Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

Water Quality in Ireland 2010 - 2012

ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency (EPA) is responsible for protecting and improving the environment as a valuable asset for the people of Ireland. We are committed to protecting people and the environment from the harmful effects of radiation and pollution.

The work of the EPA can be divided into three main areas:

Regulation: *We implement effective regulation and environmental compliance systems to deliver good environmental outcomes and target those who don't comply.*

Knowledge: *We provide high quality, targeted and timely environmental data, information and assessment to inform decision making at all levels.*

Advocacy: *We work with others to advocate for a clean, productive and well protected environment and for sustainable environmental behaviour.*

Our Responsibilities

Licensing

We regulate the following activities so that they do not endanger human health or harm the environment:

- waste facilities *(e.g. landfills, incinerators, waste transfer stations)*;
- large scale industrial activities *(e.g. pharmaceutical, cement manufacturing, power plants)*;
- intensive agriculture *(e.g. pigs, poultry)*;
- the contained use and controlled release of Genetically Modified Organisms *(GMOs)*;
- sources of ionising radiation *(e.g. x-ray and radiotherapy equipment, industrial sources);*
- large petrol storage facilities;
- waste water discharges;
- dumping at sea activities.

National Environmental Enforcement

- Conducting an annual programme of audits and inspections of EPA licensed facilities.
- Overseeing local authorities' environmental protection responsibilities.
- Supervising the supply of drinking water by public water suppliers.
- Working with local authorities and other agencies to tackle environmental crime by co-ordinating a national enforcement network, targeting offenders and overseeing remediation.
- Enforcing Regulations such as Waste Electrical and Electronic Equipment (WEEE), Restriction of Hazardous Substances (RoHS) and substances that deplete the ozone layer.
- Prosecuting those who flout environmental law and damage the environment.

Water Management

- Monitoring and reporting on the quality of rivers, lakes, transitional and coastal waters of Ireland and groundwaters; measuring water levels and river flows.
- National coordination and oversight of the Water Framework Directive.
- Monitoring and reporting on Bathing Water Quality.

Monitoring, Analysing and Reporting on the Environment

- Monitoring air quality and implementing the EU Clean Air for Europe (CAFÉ) Directive.
- Independent reporting to inform decision making by national and local government *(e.g. periodic reporting on the State of Ireland's Environment and Indicator Reports)*.

Regulating Ireland's Greenhouse Gas Emissions

- Preparing Ireland's greenhouse gas inventories and projections.
- Implementing the Emissions Trading Directive, for over 100 of the largest producers of carbon dioxide in Ireland.

Environmental Research and Development

- Funding environmental research to identify pressures, inform policy and provide solutions in the areas of climate, water and sustainability.

Strategic Environmental Assessment

- Assessing the impact of proposed plans and programmes on the Irish environment *(e.g. major development plans)*.

Radiological Protection

- Monitoring radiation levels, assessing exposure of people in Ireland to ionising radiation.
- Assisting in developing national plans for emergencies arising from nuclear accidents.
- Monitoring developments abroad relating to nuclear installations and radiological safety.
- Providing, or overseeing the provision of, specialist radiation protection services.

Guidance, Accessible Information and Education

- Providing advice and guidance to industry and the public on environmental and radiological protection topics.
- Providing timely and easily accessible environmental information to encourage public participation in environmental decision-making *(e.g. My Local Environment, Radon Maps)*.
- Advising Government on matters relating to radiological safety and emergency response.
- Developing a National Hazardous Waste Management Plan to prevent and manage hazardous waste.

Awareness Raising and Behavioural Change

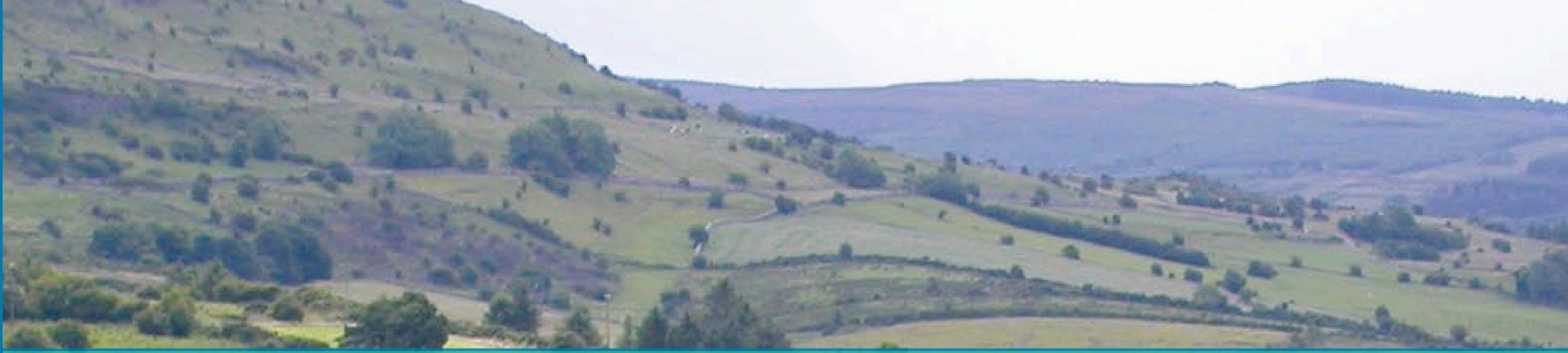
- Generating greater environmental awareness and influencing positive behavioural change by supporting businesses, communities and householders to become more resource efficient.
- Promoting radon testing in homes and workplaces and encouraging remediation where necessary.

Management and structure of the EPA

The EPA is managed by a full time Board, consisting of a Director General and five Directors. The work is carried out across five Offices:

- Office of Climate, Licensing and Resource Use
- Office of Environmental Enforcement
- Office of Environmental Assessment
- Office of Radiological Protection
- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet regularly to discuss issues of concern and provide advice to the Board.



GROUNDWATER

2. GROUNDWATER

Authors: Anthony Mannix, Matthew Craig.

- 1.5% of groundwater bodies in Ireland were classified as being at poor chemical status based on the best information available. This was an improvement from 13.6% of the groundwater bodies in Ireland classified as being at poor chemical status in the first cycle of WFD river basin management planning.
- 11 groundwater bodies were at poor chemical status with three at poor chemical status due to phosphate contribution to rivers that were at less than good status in 2011.
- 8 groundwater bodies were at poor chemical status because of historical contamination from mining activities and industrial development.
- 2 groundwater bodies were at poor quantitative status nationally, both of which are located in the South Eastern River Basin District. The status assigned was due to impacts to a groundwater dependent terrestrial ecosystem (GWDTE).
- The average nitrate concentration in groundwater was below the threshold value of 37.5 mg/l NO_3 at 96% of the monitoring locations for the period 2007-2012. The south and south-east regions of the country continue to have the greatest proportion of monitoring locations with elevated nitrate concentrations.
- The average phosphate concentration in groundwater was below the threshold value 0.035 mg/l P at 93% of the monitoring locations during the period 2007-2012.
- Downward trends in nitrate concentrations were evident at 74% of groundwater monitoring locations, with a further 21% with stable levels.
- There has been a gradual decrease in phosphate concentrations across the WFD groundwater monitoring network, with 70% of sites having average phosphate concentrations less than 0.015 mg/l P in 2012 compared to 40% in 1995-1997.
- Certain locations have been identified as having upward trends in nitrate and phosphorus that could, if they continue, lead to failure to meet WFD objectives. Further analysis of these areas is required.
- There was a slight decrease in samples with positive detections of faecal coliforms during the reporting period. Groundwater sources for both public and private drinking water need to be protected to reduce the risk of illness from the consumption of contaminated water, particularly from spring sources.

Introduction

Groundwater originates as rainfall, or snow melt, that soaks through the soil to the underlying subsoil and bedrock. Groundwater flows from the upper reaches of catchments through interconnected spaces or fractures in the subsoil or bedrock to the streams, rivers, lakes or estuaries lower down in the valley. During periods when there is little or no rain, almost all the water flowing in the streams and rivers originates from groundwater. If the underlying gravel subsoil deposits and bedrock can yield enough water for a significant water supply, they are referred to as aquifers. A large proportion of the productive aquifers in Ireland are karstified limestone bedrock. Karst landscapes develop in rocks that are readily dissolved by water, e.g. limestone (composed of calcium carbonate), and typically conduit, fissure and cave systems develop underground (Geological Survey of Ireland, 2000[8]). Some attenuation of contaminants

8 Geological Survey of Ireland, 2000. The Karst of Ireland, GSI, Dublin.

may occur in the soil and subsoil that overlie the aquifer, consequently variation in subsoil and thickness play a critical role when characterising the vulnerability of groundwater to contamination.

The natural quality of groundwater varies as groundwater flows from recharge areas to springs or rivers. The groundwater chemistry may change as it passes through soils, sub-soils or bedrock with different mineralogy. In Ireland, limestone bedrock and limestone-dominated sub-soil are common, and consequently groundwater is often referred to as being "hard", containing high concentrations of calcium, magnesium and bicarbonate. In areas where sandstone or volcanic rocks dominate, softer water is normal. Elevated concentrations of certain ions can occur naturally and may lead to drinking water quality problems, e.g. iron, manganese, sulphate and arsenic, and sodium and chloride in aquifers near coasts. Therefore, it is important to consider natural hydrochemical variations when interpreting the analyses from groundwater quality monitoring programmes, and assessing whether groundwater is polluted from human activities.

The quality of groundwater in Ireland is very good relative to other countries in Europe, based on the proportion of groundwater bodies at poor chemical status (EEA, 2013[9]). In the 2013 water quality indicator report covering the period 2004-2009, the European Environment Agency (EEA) indicates that excessive levels of nitrate are the most frequent cause of poor groundwater status across Europe. The EEA identifies agriculture as the main cause of the elevated nitrate concentrations. Pesticides and a range of other chemicals, such as heavy metals, also contribute to poor groundwater status in some areas of Europe.

Assessment of groundwater status (2007-2012)

The assessment of groundwater chemical and quantitative status in Ireland is based on representative monitoring points selected specifically for the Water Framework Directive (WFD) groundwater monitoring programme.

The European Communities Environmental Objectives (Groundwater) Regulations, 2010 define the criteria for groundwater body classification. In order to assess whether these conditions are being met, a series of tests has been prescribed for each of the quality elements defining good (chemical and quantitative) groundwater status.

Status assessments are required for all groundwater bodies identified as being at risk of failing one or more objectives of the WFD. The assessments show the impacts of abstraction and pollutants on groundwater at the time of assessment. The groundwater bodies range in size from <1 km^2 to 1,884 km^2 which may be a consequence of the physical setting or the specific management objective. While the water body may be at good status, there can still be localised environmental risks, e.g. where the local pollution impacts on groundwater quality which is not substantial enough to impact on the status of the whole groundwater body.

Classification of groundwater bodies differs from that undertaken for surface water bodies, in that the surface water standards relate to ecological status and these standards define the classification boundaries. Groundwater status does not directly assess ecology, but the classification process takes account of the ecological needs of the relevant rivers and terrestrial ecosystems that depend on contributions from groundwater. Another key component of the groundwater classification is assessment of the impact of pollution on the uses (or potential uses) of groundwater from the groundwater body, e.g. for water supply.

Five chemical and four quantitative tests have been developed to assess whether the WFD objectives are met. The worst-case classification from the relevant chemical status tests is reported as the overall chemical status for the groundwater body, and the worst-case classification of the quantitative tests is reported as the overall quantitative status for the groundwater body.

9 European Environment Agency (2013) Chemical Status Indicators for water across Europe http://www.eea.europa.eu/data-and-maps/indicators/wfd-indicator-chemical-status/assessment

Tests for assessing chemical status of groundwater include; looking for evidence of saline or other intrusions, exceedances of a range of quality standards and thresholds that would result in failure to achieve the environmental objectives of associated surface waters, groundwater-dependent terrestrial ecosystems, or drinking water protected areas. It also involves looking for evidence of deteriorating trends in quality. Tests for assessing quantitative status of groundwater focus on over-abstraction of groundwater and include; looking for evidence of saline or other intrusions due to change in groundwater levels, impacts on the environmental objectives of associated surface waters and groundwater-dependent terrestrial ecosystems due to alterations in groundwater levels, and assessing water balances to determine whether the available groundwater resource is exceeded by the long-term annual average rate of abstraction. Full details of status tests are available on the Agency's website[10].

A groundwater status update was carried out in December 2014 for a number of the main status sub-tests that caused groundwater bodies to be at "Poor Status", both quantitative and chemical, from the first River Basin Management Plan cycle. Further updates will be made to groundwater body status in 2015 following the completion of a groundwater body boundary review (physical characterisation) and further risk characterisation. EPA WFD groundwater quality data from 2007 to 2012 have generally been used where an update has been carried out, with trends based on data from 2000 to 2012, where available. Where the status update has not been carried out in 2014, the results of the status reported in 2011, based on EPA WFD groundwater quality data from 2003 to 2008, have been taken forward.

Installation of a monitoring well in Galway.

