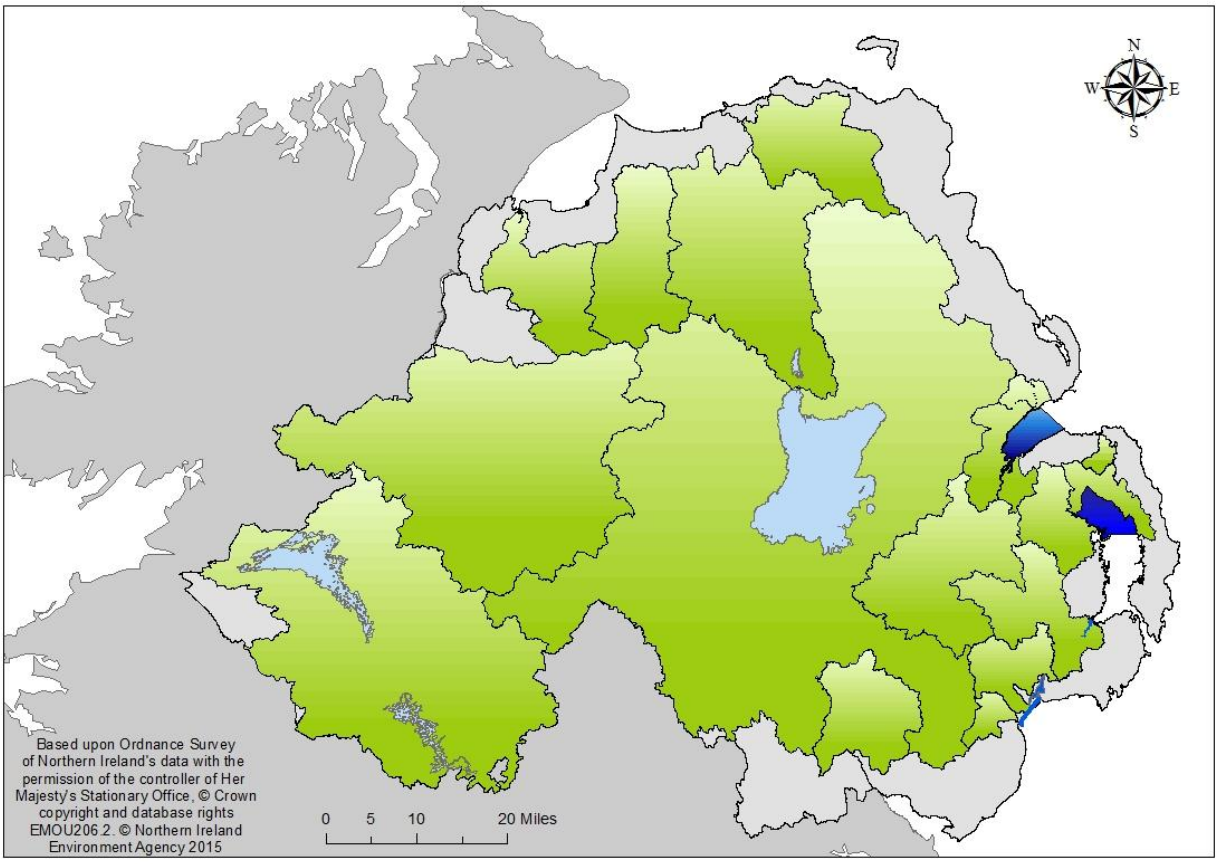
Review of Sensitive Areas in Northern Ireland under the Urban Waste Water Treatment Directive 2008-2013

May 2015



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EXECUTIVE SUMMARY

Eutrophication is considered to be a key issue for water quality in Northern Ireland, particularly in relation to freshwaters. The Department of the Environment is committed to a cross-sectoral approach, taking action across all sectors contributing to the problem. There are three European Directives which deal with nutrient discharges to waters; the Urban Waste Water Treatment Directive (UWWTD) (91/271/EEC), the Nitrates Directive (ND) (91/676/EEC) and the Water Framework Directive (WFD) (2000/60/EC).

This review is carried out under the UWWTD and deals primarily with the management actions required by Northern Ireland Water (NIW) to protect the waterways of Northern Ireland. Under the UWWTD waters may be identified as sensitive areas if found to be eutrophic or likely to become eutrophic if protective action is not taken. Discharges from qualifying waste water treatment works (WWTW) (i.e. serving a population equivalent (p.e.) of greater than 10,000) within sensitive areas are subject to more stringent treatment. Qualifying WWTW, discharging either directly or indirectly to a sensitive area (eutrophic), will require phosphorus and/or nitrogen removal to UWWTD standards within seven years of the identification of the sensitive area. In addition, 'appropriate treatment' may be required at collection systems discharging to waters that are sensitive areas. The review also assesses areas which may require sensitive area identification under Annex IIA(c) of the UWWTD, i.e. those areas where further treatment than that prescribed in Article 4 is necessary to fulfil other Council Directives.

The WFD since its adoption in 2000 has introduced additional controls over nutrients. This includes compliance with nutrient standards and ecological standards. Sensitive areas (eutrophic) under the UWWTD are Protected Areas under WFD and compliance with the UWWTD is a basic measure under the WFD River Basin Management Plans. WFD nutrient and biology standards are being applied to identify eutrophic water bodies. Sources of nutrients can then be controlled via measures under the UWWTD, action programmes under the ND and/or by other measures under the WFD.

This review for the 2008–2013 period provides a trophic status assessment of the marine and freshwaters of Northern Ireland using the WFD assessment methods, as agreed by UK Technical Advisory Group (UKTAG) in 2008. In Northern Ireland the approach for sensitive area identifications is on a catchment basis but the review detail is on a water body basis as defined under the WFD. The review is also based on a 'weight of evidence approach' in deciding whether the surface waters in a catchment should be recommended for identification as a sensitive area (eutrophic). The results

presented under the WFD assessment of all rivers, lakes and marine water bodies in Northern Ireland are broadly in agreement with previous assessments carried out under the ND and UWWTD to date.

Under EC Eutrophication guidance, (European Commission, 2009), areas where nutrient assessment does not support the biological assessment (i.e. where water bodies fail the nutrient standard but pass the biological standards), require a checking procedure. This has been somewhat superseded in some water categories (rivers and lakes) by the development of both chemical and biological standards for the WFD over the past few years. The new or revised standards, which will be used in the second WFD River Basin Plan period (RBP2), have been developed from the earlier standards, using larger data sets, to better correlate with one another and to provide a more robust overall ecological assessment. In this report, assessments will be made using the existing or older standards and the revised ones, thereby providing a detailed comparative eutrophic assessment.

The review recommends that:

- The **Castletown Catchment** is designated as a Sensitive Area (Eutrophic) as the Creggan River displays characteristics symptomatic of eutrophic conditions or 'may become eutrophic if protective action is not taken in the near future'. This catchment crosses the international border with the Republic of Ireland and discharges into the Castletown Estuary which was identified as a Sensitive Area under the UWWTD[1] on 14th June 2001.

- The **Newry River transitional water body** is designated as a Sensitive Area (Eutrophic) having shown a deterioration in both nutrient and plant status over the period of the report. The checking procedure will be applied to the adjoining Carlingford Lough which has demonstrated nutrient failures without an observed biological response during the assessment period.

- Ballyholme and Newcastle bathing waters and Inner Dundrum Bay and Strangford North shellfish water protected areas retain their identified status under Annex IIA(c). All shellfish and bathing waters have been assessed to determine whether sensitive area identification is appropriate under Annex IIA(c) of the UWWTD. There are no recommendations for new bathing or shellfish water designations in this review period.

[1] Urban Waste Water Treatment Regulations 2001, S.I. No 254 of 2001, http://www.irishstatutebook.ie/2001/en/si/0254.html

- Further biological and chemical monitoring is required to continue to assess trends in water status. During RBP2, targeted monitoring should be undertaken at specific water bodies identified in the following catchments: Belfast Lough (North), North Down and Ards Peninsula, South East Down Streams, Kilkeel and Mourne Streams, Lower Bann, Fane, Flurry and Lough Foyle. This will be balanced with the need for the retention of a comprehensive NI-wide dataset to ensure overall coverage for this and the other relevant Directives.

- Further assessment (e.g. nutrient budgets and economic analysis) may be required in some catchments, particularly the Castletown catchment as part of the development of future programme of measures (POM) under WFD RBMP2 to determine if additional measures are required to address nutrient inputs from WWTWs serving a p.e. less than 10,000.

1. INTRODUCTION

Eutrophication is considered to be a key issue for water quality in Northern Ireland, particularly in relation to freshwaters. The Department of the Environment is committed to a cross-sectoral approach, taking action across all sectors contributing to this problem.

There are three European Directives which deal with nutrient discharges to waterways; the Urban Waste Water Treatment Directive (UWWTD) (91/271/EEC); the Nitrates Directive (ND) (91/676/EEC); and the Water Framework Directive (WFD) (2000/60/EC). The ND aims to control nitrate pollution from agricultural activity whereas the UWWTD is designed to control discharges from waste water treatment works (WWTWs) and collection systems. The WFD is a framework directive requiring Member States to achieve at least good status for all bodies of surface water and groundwater by 2015.

