

Installation of mains pressure storage water heaters

Plumbing Advisory Note

Issued April 2024

This advisory note covers the correct installation of mains pressure storage water heaters. Installations must comply with *AS/NZS 3500 Part 4 Heated Water Services*.

Location

Mains pressure and reduced mains pressure water heaters must only be installed in accessible locations. These types of water heaters must not be located within a roof space unless access is by means of a doorway, between a room and the roof space, or with a walkway to the heater.

Corrosion prevention

Water heaters, supported on a surface that may become wet, must be installed to allow free air circulation between the surface and the base of the water heater unless stated otherwise in the manufacturers written installation instructions.

Support

Storage water heaters that aren't installed in a roof space or above a roof, must be floor-mounted, or supported, as follows:

- (a) By brackets or hangers supplied by, or as specified by, the manufacturer, and installed in accordance with the manufacturer's instructions
- (b) In a recess in a wall as specified by the manufacturer
- (c) On a level, stable impervious base -
 - (i) of bonded brick or concrete cast in situ, having a thickness of not less than 75mm; or
 - (ii) of precast concrete having a thickness of not less than 50mm; and
 - (iii) having the top of the base not less than 50mm above the surrounding surface.

Temperature pressure relief and expansion control valves

All new or replacement mains pressure storage water heaters shall be fitted with new temperature pressure relief and expansion control valves.

Legislative requirements

The *National Construction Code Series Volume Three, Plumbing Code of Australia (PCA) –Section B2 Heated Water services* specifies performance requirements for any part of a heated water service of a property that is connected to the drinking water supply. It covers from the point of connection to the points of discharge.

Plumbing advisory notes are issued by the Office of the Technical Regulator (OTR) to provide general assistance the plumbing industry. Each plumbing advisory note should be read in conjunction with the *Plumbing Code of Australia (PCA)* and the deemed to satisfy provisions of *AS/NZS 3500:2021*.

Sanitary plumbing and drainage systems that comply with the *AS/NZS 3500. Part 2: Sanitary plumbing and drainage* are deemed to satisfy the performance requirements of the PCA.

- *NCC PCA 2022 Part B2 Heated water services, PCA*
- *NCC PCA SA Variations, SA B2D2*
- *AS/NZS3500.4:2021*

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Drain lines

Drain lines from temperature pressure relief valves and expansion control valves must be installed as follows:

- (a) There must be no tap, valve or other restrictions in any line
- (b) Each line must fall continuously from the valve to the approved point of discharge
- (c) Drain lines from expansion control or temperature pressure relief valves must not discharge into a safe tray
- (d) The point of discharge from each drain line must be located so that the release of steam or hot water does not cause a nuisance, is readily discernible and incurs no risk of damage to the building or injury to persons
- (e) Drain Lines must discharge separately over a gully trap or tundish, drain lines must also have an air gap of at least twice the diameter of the drain line.

Insulation

Thermal insulation for piping must be fit for purpose and must have thermal insulation properties appropriate to the climate region and design requirements of the system being installed, as follows:

- (a) The cold water supply pipe between the storage water heater and the closest valve
- (b) The outlet pipe from a storage water heater excluding valves, for at least the first 500mm or, where an external heat trap is fitted, to a point 150mm down the first vertical leg of the heat trap
- (c) The primary flow and return between an auxiliary heater and a storage water heater.
- (d) On multiple installations, the whole heated water manifold to a point at least 500mm past the heated water outlet branch from the last water heater (see the table below).

