Integrated Water Quality Assessment 2013

SOUTH EASTERN REGION

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

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.

Integrated Water Quality Assessment for the South Eastern River Basin District 2013

Published by the Environmental Protection Agency, Ireland

November 2014

Edited by Jean Smith

The collation and summation of data for this report was carried out under the direction of Micheál Lehane (Programme Manager, Environmental Monitoring and Assessment) within the Office of Environmental Assessment. The author gratefully acknowledges all EPA colleagues for their input and contributions to this report.

ENVIRONMENTAL PROTECTION AGENCY

An Ghíomhaireacht um Chaomhnú Comhshaoil

PO Box 3000, Johnstown Castle Estate, Co. Wexford, Ireland

Telephone: +353 53 9160600 Fax: +353 53 9160699

Email: info@epa.ie Website: www.epa.ie

LoCall 1890 33 55 99

Regional Inspectorate, Seville Lodge, Callan Road, Kilkenny

ISBN: 978-1-84095-574-3

Cover Photo: River Nore at Kilkenny City

Contents

1. Introduction

The South Eastern River Basin (SERBD) is one of Ireland's largest river basin districts covering 13,000 km^2 of land area and a further 1,000 km^2 of marine waters. The SERBD covers all of counties Carlow, Wexford and Kilkenny, most of Waterford, Tipperary and Laois, parts of Kildare, Offaly and Wicklow and a small part of Limerick and Cork. The main catchments are the Barrow, Nore and Suir catchments but there are also many smaller catchments. There are 151 groundwater bodies in the SERBD. These range in size from < 1km^2 to 1,400 km^2. The SERBD has only five lakes. The largest of these, Knockaderry Reservoir in Co. Waterford being < 30 hectares. The SERBD is bounded by both the Celtic Sea and the Irish Sea and shares borders with the Eastern RBD, the South Western RBD and the Shannon International RBD.

Many of the water bodies in the SERBD are designated protected areas under European and national legislation (European Union (Natural Habitats) Regulations 1997, Wildlife (Amendment Act 2000)). The key pressures in the SERBD include agriculture, aquaculture, discharges from municipal waste water agglomerations, industrial discharges, emissions from domestic waste water treatment systems and invasive alien species.

This assessment presents the latest monitoring data, an assessment of the data and a **focus on key issues** that affect water quality in the SERBD.

The assessment of water quality in the SERBD will be presented using four Key Indicators:

1. Physico-Chemical Quality
2. Biological Quality
3. Pressures
4. Overall (Integrated) Quality

Under these headings the key issue is examined and there is a focus on sites of special interest, where water quality issues need to be addressed.

In addition, the 2013 monitoring data will be made available for download and links will be available to GIS maps.

2. Physico-Chemical Quality

2.1 Rivers

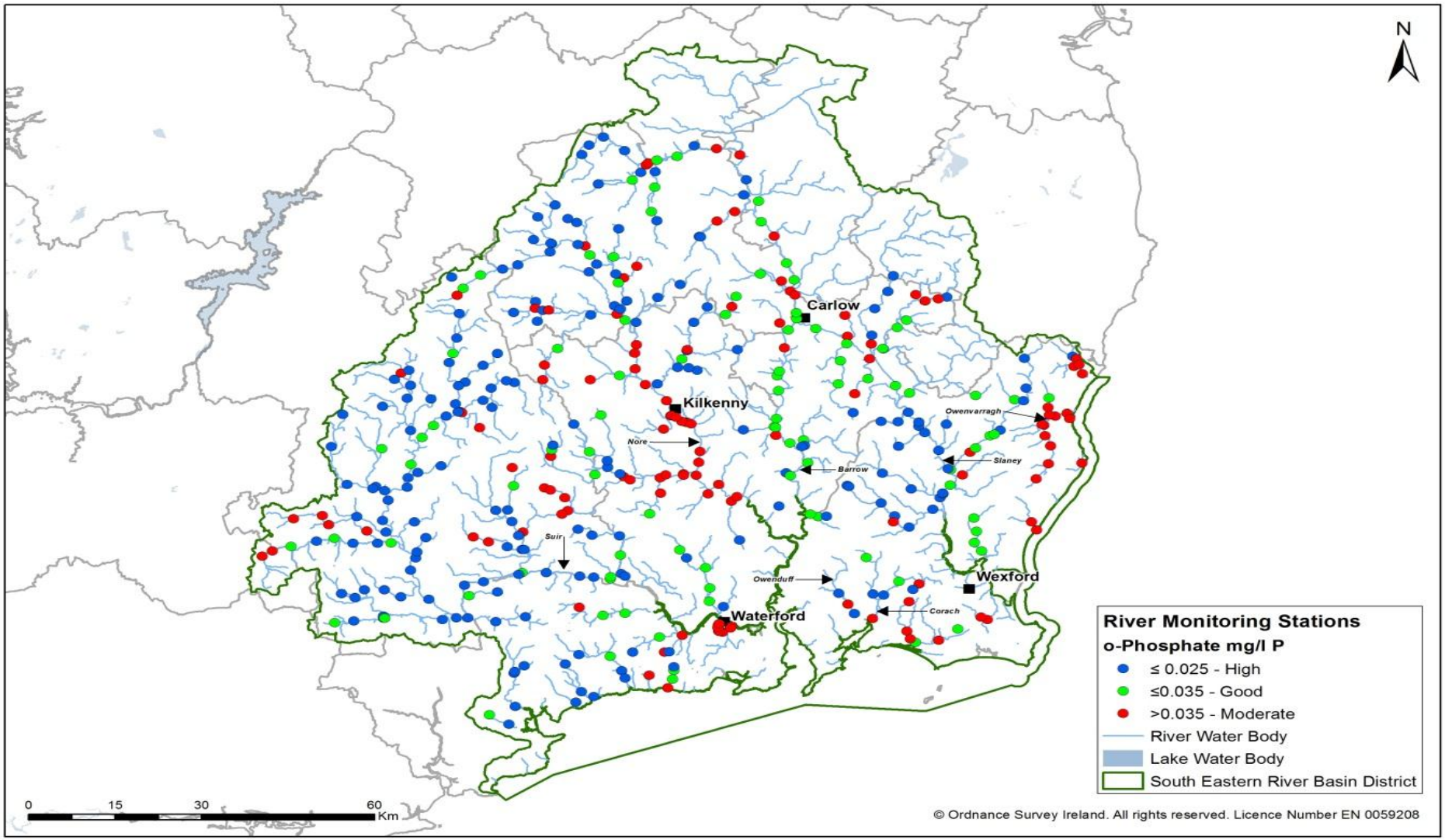
2.1.1 Key Issue: Nutrient Enrichment – Phosphorus (as Ortho-Phosphate)

Map 1 below shows the annual average ortho-phosphate concentration in SERBD river monitoring stations in 2013. This map is based on a comparison of the annual ortho-phosphate mean against the relevant annual ortho-phosphate EQS (SI 272 of 2009). The ortho-phosphate EQS standards are: Good ≤0.035 mg/L P and High ≤0.025 mg/L P (SI 272 of 2009).

There are a number of rivers in the SERBD whose annual average exceeds the EQS for 'Good' status, however, the majority of rivers in the SERBD meet the EQS standard for 'High' Status (<0.025 mg/L P).

The rivers which have the highest annual average ortho-phosphate in the SERBD are located in the eastern section of the river basin district although all counties located within the RBD have river locations which exceed the standard for 'Good' status. The rivers which show the highest annual average of ortho-phosphate in 2013 include the Duncormick, Cahore Canal, Aughboy, Nore, Erkina and the Aherlow.

Overall the level of compliance with the ortho-phosphate EQS is slightly lower than the national compliance level. This is shown in Figures 1 and 2 below.



Map 1. Compliance of SERBD river monitoring stations with ortho-phosphate EQS for 2013.

Figure 1 shows the relative compliance (High, Good or Moderate) of ortho-phosphate concentrations at SERBD river stations with respect to the EQS in 2013. Fifty percent (50%) of river stations in the SERBD are High with 21% Good and 29% Moderate.

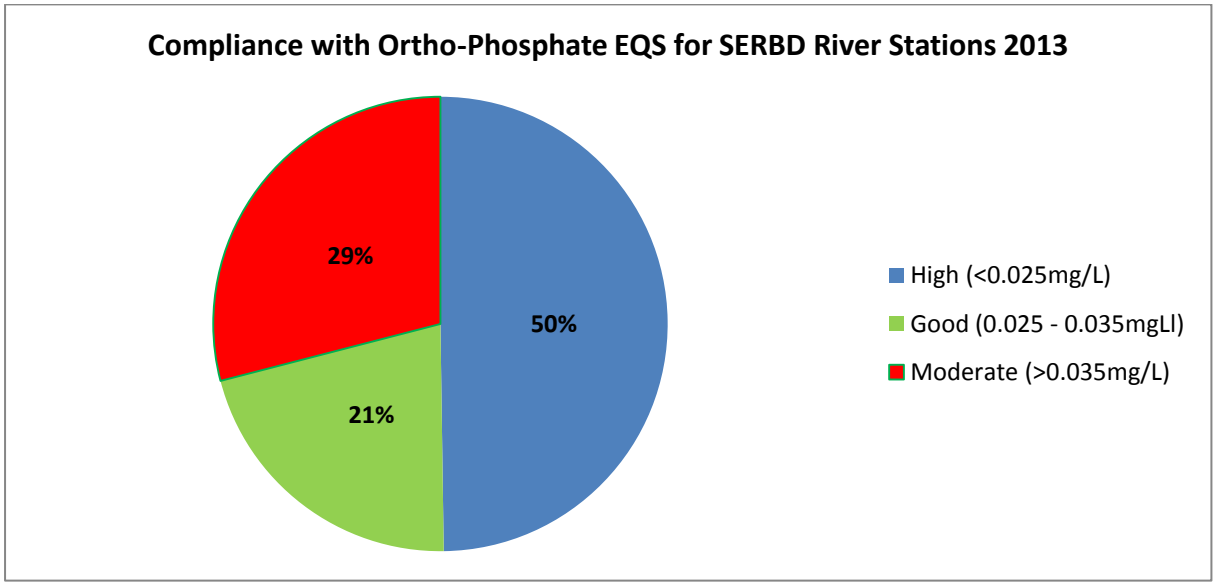


Fig. 1. Compliance with ortho-phosphate EQS for SERBD river stations for 2013.

The overall national picture shows that 27% of river stations are Moderate, 14% Good and 59% High (see Figure 2.2 below). The SERBD falls below the national level for compliance at high status by 9%, however the good status sites exceed the national compliance level by 7%. The moderate status sites are comparable with the national compliance level.

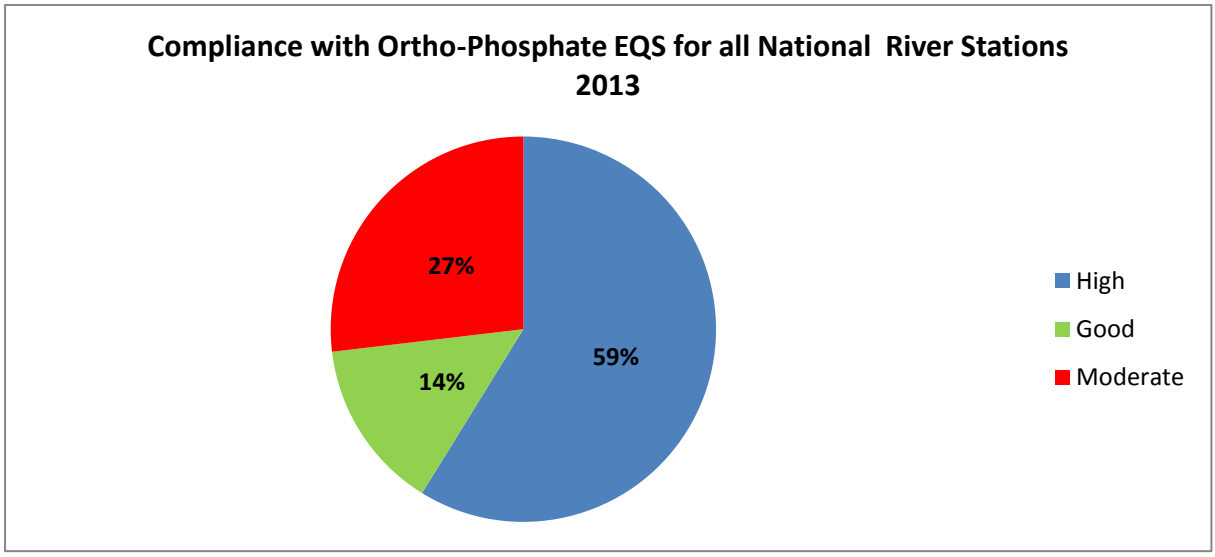


Fig. 2. Compliance with ortho-phosphate EQS for all national river stations 2013.

The long-term trend for ortho-phosphate for all rivers monitoring stations in the SERBD is presented in Figure 3. There has been a reduction in ortho-phosphate levels from a high in 2010 with current 2013 levels falling to the lowest values recorded since 2001. The average ortho-phosphate concentration for all the rivers in the SERBD fall into the 'Moderate' category with respect to the EQS for o-phosphate.

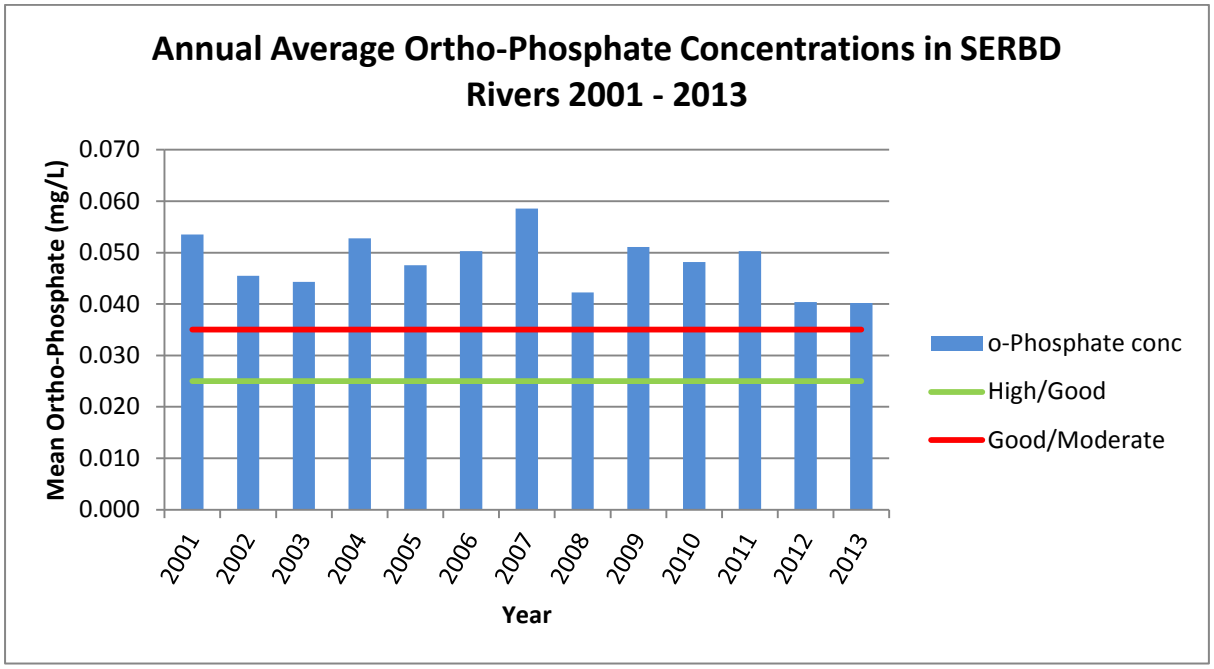


Fig. 3. Long-term trend of ortho-phosphate concentrations at all river monitoring stations in SERBD.

