Office of the Technical Regulator

Fire hydrant and fire hose reel services

Plumbing Advisory Note

Revised July 2025

The Plumbing code of Australia 2022 (PCA) was adopted in South Australia on 4 May 2023. In the latest update to the PCA, the Fire Hydrant installation standard that is referenced is now *AS2419.1:2021*, which came with several changes.

This advisory note clarifies some of those changes along with installer booking obligations with the Office of Technical Regulator (OTR).

What is required to be booked for audit with the OTR?

The OTR audits fire services with an un-metered in ground water supply from the point of connection (or other acceptable sources of supply) to fire-fighting water services. This includes fire hydrants, fire hose reels, automatic fire sprinklers suppression systems and wall drencher systems for the following Standards across South Australia.

- AS 2419 (Part 1) – Fire hydrants Installations
- AS 2441 – Installation of fire hose reels
- AS 2118 (Parts 1, 2, 3, 4 and 6) - Automatic fire sprinklers systems

All new un-metered fire services (in ground) and alterations to existing fire services (in ground) must be booked with the OTR. This includes installations or alterations to booster assemblies and backflow prevention devices supplying water to any unmetered fire service. Select the booking category of in-ground fire service via the electronic Certificate of Compliance (eCoC) booking portal if you require an OTR booking for a fire service detailed above.

Bookings are not required for above ground fire services such as automatic sprinkler systems installed per the requirements of AS 2118 unless a booster and or backflow prevention containment device installation or alteration has occurred. If this has occurred, select the booking category of in-ground fire service via the eCoC booking portal if you require an OTR booking for a fire service detailed above

Note: FPAA101D Fire Sprinklers are considered a water service.

How to book a fire service installation audit

Inspections must be booked via the eCoC portal, or by phoning before 3pm on the day prior.

- **Online:** ecoc.otr.sa.gov.au (after logging in, head to the Plumbooking tab).
- **Phone:** 1300 884 055 (9.00am to 3.00pm, Monday to Friday)

Booking requirements

At the time of booking the audit you are required to provide the following:

- eCoC number
- property owner's name
- property address
- contractor name and contractor's licence number
- contact telephone number
- on-site contact name and telephone number
- date and time of requested site audit.

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Fire service test

The pressure test must be conducted using 2x calibrated pressure gauges, minimum diameter of 100mm with a range of 0 – 2500kpa.

The pipework upstream of the required backflow prevention device should be hydrostatically tested in accordance with *AS/NZS 3500.1.*

The pipework downstream of the required backflow prevention device should be hydrostatically tested in accordance with *AS 2419.1 Appendix S.*

Note: If you require a functionality test with the MFS or CFS for an un-metered fire service installation or alteration you need to have booked an inspection for audit with the OTR and submitted the required fire service documentation detailed below detailed below.

Legislative requirements

The *National Construction Code Series Volume Three, Plumbing Code of Australia (PCA) – Part B4* specifies performance requirements related to installing firefighting water services.

Firefighting water installations that comply with the *AS/NZS 3500.1 Water Services, AS 2441*, and *AS2419.1* are deemed to satisfy the performance requirements of the Plumbing Code of Australia.

Certification of an essential safety provision (FORM 2 – ESP COMPLIANCE CERTIFICATE) is required per the *Ministerial Building Standard MBS 002* for the purpose of maintaining the performance of essential safety provisions under the *Planning, Development and Infrastructure Act 2016*.

Hydrostatic pressure testing procedure for Polyethylene (PE) pipes [Rebound test]

Polyethylene pipes can change dimensions during testing to 1700 kPa due to their elastic nature. Expansion of the pipe may mean it's not possible to secure a fixed pressure gauge reading without using a unique testing procedure (a rebound test). As the pipe expands, the pressure will reduce and not meet the requirements of a firm 1700 kPa reading.

The OTR will only accept a steady pressure gauge reading of 1700 kPa.

Where polyethylene (PE) pipe has been installed in a fire system, hydrostatic testing must conform to the general test procedure in *AS/NZS 2033 Installation of Polyethylene pipe systems.*

Supplier/manufacturers should be contacted and asked for their recommended testing procedure to meet the required test regime, without damaging the structural integrity of the pipe.

Fire hydrant installation test pressure limitations for Type A and Type B copper tubes

AS 1432 Copper tubes for plumbing, gas fitting and drainage applications - Appendix C, table C2, outlines the pressure testing (PT) limitations in kPa that Type A and B copper tubes can be subjected to.