10 http://www.epa.ie/pubs/reports/water/ground/groundwaterthresholdvaluesandassessmentofchemicaland-quantitativestatus.html

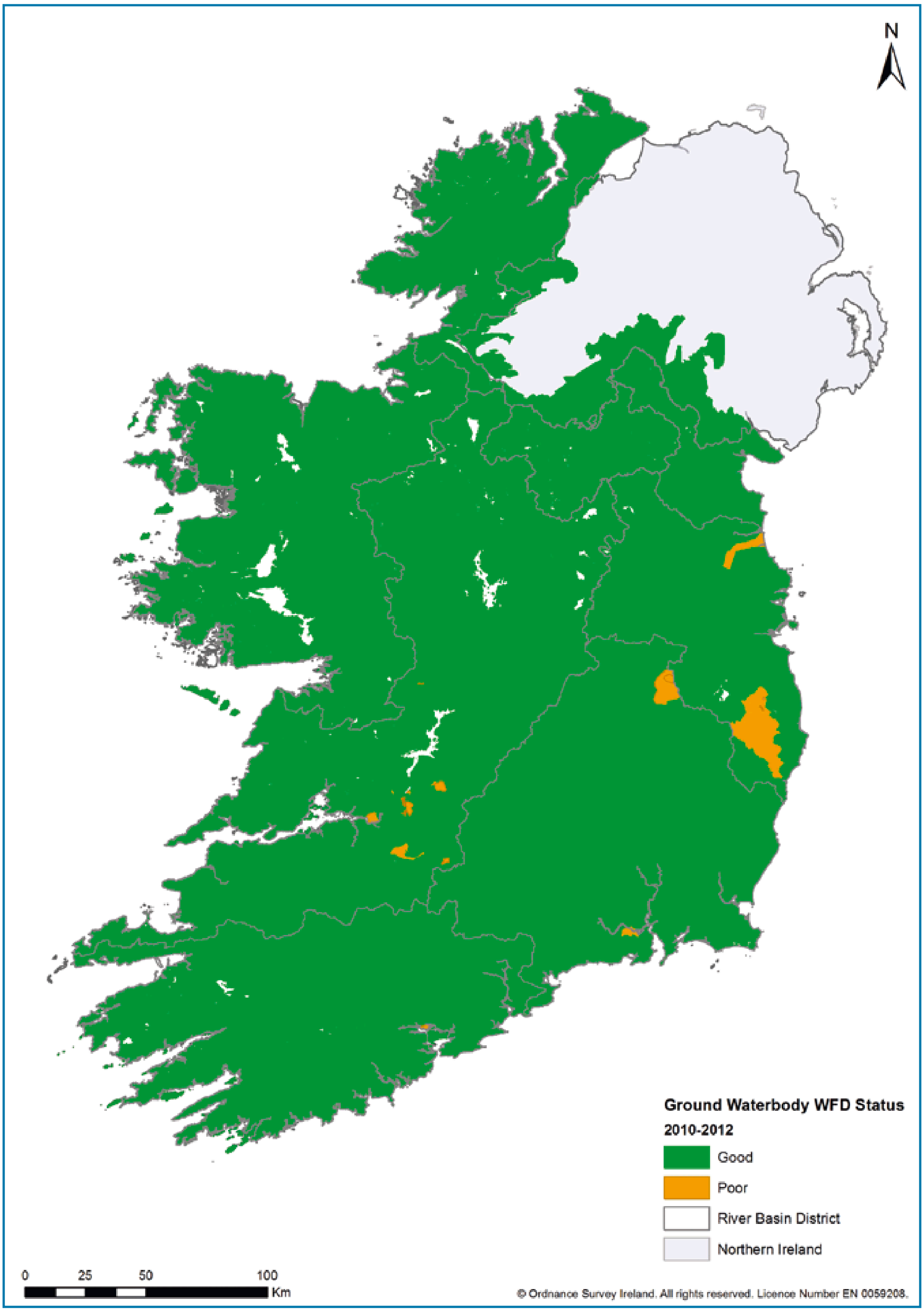


Figure 2-1. Status of groundwater bodies from December 2014 update.

The December 2014 status update (quantitative and chemical) has resulted in 1.7% of groundwater bodies being classified as poor status compared with 14% in 2011 (See **Figure 2-1** for the location of these poor status bodies). Of these, poor chemical status was assigned to eleven groundwater bodies in Ireland (1.5%) compared with 103 groundwater bodies (13.6%) in 2011 (see **Table 2-1** for a breakdown by River Basin District). In 2011, the majority of the poor status groundwater bodies in the Shannon and Western River Basin Districts were driven by the surface water classification test and the contribution of phosphate in groundwater to surface water bodies impacted by nutrient enrichment. The December 2014 update identifies that three groundwater bodies are at poor chemical status for phosphate contribution to rivers that were at less than good status because of diffuse and small point-source pressures.

Pressures from point-source activities, such as historic mines, contaminated land, and old dumps, may have adverse impacts on groundwater in the immediate area down gradient of the pollution source, but generally this pollution does not have a significant impact at a groundwater body scale. Eight groundwater bodies remain designated as being at poor chemical status because of widespread historical contamination from mining activities and industrial development, i.e. where the pollution extent is having a significant impact at a groundwater body scale. Four of these groundwater bodies are at poor status due to historic pollution from contaminated land sites, and the other four are at poor status due to historic mining activities.

Therefore, the major change in groundwater bodies from poor to good status is in those groundwater bodies that had been failing due to phosphate contribution to surface waters. This has resulted from the gradual reductions in phosphate concentrations seen nationally in recent years, which is discussed later in this chapter and presented in **Figures 2-10** and **2-11**.

Chemical status	**Good**		**Poor**	
River Basin District	**Water bodies (No.)**	**Area km²**	**Water bodies (No.)**	**Area km²**
Eastern	73	5,789	2	477
South-Eastern	149	12,869	2	24
South-Western	83	11,284	1	6
Shannon	236	17,503	6	97
Western	104	11,732	0	0
North-Western	72	7,421	0	0
Neagh Bann	28	1,805	0	0
National Total	**745 (99%)**	**68,403 (99%)**	**11 (1%)**	**604 (1%)**

Table 2-1. Groundwater chemical status.

The December 2014 status update has resulted in two groundwater bodies in Ireland being classified as at poor quantitative status (<1%) compared with three groundwater bodies in 2011 (See **Table 2-2** for a breakdown by River Basin District). This quantitative status update required the use of site-specific information, to determine whether significant abstraction pressures continued and resulted in a reduction of the number of groundwater bodies at poor status from three to two. This was related to the cessation of over-pumping of groundwater at a quarry.

Quantitative status	Good		Poor	
RBD	Water bodies (No.)	Area km²	Water bodies (No.)	Area km²
Eastern	75	6,266	0	0
South-Eastern	149	12,784	2	109
South-Western	84	11,290	0	0
Shannon	242	17,600	0	0
Western	104	11,732	0	0
North-Western	72	7,421	0	0
Neagh Bann	28	1,805	0	0
National Total	**754 (99%)**	**68,898 (99%)**	**2 (1%)**	**109 (1%)**

Table 2-2. Groundwater quantitative status.

There has been an overall improvement from 14% of the groundwater bodies in Ireland classified as being at poor status for the first WFD River Basin Management Plan (RBMP) (EPA, 2011[11]). **Table 2-3** below summarises the differences between the groundwater body status in December 2014 and that in 2011.

Groundwater Test	December 2014 Comment	May 2011 Summary		December 2014 Summary	
		Good Status	Poor Status	Good Status	Poor Status
Overall Chemical Status	Chemical Status was updated for the main "Poor Status" driver during the 1st cycle (Surface Water Test), with further updates to be made following risk characterisation in 2015.	653	103	745	11
Overall Quantitative Status	Quantitative Status was updated for the main "Poor Status" driver during the 1st cycle (Water Balance Test), with further updates to be made following risk characterisation in 2015.	753	3	754	2

Table 2-3. Summary of December 2014 status update results with summary of 2011 results for comparison.

The assessment of groundwater status does not include consideration of contamination by faecal matter. However, as will be described later in this chapter, the presence of faecal coliforms in groundwater is a widespread issue in vulnerable karst areas.

11 EPA (2011) Ecological Status and Chemical Status of Surface Waters and Chemical and Quantitative Status of Groundwaters. Prepared in fulfilment of Articles 24 and 25 of SI 272 of 2009
http://www.epa.ie/pubs/reports/water/waterqua/waterframeworkstatusupdate.html

Assessment of groundwater quality parameters

The Agency has gathered and presented data for parameters that are indicators of anthropogenic pollution (ammonium, nitrate, phosphate and faecal coliforms). Comparison is made with the appropriate WFD threshold values and standards for these parameters.

Ammonium

Microbiological reduction of nitrogen-containing compounds generally results in very low background concentrations of ammonium in unpolluted waters. Ammonium has a low mobility in soil and sub-soil. Its presence in groundwater above 0.15 mg/l N is usually indicative of a nearby source of organic pollution, such as effluent from farmyard manure, slurry and dirty water, or from domestic wastewater treatment systems (such as septic tanks or similar systems).

Figures 2-2 and **2-3** summarise the mean ammonium concentration during the period 1995-2012 and 2007-2012 respectively for the 205 monitoring locations displayed in **Figure 2-4**.

The average ammonium concentration in groundwater was below the threshold value 0.065 mg/l N at 87% of the monitoring locations during the period 2007-2012. Of the 26 monitoring locations with average concentrations greater than 0.065 mg/l N, 10 had average concentrations greater than 0.15 mg/l N. Of these monitoring locations with elevated ammonium concentrations, in general, deep groundwater flow contribution is expected, and there is greater potential for natural reducing redox conditions and elevated ammonium concentration.

As reported in the 2007-2009 Water Quality in Ireland report (EPA, 2010) and highlighted in **Figure 2-2**, there was a significant increase in ammonium concentrations in the period 2007-2009, which has been attributed to rainfall being significantly above the long-term average during this period. Increased rainfall may have resulted in an increased impact of pollution on near surface/shallow water in groundwater systems, resulting in pollutants getting into groundwater relatively quickly, particularly in areas with extreme groundwater vulnerability.

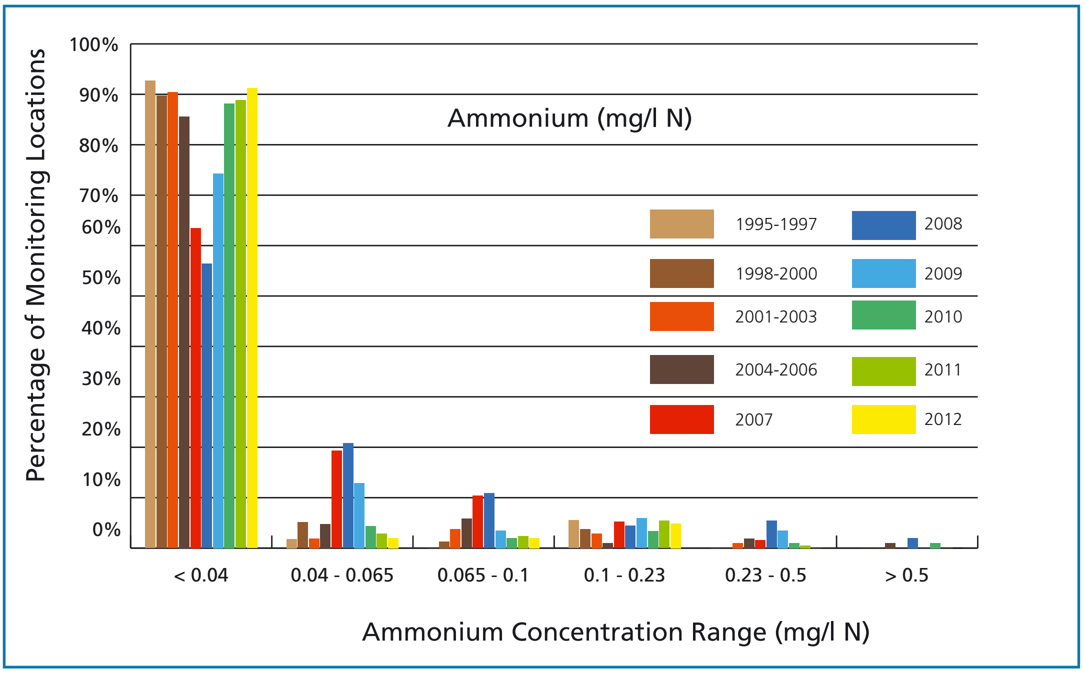


Figure 2-2. Comparison of the proportion of monitoring locations nationally over different reporting periods with mean ammonium concentrations in the ranges indicated.

