edition.
  - Water Supply Code of Australia  
WSA 03-2002-2.3 Melbourne Retail Water Agencies Edition.
- 1.6 The design and construction of sewage pump stations and rising mains must be in accordance with Western Water Neighbourhood Sewer Pump Station Design Standards, January 2004, a copy of which will be provided upon request and Water Services Association of Australia Sewage pump station code of Australia WSA 04-2005 Version 2.1.

- 1.7 The Owner / Developer and Consultant are jointly and severally responsible for the design and construction of the Works necessary to complete the Development and the role of Western Water is limited to that of acceptance or refusal of the Works for connection to the Authority's System and surveying and recording of as constructed measurements of the works for its own purposes.
- 1.8 The owner / developer shall indemnify Western Water for all claims related to the construction of water and sewerage works associated with the development including any claims for payment made by contractors engaged on the construction of those works and all legal and other costs incurred by Western Water defending such claims.
- 1.9 The Consultant shall supervise the construction of the works as Superintendent for the contract with the developer nominated as the Principal for the contract in a similar manner as defined in AS2124 - 1992 General Conditions of Contract. The Owner / developer and Consultant is responsible for:
  - a. Obtaining all necessary statutory and other permission to carry out the Works;
  - b. The day-to-day operations of the Development and specifically the carrying out of the Works;
  - c. Site supervision of all parties associated with the carrying out of the Works;
  - d. Compliance with all aspects of the Road Management Act (Vic) including obtaining approval for works and all notifications;
  - e. Compliance with all Occupational Health and Safety Legislation and generally the safety of all parties (including employees of Western Water) on the Land.
- 1.10 Western Water shall record any failure to comply with the requirements of Western Water including deviations from the design ("Non Conformances") which may lead to Western Water exercising it's right to refuse acceptance of the Works and withhold it's consent to the issue of a statement of compliance for a subdivision related to the works.
- 1.11 Notwithstanding condition 1.9, the works shall only be constructed by a suitably qualified and experienced contractor approved by Western Water;
- 1.12 Notwithstanding condition 1.9, contracts must not be awarded and works must not commence until written consent is obtained from Western Water for works proceeding in accordance with the design plans lodged and Western Water has approved the proposed contractor in writing;
- 1.13 During construction of the Works Western Water shall:

- a. Carry out such inspections of the Works as Western Water in the circumstances thinks fit. The consultant and the owner can expect Western Water to carry out random inspections of the works and witness of all pressure and vacuum testing necessary to obtain Western Water's acceptance of the works.
  - b. Advise the Contractor, Owner or Consultant if Western Water becomes aware of any Non Conformances from the design. Western Water may not necessarily advise the owner or consultant of the Non Conformances until the completion of the works. As such Western Water's inspections do not replace the consultant's need to provide regular on site supervision of the works.
  - c. Survey the works and record as constructed details for it's own purpose. The owner, consultant or contractor shall provide a survey chainman as required by Western Water's inspector to survey to the works without cost to Western Water.
- 1.14 Trench watering shall not be permitted during drought conditions and whilst water restrictions are in place unless otherwise approved by Western Water in writing.
- 1.15 Prior to the issue of a statement of compliance, the consultant shall:
- a. Provide certified evidence of the actual cost of the works for asset management purposes. This may be in the form of a copy of the successful tender and details of all variations paid;
  - b. Provide certification that the works have been constructed in accordance with the design accompanied with a schedule of any non conformances;
- 1.16 All works shall be subject to a 12 months maintenance period.
- 1.17 The owner shall lodge a maintenance bond equal to 5% of the actual cost of the works including GST that shall be retained by Western Water until the works pass Western Water's final inspection at the end of the 12 months maintenance period.
- 1.18 The maintenance period shall be 12 months in duration for reticulation pipelines and 24 months for pump stations.
- 1.19 The maintenance shall commence on the latter of:
- The date the works reach practical completion; and
  - The date the maintenance bond is received and the New Customer Contributions have been paid;



Further Western Water reserves the right to nominate a common commencement date for the maintenance period and nominate a common commencement date for the maintenance period for all works constructed for the relevant stage of the development.

