UNDERGROUND STORAGE

This document provides advice to help installers and those responsible for water fittings to understand their legal obligations under the water fittings regulations, byelaws in Scotland as they apply to underground systems storing water for domestic use and processes. Process water includes but is not limited to water supplied for firefighting, as a backup for alternative water systems and irrigation.

It should be read in conjunction with the information about cold water storage cisterns published by Water Regs UK, for further information refer to the Water Regs UK website.

What are the water fittings regulations, byelaws in Scotland?

The water fittings regulations in England, Wales and Northern Ireland, byelaws in Scotland, are national regulations which protect drinking water by ensuring plumbing systems are designed, installed and used safely.

For further information please refer to the Water Regs UK website www.waterregsuk.co.uk.

When does this document apply?

For the purposes of this document underground storage means:

- A storage system supplied directly from mains via an appropriate form of backflow protection
- Installed below-ground level wholly or partially outside the thermal envelope of a premises

What do I need to do?

1. Ensure the underground storage system is legal and safe by notifying the local water undertaker at least 10 working days before commencing any proposed work.
2. Prevent drinking water supplies from becoming contaminated by knowing what are, and avoiding, all the contamination risks on site.
3. If the stored water is to be used for domestic purposes ensure it remains wholesome.
4. Make use of the other sources of information identified and the checklist provided at the end of this booklet.

One requirement of these regulations is to provide the local water undertaker with advanced notification of proposed plumbing work. This is a simple and essential check to help minimise the risks to water supplies. **Advanced notification of any proposed plumbing work involving below-ground storage, even that undertaken by an approved contractor, is notifiable.**

MAKE SURE YOUR INSTALLATION IS LEGAL & SAFE

Notification

To ensure your underground storage is safe you must tell the local water undertaker in advance of any plumbing work you are planning to do. This is a simple and essential check to help minimise the risks to water supplies.

Advanced notification of any proposed plumbing work involving below-ground storage, even that undertaken by an approved contractor, is notifiable.

For further information about the notification process please refer to the Water Reg UK website www.waterregsuk.co.uk

Design and installation guidance

Unless the local water undertaker confirms otherwise in their conditions of consent:

- All underground storage systems with a mains water supply are considered to be a fluid category 5 risk irrespective of what the stored water will be used for.
- The backflow protection for an underground system must be installed above the finished ground level. It can be located either within or outside the thermal envelope of the premises (please refer to the illustrations below).
- The local water undertaker must be satisfied the underground storage cistern design and installation includes adequate and appropriate provision to enable ventilation, overflow warning, inspection, maintenance and repair.
- Any water fittings located below-ground at a depth less than 750 mm must be installed in accordance with the water undertaker's terms and conditions of consent.
- All water fittings installed must be of an appropriate quality and standard.

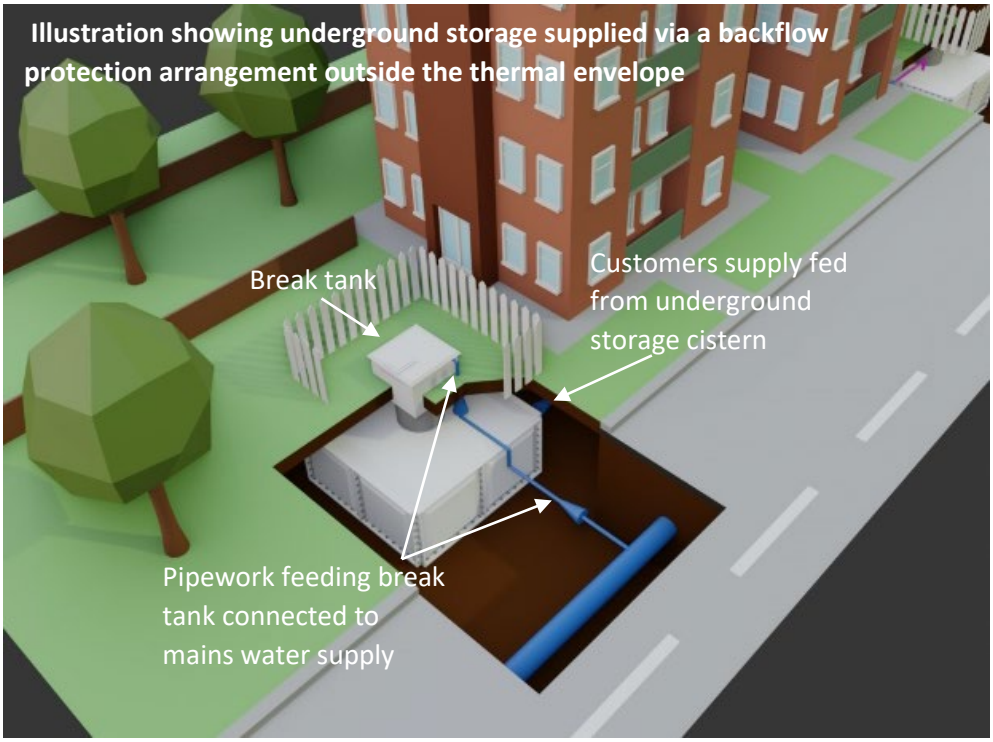
Please note, responsibility for water quality will be clarified in the conditions of consent.

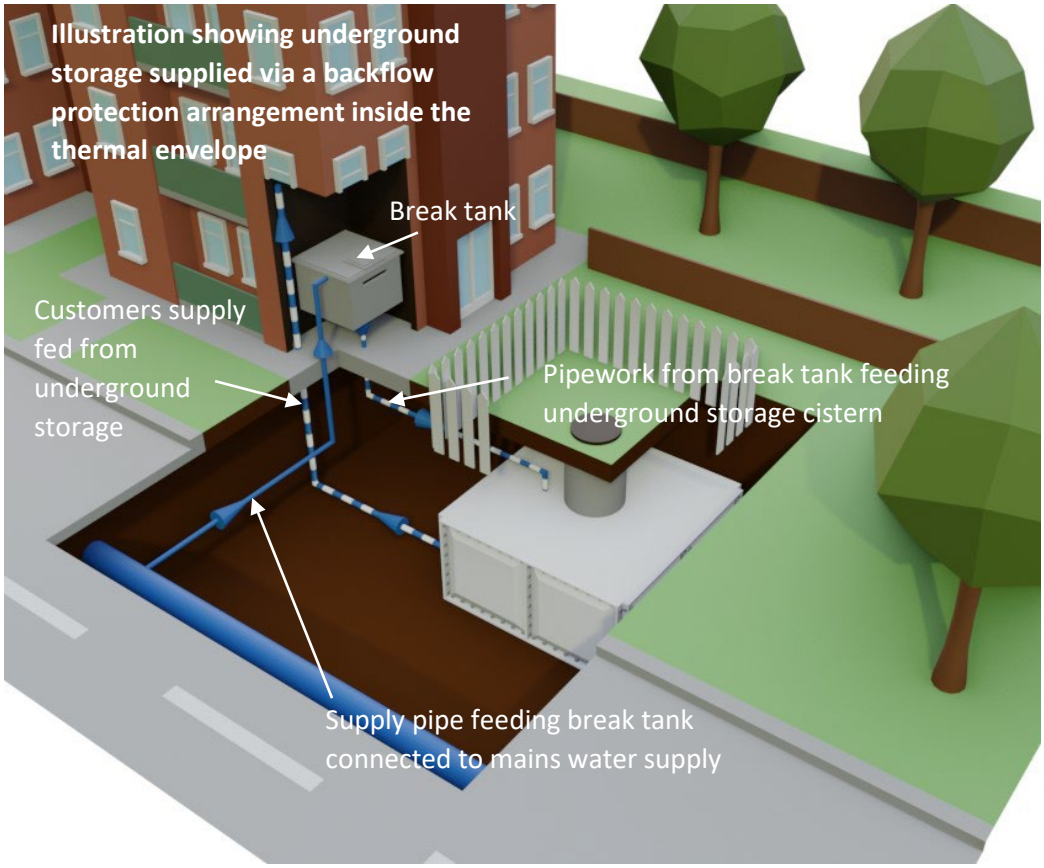
Wholesome drinking water

Underground storage supplying water which will be used for drinking, bathing, washing, cooking and any processes which requires the water to be wholesome must be of an appropriate quality and standard and suitable for installation.

If the storage cistern is supplied via a break tank incorporating a Type AB air gap, the overflow arrangement must be screened and protected against light penetration. For further details please refer to the cold water storage cisterns and unrestricted discharge information published by Water Regs UK.

Please note: other requirements of the water fittings regulations, byelaws in Scotland, not detailed in these examples also apply.





Examples for illustration purposes only. No reliance should be placed on these images for the purposes of designing and installing underground storage. As examples they do not guarantee compliance with the Water Supply (Water Fittings) Regulations 1999, the Water Supply (Water Fittings) (Scotland) Byelaws 2014 and the Water Supply (Water Fittings) Regulations (Northern Ireland) 2009.

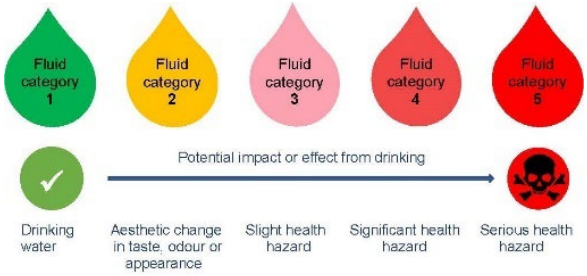
MAKE SURE THE DRINKING WATER IS SAFE

Avoid contamination

The best way to avoid contamination is to limit the risk of any potential sources of contamination from coming into contact with drinking water, and the water fittings supplying it. This will help to maintain water quality.

The information provided below will highlight some of the areas of risk.

What is contamination?



Contamination occurs when there is a change in water quality. If the water supply in the underground storage system were to be contaminated it would potentially pose a risk to the health and wellbeing of not only those on site but also, if it entered the public water supply, that of the wider community.

The regulations identify five categories of contamination risk, reflecting the impact and risk to health. These range from no risk (fluid category 1) to serious health hazard (fluid category 5).

Contamination by backflow occurs when fluid in a plumbing system flows in the opposite to the intended or normal direction of flow. The regulations/byelaws classify backflow risks by fluid categories or risks to health. Backflow is not theoretical rather an ever present threat to people's health.

Where underground storage is permitted, conditions of consent will clarify the responsibility of the customer. Failure to comply with these conditions could result in enforcement action being taken.

Contamination risks

Make sure the drinking water supplies on site, and in the water network, remains safe by identifying all possible sources of contamination and ensuring steps are taken to protect against the water supplies being contaminated by them.

There are various risks which might be found on site to be aware of including:

- Car parking areas
- Bin stores
- Septic tanks
- Alternative water storage systems
- Low lying and areas subject to flooding
- Chemical and fuel storage
- Driveways/roads
- Animals grazing

PROTECT YOUR PLUMBING INSTALLATION

The following advice should help those responsible for underground storage to prevent water quality being adversely affected and installations damaged.

Water Quality

For drinking water supplies to remain safe it is important they do not become contaminated with other substances and fluids, including water from alternative sources. There are various ways which could result in water supplies becoming contaminated, including by backflow, ingress and permeation.

It is essential adequate backflow protection arrangements are in place, plumbing correctly installed and systems adequately maintained.

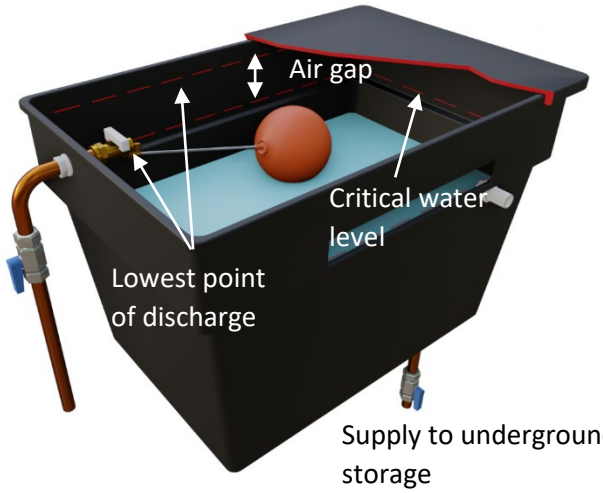
Incorrectly installed or poorly maintained backflow arrangements may fail to protect against backflow placing both systems on site and potentially the wider water network at risk.

Water fittings should never be installed in a contaminated environment. Plastic plumbing fittings are at risk of permeation by diesel or heating fuel, pesticides, insecticides and similar organic substances, so should never be installed where they could come into direct contact, including contact with soil contaminated with them.

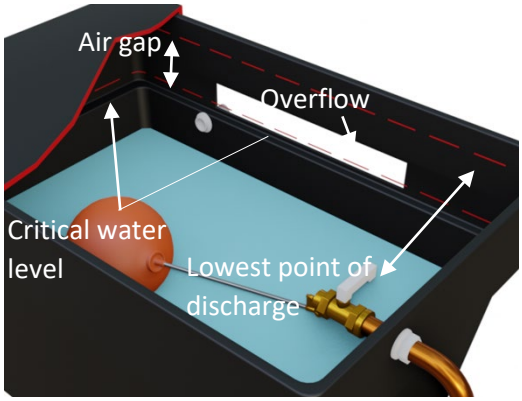
Aesthetic changes to water quality, such as warming such can result in taps being left to run not only wasting water but literally pouring money down the drain. Where warming is an issue, for example water fittings laid at a depth of less than 750 mm, plumbing installations need to be insulated.

Backflow protection

Unless the local water undertaker confirms otherwise in their conditions of consent, the underground storage should be supplied via fluid category 5 backflow protection. This is typically done using a break tank, upstream of the underground storage supplied via a Type AB air gap. This provides protection against backflow by ‘breaking’ the otherwise direct connection to the mains water supply. Below is an example of Type AB air gap for further information about Type AB air gaps please contact the local water undertaker.



In the case of wholesome water applications, the overflow should be fitted with a screen and light cowl



Damage

All plumbing systems are at risk if exposed to freezing temperatures. To avoid damage all water fittings, including those supplying or being fed from an underground storage system, laid at a depth of less than 750 mm need to be protected. This typically is done by insulation and/or trace heating.

Blue MDPE pipe should only be installed where light is excluded as exposure to light can result in it becoming brittle and breaking down.

Any plumbing installed at depths less than 750 mm or above ground externally must be protected against environmental, accidental and animal damage. A regular inspection should be undertaken of pipework and water fittings to identify leaks or other issues. This will help to reduce waste, prevent contamination and save money.

Checklist

There are a number of basic checks someone installing or responsible for underground storage should carry out:

1. **Has the installation been notified?**
   The installation of underground storage is notifiable in all circumstances. This is a simple and effective check, undertaken by the local water undertaker to ensure the installation is compliant.

2. **Do you know the conditions of consent?**
   This information will be included in the consent letter, conditions are likely to include but not be limited to:
   - Installation requirements
   - Clarification of the responsibilities relating to water quality
   - Measures to address wastage arising from leakage, such as alarms, monitoring consumption or visible signs of leakage
   - Signage providing advice in the event of visible discharge
   - Maintenance requirements

3. **Is all the necessary paperwork in place?**
   If your property was inspected by the local water undertaker, you may be asked several questions about the underground storage. To help answer these it is recommended a technical file be maintained on site. This should include the letter of consent from the local water undertaker and any certificates of compliance issued by an approved contractor. The manufacturer's installation and maintenance instructions; this will help to identify the make and model of machine and evidence of regulation 4(1)(a) compliance.

   Failure to provide all the information required could result in enforcement action being taken.

4. **Has the right level of backflow protection been installed?**
   As part of their check the local water undertaker will confirm the acceptability of the proposed underground storage and highlight any suitability issues associated with the proposed form of backflow protection. Don't forget backflow protection arrangements not only need to be suitable but also of an appropriate quality and standard.

5. **Additional sources of information**
   Other installation information can be found on the Water Regs UK website, including details about cold water storage cisterns and unrestricted discharge