2.1.2 Case Study: Banoge River

Figure 4 shows long-term 3-year rolling mean values for ortho-phosphate in the River Banoge, Co.Wexford at three different stations (0100, 0200, 0300) from 2001 to 2013. This river was chosen for further long-term assessment as it currently has elevated ortho-phosphate concentrations at all stations. It displays only Moderate compliance with the ortho-phosphate EQS at stations 11B02-0200 and 11B02-0300.

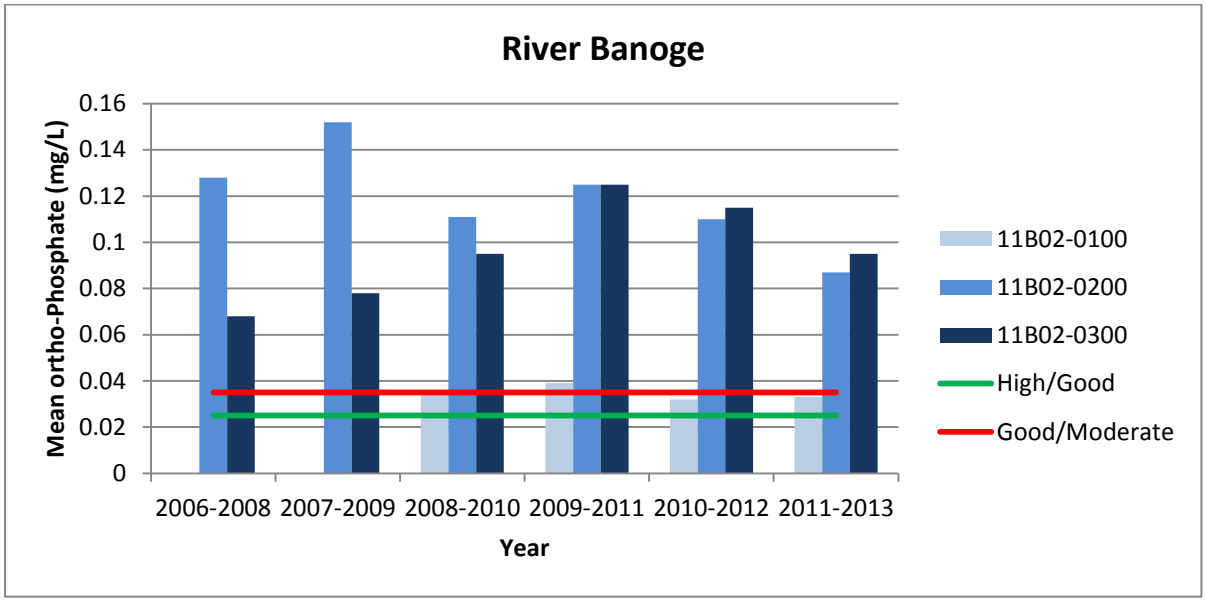


Fig. 4. Long-term 3-year rolling mean values for ortho-phosphate in the Banoge river for monitoring stations 0100, 0200 and 0300.

Station 0100 was added to the monitoring programme since 2008. It displays 'Good' compliance with the ortho-phosphate EQS. Station 0200 (2 km south of Gorey) and station 0300 (Br u/s Owenavorragh R confluence) show elevated ortho-phosphate concentrations throughout the period being assessed. Both of these sites were identified as sites for further investigation in the EPA's Integrated Water Quality report for the South East Region, 2012. The ortho-phosphate concentrations have fallen over the past three cycles however they are still significantly above the EQS for 'Good' status at 0.035 mg/L P. A noticeable trend is that the level of o-phosphate at station 0300 has been rising relative to station 0200 in each three year cycle. It was at 50% of the station 0200 ortho-phosphate level in 2006 - 2008 but in 2011 - 2013 it is 109%.

The key pressure identified for this site is municipal waste water, but there is also tillage and pasture land upstream of station 0300.

2.1.3 Case Study: River Tay

Figure 5 shows long-term 3 -year rolling mean values for ortho-phosphate in the River Tay at three different monitoring stations (0500, 0300 and 0400) from 2007 to 2013. The River Tay flows through Co. Waterford and into the sea at Stradbally. The monitoring stations are at Aughnacurra Bridge (0050), the bridge south of Kilminnin (0300) and Stradbally Bridge (0400).

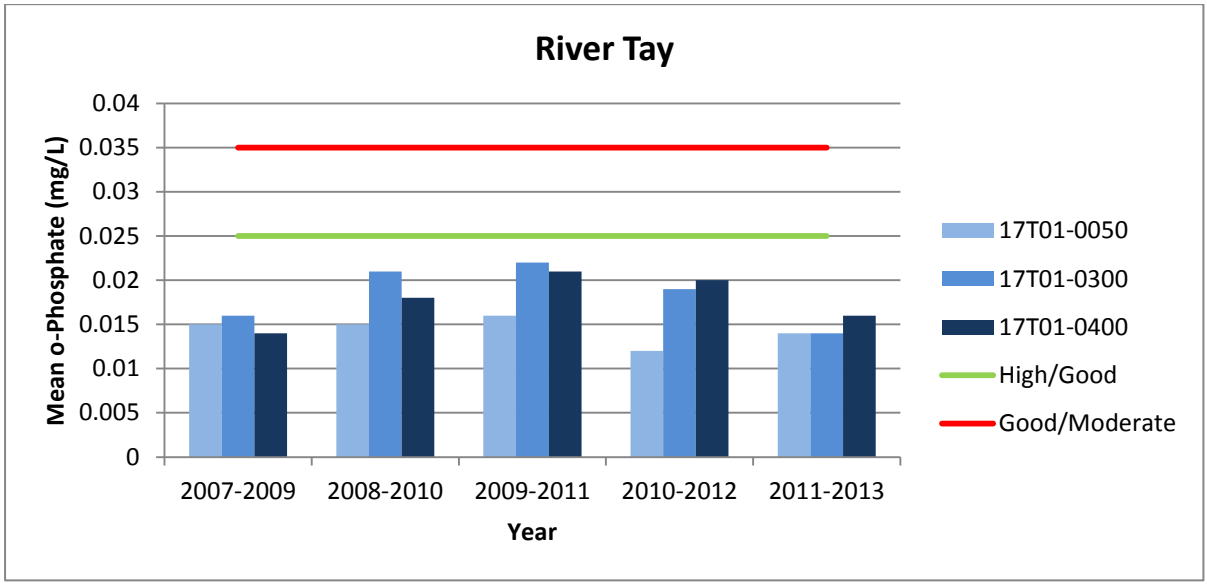


Fig. 5. Long-term 3-year rolling mean values for ortho-phosphate in the River Tay for monitoring stations 0050, 0300 and 0400.

This river was chosen as an example of a river with low ortho-phosphate concentrations. The ortho-phosphate concentrations start to rise from 2007 to 2011 but did not exceed the 'High/Good' boundary. From the 2009 - 2011 cycle the ortho-phosphate levels have dropped further. The level of ortho-phosphate at station 0050 has increased relative to those at stations 0300 and 0400, however, it is still significantly below the 'High' status EQS value.

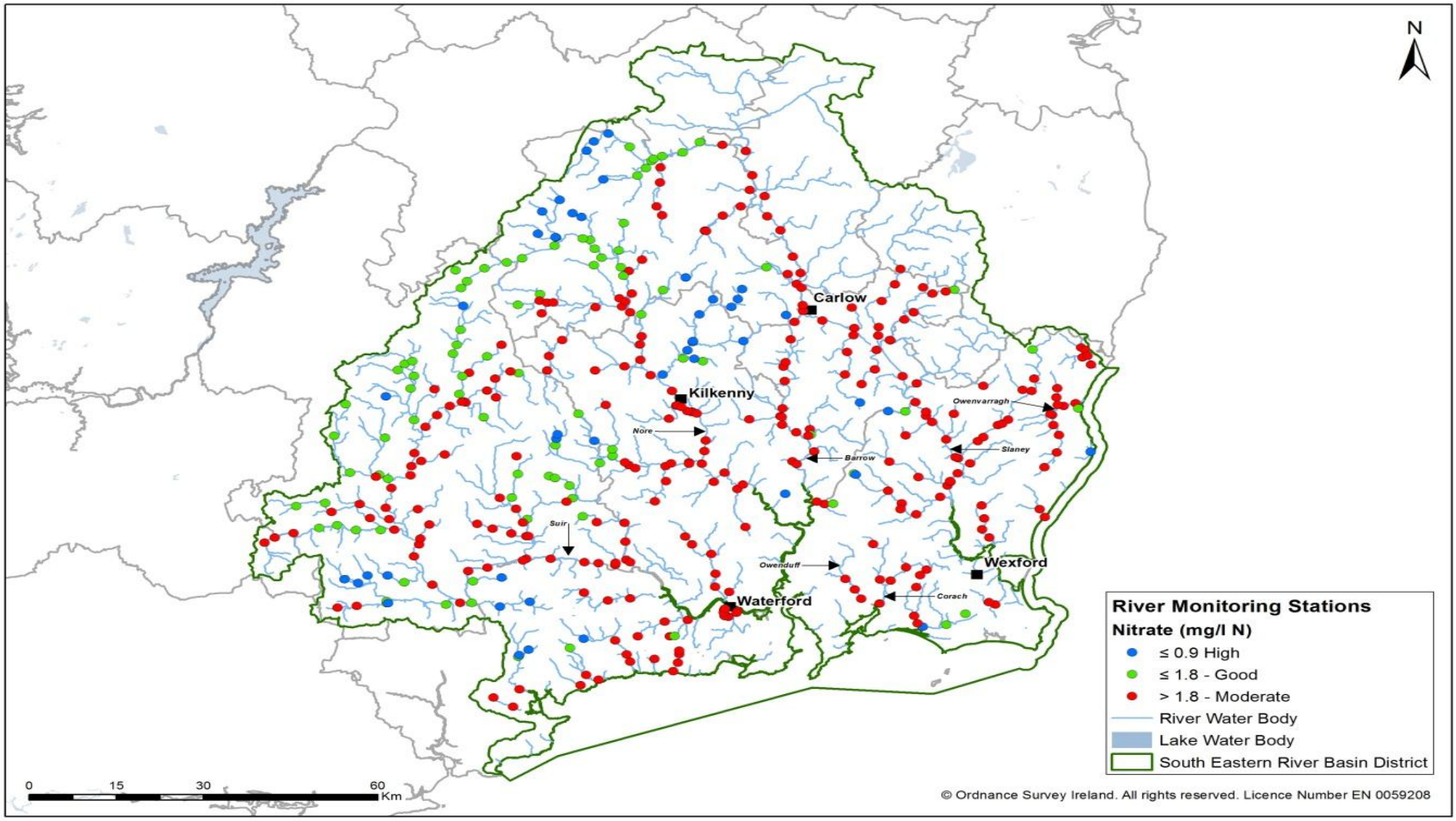
2.1.4 Key Issue: Nutrient Enrichment – Nitrate (as N)

There is no EQS set for nitrate, however, a surrogate standard was included to maximise the match between the status arising from biological quality elements and the physico-chemical quality elements.

Map 2 shows the compliance (High, Good or Moderate) at SERBD river monitoring stations with respect to the surrogate nitrate EQS in 2013. The nitrate surrogate EQS standards are: Good ≤1.8 mg/L N and High ≤0.9 mg/L N.

There are few rivers which achieve 'High' and 'Good' status with respect to the nitrate EQS. These rivers are mainly located along the north-western and western border of the river basin district. The majority of rivers in the SERBD, however, are of 'Moderate' status. The rivers which showed the highest annual average concentrations of nitrate in 2013 include the Aghalona, Lerr, Douglas, Chapel Stream, Duncormick and the Burren.

Compliance with the surrogate EQS for nitrate in the SERBD does not compare favourably with the national picture. This information is presented as a percentage of the total number of rivers stations within the SERBD in Figures 6 and 7 below.



Map 2. Compliance of SERBD river monitoring stations with the surrogate nitrate EQS for 2013.

Figure 6 shows the relative compliance (High, Good or Moderate) of nitrate concentrations at SERBD river stations with respect to the surrogate EQS in 2013. Sixty eight percent (68%) of river stations in the SERBD are Moderate with 21% Good status and 11% High status.

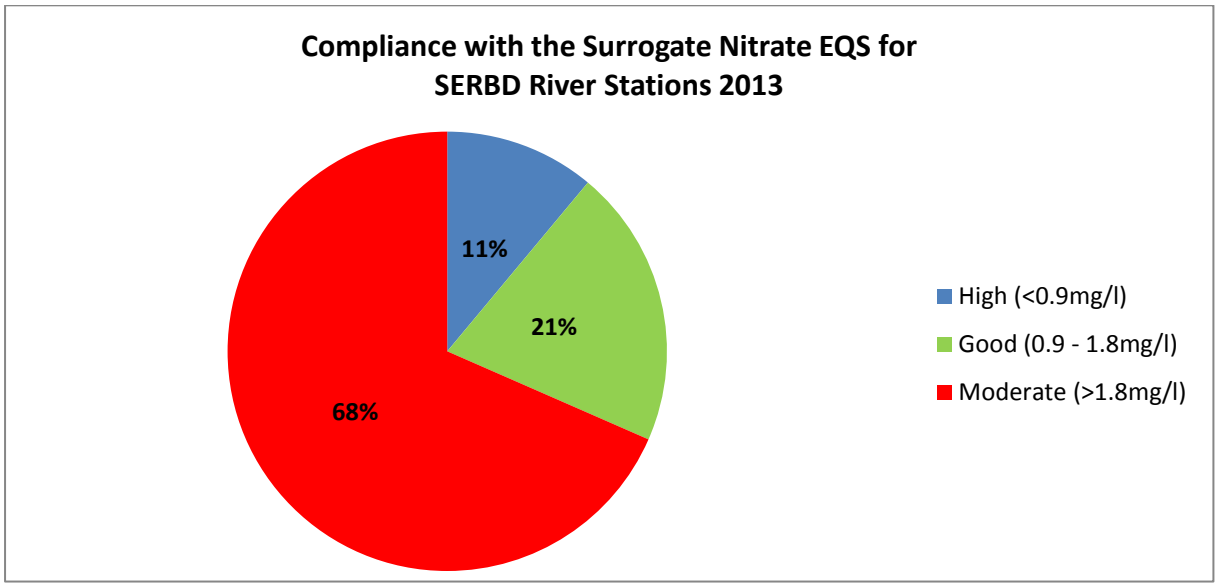


Fig. 6. Compliance with the surrogate nitrate EQS for SERBD river stations for 2013.

Figure 7 below shows the overall national picture where 39% of river stations are Moderate, 23% Good and 39% High. The SERBD falls well below the national level for compliance at high status and is significantly higher than the national figure for moderate status. However, the percentage of good status sites in the SERBD is comparable with that at national level (21% vs 23%).

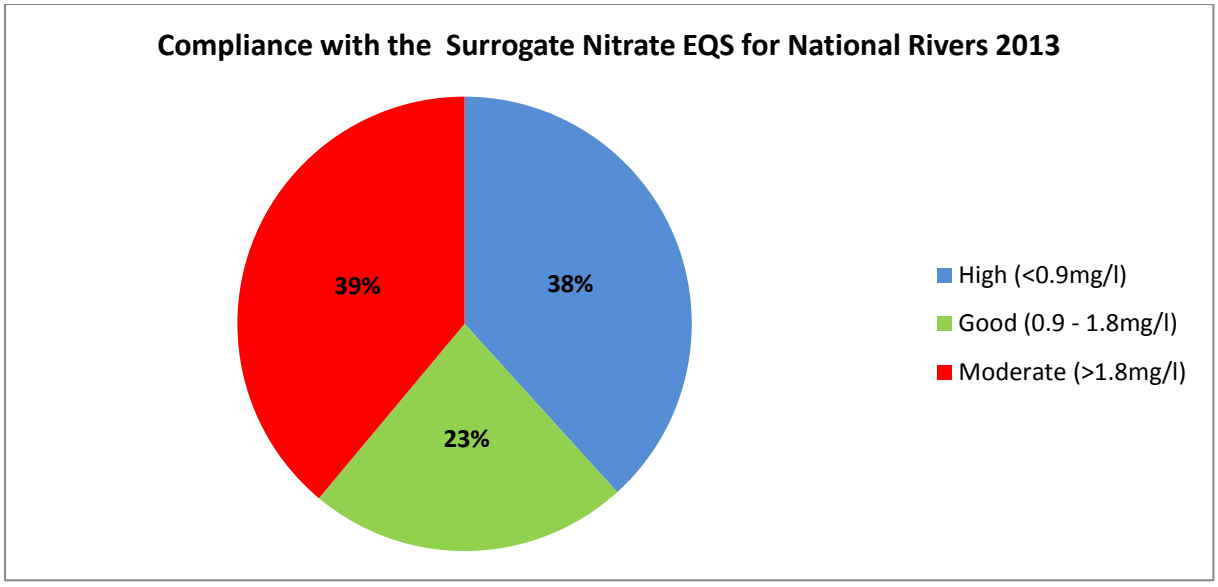


Fig. 7. Compliance with the surrogate nitrate EQS for all national river stations 2013.