- 1.20 During the 12 month maintenance period the owner shall maintain the works in as new condition including making good any defects or omissions found and make good any damage caused to the works regardless of the cause of the damage.
- 1.21 Upon satisfactory completion of the maintenance period Western Water will issue a preliminary acceptance certificate for the works, at which time the works will vest in Western Water.
- 1.22 In the event that Western Water discovers defects or omissions during the maintenance period, the developer's consultant shall arrange for the defects or omissions to be rectified within the time specified by Western Water.
- 1.23 In the event that Western Water discovers defects or omissions during the maintenance period and the defect or omission is, in Western Water's opinion, likely to risk security of supply to Western Water customers or will result in discharge of sewage and or places persons or property in danger, Western Water may undertake remedial works without consulting the owner or the consultant and the cost of such works shall be a debt payable to Western Water by the owner;
- 1.24 Third Party Damage.  
Notwithstanding items 1.22 and 1.23, the owner will not be responsible for damage caused to the works during the Works Warrantee Period by:
  - a. Subsequent land owners landscaping or building over the works including covering sewer access chambers or removing marker posts, valve surrounds and hydrant surrounds;
  - b. Vehicles accessing the land in order to construct a dwelling on the land or landscape the new owners property.

unless the damage is caused by a builder engaged by or in partnership with the owner.

The owner is however responsible for any damage caused by another utility providing a service to the land as such damage should be avoided by proper project management of the subdivision.

- 1.25 At the end of the maintenance period the consultant shall provide Western Water with its Final Inspection Report advising that the consultant has inspected the works and all remedial works have been completed.

- 1.26 Upon receipt of the consultant's Final Inspection Report, Western Water will make a Final Inspection of the works and refund the maintenance bond provided no defects of omissions including subsidence are found, (the "final acceptance").
- 1.27 At final acceptance of the works, Western Water will issue a Final Acceptance Certificate for the works confirming that the owner's obligations under the maintenance period end however the consultants liability for the design remains indefinitely.
- 1.28 The owner shall pay Western Water's actual costs associated with design checking, construction audit, asset recording survey, preparation of as constructed plans and associated administration. The method of payment shall be as follows:
- a. An initial fee to be paid at the acceptance of the provision of services notice;
  - b. A reconciliation of "*projected final costs*" prior to Western Water issuing it's consent to a Statement of Compliance with either a refund paid by Western Water or an additional amount paid by the owner;
  - c. A final reconciliation of costs at the end of the maintenance period prior to Western Water's final Acceptance of the Works and the return of the maintenance bond with an adjustment made by either a refund paid by Western Water or an additional amount paid by the owner; and
  - d. Any interim reconciliation of Projected Final Costs that may be made by Western Water at any time to redress any shortfalls in the initial fees paid or shortfalls in the first reconciliation discovered during the maintenance period. This also covers any administration costs associated with the developer undertaking the repair of failed assets or subsidence during the maintenance period.
- For the purpose of this condition the "Projected Final Cost" means the costs incurred by Western Water associated with design checking, construction audit, asset recording survey, preparation of as constructed plans, final inspection of woks and associated administration up to and including final acceptance of the works at the end of the maintenance period.
- 1.29 Western Water's consent to works proceeding or inspection of any stage of the Works does not amount to Western Water approving, consenting to, ratifying or otherwise accepting the design or construction, as all liability for design and construction remains with the Owner and the Consultant. Western Water's role is to assess the Development with regard to its

strategic relationship to Western Water's Systems and to confirm that the design drawings are generally in Accordance with Western Water's standards of design and presentation. Otherwise in relation to design and construction of the Works, Western Water expressly relies on the Owner and the professional capacity of the Consultant.