This review is carried out under the UWWTD and deals primarily with the management actions required by Northern Ireland Water (NIW) to protect the waterways of Northern Ireland. A limited number of industries which discharge high concentrations of nutrients are also covered by the requirements of the UWWTD. Waters may be identified as sensitive areas under the UWWTD if found to be eutrophic or likely to become eutrophic if protective action is not taken. This review also assesses water bodies which may require sensitive area identification under Annex IIAb and Annex IIAc of the UWWTD.

The purpose of this review is primarily to provide an assessment of the trophic status of freshwaters (for the period 2008-2013) and marine waters (for the period 2010-2013) of Northern Ireland under the UWWTD. A revision of the river monitoring network was carried out in 2009 in light of budget cuts to the Department. The surface water chemical monitoring programme from 2010 to 2014 involved monthly sampling of 258 monitoring stations (known as the core list) with the remaining 270 of the surface water stations monitored for 2 years of the first River Basin Plan period (2009-2014). The rolling programme was based on a targeted catchment approach. Data was collected in water bodies over a 6 year cycle, i.e. 2008-2013. Macrophyte data collected in 2008 was carried through the 2013 classification process for some stations that were due to be resurveyed in 2014.

The Northern Ireland Environment Agency (NIEA) is responsible for monitoring the water quality of freshwater rivers and lakes of Northern Ireland. The DOE Marine Division is responsible for the monitoring of transitional and coastal marine waters.

1.1 Urban Waste Water Treatment Directive

The UWWTD seeks to protect the freshwater and marine environment from the adverse effects of domestic sewage, industrial waste water and surface water run-off. It sets requirements for the collection, treatment and discharge of urban waste water and also establishes timetables for the achievement of these standards according to the sensitivity of the receiving waters.

Annex IIA of the Directive states that:

"*A water body must be identified as a sensitive area if it falls into one of the following groups:*

(a) natural freshwater lakes, other freshwater bodies, estuaries and coastal waters which are found to be eutrophic or which in the near future may become eutrophic if protective action is not taken.

The following elements might be taken into account when considering which nutrient should be reduced by further treatment:

i) lakes and streams reaching lakes/reservoirs/closed bays which are found to have a poor water exchange, whereby accumulation may take place. In these areas, the removal of phosphorus should be included unless it can be demonstrated that the removal will have no effect on the level of eutrophication. Where discharges from large agglomerations are made, the removal of nitrogen may also be considered;

ii) estuaries, bays and other coastal waters which are found to have a poor water exchange, or which receive large quantities of nutrients. Discharges from small agglomerations are usually of minor importance in those areas, but for large agglomerations, the removal of phosphorus and/or nitrogen should be included unless it can be demonstrated that the removal will have no effect on the level of eutrophication;

(b) surface freshwaters intended for the abstraction of drinking water which could contain more that the concentration of nitrate laid down under the relevant provisions of the Council Directive 75/440/EEC of 16 June 1975 concerning the quality required of surface water intended for the abstraction of drinking water in the Member States if action is not taken;

(c) areas where further treatment than that prescribed in Article 4 of this Directive is necessary to fulfill Council Directives."

The identification of sensitive areas must be reviewed at least every four years (the last review was in 2009). Completion of the next review has been deferred to 2015 to tie in with the production of the next cycle of River Basin Management Plans and to reduce duplication of some of the monitoring and assessment completed for both UWWTD and WFD.

Discharges from qualifying WWTWs (i.e. serving a population equivalent (p.e.) of greater than 10,000), either directly or indirectly to a sensitive area, are subject to more stringent treatment as required by the Directive within seven years of the identification of the sensitive area. In the case of identifications under Annex IIA(c), further treatment is required to meet the requirements of the parent Directive e.g. the revised Bathing Water Directive (2006/7/EC) or for shellfish water protected areas which now fall under the WFD. The Shellfish Water Directive (2006/113/EC) was subsumed by WFD in December 2013.

Following identification, further assessments such as nutrient budgets may be required to determine the appropriate treatment e.g. whether nitrogen and/or phosphorus removal is required. All p.e.'s quoted in the review are based on 2015 figures.

All of the WWTWs in **Table 1** met the required timescale for the implementation of additional treatment. Upgrades at WWTW are prioritised by NIEA and NIW based on their operational capacity and impact on the receiving water. Any future requirements for additional treatment will be added to WWTW priority list. The upgrades are funded under the Price Control (PC) process. The current PC process, known as PC15, runs from 1 April 2015 until 31 March 2021.

Table 1 shows the WWTW which have received additional treatment as a result of the previous sensitive area designations.

Table 1: Additional treatment received at WWTW in Northern Ireland

Catchment	Qualifying works	Requirement	Further Treatment to be Implemented by
Lough Erne	Enniskillen	P	31/12/1998
Lough Neagh	Antrim Armagh	N and P	31/12/1998 **crossed the 10,000 p.e. threshold in 2010. P removal in place in October 2010.*
	Ballyclare Ballymena Ballynacor Banbridge Cookstown Magherafelt Moygashel Tandragee Coalisland*	P	
Inner Belfast Lough	Belfast Carrickfergus Kinnegar Newtownabbey	N	20/12/2008
Tidal River Lagan	Newtownbreda Dunmurry Newholland	N and P	20/12/2008
Quoile Pondage	Downpatrick	N and P	20/12/2008
Ballyholme / Groomsport bathing water	North Down and Ards	Additional treatment (Bacterial reduction)	17/06/2011
Foyle	Omagh	P	28/07/2013
Roe	Limavady	P	28/07/2013
Lower Bann	Glenstall Ballybrakes (closed and replaced by pumping station 2007)	P	28/07/2013
North end of Strangford Lough and Paddy's Point and Reagh Bay	Ballyrickard	N and additional treatment (bacterial reduction)	28/07/2013
Newcastle bathing water	Newcastle	Additional treatment (bacterial reduction)	28/07/2013

1.2 Nitrates Directive

The ND aims to prevent and reduce water pollution by nitrates from agricultural sources and to prevent such pollution occurring in the future. Article 3(1) of the Directive requires Member States to identify waters affected by pollution and waters which could be affected by pollution if action is not taken. Annex I A(3) of the Directive states that:

"*Waters referred to in Article 3(1) shall be identified making use, inter alia, of the following criteria:*

1. *whether surface freshwaters, in particular those used or intended for the abstraction of drinking water, contain or could contain, if action pursuant to Article 5 is not taken, more than the concentration of nitrates laid down in accordance with Directive 75/440/EEC;*

2. *whether groundwaters contain more than 50 mg/l nitrates or could contain more than 50 mg/l nitrates if action pursuant to Article 5 is not taken;*

3. *whether natural freshwater lakes, other freshwater bodies, estuaries, coastal waters and marine waters are found to be eutrophic or in the near future may become eutrophic if action pursuant to Article 5 is not taken.*"

Member States may then choose to apply action programmes within specific Nitrate Vulnerable Zones which drain to identified polluted waters or they may apply action programmes across their national territory. Action programmes require farmers to observe rules to reduce nitrate pollution, with measures on storing manure and periods when spreading manure and manufactured fertiliser to land is not allowed. The ND requires an assessment of the effectiveness of action programmes to be carried out every four years and, where necessary, the action programme measures revised.

The agricultural sector is a significant contributor to elevated nutrient concentrations in the waterways of Northern Ireland. An action programme under the ND applying to all farms across Northern Ireland was first introduced on 1 January 2007. The action programme for the period to 2007 to 2010 was reviewed and the Nitrates Action Programme (NAP) Regulations (Northern Ireland) 2010 came into effect for the period 1 January 2011 to 31 December 2014. In accordance with the requirements of the Directive, a review process for the 2010 NAP Regulations was initiated in summer 2013. Consultation on proposals for a new NAP closed on 29 August 2014 and the proposals were agreed by the Commission in December 2014. The revised action programme is effective from 1st January 2015 to 31st December 2018. In addition, other controls such as the Phosphorus (Use In Agriculture)

Regulations (Northern Ireland) 2006 (with updated 2014 regulations coming into operation on 1st January 2015) were introduced across Northern Ireland and these measures collectively are designed to reduce nutrient inputs from agriculture that contribute to eutrophication. While acknowledging its environmental responsibilities, the agriculture industry recognises that changes in farming practices have been required. The controls on the storage and application of nitrate and phosphorus fertilisers, at farm level, are an important contribution to tackling Northern Ireland's eutrophication problem.

1.3 Water Framework Directive

Although the term eutrophication is not explicitly defined in the WFD there is a requirement to classify each water body in terms of its ecological and chemical status. Ecological status is an expression of the quality of the structure and functioning of surface water ecosystems as indicated by the condition of a number of quality elements. There are five classes of ecological status i.e., high, good, moderate, poor or bad. The status classes are defined in terms of how much the ecological quality deviates from natural conditions. For example, high status means that the water body is unaffected or virtually unaffected by human activity; whereas at good status the water body shows some signs of disturbance, such as slight alterations in the balance of aquatic species (biological quality elements - BQE) that would be expected in a water body unaffected by human activity.

The ecological status of a water body is determined by combining assessment results for biological and physicochemical quality elements; with the quality element most severely affected by human activity determining the overall ecological status. This is called the 'one out – all out principle'.
For a water body to achieve good ecological status, the BQE must show only slight signs of disturbance caused by human activity. Among other things, this requires the physicochemical (nutrients, dissolved oxygen etc.) and hydromorphological quality of the water body to achieve the standards and conditions necessary to support the biology at good status.

Chemical status is either good or failing to achieve good. 'Good' means that none of the environmental quality standards established for priority substances and other dangerous substances identified at EU-level is being exceeded. Ecological and chemical status are then combined to provide an assessment of overall surface water status determined by the lowest status e.g. if chemical status is good but ecological status is moderate, then overall the surface water classification is moderate. The WFD therefore has an implicit requirement to assess eutrophication when classifying the status of surface water bodies where nutrient enrichment affects biological and physiochemical quality elements.

The WFD requires Member States to prevent any further deterioration in the status of water bodies and, where technically feasible and where not disproportionately costly, to restore water bodies to good status. The principal mechanism for managing and delivering improvements to the water environment is the River Basin Management planning process and the first cycle River Basin Management Plans (RBMP) for Northern Ireland were published on 21 December 2009. Environmental objectives in the 2009 RBMP were set on a water body by water body basis for all surface water bodies and groundwater bodies on a six-year planning cycle for the deadline dates 2015, 2021 and 2027. The process by which these objectives were established was set out in the documentation provided on the website with the 2009 plan at: http://www.doeni.gov.uk/niea/achieve_2015_gen.pdf

For the draft second cycle RBMP, Member States were required to assess progress in achieving the objectives set in the 2009 plan and to review the objectives set for 2021 and 2027, in relation to achieving good status or better. It is therefore not a matter of setting new objectives for 2021 and 2027 but rather reviewing the existing objectives to determine if they are still relevant and/or appropriate for the second cycle plan which updates the original 2009 RBMP. The draft second cycle RBMPs were published in December 2014 and the final plans will be published by December 2015.

RBMP must contain a programme of measures (POM) aimed at meeting the objectives of the WFD. The UWWTD and ND are basic measures to be included in POM and both sensitive areas and polluted waters respectively become protected areas under the WFD. However, due to the significant water management issues that we still need to address, to date the impact of our Programme of Measures on the condition of water bodies is small. This is because it takes time to turn plans into changes on the ground. It also takes time for changes to be reflected in monitoring results. This is partly due to lag times in the recovery of plant and animal communities and partly because classification results are based on combining and averaging monitoring results collected over a number of years. In the water environment across Northern Ireland, the results of our most up to date indicative[2] classification show that 23% of river water bodies achieve high or good status, 24% of lakes meet good status and 48% of marine water bodies achieve good status when the first cycle water body set and environmental standards are used. However, when the second cycle water body set and environmental standards are used, 34% of river water bodies achieve high or good status, lake status remains unchanged at 24% meeting good status and 46% of marine water bodies achieve good status.

[2] The indicative classification includes monitoring data up to the end of 2013. Final classification, using data up to the end of 2014 and covering the complete RBMP1 period will be used in the final plans in 2015.

The WFD also requires the adoption of supplementary measures, where required, to meet the objectives. It may therefore be necessary in certain cases to take further action in relation to the treatment of urban waste water beyond the minimum requirements laid down in the UWWTD e.g. nutrient removal at WWTW serving a p.e. less than 10,000. The development of such further action will be taken forward as part of the development of the POM in future RBMP. In the case of eutrophic waters, this will normally mean that nutrient budgets will be required for the relevant catchments along with economic analysis to determine the most appropriate measures to be taken forward to meet WFD objectives.

In practice, the measures required by the UWWTD, ND and WFD are now integrated to ensure appropriate controls over all significant sources of nutrients. WFD nutrient and ecology standards are used to identify eutrophic water bodies which can then be identified under the UWWTD or ND. Sources of nutrients can then be controlled via the standards under the UWWTD, action programmes under the ND or by supplementary controls under the WFD.

In December 2013 the Shellfish Waters Directive (2006/113/EC) was subsumed into the WFD. In order to afford at least the same level of protection under WFD, shellfish water protected areas must meet their WFD objective and meet at least Class B (the criteria for which are laid down in the EU Hygiene Regulations). The classification under the EU Hygiene Regulations is a set of bacteriological standards for shellfish flesh which determine the level of post harvest treatment required before shellfish product may be placed on the market for human consumption.

1.3.1 Changes to classifying the state of our water bodies

The classification tools and standards that will be used for WFD classification in 2015 have changed during RBMP1. It was always considered that, given the complexity of the classification tools and with the WFD emphasis on looking at various elements in connection with one another (e.g. for rivers, phosphorus, aquatic plants (macrophytes) and phytobenthos (diatoms) for nutrient enrichment) that there would be the need for further development. Revisions have been made to these tools and standards so that they now align much better. These revisions have been facilitated through:

- *inter-calibration* - the UK has worked with other member states and the European Commission to ensure the boundaries of good status are consistent across Europe and

- *improved scientific understanding* - improved understanding through research and monitoring, and the benefit of experience in their practical application, have shown that existing standards are not as well matched to ecological quality as they could be.

UKTAG undertook a technical review of the tools and standards, and consultation exercises were undertaken in 2012 and 2013. As a result a number of recommendations were made, including a revision of the phosphorus and diatom standards in rivers and diatom and phytoplankton standards in lakes. In July 2014 the Department put out to consultation details of the proposed changes to the classification and standards which will be adopted for the second cycle plans (UKTAG, 2015). An overview of the main changes is explained below in **Sections 2.1, 2.2, 2.4 and 2.5**. The final regulations were laid in March 2015 and further information can be found at:
http://www.wfduk.org/resources/new-and-revised-phosphorus-and-biological-standards

The revised ecological assessment methods and associated standards will provide the most comprehensive understanding yet of the ecological impact of nutrient pollution. The standards for good status for the majority of the methods have been benchmarked against the corresponding standards used to define good ecological status across Europe.

This review is based on 2013 WFD classification data and during this transition period, two sets of WFD trophic classifications will be produced for comparison. The changes to water body sets, classification methods and environmental standards during the first cycle will make a difference to the number of water bodies classified at high, good, moderate, poor and bad. We need to assess what impact this has on the overall classification of our surface water bodies. One method of analysis will be based upon RBMP1 (2009) water body sets and methods. Our second classification set is based upon the proposed new water body sets and the new methods developed as outlined in **Sections 1.3.2, 2.1, 2.2, 2.4 and 2.5** below.

Comprehensive eutrophic parameter monitoring is essential for Nitrates and UWWT Directive reporting as well as the WFD. However, due to current resource and budgetary constraints, changes to the monitoring programme will have to be implemented for the 2nd cycle of the RBMPs. The minimum mandatory monitoring frequency for WFD classification of macrophytes is once every 6 years. The aim to the end of 2014 has been to monitor each surveillance monitoring station every three years and operational monitoring stations once in the 6 year period 2009-2014. For diatoms, the minimum mandatory monitoring frequency for WFD classification is also once every 6 years. The aim to the end of 2014 has been to sample each site for at least 3 replicates over a 2 year period, which has been considered the minimum required for WFD classification. The UKTAG Freshwater Task team has undertaken work which has identified where either macrophytes or diatoms are singularly best able to indicate eutrophic problems in rivers. Which element(s) is/are used during RBP2 in rivers will be based on threshold alkalinity values with diatoms prevalent at lower and macrophytes prevalent at higher values. Due to the implementation of the new water body set and further budgetary

restrictions, there will also be a number of changes to inorganic chemistry monitoring. Although WFD surveillance stations will continue being done yearly, the remainder of the stations will be done on a quarterly basis, i.e. four samples per year.

1.3.2 Proposed new water body boundaries and designation changes

Water bodies are the basic management units for reporting and assessing compliance with the Directive's environmental objectives. For the first RBMP in 2009, size thresholds taken from the Directive were used to delineate 623 surface water bodies (rivers, lakes, transitional and coastal). During RBMP1 we have been able to improve on our water body sets through better understanding of catchment characteristics and increased knowledge through river walks, routine monitoring and targeted investigation work. Note that this change in boundaries has meant that in some cases, some previously separate water bodies have been merged to form larger single units. Hence direct comparison of land area and water quality classifications, when expressed as percentage of total water body number, are not directly comparable. This has resulted in changes to the number of water bodies within Northern Ireland. This is a refinement of the reporting and management units, but the total area covered by the Plan is not affected. For RBMP2 it is proposed that there will be 497 surface water bodies in Northern Ireland, including rivers, lakes, transitional and coastal waters. **Table 2** illustrates the proposed change to the number of water bodies in RBMP1 and RBMP2.

A number of changes to marine transitional and coastal water bodies have been proposed to take forward into the second cycle of the WFD:

- Currently the whole Foyle and Faughan water body is defined as heavily modified; the proposal is to divide this into two water bodies to better reflect the natural state of the upper River Foyle. The downstream water body will contain most of the reinforced shoreline within the existing water body and will be named "Foyle Harbour and Faughan" (HMWB).
- It is proposed that the Connswater Transitional water body be included within Belfast Harbour Coastal water body (HMWB).
- The Strangford Narrows is primarily a channel for the exchange of water between Strangford Lough and the adjacent Irish Sea. It is proposed to merge Strangford Narrows with Strangford Lough South to form Strangford Lough South Coastal water body.
- It is proposed that the River Roe Transitional water body is merged with Lough Foyle Coastal waterbody. This primarily reflects the small scale of the water body which combined with the hydrographic regime within the Roe Transitional water body restricts the establishment of stable estuarine plant and animal communities.

At present there are no issues emerging from an initial assessment of the data following the re-allocation of data associated with monitoring points from the previously described water bodies. An assessment of the newly designated areas will be carried out to address future UWWTD and WFD requirements utilising the new representative sites.

Table 2: Number of surface water bodies in first and second cycle RBMP within each River Basin District in Northern Ireland

Water Body Type	Neagh Bann		North East		North West		Northern Ireland Total	
	1st Cycle	*2nd Cycle*	*1st Cycle*	*2nd Cycle*	*1st Cycle*	*2nd Cycle*	*1st Cycle*	*2nd Cycle*
Rivers	255	199	111	89	209	162	575	450
Lakes	10	10	3	3	8	8	21	21
Transitional	2	2	3	2	2	3	7	6
Coastal	3	3	16	15	1	1	20	19

1.3.3 Lake Heavily Modified Water bodies

In accordance with Article 4 of the WFD, Member States are permitted to identify surface water bodies where the physical structure has been changed for a specific use and designate them as heavily modified water bodies (HMWBs). Lake water bodies have been designated as HMWBs if they are used for Drinking Water storage and/or have Water Regulation. UKTAG guidance on the Classification of Ecological Potential for Heavily Modified and Artificial Water bodies recommends that macrophytes are not included in overall status assessments because they are likely to respond to the hydromorphological pressure their use imposes. For the first River Basin Cycle, this guidance was followed at all HMWBs. However, for the second River Basin Cycle it will be assumed that if a lake HMWB passes its water level standards this indicates that the habitat should be favourable for macrophyte colonisation and that macrophytes should be included in overall status and in trophic status assessments. If a lake fails its hydrology standards then macrophytes will not be included in overall status or in trophic status assessments.

1.4 Marine Strategy Framework Directive (MSFD)

There are strong links between the Marine Strategy Framework Directive (MSFD) and the WFD. The WFD relates to improving and protecting the chemical and biological status of surface waters throughout river basin catchments from rivers, lakes and groundwaters through to estuaries

(transitional) and coastal waters to one nautical mile out to sea. MSFD explicitly recognises the overlaps with WFD and makes it clear that in coastal waters, MSFD is only intended to apply to those aspects of good environmental status which are not already covered by WFD.

MSFD and WFD also have comparable objectives, with MSFD focused on the achievement of good environmental status in marine waters, and WFD aiming to achieve good ecological and good chemical status. Whilst good environmental status is not exactly equivalent to good ecological/chemical status, there are some significant areas of overlap, particularly in relation to chemical quality and the effects of nutrient enrichment (eutrophication). In coastal waters it is anticipated that measures taken under WFD and its related Directives (e.g. the Nitrates Directive and Urban Waste Water Treatment Directive) should be sufficient to achieve good environmental status in relation to pressures such eutrophication (Descriptor 5).

The UK targets and indicators for good environmental status have been aligned, as far as possible, with existing WFD assessment tools and criteria. For issues which are already covered by WFD in coastal waters (e.g. contaminants, eutrophication) MSFD targets and indicators are assessed as being compatible with the existing requirements of the WFD.
For Descriptor 5, MSFD targets apply both to coastal waters and wider marine waters. The target is expressed in a way which is consistent with existing WFD targets/tools, and will use some of the WFD tools for part of the assessment of good environmental status, although these would be applied at a broader scale than an individual WFD water body.

1.5 Defining Eutrophication

The UWWTD defines eutrophication as:
"The enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned;"

The ND defines eutrophication as:

"The enrichment of water by nitrogen compounds, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned."

Action is required under both the UWWTD and the ND either when waters are already eutrophic or in the near future may become eutrophic, if protective action is not taken.

Eutrophication assessments are also required under the OSPAR Convention for the Protection of the Marine Environment of the North East Atlantic and in particular to demonstrate progress required under the OSPAR Strategy to Combat Eutrophication.

OSPAR defines eutrophication as:

"The enrichment of water by nutrients causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned, and therefore refers to the undesirable effects resulting from anthropogenic enrichment by nutrients as described in the Common Procedure."

The WFD does not specifically mention eutrophication. Yet, the "good ecological status", one of the two elements of "good water status" to be achieved, is primarily concerned with the ecological balance of organisms. Clearly, WFD status links closely with trophic status. At moderate ecological status, the changes in biomass/abundance of plants/algae "may be such as to produce significant undesirable disturbances to other BQE and to water quality". Undesirable disturbances need not necessarily be present but are considered increasingly likely moving down through the class. This can be equated to "in the near future may become eutrophic" or "eutrophic" depending on whether undesirable disturbances are present.

Under all of these definitions, in order to be classified as eutrophic, water bodies must show:

- enrichment by nutrients;
- accelerated growth of algae and higher forms of plant life; and
- undesirable disturbance to the balance of organisms present and to the quality of water concerned.

1.6 Annex IIA (b) and (c) Identifications

Annex IIA of the UWWTD also requires the identification of sensitive areas where:

(b) levels of nitrate could exceed 50 mg NO_3/l where surface freshwater is intended for the abstraction of drinking water if action is not taken; or

(c) further treatment than that prescribed in Article 4 of this Directive is necessary to fulfil Council Directives.

A full assessment of the nitrate levels in surface freshwaters was completed as part of the "Review of 2011-2014 Action Programme for the Nitrates Directive Northern Ireland". This report showed that surface freshwaters in Northern Ireland continue to have nitrate levels well below the 50 mg NO_3/l limit. In addition, long-term seasonal trend analysis showed that the monthly trends in average nitrate concentrations in rivers in Northern Ireland were predominantly decreasing or stable over the 20-year period, 1992-2012. For this reason this review will not consider any identification against this criterion. Further information can be found at: www.doeni.gov.uk/index/protect_the_environment/water/nitrates

Additional sensitive areas may be identified for example to protect bathing waters under the Bathing Water Directive (2006/7/EC) or shellfish waters under the WFD.

1.7 Criteria used for Identification in the 2001, 2005 and 2009 Reviews

Historically, under the ND and UWWTD trophic status was assessed by determining the concentrations of nutrients in a water body, either phosphorus in freshwaters or nitrogen in coastal or transitional marine waters along with evidence of response and secondary impacts where this was available. Evidence of response and secondary impacts comprised:

- effects on microflora – Chlorophyll-α concentrations and trends, changes in benthic diatom communities and prevalence of toxic algal blooms;
- effects on macroflora – changes in macrophyte communities;
- dissolved oxygen saturation levels;
- effects on fauna – changes in invertebrate communities and fish fauna; and
- water retention time.

For the 2001 and 2005 Sensitive Area Review, NIEA used pre-WFD guidance issued by the UK for identifying sensitive areas (eutrophic) under UWWTD in March 1993, Comprehensive Studies Task Team guidance issued by the UK authorities in 1997 (MPMMG, 1997), and supplementary guidance issued in May 2002 and in 2004 (DEFRA, UK, 2002 and 2004) align closely with the OSPAR Common

Assessment Criteria for Eutrophication. All designations were made using a catchment-based approach.

For the 2009 Sensitive Area Review, eutrophic waters were identified using WFD nutrient standards and BQE/classification tools known to be sensitive to nutrient enrichment in the 2006-2009 WFD classification.

1.8 Chronology of Sensitive Area Identification

Prior to the 2005 review, the following five catchments were identified as sensitive areas (eutrophic) in Northern Ireland:

- Lough Neagh (1994)
- Lough Erne (Lower and Upper) (1994)
- Inner Belfast Lough (2001)
- Tidal River Lagan Estuary (2001)
- Quoile River Pondage (2001)

The key criteria used in 2001 to assess the trophic status of estuarine and coastal waters in Northern Ireland were based on the guidance produced for implementation of the UWWTD (DOENI, 1999).

In 2006, following the 2005 Sensitive Area Review, the number of areas identified increased to 16 bringing the total land area of Northern Ireland draining the catchments of waters identified as sensitive areas to approximately 85%. These later identifications included, along with their catchment areas, eight freshwaters and three coastal/transitional waters as follows: North Strangford Lough (bounded by the co-ordinates 54^{o} 30' 26'N 5^{o} 02"W, 54^{o} 30' 40"N 5^{o} 33' 05"W), Newcastle bathing water, Ardmillan shellfish water[3], the River Lagan, Enler River, River Bush, Newry River, Lower Bann River, River Roe, River Faughan and Foyle River.

The primary reasons for the increase in the number of identified sensitive areas following the 2005 Sensitive Area review were:

[3] This shellfish water was modified in 2009 and is now known as Paddy's Point and Reagh Bay.

i A shift in emphasis in UK policy which placed increased importance on identifying waters at risk of becoming eutrophic; and

ii The development of more objective UK criteria for the identification of sensitive areas (eutrophic) including biological criteria.

Following the 2009 review, identification at Ballyholme bathing water was recommended. The identification was mainly procedural as Northern Ireland Water (NIW) was already committed to putting measures in place to achieve compliance with the Bathing Water Directive.

Although Inner Dundrum Bay was not identified as sensitive under the 2009 review, it did fail the WFD assessment on 2 criteria; winter nutrients (Dissolved Inorganic Nitrogen - DIN and the Macroalgal Blooming Tool - MBT). The report recommended further monitoring and assessment to be carried out. In 2012 an Interim Sensitive Area Review of Inner Dundrum Bay was conducted and identified both the Bay and its catchment area as a SA(E). A designation was also made under Annex IIAc (shellfish water) with effect from 1st August 2014 (**Figure 1**).

