

## **Impacts of shale gas on water and wastewater**

**The evidence base on the magnitude of the impact of shale gas on drinking water and wastewater services in the UK is limited but nonetheless risks do exist. Although water companies would not wish to hinder economic development, there is a view that the impacts on water need to be addressed and need to be addressed at the outset.**

### **Risks**

The impacts of shale gas on water can be considered in four broad categories – water quality, water quantity, wastewater treatment and infrastructure.

The primary risk of concern to water companies is that associated with contamination of the drinking water aquifers that overlie shale gas reserves as a result of the ‘fracking’ process allowing gases, such as methane, to permeate into drinking water sources from previously confined rocks. Contamination can be caused by chemicals used in the process entering the drinking water aquifer either via fractures caused by the process or, potentially, by existing pathways.

The fracturing process uses water to pressurise the shale strata. The quantities of water needed vary by site and throughout the process, but the demand will have a significant impact on local water resource availability. This demand may be met from the public water supply, from direct abstraction, from water tankered in from other areas or from recycling and reuse of flowback water. Where a large number of extraction wells exist in a local area, there is an exacerbated risk of water shortages for other purposes.

Water companies may be asked to accept discharge of contaminated effluents recovered from the fracking process for treatment. Whether or not this would be an option would be determined by the size of the receiving works and the extent to which wastewaters contained naturally occurring radioactive materials (NORM).

Finally, even if a supply of water is available from a water company, there may be constraints on the availability of infrastructure to provide a supply and also the degree to which this may be at risk from seismic activity induced by the fracturing process.

### **Regulatory framework**

There is a robust framework of planning, environmental and health and safety regulation in place in the UK. A petroleum exploration and development licence (PEDL) is required along with drilling consents and planning permission. The environmental regulator and the HSE are consulted on environmental risk and safety risks respectively. In England the Environment Agency has stated that each shale gas operational will need to complete environmental impact assessments at various stages of its development, from exploration through to production.

Under current planning arrangements inclusion of water companies in the process is not required, but such liaison can provide helpful information to both the water company (in terms of updating risk assessments for their Drinking Water Safety Plans) and to the shale gas operator. Early dialogue is the key to jointly assessing solutions that mitigate or minimise risks.

### **Proposals for change**

Water UK urges government to consider the introduction of legislation to ensure that water undertakers in the UK are statutory consultees in the planning process, in addition to the environmental agencies, for proposed shale gas extraction sites, and that the protection of drinking water sources is considered as a priority within this framework.

In the meantime, Water UK encourages shale gas exploration licence holders to engage with water companies at the earliest opportunity in the areas of potential exploration and production, to address the concerns and specific local factors that may affect water or wastewater service availability.

There should also be full disclosure of the chemical composition of the fluids used during the extraction process, on a site-specific basis, so that the water industry can consider risks to drinking water sources.

This should include visibility of the measures being put in place from the planning stage, to mitigate any risks identified that may either directly contaminate drinking water aquifers or indirectly provide pathways for contaminants that already exist in the environment.

Development of a water management plan for each site could prove beneficial in terms of understanding the local impacts and constraints. Consideration should be given to the wider potential safety issues rather than just the borehole design risk – for example, whether seismic activity associated with the shale gas extraction could damage utility infrastructure.

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