

This guidance is to assist property developers and builders when designing the water system layout for multiple occupancy premises such as blocks of flats and apartments to prevent unnecessary problems in the future. This guide also applies to new developments and conversions of an existing building into a multiple occupancy dwelling. It aims to give advice and guidance to SES Water customers to achieve compliance with the Water Supply (Water Fittings) Regulations 1999.

Background

The guidance in this fact sheet has been shaped through an understanding of historical problems that have occurred in premises as a result of poorly designed water supplies, with incorrectly placed valves, pipes and other fittings.

Every self-contained flat or apartment in a development will need its own independent water supply and a water meter. This will be regardless of whether it is a new build property or a conversion. If a new water supply is required, this must be metered. We prefer the water meter to be located at the boundary of the property usually in the footpath or the road outside the property boundary.

How to obtain a new water supply for your development

Firstly, you need to apply for a new water connection through the developer's section of our website. This application process is clearly outlined and should include all relevant notifications under Regulation 5 of the Water Supply (Water Fittings) Act 1999, i.e. development details and schematics. As all new connections must be metered, a suitable location close to our distribution main will be required; our Developer Services team can advise you on the most suitable location for your development. In some cases, a network mains extension to your development site may be required. This work is chargeable to the Developer.

Each flat or apartment in the development will need an independent water supply that is either connected externally to our communication pipe in the public highway or connected off an internal bulk water supply pipe laid into a common area. A bulk water supply pipe may be directly mains-fed or connected to an internal storage tank with a booster set.

Stop valve design for common supply pipes

The Water Industry Act 1991 normally requires premises to have separate water supply pipes wherever this is possible. However, where a supply or distributing pipe provides water in common to two or more premises, a stop valve must be provided either inside or outside the premises to which each occupier has easy access. The principle is that if any occupiers need to isolate the water supply, they have easy access to a stop valve that controls their own supply. **Note:** it is important to consider whole-site backflow protection where two or more premises are served by a common supply.

Common problems in multiple occupancy properties

The following is a list of common problems that can occur in multiple occupancy properties that have been poorly planned or constructed.

Noise from plumbing systems may be caused through water hammer (surge), unclipped pipes, pipes running through other dwellings, cisterns refilling, and water being drawn from taps. This can cause unnecessary nuisance to occupants.

Leaks from poorly installed plumbing systems. It is recommended that a qualified plumber is always used.

Poor access to stop valves, pipework and other fittings which can mean that in an emergency your water supply cannot be isolated easily, potentially leading to unnecessary damage to the property.

Third Party interference to your water assets

which could mean your water is turned off in error or a third party connecting to it illegally.

Water quality issues. This is common if there is unnecessary warming of water through poor installation, a lack of insulation and the presence of 'dead legs' which can encourage bacterial growth. Water should not be allowed to exceed 20 degrees centigrade.

Wasted water can occur if excess water is drawn through taps to obtain cold water. This can occur if pipework routes are near heat sources. Frozen pipes also present a significant risk and come about through exposed or poorly insulated pipework.

The likelihood of the issues listed above occurring can be reduced through undertaking good design in compliance with the Water Supply (Water Fittings) Regulations 1999. The next section of this fact sheet lists the key considerations when planning new supplies within multiple occupancy buildings.

Key considerations

The following should be considered when planning and designing plumbing systems for new apartments, flats and maisonettes to avoid future problems.

- Good accessibility to stop valves, drain off valves, pipework and fittings for each property.
- Suitably located water meters for each individual property. These should be located in a communal area and be accessible to all.
- Supply pipes to all properties must run through communal areas only. Supplies should not run through flats that they are not serving.
- Adequate insulation compliant to BS5422 should be considered to help regulate water temperature and reduce both heat transfer and frozen pipework.
- Pipework interference from third parties should be considered.
- Zonal backflow protection at manifolds

will be required. A double check valve must be fitted above the stop valve on each supply from the manifold.

- Suitable pipework and fittings with WRAS, British Standard, Kiwa and EN approval must be used. Internal point of use backflow protection will be required in each premises.

Buildings with individual water supplies and external meters

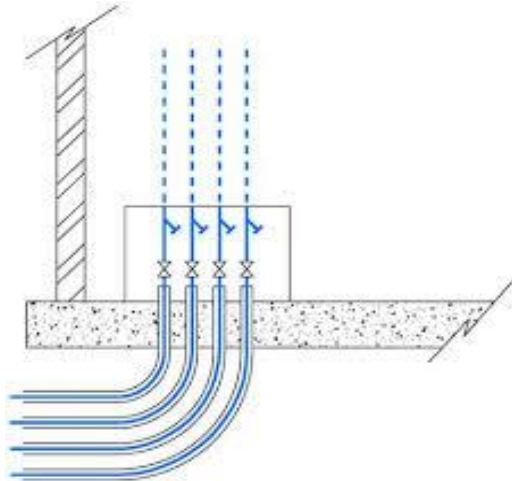
The Water Industry Act 1991 normally require new premises to have separate water supply pipes wherever this is possible. Typically, for most multiple occupancy developments up to three storeys in height, it should be possible to supply each flat/apartment by mains pressure. This would however need to be checked with a hydraulic modelling assessment undertaken by SES Water.