Table 1: Minimum thermal insulation

System	Location of piping to be insulated	Minimum total R-values		
		Climate region A	Climate region B	Climate Region C
Non-circulating heated water piping	All heated water piping within a conduit encased within a concrete floor slab	0.3	0.3	0.3
	All external piping from the water heater to the primary kitchen sink	0.3	0.6	1.0
Circulating heated water piping	All heated water piping within a conduit encased within a concrete floor slab (except for piping which is part of a floor heating system)	0.3	0.3	0.3
	All external flow and return piping including 500mm along any branch from the flow and return piping	0.3	0.6	1.0
	All internal flow and return piping including 500mm along any branch from the flow and return piping	0.3	0.3	0.3

Notes:

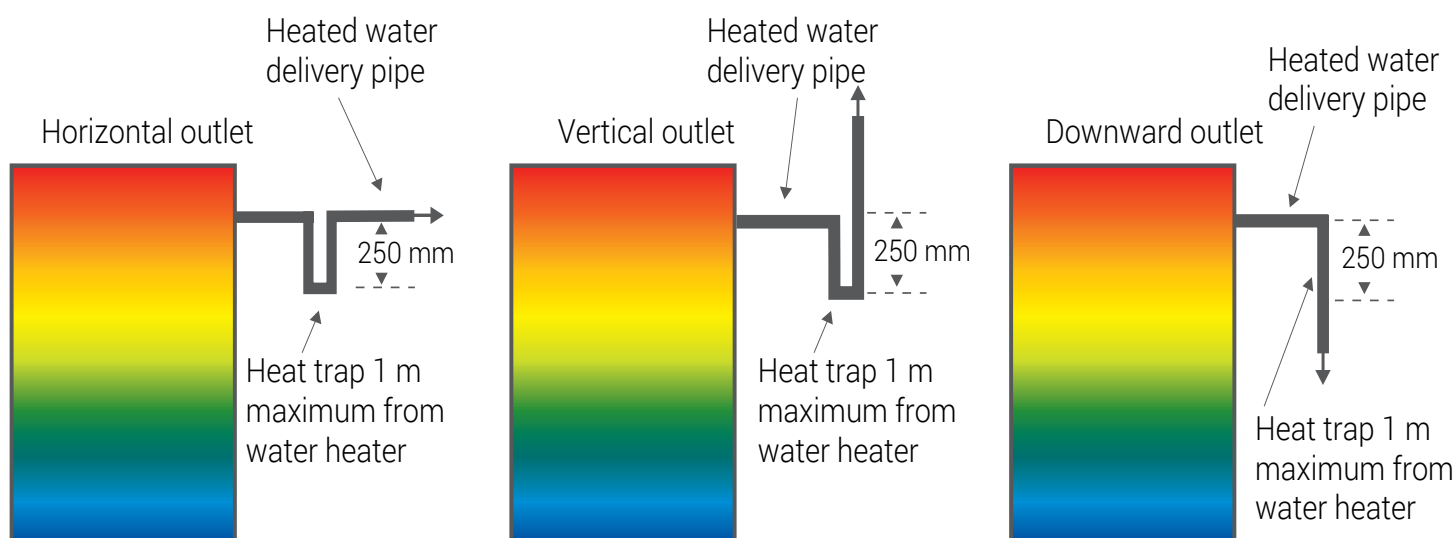
1. An external location of a building is an unenclosed area and includes:
 - a. an open sub-floor area of a building; and
 - b. the area of a building located under an open veranda or carport or the like.
2. The R value will cover the pipe material, the insulation material and the air space in the conduit for the completed installation.
3. Acceptable pipe insulation materials include, but are not restricted to, the following:
 - a. 13 mm of closed cell polymer, $R = 0.3$
 - b. 25 mm of closed cell polymer, $R = 0.6$
 - c. 38 mm of closed cell polymer, $R = 1.0$

Heat traps

Heat traps may be required in new and replacement installations (refer to Figure 1 below & Manufactures instructions) as follows:

- (a) All storage water heaters must have a heat trap within 1m from the outlet of the water heater and before the first branch
- (b) The heat trap must have a vertical drop of 250mm from the outlet level of the storage water heater if the heat trap is not an integral part of the water heater
- (c) An external heat trap is not required where the heat trap is integral with the storage water heater. This will be labelled on the heated water service.

Figure 1: Heat trap placement



Contact the Office of the Technical Regulator for more information

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**Government of
South Australia**