### 1.30 Water Carters Permit.

All contractors engaged on the subdivision works that require water to obtain a "Water Carter Permit" from Western Water's Asset Engineer on 9218 5400 and comply with that Water Carter Permit at all times. This will include the permit holder:

- Owning a metered hydrant approved by Western Water
- Metering and paying for all water taken,
- Displaying a Western Water permit number sticker;
- Only taking water from nominated hydrants or standpipes,
- Only using water for the purpose approved in the permit and avoiding wastage; and
- Comply with any water restrictions imposed by Western Water at the time water is used.

Depending on the level of water restrictions, the permit holder may be able to obtain an exemption from water restrictions for specific subdivision works. The permit holder must apply to Western Water's Restrictions Team for an exemption stating the location and stage of the subdivision and the purpose for which the exemption is applied. Applications must be made on Western Water's application form, copies of which are available at [www.westernwater.com.au](http://www.westernwater.com.au), Western Water's Macedon Street office or can be obtained from Western Water's Restriction Team hotline 9218 5400.

For example Western Water may, in certain circumstances, grant an exemption to use water for dust suppression and road compaction. Western Water does however reserve the right to refuse an exemption. For instance Western Water will not grant an exemption in areas where water supply is severely limited and or taking water by the Water Carter will affect other customers.

Also Western Water will not grant an exemption for washing down road pavements and flooding trenches to consolidate backfill whilst restrictions are in place.

In some areas use of treated "recycled water" from Western Water's Sunbury, Gisborne and Melton Wastewater Treatment plants may provide a viable alternative water supply to assist compaction. Please ask your contractors to contact Western Water's Recycled Water Advisor on 9218 5484 to discuss filling points and suitability of recycled water.



Failure by the consultant and the owner to ensure all contractors obtain and comply with a Water Carters permit may result in prosecution of either or both the consultant and the owner as well as the contractor.

## **2 GENERAL DESIGN STANDARDS**

All materials and fittings to be incorporated in the water supply or sewerage works must be to the appropriate Australian Standard.

Construction of all services to a subdivision is to be programmed in a manner that allows installation of the deepest service first.

### **2.1 Design presentation**

All design plans are to be at a **1:500 scale** and all plans are to have a locality plan attached or included and a north point. Also, the location and level to Australian Height Datum(AHD) of Temporary Bench Marks(TBM's)/Permanent Survey Marks(PSM's) is to be included.

Western Water requires the following sets of design information to be provided:

#### **2.1.1 At the request for conditions stage**

- A completed request for conditions form and associated documentation. The request for conditions form is available on our website at [www.westernwater.com.au](http://www.westernwater.com.au)

### **2.1.2 At the detailed design stage**

- 1 set A3 or PDF road and drainage design plans
- 2 hard copy sets of water and/or sewer plans in A1 size
- A pdf version of the water and/ or sewer plans and a hard copy in reduced A3 size. Please note that pdf plans created by scanning will not be acceptable;

The drawings must show the location of all other service assets in road reserves.

- Latest copies of the plan of subdivision both in paper copy and digital format as per 2.1.1 or certification that the plan of subdivision has not changed from the version supplied at the application for conditions stage.

### **2.1.3 At the final audit stage**

- A digital copy of the latest plan of subdivision format to MGA coordinates, zone 55.
- All design plans shown under item 2.1.2, if there are any variations in the design from the design audit stage.

## **3 BODY CORPORATE SUBDIVISIONS**

### **3.1 *Ownership of Internal Assets***

Western Water will not accept authority water supply assets in common Property or private property within body corporate subdivisions.

Western Water will only accept authority sewers in common property or private property within body corporate subdivisions if it is an existing sewer or it is a new sewer necessary to extend to other land.

The owner shall construct an authority sewer through the body corporate land if required to avoid land locking other land in the natural catchment of the sewer. The funding of the authority sewer shall be in accordance with Essential Services Commission New Customer Contributions Guidelines applicable at the time of development and section 4 herein.