The preferred option for smaller multiple occupancy developments and buildings not exceeding three storeys high is to have separate water supply pipes laid to each individual property. Supply pipes must be either ducted into a common area of the premises or ducted directly into each property. These supply pipes will then be connected to an external manifold housing the water meters which is usually located at the property boundary on the highway but may be fitted inside private land with permission from SES Water, if it is not possible to fit one in the desired location. The individual supply pipes will need to be laid as per our 'Laying a New Supply Pipe' fact sheet.

The pipes supplying the ground floor flats can be ducted straight into the property like they would for a new house and must be fitted with an approved stop valve and drain off valve close to the exit of the duct inside the individual dwelling.

The pipe should ideally be installed with one continuous pipe without joints if it is possible to help minimise the risk of a leak from a joint. An approved secondary stop valve must be fitted inside the individual dwelling in an easily accessible area such as an airing cupboard and

drain off valves fitted on any low points in the system. It should be noted that there must not be any joints such as a coupling or elbow joint fitted on the supply pipe before the internal stop valve located in the common area. The first joint will be the inlet nut of the stop valve.

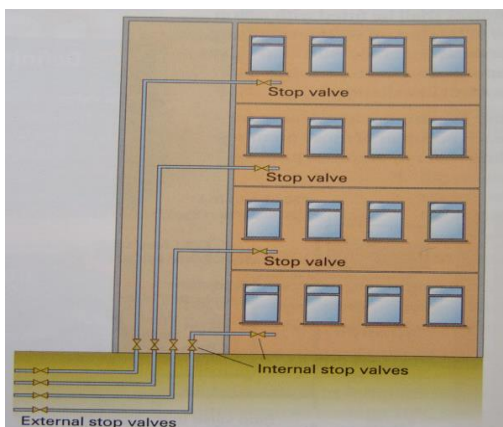


[Example of suitable pipe route through building foundations]

connected into an approved wall-mounted internal manifold carrying the internal water meters within the premises.

On larger developments, it may be more appropriate for the bulk supply to rise through the communal area of the building in a riser and spur off into suitably sized accessible cupboards with doors that are located in the communal area on each floor. A manifold will then be fitted inside the cupboard with the water meters for every dwelling on that floor. Each connected individual supply pipe from the manifold must be fitted with an approved stop valve, SES approved water meter, an approved double check valve, a drain off valve and an identification tag for the dwelling that it supplies. All pipework must be adequately clipped and secured and adequately insulated in any areas deemed to be a cold void.

A bulk water meter should also be fitted on the supply pipe at the property boundary. This will assist SES Water to identify if any leakage or high consumption is taking place within the building.



[Example of individual supplies entering building]

Mains-fed bulk water supply with internal meters

A single bulk supply for a mains-fed system must enter the premises into a communal area on the ground floor. There must be a suitably approved stop valve and drain off valve fitted on the incoming supply around 300mm above ground. On a smaller development, it is possible for the bulk supply pipe to be laid into a suitably sized cupboard in the ground floor communal area and



[Example bulk supply in to building and individual connections to properties]

Bulk water meters supplying tanks with booster sets and internal meters

Some developments may have an internal water tank and a booster set to ensure that adequate pressure is maintained to the higher floors.

In these circumstances a bulk water meter should be fitted at the property boundary to capture the total amount of all water entering the building. This can then be used for billing purposes if the management company choose to have this arrangement, but it would also be used to assist SES Water to identify if any leakage or high consumption is taking place within the premises. The bulk water supply should ideally enter inside the thermal envelope of the premises in a purpose-built plant room, must be sleeved via a duct from the point of entry through to the finished floor level and must be laid to the required depth for compliance with the water regulations.

The bulk supply must have an approved stop valve and drain off valve fitted on the inlet to a WRAS approved cistern and WRAS approved booster pump set. The water should then be distributed throughout the building via a single bulk pipe of suitably approved material which is usually copper that has been sized accordingly by the designer.