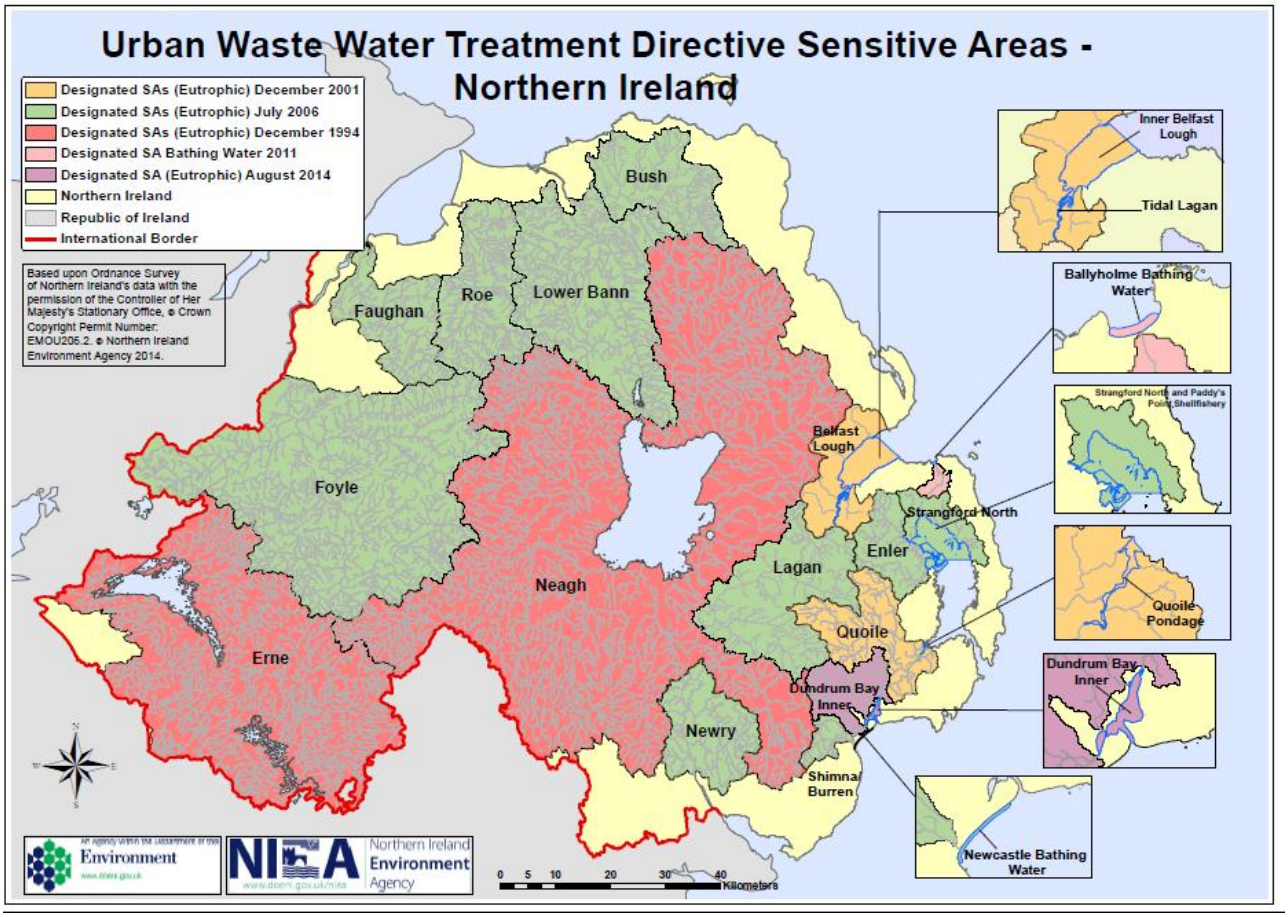

Figure 1: Sensitive Areas Identified under UWWTD in 1994, 2001, 2006, 2011 and 2014

Discharges from qualifying WWTWs discharging to a sensitive area (eutrophic), identified in 2006, were subject to more stringent treatment by 2013. This was on a similar timescale to the operational date for the POM under the WFD first cycle RBMP. Any additional measures required under the UWWTD as a result of the 2009 review have to be implemented within seven years (by 2017), which is within the second RBMP cycle.

2. IDENTIFICATION METHODOLOGY AND CRITERIA FOR 2015 REVIEW

NIEA monitors a number of quality elements and parameters when considering eutrophication pressures for WFD on all water body types which are outlined in **Table 3** below. This review is based on 2013 WFD classification data. Eutrophic waters are identified using WFD nutrient standards and BQE/classification tools which are known to be sensitive to nutrient enrichment. In this review, whilst the approach for identification remains on a catchment basis, the assessments are based on a water body level as defined under WFD. The revised standards will be primarily used in the identification of potential new candidate areas whilst the current standards will contribute to the weight of evidence.

Table 3: WFD Quality Elements and Parameters Relevant to Eutrophication

Quality Element	Rivers	Freshwater Lakes	Transitional Waters	Coastal Waters
General Conditions	Soluble Reactive Phosphorus	Total Phosphorus	Dissolved Inorganic Nitrogen	Dissolved Inorganic Nitrogen
Phytoplankton	-	Chlorophyll-α % Cyanobacteria	Chlorophyll-α Phytoplankton	Chlorophyll-α Phytoplankton
Macrophytes & Phytobenthos	Diatoms Macrophytes	Diatoms Macrophytes	-	-
Macroalgae & Angiosperms	-	-	Macroalgae: (Blooming tool) (FSL and RSL) Seagrass	Macroalgae: (Blooming tool) (FSL and RSL) Seagrass

NIEA and Marine Division uses information collected on the above indicators and assesses them against the three elements of eutrophication as set out in guidance (European Commission, 2009). Assessment of the indicators is used to determine whether a water body is eutrophic or is at risk of becoming eutrophic in the near future if protective action is not taken.

According to the European guidance, high and good status under WFD correspond with non-eutrophic status under the UWWTD and ND; poor and bad status under WFD correspond with 'eutrophic' under the other two Directives. Moderate status can be thought of as transitional zone between good status, where the probability of 'undesirable disturbances' occurring is zero, and poor/bad status where they

are increasingly common and severe. Moderate status may be thought of as broadly equivalent to 'may become eutrophic'.

Surface water bodies are recommended by NIEA for identification as sensitive areas (eutrophic) where on the basis of quality elements relevant to eutrophication in the 2013 WFD classification:

i There is a weight of evidence that the water body is at less than good status; or

ii There is evidence that a water body is at risk of deterioration from good status within the current RBMP cycle.

iii This weight of evidence includes any additional evidence for indirect effects on water quality which may also be considered and evaluated and incorporated into assessments.

Under EC Eutrophication guidance, (European Commission, 2009), areas where nutrient assessment does not support the biological assessment (i.e. where water bodies fail the nutrient standard (moderate or worse) but pass the biological standards), require a checking procedure. In freshwaters, the certainty of eutrophication from evidence based assessments will also assist in the decision making process, i.e. water bodies with a high or medium certainty of eutrophication exhibiting wider evidence of eutrophic impact will be considered as a candidate area. For waters already identified as Sensitive Areas, the focus is now assessing through WFD programmes whether these waters are still affected by eutrophication. WFD investigations should consider whether it is necessary to proceed beyond current measures (both WFD programme of measures and any additional measures required under the UWWTD), taking into account technical feasibility, costs and benefits.

Areas should be identified where a water body is eutrophic or may become eutrophic if protective action is not taken. A nutrient failure alone will invoke the checking procedure in marine water bodies to assess all available evidence. Checking of marine water bodies is to some degree dependant on ongoing UK advisory group work intended to address concerns about some of the existing standards, and the mismatch between chemical standards and biological tools, particularly nutrient in estuaries. This is independent of the presence or absence of qualifying discharges. Following this designation, further investigations may be required to confirm where appropriate treatment is required at any WWTWs or systems in the catchment and /or other measures are required in line with meeting WFD requirements.

2.1 Causative Parameters in Running Freshwaters

2.1.1 Soluble Reactive Phosphorus

The importance of phosphorus is recognised by the inclusion of soluble reactive phosphorus (SRP) in WFD classification. Increasing nutrient concentrations are capable of changing the biomass and composition of biological communities with the most obvious primary impact being enhanced plant and algal production. Secondary impacts can include reduced dissolved oxygen levels caused by the overnight respiration of higher aquatic plants or macrophytes which can lead to problems for fish. Elevated nutrient levels can also cause toxic blooms of blue-green algae leading to potential problems for livestock and other animals as well as overgrowth of other species.

The existing standards for phosphorus recommended by UKTAG for the first RBMP were derived by assembling a set of sites whose ecology was measured as being at good status. The approach looked at the values for the annual mean SRP concentration across all the sites of the same river type. The types were defined by particular ranges of altitudes and alkalinities, as shown in **Table 4**.

Table 4: Characteristics of the Four Types of UK Rivers under existing standards

Type	Total alkalinity (mg l^{-1} $CaCO_3$)	Altitude (m)
1n	≤ 50	≤ 80
2n	≤ 50	> 80
3n	> 50	≤ 80
4n	> 50	> 80

Waters which are not considered to be eutrophic are classed as high or good according to the SRP standards in **Table 5**, and waters considered to be eutrophic are classed as poor or bad status. Waters which fall into moderate status equate to 'indicative of unacceptable or worsening eutrophic conditions'. Classification provides a way of comparing waters and a way of looking at changes over time, therefore, where the trend of phosphorus deteriorates from good status to moderate status the water body would be considered to be 'at risk of eutrophication'.