The consultant must make an assessment of the total sewerage catchment in conjunction with Western Water when assessing whether an authority sewer is required to traverse the land.

### **3.2 Water meters**

Each house and garden tap within a body corporate subdivision shall be individually metered.

Fire services and hydrant reels within a body corporate subdivision shall have a check meter or be fully metered.

### **3.3 Design and Construction standards**

Internal private water and sewerage works shall be designed and constructed by owners plumber in accordance with National Plumbing Code or WSAA under a Plumbing Industry Commission number issued by Western Water's Property Services Department.

The Plumbing Industry Commission number will not be issued until:

- The owner has paid all fees including New Customer Contributions for the Body Corporate Development; and
- In the case of a New Customer Contribution payment made before expiry of the 30 day period, in which the owner may appeal the New Customer Contribution under section 271 of the Water Act (Vic) 1989, the owner has agreed in writing to waive its right to appeal the charge under that section of the act using the Waiver Form provided by Western Water for that purpose.

As constructed plans of private internal water and sewer works must be provided to Western Water prior to seeking a consent for a statement of compliance for the subdivision.

#### **4 RETICULATION ASSETS AND SHARED DISTRIBUTION ASSETS**

The funding of works required to provide water and sewerage service to the development shall be set out in the notice of conditions for the relevant stage of the subdivision. Where the notice is silent on the funding the following principles apply:

- 4.1 The owner shall design and construct all Reticulation Assets as defined by the Essential Services Commission New Customer Guideline applicable at the time of the notice, without cost to Western Water. In addition:
- 4.1.1 Western Water regards all water and sewer works within the development and not required to be made larger to cater for other land as reticulation assets regardless of size;
  - 4.1.2 Western Water regards all water works required to connect the development to Western Water's systems and not required to be made larger to cater for other land as reticulation assets regardless of size.
  - 4.1.3 Western Water regards all sewer works required to connect the subdivision to Western Water's systems as a reticulation assets regardless of size unless:
    - Western Water requires the sewer works to be made larger to cater for other land upstream of the development; or
    - Land within the new sewer catchment has been identified as a backlog sewer scheme in Western Water's 20 capital works program or a state-wide sewerage backlog program by the Department of Sustainability and Environment.
  - 4.1.4 Notwithstanding 4.1.2 any water main less than or equal to 150-mm in diameter shall be a reticulation asset;
  - 4.1.5 Notwithstanding 4.1.3 any sewer main less than or equal to 225-mm in diameter shall be a reticulation asset.
- 4.2 The owner shall, if required by Western Water, arrange for the design and construction of Shared Distribution Assets at Western Water's cost, including complying with Western Water's requirements for competitive tendering of the works;



- 4.3 The owner shall not seek a statement of compliance for the relevant stage of the subdivision until the shared distribution assets are completed unless approved otherwise in writing by Western Water, such approval shall, as a minimum, require a formal deed of agreement providing indemnities to Western Water's satisfaction.

## **5 WATER SUPPLY DESIGN STANDARDS**

### **5.1 *Water Supply Pipelines***

The following standard pipe diameters and materials shall be adopted:

63mm	poly MDPE (in court bowls only)
100mm	Class 16 or higher class PVC or PN35 DICL / MSCL
150mm	Class 16 or higher class PVC or PN35 DICL / MSCL
225mm	Class 16 or higher class PVC or PN35 DICL / MSCL
300mm	Class 16 or higher class PVC or PN35DICL / MSCL
375mm	PN35 class DICL / MSCL
450mm	PN35 class DICL / MSCL
500mm	PN35 class DICL/ MSCL
600mm	PN35 class DICL / MSCL
750mm	MSCL

Ductile iron cement lined pipes must be used under road pavements.

O-PVC pipe will not be accepted within Western Waters region

All ductile iron cement lined and mild steel cement lined pipes must have an intertuf internal coating.