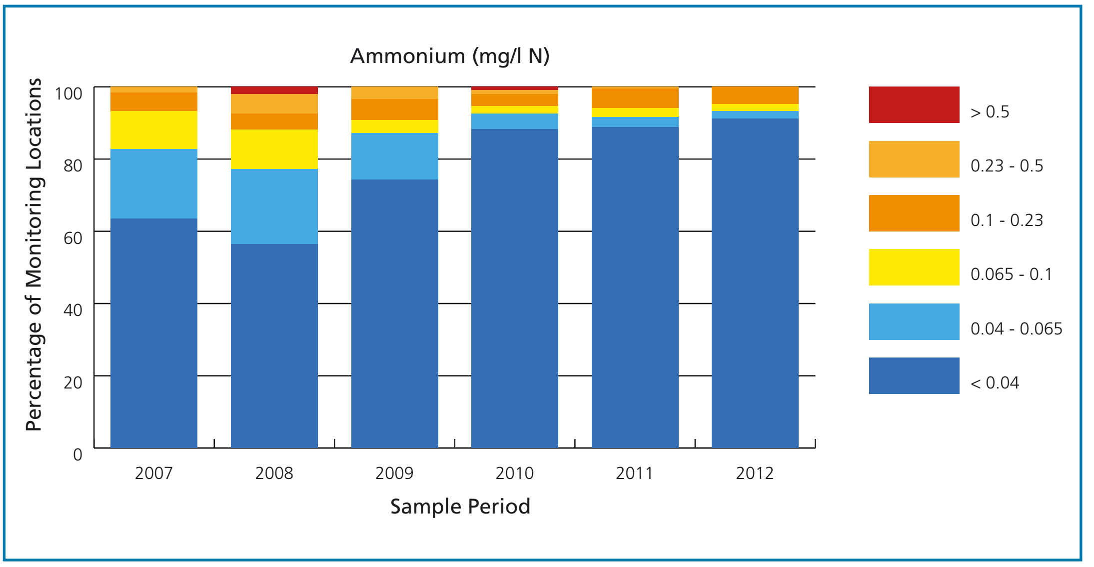


Figure 2-3. Comparison of the mean groundwater ammonium concentrations from 2007-2012 based on the national network.

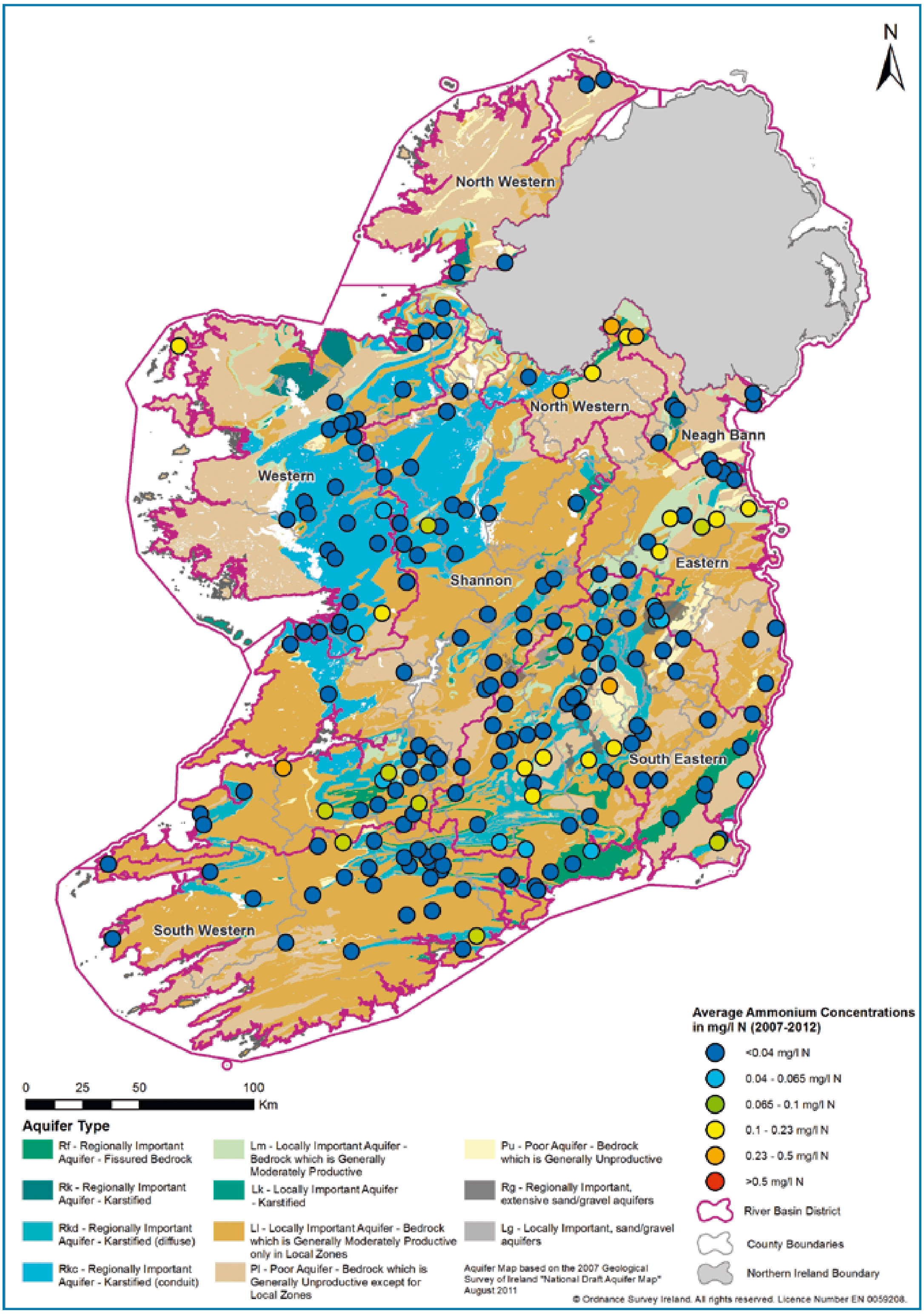


Figure 2-4. Mean ammonium concentration in groundwater 2007-2012 based on the national network. (Source: EPA, GSI)

Nitrate

Relatively low concentrations of nitrate are found naturally in groundwater, and concentrations higher than 10 mg/l of NO_3 are usually indicative of anthropogenic organic or inorganic inputs. Organic sources can include organic fertiliser, e.g. slurry, or effluent from domestic wastewater treatment systems, whilst inorganic sources can include the spreading of artificial fertiliser. If a significant proportion of surface water flow is derived from groundwater, then increased nitrate concentrations in groundwater may contribute to eutrophication impacts in downstream transitional and coastal waters.

A mean concentration greater than the Threshold Value of 37.5 mg/l NO_3 is an indication of appreciable contamination, which given the dynamic nature of groundwater in Ireland, would probably result in the Drinking Water Maximum Allowable Concentration (MAC) of 50 mg/l NO_3 being exceeded at the monitoring point at some time during the sampling period.

Figures 2-5 and **2-7** summarise the mean nitrate concentration during the period 1995-2012 and 2007-2012 respectively for the 205 monitoring locations displayed in **Figure 2-6**.

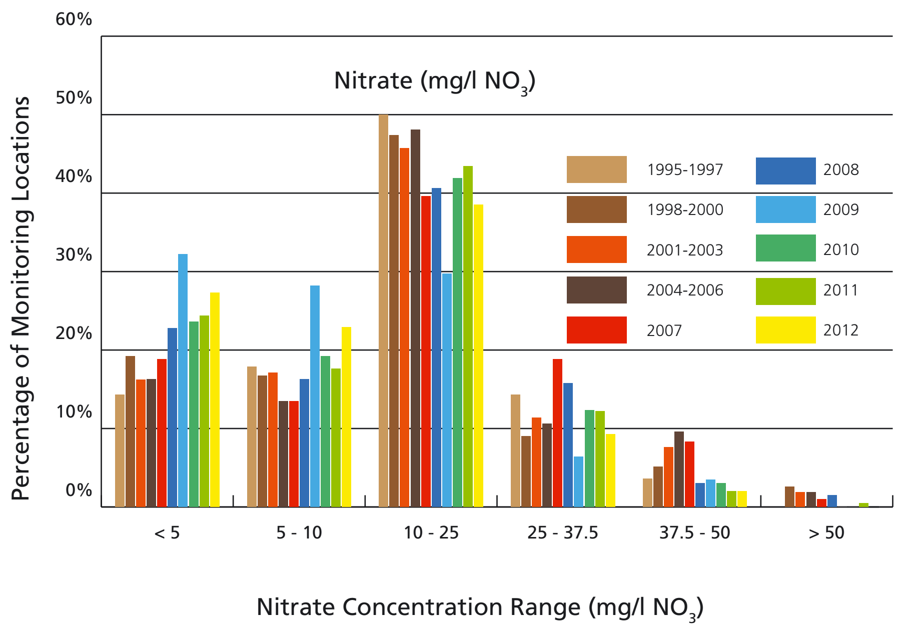


Figure 2-5. Comparison of the proportion of monitoring locations nationally over different reporting periods with mean nitrate concentrations in the ranges indicated.

The average nitrate concentration in groundwater was below the threshold value of 37.5 mg/l NO_3 at 96% of the monitoring locations for the period 2007-2012. All eight monitoring locations with average concentrations greater than 37.5 mg/l NO_3 are water supplies, and had samples with concentrations greater than the Maximum Allowable Concentration (MAC) of 50 mg/l NO_3 that is required under the Drinking Water Regulations (S.I. No. 122 of 2014[12]). One of these water supplies (Glanworth PWS (Tobermore), Co. Cork) had an average concentration greater than the drinking water standard of 50 mg/l NO_3. In situations like this, the EPA investigates and takes appropriate action, such as notifying the water services authority, to ensure that the water being supplied to the public (post-treatment) is meeting the appropriate Drinking Water Standard. In most instances, blending water from different sources or other treatment mechanisms is used by water service authorities to ensure that the water supplied to the public does not exceed the Drinking Water Standard.

12 European Union (Drinking Water) Regulations 2014 www.irishstatutebook.ie/pdf/2014/en.si.2014.0122.pdf

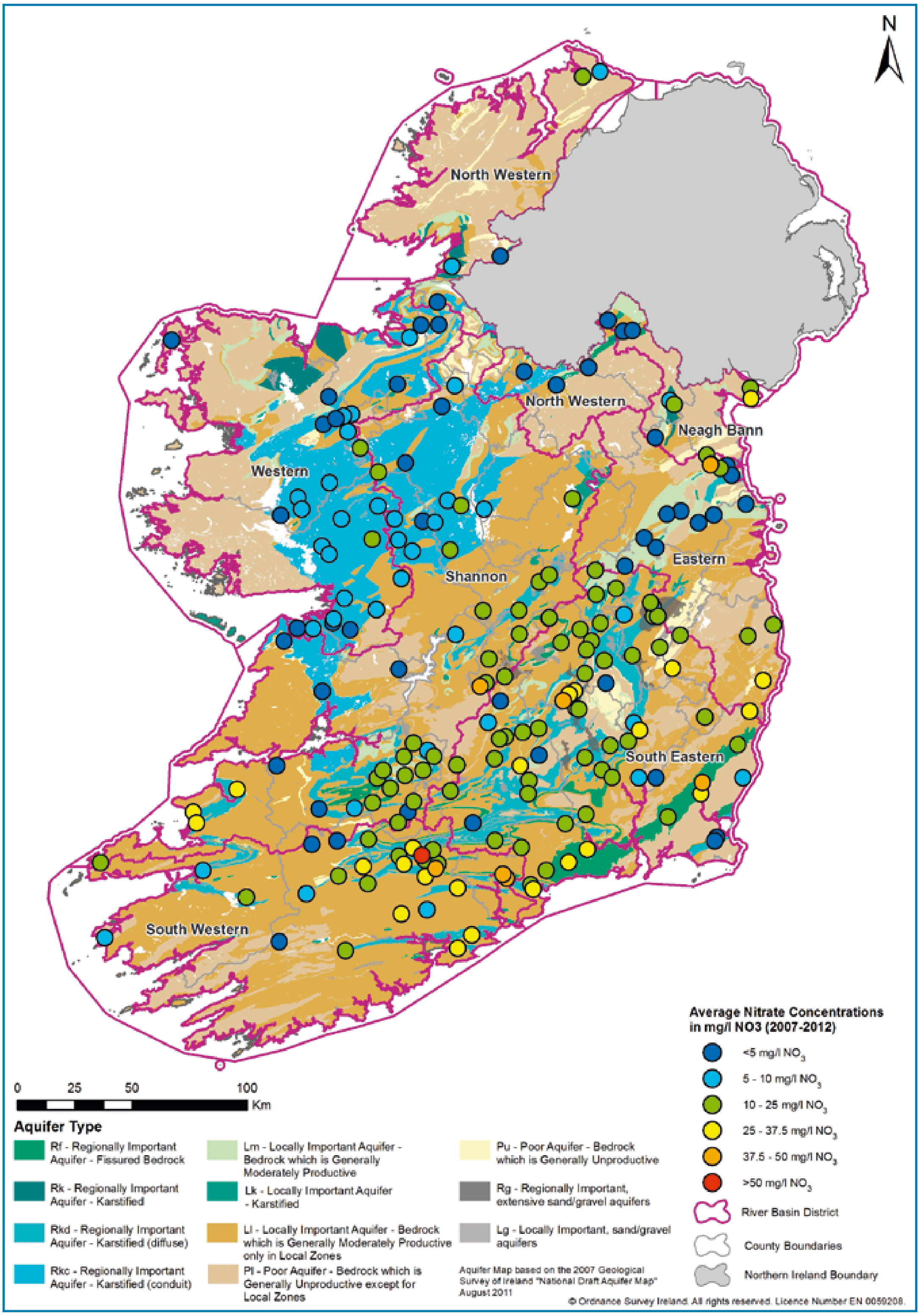


Figure 2-6. Mean nitrate concentrations in groundwater 2007-2012 based on the national network. (Source: EPA, GSI)

Figure 2-7 illustrates that there has been a gradual reduction in mean nitrate concentrations over the 2007-2012 reporting period, with the reductions in 2009 largely being attributed to the increase in annual rainfall, which Met Éireann indicate (Met Éireann, 2009[13]) was between 12% -

13 Met Éireann (2009), Year Summary 2009, December 2009 http://www.met.ie/climate/MonthlyWeather/clim-2009-ann.pdf

55% higher than the long-term average during that year. The reduction in nitrate concentration was particularly evident in the karstified aquifers in the south-east of the country. This is thought to have been caused by a combination of the above-average rainfall causing dilution, and the saturated ground conditions being unsuitable for landspreading of organic fertiliser.

