



Groundwater in Northern Ireland

Sustainability at the heart of a living, working, active landscape valued by everyone.



Department of
**Agriculture, Environment
and Rural Affairs**

www.daera-ni.gov.uk



Northern Ireland
**Environment
Agency**

www.daera-ni.gov.uk

What is Groundwater?

Groundwater is simply water naturally stored in the ground underneath the earth's surface. In Northern Ireland groundwater has a lot of different and important purposes, from the use of it for the manufacturing of soft drinks to its role in the creation of the Marble Arch Caves and wetlands.

Groundwater is currently not being used to its full potential in Northern Ireland and is considered by many hydrogeologists to be a hidden asset for our economy.

Groundwater
makes up
to ~98%
of Earth's
available fresh
water!

Source: UNESCO



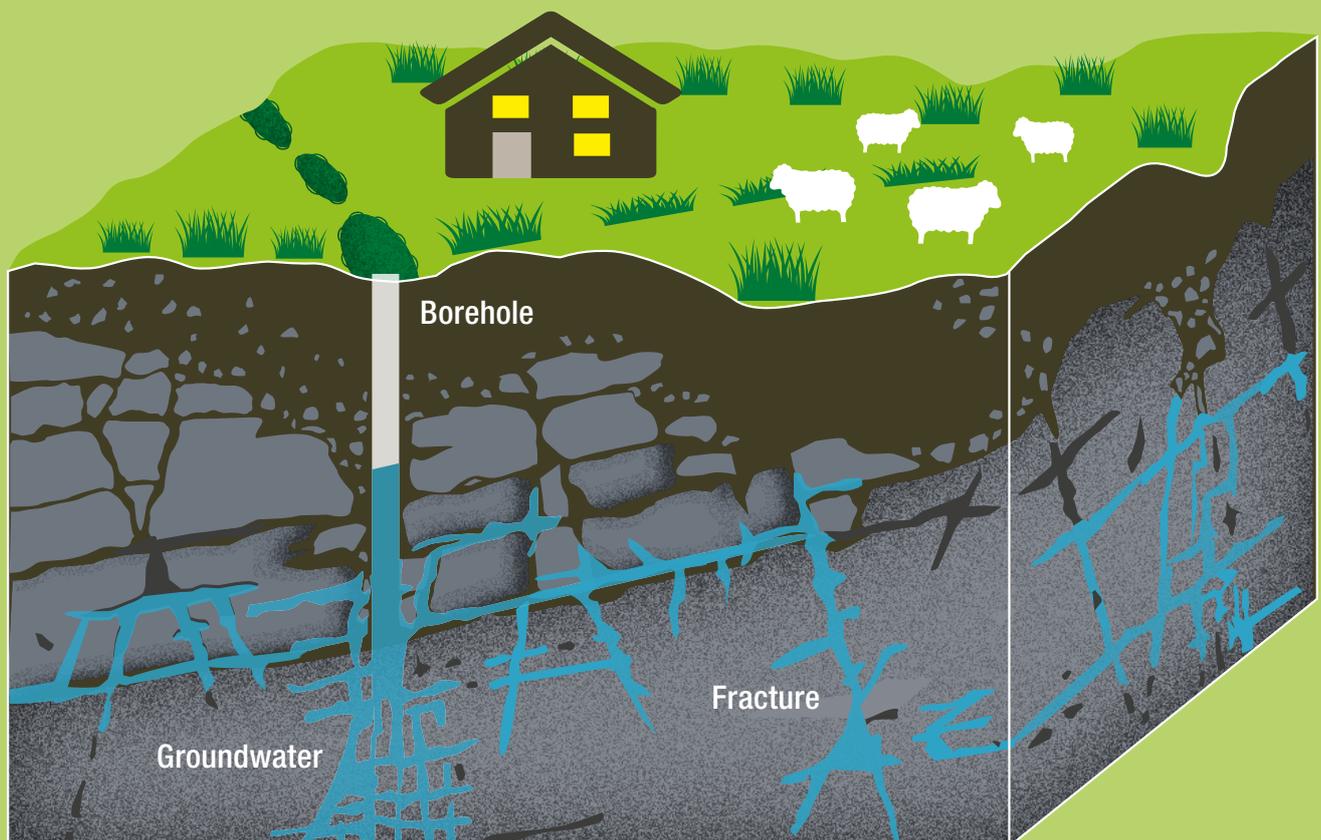
Where is Groundwater?

