

This Technical Note responds to issues raised by licensed plumbers regarding the installation of reticulation/irrigation cut-ins and backflow prevention, 40 mm traps (using products with built-in air admittance valves), vacuum sewer and boundary trap installations and venting.

RETICULATION / IRRIGATION CUT-INS & BACKFLOW PREVENTION

The Regulations define water supply plumbing work to include the installation, alteration, extension, disconnection, repair or maintenance of pipes and other fittings used or intended to be used for the supply of potable water from a meter assembly to the points of use within any property.

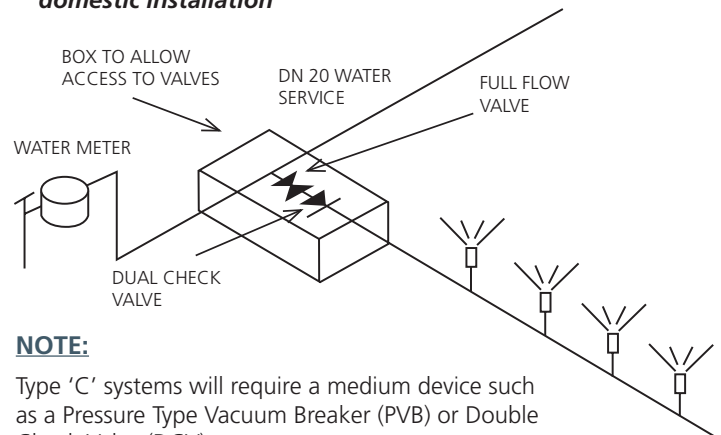
Where mains water supply is used to reticulate/irrigate a property a licensed plumber is required to cut-in the tee-piece and install the isolating valve. The Regulations require the Licensed Plumbing Contractor to report this minor plumbing work to the Board by the end of the first week of the month following the completion of the work.

The Regulations also adopt AS/NZS 3500.1:2003 Section 7 applicable to Irrigation and Lawn Watering systems. For the purposes of backflow prevention and consumer protection the following applies;

- (a) a backflow prevention device is mandatory where chemical nutrients such as fertilisers, herbicides and the like are injected or siphoned into an irrigation system irrespective of the piping or outlet height for the reticulation/irrigation system (Referred to in the Standards as Type D systems);
- (b) a backflow prevention device is also required to be installed in all cases where domestic and residential (Type B) or commercial (Type C) irrigation systems contain piping or outlets installed less than 150 mm above finished ground level (**NOTE: See Figure 1**);
- (c) no backflow prevention device is to be buried in the ground however a device is allowed to be situated below ground if located in a pit or box to allow easy access for maintenance, repair, replacement or removal if required;
- (d) the installation of a backflow prevention device must be reported by the Licensed Plumbing Contractor to the Board (as major plumbing work) within 5 days of the work being completed; and
- (e) a backflow prevention device is not required to be installed in Type A systems containing permanently open outlets and piping installed more than 150 mm above finished ground level. This advice is qualified however by the need for the licensed plumber to consider the possibility of ponding or backpressure on the site and must not involve injection systems.

The Board recommends the publication "A guide to cross-connection control in potable water supply systems" published by Ian Cook as a practical reference for licensed plumbers when dealing with mains reticulation and backflow prevention plumbing work.

Figure (1) - Reticulation/irrigation cut-in for Type 'B' domestic installation



NOTE:

Type 'C' systems will require a medium device such as a Pressure Type Vacuum Breaker (PVB) or Double Check Valve (DCV)

40mm TRAPS AND CERTIFICATION

Some industry members are installing sanitary fixture traps using products manufactured with built-in air admittance valves.

For this plumbing work to comply with the Regulations, only plumbing products carrying the Australian Standards Watermark are to be used and the manufacturer's instructions are to be followed. Licensed Plumbing Contractors must therefore ensure that in certifying their plumbing work to the prescribed plumbing standards under the Regulations that they are also certifying they have correctly installed only Watermark approved plumbing products.