The distributing pipework must be routed through common areas such as risers, corridors and stairwells to each floor where it will then spur off and connect into an approved manifold that is fitted in a suitably sized accessible cupboard with doors on each communal landing. The manifold will have an approved shut-off valve and a drain off valve fitted on the inlet and all the supply pipes for each dwelling on that level of the building will be connected into the manifold. Each supply pipe will be fitted with an approved stop-valve, SES Water approved water meter, identification tag stating which premises it supplies, a double check valve and a drain off valve. The pipes and fittings should be fitted in a staggered position with enough room between each supply to enable maintenance to be carried out.



[Example: Individual meters downstream of a boosted storage cistern]



[Example bulk water meter]



[Example of a WRAS approved Fluid Category 5 break tank system with booster pump]

Communal hot water and heating systems

If a developer chooses to design a multiple occupancy development that incorporates a communal hot water or heating system using renewable energy such as ground source heat pumps, then it must be noted that we are only able to accurately capture all of the water used within the premises by fitting a bulk water meter on the main supply at the boundary. The bulk metered water is then chargeable to the property owner or management company responsible for that development.

Any hot water or heating pipework that is laid below ground to supply different blocks in the development must be ducted out of the plant room/boiler room, laid to a depth of 750mm below ground, clearly identified with the correct labelling and must be adequately insulated inside a waterproof closed cell insulation in accordance with BS5422.

The developer may choose to fit internal water meters on the hot and cold feed to each individual dwelling within the blocks to calculate the water consumption for each dwelling. The water meter must be an approved fitting and it must be made clear to the property management company that SES Water are not responsible for these meters and are unable to charge individual customers using these internal water meters.

Communal area cupboards and meter positioning

Any cupboard that houses internal water meters, fittings and pipework must be located, in an easily accessible communal location within the premises. The cupboard must be of a suitable size, easily accessible by use of a standard triangular key if they are to be locked, and must be situated in a position that allows enough space for maintenance to be carried out without safety concerns or disruption to our customers. The meter must be positioned a maximum height of 1.5m above the ground and with 150mm space between each metered supply and the outside of the cupboard to allow for maintenance

without having to reconfigure the pipework. The meters should all be fitted in a staggered formation to make it easier for any maintenance. Third parties will not be able to connect any other equipment to our meters. We do not permit meters to be fitted in ceiling voids.



[Typical in-building meter installation]

Bin store tap requirements

WRAS states that any hose union taps and hoses used in bin store areas will be considered a Fluid Category 5 Risk unless a risk assessment by the relevant water undertaker determines otherwise. If a hose union tap is fitted in a bin store area then the tap can only be supplied with water through a system incorporating a type AA, AB, AD or AUK 1 air gap arrangement. An alternative solution for a tap in this vicinity is to fit a non-threaded bit tap or percussion tap with a double check valve on the pipe and erect a sign next to the tap stating it is for BUCKET FILL ONLY. This tap is not threaded and a hosepipe cannot be attached to it. A hose union tap with a double check valve in a bin store area for the purpose to allow the landlord to wash down bin store areas must not be installed.



[Example of a non-threaded tap]

Landlord supplies and standpipes

Communal taps, for example outdoor hose union taps, are commonly installed in multiple occupancy premises. Please see the 'Standpipe Installation' fact sheet for specific information on the requirements you must fulfil in order to pass a water regulations inspection.

Internal plumbing requirements

All internal pipework should be either approved copper or approved internal plastic. Blue MDPE pipe is designed for underground use and should only be used up to the first internal stop valve.

Operational fittings such as taps, tap flexi connectors, stop-valves, drain valves, servicing valves, float-operated valves/devices, double/single check valves, pressure reducing valves, strainers, temporary connections to heating systems, hose union taps, showers and WC/urinal flushing systems must be fitted in easily accessible positions for operational and maintenance purposes. The pipes and fittings must be WRAS, British standard or Kiwa approved.

There must be a stop valve and drain off valve fitted in an easily accessible place inside the property close to where the pipe enters. The entire system can then be drained down using the drain off valve during long periods when the property is not occupied.

Any outside taps must have an isolation valve and double check valve fitted inside the property on the feed supplying the hose union tap (outside tap). If it is not possible to fit a double check valve on the pipe inside the property, then an HUK 1 hose union tap is acceptable as it has built in backflow protection. However, this type of tap is not recommended as they are susceptible to leaking from the frost plug during prolonged cold spells. It should also be noted that it is best practice to isolate the tap during winter by shutting off the stop valve if it is not going to be used.

Any appliances such as a washing machine or dishwasher must have a double check valve

fitted next to the hose valve for backflow protection purposes. Showers must have backflow protection via double check valves, a retaining ring on the shower rail to restrain the head or fit a shorter hose to ensure that the head cannot reach the floor of the shower tray and most importantly ensure that it cannot reach the toilet which is a Fluid Category 5 Risk and serious contamination risk. Toilets require a type AUK 1 arrangement with an AG air gap.