All MSCL pipes are to be designed for the application.

Normal subdivisional designs will be limited to the 225mm diameter pipelines and below. The Authority may retain the design of trunk supply mains 300mm diameter and above and subject to clause 5.9, may not allow 300mm diameter and larger mains to be tapping mains.

Only the curved part of the court bowl shall be in poly MDPE pipe with copper tracer wire included.

Water mains should be located within the road reserve in such a way that water from any bursts is collected in the stormwater drainage network.

### **5.2 *Water Main Offsets***

Were possible water mains should be laid at a standard offset of 2.1 metres from the building line.

Drawings should include a table of offsets of services proposed in the road reserve.

Maintain clearance between the water main and other services as per WSA MRWA

Water mains must be located on the opposite side of the road reserve to underground power cables.

### **5.3 Valves, Bends and Indicators**

All water supply main valves are to be anti clockwise closing (**except for the Melton District which is to be clockwise closing**).

Provide flange valves at all TEE's bolted to SP-SP – FL TEES, unless the tee is located beneath the road pavement in which case the valve is to be located a close as possible to the tee.

Provide shut off valves at the tee connection to every court regardless of the number of lots within the court.

Provide a shut off valve and loop main to limit the number of houses affected by a shut off to 40 houses.

Provide white valve indicator posts with a black top in rural areas. In urban areas i.e. where a kerb exists the kerb shall be painted to indicate the presence of a stop valve.

Provide white Bend indicator posts with back top if requested by Western Water.

### **5.4 Fire Plugs**

Provide fire plugs at locations required by Western Water for operation of the water supply system. Typically Western Water will require fire plugs at high points and low points, and at the start and end of each road. Fire plugs shall be located on the low side of all shut off valves at the end of water mains.

All fireplugs are to be in ground spring type. In rural areas all fireplugs shall also have an L type cover as well as marker post and road markings. L type covers are not to be used in residential zone areas.

Provide a white marker post with a red top at the property boundary and a blue cats eye reflector on the road pavement to mark the location of all fire plugs.

Unless otherwise approved by Western Water in writing, provide a fire plug at all transitions from a 100mm diameter water main to a 63mm diameter



polyethylene water main with the polyethylene taped off the fire plug riser in accordance with the standard drawings. Written approval from the CFA is required for all fire plug locations.

### **5.5 Thrust Blocks**

A thrust block schedule is required on the plan. Thrust blocks are to be designed to withstand the maximum permissible pressure of the pipeline with a soil classification taken as soft.

### **5.6 Anti-corrosion Tape and Filler**

All exposed bolts (whether they be stainless or galvanised mild steel) on watermain fittings are to be protected and wrapped with Denso tape and filler or equivalent protection system.

Precautions must be made to prevent contact between dissimilar materials due to corrosion problems.

### **5.7 Pipe Cover & backfill**

The minimum cover depths to top of pipe shall be:

1200 mm	Under Vic Roads/Main Roads pavements
900 mm	under other road pavements; and
600 mm	nature strips and elsewhere

FCR backfill is required under all driveways, roads and concrete footpaths.

### **5.8 Dry Tappings**

Dry tappings are to be provided into all allotments.

For corner allotments the tapping must be provided on the designated front of the property. That is the dry tappings must be provided on the shorter road frontage of corner allotments unless the cross over and frontage of the lot is designated as the alternative side.

**The location of dry tappings are to be shown on design drawings.**

**Western Water does not allow the installation of pre-tapped DICL collars or connectors.**

Tappings are not permitted off curved water mains.

The tapping shall be installed using gun metal tapping band or stainless steel band and TPFNR fittings at Western Water 's water main and terminating with a buried Right angle stop valve and protection cover. The buried stop valve

and cover must be located between 300mm and 500mm inside the property boundary.

No two tapping bands are to be installed on a water main within 1 metre of each other.