Table 5: WFD Standards for Phosphorus in UK Rivers under existing standards

Soluble Reactive Phosphorus (µg/l) (annual mean)				
Type	**High**	**Good**	**Moderate**	**Poor/Bad**
1n	>= 30	>= 50	>= 150	>= 500
2n	>= 20	>= 40	>= 150	>= 500
3n + 4n	>= 50	>= 120	>= 250	>= 1000

A scientific review of biological and chemical data led to the development of a revised approach to identifying phosphorus standards. The revised standards benefit from improvements in understanding of the relationship between phosphorus concentrations and the response of river plant communities. They have been derived using a new approach to setting phosphorus standards that produces site-specific estimates of natural phosphorus concentrations, taking account of a site's alkalinity and altitude (UKTAG, 2013).

The revised standards have the effect of reducing the mismatch between classifications based on biology and phosphorus. For further information on the application of the WFD standards for phosphorus in rivers please see:
http://www.wfduk.org/sites/default/files/Media/UKTAG%20Phosphorus%20Standards%20for%20Rivers_Final%20130906_0.pdf

The revised standards represent a major step forward in matching nutrient concentrations to ecological change. The proposed standards are more stringent than the existing standards as UKTAG found these to be insufficiently stringent, with good or high status phosphorus classifications being produced for water bodies where there are clear ecological impacts of nutrient enrichment. However, comparing the revised standards with the existing phosphorus standards is not straightforward because the revised standards are site-specific standards rather than type-specific.

2.2 Response Parameters in Running Freshwaters

2.2.1 Macrophytes in Rivers

The WFD classification tool used is the Macrophyte Prediction and Classification System (LEAFPACS) developed by Willby *et al* (2009) and it considers species sensitivity to pollution and the actual abundance of plants represented in a water body which are then collated into a 5-band classification system. The LEAFPACS classification method uses three key aspects of the aquatic

plant community to assess the ecological status of rivers, namely, species composition, diversity and abundance based on the response of these characteristics to nutrient and hydromorphological pressures (**Table 6**). The principal refinements to the original MTR method are in an extended list of scoring taxa and the scores applied to these taxa to obtain a site-based metric. The method is designed to distinguish the anthropogenic effects of nutrient enrichment from a natural nutrient gradient and to take into account the impact of changes in river hydromorphology on the macrophyte community. Each of the observed characteristics is compared with a reference value, and expressed as a calculated Ecological Quality Element (EQR). Reference values specific to each river water body are determined from a set of environmental predictors, including geographical location, altitude, slope, distance from source and alkalinity. EQRs for each of the metrics are adjusted to a common scale and combined using weighted averaging to give an overall status class.

Table 6: WFD boundaries for LEAFPACS classification

WFD Class	EQR Range	Class Boundary
High	> 0.80	
Good	0.60 – 0.80	H/G = 0.80
Moderate	0.40 – 0.60	G/M = 0.60
Poor	0.20 – 0.40	M/P = 0.40
Bad	<0.20	P/B = 0.20

In addition to allocating a classification for survey sites, the LEAFPACS river calculator also calculates a confidence of class for that particular site. All LEAFPACS classifications in this review were calculated using Version 2.3.1 of the programme. Macrophyte surveys are undertaken once between May and September and are not normally repeated within three years. More often surveys in Northern Ireland are carried out over six years.

Macrophyte standards have not changed between RBMP1 and RBMP2.

2.2.2 Diatoms in Rivers

Diatoms are being used in most EU Member States as one of the biological elements that are required by the WFD in ecological status assessments. In the UK, the Trophic Diatom Index (TDI), which was previously used in Northern Ireland for assessment in the 2005 Review, was refined and extended to provide WFD-compatible metrics for rivers and lakes. The old four-band TDI assessment was replaced by the Diatoms Assessment for Rivers and Lakes Ecological Quality (DARLEQ) which took into account species presence and their relative abundance to produce a classification, weighted by

degradation indicator species (Kelly *et al*., 2006 & 2008). The DARLEQ tool implements a classification algorithm using a metric known as TDI3. Diatom taxa are each assigned a score from 1 (nutrient sensitive) to 5 (nutrient tolerant) and the computed scores range from 0 (very low nutrients) to 100 (very high nutrients). The WFD requires derivation of ecological status as an EQR (Ecological Quality Ratio). The EQR is calculated based on observed data and predicted reference values, resulting in an overall EQR representing an ecological status class of either high, good, moderate, poor or bad. The EQR scale ranges from 0 (bad ecological status) to 1 (high ecological status). The existing DARLEQ EQR boundaries are shown in **Table 7**.

Table 7: Existing WFD Diatom Status (DARLEQ) Class boundaries for UK Rivers

WFD Class	EQR Range	Class Boundary
High	> 0.93	
Good	0.78 – 0.93	H/G = 0.93
Moderate	0.52 – 0.78	G/M = 0.78
Poor	0.26 – 0.52	M/P = 0.52
Bad	<0.26	P/B = 0.26

DARLEQ was evaluated and revised to ensure that in combination with the revised macrophyte tool, it provides an appropriate assessment to the overall quality element of macrophytes and phytobenthos. To enable a confidence of class to be calculated for all 5 status classes it was necessary to make an arithmetic adjustment to the intercalibrated EQR boundary values, and the calculated EQRs, so that EQR values are constrained to a scale of 0 – 1. This was achieved by multiplying the intercalibrated boundary values, and the calculated EQR, by 0.8 (WFD-UKTAG, 2014).The revised method is known as DARLEQ2 and the revised metric used to classify phytobenthos in rivers is TDI4. The current DARLEQ2 EQR boundaries are shown in **Table 8** below.

Table 8: Revised WFD Diatom Status (DARLEQ2) Class boundaries for UK Rivers

WFD Class	Class Boundary (TDI4)
High/ Good status	0.80
Good/ Moderate status	0.60
Moderate/ Poor status	0.40
Poor/ Bad status	0.20

Prior to 2009, the number of water bodies classified for diatoms was relatively low due to the structure of the monitoring programme. Since 2009 the number of water bodies classified has increased

although due to the rolling programme there are still some monitoring gaps. The WFD classification for diatoms is ideally based on 6 samples per site. However, due to resource limitations the classification is based on either 3 or 4 samples depending on the confidence of class for the site; a classification is carried out after 3 samples have been analysed and sampling stations with a Confidence of Class >90 % (of the Good/Moderate boundary) would not require a 4th sample to be analysed where all 3 samples classify on the same side of the good/moderate boundary. For this reason there is a paucity of data for some river monitoring stations. Sample collection and analysis commenced in Autumn 2014 for relevant sites that required a 4th sample, therefore the results will not be included in the review.

2.3 Confidence in Class - Rivers

The rivers confidence in class procedure follows and builds on the logic given in the UKTAG WFD Classification guidance document page 25 para 4.3 (c) (December 2007)[4]:

'… a number of types and sources of information, including monitoring results for different quality elements known to respond to a pressure to which the water body is subject, all reinforce the understanding of how the water body is behaving in response to pressures and this understanding provides a high level of confidence that the status of the water body is truly worse than Good, i.e. the weight of evidence overall provides high confidence.'

The system used is a simplistic alternative based on the differences between classes of individual biological and chemical parameters. It is based around the assumptions that the major pressures on all water bodies are either from eutrophic and/or organic pressures and that the classifications for each individual parameter are accurate. Confidence in class (CiC) is estimated as high, medium or low as per UKTAG guidance.

The full methodology involves assessing the confidence in class for each water body using the procedure below and then taking the lowest confidence of the eutrophic and organic pressures. It is necessary to give some weighting to the number of metrics that have been combined to produce classification for each pressure. However, for this review only eutrophic pressures (macrophytes, diatoms and SRP) are considered. Both UKTAG and EC Eutrophication Guidance require further assessment where only SRP fails and this procedure is aimed at being compliant with the weight of

[4] http://www.wfduk.org/ 'Recommendations of the classification schemes for surface waters'

evidence approach for eutrophic pressures should SRP be the only failing element. It was therefore considered that if SRP is the only failing element, eutrophic CiC should be low if macrophytes and/or diatoms both pass (an alternative approach may allow a eutrophic pass if a subsequent detailed local study suggested it, but this approach has not been adopted to date. If either macrophytes or diatoms also fail, then the confidence will be higher. The rules for establishing CiC for eutrophic pressures are set out in **Table 9** below:

Table 9: Overall River Water Body Confidence in Class

Number of parameters	Parameters and class differences	Eutrophic confidence in class
1	Any	Low
2	Parameters the same class either High, Poor or Bad	High
2	Parameters the same class either Good or Moderate	Medium
2	Both pass, 1 High and 1 Good	High
2	Both fail but different classes	High
2	Biology fails and SRP passes	Medium
2	1 Biology passes and other fails	Low
2	SRP fails and biology passes	Low
3	Parameters the same, pass or fail	High
3	SRP & biology all pass or all fail but cover 2 classes	High
3	SRP fails but biology doesn't	Low
3	Biology fails but SRP passes	Medium
3	SRP and one biological parameter pass or fail and 3 cover 3 classes	Medium
3	SRP and one biological parameter pass or fail and 3 cover 4 or 5 classes	Low

This is now a 2-stage process to produce both assessment of individual CiC as well as confidence of 'good or better' or 'moderate or worse'. Once a class has been assigned for eutrophic class as per above further weightings are applied (based on the eutrophic class) to output the confidence of 'Good or better' or 'Moderate or worse' status. This is considered a 'weight-of-evidence' approach. Further, more comprehensive, approaches are being developed but are not available yet for use in this report.