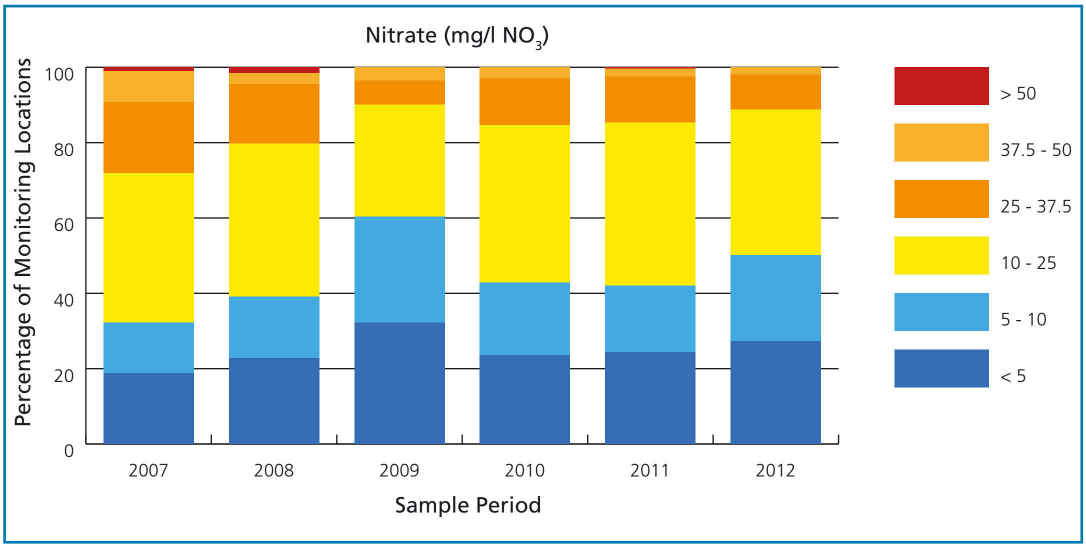


Figure 2-7. Comparison of the mean nitrate concentrations in groundwater from 2007-2012 based on the national network.

Figure 2-6 illustrates that the south and south-east regions of the country continue to have the greatest proportion of monitoring locations with elevated nitrate concentrations. **Figures 2-8** and **2-9** show the breakdown of nitrate concentrations from 2007-2012 for the south-eastern and southern regions respectively. As is the case nationally, a gradual reduction in mean nitrate concentrations over the period is evident in both regions, but Figure 2-8 highlights the impact that the above-average rainfall in 2009 had on nitrate concentrations in the south-east. By contrast, a similar drop in nitrate concentrations is not seen in the southern region, although rainfall in 2009 was also well above the long-term average.

It is not possible to provide definitive reasons for the regional differences in 2009 without detailed analysis of the fertiliser applications for these regions. A possible explanation could be differences in land use between the regions, with the south-east region having a higher proportion of arable farming than the southern region. Another explanation could be differences in hydrogeology, with monitoring locations in the south-east having a higher proportion of regionally important karstified aquifers than those in the southern region. The latter is a more plausible explanation because the regionally important karstified aquifers offer greater potential for groundwater flow, and therefore greater potential for dilution.

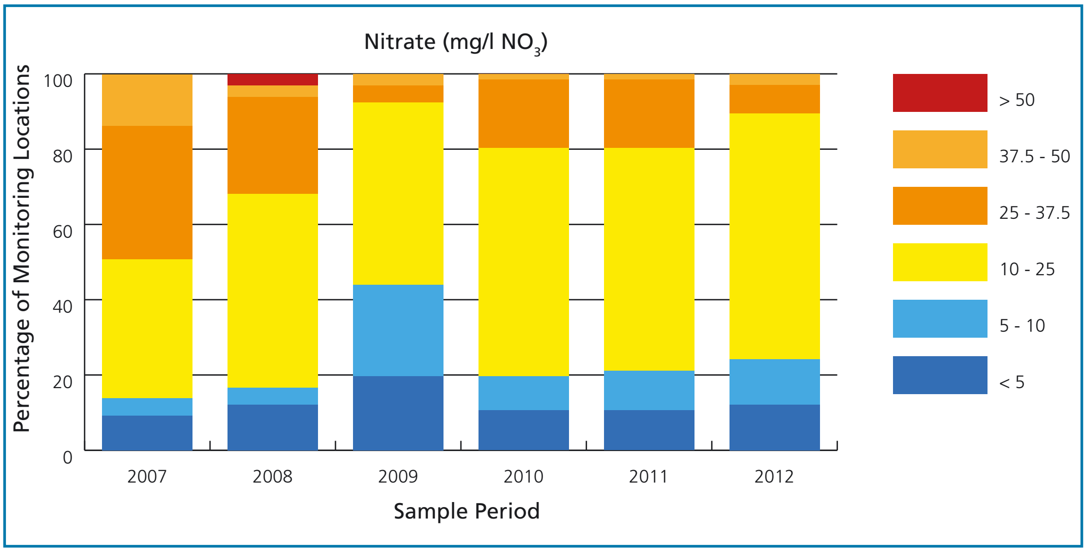


Figure 2-8. Comparison of the mean groundwater nitrate concentrations in the south-east region from 2007-2012.

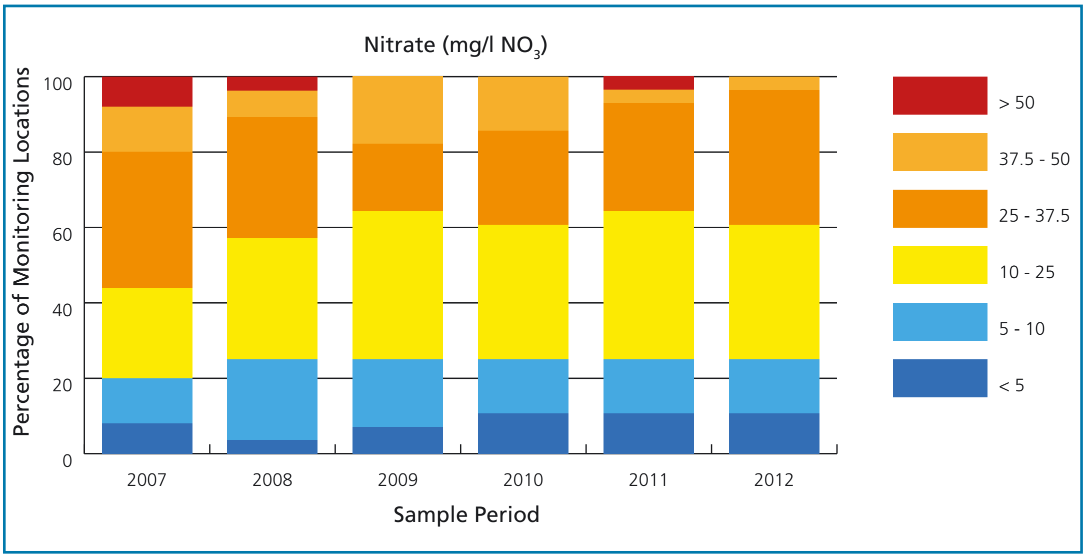


Figure 2-9. Comparison of the mean groundwater nitrate concentrations in the southern region from 2007-2012.

Phosphate

Phosphate is a major source of concern for surface waters because small amounts may lead to eutrophication of rivers, lakes and wetlands. Transport of phosphorus to surface water directly via piped wastewater effluent discharges or by near surface pathways, ditches and drains, particularly in areas with heavy soils, are understood to be the dominant mechanism for phosphorus loss. However, where phosphorus can enter groundwater, particularly those areas with shallow soils or bedrock exposed at the surface, groundwater may act as an additional nutrient enrichment pathway for surface water receptors further downstream.

The proportion of river flow coming from groundwater varies depending on the hydrogeology, with higher groundwater contributions seen from the regionally important aquifers, particularly the karst limestone aquifers. The catchments areas of rivers and lakes that are dominated by shallow soils and outcropping bedrock or free draining soils and sub-soils generally also have higher groundwater contributions. There are areas of the country, particularly the more productive regionally important karst aquifers, where 80% to 90% of the average surface water flow comes from groundwater. Consequently, if the phosphate concentrations in groundwater are elevated in areas where the groundwater contribution is high, then groundwater may be contributing significantly to eutrophication in rivers and lakes.

Figures 2-10 and **2-11** summarise the mean phosphate concentration during the period 1995-2012 and 2007-2012 respectively for the 205 monitoring locations displayed in **Figure 2-12**.

The average phosphate concentration in groundwater was below the threshold value 0.035 mg/l P at 93% of the monitoring locations during the period 2007-2012. Of the 14 monitoring locations with average concentrations greater than 0.035 mg/l P, four had average concentrations greater than 0.05 mg/l P.

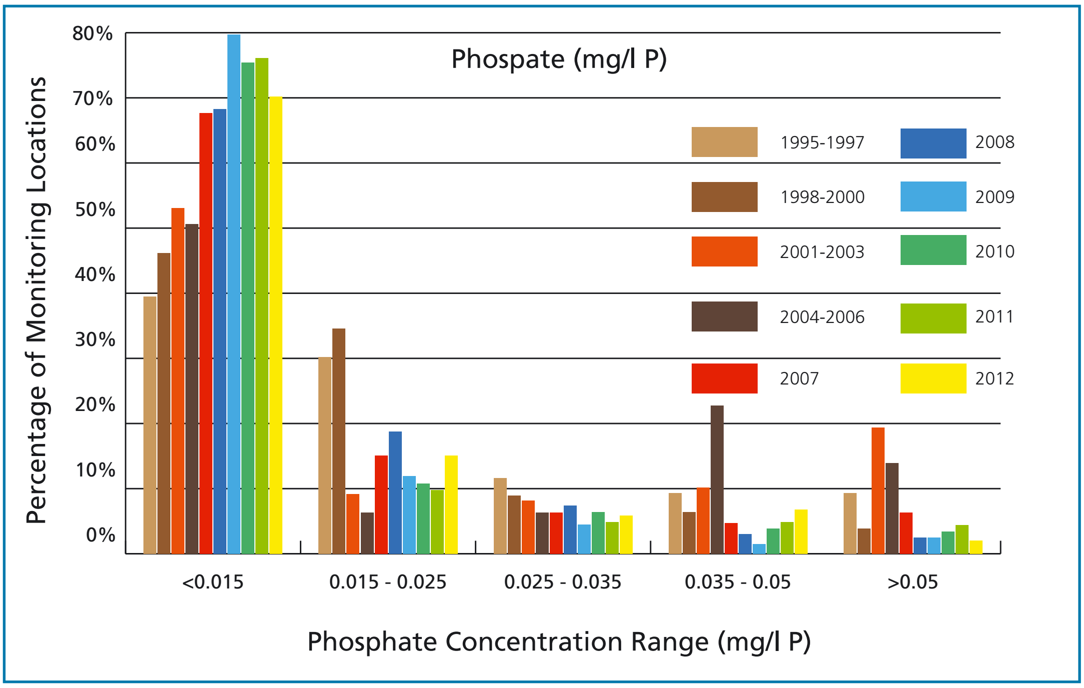


Figure 2-10. Comparison of the proportion of monitoring locations nationally over different reporting periods with mean phosphate concentrations in the ranges indicated.

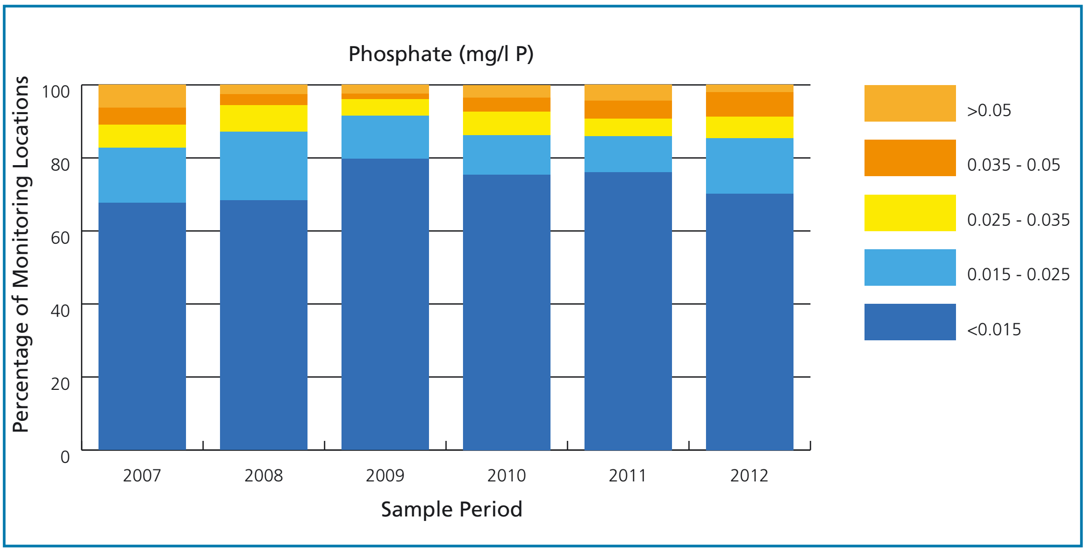


Figure 2-11. Comparison of the mean phosphate concentrations in groundwater from 2007-2012 based on the national network.