To gain the Watermark accreditation plumbing products, that have built-in air admittance valves, have had to equal or exceed the Australian Standards' test requirements for a 40 mm trap. The test's performance criteria includes draining a set amount of water over a set amount of time, as well as the capacity to allow the free-flow of water (with any objects within) to drain adequately.

A Watermark approved product will carry a clearly visible Certification Mark on the finished product so the installer is aware that the product is certified. This certification can be confirmed by searching SAI-GLOBAL web site at <http://register.saiglobal.com> for the licence number. The product certification certificate can also be viewed to confirm that the licence number is for that exact product.

The Regulations adopt AS/NZS 3500.2:2003 by providing in Clause 4.6.7.4 that wastepipes discharging to floor waste gullies shall not be extended and trap vents shall not be installed on fixture discharge pipes. The existence of an air admittance valve, acts as a trap vent and therefore products with a built-in AAV cannot be used to extend the length of waste pipes for sanitary fixtures to a floor waste gully.

VACUUM SEWER CONNECTIONS & VENTING

The Regulations amend Clause 3.18 in AS/NZS 3500.2:2003 for the installation of drains connected to vacuum systems. The accompanying figures have been provided where licensed plumbers have sought clarification on these installations.

Drains connected to vacuum systems shall be installed in accordance with the following:

- (a) Jump-ups shall be avoided.
- (b) An inspection shaft connected to the drain with a junction shall be placed as close as practicable to, and upstream of, the vacuum chamber.
- (c) The inspection shaft shall be a sweep or 45° junction installed in the graded drain with the branch of the junction extended vertically upwards to surface level.
- (d) The junction to the inspection shaft shall be against the grade of the drain so that any rodding of the line is in the direction away from the chamber.

NOTE: See Figure (2a) & (2b).

- (e) Where more than one drain is connected to a vacuum chamber, the spill level of both overflow gullies of the drains shall be installed level with each other wherever possible.
- (f) A DN 100 vent pipe shall be provided on each drain connected to a vacuum chamber.
- (g) A vacuum sewer system vent can be located on the main drain as close as possible to the inspection shaft riser but can also be connected further upstream as long as no other fixture is connected between the inspection shaft riser and the vent connection.

NOTE: See Figure (2a) & (2b).

- (h) A vacuum sewer system vent can terminate between a minimum of 150 mm and a maximum of 250 mm above ground or adopted flood level using one of the following methods:
NOTE: See Figure (2c) for three installation options.

- (i) one 88° bend and a flat grate with invert level not less than 150 mm above ground or adopted flood level;
 - (ii) two 88° bends and a flat grate or vent cowl so that there is not less than 150 mm between the flat grate or vent cowl and the ground or adopted flood level; and
 - (iii) an air admittance valve not less than 150 mm above ground or adopted flood level installed in accordance with Clause 6.9.
- (i) Where a vacuum sewer system vent is installed as a low level vent it shall terminate in accordance with Clause 3.9.2.3.
 - (j) Where a vacuum sewer system vent is not installed as a low level vent it shall terminate in accordance with Clause 6.8.4 and where an air admittance valve is used it shall be installed in accordance with Clause 6.9.

Figure (2a)

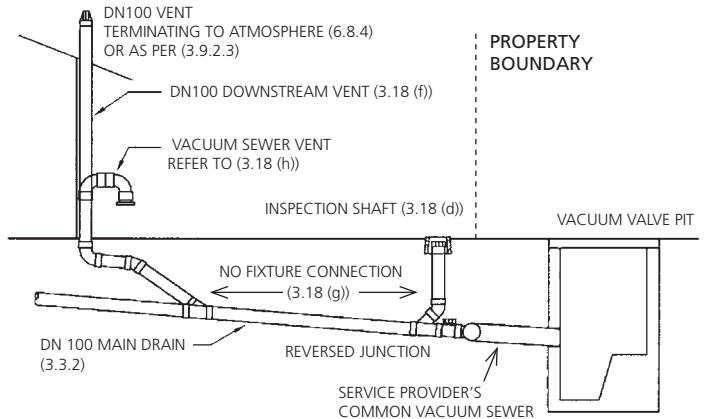


Figure (2b)