It is recommended that the internal pipework is insulated to BS 5422 to minimise any undue warming or freezing of pipes that could result in potential water quality issues and unnecessary waste of water. WRAS has a free-to-use insulation calculator on their website which should be used when considering different insulation materials to ensure the right level of protection is offered.

The following images provide examples of the fittings and applications detailed above.



[Example approved stop valve]



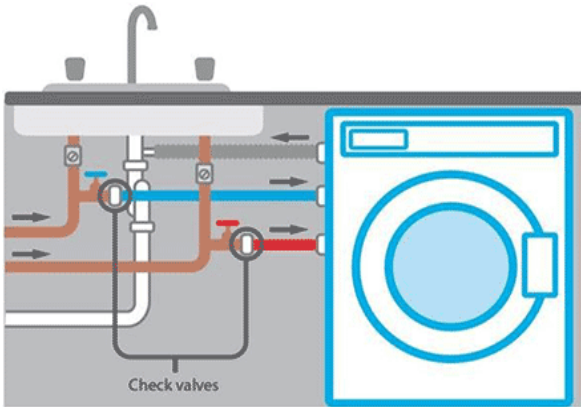
[Example approved drain valve]



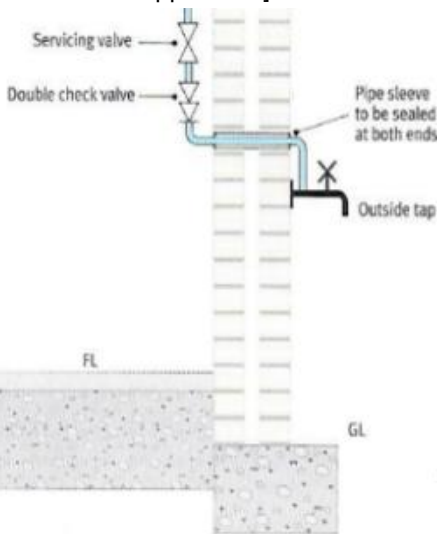
[Example approved double check valve]



[Example hose union tap]



[Example double check valve arrangement for appliances]



[Example outside tap set up]



[Example shower with retaining ring set up]

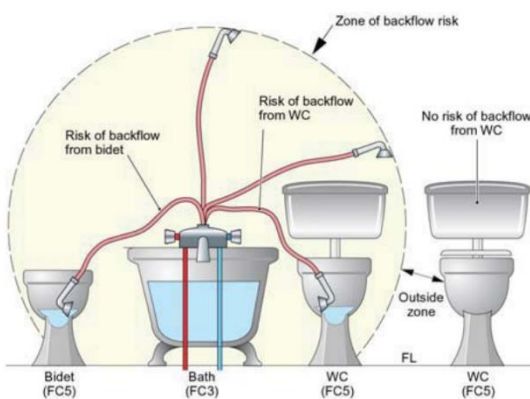


[Compliant Type AUK 1 WC arrangement incorporating an AG air gap]

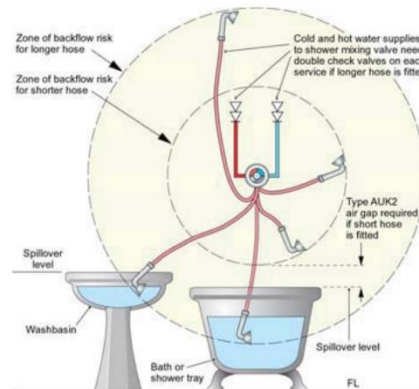
Bathroom plumbing risks

Bathroom backflow protection risks are shown in the diagram below. A **bath with a shower** hose attachment that is generally used for washing hair is classed as a Fluid Category 3 Risk providing that the shower head cannot reach a toilet or bidet. It requires either a double check valve fitted on both the hot and cold feed to the bath, WRAS approved taps that have built in double check valves or a WRAS approved double check valve fitted on the shower hose.

[Fluid Risk Category 3 – backflow protection]



[Zone of backflow risk for a shower house outlet]



provided by shortening hoses or providing check valves]

Showers require backflow protection for Fluid Category 3 Risk and should have a retaining ring fitted. Fluid Category 3 Risk can include a retaining ring, shorter hoses, fitting double check valves on the hot and cold feed or incorporated into WRAS approved thermostatic showers. A WRAS approved double check valve could also be fitted on the shower hose.

If a shower hose can reach the toilet pan, then it is deemed to be a Fluid Category 5 Risk which requires a much higher level of backflow protection and the options listed above are not sufficient in this situation.

Please contact our Water Regulations team for more details and guidance at: waterregulations@seswater.co.uk .

For further information contact the Water Regulations team at
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Email: waterregulations@seswater.co.uk