Water is continually moving through the environment - we call this the water cycle. However, there is one aspect of the water cycle that is often forgotten - Groundwater!

Groundwater is present almost everywhere underground and does not always look like underground rivers or lakes.

Groundwater is water stored in the pore spaces and fractures (cracks) of geological formations (rock units) underlying our landscape. Sometimes the fractures become so big they form caves and conduits.

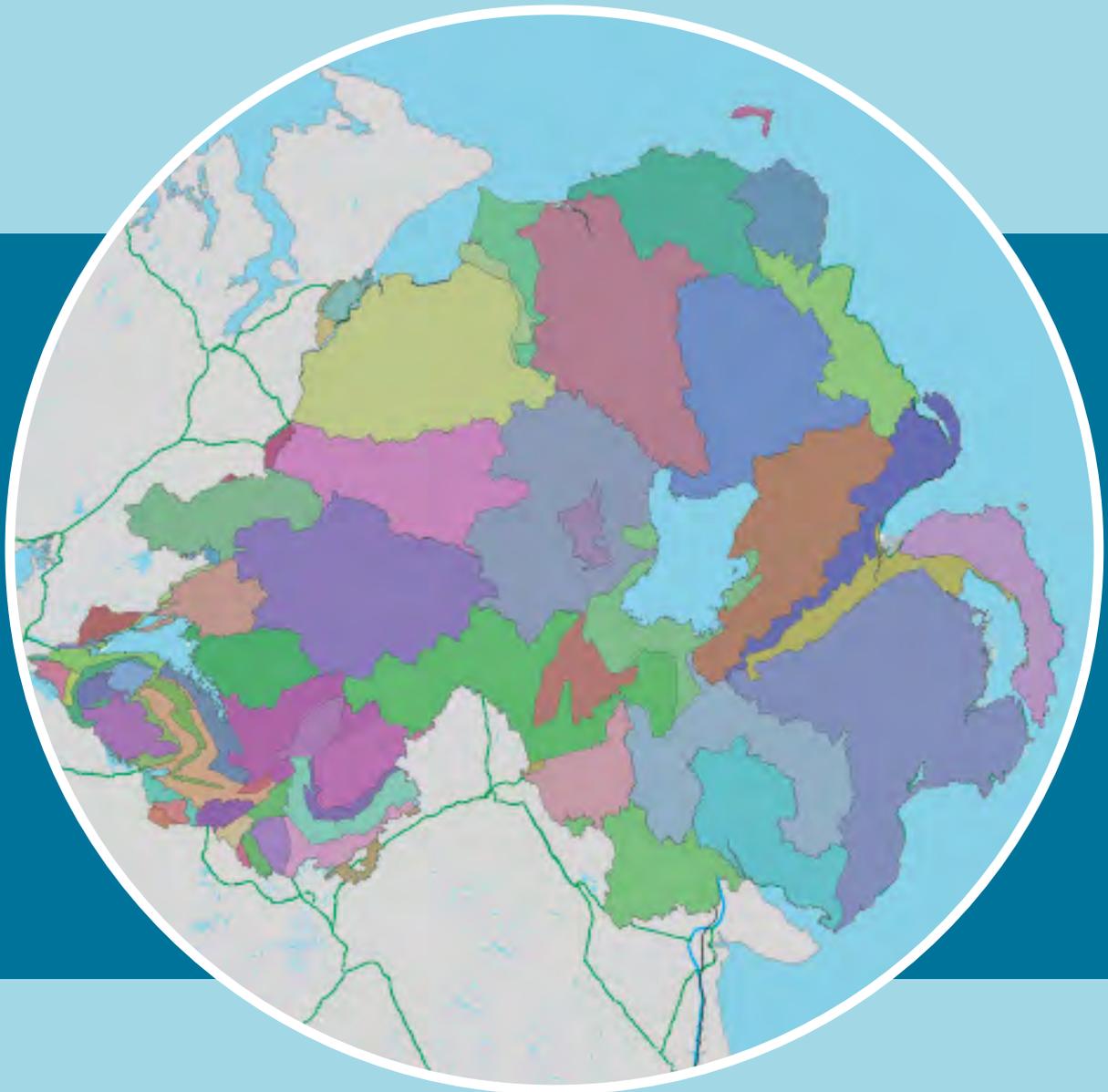
The geological formations which contain groundwater are known as **aquifers**.



Aquifers in Northern Ireland

DAERA, through the NIEA, have divided all the **aquifers** in Northern Ireland into different management units known as groundwater bodies.

There are 75 groundwater bodies in Northern Ireland - each one has unique properties and their health (status) is assessed on a cyclical basis.



The study of groundwater is known as **hydrogeology**, and the scientists and engineers who study groundwater are known as **hydrogeologists**.

Groundwater Monitoring

Groundwater quality and quantity is routinely sampled and tested by DAERA, through the NIEA, using a network of boreholes and springs. Data collected is used to create a baseline to aid understanding of Northern Ireland's natural groundwater conditions, as well as how groundwater can be impacted and protected.



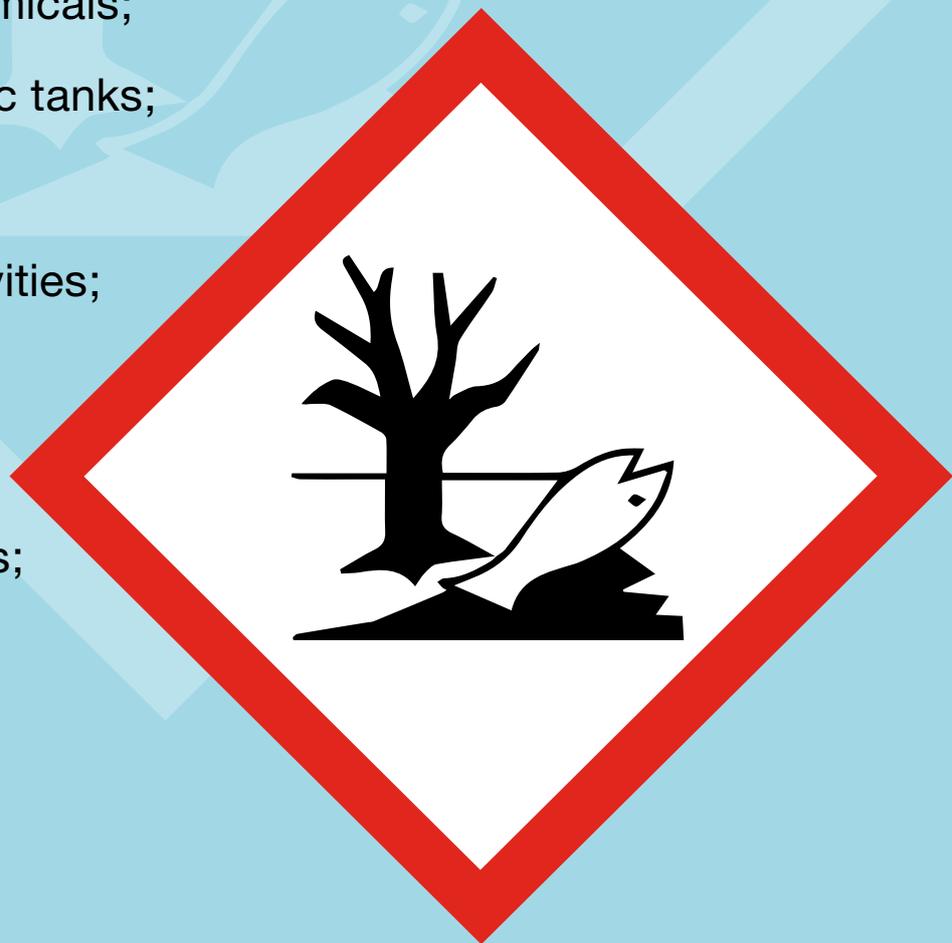
Both groundwater quality (chemistry) and quantity (levels) are monitored in Northern Ireland.

Groundwater Pollution and Protection

Groundwater quantity and quality needs to be protected to ensure it remains a sustainable resource. Groundwater quantity is regulated through the abstraction licensing regime and the best way to protect groundwater quality is by managing potential sources of pollution.

Potential sources of groundwater pollution include:

- Leaks from machinery or oil tanks;
- Fertilisers/pesticides/sheep dips;
- Farm yard runoff;
- Misuse/disposal of chemicals;
- Poorly maintained septic tanks;
- Landfills;
- Unregulated waste activities;
- Cemeteries;
- Mining/quarries;
- Historical industrial sites;
- Livestock manure.



Your groundwater supply

If you have or are considering a groundwater supply you should:

- Always seek professional advice;
- Test the water quality of the well to ensure its fit for purpose. For example, if a potable supply of water is required it must comply with the **Drinking Water Quality Standards**. In some cases treatment may be required to make sure it is safe to consume;
- Reduce the risk of pollution to the supply. This can be done in different ways including avoiding spraying pesticides or manure in proximity, by maintaining the headworks and/or surrounding it with stock proof fencing.



Why is groundwater important for Northern Ireland?

Groundwater plays a vital role in our community's everyday life, however, because we can't see it, it can be difficult to recognise how significant it is.

Public Water Supplies

Northern Ireland Water uses groundwater to provide part of its public water supply network, for example, drinking water on Rathlin Island.



Rural Private Water Supplies

Groundwater, from private boreholes, wells or springs, provides water to homeowners and farmers, particularly in remote areas where public supply is not available.



Irrigation

Groundwater is used to supply water for irrigation. This includes for horticulture and recreational purposes, for example golf course irrigation.



Natural Environment

Groundwater makes our rivers and lakes more stable and creates important wetland habitats. It also helps create a special type of landscape in some areas of limestone, known as karst. Karst is an important part of our geological diversity.



Groundwater supports our environment, economy and society, which contributes to a more sustainable Northern Ireland

Geothermal Energy

Ground source heat pumps and heat exchangers can use the heat energy storage capacity of groundwater to heat and cool buildings. This is a natural and renewable energy resource.



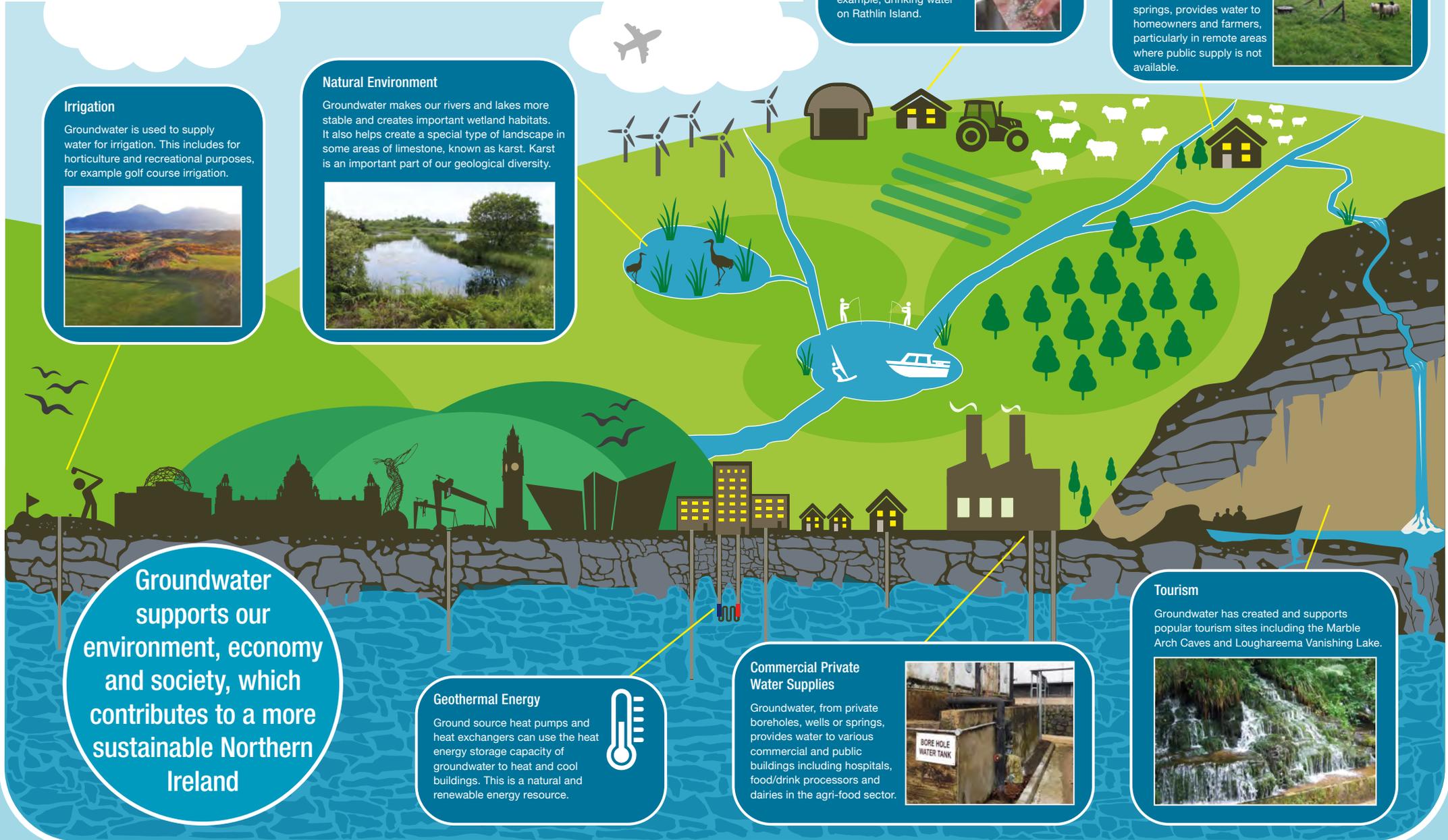
Commercial Private Water Supplies

Groundwater, from private boreholes, wells or springs, provides water to various commercial and public buildings including hospitals, food/drink processors and dairies in the agri-food sector.



Tourism

Groundwater has created and supports popular tourism sites including the Marble Arch Caves and Loughareema Vanishing Lake.



How To Find Out More?

If you are considering taking advantage of Northern Ireland's groundwater assets, need some advice or want to find out more you can contact and/or consider:

- **Department of Agriculture, Environment and Rural Affairs (DAERA):** DAERA, through the NIEA, regulate abstraction licences (required for larger abstractions above 20 cubic meters per day), monitor background groundwater quality and quantity, and, through the Drinking Water Inspectorate, regulate drinking water quality. More information is available at: www.daera-ni.gov.uk
- **The Geological Survey of Northern Ireland (GSNI):** GSNI can advise on the groundwater abstraction potential based on your location. More information is available at: www.bgs.ac.uk/gsni/
- **Environmental consultancies with hydrogeological expertise:** Consultancies can provide a full range of services for an individual or business wanting to use a groundwater supply.
- **Drilling contractors:** These are the companies that complete the construction of the borehole, and may be able to provide local knowledge of the ground conditions. It is recommended they are used in collaboration with hydrogeological expertise.
- **The Institute of Geologists Ireland (IGI):** The IGI have guidance documents available on-line at: <https://igi.ie/>
(Other professional bodies providing guidance are available)

This leaflet is endorsed by the **Northern Ireland Groundwater Resources Working Group**, members include various government departments, AFBI and NI Water.