The cover over the buried stop valve and cover ***within the property*** must not be more than 600mm from the finished surface level unless otherwise approved in writing by Western Water.

The service pipe from the tapping to the property shall be constructed in the appropriate class pipe for the design pressure. The minimum class copper pipe shall be Class B and the minimum class polyethylene pipe shall Class12. The polyethylene service pipe must be must include a tracer wire.

### **5.9 Tapping and Non Tapping Mains.**

The decision on whether a 300 mm or larger diameter water main can be used as a tapping main is the sole discretion of Western Water.

As a guide, a 300 mm or larger diameter main can be used as a tapping main, at Western Water's discretion, if:

- It is constantly under pressure and is not designed as a slow transfer main or a high pressure rising main;
- It has spare capacity to cater for the instantaneous demand created by the proposed tapplings and the tapplings will not compromise the primary function of the pipeline .
- Residential tapping bands and the pipe material and diameter compatible.
- The pressure is not too high to allow to safely provide supply to residential houses, e.g. the rising main from Loemans road pump station is higher than the rating for conventional tapping bands.
- Water quality can be guaranteed off the pipeline, that is residential chlorine levels will not be too high or too low.
- There is no alternative network grid to supply individual properties.

Typically larger diameter pipelines such as the 750 mm diameter supply main into Melton from Minns road and the rising main from the Loemans Road pump station must not be used as tapping main.



### 5.10 Cathodic Protection

Some of the Authority's distribution or trunk mains are protected by cathodic protection systems. Particular care and allowances need to be incorporated into designs, when connecting to these mains, to maintain the integrity of these systems. The Authority may require its cathodic protection maintenance contractor to check the design and installation of proposed cathodic protection systems.

## 6 SEWER DESIGN STANDARDS

### 6.1 Sewer Pipe Diameters and materials

Diameter	Material	Areas.
100mm	Not permitted other than for PVC house connection branches.	All Residential areas
150 mm	Vitrified clay or solvent cement jointed PVC	All Residential areas
225 mm	Vitrified clay or rubber ring jointed PVC	All Residential areas
300mm and larger	Vitrified Clay or an approved equivalent	All Residential areas
225mm and larger (See section 4.5.)	Vitrified clay or an approved equivalent	Industrial areas.

Written approval from Western Water must be obtained for any alternative pipe material.

### 6.2 Curved sewers

Horizontally curved sewers are permitted only for 150 mm diameter sewers.

### 6.3 Minimum Grades

The minimum grades shall be:

1 to 4 lots upstream      **150mm diameter sewer 1 in 80**

More than 4 lots      **As per WSAA Standards for 150mm diameter and larger sewers.**

**6.4 *Maximum Grades.***

Sewers must not be laid at grades where the maximum scour velocity will exceed 3 metres per second in either partial flow, full flow or under pressure flow.

**6.5 *Jointing of Sewers***

Root resisting rubber rings shall be used for all PVC sewers greater than 150mm diameter.

Root resisting rubber rings may be used for 150mm diameter uPVC sewers in wet conditions where solvent cement jointing is impractical.

For all other pipe materials joints should be as per the Manufacturer's recommendations.

**6.6 *Sewers in front boundaries.***

Where sewers are required at the front of the allotments the sewer must be laid in a road reserve and not within private land.

**6.7 *Industrial Sewers***

Reticulation sewers to industrial areas are required to be 225mm diameter or greater in Vitrified Clay unless otherwise approved in writing.

Property connection branches in industrial areas are required to be 150mm diameter VC.

Provide Boundary traps where required by Western Water on all connection points within nominated industrial areas.

**6.8 *Access Chambers , Covers and Step Irons***

Access chambers must be cast in situ unless approved otherwise in writing by Western Water. Such approvals will only be granted in exceptional circumstances.

Alternative maintenance shaft systems will not be accepted.

Where access chambers are located in flood ways, suitable bolt down access covers must be provided to Western Water's satisfaction.

Access chamber lids are to be round Gatic type which are opened with the standard Gatic Lifter and have a concrete infill.



Step irons are to be cranked and located over the downstream pipeline with the cone of the access chamber pointing upstream. Exceptions to this may be approved in writing on a case by case basis.

Gas check access chambers are not required.

### **6.9 Access chamber spacing.**

Provide access chambers at all changes in grade and direction.

Provide access chambers at the end of all sewer branches longer than 45 metres in length from the downstream access chamber.

Access chambers shall be provided at a spacing equal to the lesser of:

- a. 100 metres or
- b. a spacing sufficient to ensure access to every part of sewer pipelines from the downstream manhole only with a maximum length pressure jet hose of 150 metres measured from a point where a vehicle can be legally parked in a road or public land. The distance shall be calculated using slope distances in steep terrain and shall include allowance for the vertical component inside the chamber or shaft.<sup>1</sup>

“Legally parked” shall include street side parking in road carriageways (but not freeways) and public care parks, but shall exclude parking within the minimum specified distance of intersections.

### **6.10 Inspection Shafts**

Were Inspection shafts are installed at the end of sewer branches, ie for branches less than 45 metres in length, the inspection shaft shall be constructed upstream of all house connection points.

### **6.11 House Connection Branches**

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<sup>1</sup> This method is used instead of traditional “access chamber spacing” to specify minimum access requirements.

*The intent of these rules is to ensure that all pipelines are accessible from roads using Western Water’s machines with a reach of 150 metres **entering the downstream access chamber only and the maximum spacing between any access chamber is no more than 100 metres.** . **The inefficiency, occupational health and safety and environmental risks (of solids spills) associated with jetting from upstream access chambers to clear blockages and perform maintenance is unacceptable to Western Water.***



House connection branches are to extend beyond the property or easement boundary by a minimum of 500mm.

House connection branches must not enter manholes.

Boundary traps are not required in residential areas. Boundary traps are required in and areas nominated by Western Water.

### **6.12 Bedding Materials**

Bedding materials should be approved for use in accordance with WSAA standards and the pipe manufactures specifications.

Embedment and protection zones shall be specifically designed for deep sewers and large diameter sewers.

### **6.13 Backfill requirements**

Mechanical compaction shall be carried out on layers of backfill to achieve the specified level of compaction. Flooding or jetting of fill materials in excavation is not permitted under any circumstances.

### **6.14 Connection to Live Sewers**

The Consultant may arrange for Cut-ins to live sewers provided that the cut in is carried out by contractors accredited to work on live sewers and the contractor has obtained a Works Approval and a Certificate Of Entry from Western Water for the date and time of the sewer connection. These forms are available at [www.westernwater.com.au](http://www.westernwater.com.au).

The contractor must provide all confined space entry equipment and staff in accordance with Occupational Health and safety regulations current at the time and provide appropriate bypass pumping arrangements and standby equipment prior to attempting a connection to a live sewer

## 7 SEWAGE PUMP STATIONS

The design criteria for sewage pump stations are in table 7-1.

**Table 7-1 SPS Design Guide**

	<b>Small</b> ADWF < 5 L/s (at ultimate development)	<b>Large/Sensitive</b> ADWF => 5 L/s (at ultimate development)
New Catchment	6 x ADWF	6 x ADWF or greater
Existing Catchment	1 in 5 ARI	1 in 5 ARI
Pumps	100% Duty / 100% Standby	100% Duty / 100% Standby Dual Operation
Emergency Storage	2 hours @ PDWF	3 hours @ PDWF
Station Power	Allows 1 pump operation	Allows 2 pump operation
Rising Main Velocity	Min – self cleansing Max – scouring @ 100% pump flow	Min – self cleansing Normal Max – 1.5m/s Dual Max – 2.5m/s
SCADA	Generally not required	Installed as per Western Water Specifications