2.4 Causative Parameters in Lakes

The WFD introduces a formal classification system for lakes. Lakes over 50 hectares (ha) in size are water bodies in themselves, but lakes less than 50ha are subsumed under river water bodies.

2.4.1 Total Phosphorus

The importance of phosphorus in eutrophication is recognised by the inclusion of total phosphorus in WFD classification. Total phosphorus (TP) is the chosen parameter as it includes both available phosphorus, i.e. phosphorus bound to particulate material and that contained in phytoplankton. It is a well established measure and is deeply rooted in limnological literature.

Under the WFD during RBMP1, lakes were classified for TP using standards determined by typology (altitude, alkalinity and mean depth) (**Table 10**). The natural nutrient levels in a lake will vary and the impact of additional phosphorus depends on the sensitivity of the lake. As a result it was decided to use standards specific to individual lakes. A site specific model is used to predict the reference level of phosphorus for each individual lake. This reference value of phosphorus is derived from the Morpho Edaphic Index (MEI) which uses the typology factors of alkalinity and mean depth, (Vighi & Chiauani, 1985) reflecting both the physical environment and the water chemistry. It can be used to classify lakes according to their natural status and identify lakes which have been impacted by anthropogenic influences. In other words, it predicts the TP reference concentrations for a particular lake and also calculates deviation from this reference condition. In addition, NIEA have used site specific humic and non-humic MEI models developed by Cardoso et al., 2007 to produce the reference lake TP values for each individual lake (**Table 11**).

Table 10: WFD Typologies for Surveillance Lakes in Northern Ireland

Alkalinity (mg/l CaCo3)	Low (LA) = < 10 Moderate (MA) = 10 - 50 High (HA) = >50
Depth (m)	Very Shallow (VS) <3 Shallow (S) 3 – 15 Deep (D) >15

Table 11: WFD Type Specific Standards for TP for Lakes

	Class Boundaries				
	High	**Good**	**Moderate**	**Poor**	**Bad**
	Annual Mean (ug TP/l)				
High Alkalinity - shallow	16	23	46	92	>92
High Alkalinity - very shallow	23	31	62	124	>124
Moderate Alkalinity – deep	8	12	24	48	>48
Moderate Alkalinity – shallow	11	16	32	64	>64
Moderate Alkalinity–very shallow	15	22	44	88	>88
Low Alkalinity – deep	5	8	16	32	>32
Low Alkalinity – shallow	7	10	20	40	>40
Low Alkalinity – very shallow	9	14	28	56	>56
Marl - shallow	9	20	40	80	>80
Marl – very shallow	10	24	48	96	>96

If the typology data required by the model is not available type specific standards can be applied. UKTAG has defined these as the median of the range of site specific standards. For moderate, poor and bad status UKTAG doubled the boundary values i.e. the boundary between moderate/poor status is twice the boundary between good/moderate status and the boundary between poor/bad status is double that for the moderate/poor boundary. Lakes which are not considered to be eutrophic are classed as high or good, and lakes considered to be eutrophic/hypereutrophic are classed as poor or bad status. Lakes which fall into moderate class equate to 'indicative of unacceptable or worsening eutrophic conditions'. Similar to rivers classification this provides a way of comparing the trophic status of lakes and a way of looking at changes over time. Where the trend of phosphorus deteriorates from good status to moderate status the lake water body would be considered to be 'at risk of becoming eutrophic'.

Total phosphorus standards have not changed between RBMP1 and RBMP2.

2.5 Response Parameters in Lakes

2.5.1 Phytoplankton in Lakes

For the first River Basin Planning cycle, classification of lake phytoplankton is based on two metrics that have been developed and intercalibrated separately:

- phytoplankton biomass is represented by chlorophyll-*a* (based on monthly samples); and
- phytoplankton taxonomic composition and abundance is represented by the percentage of nuisance cyanobacteria (blue-green algae) as measured by biovolume.

EQRs for chlorophyll-*a* are calculated as a ratio of the observed values to the expected values at Reference condition (**Tables 12 and 13**).

Phytoplankton is sampled three times (spring, summer and late summer) in the selected survey year corresponding to the natural growth optima of a range of species groups. The measured value of percentage by biovolume of nuisance cyanobacteria, is the percentage of the total biovolume of the sample made up of cyanobacteria against the total biovolume of all phytoplankton taxa present in each sample. The overall classification for the lake, based on phytoplankton, is whichever is the lower of the chlorophyll-*a* and % cyanobacteria classifications

Table 12: Current WFD Class Boundary EQR Values for Chlorophyll-*a* for each Lake Type

Lake Type*	High/Good Boundary EQR	Good/Moderate boundary EQR	Moderate/Poor boundary EQR	Poor/Bad boundary EQR
HA, S	0.55	0.32	0.16	0.05
HA, VS	0.63	0.30	0.15	0.05
MA, D	0.50	0.33	0.17	0.05
MA, S	0.50	0.33	0.17	0.05
MA, VS	0.63	0.34	0.17	0.06
LA, D	0.50	0.33	0.17	0.05
LA, S	0.50	0.29	0.15	0.05
LA, VS	0.63	0.33	0.17	0.05

** see Table 12 above for type abbreviations*

Table 13: Current WFD Class Boundary EQR Values for % Cyanobacteria

Geological Characteristics	High Alkalinity	Moderate Alkalinity	Low Alkalinity
High	0.97	0.95	0.97
Good	0.82	0.77	0.82
Moderate	0.61	0.61	0.61
Poor	0.15	0.15	0.15
Bad	<0.15	<0.15	<0.15

For RBMP2, a new classification tool has been developed. The Phyto**PL**ankton Classification with **U**ncertainty **To**ol (PLUTO) encompasses phytoplankton abundance, taxonomic composition and cyanobacterial bloom intensity. It replaces the phytoplankton classification tool used for the classifications in RBMP1. This assessment method is based on the impact of eutrophication. It is primarily indicating response to nutrients, particularly phosphorus. However, the combined metric assesses the status of the phytoplankton which can be influenced by other factors such as grazing by zooplankton, flushing rates and nitrate limitation.

The classification comprises three metrics which are assessed separately then combined to provide an overall classification;

- **Phytoplankton abundance**, measured using chlorophyll-*a*.
- **Phytoplankton species composition**, assessed using a metric called the Plankton Trophic Index (PTI), derived from biovolume of taxa present in the late summer.
- **Bloom intensity**, assessed from the biovolume of cyanobacteria

Ecological Quality Ratios (EQRs) are derived from each of the three metrics, based on observed data and predicted reference (expected) values. The values are then normalised so they use the same scale and finally combined by averaging to provide an overall EQR representing an ecological status class; high, good, moderate, poor or bad. The EQR boundary values for each metric were normalised and use either a linear or polynomial scaling method. The normalised EQR scale enables combination of metrics and the assessment of status class indicated by each metric (**Table 14**).

Table 14: PLUTO Normalised WFD Class Boundary EQR Values

Status class	Normalised EQR Boundary
High	>0.8
Good	>0.6 <=0.8
Moderate	>0.4 <=0.6
Poor	>0.2 <=0.4
Bad	<=0.2

For further information on the application of the PLUTO classification tool please see: http://www.wfduk.org/sites/default/files/Media/Characterisation%20of%20the%20water%20environment/Biological%20Method%20Statements/Lake%20Phytoplankton%20UKTAG%20Method%20Statement.pdf

2.5.2 Macrophytes in Lakes

Macrophyte surveys of lakes in Northern Ireland are carried out once between June and September and the classification is based on the data from the most recent survey year. NIEA have used the FREE Index (Free *et al.*, 2007) developed by the Environmental Protection Agency in the Republic of Ireland to classify lakes as this gives the advantage of using the same tool to classify macrophytes throughout Ecoregion 17. The FREE index uses the relative frequency of macrophytes found in each quadrant from all sites surveyed. It uses a combination of metrics to produce an overall FREE index for an individual lake. Boundaries are set using points of ecological change along a TP gradient based on reference sites from the IN-SIGHT[5] paleoliminology work (**Table 15**). The FREE index is applicable across all lake types.

Table 15: WFD Class Boundary EQR Values for Macrophytes for each Lake Type

WFD Class	EQR Range
High	>0.90
Good	>0.68 – 0.90
Moderate	>0.42 – 0.68
Poor	>0.33 – 0.42
Bad	<0.33

Lake macrophyte standards have not changed between RBMP1 and RBMP2.