For Fire services, Type B copper tubes can be selected for use in sizes up to and including DN 100.

Type A copper tubes can be selected for use in sizes up to and including DN 150. Copper tube is not suitable for services larger than DN 150 due to pressure limitations.

Turning off a fire service, or to recharge a fire service

To have the fire service valve turned off, or to recharge a fire service contact the Network Utility Operator.

- SA Waters customer service: 1300 883 121

Fines apply for tampering with Infrastructure under the *Water Industry Act 2012*. Maximum penalty is $20,000.

Fire service documentation requirements

The plumbing contractor must provide the OTR with the following information within seven days of completing the fire services installation:

- copy of the fire service installation report
- electronic Certificate of Compliance (eCoC)
- backflow prevention device commission, inspection, and maintenance report
- block plan of the installation.

This information must be emailed to:
otr.plumbregulator@sa.gov.au

Only after this information is received from the OTR will the Metropolitan Fire Service (MFS) or the Country Fire Service (CFS) attend site and complete a functionality test.

Connection to Network Utility Operator (NUO) supply

All pipework and fittings connected to the network's drinking water connection, until downstream of the

containment backflow prevention assembly (which includes the isolation valves), must be Watermarked and compliant with ***AS/NZS 4020 - Products for use with drinking water***.

Examples of some compliant watermarked materials are:

- Copper
- Ductile Iron
- 316 Stainless steel
- PVC-O
- Polyethylene (Plastic pipes and fittings cannot be used above ground, see Table 2)

See the General Installation Illustrations further in this document for examples.

Fire services are provided solely for the purpose of firefighting. Under no circumstances is a fire service to be used for an unauthorised purpose.

Backflow prevention for fire services

Where a site is served by a NUO's drinking water supply, appropriate backflow containment protection must be selected and installed.

- The National Construction Code (NCC) Volume 3 - Plumbing Code of Australia (PCA) Specification 41: Cross-connection hazards sets out the hazard ratings for firefighting water services in S41C7.

- AS/NZS 3500.1 Table 4.4.1- Suitability of devices provides the selection of a suitable backflow prevention device after the hazard is known.

The minimum requirement for containment protection for a fire service if recognised as a low hazard per section S41C7 of the PCA is a Single Check Valve Testable device (SCVT) which is suitable for low hazard services only.

A low hazard device is the minimum requirement for a dedicated fire service containment valve, practitioners should consult with their hydraulic consultant to determine their backflow requirements if unsure.

PCA's firefighting water services hazard ratings

1. Low hazard

A firefighting water service is considered to be a low hazard if it has a direct connection to the NUO's drinking water supply. This is commonly referred to as a dedicated fire main that has its own independent connection to the NUO's drinking water supply and does not share the same supply connection as the dedicated on-site drinking water supply or any other water supply.

Other criteria to be considered as low hazard:

The firefighting water service -

- **Does not contain a tank:** specifically tanks stored with water that comes from a source other than a dedicated fire main connection to the NUO's drinking water supply.
- **Does not contain a reservoir:** examples include (but aren't limited to) water sourced from a dam, reservoir, or other open water sources.
- **Does not contain a connection to another water supply:** such as an interconnection with any alternative water supply other than the dedicated fire main connection to the NUO's drinking water supply. This could include non-drinking water, rainwater, sea water, bore water, river water etc.
- **Does not contain antifreeze or other chemical additives:** including foaming agents or other anti-freeze additives etc.
- **Does not have a fire brigade booster connection from an auxiliary water supply:** for example water that is being drawn from a source other than a NUO drinking water supply, which is then introduced into the fire service via a booster assembly.

Other fire services also considered to be low hazard:

- Domestic fire sprinkler systems installed in Class 1 buildings.
- FPAA101D fire sprinkler systems.
- Firefighting water storage tanks that are fed via a dedicated fire main connection to the NUO's drinking water supply.
- Wall drenchers connected to a dedicated fire service main.