Figures 2-10 and **2-11** illustrate that nationally there has been a gradual decline in phosphate concentrations in groundwater. The WFD chemical status update in December 2014 determined that three groundwater bodies in counties Limerick and Louth were at poor status due to phosphate contributions from groundwater to rivers at less than good status (see **Figure 2-1**). This is compared to 95 water bodies at poor status due to groundwater phosphate contribution to rivers at less than good status, when assessed in 2011. In karstified limestone aquifers, it is estimated that groundwater contributes approximately 75% of the flow in the river. Therefore, although approximately 91% of groundwater monitoring locations nationally have average phosphate concentrations below the river environmental quality standard of 0.035 mg/l P, there is still potential for groundwater in certain areas to contribute a significant proportion of the phosphate load. This can be of significance at times of low flow, particularly during the summer period, when the combination of elevated nutrient levels, higher water temperatures, and the subsequent accelerated growth of aquatic algae and higher plant life can give rise to eutrophication. Consequently, any measures to improve the water quality in the river need to consider all potential pathways, including groundwater, that deliver phosphate to the river. The portions of the groundwater bodies that are within the catchment areas of the impacted rivers should be prioritised for investigation rather than the groundwater bodies as a whole. Within these areas, action should be focused where losses of phosphorus to groundwater are actually contributing to the water quality problems.

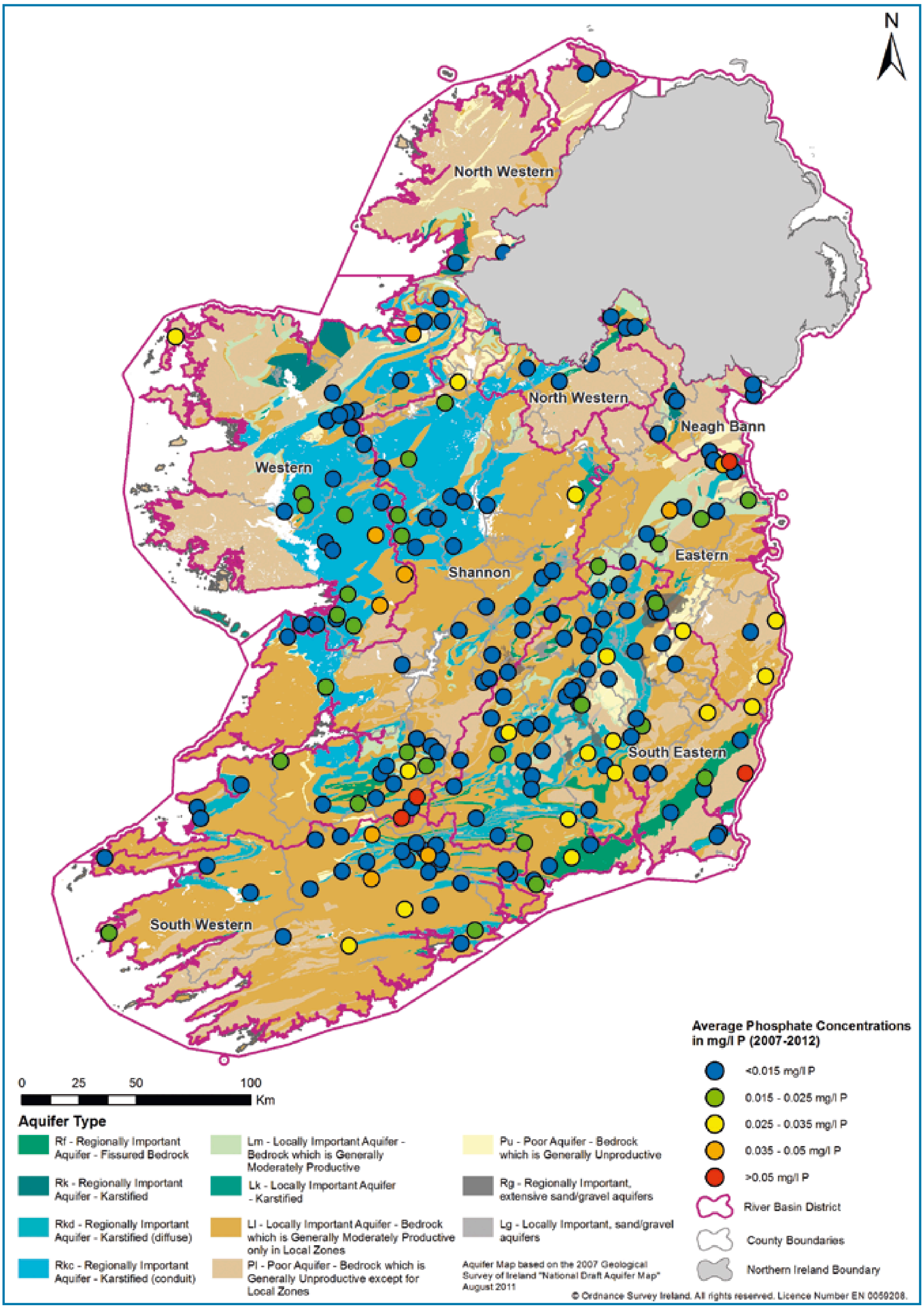


Figure 2-12. Mean phosphate concentrations in groundwater 2007-2012 based on the national network (Source: EPA, GSI).

Microbiological contamination

Microbiological contamination arises from the entry of faecal matter to waters. The main sources of microbial pathogens are domestic wastewater treatment systems (e.g. septic tank systems), farmyard run-off, grazing animals, and the land-spreading of manure or slurry. The natural environment, particularly soils and sub-soils, can be effective in removing bacteria and viruses by filtration and absorption. However, not all areas are naturally well protected. Extremely vulnerable areas, including karst aquifers, fractured aquifers, and areas with exposed outcrop or shallow soils, allow the rapid movement of contaminants into groundwater with minimal attenuation. While the presence of clayey sub-soils and peat will, in many instances, retard the vertical migration of microbes, preferential secondary flow paths, such as cracks in clay materials, can allow the filtering effect of the sub-soils to be reduced or bypassed.

In practice, the presence of faecal coliform bacteria (e.g. *Escherichia coli)* in water samples is taken as an indicator of faecal contamination. The detection of *E. coli* may mean that associated pathogenic micro-organisms are also present, i.e. those organisms capable of causing disease (e.g. viruses and the parasitic protozoan *Cryptosporidium*). However, it should be noted that the absence of faecal coliform bacteria in groundwater does not mean that more persistent organisms, such as *Cryptosporidium,* are absent.

From the perspective of human use and consumption of groundwater, the most important consideration is the absence of pathogens. Disinfection techniques, e.g. chlorination, are used to counteract this potential problem in public drinking water treatment, and 'barriers for removal', such as filtration or ultraviolet disinfection, are included in many areas susceptible to contamination by cyst-forming protozoa (e.g. *Cryptosporidium*), as chlorine has limited effectiveness. However, the majority of private groundwater supplies do not undergo any treatment prior to use which makes them particularly vulnerable. The delineation of source protection areas around water supplies can provide a means of targeting protective measures towards those land areas which pose the greatest risk to water supplies. The source protection area is based on the premise that 99.9% of bacteria will die off within 100 days in groundwater. Therefore, proper management of activities within this 100 day "time of travel" area could reduce the risk of bacteriological contamination of the water supply.

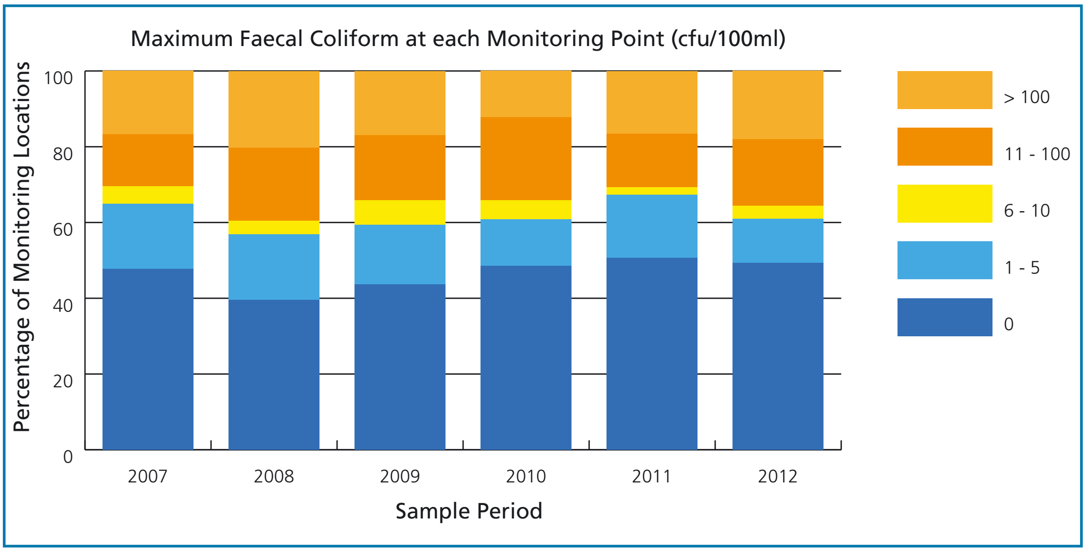


Figure 2-13. Comparison of the maximum number of faecal coliforms detected at monitoring locations from 2007-2012.

Figure 2-13 summarises the maximum number of faecal coliforms detected during the period 2007-2012 for the 205 monitoring locations. **Figure 2-14** shows the maximum number of faecal coliforms detected in 2012 at these monitoring locations. In 2012, positive counts were detected at 104 (51%) monitoring locations, with faecal coliform counts in excess of 100 cfu[14]/100 ml recorded in at least one sample at 42 (20%) of the monitoring locations. The drinking water standard (parametric value) for *E.coli* is 0 cfu/100 ml (EPA, 2013). **Figure 2-14** indicates that the groundwater monitoring locations in karst limestone areas show the greatest degree of microbiological pollution. The highest faecal coliform counts were recorded in springs.

The presence of faecal coliforms in groundwater reflects the natural vulnerability of groundwater to contamination in some areas. Groundwater in areas with shallow soils, outcropping bedrock, or karst features, such as swallow holes, is more vulnerable to contamination than groundwater in those areas that are naturally protected by deep, heavy soils and sub-soils. **Figure 2-13** and **Figure 2-14** are a reflection of the vulnerability of groundwater, rather than necessarily being a true reflection of water quality. Nevertheless, the figures demonstrate that adequate levels of treatment and appropriate water supply catchment management strategies are required to ensure that the water supplied is safe to drink.

Whilst the majority of public water supplies and many group scheme supplies have appropriate levels of disinfection, this may not be adequate for certain viruses and parasitic protozoan, and therefore a dual approach of treatment and catchment management is needed. Catchment management also serves the purpose of protecting the water for private water supplies because these supplies may not have appropriate levels of treatment, and the sources of contamination may be unknown, or are beyond the control of the owner of the supply.

Therefore, general improvements in well design, knowledge of source protection and good land use practice are essential if the risks to these supplies are to be reduced and improvements in water quality are to be seen.