The long-term trend for nitrate for all river monitoring stations in the SERBD is presented in Figure 8. There has been a reduction in nitrate levels from a high in 2006 - 2007 with levels stabilising over the last 3 years. The average nitrate concentrations for the SERBD are all of 'Moderate' status when assessed against the surrogate EQS for nitrate.

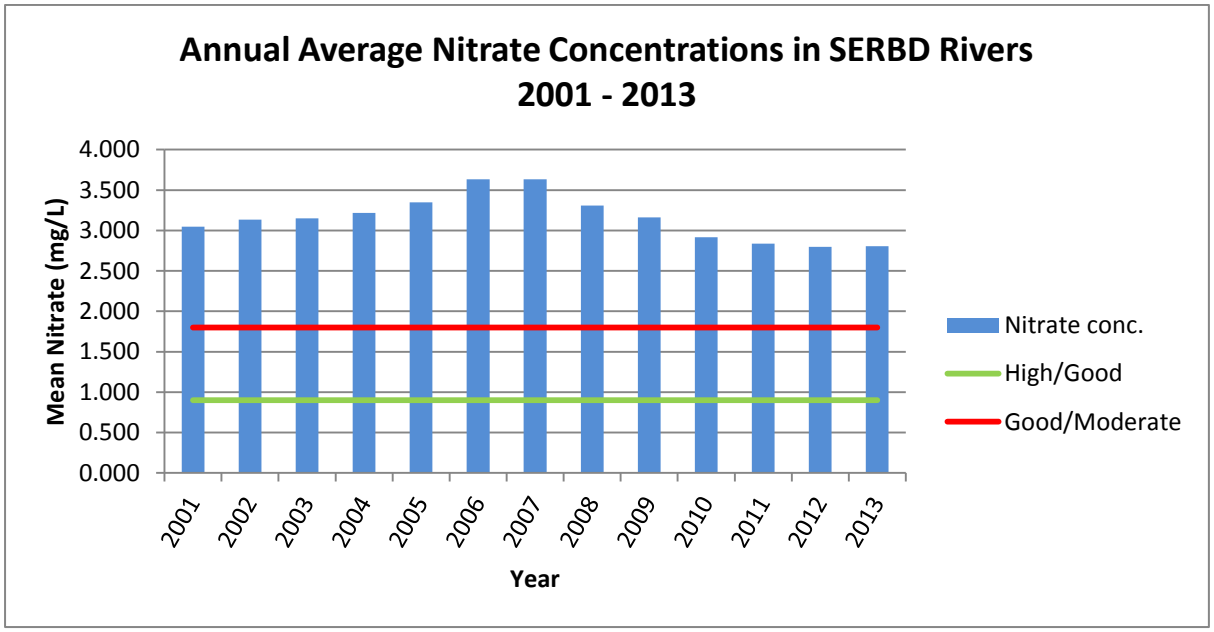


Fig. 8. Long-term trend of nitrate concentrations at all river monitoring stations in SERBD.

2.1.5 Case Study: Aghalona River

Figure 9 shows long-term 3-year rolling mean values for nitrate in the Aghalona River, Co. Carlow at two different stations (0100 and 0200) from 2006 to 2013.

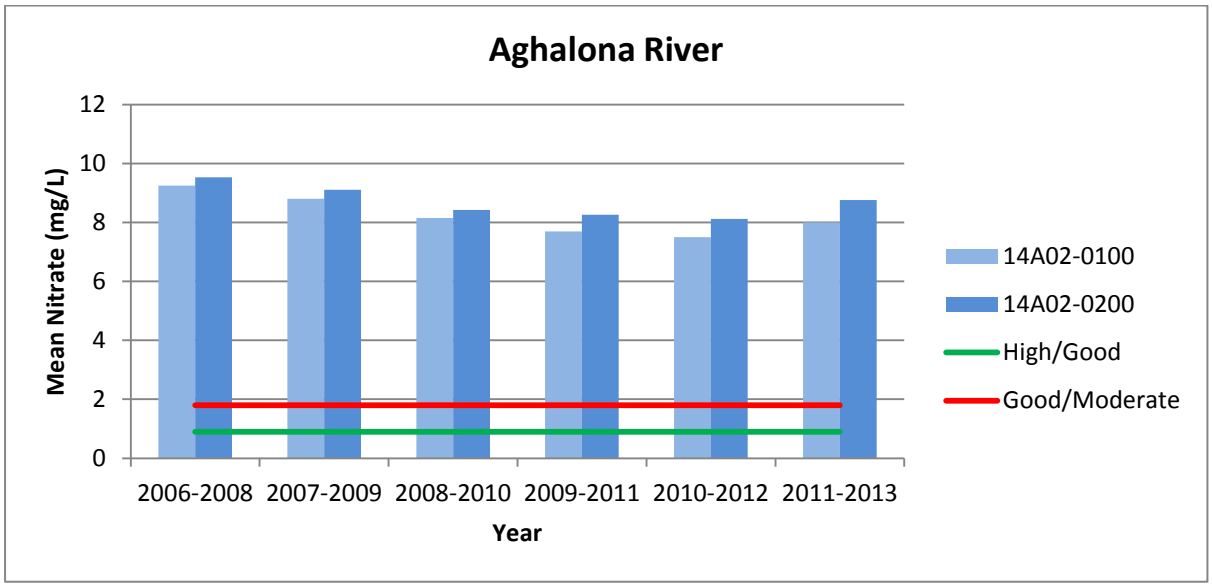


Fig. 9. Long-term 3-year rolling mean values for nitrate in the Aghalona river for monitoring stations 0100 and 0200.

This river was chosen for further long-term assessment as it currently has elevated nitrate concentrations and displays only 'Moderate' compliance with the nitrate EQS at both stations. Both of these sites 14A02-0100 (Friarstown Bridge) and 14A02-0200 (Bridge N of Moatalusha House) were identified as sites for further investigation in the EPA's Integrated Water Quality report for the South East Region, 2012. The suspected causes are due to diffuse pollution from agriculture and domestic wastewater treatment systems. The nitrate concentrations reduced slightly for each cycle up to the 2010 - 2012 cycle, however, they increased marginally in the 2011 - 2013 cycle. The Aghalona had the highest average nitrate concentrations in Co. Carlow in 2013 with station 14A02-0200 at 9.6 mg/L N and station 14A02-0100 at 8.8 mg/L N.

2.1.6 Case Study: Mountrath River

Figure 10 shows long-term 3-year rolling mean values for nitrate in the Mountrath River at three different monitoring stations (0080, 0100 and 0300) from 2006 to 2013. The Mountrath Rive rises in the Slieve Bloom mountains and flows through the town of Mountrath before joining the River Nore. The monitoring stations are at Roundwood Bridge (0080), Paddock Bridge (0100) and Forest Bridge (0300).

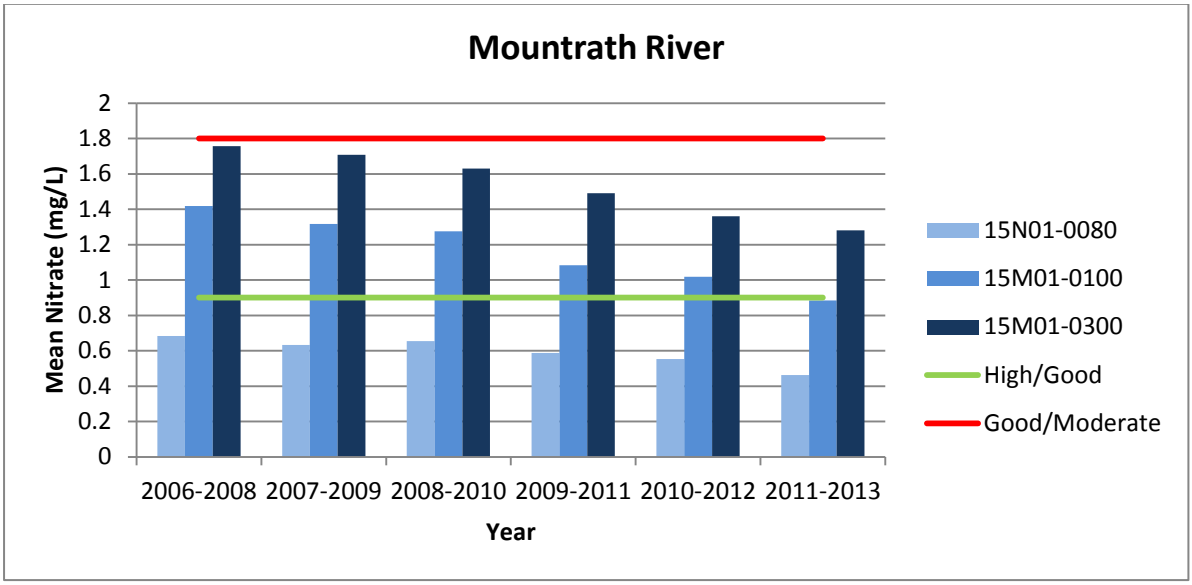


Fig. 10. Long-term 3-year rolling mean values for nitrate in the Mountrath river for monitoring stations 0080, 0100 and 0300.

This river was chosen as an example of a river with low nitrate concentrations. The nitrate concentrations have been falling with each cycle and stations 0100 and 0300 have been consistently of 'Good' status with station 0080 at 'High' status. In the most recent cycle of 2001 - 2013 station 0100 also achieved 'High' status relative to the surrogate EQS for nitrate of <0.9 mg/L.

2.1.7 Overall Physico-Chemical Assessment of Rivers in SERBD

As part of the determination of the ecological status of a water body, a statistical method has been derived for assessing the physico-chemical results (i.e. nutrient and oxygen concentrations, etc.) to compare with the biological quality elements (e.g. macroinvetebrate and fish populations) for the same water body.

This physico-chemical assessment is based on compliance with the EQS for Ortho-Phosphate, Biochemical Oxygen Demand (BOD), Ammonia and Nitrate. This assessment is undertaken in 3 year rolling cycles and the results of the assessment of surveillance rivers in the SERBD are given below in Table 1. All surveillance rivers monitored in the SERBD met the compliance criteria for this statistical assessment.

RIVER	CODE	2007–2009	2008–2010	2009–2011	2010–2012	2011–2013
BANOGE	11B020300	Pass	Pass	Pass	Pass	Pass
OWENAVORRAGH	11O010500	Pass	Pass	Pass	Pass	Pass
CLODY	12C030200	Pass	Pass	Pass	Pass	Pass
DERRY Wicklow	12D020700	n/a	n/a	n/a	n/a	n/a
DOUGLAS (BALLON)	12D030200	Pass	Pass	Pass	Pass	Pass
SLANEY Wicklow	12S020400	n/a	n/a	n/a	n/a	n/a
SLANEY	12S021800	Pass	Pass	Pass	Pass	Pass
URRIN	12U010200	Pass	Pass	Pass	Pass	Pass
DUNCORMICK	13D010350	Pass	Pass	Pass	Pass	Pass
OWENDUFF (WEXFORD)	13O010100	Pass	Pass	Pass	Pass	Pass
BARROW	14B011000	Pass	Pass	Pass	Pass	Pass
BARROW	14B013500	Pass	Pass	Pass	Pass	Pass
BURREN	14B050100	Pass	Pass	Pass	Pass	Pass
GOWRAN	14G030300	Pass	Pass	Pass	Pass	Pass
GREESE Kildare	14G040350	n/a	n/a	n/a	n/a	n/a
TULLY STREAM Kildare	14T020390	n/a	n/a	n/a	n/a	n/a
BALLYROAN	15B010200	Pass	Pass	Pass	Pass	Pass
DININ (NORE)	15D020800	Pass	Pass	Pass	Pass	Pass
GLORY	15G010200	Pass	Pass	Pass	Pass	Pass
KING'S (KILKENNY)	15K020800	Pass	Pass	Pass	Pass	Pass
NORE	15N010300	Pass	Pass	Pass	Pass	Pass
NORE	15N012400	Pass	Pass	Pass	Pass	Pass

RIVER	CODE	2007–2009	2008–2010	2009–2011	2010–2012	2011–2013
NUENNA	15N020100	Pass	Pass	Pass	Pass	Pass
AHERLOW	16A010900	Pass	Pass	Pass	Pass	Pass
ANNER	16A020600	Pass	Pass	Pass	Pass	Pass
ARA	16A030600	Pass	Pass	Pass	Pass	Pass
DUAG	16D030100	Pass	Pass	Pass	Pass	Pass
MULTEEN	16M021100	Pass	Pass	Pass	Pass	Pass
NIER	16N010100	Pass	Pass	Pass	Pass	Pass
SUIR	16S020200	Pass	Pass	Pass	Pass	Pass
SUIR	16S022700	Pass	Pass	Pass	Pass	Pass
COLLIGAN	17C010150	Pass	Pass	Pass	Pass	Pass
MAHON	17M010350	Pass	Pass	Pass	Pass	Pass

Table 1. Physico-chemical assessment of Surveillance Rivers in the SERBD.

2.2 Lakes

2.2.1 Key Issue: Nutrient Enrichment – Phosphorus (as Total P)

Physico-chemical monitoring to meet the requirements of the Water Framework Directive for the SERBD is undertaken at five sites in Co. Waterford (three lakes and two reservoirs). These are Ballyscanlon, Ballyshunnock, Belle, Carrigavantry Reservoir and Knockaderry Reservoir. There is currently no formal EQS for total phosphorus. The phosphorus regulations (SI 258 of 1998) set the annual mean target value for total phosphorus at 25 µg/L and this value is used as a guide EQS. The surrogate total phosphorus EQS standards are: Good ≤0.025 mg/L P and High ≤0.010 mg/L P. Map 3 shows the annual average total phosphorus in the SERBD lakes in 2013. This map is based on a comparison of the annual mean against the surrogate EQS for total phosphorus.

All of the lakes in the SERBD fall into the 'Moderate' category with annual average total phosphorus levels in excess of the EQS for 'Good' status. The lakes in the SERBD do not compare favourably with the national picture where 59.6% of all lakes are of 'High' status and only 25.9% of lakes below 'Good' status. This information is shown in Figures 11 and 12 below.

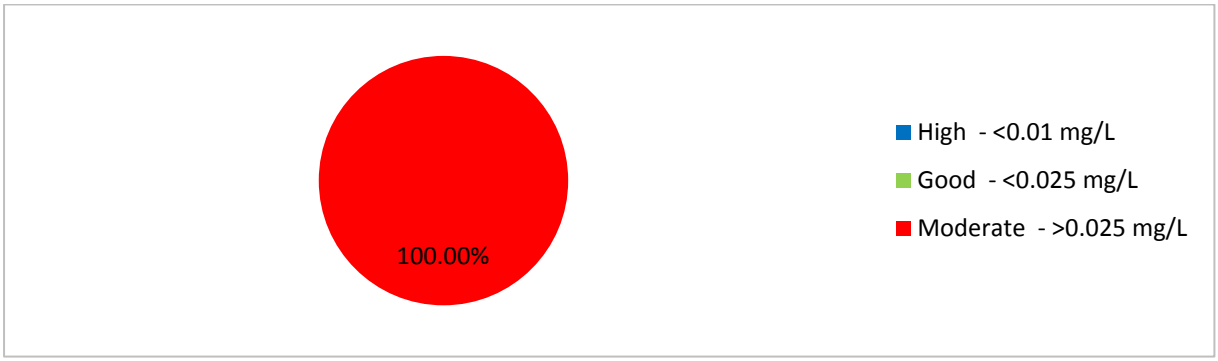


Fig. 11. Compliance with total phosphorus guide EQS for SERBD lake stations 2013.