2. Medium Hazard

Any firefighting water service not referred to in (1) is considered a medium hazard. This is referring to any fire service that is not listed as low hazard or does not meet the criteria to be deemed as low hazard within S41C7 ***(Specification 41 from the Plumbing Code of Australia 2022).***

An example could be a fire hydrant service that is pump-fed via on-site water storage tank(s) with water sourced from a shared on-site drinking water supply (plumbing installation) that is connected to the NUO's drinking water supply. This type of fire service would be deemed as a medium hazard as it does not have a direct independent connection to the NUO's drinking water supply, therefore not meeting the criteria of S41C7

(1). However, the site backflow prevention containment device requirement would need to be selected based on the criteria listed within S41C6 for the sites drinking water supply. This could also result in a medium or high classification for the purpose of individual, zone and containment device requirements depending on the nominated cross-connection hazards within the site itself and the site classification as listed within specification 41.

Another example of a medium hazard scenario is a wall drenching system that is fed via an on-site plumbing installation. In this example the wall drenching system does not have a direct connection to the NUO's drinking water supply as it's fed via the on-site plumbing installation. This means that it shares a drinking water connection to the NUO's drinking water supply. Therefore, as it is not listed within S41C7 (1) it is nominated as being a medium hazard. This scenario would require a medium hazard individual backflow prevention device for an individual water supply to a single drencher or medium hazard zone device for the branch offtake to a set of drenchers. The wall drenching system would be then considered as a fire service as it is separated from the plumbing installation via a testable backflow prevention device.

However, if the wall drenching system is installed and certified by an appropriately licensed plumbing worker and or sprinkler fitter with WaterMarked materials used for its construction it could be reduced in hazard rating to low.

Location of backflow prevention

Containment backflow prevention devices must be installed within 3m of the network connection. There must be no other branch offtakes upstream of the backflow prevention containment device.

Backflow prevention devices must be readily accessible.

If the H pattern booster assembly is located adjacent to the point of connection, the backflow prevention containment device may be incorporated into the booster assembly.

The backflow prevention containment device must have WaterMarked, gear-activated, resilient-seated isolating valves installed on either side, locked in the open position.

If the H pattern booster assembly is not located within 3m from the point of connection, a WaterMarked containment backflow prevention device must be installed upstream of the H pattern, and within 3m of point of connection. In this scenario the H pattern booster assembly must contain a certified full flow non-return valve.

See the General Installation Illustrations further in this document for examples.

Note: Line strainers shall not be installed on backflow prevention devices when used in fire services.

Backflow prevention testing

Backflow prevention devices must be installed by an appropriately licensed plumber and commissioned in accordance with ***AS/NZS 2845 Part 3 – Field testing and maintenance of testable devices.***

AS2845 requires test equipment used for field testing backflow prevention devices to be annually calibrated by a registered laboratory.

Backflow commission, inspection and maintenance report documents can be downloaded on the OTR Plumbing Trades website.

Inline pumping

Pumping directly from the water main is not permitted by NUOs without approval. Approval must be given by the network utility before projects begin.

Some NUOs (e.g. SA Water) may require a higher level of backflow prevention for installations that pump directly from a water supply.

General installation illustrations

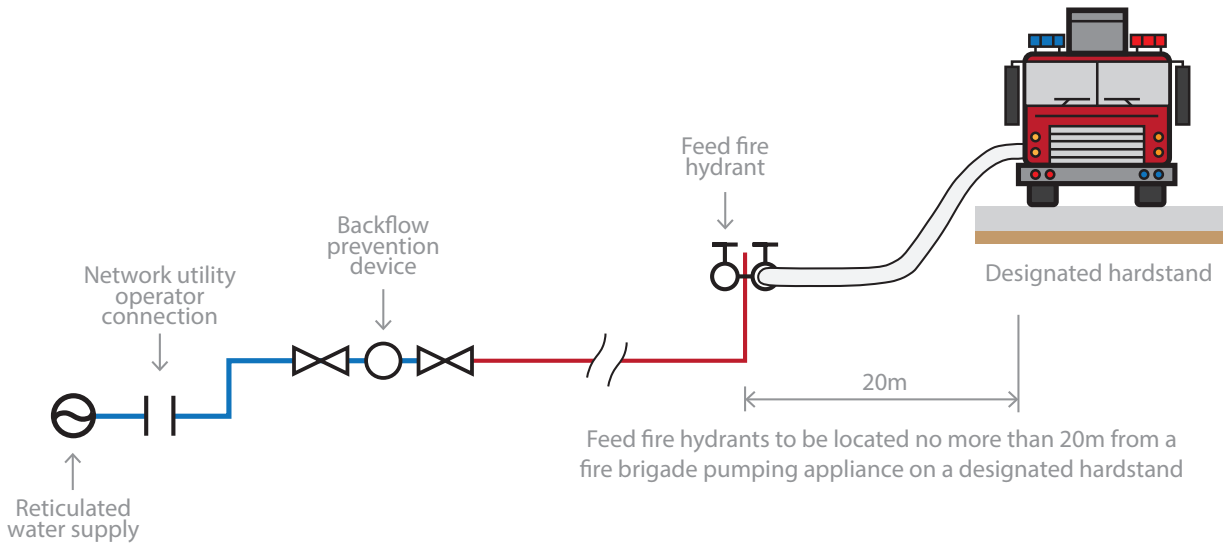

Figure 1 - Standalone feed hydrant

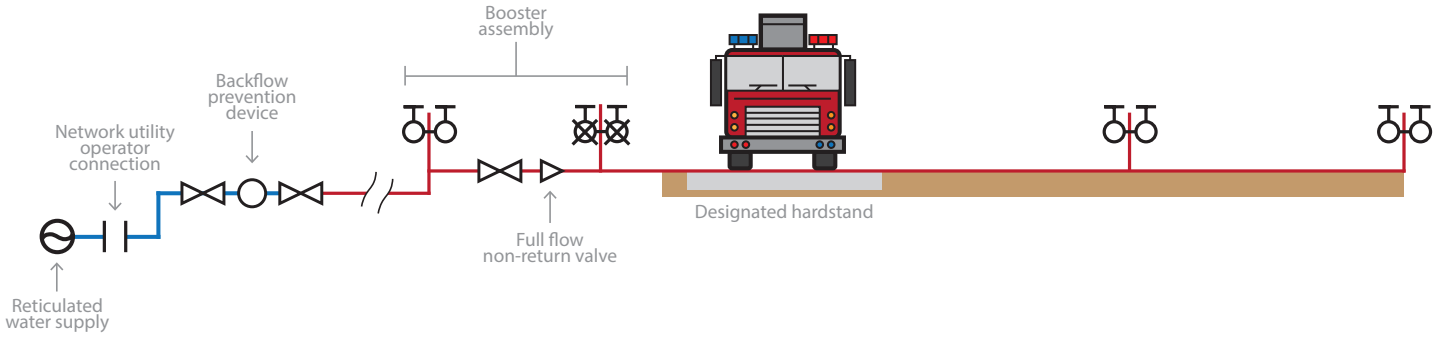

Figure 2 - Attack hydrant

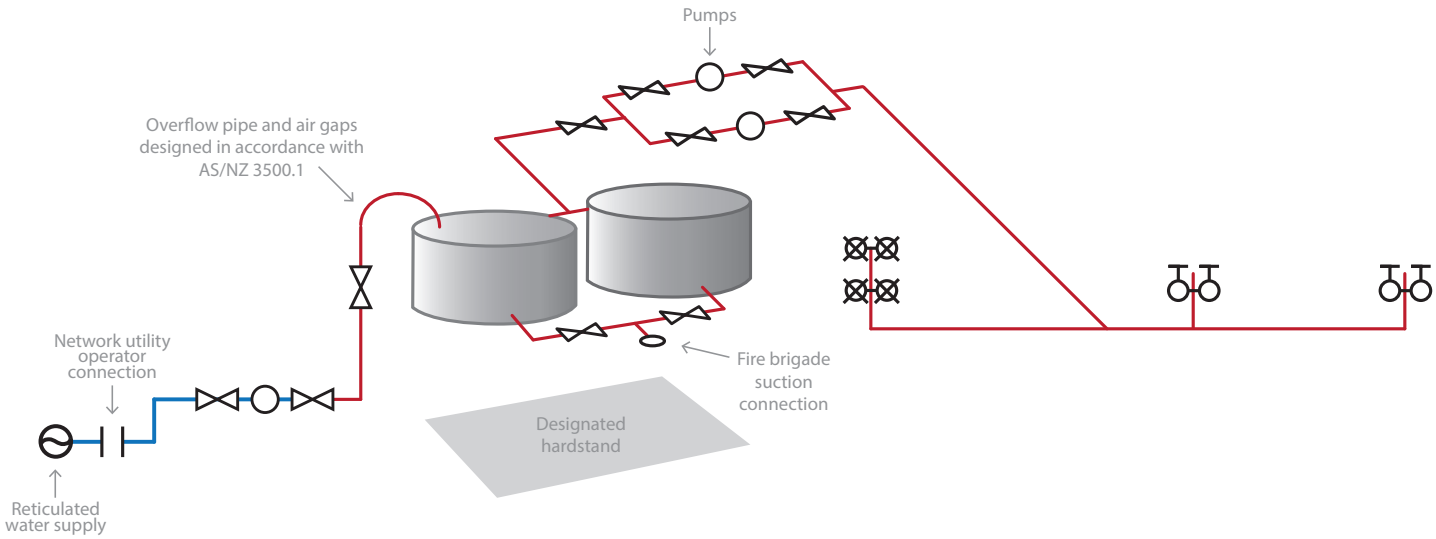

Figure 3 - Attack hydrant incorporating on-site tank and pumps

Water storage tanks

Where steel tanks are used as either full-capacity tanks, reduced-capacity tanks or break tanks, they must conform to *AS 2304 Water storage tank for fire protection system.*

*O*verflow pipe sizes and air gaps between float-operated valves, automatic infill outlets and maximum tank water levels must be designed in accordance with *AS/NZ 3500.1*

Fire Hose Reels (FHR)

Fire hose reel installations must comply with *AS 2441 - Installation of fire hose reels.*

FHR Isolating valves

Any valve that can prevent the flow of water to the hose reel must be secured and padlocked in the open position. It must have a tag attached which is corrosion-resistant. The tag must have the text shown in the diagram below in upper case lettering, at least 8 mm tall. This includes Water Meters.

FHR Isolating valves supplied by a connection to a fire service

An isolating valve must be provided and located in a fire-isolated stairway, fire-isolated passage or a fire isolated ramp, or outside the building.

This isolation valve must have permanent signage.

This enables the system to be easily shut off in the event that fire has damaged internal hose reel pipework, while maintaining available system pressure in the fire hydrant system to meet the operational needs of the SAMFS or CFS.

Backflow prevention for FHR installations

FHRs located within an area where a cross connection hazard exists must have a hazard rating the same as the areas within reach of the hose.

This hazard rating will need to be determined using the verification method in the *PCA B5V1* as there can be many variables depending on the site.

FHRs may be zoned with an appropriate backflow prevention device.

FHRs supplied by dedicated fire services may not require zone or individual backflow prevention devices if the containment device is a suitable hazard rating.

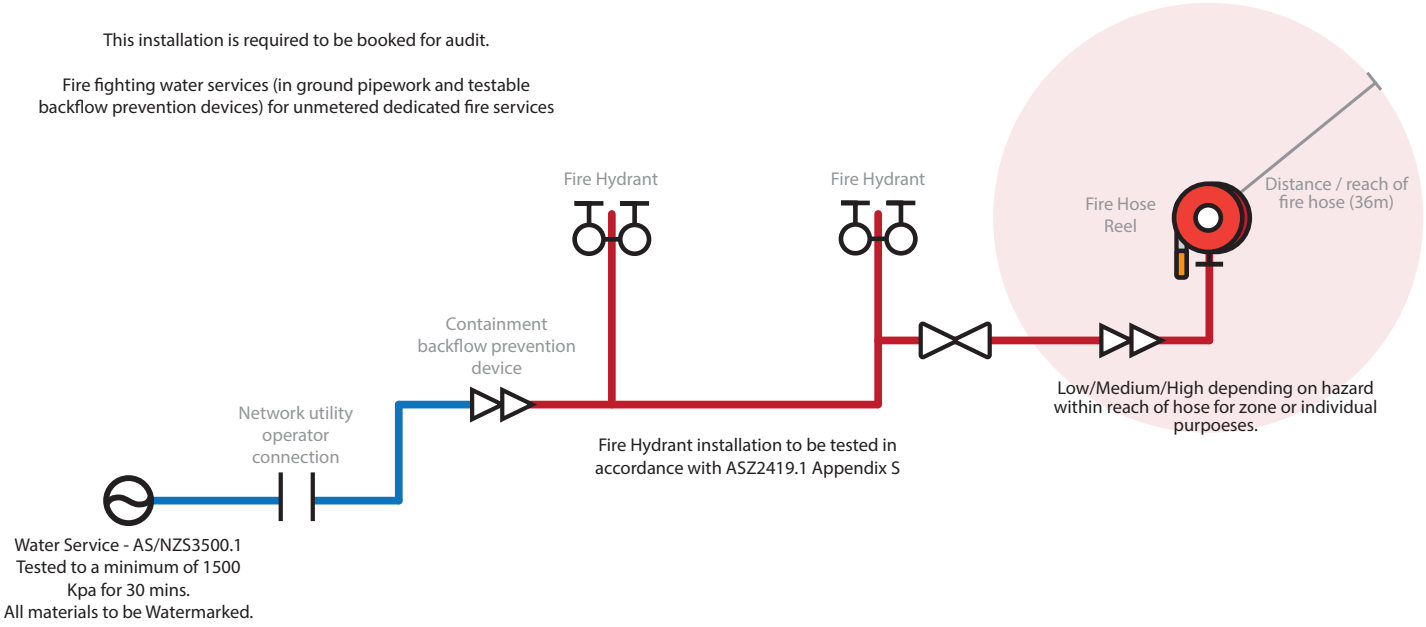

Figure 4

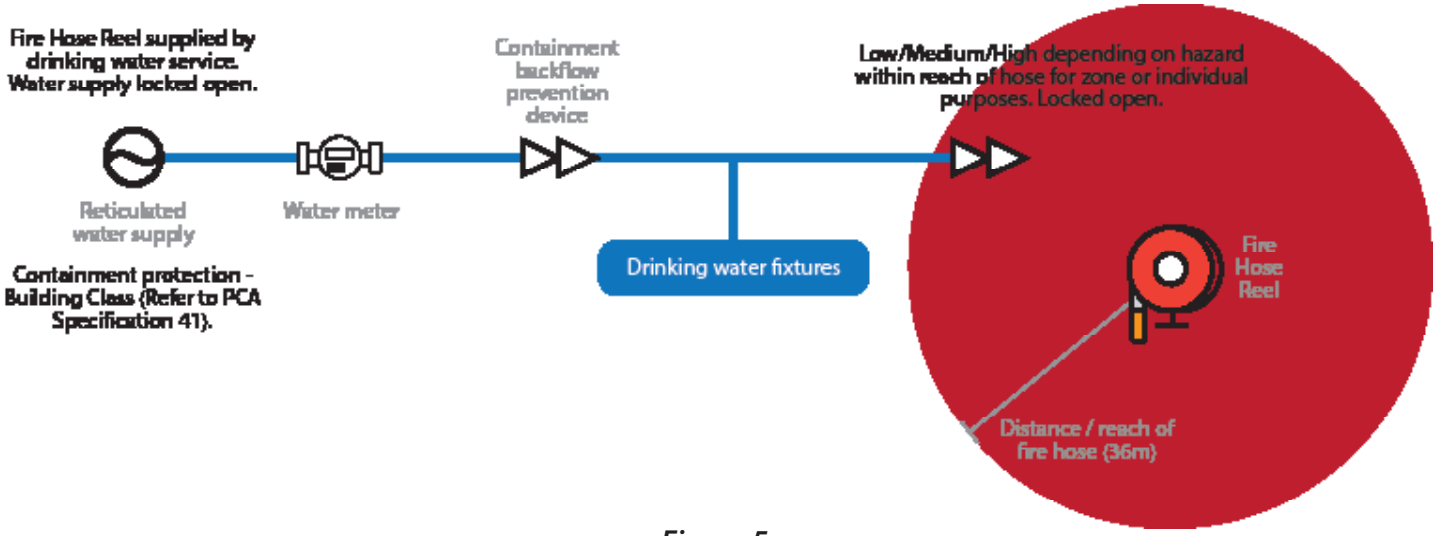

Figure 5

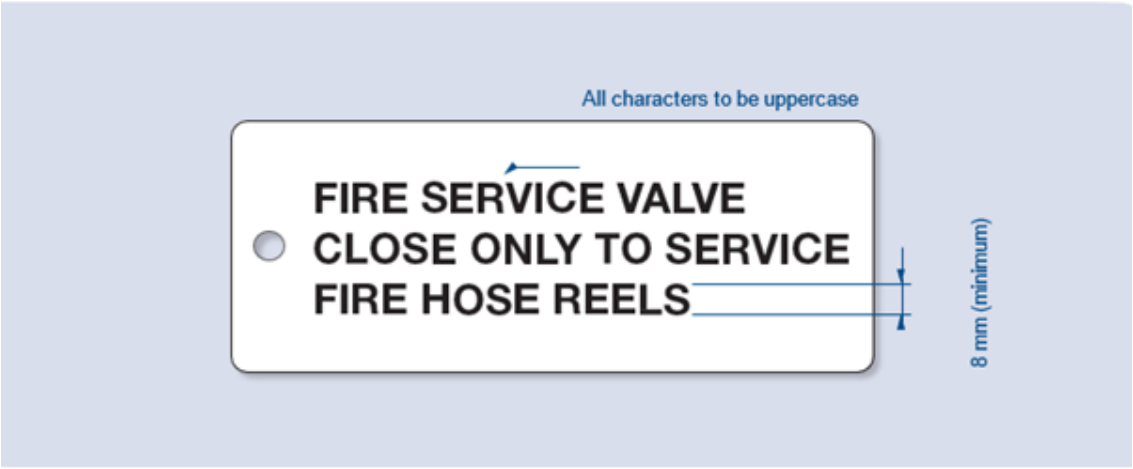

Figure 6

Materials used in fire service installations

Galvanised steel pipe must not be used upstream of any backflow prevention device.

When selecting materials used in fire service installations, plumbers should consider:

- if the material will be above or below ground
- the requirements for protecting specific materials
- the minimum pressure rating for PVC-U and polyethylene piping (must be a minimum of PN16).

Material	Above-ground use	Below-ground use
Cast iron fittings	Yes	Yes
Copper tubes	Yes	Yes
Ductile iron pipes and fittings	Yes	Yes
Plastic pipe and fittings	No	Yes
Stainless steel pipes and fittings	Yes	Yes
Steel pipes and fittings - galvanised	Yes - downstream of the Backflow prevention device	Yes - downstream of the Backflow prevention device and no more than 1.5m in length as part of the hydrant riser
Wrought steel fittings	Yes	No

Thrust blocks and anchors

Thrust blocks and anchors must be installed in systems with unrestrained joints in accordance ***AS/NZS 3500.1 5.8 Anchorage below ground***. Installations must not be charged with water until all thrust blocks have been allowed sufficient time to gain their designed strength. Thrust blocks are required against NUO's connections. Galvanised steel pipe must not be used upstream of any backflow prevention device.

External and internal pipework

Above ground pipework in fire hydrant systems must be protected from the effects of fire.

For example, where exposed copper pipework is installed within a non-sprinkler protected building it must be protected by fire resisting construction of not less than -/60/60 fire resistant level (FRL) or installed in a fire isolated-stair or fire-resisting shaft or located above a ceiling system that achieves a resistance to the incipient spread of fire for a period of not less than 60 minutes.