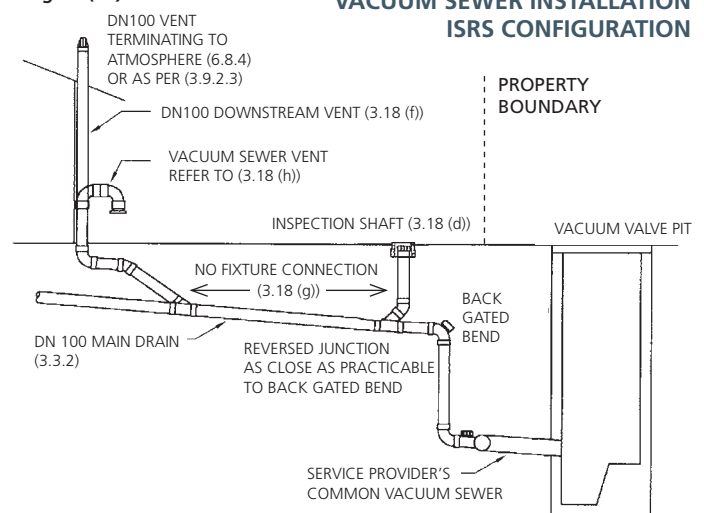
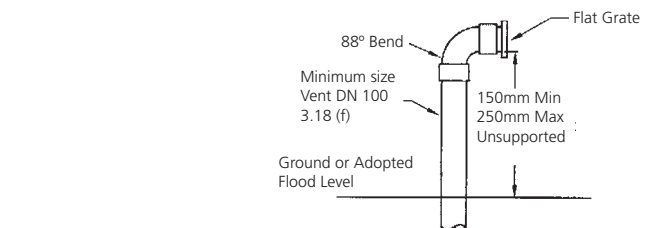
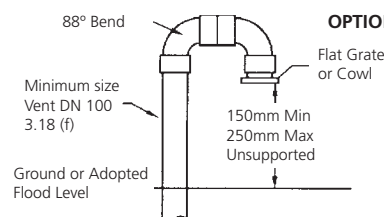


Figure (2c)

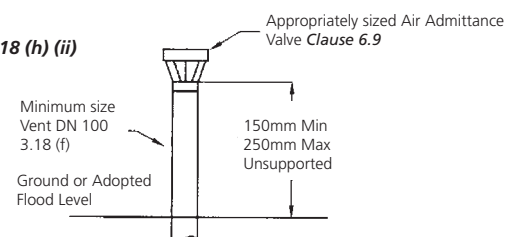
VACUUM SEWER VENTING ALTERNATIVES



OPTION 1. Clause 3.18 (h) (i)



OPTION 2. Clause 3.18 (h) (ii)



OPTION 3. Clause 3.18 (h) (iii)

BOUNDARY TRAP CONNECTIONS & VENTING

The Regulations amend the Standards by providing in Clause 4.4.1 that boundary traps are required to be installed at the connection to the main sewer in boundary trap areas determined by the appropriate Water Services Provider (WSP).

NOTE: The Water Corporation's "Wastewater Manual" states that the number of property connections to DN 300 and DN 375 sewers shall be kept to a minimum and a boundary trap shall be provided on each connection.

The function and purpose of a boundary trap is to help maintain balanced pressure within the main drain where the WSP sewer has large volumes of sewage moving at velocity. This action has the potential to siphon the trap seals in the main drain of a private property.