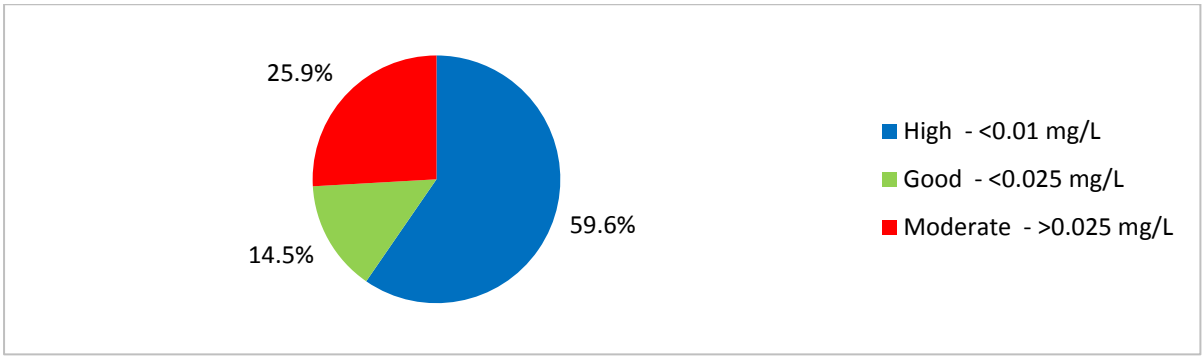
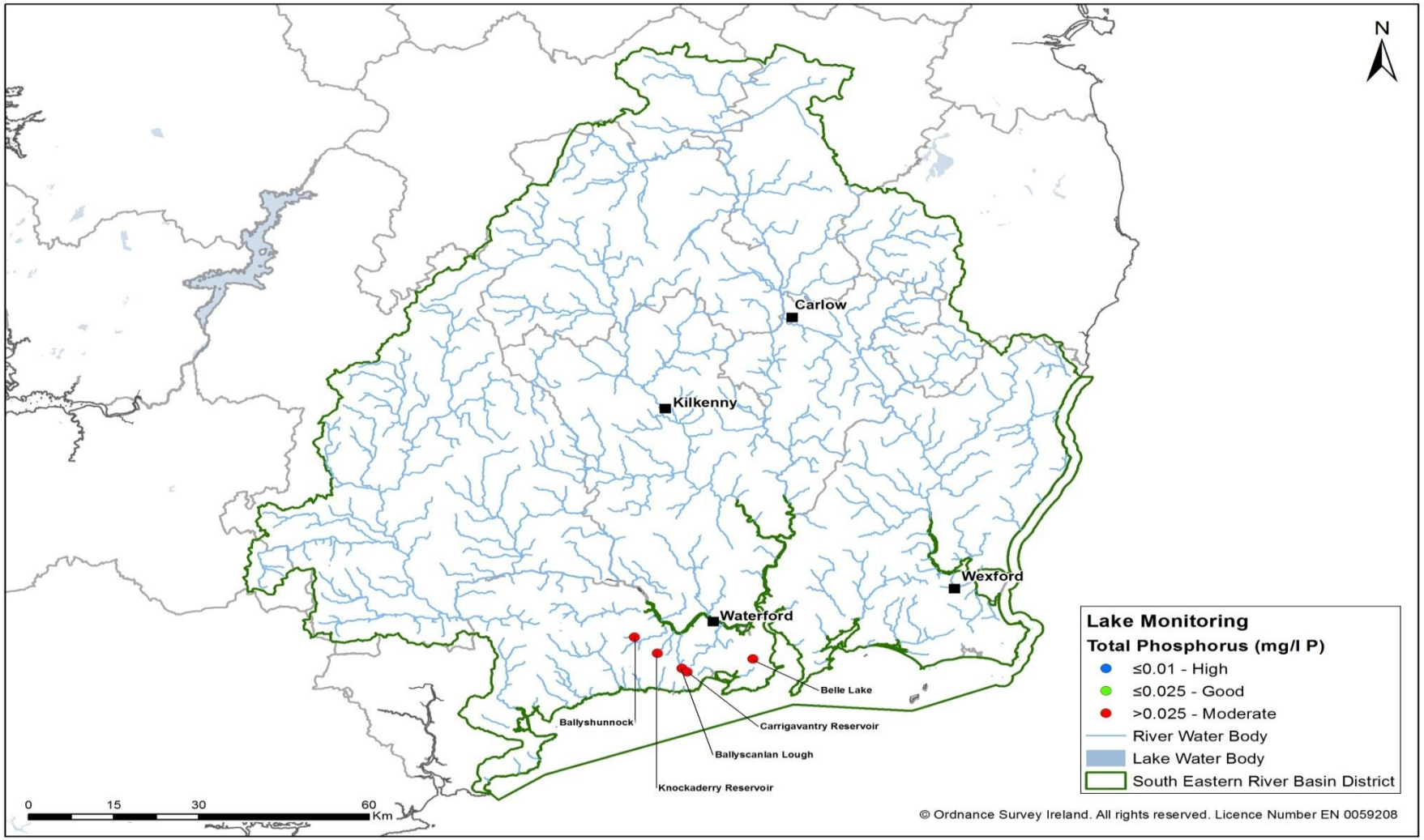


Fig. 12. Compliance with total phosphorus guide EQS for all national lake stations 2013.



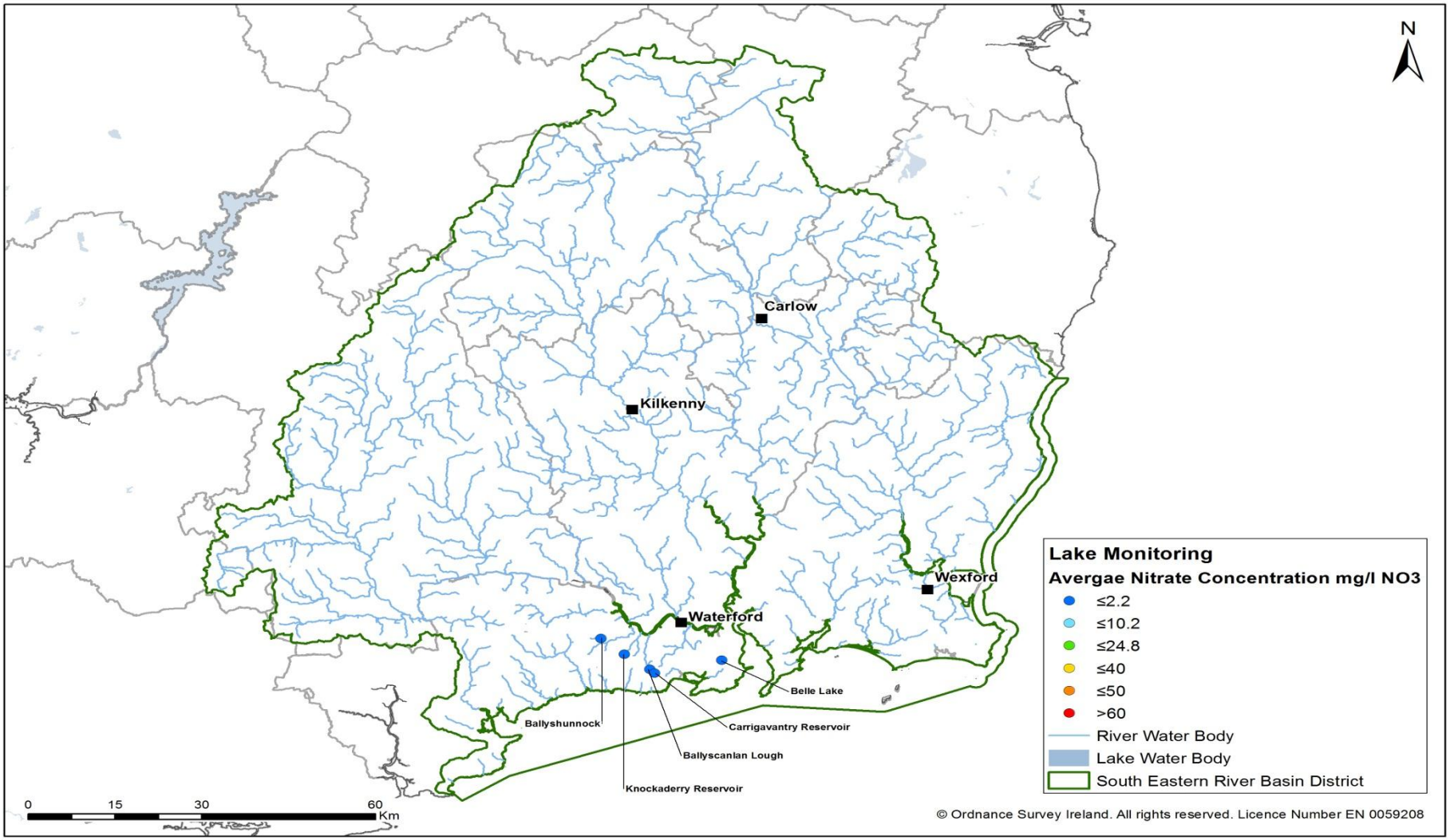
Map 3. Annual average total phosphorus in SERBD lakes in 2013.

2.2.2 *Key Issue*: Nutrient Enrichment – Nitrate (as N)

Nitrate levels in the SERBD lakes have been monitored over many years and while there is at present no nitrate EQS, it still important to assess the concentration of nitrate present. Both Knockaderry Reservoir and Ballyshunnock Lake have higher nitrate levels than the other three lakes in the SERBD. The level of nitrate in both Knockaderry and Ballyshunnock had been decreasing in recent years, however, 2012 saw an increase in nitrate levels in both lakes. The downward trend was again observed in 2013 with levels not only decreasing but falling below 2012 levels. The nitrate level in both Knockaderry Reservoir and Ballyshunnock lake in 2013 was < 2.2 mg/L N.

Ballyscanlon, Belle and Carrigavantry lakes have significantly lower levels of nitrate than both Knockaderry and Ballyshunnock. The levels of nitrate in these lakes showed a slight increase on 2012 levels, but levels in all three lakes remain < 1mg/L N.

Map 4 shows the annual average nitrate concentration in SERBD lakes in 2013.



Map 4. Annual average nitrate in SERBD lakes in 2013.

2.2.3 Case Study – Knockaderry Reservoir

Knockaderry Reservoir is located in Co. Waterford. It is a shallow lake and is very sensitive to low levels of nutrients. Diffuse pollution is the main pressure and a reduction in the amount of nutrients entering Knockaderry Reservoir is essential to improving the quality of the lake. Knockaderry Reservoir is designated as an operational monitoring site for the Water Framework Directive (WFD).

The 3 year rolling trend for Knockaderry Reservoir over the period of the WFD cycle shows that total phosphorus levels were at their highest in the most recent 3 year cycle. There had been a decrease in the levels of total phosphorus in Knockaderry reservoir in 2012, however, this was reversed in 2013 and the average over the 3 years is more than double the level of the EQS for 'Good' status. The average total phosphorus concentration in Knockaderry Reservoir has consistently exceeded the surrogate total phosphorus EQS for 'Good' status of 0.025 mg/L P.

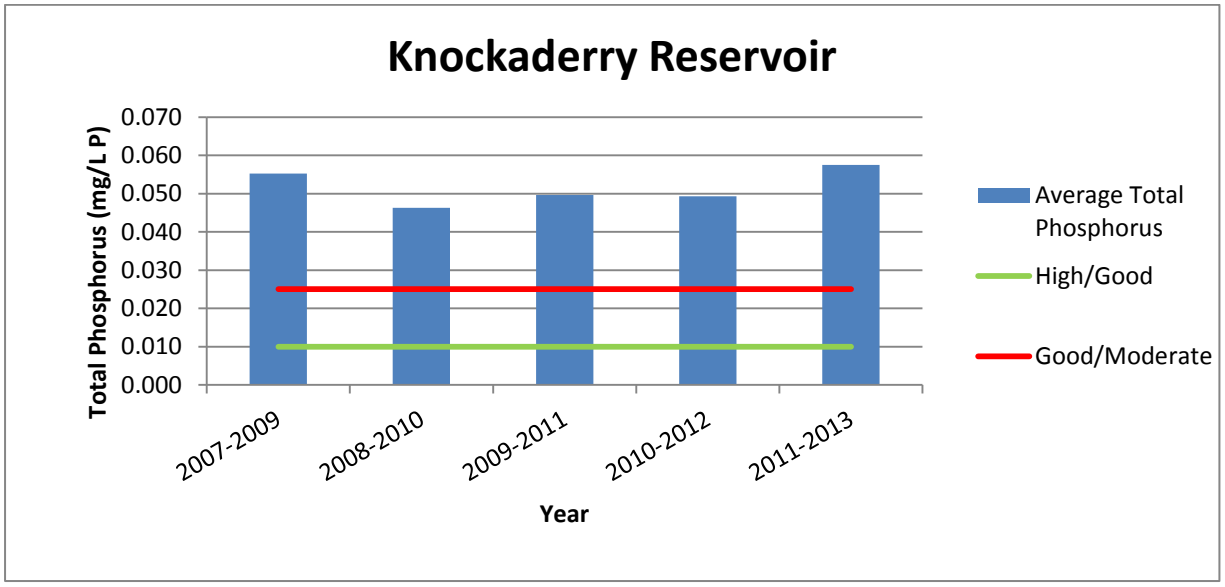


Fig. 13. Long-term 3-year rolling mean values for total phosphorus in Knockaderry Reservoir, Co. Waterford.

There is no EQS for nitrate in lakes, however, it is promising to see that there is a general downward trend in the levels of nitrate in Knockaderry Reservoir with levels in 2013 reaching their lowest since the start of the WFD monitoring in 2007.

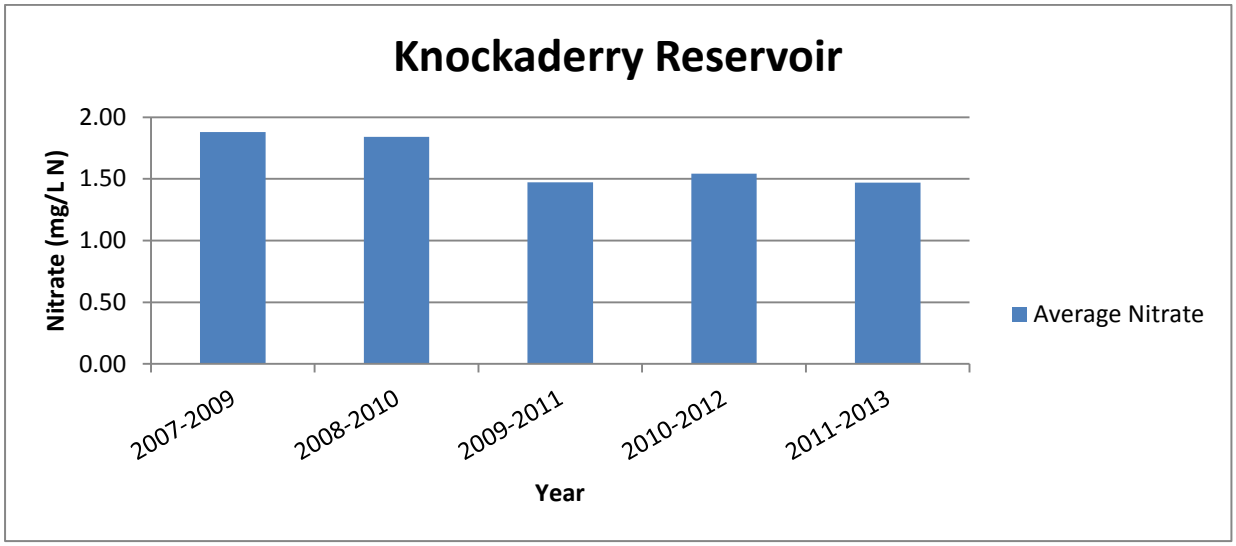


Fig. 14. Long-term 3-year rolling mean values for nitrate (as N) in Knockaderry Reservoir, Co. Waterford.