14 Monitored as colony forming units (cfu)

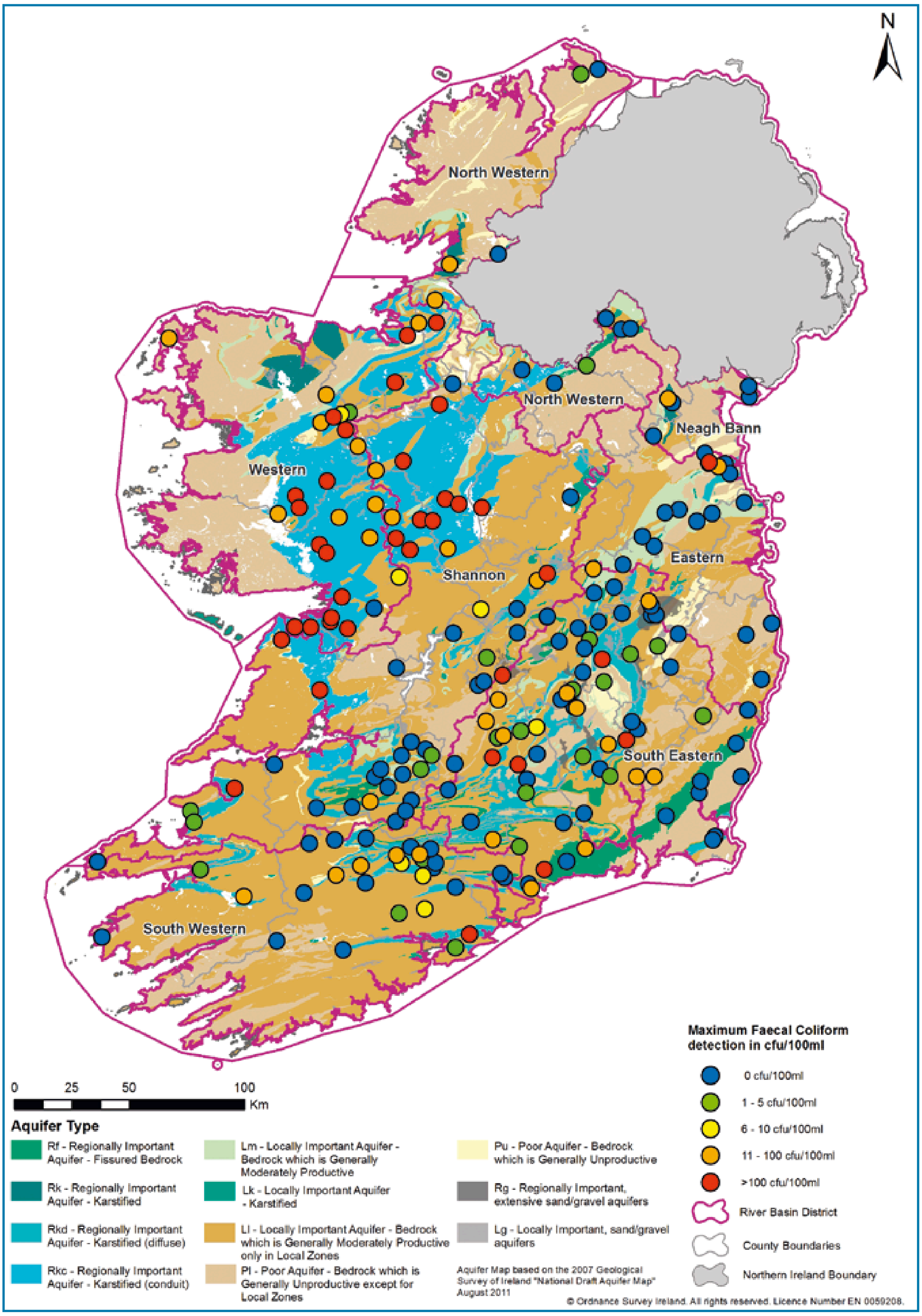


Figure 2-14. Maximum faecal coliform detections in groundwater in 2012. (Source: EPA, GSI)

Hazardous substances

Previous assessments of hazardous substances in Groundwater (EPA, 2010) have indicated that hazardous substances in groundwater are not considered to be a widespread national water quality issue. However, it is recognised that historical contamination from a small number of mining and industrial activities has resulted in significant localised groundwater pollution.

Analyses for pesticides in groundwater, as part of a series of national monitoring, have indicated that these do not contribute to a groundwater body scale issue, though local scale issues may exist. Consequently, in response to these findings, there has been a reduction in pesticide monitoring frequency.

The Surface Water Regulations (S.I. 272 of 2009) and Groundwater Regulations (S.I. 9 of 2010) introduced water quality requirements that triggered a review of existing industrial and waste licence conditions. These reviews have been the primary mechanism for addressing the water quality issues associated with these activities, and pollution issues will be addressed through licence conditions. The EPA has published guidance for licensees for dealing with such pollution (Guidelines for reporting compliance with the Groundwater Regulations). Studies and on-going monitoring are being undertaken by the Department of Communications, Energy and Natural Resources and the EPA at the sites of historical mines in Avoca, Silvermines and Tynagh, with the aim of minimising the impact of pollution at these locations.

Groundwater quality trends

The identification of statistically significant upward trends and the use of trends to demonstrate trend reversal are formal assessment requirements of the WFD for groundwater. In addition, the use of trend assessments is a key component in WFD groundwater risk characterisation, with trends used to predict where there is a risk of future deterioration in groundwater status. This is intended to enable the implementation of pre-emptive measures to minimise this risk.

Trend assessments were undertaken during the first WFD planning cycle and reported in the 2007-2009 EPA Water Quality in Ireland report (EPA, 2010[15]), indicating a relatively stable or slightly improving picture nationally with regard to groundwater quality trends. However, at the time of that report, trend assessments could not be undertaken for all sites due to data records being too short for trend assessments, and there was lower confidence in some of the detected upward trends because of the proportion of values in the data record that were below the limit of quantification. These trend assessments were produced to satisfy the reporting requirements of the Nitrates Directive (EPA, 2012[16]). This assessment indicated environmentally and statistically significant upward trends in nitrate concentrations at Redcross in Co. Wicklow and Fethard (Laffansbridge) in South Tipperary, as presented later in this chapter. These upward trends will require reversal.

Nitrate trend assessments

Of the eight monitoring locations with average nitrate concentrations greater than 37.5 mg/l NO_3 in the period 2007-2012, only one, Ballyhane, Co. Waterford, is predicted to have a nitrate concentration greater than 37.5 mg/l NO_3 by 2021. **Figure 2-15** shows the trend assessment for Ballyhane, where there is a statistically significant downward trend in nitrate concentration. However, due to high initial concentrations in groundwater, it is predicted that the trendline through the annual average concentrations will not drop below 37.5 mg/l NO_3 before 2021.

15 EPA (2010) Water Quality in Ireland 2007-2009, http://www.epa.ie/pubs/reports/water/waterqua/waterqualityinireland2007-2009.html

16 EPA (2012) Council Directive of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources ((1/676/EEC), Article 10 Report for the Period 2008-2011

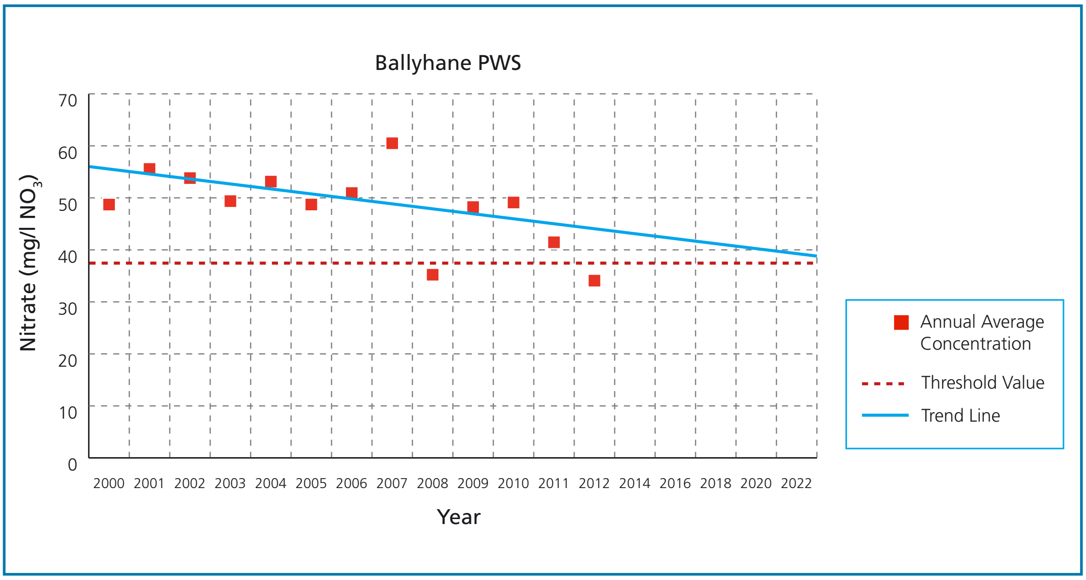


Figure 2-15. Nitrate trend assessment for Ballyhane Water Supply, Co. Waterford.

A report to the European Commission on the Nitrates Directive implementation in Ireland (EPA, 2012) indicates that downward trends in nitrate concentrations are evident at 74% of groundwater monitoring locations, with a further 21% showing stable trends. Upward trends were reported for 11 monitoring locations, two of which were considered to be environmentally significant. The nitrate trends for these monitoring locations at Fethard (Laffansbridge) Public Water Supply (PWS) in South Co. Tipperary and Redcross PWS in Co. Wicklow are shown in **Figures 2-16** and **2-17** respectively. Although the average nitrate concentration at these locations was below 37.5 mg/l NO_3 in 2007-2012, the concentration is predicted to increase above 37.5 mg/l NO_3 at these locations by 2021. Consequently, further investigation into the reasons for the elevated concentrations and measures to address these issues will be needed to ensure the threshold value is not breached.

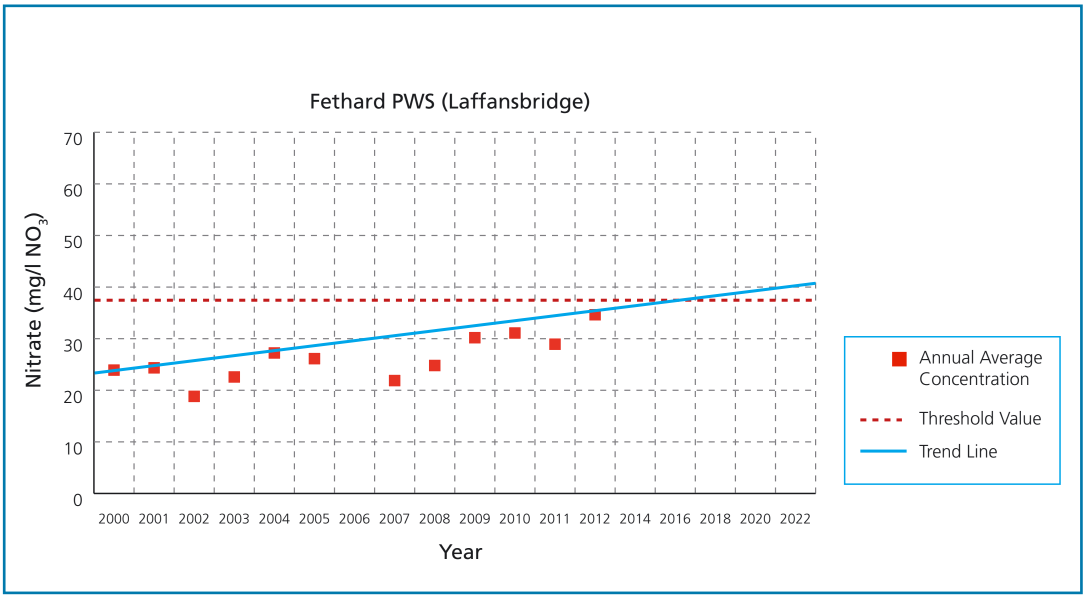


Figure 2-16. Nitrate trend assessment for Fethard (Laffansbridge) Water Supply, South Co. Tipperary.

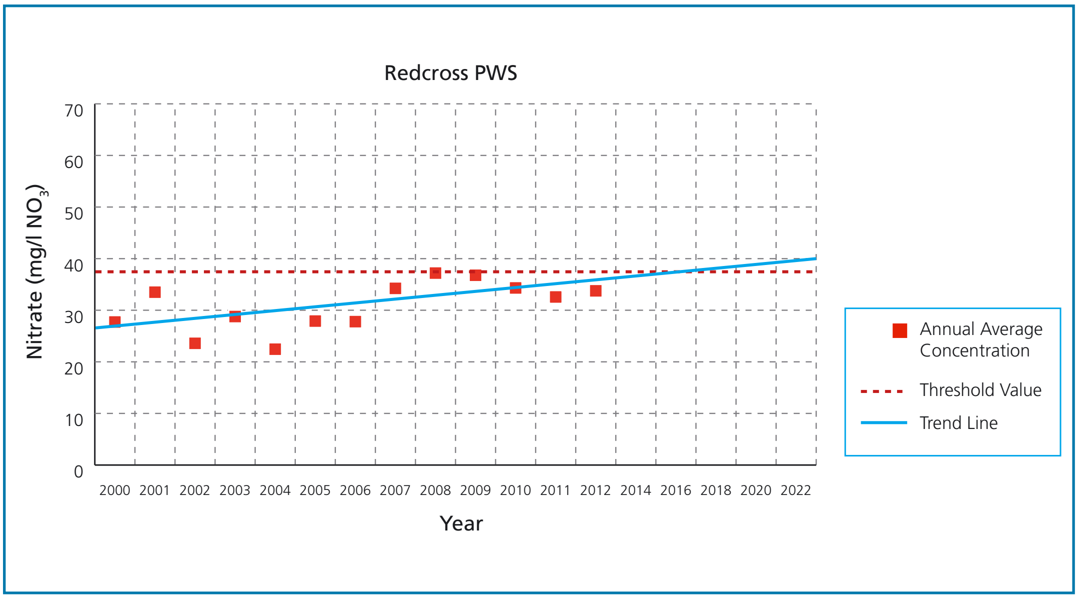


Figure 2-17. Nitrate trend assessment for Redcross Water Supply, Co. Wicklow.

Although statistically significant upward trends were not identified for Cappoquin PWS, Co. Waterford (**Figure 2-18**) and Ballyogarty PWS, Co. Waterford, there is a risk that the concentration in 2021 may exceed 37.5 mg/l NO_3. Therefore, further investigation and measures may also be required to ensure the threshold value is not breached at these locations.

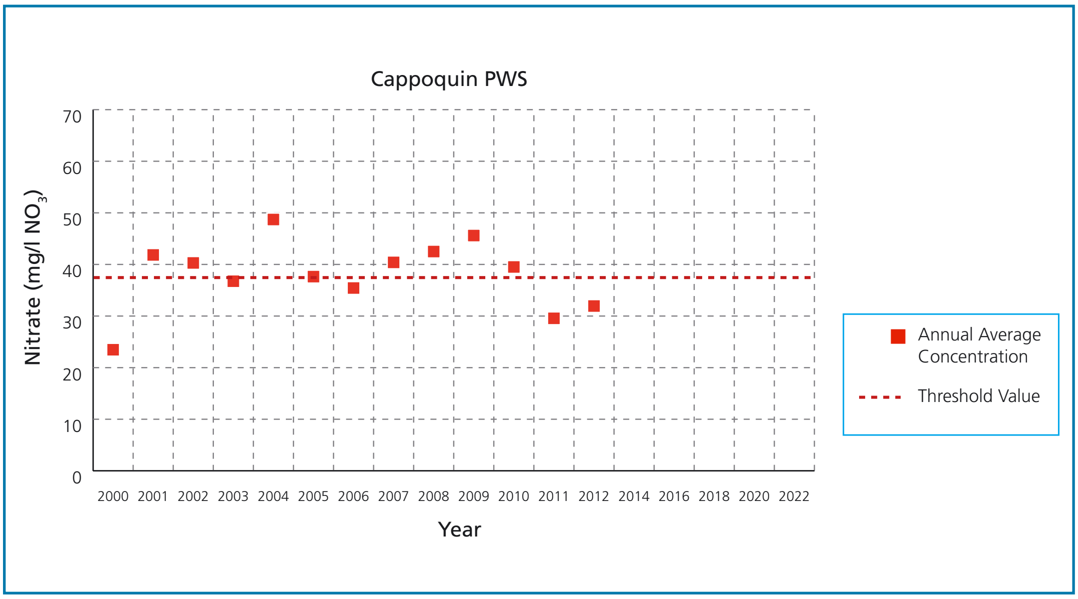


Figure 2-18. Nitrate trend assessment for Cappoquin Water Supply, Co. Waterford.

The only environmentally and statistically significant upward trends that were reported during the first WFD planning cycle were for nitrate at Durrow PWS, Co. Laois and Ballyheigue PWS, Co. Kerry. In 2009, the average nitrate concentration at these water supplies was greater than the threshold value of 37.5 mg/l NO_3, and there were statistically significant upward trends that predicted the average concentration would exceed 50 mg/l NO_3 by 2015 at both locations. The EPA conducted further investigations, including the assessment and development of a source protection zone for Ballyheigue (the Geological Survey of Ireland had already developed one for Durrow). In both cases, the primary pressure was agriculture; a mixture of tillage and dairy farming at Durrow, and primarily dairy farming at Ballyheigue. Both water supplies abstract from karstified limestone aquifers, with a high proportion of free draining soils and sub-soils in the catchment.

Figures 2-19 and **2-20** indicate that there have been marked decreases in nitrate concentrations at these water supplies since 2008. Whilst the drop in concentration during 2008 and 2009 can partly be explained by the above-average rainfall in the country, the subsequent concentrations have not returned to their pre-2008 levels, and the 2012 average concentrations were below the threshold value of 37.5 mg/l NO_3. This would imply that other factors, such as improved farm management practices, e.g. increased slurry storage infrastructure, reduced fertiliser applications, better farm management practices, and tightened regulatory controls, may have contributed to the water quality improvements.

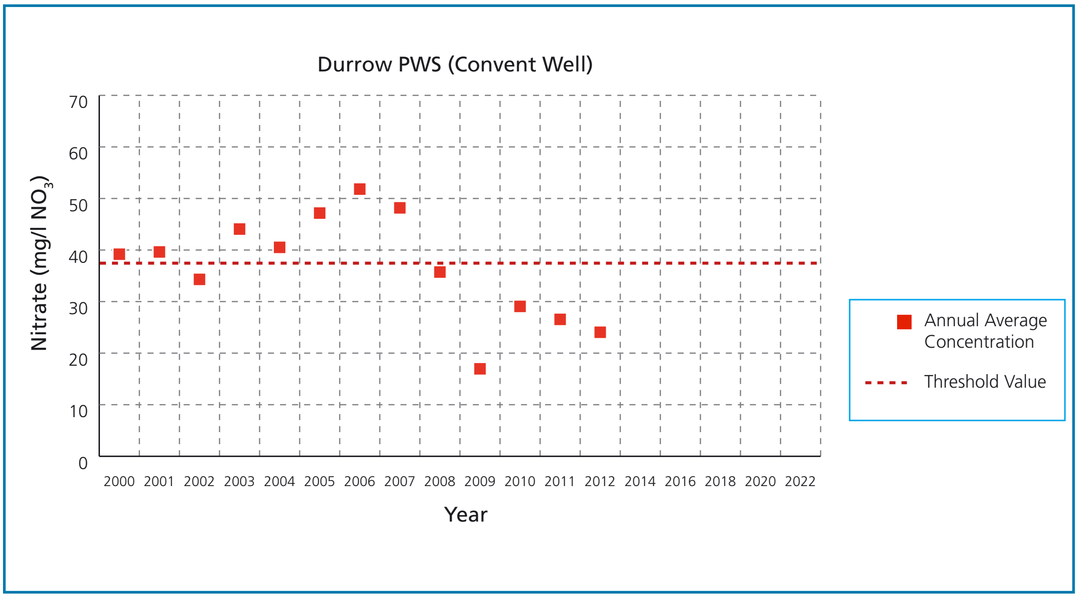


Figure 2-19. Nitrate trend assessment for Durrow Water Supply, Co. Laois.

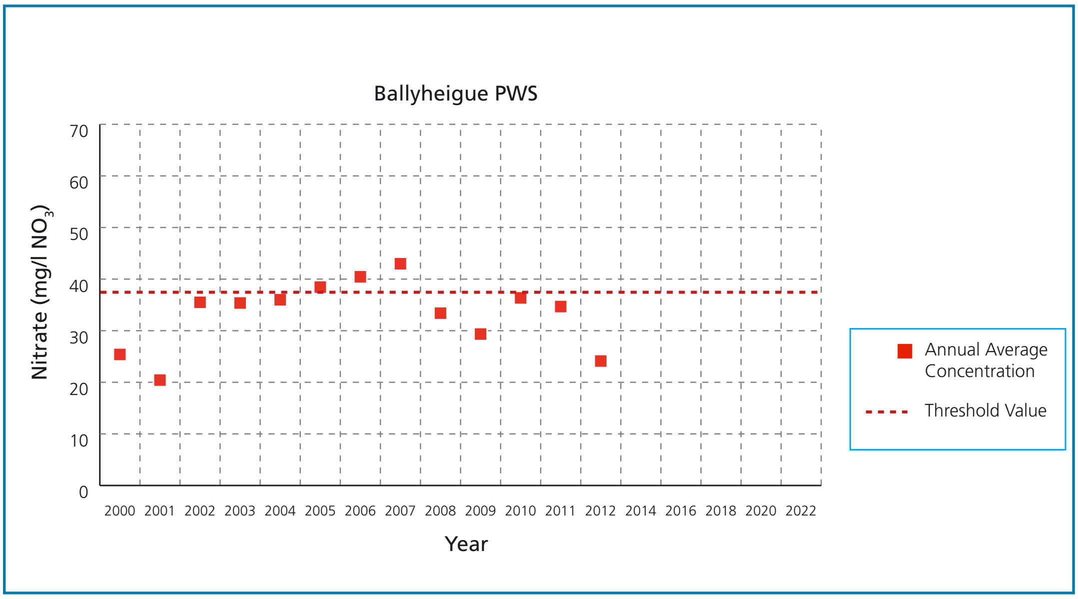


Figure 2-20. Nitrate trend assessment for Ballyheigue Water Supply, Co. Kerry.

Phosphate trend assessments

Nationally, there has been a gradual decline in phosphate concentrations in groundwater but this is not generally evident as statistically significant trends at individual monitoring points. Seven of the fourteen monitoring locations with average concentrations greater than 0.035 mg/l P during 2007-2012 had sufficient data records to undertake trend analysis. Of these, Mid-Galway, Co. Galway, New Inn (BH 1), Co. Galway, and Tobernalt, Co. Sligo (**Figure 2-21**) had statistically significant downward trends in concentrations. The trends at the remaining locations were relatively stable.

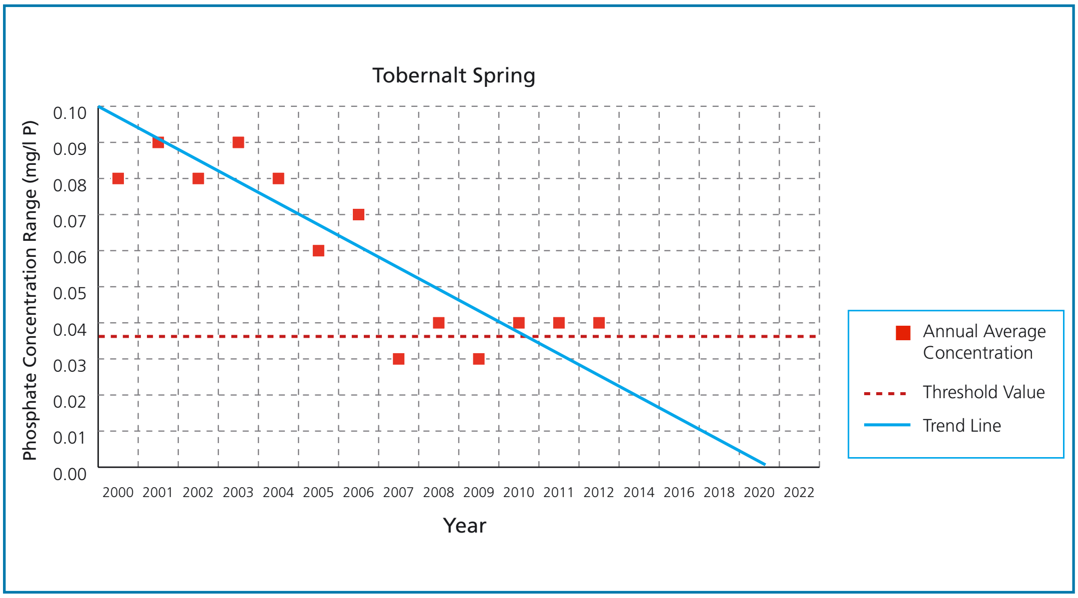


Figure 2-21. Phosphate trend assessment for Tobernalt Spring, Co. Sligo.

Where average concentrations were lower than 0.035 mg/l P in 2007-2012, statistically significant upward trends that would result in the concentration exceeding 0.035 mg/l P in 2021 were only detected at one monitoring location, Thurles Water Supply (Creamery Well), North Co. Tipperary (**Figure 2-22**). The presence of a significant upward trend means that the groundwater body will be investigated further in the risk characterisation process.

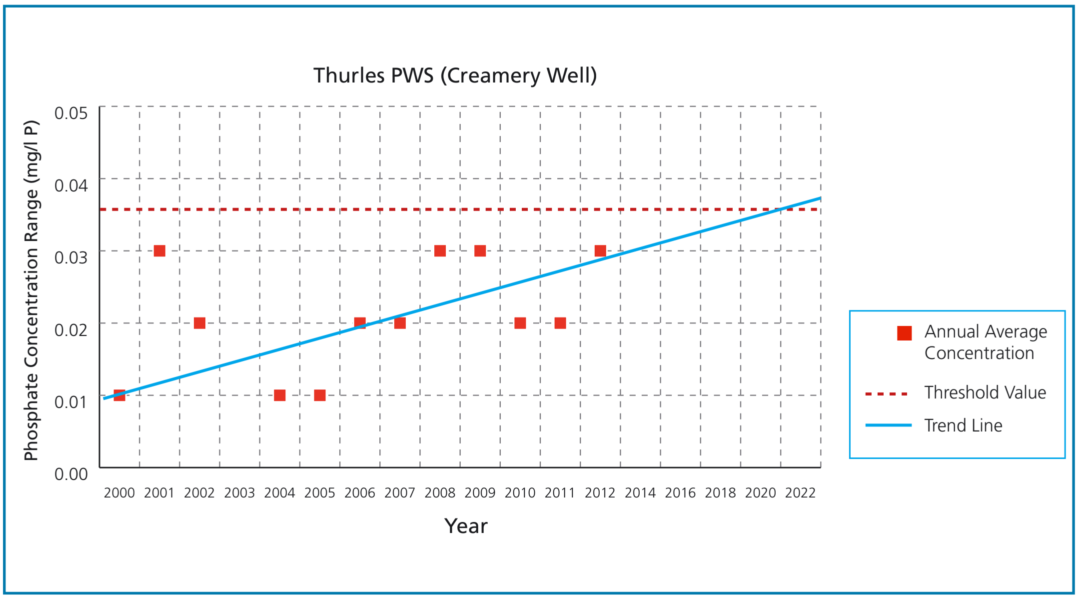


Figure 2-22. Phosphate trend assessment for Thurles Water Supply, North Co. Tipperary.

Conclusions

Groundwater is an important natural resource, both in terms of water supply and as a contributor to surface water receptors. A comprehensive assessment of groundwater quality requires an understanding of the whole groundwater system. Rainfall is the driving force behind the groundwater system through the recharge of water to the aquifers. Variations in rainfall patterns have the potential to impact on the dynamics of both the quantity of flow and the quality of the water in the aquifers. To prioritise measures to protect groundwater knowledge of the anthropogenic pressures, the hydrogeological characteristics of catchments (including the physical characteristics of the sub-surface deposits, i.e. soil, sub-soil and aquifer type) and groundwater quality data are required. It is through development of the understanding of the overall groundwater system that progress towards sustainable management of the groundwater resource can be achieved.