<p><b><u>New Catchment</u></b></p> <p>All new catchments where no additional information is available will assume that each domestic property discharges 700L/prop/day (ADWF). Other users (eg. Industrial/commercial) are to be individually assessed.</p> <p>A peak factor of 3 will be applied to the ADWF to determine the PDWF.</p> <p><b><u>Existing Catchment</u></b></p> <p><i>The SPS upgrade for an existing catchment will be determined using a mix of catchment flow monitoring and design storm events.</i></p>	<p><b><u>Notes:</u></b></p> <ul style="list-style-type: none"> <li>• Additional information about a catchment's characteristics may warrant an increase in the station capacity (small catchments have less attenuation and may warrant higher factors).</li> <li>• All new/upgraded SPS's need to consider the impact on the receiving gravity sewer (either upsize or increase the SPS operational storage – cost benefit analysis required).</li> <li>• All SPS's are required to have a plug connection for an emergency generator.</li> <li>• Pump/rising main sizing shall consider power optimisation in combination with capital costs.</li> </ul>
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## 7.2 Sensitive Catchments

If the pump well overflow is likely to pose High Risk as indicated in the following table, the pump station should be considered as sensitive and alternative design exceeding that specified in this procedure should be adopted.

Table-Risk Assessment for sewer overflows.

Parameters	Low Potential or Risk	High Potential or Risk
*Environmental Values of receiving environment	Water used for Industrial or Agricultural purposes only	Water used for Drinking, Recreational - Primary Contact (swimming)/Secondary Contact (fishing/boating) or requires Aquatic Ecosystem Protection
Water Quality Objectives**	Low degree of compliance	High degree of compliance

Overflow Characteristics	Infrequent, low volume, short duration	Frequent, high volume, long duration
Physical Factors	High dilution and dispersion rate	Low dilution and dispersion rate (eg head waters in a stream)
Overflow Quality	Domestic source	Industrial source

\* consistent with State Environment Protection Policy(waters of Victoria)-SEPP(WOV)

\*\* refer Table 1 SEPP (WOV)

## **8 RECYCLED WATER MAINS**

Recycled water mains shall be constructed in purple coloured pvc pipe or purple sleeved pipe, both marked with the words NON-DRINKING WATER in accordance with "*Water Services Association of Australia*" standard.

Provide purple detectable tape over the top as a fail safe with the words "RECYCLED WATER-DO NOT DRINK" in vertical block type lettering of at least 25mm.

All marker posts, valve covers, above ground pipes, fittings & pit lids are to be coloured purple with the appropriate signage.

## **9 SCADA AND TELEMETRY**

All pump stations and emergency storages shall be provided with an Autodialler.

In addition to the Autodialler facilities, SCADA facilities for sewage pump stations will be provided as nominated by Western Water or required by table 7-1. (If SCADA connection is not required, provision for later connection should be provided.)

The SCADA system used by Western Water is a series of interconnected CITECT systems with a head office main system in Sunbury.

The SCADA system shall be designed and installed in accordance with Western Water SCADA Standards Version 1.3 March 2005 and any updates of that standard made from time to time by Western Water.

## **10 NOTIFICATION**



The consultant shall provide Western Water with 5 working days written notice of the date and time of commencement of works on site.

Notification of works commencing is to be given to neighbouring residents a minimum of two weeks prior to construction.

The consultant must comply with Western Water 's requirement for notification of customers prior to shutting down existing water mains and or sewers for connection of the new works.

The consultant shall provide all notifications to road management authorities required under the Road Management Act (*Vic*).



## 11 FURTHER INFORMATION

These technical design standards have been prepared to assist with clarification of the Authority's technical requirements for the design of water supply and sewer facilities.

**Please note that Western Water design standards and procedures may change. As such you should consult with Western Water staff prior to designing any subdivision works in this region.**

For further information, please contact the Western Water 's Sustainability Section on (03) 9218 5400.

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