2.2.4 Overall General Physico-Chemical Status of Lake in SERBD

As part of the determination of the ecological status of a lake, a statistical method has been derived for assessing the general physico-chemical results of lake samples. These are then compared with the biological quality elements of a lake to derive the overall ecological status of the lake.

This general physico-chemical (GPC) status was assigned to SERBD lakes by assessing Oxygenation Status, Nutrient Conditions Status, Acidification/Alkalisation Status, Thermal Status and Specific Pollutants. Compliance is rated as High, Good, Moderate, Poor or Bad.

The GPC status for all five lakes in the SERBD is Moderate. The lakes have been of Moderate status since the advent of the WFD monitoring. The results of this assessment for all lakes monitored in the SERBD are presented in Table 2.2 below.

Lake Name	Lake Code	2007 - 2009	2008 - 2010	2009 - 2011	2010 - 2012	2011 - 2013
Ballyscanlon	SE_16_460	Moderate	Moderate	Moderate	Moderate	Moderate
Ballyshunnock	SE_16_463	Moderate	Moderate	Moderate	Moderate	Moderate
Belle	SE_17_5	Moderate	Moderate	Moderate	Moderate	Moderate
Carrigavantry Reservoir	SE_17_8	Moderate	Moderate	Moderate	Moderate	Moderate
Knockaderry Reservoir	SE_16_294	Moderate	Moderate	Moderate	Moderate	Moderate

Table 2. General physico-chemical status of SERBD lakes.

2.3 Transitional and Coastal Waters

2.3.1 *Key Issue*: Nutrient Enrichment –Trophic Status

The EPA has been monitoring and assessing the water quality of estuaries and coastal waters since the early 1990s. Following the introduction of the WFD, the monitoring programme has intensified and the EPA now monitors over 120 water bodies up to four times per year, once in winter and three times in summer. In addition to more traditional trophic-status monitoring (nutrients, chlorophyll and oxygen), the assessment now covers a wide range of biological elements such as seaweeds, phytoplankton and seagrass. This holistic ecological assessment is an essential part of the WFD, and in conjunction with programmes run by the Marine Institute and Inland Fisheries Ireland, a comprehensive overview of the ecological status of Ireland's tidal waters environment can now be provided.

The transitional (estuaries) and coastal waters of the SERBD cover an area of just over 1,000 km^2 and comprise tidal freshwater rivers (e.g. the upper Suir and Slaney estuaries), partially mixed estuaries (e.g., the middle Suir), transitional lagoons (e.g. the North and South Slob channels), tidally mixed and seasonally stratified coastal waters (e.g. Waterford Harbour and the Eastern Celtic Sea, respectively).

Transitional and coastal water bodies are monitored for the following parameters: salinity, temperature, pH, turbidity, secchi depth, dissolved oxygen, biochemical oxygen demand (BOD), total oxidised nitrogen (TON), total ammonia, dissolved inorganic nitrogen (DIN), ortho-phosphate and chlorophyll α.

The trophic status of these waters is assessed using the EPA's Trophic Status Assessment Scheme (TSAS) which captures the cause-effect relationship of the eutrophication process and considers the following:

- Enrichment of waters by nutrients (dissolved inorganic nitrogen and phosphorus)
- Accelerated algal growth (phytoplankton and opportunistic macroalgae)
- Undesirable disturbance (oxygen content)

Trophic status assessments are based on the analysis of data collected over a period of 3 years, and each water body assessed is categorised as eutrophic, potentially eutrophic, intermediate or unpolluted with respect to nutrient enrichment.

Priority substances are also monitored and details of this programme, which is undertaken by the Marine Institute, are available at http://hdl.handle.net/10793/635.

The rivers of the south east deliver some of the highest nutrient loadings nationally. For example, in 2011 the combined loading of nitrogen, as total nitrogen, and phosphorus, as

total phosphorus, from the Blackwater, Suir, Barrow, Nore and Slaney rivers, was 24,300 and 524 tonnes, respectively, representing just under 25 % of the national total for both nutrients. A trend assessment of nutrient loadings from these rivers between 1990 and 2010 indicates a statistical downward trend in total phosphorus and total ammonia in all five rivers.

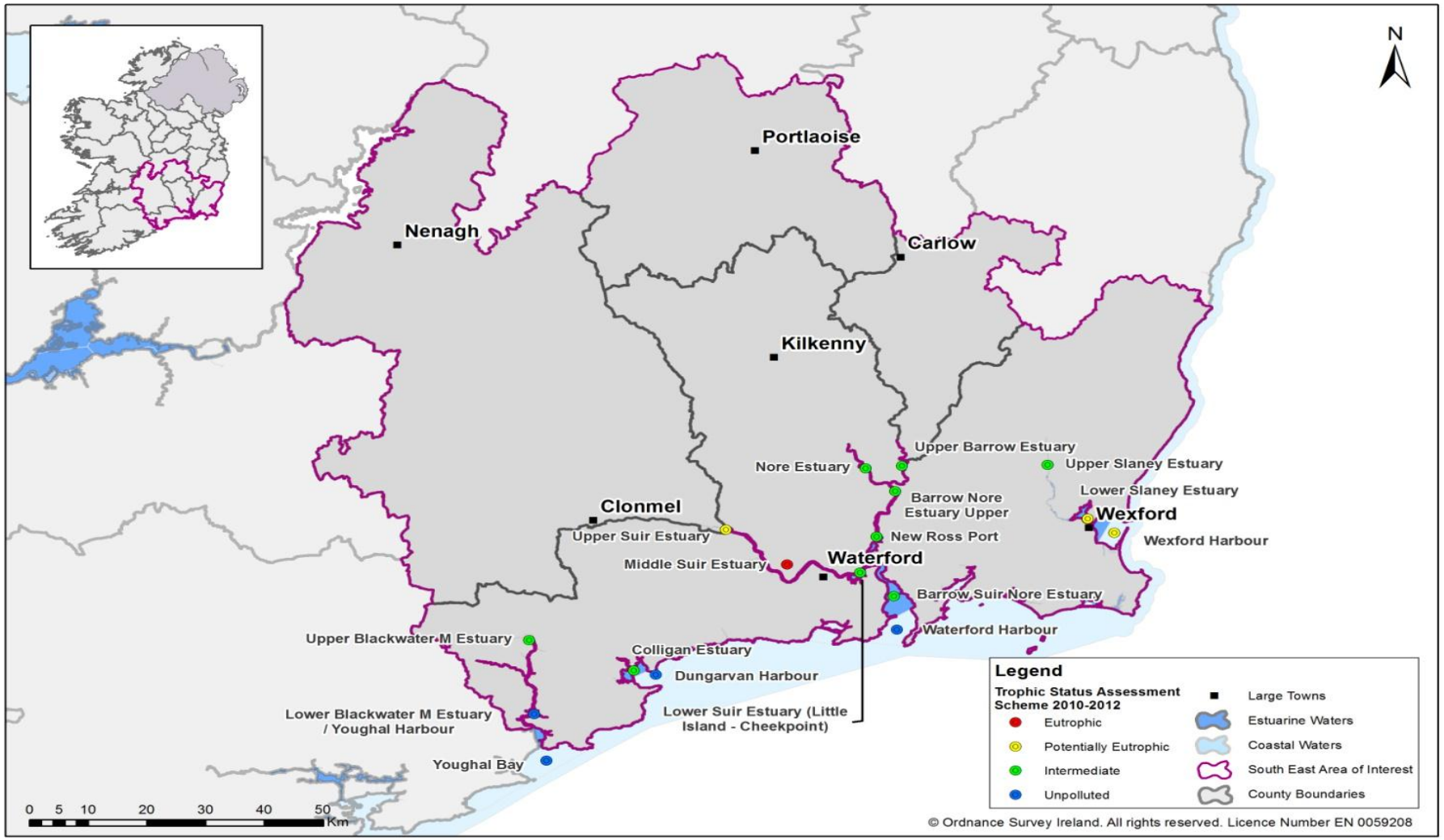
In terms of point sources, five of the ten largest waste water treatment plants in the SERBD discharge directly to tidal waters. The largest discharge of over 190,000 p.e. from Waterford City discharges into the lower Suir estuary.

The latest trophic status assessment indicates that the middle Suir estuary is eutrophic, while a further three areas, the lower Slaney estuary and Wexford Harbour and upper Suir estuary are potentially eutrophic. In terms of ecological status, as defined under the WFD, of the 18 water bodies assessed, ten were found to be 'moderate or worse', seven were 'good', and one was 'high'.

Of the 16 estuarine and coastal water bodies in the south east assessed in the latest period, one was classed as eutrophic, three as potentially eutrophic, eight as intermediate and four as unpolluted. This compares unfavourably with the national average as can be seen from Table 3 below:

Trophic Status	South east (%)	National (%)
Eutrophic	6	7
Potentially Eutrophic	19	8
Intermediate	50	28
Unpolluted	25	57

Table 3. Trophic status of south eastern water bodies.



Map 5: Trophic Status of Transitional and Coastal Waters in the South-East in 2012

2.4 Groundwater

2.4.1 *Key Issue:* Nutrient Enrichment – Phosphorus and Nitrates

Groundwater, which originates from rain that soaks into the ground, is an important natural resource in Ireland. It flows through and is stored in the fractures in bedrock and the pore spaces of sand and gravel deposits. In the past the focus was on its use as drinking water; however, under the WFD there is an increased emphasis on the environmental quality of groundwater, as well as its value as a potable water supply. Groundwater plays an essential role in the hydrological cycle and is critical for maintaining river levels and surface water ecosystems. In many Irish rivers, more than 30% of the flow is derived from groundwater, rising to 90% in periods of low flow. Therefore, the quality of groundwater can have a major impact on the quality of river water.

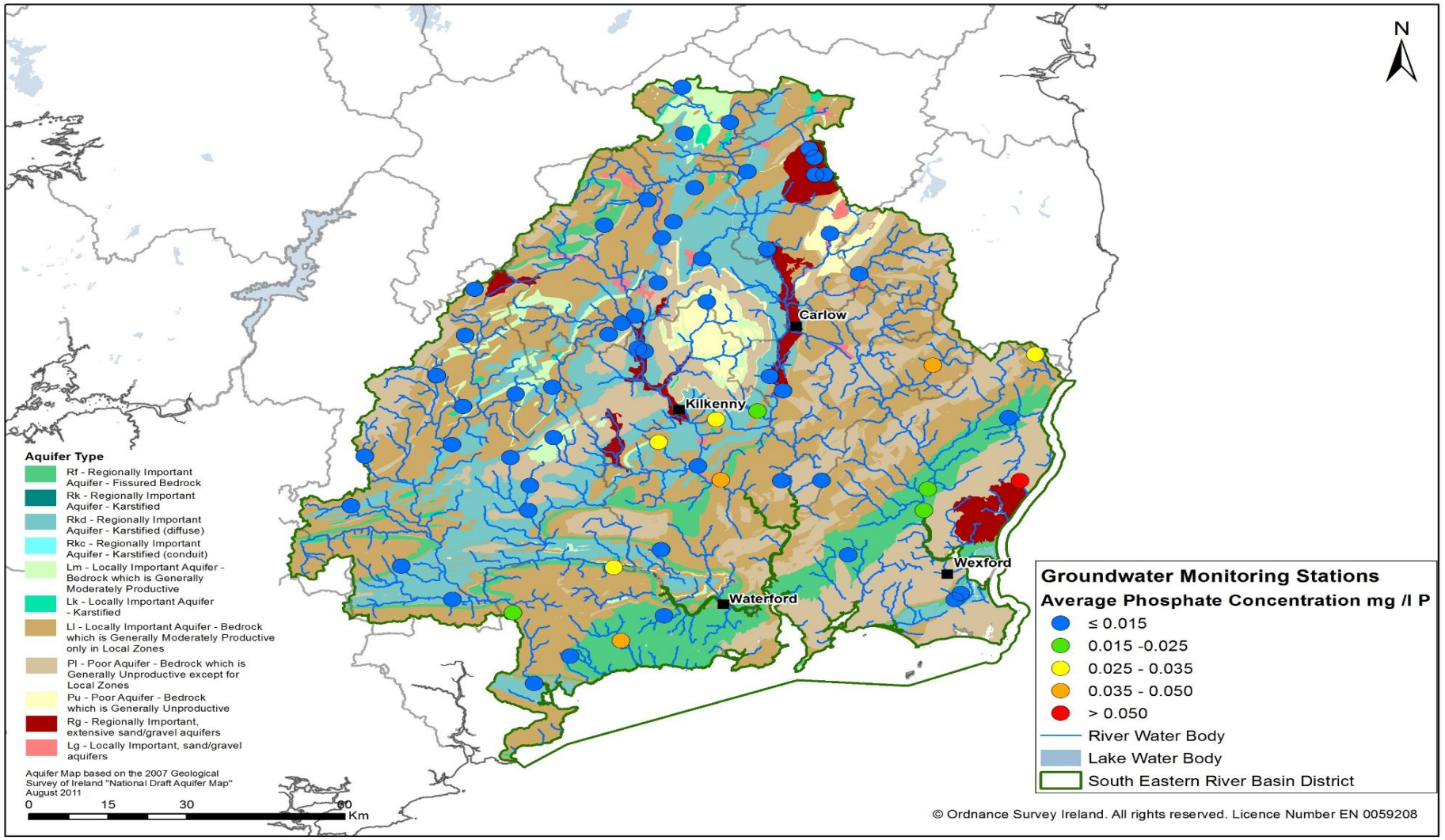
In Ireland approximately a quarter of all public and private drinking water supply is from groundwater. Most of the private group schemes and small supplies are reliant on groundwater and many have inadequate treatment. Therefore, it is critical that groundwater is protected to maintain the quality of drinking water and ensure the water is safe to drink without the requirement for excessive levels of treatment.

In 2013 the Environmental Protection Agency's groundwater monitoring programme included 64 monitoring locations in the SERBD. These sites were monitored for a variety of physico-chemical and microbiological parameters. Nitrate and ortho-phosphate, two of the main indicators of anthropogenic pollution from diffuse and small point sources, were measured and these are discussed in more detail in Section 2.4.1.1 and 2.4.1.2.

In 2009, during the first river basin management plan (RBMP) cycle, two groundwater bodies in the SERBD were identified as being at poor status because of industrial/urban activities that resulted in contaminated land (Waterford City and Mullinavat A). A further two groundwater bodies in the SERBD were identified as being at poor quantitative status due to the impact of an abstraction associated with a road cutting that reduced regional groundwater flows to Pollardstown Fen (Pollardstown Fen and the Curragh).

2.4.1.1 Ortho-Phosphate in Groundwater

Map 6 shows the locations and the associated average ortho-phosphate concentrations in 2013 for the groundwater monitoring points in the SERBD.



Map 6. Average ortho-phosphate concentrations in the SERBD in 2013.

Figure 15 summarises the average yearly ortho-phosphate concentrations from 2007 - 2013 for the groundwater monitoring programme in the SERBD.