Overall, there is a continued need for improved protection of groundwater, especially in the context of achieving the WFD objective of good status for all waters. In some instances, it will not be feasible to meet this objective by the end of 2015, e.g. where the concentrations of nitrate or phosphate in groundwater already exceed the Threshold Value and there is an upward trend in concentration at the end of this RBMP cycle. In these instances, it may take a number of years for the measures to bring about a reduction in concentrations because it will take time for pollutants to be attenuated or flushed through the system. If the appropriate measures are implemented, the objectives should be achievable. However, it is likely that it will not be technically or economically feasible to achieve good chemical status by 2027 for a small number of water bodies, such as groundwater pollution from historic mining activities. These bodies may be candidates for less stringent objectives. In all cases, but particularly for the less stringent objective bodies, the objective of no further deterioration applies and, as a minimum, measures are required to ensure that this happens.

Although natural variations in nitrate and phosphate concentrations may influence water quality assessments, where elevated concentrations of nitrate and phosphate are measured in Irish groundwater, the sources are largely anthropogenic. The intensive agricultural practices in the south-east suggest that diffuse, agricultural sources are the cause of the elevated nitrate concentrations. In vulnerable Karst Limestone aquifers, in particular in the west, there is more potential for elevated phosphate concentrations in groundwater, and groundwater may be contributing to eutrophication in rivers and lakes in these areas.

There has been a general pattern of decreasing nitrate concentrations towards less than 10 mg/l NO_3 across WFD groundwater monitoring locations within the national network. 50% of sites had average nitrate concentrations less than 10 mg/l NO_3 in 2012 compared to 32% in 1995-1997. The number of monitoring locations with nitrate concentrations greater than 37.5 mg/l NO_3 reduced to only 2% of monitoring locations in 2012, with no locations having a concentration greater than 50 mg/l NO_3 in 2012. The general reduction in nitrate concentrations appears to be the result of a number of factors. Nationally, nitrate concentrations remain highest in the south-east and south of the country. There has also been a gradual decrease in phosphate concentrations across the WFD groundwater monitoring network in recent years, as 70% of sites had average phosphate concentrations less than 0.015 mg/l P in 2012 compared to 40% in 1995-1997. The reductions in inorganic fertiliser applications over the last decade, improvements in storage for organic fertiliser, and the implementation of Good Agricultural Practice Regulations, including landspreading restrictions, may have resulted in a reduction in pressures, thereby contributing to a reduction in nitrate and phosphate concentrations in groundwater. Following a slight increase in fertiliser sales in 2010-2012, the usage of inorganic nutrients should be monitored in relation to the potential for reversing the trend of increasing groundwater quality.

The reduction of phosphate concentration in groundwater has also been reflected in the 2010-2012 update to groundwater body status, where the number of groundwater bodies previously classified at poor status due to the groundwater contribution of phosphate to surface waters has significantly decreased. However, the contribution of phosphate from groundwater to associated ecosystems is still a risk because these ecosystems have limited capacity for additional phosphate. This is largely due to the sensitivity of surface water ecosystems to phosphate and high contribution of average surface water flow coming from groundwater in certain areas, particularly the karstified limestone aquifers. Therefore, in areas where the groundwater is vulnerable to pollution, if small concentrations of phosphorus get into the groundwater, they may have an impact on surface water receptors. When measures are introduced to improve surface water bodies, the groundwater pathway to surface water must be considered.

At all of the WFD groundwater monitoring locations, the mean ammonium concentrations were below the Drinking Water Maximum Allowable Concentration (MAC). The proportion of monitoring locations with ammonium concentrations less than 0.04 mg/l N has continued to increase, to approximately 91% of locations during in 2012. Approximately 7% of monitoring locations had average concentrations greater than the Environmental Quality Standard of 0.065 mg/l N in 2012. Although the nitrification of ammonium to nitrate will readily take place when favourable conditions exist, concentrations of ammonium in groundwater that are significantly above the EQS may have an impact on the receiving surface waters.

Microbiological contamination problems are observed in the areas where groundwater is more vulnerable to pollution (particularly at spring monitoring locations) because they have little natural protection from organic inputs. However, abstraction wells can be properly designed, installed and located in areas where the groundwater vulnerability is lower, and an adequate approach to water testing and treatment applied to reduce the potential for health impacts. There was a slight decrease in samples with positive detections of faecal coliforms during the reporting period. While improved storage facilities and the implementation of landspreading restrictions should help to reduce faecal coliform counts, faecal coliforms can, in places, by-pass the soils and sub-soil and get into groundwater before attenuation can occur. This is reflected by a large number of spring monitoring locations, e.g. in the karst limestone, that have faecal coliform counts greater than 100 cfu/100ml.

Recommendations and follow-up actions

To meet the objectives of the WFD, an improved understanding of the interactions between groundwater and surface water receptors is required because this understanding is fundamental if further deterioration in water quality is to be prevented and sustainable water resources are going to be achieved. This understanding may help improve the management of groundwater resources, and ultimately maintain the quality and yield of drinking water sources, and ensure that groundwater is not having a detrimental impact on surface water and ecological receptors in the future.

A groundwater status update was carried out in December 2014 for a number of the main status sub-tests that caused groundwater bodies to be at “Poor Status”, both quantitative and qualitative, from the 1st River Basin Management Plan (RBMP) cycle. This update was based on data gathered up to the end of 2012. Work on further risk characterisation, in particular point source characterisation (e.g. contaminated land), characterisation of groundwater-dependent terrestrial ecosystems, and a groundwater body boundary review (physical characterisation), will be carried out during 2015. There will be a further update to status for the 2017 RBMP, taking account of this updated information for all risk assessments. These will drive future measures and action. For groundwater, this will include addressing groundwater bodies at risk of failing the WFD status objectives, for example relating to point source issues, or those groundwater bodies failing their water quality trends objective and requiring trend reversal. The improved understanding obtained through the characterisation process will also be used in a review of the groundwater WFD monitoring programme.

AN GHNÍOMHAIREACHT UM CHAOMHNÚ COMHSHAOIL

Tá an Ghníomhaireacht um Chaomhnú Comhshaoil (GCC) freagrach as an gcomhshaol a chaomhnú agus a fheabhsú mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaol a chosaint ó éifeachtaí díobhálacha na radaíochta agus an truaillithe.

Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

Rialú: *Déanaimid córais éifeachtacha rialaithe agus comhlíonta comhshaoil a chur i bhfeidhm chun torthaí maithe comhshaoil a sholáthar agus chun díriú orthu siúd nach gcloíonn leis na córais sin.*

Eolas: *Soláthraímid sonraí, faisnéis agus measúnú comhshaoil atá ar ardchaighdeán, spriocdhírithe agus tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar gach leibhéal.*

Tacaíocht: *Bímid ag saothrú i gcomhar le grúpaí eile chun tacú le comhshaol atá glan, táirgiúil agus cosanta go maith, agus le hiompar a chuirfidh le comhshaol inbhuanaithe.*

Ár bhFreagrachtaí

Ceadúnú

- Déanaimid na gníomhaíochtaí seo a leanas a rialú ionas nach ndéanann siad dochar do shláinte an phobail ná don chomhshaol:
- saoráidí dramhaíola (m.sh. láithreáin líonta talún, loisceoirí, stáisiúin aistrithe dramhaíola);
- gníomhaíochtaí tionsclaíocha ar scála mór (m.sh. déantúsaíocht cógaisíochta, déantúsaíocht stroighne, stáisiúin chumhachta);
- an diantalmhaíocht (m.sh. muca, éanlaith);
- úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe (OGM);
- foinsí radaíochta ianúcháin (m.sh. trealamh x-gha agus radaiteiripe, foinsí tionsclaíocha);
- áiseanna móra stórála peitril;
- scardadh dramhuisce;
- gníomhaíochtaí dumpála ar farraige.

Forfheidhmiú Náisiúnta i leith Cúrsaí Comhshaoil

- Clár náisiúnta iniúchtaí agus cigireachtaí a dhéanamh gach bliain ar shaoráidí a bhfuil ceadúnas ón nGníomhaireacht acu.
- Maoirseacht a dhéanamh ar fhreagrachtaí cosanta comhshaoil na n-údarás áitiúil.
- Caighdeán an uisce óil, arna sholáthar ag soláthraithe uisce phoiblí, a mhaoirsiú.
- Obair le húdaráis áitiúla agus le gníomhaireachtaí eile chun dul i ngleic le coireanna comhshaoil trí chomhordú a dhéanamh ar líonra forfheidhmiúcháin náisiúnta, trí dhíriú ar chiontóirí, agus trí mhaoirsiú a dhéanamh ar leasúchán.
- Cur i bhfeidhm rialachán ar nós na Rialachán um Dhramhthrealamh Leictreach agus Leictreonach (DTLL), um Shrian ar Shubstaintí Guaiseacha agus na Rialachán um rialú ar shubstaintí a ídíonn an ciseal ózóin.
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaol.

Bainistíocht Uisce

- Monatóireacht agus tuairisciú a dhéanamh ar cháilíocht aibhneacha, lochanna, uiscí idirchriosacha agus cósta na hÉireann, agus screamhuiscí; leibhéil uisce agus sruthanna aibhneacha a thomhas.
- Comhordú náisiúnta agus maoirsiú a dhéanamh ar an gCreat-Treoir Uisce.
- Monatóireacht agus tuairisciú a dhéanamh ar Cháilíocht an Uisce Snámha.

Monatóireacht, Anailís agus Tuairisciú ar an gComhshaol

- Monatóireacht a dhéanamh ar cháilíocht an aeir agus Treoir an AE maidir le hAer Glan don Eoraip (CAFÉ) a chur chun feidhme.
- Tuairisciú neamhspleách le cabhrú le cinnteoireacht an rialtais náisiúnta agus na n-údarás áitiúil (m.sh. tuairisciú tréimhsiúil ar staid Chomhshaol na hÉireann agus Tuarascálacha ar Tháscairí).

Rialú Astaíochtaí na nGás Ceaptha Teasa in Éirinn

- Fardail agus réamh-mheastacháin na hÉireann maidir le gáis cheaptha teasa a ullmhú.
- An Treoir maidir le Trádáil Astaíochtaí a chur chun feidhme i gcomhair breis agus 100 de na táirgeoirí dé-ocsaíde carbóin is mó in Éirinn

Taighde agus Forbairt Comhshaoil

- Taighde comhshaoil a chistiú chun brúnna a shainaithint, bonn eolais a chur faoi bheartais, agus réitigh a sholáthar i réimsí na haeráide, an uisce agus na hinbhuanaitheachta.

Measúnacht Straitéiseach Timpeallachta

- Measúnacht a dhéanamh ar thionchar pleananna agus clár beartaithe ar an gcomhshaol in Éirinn (m.sh. mórphleananna forbartha).

Cosaint Raideolaíoch

- Monatóireacht a dhéanamh ar leibhéil radaíochta, measúnacht a dhéanamh ar nochtadh mhuintir na hÉireann don radaíocht ianúcháin.
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as taismí núicléacha.
- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta.
- Sainseirbhísí cosanta ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

Treoir, Faisnéis Inrochtana agus Oideachas

- Comhairle agus treoir a chur ar fáil d'earnáil na tionsclaíochta agus don phobal maidir le hábhair a bhaineann le caomhnú an chomhshaoil agus leis an gcosaint raideolaíoch.
- Faisnéis thráthúil ar an gcomhshaol ar a bhfuil fáil éasca a chur ar fáil chun rannpháirtíocht an phobail a spreagadh sa chinnteoireacht i ndáil leis an gcomhshaol (m.sh. Timpeall an Tí, léarscáileanna radóin).
- Comhairle a chur ar fáil don Rialtas maidir le hábhair a bhaineann leis an tsábháilteacht raideolaíoch agus le cúrsaí práinnfhreagartha.
- Plean Náisiúnta Bainistíochta Dramhaíola Guaisí a fhorbairt chun dramhaíl ghuaiseach a chosc agus a bhainistiú.

Múscailt Feasachta agus Athrú Iompraíochta

- Feasacht chomhshaoil níos fearr a ghiniúint agus dul i bhfeidhm ar athrú iompraíochta dearfach trí thacú le gnóthais, le pobail agus le teaghlaigh a bheith níos éifeachtúla ar acmhainní.
- Tástáil le haghaidh radóin a chur chun cinn i dtithe agus in ionaid oibre, agus gníomhartha leasúcháin a spreagadh nuair is gá.

Bainistíocht agus struchtúr na Gníomhaireachta um Chaomhnú Comhshaoil

Tá an ghníomhaíocht á bainistiú ag Bord lánaimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóirí. Déantar an obair ar fud cúig cinn d'Oifigí:

- An Oifig Aeráide, Ceadúnaithe agus Úsáide Acmhainní
- An Oifig Forfheidhmithe i leith cúrsaí Comhshaoil
- An Oifig um Measúnú Comhshaoil
- An Oifig um Cosaint Raideolaíoch
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tá Coiste Comhairleach ag an nGníomhaireacht le cabhrú léi. Tá dáréag comhaltaí air agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair imní agus le comhairle a chur ar an mBord.

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