A main drain that incorporates a boundary trap must have an upstream and a downstream vent in accordance with AS/NZS 3500.2:2003 Clause 3.9.1(a). The Regulations adopt the Standards with respect to upstream vents but replace the Standards at Clause 3.9.2.2 when installing downstream (boundary trap) vents with the requirements below:

Where, on any drain, a boundary trap vent is required by Clause 3.9.1(a), it shall be installed so that —

- (a) the vent is connected not more than 10 m from the boundary trap riser and no other fixture is connected between the vent and the boundary trap riser.

NOTE: See Figures (3a) & (3b).

- (b) if the vent is unsupported, it terminates between a minimum of 150 mm and a maximum of 250 mm above ground or adopted flood level using one of the following methods:

NOTE: See Figure (3c).

- (i) one 88° bend and a flat grate with invert level not less than 150 mm above ground or adopted flood level;
 - (ii) two 88° bends and a flat grate or vent cowl so that there is not less than 150 mm between the flat grate or vent cowl and the ground or adopted flood level;
 - (iii) an air admittance valve not less than 150 mm above ground or adopted flood level installed in accordance with Clause 6.9; and
- (c) the vent is sized in accordance with Clause 3.9.3.1 so that the fixture unit loading on the main drain determines the size of the vent with the minimum size being not less than DN 50.

Licensed Plumbers are also to note that the Regulations further modify the Standards by adding a high level vent provision (new Clause 3.9.2.4). "Where a boundary trap vent is not installed as a low level vent it shall terminate in accordance with Clause 6.8.4, and where an air admittance valve is used it shall be installed in accordance with Clause 6.9."

Figure (3a) BOUNDARY TRAP INSTALLATION ('P' TYPE)

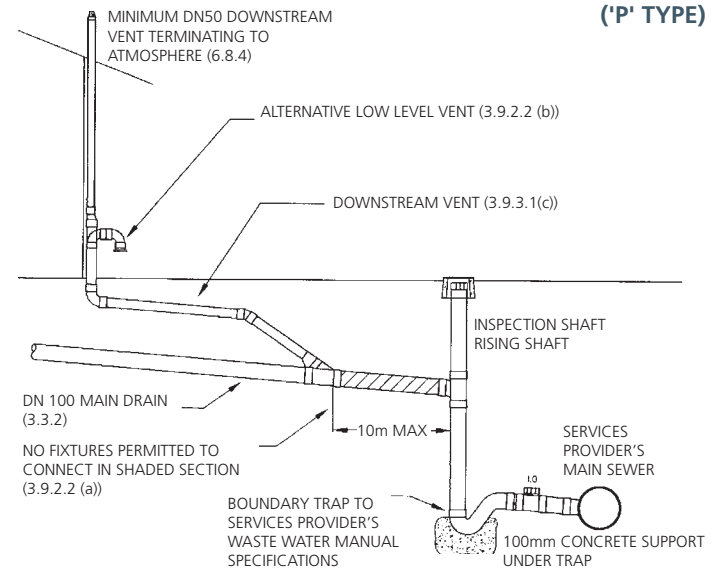


Figure (3b) BOUNDARY TRAP INSTALLATION (RUNNING TRAP TYPE)