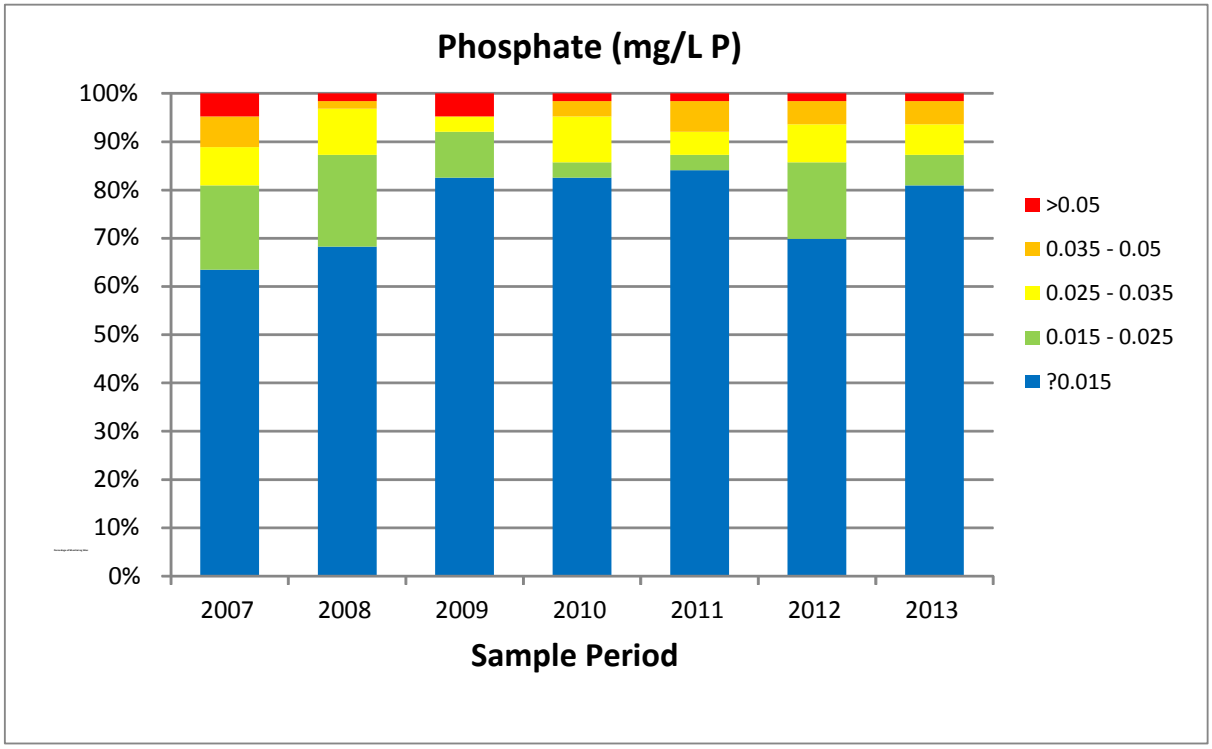


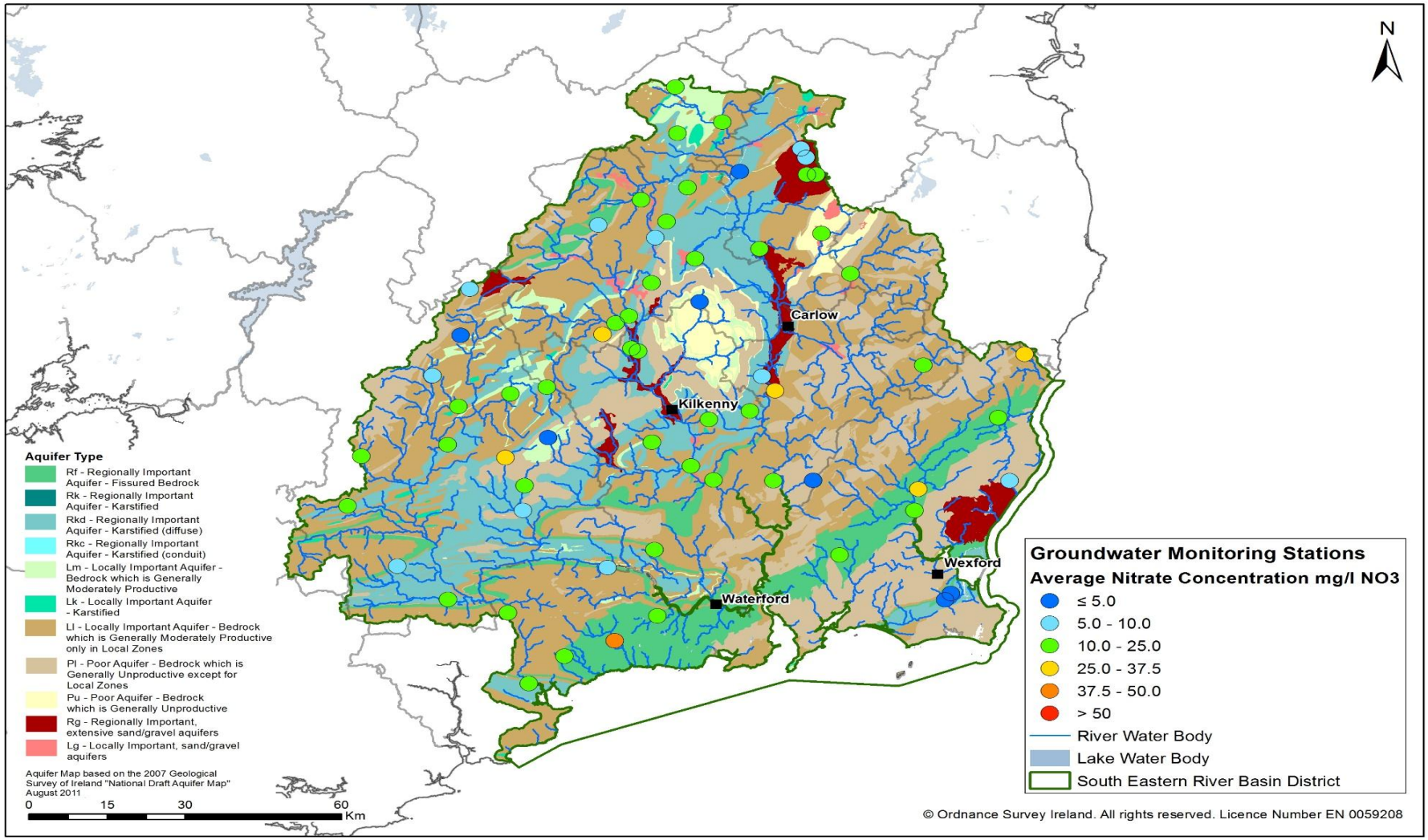
Fig. 15. Average ortho-phosphate concentrations in groundwater in the SERBD.

The average ortho-phosphate concentration at groundwater monitoring locations in the SERBD has declined slightly over the period 2007 - 2013. There was a decrease in 2013 with average concentrations >0.015 mg/L P at 19% of monitoring locations compared with 30.2% of monitoring locations in 2012, and the proportion of monitoring locations with average concentrations >0.015 mg/L P in 2013 is comparable to the period 2009 - 2011 (15.9 - 17.5%). In 2013 6.3% of sites had average concentrations above the Irish WFD Threshold Value concentration of 0.035 mg/L P (considered when assessing the contribution of ortho-phosphate in groundwater to rivers).

A number of factors may have influenced the overall reduction in average ortho-phosphate concentration including reductions in inorganic fertiliser, improvements in storage for organic fertiliser and the implementation of landspreading restrictions as part of the Good Agricultural Practice Regulations.

2.4.1.2 Nitrate in Groundwater

Nationally, the south and south east of the country continue to have the greatest proportion of monitoring locations with elevated nitrate concentrations; with agricultural practices the probable cause (McGarrigle *et al*. 2010). Map 7 shows the locations and the associated average nitrate concentrations in 2013 for the groundwater monitoring points in the SERBD.



Map 7. Average nitrate concentrations in the SERBD in 2013.

Figure 16 summarises the average yearly nitrate concentrations from 2007 to 2013 for the groundwater monitoring programme in the SERBD.

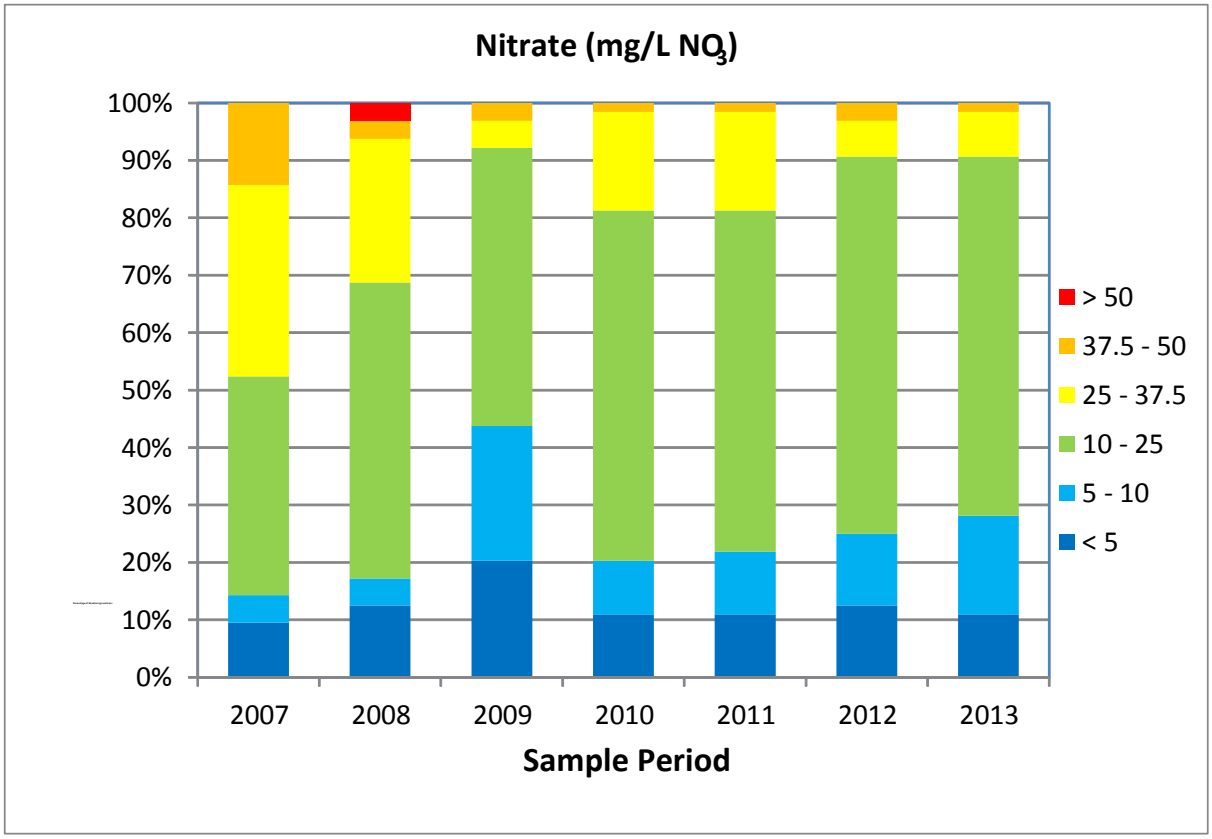


Figure 16. Average nitrate concentrations in groundwater in the SERBD.

The average nitrate concentration at groundwater monitoring locations in the SERBD has decreased over the period 2007 - 2013. The average nitrate concentration was >37.5 mg/L NO_3 at only one monitoring point in 2013. An average nitrate concentration of < 25 mg/L NO_3 was found at 90.6% of monitoring locations in 2013, which is a significant improvement when compared to 2007.

A number of factors may have influenced the overall reduction in average nitrate concentration including reductions in inorganic fertiliser applications, improvements in storage for organic fertiliser and the implementation of landspreading restrictions as part of the Good Agricultural Practice Regulations. Above average rainfall in 2008 - 2009 and the resultant increase in dilution (particularly in 2009) also contributed to a noticeable decrease in the average nitrate concentration in 2009.

2.4.2 Groundwater Summary

It is important that groundwater is protected to maintain the quality of drinking water and so that the groundwater contribution to ecosystems, including rivers, is of good quality. While nitrate concentrations in groundwater in the SERBD have been decreasing overall, they remain high relative to the rest of the country, and a similar reduction in nitrate concentrations is seen in the rivers. There has also been a slight decrease in ortho-phosphate concentrations over the period, however, the relatively static picture highlights the importance of continuing with programmes of measures to ensure that overall nutrient loss to groundwater of nitrates and ortho-phosphates is minimised.

3. Biological Assessment

3.1 Rivers

3.1.1 Key Issue: Macroinvertebrates

Biological assessment of rivers is generally carried out on a 3 year cycle. Assessment for the purposes of this report is based on the macroinvertebrate biological survey. In the overall assessment for WFD status at surveillance sites, in addition to macroinvertebrates, other biological elements, i.e. plants (macrophytes), algae (including diatoms) and fish as well as hydromorphological and chemical criteria, are taken into account.

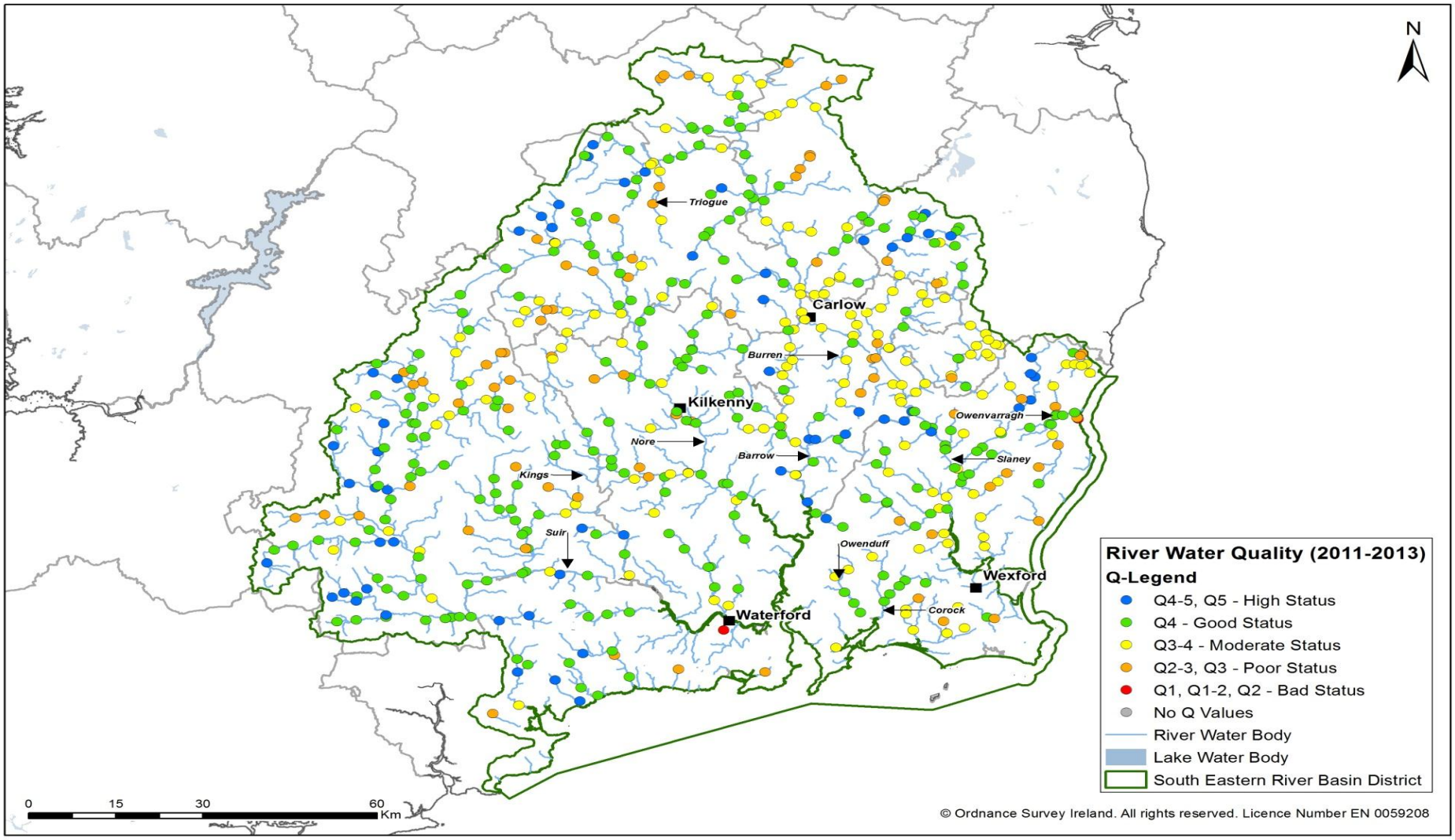
Relationships between water quality and macroinvertebrate community structure are usually described by means of a numerical scale of values. The EPA scheme of Biotic Indices or Quality (Q) Values and its relationship to WFD status is set out in Table 4.

