

BACKFLOW PROTECTION FOR WATER SUPPLIES TO CONSTRUCTION SITES

The following advice has been agreed by the WRAS Technical Committee on behalf of Water Suppliers.

1 Water supply for construction, irrigation and site management use only

1.1 A supply of water to a construction site where, during construction, the water supply will NOT also be used for domestic or food production purposes,

and where

- (a) the water is metered and
- (b) the supply of the water is for a period not exceeding one month, or, with the written consent of the water undertaker, three months;

ONLY requires backflow protection so that

- (c) no water can return through the meter to the Water Supplier's communication pipe or water main.

1.2 Backflow protection in accordance with 1.1(c) above can be either

- (a) by 'whole-site backflow protection' (see Figure 1) using a backflow device rated at fluid category five (FC5) installed on the supply pipe or private water main close to where it enters the site – e.g. a break tank arrangement with an air gap of the type AA, AB or AD (see Appendix). In such circumstances, individual outlets or processes on the site do not have to have point-of-use backflow protection.

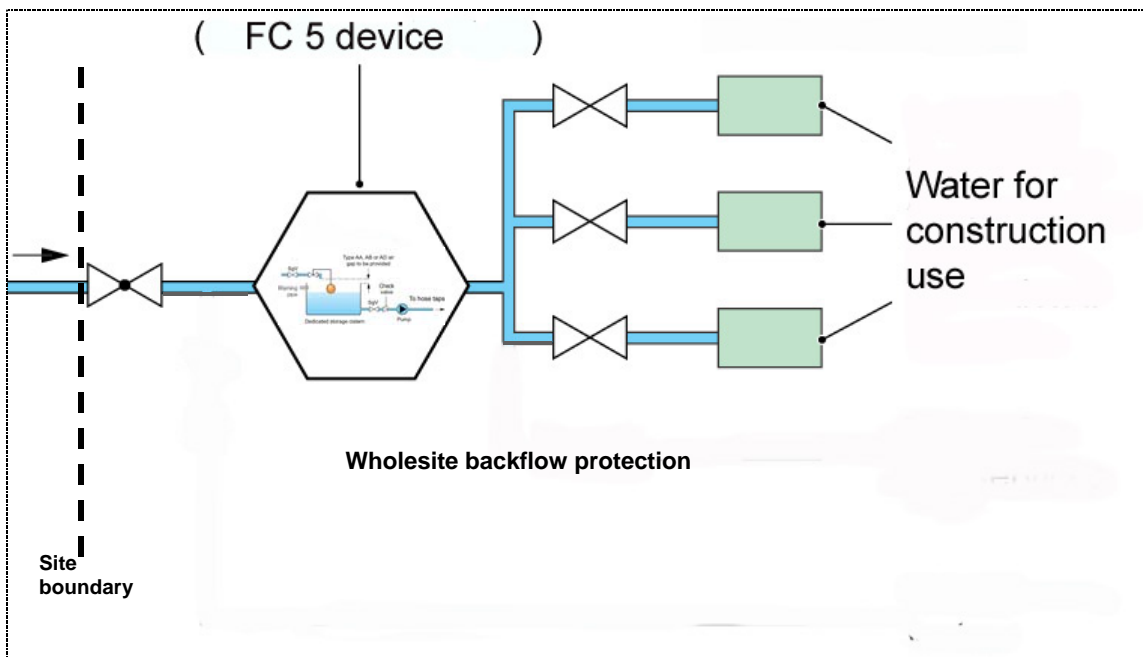


Figure 1: Illustrating the principle of whole site backflow protection

- (b) at each point of use, by using either break tanks and air gaps as above or by a type DC pipe interrupter permanently attached to every tap outlet. Pipe interrupters cannot have any flow restriction, valve or tap on their outlets, which may make their use impractical for some purposes because of lack of water pressure. They must be fitted with the lowest point of the air aperture not less than 300 mm above the free discharge point or spillover level of the receiving vessel or appliance (see Figure 2).

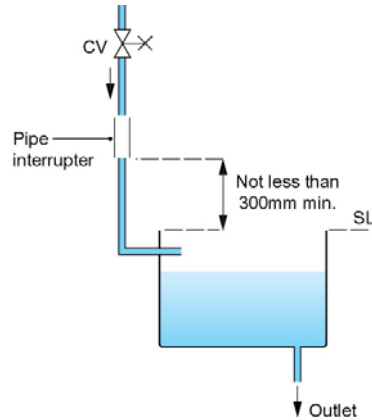


Figure: 2 Installation of the type DC pipe interrupter

- 1.3 **However, if water is used on site for domestic purposes (see below) there must be point-of-use backflow protection for the domestic use outlets and backflow protection for the water used for construction.**

2 Zone protection

- 2.1 Following on from 1.3 above, where backflow protection is required for the construction water, 'Zone protection' can be used as shown in Figure 3:

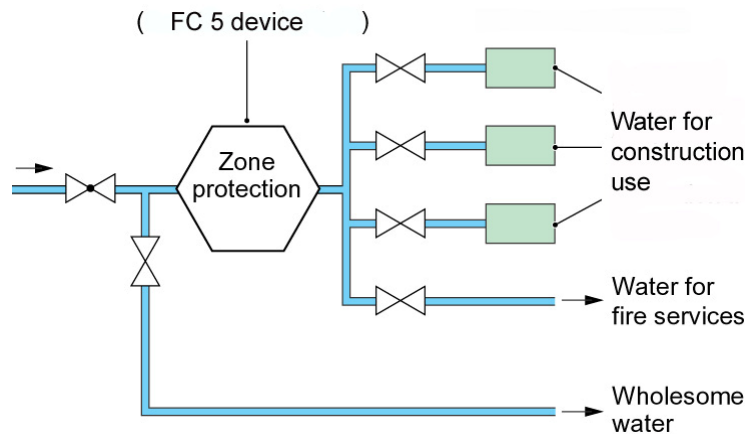


Figure 3: Zone backflow protection for construction water

3 Water for other non-domestic purposes

3.1 Hose union taps

These will require fluid category five backflow protection. Where an appliance or process is directly connected to the supply pipe or private water main without using readily-disconnected hoses and hose union taps, backflow requirements will depend upon a risk assessment of the individual process e.g. cement mortar batching plant (see below).

3.2 Cement mortar batching plant.

3.2.1 Cement batching plant which could contain cement, additives and aggregate being mixed with water, is in Fluid Category 4, permitting the use of a Type BA device (a reduced pressure zone (RPZ) valve) for its backflow protection. The valve should be tested either on relocation of the plant between building sites or at six-monthly intervals, whichever is more frequent. See the WRAS leaflet AIM 08-01: Type BA device – Verifiable backflow Preventer with reduced Pressure Zone (RPZ Valve) – available on the WRAS website (www.wras.co.uk/publications)

3.2.2 Specified cement mortar mixing units fed from bulk storage with mixed cement and aggregate which have been dried at high temperatures, making it unlikely that micro-organisms would be present, reduces the backflow risk from fluid category four to three, allowing a double check valve to be used. This is limited to specific designs of plant which have been assessed and accepted for this purpose. These are:

Tarmac ‘Dry Silo Mortar’ dry mix mortar silo units (formerly known as Silomate)

Cemex Ltd ‘Readymix Dry silo mortar’

Hanson Building Products ‘M-tec UK Calypso D50-IV FU continuous flow mixer unit’.

For acceptance of other makes of plant, please contact WRAS.

3.3 Fire Sprinkler systems

Systems containing no additives and operating at the normal water pressure of the mains system require fluid category two backflow protection (e.g. a single check valve). Systems which are pressurised by pumps or air receivers, and/or which use additives (e.g. corrosion prevention or fire suppression chemicals) require fluid category four protection (e.g. a type BA device (RPZ valve)).

3.4 Road cleaning

Road cleaning machines which require water must use filling points which have fluid category five backflow protection, either at the point of use or, where appropriate, by zone or wholesite protection. The connection of stand pipes to hydrants on the water supplier’s public water mains does not come under the scope of the Water Fittings Regulations, but their use is subject to the consent of the Water Supplier and must be in accordance with its conditions of use.

3.5 Irrigation for planting and landscape use

Backflow protection required for different arrangements of irrigation are shown in the table:

Irrigation system	Fluid category	Typical device(s)
Fixed spray heads not less than 150 mm above ground level; no fertiliser or insecticide additives	Three	Double check valve
Irrigation outlets at or below ground, with or without chemical additives	Five	Type AA, AB or AD air gap in break tank

4 Water for domestic purposes

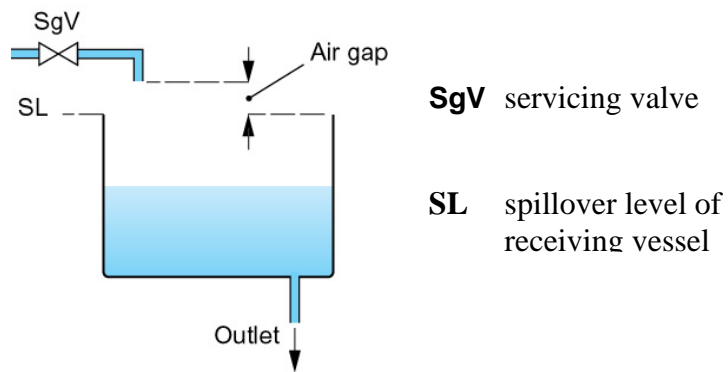
4.1 On construction sites water may also be used for domestic purposes such as canteen use, toilet and washing facilities and laundering protective clothing. These uses come under the full scope of the Regulations and require the usual backflow protection requirements:-

Water for domestic purposes	
Fluid category for backflow protection	Application
FC1	Cold drinking water
FC2	Water coolers & drinks vending machines; Hot water for culinary purposes
FC3	Washbasins; showers
FC4	Washing machines; dishwashers for site operators' use
FC5	WCs

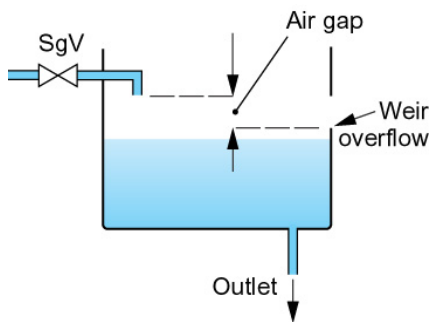
Appendix: Fluid category Five air gaps

All air gaps to be 20 mm or twice the diameter of the inlet pipe bore, whichever is the greater.

1 Type AA – Air gap with an unrestricted discharge:



2 Type AB – Air gap with weir overflow:



3 Type AD – Air gap with injector:

