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FLOODING: GROUNDWATER FLOODING



Northamptonshire
County Council
Flood Toolkit



Groundwater is water, such as rainfall, that has not been returned to the atmosphere or used by plants. Instead it has soaked into the ground and trickled downwards into the rocks.

Water is present everywhere underground, but some rock formations allow hardly any water flow, whilst others (known as aquifers) do allow water to flow through them.

Groundwater Flooding

Groundwater flooding is a natural occurrence.

Long periods of abnormally high rainfall can result in the groundwater levels rising and filling basements. Groundwater can also emerge on the surface, creating an overland flow which can flood roads and overwhelm drainage systems.

This type of flooding is unusual in Northamptonshire as it may appear as a 'delayed reaction' rather than during or immediately after a storm. It is also often difficult to prevent but there are ways to limit its impact if the source of flooding is correctly identified.

Impact of Groundwater Flooding

Groundwater flooding may appear as a wide area of flooding (across flat ground) or at a point (a spring or within a basement of a property). Its impacts include:

- Flooding of basements, underground car parks and similar structures, causing anything from structural damage to mere nuisance
- Flooding of land and property, damaging possessions/crops/stock
- Flooding of sewer systems, in some cases opening manhole covers and flooding the area with sewage (causing pollution as well as a flood incident)
- Flooding of utilities sited underground (power lines/telecoms/drinking water supply) causing service failures.

Sometimes changes to groundwater flow patterns can also contribute to surface water flooding.

Groundwater flooding may last far longer compared to other types (from weeks to months). The amount of damage that can result may also be substantially higher, and there may be prolonged closure of access routes, roads and railways.

Who is at Risk?

There are no publicly available flood risk maps for groundwater, but the risk of this type of flooding in Northamptonshire is generally regarded as low.

The Local Lead Flood Authority (Northamptonshire County Council) may be able to advise further on this, and the following sources may also be able to help:

- Local Environment Agency office
- Parish or Town Council
- The Highway Authority
- Any Flood Wardens or Flood Action Groups in the area
- British Geological Society.

If further information regarding the risk to a particular property is needed, then a qualified professional such as a consulting engineer or chartered surveyor should be contacted to carry out a flood risk assessment.

Steps to reduce groundwater flood risk

If a property is found to be at risk of this type of flooding, then the options are limited, both because of the volume of water typically involved and the difficulties in containing or channelling it.

Some general measures to limit the impact include:

- Moving services (electrics, boilers, service- meters) well above the likely flood level
- Using water resistant materials (such as lime plaster or cement render) rather than gypsum plaster on walls
- Using plastic or steel units in the kitchen and bathroom (rather than the usual chipboard carcasses)
- Using waterproof flooring such as tiles rather than carpets
- ‘Tanking’ (waterproofing) of basements/cellars
- Collecting water in a sump (a low point in which water can drain) under the floor or next to the property
- Using pumps to dispose of small quantities of water, which can then be discharged into a stream, ditch or drain (after receiving appropriate permissions)
- Fitting non-return valves to drainage systems
- Protecting septic tanks/cess pits with a concrete surround.

However, dependent on the characteristics of the flooding, there are some specific measures you can take to limit the impact.

WATER COMING UP FROM UNDER THE FLOORS

- If this occurs every time it rains heavily then you may need to restore or replace a faulty drain.
- If the water level beneath your property is high, or if a wall or barrier is preventing water from reaching a nearby river, then you should consider installing a new drain or creating a new drainage route around your property
- If water appears even in dry weather then a leaking water main could potentially be responsible. In such cases you should contact your utility provider
- If water comes up only after a very long wet period then it is possible that there is a spring under your property. A pump set up in a sump under the floor may help.

WATER FLOWING IN UNUSUAL PLACES AFTER HEAVY RAIN

- If this is causing considerable flooding then a diversion channel or barrier wall can help to ensure that water goes around rather than through your property
- If this is resulting in only small flows or seepages then installing a slotted drain set within a gravel trench can often help
- If you have limited space then you should consider using a flood barrier to cover doorways, airbricks and similar openings.

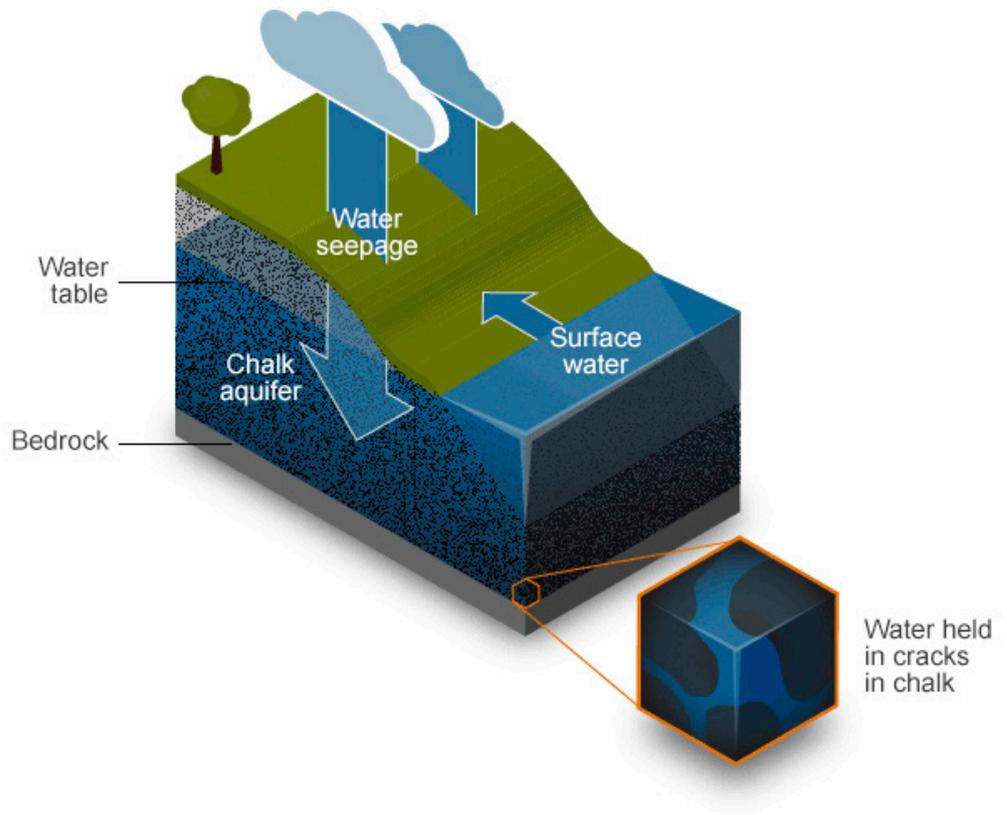
PERSISTENT, FLOWING WATER AFTER A LONG WET PERIOD

- If your house is flooded in this way after an exceptionally long wet period it is probably due to high groundwater tables. Barriers – from sandbags to thick walls – are unlikely to resist flood water for an extended period unless very well engineered and accompanied by large pumps. This sort of flooding is very rare in Northamptonshire.

FLOODING IN BASEMENTS AND CELLARS

- If you are experiencing flooding to basements and cellars then it is likely that waterproofing in the basement is either absent or has failed. This can usually be remedied by specialist companies who can provide tanking of floors and walls, providing a waterproof membrane
- In some instances pumping from a sump may also be necessary in order to relieve water pressure.

How Groundwater Flooding Occurs



 **Further Information and Contacts**

'Flooding from Groundwater: Practical advice to help you reduce the impact of flooding from groundwater' is available from the GOV.UK site here:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297421/flho0911bugi-e-e.pdf

Northamptonshire County Council Flood Toolkit

Groundwater Flood Risk Study:

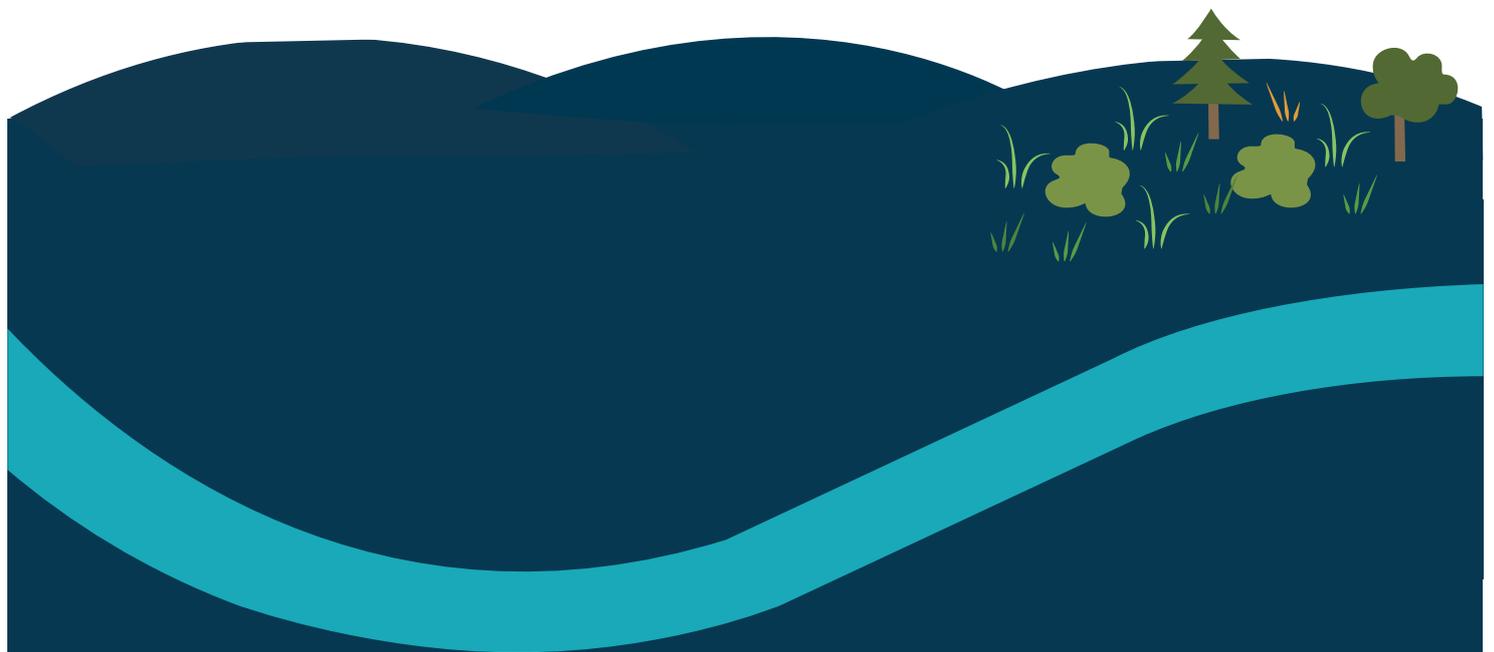
Main report: <https://www.floodtoolkit.com/wp-content/uploads/2016/05/GWFRS-Report.pdf>

Groundwater flood risk map: <https://www.floodtoolkit.com/wp-content/uploads/2016/05/GWFRS-Fig-3.2.pdf>

To contact the Flood and Water Management Team at Northamptonshire County Council:

Email: Floodandwater@northamptonshire.gov.uk

Or visit: <https://www.floodtoolkit.com/>



Floodline number: 0345 988 1188



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