

Groundwater and the Farming Rules for Water

Why is groundwater important?

Groundwater may be hidden out of sight but it is vitally important in many parts of the UK, and needs to be protected. Groundwater aquifers are a source of drinking water for millions of people and in some areas are the only source. It is also used for irrigating agricultural and horticultural crops and for supplying industry with water for processes and cooling.



Many farm businesses (and other rural properties) are located away from public supply networks and depend on private boreholes and springs, for domestic water supplies and for watering livestock.

Beyond these obvious and direct uses, groundwater also supports wetlands, and river flows via high water tables and springs feeding smaller tributaries. Indeed, in many rivers, 50% of the flow is derived from groundwater sources, and in a dry summer, this can rise to 90% in some cases.

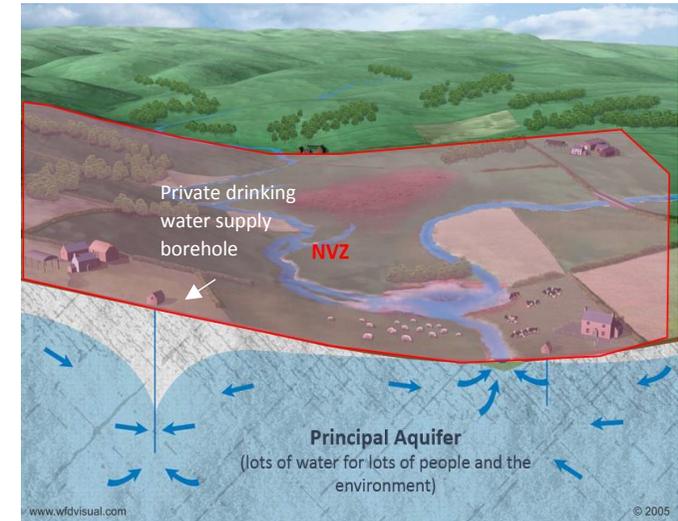
What are the consequences of failing to protect groundwater?

Groundwater moves slowly through the subsurface (sub-soils and rock) so the impact of human activities may last for a relatively long time: pollution that occurred some decades ago – whether from agriculture, industry or other human activities – may still be threatening groundwater quality today and, in some cases, will continue to do so for several generations to come. Cleaning up polluted groundwater can be a very lengthy and expensive process, and sometimes cannot be realistically done at all. Remembering that groundwater is such an important contributor to rivers and other surface waters, it is far better to protect groundwater from pollutants in the first place, or there is a real risk that the entire water cycle becomes contaminated, damaging legitimate uses of water and the many ecosystems that depend on good quality natural waters.

How does agriculture impact on groundwater quality?

There are many important materials/ chemicals used as part of modern agriculture which are safe if used as recommended and contained where they are needed,

but more problematic if they escape elsewhere. This would include nitrates and phosphates from manures



and manufactured fertilisers. We know from existing monitoring networks that in some places we have higher levels of these nutrients than we would want, in both surface and groundwaters. There are a number of natural scenarios which allow nutrients access to groundwaters: very shallow, free draining soils over a vulnerable aquifer; 'leaky' stream and river beds, where significant fissures, or even sink holes, directly connect surface waters to groundwater; heavy clay soils which shrink and crack in a dry summer, creating deep fissures which allow much faster travel time for surface contaminants to reach underlying groundwaters. This isn't an exhaustive list but it does illustrate the range of different conditions which may increase the vulnerability of groundwaters.

How can the Farming Rules for Water help protect groundwaters?

The Farming Rules for Water (FRW) were primarily introduced to tackle diffuse pollution of surface waters. They do this by requiring farmers and land managers to apply the correct amount of nutrients to crops, manage in-field manure heaps safely, and keep soil on the land and out of watercourses by controlling erosion from cultivations and poaching by livestock. However, by complying with the FRW, this will also benefit groundwater quality, especially in areas where there is a very high connectivity between surface waters and groundwaters. It is to be recommended that any farmer or land manager makes themselves familiar with any vulnerable areas for which they are



River Greta at Gods Bridge –during dry climatic conditions where the groundwater level has fallen below the river bed level. River flow resumes lower down in the catchment.

responsible, and the nature of the connectivity. These areas may then need to be

treated differently to other areas of the holding when calculating nutrient applications, choosing

cultivation techniques and managing livestock impacts etc.



Hawthorn Burn at Railway Crossing –during dry climatic conditions where the groundwater level has fallen and the burn flows into groundwater instead of the channel into the North Sea.

For information about groundwater protection guides covering requirements, permissions, risk assessments and controls (previously covered in The EAs Groundwater Protection Policy GP3) go to: <https://www.gov.uk/government/collections/groundwater-protection>

The Environment Agency's approach to protecting groundwater resources can be found here:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/692989/Environment-Agency-approach-to-groundwater-protection.pdf along with position statements regarding specific activities. Specifically Section H is relevant for farmers and land

managers, along with a number of others such as point sources and water intended for human consumption especially where groundwater is used for local and public drinking water.

Groundwater – out of sight but not out of mind