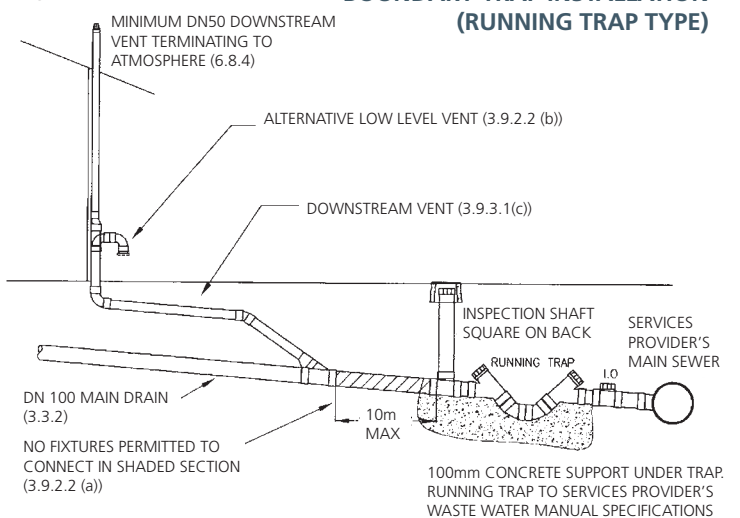
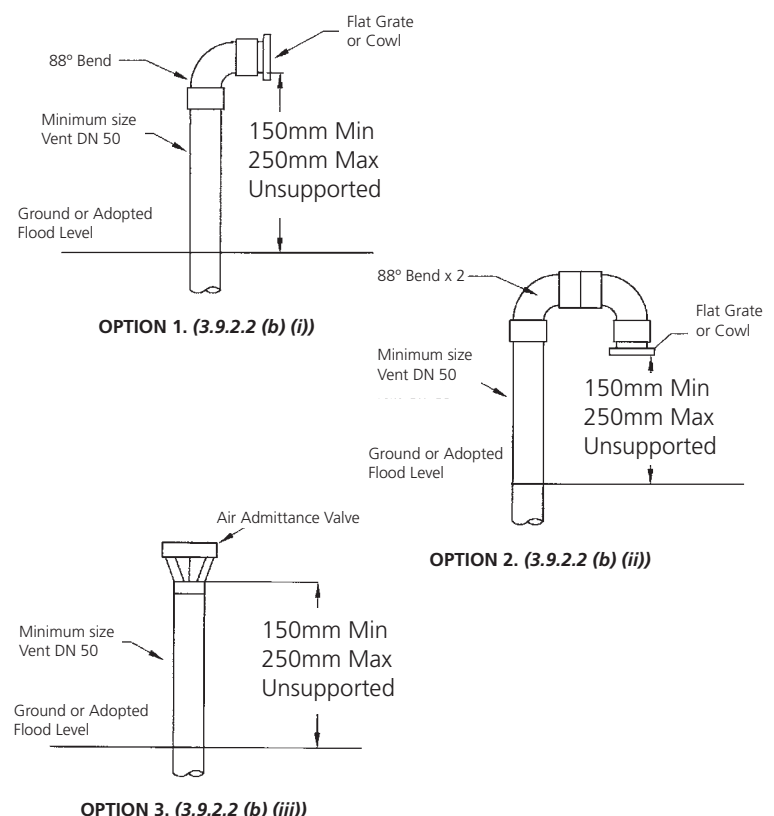


Figure (3c) DOWNSTREAM VENTING FOR BOUNDARY TRAPS



Plumbers Licensing Board

Technical Advice Line 1300 360 897

NOTES

The Technical Note Series is issued by the Plumbers Licensing Board to assist the plumbing industry to comply with the Water Services Licensing (Plumbers Licensing and Plumbing Standards) Regulations 2000 (the Regulations) applicable to plumbing work in Western Australia.

Each Technical Note is to be read in conjunction with Part 6 of the Regulations that currently adopt the Plumbing and Drainage Standard AS/NZS 3500:2003 (the Standards) but modified in certain matters to suit the State's building approach and other local conditions.

DEVELOPMENT

Each Technical Note is generally developed with the assistance of the Plumbing Industry Reference Group. Details of the members of the Group are available via the Board's web site www.plumbers.wa.gov.au.

FEEDBACK

The Plumbers Licensing Board welcomes your feedback. If you have any questions or suggestions on this Technical Note or any areas that the Technical Notes should cover, please contact the Board's Trade Education and Training Standards Officer on (08) 9282 0478.

COPIES

Copies of all Technical Notes can be obtained online at www.plumbers.wa.gov.au or by contacting the Plumbers Licensing Board on (08) 9282 0478 or via email to plumbers@commerce.wa.gov.au.

CONTACT

As a licenced plumber you can access the following services by contacting the Board via telephone, fax or email below:

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