Where a toxic effect is apparent or suspected the suffix '0' is added to the biotic index (e.g. Q1/0, Q2/0, etc.) and attention is sometimes drawn to siltation or atypical effects by appending an asterix to the biotic index (e.g. Q1*, Q2*, etc.). The Q rating assessment has been adapted to meet the requirements of the WFD and to ensure it is comparable with methods used in other EU countries.

Table 4. Reference table for WFD status and Q value.

Q Value		WFD Status
5, 4-5		High
4		Good
3-4		Moderate
3, 2-3		Poor
2, 1-2, 1		Bad

Map 8 below shows the most recent WFD biological classification of rivers in the south east. These biological assessments were carried out in the period 2011 - 2013.



Map 8. Biological classification (High, Good, Moderate, Poor, Bad) of SERBD rivers for the period 2011 – 2013.

Table 5 below gives the breakdown of the monitored sites in the SERBD by their biological Q status following assessment in the period 2011 - 2013.

Q Value	WFD Status	Number of River Monitoring Sites	%
5, 4-5	High	61	11.1
4	Good	241	43.9
3-4	Moderate	160	29.1
3, 2-3	Poor	82	14.9
2, 1-2, 1	Bad	5	0.9

Table 5. Breakdown of sites in the SERBD by biological Q Value status.

There are no sites in the SERBD of Q5 status. Sixty-one sites in the SERBD were designated as High status sites and 241 sites were classified as Good status. Therefore, 55% of the river monitoring locations (302 sites) in the SERBD are classified as good or better. There were 82 sites (15.0%), which were classified as Poor status and 5 sites (0.9%), which received a classification of bad status. This is portrayed graphically in Figure 17 below.

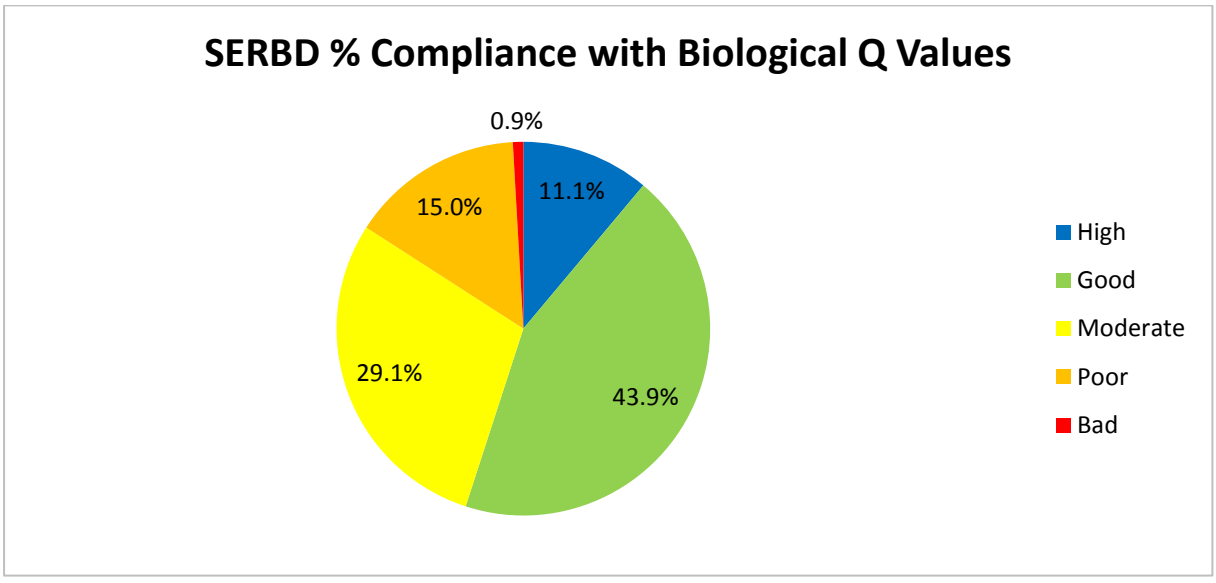


Fig. 17. Percentage compliance of SERBD sites with biological Q values.

The SERBD falls below the national average percentage for sites which are of Good status or better. This also means that the SERBD has more sites at Moderate, Poor and Bad status than the national average.

In 2010–2012 nationally there were 18.3% of sites at High status with 65% of all sites classified as Good status or better.

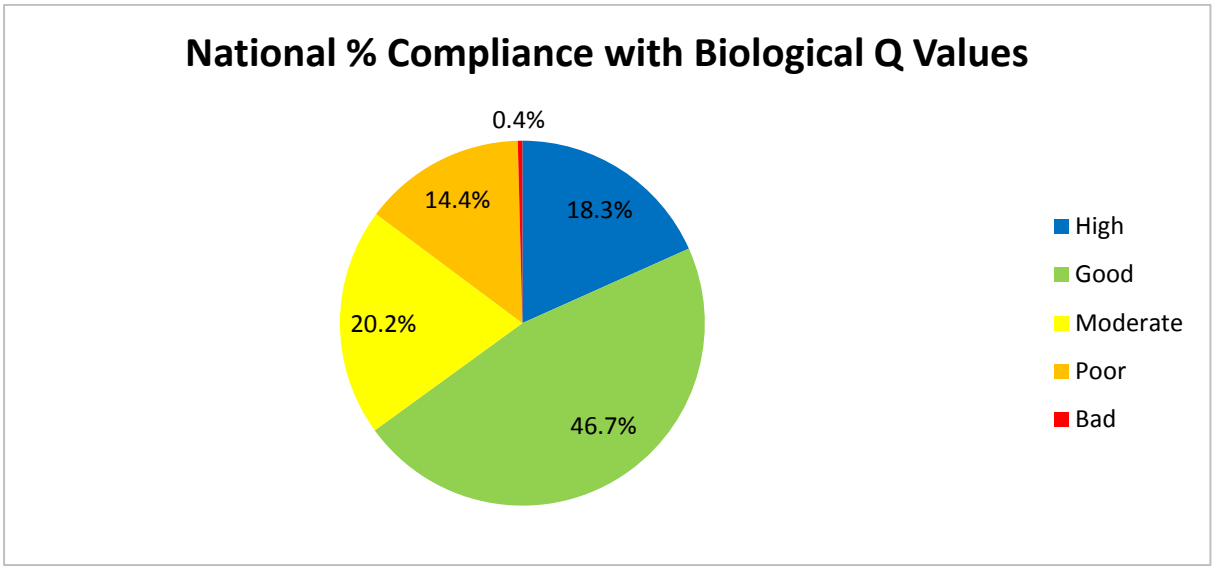


Fig. 18. Percentage compliance of national river sites with biological Q values.

3.2 Lakes

3.2.1 Biological Quality Element

The biological monitoring programme for the operational monitoring lakes is undertaken by the EPA once every 3 years as biological communities typically exhibit longer response times to gradual changes in their environment.

A number of biological tools have been developed specifically to meet the requirements of the WFD and enable each lake to be assigned High, Good, Moderate, Poor or Bad status.

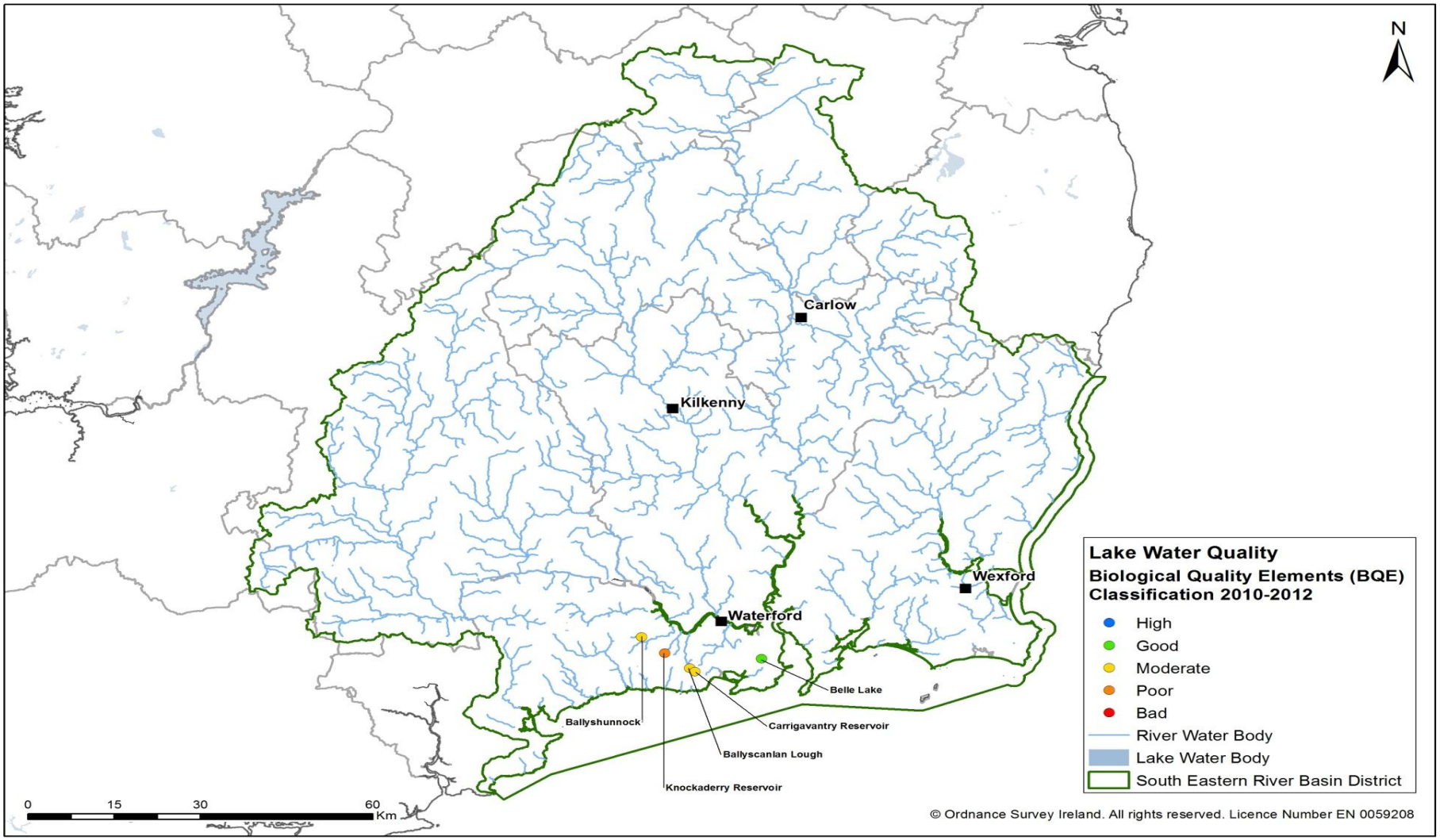
Each biological quality element is assigned status separately and the results are combined using the "one-out-all-out" approach to produce biological status. In the "one-out-all-out" approach, status is determined by the element with the lowest status. The same approach is adopted for assigning GPC status. Biological status is combined with GPC status using "one-out-all-out" to produce ecological status. High ecological status is dependent upon agreement between the biological and physico-chemical status. Additionally, a lake is not considered to be at High status if it contains the invasive alien species zebra mussel or roach; or if it has significant morphological alterations to its shoreline or a regulating structure on its outflow.

The GPC status, the biological quality elements (BQE) status and the overall ecological status for the most recent period 2010–2012 for the WFD monitored lakes in Waterford are presented in Table 3.3. All five lakes monitored in the SERBD were classified as Moderate or worse for ecological and GPC status. This reflects the relatively high nutrient levels in lakes in the south east.

LAKE	SEG_CD	2010 - 2012 Status for GPC	2010 - 2012 Status for BQE	2010 - 2012 Ecological Status
Ballyscanlan	16_460	Moderate	Moderate	Moderate
Ballyshunnock	16_463	Moderate	Moderate	Moderate
Belle	17_5	Moderate	Good	Moderate
Carrigavantry Reservoir	17_8	Moderate	Moderate	Moderate
Knockaderry Reservoir	16_294	Moderate	Poor	Poor

Table 6. Biological and ecological status of lakes in south east Ireland.

Map 8 shows the biological classification (BQE status) of SERBD lakes for the period 2010–2012. Knockaderry Reservoir is of Poor status. All the other lakes are of Moderate status.



Map 8. Biological classification (BQE status) of lakes in the SERBD for the period 2010–201

4 Pressures

The causes of water pollution, or pressures, fall into two categories, point source pressures and diffuse pressures. Point source pressures are where the pollution arises from a well-defined point. Diffuse source pollution arises from diffuse areas in a catchment and can be more difficult to determine than point source pressures.

The SERBD is predominantly rural and diffuse pollution from agriculture combined with other small point sources such as domestic wastewater treatment systems (DWWTS) and farmyards are significant pressures. The main pressures in the urban areas tend to be point source pressures, such as discharges from wastewater treatment plants, industrial discharges and storm water overflows. Other point source pressures include landfill discharges, Section 4 licenced discharges and abstraction points for drinking water. In many cases, the cause of pollution may not be due to one single pressure but a combination of several pressures.

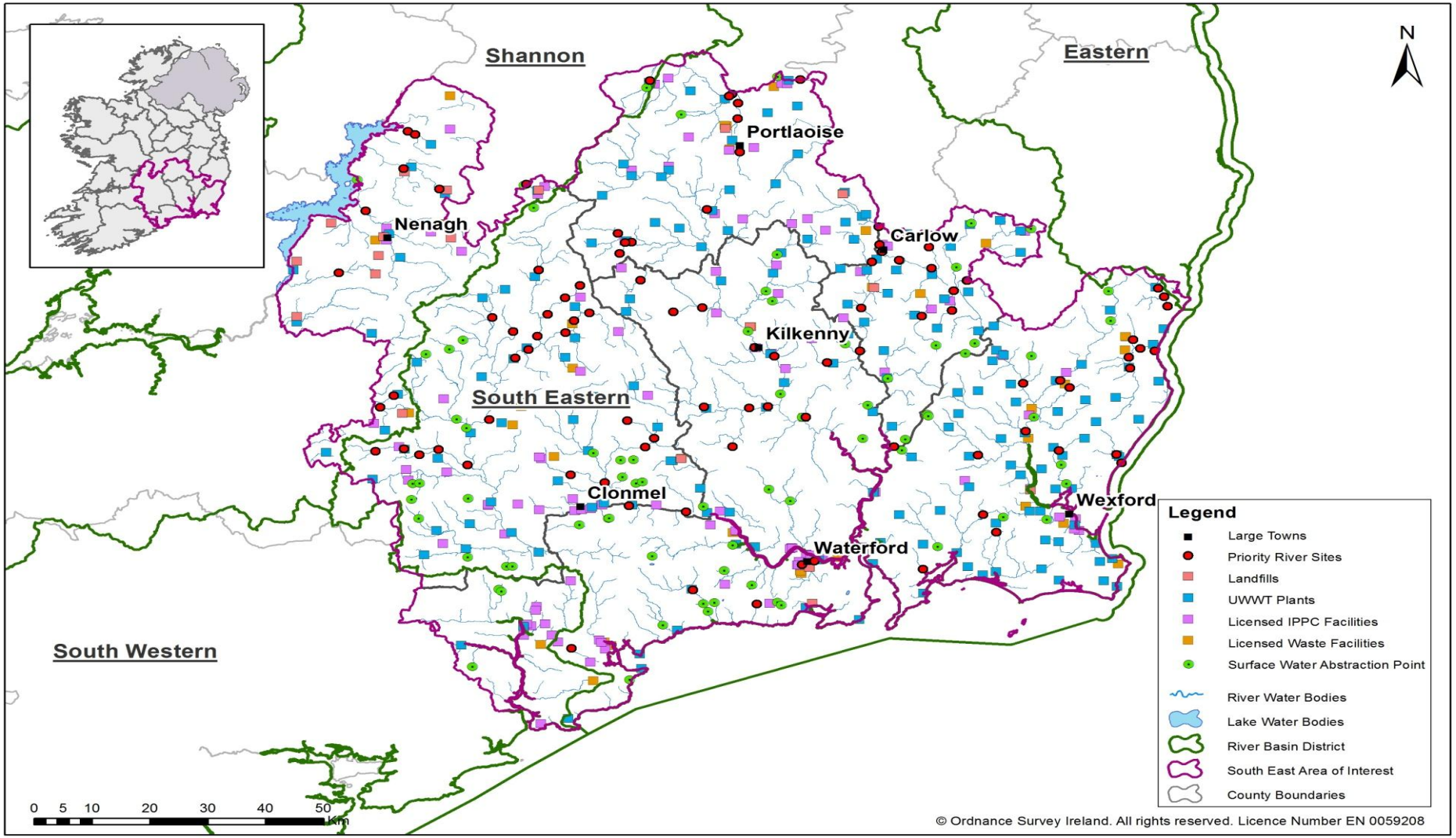
One hundred and forty-three river sites in the SERBD have been identified as sites requiring further investigation. These sites have undergone biological assessment and have Q values of less than Q4 (less than Good status), or other issues of concern have been identified at the site. The reasons for pollution at these sites are varied, with agriculture and sewage being the most common. The sites are individually listed in the relevant county reports along with the suspected cause of pollution.

Table 7 below indicates the number and percentage of stations impacted by each suspected cause of pollution.

Map 9 shows the key point pressures in the south east, along with the sites identified for further investigation in the SERBD region (sites with biological classification of less than Good status).

Suspected Pressure	County Carlow	County Kilkenny	County Laois	County Tipperary	County Waterford	County Wexford	Total	%
Agriculture	24	19	17	27	3	19	109	42.7%
Aquaculture				1			1	0.4%
DWWTS	2		1			1	4	1.6%
Hydro-morphology				3			3	1.2%
Industrial	4	2	2	9			17	6.7%
Landfill	1				1		2	0.8%
Mixed Rural Influences	10	8	8	10	1	8	45	17.6%
Siltation	4	1				1	6	2.4%
Urbanisation	5	4	3	5	1	2	20	7.8%
Urban wastewater	10	7	7	11	3	10	48	18.8%

Table 7. Suspected causes of pollution for SERBD river stations with biological classification of less than Good status (Q value of <4).



Map 9. Key point source pressures in the SERBD and river sites identified for further investigation.

4.1 Agriculture

The south east of Ireland is predominately rural and agriculture is the most significant pressure on water quality (See Table 4.1 above). Diffuse pollution from agriculture, such as nutrient runoff from land combined with other small point sources such as domestic wastewater treatment systems (DWWTS) and farmyard runoff are significant pressures. These pressures result in significant levels of phosphorus and nitrogen being discharged to waters. This leads to eutrophication in the rivers and lakes with artificially increased weed and algal growth in many rivers having an adverse effect on the aquatic fauna.

Legislation through the Nitrates Directive (SI 610 of 2010) is the main measure for addressing agricultural pollution. These regulations also provide statutory support for good agricultural practice to protect waters against pollution. Although there have been decreases in the phosphorus and nitrogen concentrations in the SERBD water bodies, the average levels in SERBD rivers and lakes are still above the EQS values. A third national Nitrate Action Plan (NAP) to achieve compliance with the Nitrates Directive is currently being implemented. The NAP includes limits on farm stocking rates, limits for nitrogen and phosphorus application rates, prohibited spreading periods, minimum storage requirements, requirements regarding maintenance of green cover in tillage lands and set back distances from waters. An effective inspection and enforcement regime is needed to ensure full compliance with the Nitrates Directive.

The targets set by *Food Harvest 2020*, to increase agricultural output, will provide welcome economic development, but will also pose significant challenges in meeting the requirements of the WFD. *Food Harvest 2020* aims to increase output in the dairy sector in the region by up to 50%. Building this capacity while maintaining environmental sustainability is a significant challenge for the agriculture sector and a cohesive plan incorporating all stakeholders is essential. Improved awareness and support within local communities will be key to the implementation of this initiative and ensuring that Ireland meets its objectives for the Water Framework Directive.

4.2 Urban Waste Water Discharges

Municipal waste water discharge is another of the main sources of pollution in the SERBD. In accordance with the requirements of the Waste Water Discharge (Authorisation) Regulations, 2007 (SI 684 of 2007), the EPA is responsible for the licensing or certification of all discharges to the aquatic environment from sewerage systems owned, managed and operated by water service authorities. Up to the end of 2013, 63 urban waste water discharge licences and 168 certs of authorisation had been issued in the SERBD (see Table 8 below). In 2013, 20 UWWD licences were issued to plants located in the SERBD; these are shown in Table 9.

RBD	No. of Licenses Issued	No. of Certs of Authorisation Issued
SERBD	63	168

Table 8. Number of UWWD licences and certs of authorisation issues by end of 2013 in the SERBD.

County	Agglomeration	Licence No.
Kilkenny	Johnstown	D0401-01
Kilkenny	Freshford	D0526-01
Kilkenny	Goresbridge	D0529-01
Kilkenny	Fiddown	D0528-01
Kilkenny	Ballyhale/Knocktopher	D0530-01
Kilkenny	Bennettsbridge	D0400-01
Kilkenny	Kilkenny City	D0018-01
Kilkenny	Castlecomer	D0149-01
Laois	Ballinakill	D0384-01
Tipperary	Thurles	D0026-01
Tipperary	Mullinahone	D0456-01
Tipperary	Limerick Junction	D0457-01
Waterford	Stradbally	D0353-01
Waterford	Baile na nGall	D0358-01
Wexford	Rosslare Strand	D0173-01
Wexford	Kilmore Quay	D0232-01
Wexford	Taghmon	D0389-01
Wexford	Tagoat	D0397-01
Wexford	Ballycanew	D0402-01
Wexford	Camolin	D0405-01

Table 9. UWWD licences issued in 2013 in the SERBD.

Under the Water Services Investment programme (WSIP) a number of the country's waste water treatment plants (WWTPs) have been upgraded with improved treatment and associated reduction in nutrients in the final effluent. However, approximately one-fifth of the sites identified for further investigation in the SERBD list WWTPs as a contributory pressure to water quality. Several WWTPs in the south east persistently fail to meet the quality and/or sampling standards required with WWTPs listed as a suspected source of pollution in 48 of the sites identified for further investigation. These sites were in counties

Carlow, Kilkenny, Laois, Tipperary, Waterford and Wexford (Focus on Waste Water Treatment in 2012, EPA 2014). Irish Water is now the authority with responsibility for WWTPs and it intends to invest significant funds in water service capital projects, which would include increasing waste water treatment capacity and improving environmental compliance.

4.3 Domestic Wastewater Treatment Systems (DWWTS)

The focus on domestic waste water treatment systems (DWWTS) has increased in recent years. It is estimated that there are almost 500,000 DWWTSs in the country, and if not maintained properly these have the potential to contaminate water supplies and cause harm to human health and the environment. Under the Water Services (Amendment) Act 2013 and SI 223 of 2012 the responsibility for operation and maintenance of DWWTS lies with the householder. This legislation sets out requirements for an inspection regime to ensure satisfactory performance of DWWTS. In 2013 the EPA launched the National Inspection Plan for DWWTS. The plan adopted a risk-based inspection process coupled with citizen engagement strategies. Inspections started in 2013, starting with areas at greatest risk of damage to human health or the environment - see http://www.epa.ie/pubs/advice/water/wastewater/EPA_National_Inspection_Plan_2013.pdf. The implementation of the plan is carried out by local authorities and 41 inspections were carried out across the SERBD in counties Carlow, Kilkenny, Tipperary and Wexford. No inspections were carried out in counties Waterford and Laois. None of the counties in the SERBD carried out the minimum allocation of inspections as set out in the National Inspection Plan for 2103. Of the inspections which were carried out 23 of the inspections were compliant (56%) with 18 of the inspections being non-compliant (44%). Results of the inspections may lead to the requirement for upgrading of DWWTSs where they are causing pollution to surface or groundwaters.

4.4 Industry

Although industry is subject to licence both by the EPA and the local authorities there are still issues with discharges to waters causing pollution. The Clareen stream in Nenagh which is downstream of Arrabawn Co-op has the highest TON and one of the highest ammonia values in the SERBD. The licenced facility may be a contributing factor to the high TON and ammonia along with other agricultural activities in the area. Other locations such as the Drish and Rossestown rivers, which are adjacent to mining activities continue to have very high average ammonia concentrations.

5 Overall Integrated Quality

The Water Framework Directive (WFD) is the primary legislation for the protection of surface and ground waters in Ireland and Europe. It was introduced in 2000 and sets targets for the protection of water quality where it is already good, and for improvement where it is less than good. The current phase runs until 2015, and includes details of programmes of measures to improve water quality. This report aims to provide an assessment of some of the progress which is being made in meeting the objectives of the WFD.

In carrying out this assessment, physico-chemical monitoring was carried out on over 500 rivers sites on 135 rivers in the SERBD in 2013. Biological monitoring was also carried out on a large number of these sites over the period 2011 - 2013. Five lakes were assessed for general physico-chemical and ecological quality, 64 groundwater locations and 16 estuarine and coastal water bodies. The SERBD faces a significant challenge to meet the requirements of the WFD. It can be seen that nutrient enrichment (from both phosphorus and nitrate) is the main threat to water quality in the SERBD. The main sources of these nutrients are runoff from agricultural land, wastewater treatment plants and domestic wastewater treatment systems (DWWTS).

While there are improvements in the physico-chemical quality in rivers in the south east with levels of ortho-phosphate and nitrate deceasing over the period since the WFD started, the average levels of both nutrients in rivers still exceed the EQS values. Compliance with the ortho-phosphate EQS for good quality in the SERBD rivers is 71% which is comparable with the national figure of 73%, however only 33% of all rives in the SERBD meet the good quality EQS for nitrate as compared with 61% compliance in national rivers.

Biological monitoring of the rivers in the SERBD show that 302 sites achieved Good status (Q value of ≥4) in the period 2011 - 2013. Sixty-one sites achieved High status, a slight decrease over the period 2010 - 2012. There are no sites in the SERBD with a Q value at Q5 and the number of sites at Poor status or less (≤ Q3) was almost 16% indicating the significant improvements still required.

Total phosphorus is the main nutrient of concern in the SERBD lakes. None of the five lakes in the SERBD are compliant with the EQS for 'Good status. All five lakes are of Moderate status for general physico-chemical parameters. Of the five lakes only Belle Lake achieves Good status for biological quality elements (BQE), however its ecological status is Moderate as is Ballyscanlon, Ballyshunnock and Carrigavantry with Knockaderry Reservoir being of Poor BQE and ecological status. Diffuse pollution from agriculture and nutrients from DWWTS are the main cause of pollution in these shallow calcerous lakes and it is essential that the amounts of nutrients entering the lakes are reduced so that the overall lake quality can improve.

Nitrate is the main pressure on groundwater in the SERBD. The SERBD continues to have the highest amount of sites nationally with elevated nitrate concentrations. However, similar to trends displayed in the SERBD rivers the level of nitrate has been decreasing and over 90% of groundwater sites in the SERBD had average nitrate concentrations of < 25 mg/L NO_3 in 2013. Ortho-phosphate concentrations in groundwater have fallen slightly over the period of the WFD. In 2013 the number of sites with ortho-phosphate <0.015 mg/L P was 81%; an improvement from 69.2% in 2012. It is important that groundwater is protected and further reductions in the nitrate and ortho-phosphate concentrations can be achieved through continuing programmes of measures. This will in turn lead to improvements in the overall water quality in the ecosystem.

The main rivers in the south east, namely the Barrow, Blackwater, Nore, Slaney and Suir, contribute 25% of the national nitrogen and phosphorus loading to the transitional and coastal water bodies (TrACs). Since the 1990s however, there has been a downward trend in the nitrogen and phosphorus loadings. The latest WFD ecological assessment shows that 44% of the water bodies assessed were of Good status with 56% at Moderate status.

Over one hundred river sites in the SERBD have been identified as sites that require further investigation (i.e. Q value of <4). Diffuse agricultural pressures and urban wastewater discharges are the main reasons why these sites are not achieving Good status. The main challenges towards improving water quality in the SERBD relate to eliminating these and other point and diffuse sources of pollution. Tackling pollution at these sites will improve the water quality and this will have knock-on beneficial effects on the lakes and transitional and coastal waters that are fed by these rivers. Diffuse pollution from agriculture can be ameliorated by strategies such as reduction in the use of inorganic fertiliser and the implementation of landspreading restrictions as part of the Good Agricultural Practice Regulations. It has been seen in the past that investment in wastewater infrastructure shows rapid improvements at locations where untreated or poorly treated wastewater discharges have contributed to reduced quality in the water body. Also, targeted local investigations using a variety of methods such as the small stream risk score (SSRS) in investigating diffuse pollution can be an effective way of identifying and eliminating sources of pollution. Using integrated catchment management involving all stakeholders should also prove to be an effective method for delivering improved water quality.

Water quality in the SERBD is of reasonable quality compared with the rest of the country. The south east river basin management plan (RBMP) had set interim targets that implementation of the programme of measures in the plan should have achieved. The objective was that Good status would be achieved in 2015 in 59% of rives, 100% of lakes, 76% of estuaries, 44% of coastal waters and 98% of groundwaters. Latest figures indicate 55% of rivers are of Good or higher status. Groundwater quality is improving and 44% of transitional and coastal waters are of Good status. No lakes however meet the target of Good status as required under the WFD. The plan aims to protect, maintain and improve the

waters in the SERBD and to achieve sustainable water use. A revised plan is now being put in place to ensure compliance with the WFD and this plan will cover the period up to 2021. (Timetable and Work Programme for the Development of the Second Cycle River Basin Management Plans).

6 References

SI 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations, 2009.

SI 610 of 2010: European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010.

Water Services (Amendment) Act, 2012.

SI 223 of 2012: Water Services Acts 2007 and 2012 (Domestic Waste Water Treatment Systems) Regulations, 2012.

SI 94 of 1997: European Communities (Natural Habitats) Regulations, 1997.

Wildlife (Amendment) Act, 2000.

EU Water Framework Directive (2000/60/EC). Timetable and Work Programme for the Development of the Second Cycle River Basin Management Plans.

Nitrates Action Programme, Malta, 2011

Food Harvest 2020 – A vision for Irish agri-food and fisheries, Department of Agriculture, Fisheries and Food.

Water Services Investment Programme 2010 - 2012, Department of Environment, Health and Local Government.

Focus on Waste Water Treatment in 2012, EPA 2014.

Water Matters: Our Plan!, South Eastern River Basin Management Plan (2009 - 2015), 2010.

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.

ENVIRONMENTAL PROTECTION AGENCY

An Ghníomhaireacht um Chaomhnú Comhshaoil
PO Box 3000, Johnstown Castle Estate, Co. Wexford, Ireland

Telephone: +353 53 9160600 Fax: +353 53 9160699
Email: info@epa.ie Website: www.epa.ie
LoCall 1890 33 55 99

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil