River Basin Management Plans – Groundwater Classification

Contaminated Land

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An Agency within the Department of the Environment
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NIEA Northern Ireland Environment Agency
www.ni-environment.gov.uk

1.0 Purpose

This paper describes the approach taken to assess the Water Framework Directive (WFD) chemical status of groundwater bodies with respect to impact from contaminated land sites.

2.0 Background

The WFD requires that groundwater bodies must be classified as good or poor for both chemical status (in relation to a large range of pollution pressures) and quantitative status (in relation to groundwater abstraction pressures).

Potential impacts from contaminated land have been considered in the context of three of the five tests developed for groundwater body chemical classification, based on WFD requirements and guidance provided at an EC and UK level[1]. The five tests consider groundwater chemical composition with respect to impacts both on the groundwater body (including significant potable supplies), and on the ecological receptors which depend on it. The worst result from all five tests is taken as the overall chemical status result for each groundwater body.

Northern Ireland has a predominately rural land use with few major concentrated industrial areas (current or historical) outside of the greater Belfast (including Lisburn) and Londonderry/Derry urban centres.

Although primary legislation is in place with respect to assessment and management of contaminated land, full implementation of legislation which requires a strategic assessment of contaminated land within each council area has, to date, not been undertaken.

Northern Ireland Environment Agency (NIEA) has a database of sites where historical land use could potentially have resulted in some impact on soils and waters. This dataset is not considered to be comprehensive and does not determine in any way whether actual impact has occurred or is occurring.

In recent years more site specific information has become available for sites where redevelopment is taking place and actual pollution has been identified. For most of these sites, with respect to risk to groundwater, some remediation work has been undertaken and/or it has been determined that the impact on the water environment is not significant.

A list of sites where actual contamination of groundwater has been detected or is suspected has been compiled in consultation with Land Quality Team of NIEA. Site locations have been plotted within GIS, the hydrogeological setting determined and relevant data from the surface water body catchment in which they are located reviewed. Where groundwater monitoring data is available external to the site boundary, this has also been considered.

As would be expected the location of many of the identified sites where groundwater pollution is known or strongly suspected coincides with urban areas and in some cases the assessment has defaulted to the assessment undertaken for urban area classification.

[1] UK Technical Advisory Group on the Water Framework Directive. Paper 11b(i): Groundwater Chemical Classification for the purposes of the Water Framework Directive. This paper can be downloaded from the www.wfduk.org web site.

3.0 Classification

For the purposes of groundwater classification, the location of contaminated sites or boreholes where groundwater pollution (non-diffuse type) is known or strongly suspected has been reviewed in the context of:

Chemical Classification

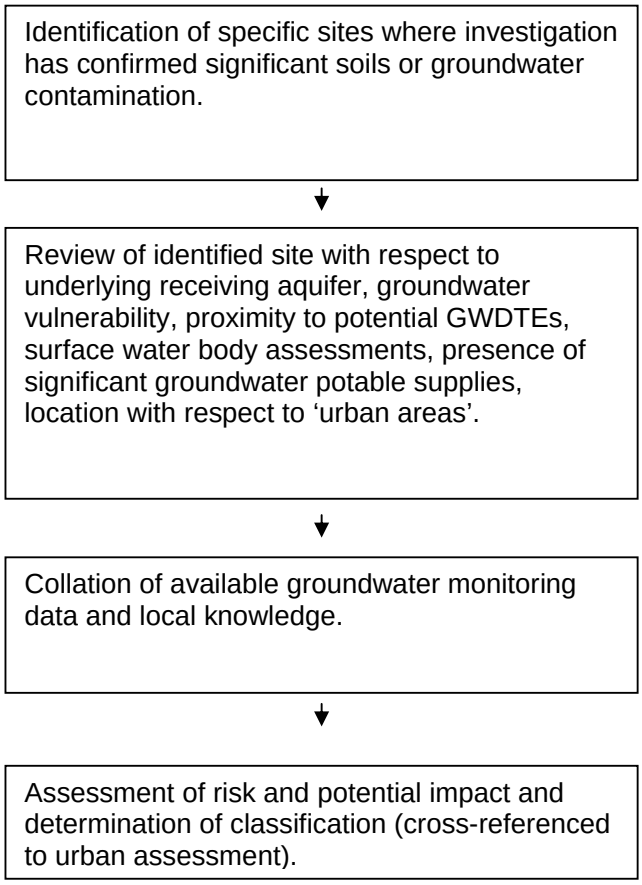
- No significant diminution of surface water chemistry and ecology
- Impact on Groundwater Dependent Terrestrial Ecosystems (GWDTEs)
- Impact on Drinking Water Protected Areas

Given the size and nature of groundwater bodies currently delineated in Northern Ireland, it is considered that individual contaminated and polluting sites would not be of sufficient scale to have an impact on general water quality across a groundwater body.

4.0 Assessment Process

The following assessment process was undertaken, managed within a GIS-based project.

It should be noted that for potential GWDTEs (SPA, SAC, ASSIs and NNRs) limited knowledge is currently available regarding their groundwater dependency and sensitivity to water chemistry changes. Where such sites occur within or near an identified contaminated land area an opinion on potential for impact has been made by reference to the hydrogeological setting and information available from NIEA ecologists familiar with the sites. Similarly with surface water bodies, there is a general lack of relevant surface water monitoring data unless specific monitoring has been undertaken as part of the site specific investigation.



This assessment has been carried out in order to identify sites which are or may be impacting on local groundwater, nearby abstraction sources and/or surface waters/GWDTEs and to provide an opinion as to the potential significance of any impact. A determination has been made as to whether the groundwater body in which the contaminated site is located should be classed as good or poor status. This determination was based on local knowledge of hydrogeological settings at identified sites and available site data/knowledge with respect to impact on local groundwater quality and/or nearby receptors. As contaminated land legislation has not yet been fully introduced in Northern Ireland, a comprehensive assessment of sites where contamination may exist has not yet been undertaken by responsible authorities. Where contaminated sites fall within an urban area, their presence has generally contributed to the urban area classification assessment.

5.0 Outcome

No groundwater bodies have been classified as being at "poor status" for this contaminated land pressure based upon the above assessment. For most known contaminated sites some form of remediation has taken place or is proposed hence risks to receptors are being reduced with time.

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6.0 River Basin Planning Cycle

Unless of very significant size or distribution, contaminated land is very unlikely to cause a significant impact on general water quality across a groundwater body. If a receptor is nearby and downstream, the potential then exists for an impact to occur to the extent that the receptor is compromised with respect to attaining its required class or condition. Indications are that within this RBMP period additional contaminated land legislation will be enacted and that this will lead to a more detailed assessment of potentially contaminated land. This information should be used to review the risks to groundwater and associated receptors and inform requirements for additional investigative monitoring.

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