Press fit type systems

Press fit type joints have been added to ***AS 2419.1*** as a compliant joining method.

Press fit type systems must only be used on copper or stainless pipework confirming to ***AS 3688 Water supply and gas systems - Metallic fittings and end connectors.*** Pipe valves and fittings that meet the requirements listed in section 9.1 are also suitable for this application.

Below-ground pipes

The combined maximum length of galvanized pipe and fittings for individual hydrant risers must not exceed 1.5m in length, and must be double wrapped with a petrolatum tape in accordance with ***AS 2419.1 Clause 8.6.5.3.***

Polyethylene extruded plastic coating and tape

For in-ground hydrant lines that are polyethylene coated, the extruded sleeve of tape shall be of high-density polyethylene plastic, applied over the hot dipped galvanised pipe.

'Loose polyethylene sleeving shall not be used as in-ground corrosion protection for stainless steel and galvanized steel pipe and fittings.'

Petrolatum tape coating

Galvanized steel risers and copper pipes installed in the ground must be double-wrapped with petrolatum tape.

- The second wrapping must overlap by 50% and be wrapped in the opposite direction of the first wrapping.
- The coating must be overwrapped with a self-adhesive polyethylene tape.

Depth of cover

Minimum depth of cover for buried pipes should comply with Table 5.9

Loading conditions	Minimum cover
Under slabs and footings (concrete)	75 mm
Not subject to vehicular loading (excluding fire services)	300 mm
Fire services not subject to vehicular loading	600 mm
Subject to vehicular loading:	
(a) no carriageway	450 mm
(b) sealed carriageway	600 mm
(c) unsealed carriageway	750 mm
Pipes in embankments or subject to construction equipment loads	750 mm

Contact the Office of the Technical Regulator for more information

Online otr.sa.gov.au

Email otr.plumbregulator@sa.gov.au

Phone 1300 760 311