[5] **I**dentification of refere**N**ce-**S**tatus for **I**rish lake typolo**G**ies using palaeolimnological met**H**ods and **T**echniques

2.5.3 Diatoms in Lakes

DARLEQ is a benthic diatom-based tool developed to fulfill the obligation to include phytobenthos in the assessment of ecological status of freshwaters. Separate tools have been developed for lakes and rivers, although they share a common approach. The tools are based on changes in the species composition and abundance of the benthic diatom flora (the bio-film) in response to nutrient pressure. The dynamic nature of bio-films means they may change over relatively short time scales. The tool is based on the TDI, which is already used by the UK statutory agencies for the assessment of eutrophication in rivers. The index, Lake Trophic Diatom Index (LTDI), was developed for use in lakes. It is based on the expert-derived riverine trophic diatom index which was re-calibrated and applied to lake diatom communities. Reference TDI values (or LTDI for lakes) are calculated using site-specific predictions, and compared with the observed values to produce an EQR. The high/good status boundary was defined as the 25th percentile of the EQRs of all sites considered to be at reference condition; the good/moderate boundary is the point at which the relative proportions of diatoms present belonging to nutrient-sensitive and nutrient-tolerant taxa were approximately equal (**Table 16**). As a consequence of the dynamic nature of bio-films there may be a considerable amount of within-site variability, although less so in lakes compared to flowing waters. Both tools include an estimation of uncertainty along with their EQR outputs. Diatoms are sampled twice a year in spring and summer in the selected survey year.

Table 16: Current WFD Class Boundary EQR Values for Diatoms for each Lake Type

WFD Class	EQR Range	
	High/Moderate Alkalinity	Low Alkalinity
High	>0.90	>0.90
Good	>0.66 – 0.90	>0.63 – 0.90
Moderate	>0.44 – 0.66	>0.44 – 0.63
Poor/Bad	<0.44	<0.44

DARLEQ was evaluated and revised to ensure that in combination with the revised macrophyte tool, it provides an appropriate assessment to the overall quality element of macrophytes and phytobenthos. The revised method is known as DARLEQ2 and the most recent index is LTDI2 (WFD-UKTAG, 2014). The revised DARLEQ2 EQR boundaries for lakes are defined for three alkalinity types, as shown in **Table 17**.

Table 17: Revised WFD Diatom Status (DARLEQ2) Class boundaries for Lakes

Alkalinity type (annual mean CaCO3 mg/l)	H/G	G/M	M/P	P/B
Low Alkalinity (<10)	0.92	0.70	0.46	0.23
Medium Alkalinity (10-50)	0.95	0.70	0.46	0.23
High Alkalinity (>50)	0.92	0.70	0.46	0.23

For further information on the application of the DARLEQ2 classification tool please see: http://www.wfduk.org/sites/default/files/Media/Characterisation%20of%20the%20water%20environment/Biological%20Method%20Statements/Lake%20Phytobenthos%20UKTAG%20Method%20Statement.pdf

2.6 Confidence in Class for Lakes Status

The approach to confidence in class in lakes by NIEA follows and builds on the logic given in the UKTAG Classification Document (UKTAG, 2007)

'...a number of types and sources of information, including monitoring results for different quality elements known to respond to a pressure to which the water body is subject, all reinforce the understanding of how the water body is behaving in response to pressures and this understanding provides a high level of confidence that the status of the water body is truly worse than good, i.e. the weight of evidence overall provides high confidence'.

The system used for assessing confidence in class in lakes in Northern Ireland is based on the presumption that the major pressure on NI lakes is from eutrophic pressures. The methodology is a simplistic analysis based on the number of failing elements. It uses the classification for the main eutrophic indicators i.e. macrophytes, phytobenthos, phytoplankton and Total Phosphorus.

Confidence in class (CiC) is estimated as having a high, medium or low confidence of having or not having an impact from eutrophication and is first assigned based on the biological quality elements alone. The number of eutrophic biological elements used in overall classification of the lake is selected from column 1 in **Table 18(a)**. The number of elements that are at moderate or worse status and number of elements at good or better status are then selected from Columns 2 and 3 respectively. The confidence score of biological impact from eutrophication is then read from column 4.

Table 18(a): CiC assigned using Biological Quality elements only

No. of BQE which respond to eutrophication pressure used in overall classification	No. elements that fail good status	No. Elements that pass good status	Confidence of Biological Impact from eutrophication 1 = Low, 2 = Medium, 3 = High Confidence of No Biological Impact from Eutrophication 4 = Low 5 = Medium, 6 = High
1	0	1	**4**
1	1	0	**1**
2	0	2	**5**
2	2	0	**2**
2	1	1	**1**
3	0	3	**6**
3	3	0	**3**
3	1	2	**1**
3	2	1	**2**

This confidence in class score is then combined with the TP classification for the lake. Using the matrix in **Table 18(b)**, the confidence score using biological quality elements only is read across the top row and then the TP class for that lake is located in the first column. The point where these two intersect gives an overall confidence score of the likelihood of impacts from eutrophication.

Table 18(b): CiC for Biological Quality Elements and TP Class combined

TP Class	Confidence of impact from eutrophication			Confidence of No impact from eutrophication		
	1	**2**	**3**	**4**	**5**	**6**
Bad	2	3	3	2	1	1
Poor	2	3	3	2	1	1
Moderate	1	2	3	2	1	1
Good	1	2	2	5	6	6
High	1	2	2	5	6	6

This overall confidence score equates as:

1	Low confidence of impact from eutrophication
2	Medium confidence of impact from eutrophication
3	High confidence of impact from eutrophication
4	Low confidence of no impact from eutrophication
5	Medium confidence of no impact from eutrophication
6	High confidence of no impact from eutrophication

2.7 Causative parameters in Marine Waters

2.7.1 Dissolved Inorganic Nitrogen (DIN)

Nutrient inputs to marine waters are assessed using the winter mean of DIN. The thresholds for high and good status are based on the thresholds developed for UK assessments made for the OSPAR Convention. The boundary between high and good status is given as OSPAR's "background" value. The boundary between good and moderate is OSPAR's "Assessment Level". This reflects the natural variability in water quality, plus a "slight" disturbance, as defined by OSPAR. This has been used to define offshore thresholds and reference conditions for the WFD. The UK WFD technical advisory group (UKTAG) proposed inshore and offshore thresholds related to salinity for the assessment of transitional and coastal marine waters. DOE Marine Division have used the UK WFD DIN classification tool to place water bodies in high, good, moderate, poor and bad status using the boundaries in the threshold table below (**Table 19**).

Table 19: Dissolved Inorganic Nitrogen (DIN) thresholds

Area	Salinity range	DIN (µM) HIGH	DIN (µM) GOOD	DIN (µM) MODERATE	DIN (µM) POOR	DIN (µM) BAD
Coastal (at salinity 32)	30-34.5	<12	≥12 ≤18	>18 ≤27	>27 ≤40.5	>40.5
Transitional (at salinity 25)	<30	<20	≥20 ≤30	≥30 ≤45	≥45 ≤67.5	>67.5

The distribution of inorganic nitrogen and phosphorus, and bioassay experiments specific to both shows that nitrogen is the critical limiting factor to algal growth and eutrophication in coastal marine waters, and that any ecological impact in coastal waters is less likely to be caused by phosphorus. In transitional waters, the growth limiting nutrient can fluctuate between nitrogen and phosphorus, and in these situations, nitrogen and phosphorus removal need to be considered.

Nutrient concentration information focuses on winter dissolved inorganic nitrogen (DIN = NO_2 + NO_3 + NH_4) which is assessed in the winter period in the presumed absence of significant plant growth. This is the primary criterion and is used in each assessment area/salinity regime, normalised to the relevant salinity. We have used winter dissolved inorganic phosphorus historically as a primary criterion, but only when assessment of the winter DIN/DIP (DIP = Dissolved Inorganic Phosphorus) ratio suggested phosphorus limitation.

The boundary between good and moderate WFD status is OSPAR's "Assessment Level". This reflects the natural variability in water quality, plus a "slight" disturbance, as defined by OSPAR (It is actually OSPAR's "background", increased by 50 per cent). The UKTAG used this to define offshore thresholds and reference conditions for the WFD.

The UKTAG then derived standards for coastal and transitional waters that are related to salinity. This provides single values for UK offshore, coastal and transitional waters (normalised for salinity) for:

- Reference values (or the boundary between high and good status);
- Threshold values (or the boundary between good and moderate status).

2.8 Response parameters in Marine Waters

2.8.1 Chlorophyll-*a*

Measurements of chlorophyll-*a*, used as an estimate of phytoplankton biomass, are included in most eutrophication assessment monitoring programmes. Chlorophyll-*a* biomass is assessed as a 90th percentile against accepted threshold standards **(Tables 20 and 21)**. Elevated chlorophyll biomass (moderate or worse status) can be indicative of nutrient enrichment, as increased chlorophyll-α concentrations mainly occur in nutrient-enriched waters.

Table 20: Reference Thresholds for WFD Coastal Chlorophyll tool

Water Ref. Area		Status				
		High	Good	Moderate	Poor	Bad
North/Irish Sea	Chl □g l^{-1}	<5	5-10	10-15	15-20	>20
	EQR	0 -1.0	1.0-0.8	0.8-0.6	0.6-0.4	0.4-0.2

Table 21: Reference Thresholds for WFD Transitional Chlorophyll tool

		EA Boundaries				
		High	Good	Moderate	Poor	Bad
10 (5 sub-metrics for each zone) (2 salinity zones present) 1-25psu & >25-35psu	Face Value (passes)	9	7	5	3	<2
	EQR	0.9	0.7	0.5	0.3	0
5 (only 1salinity zone present)	Face Value (passes)	4	3	2	1	0
	EQR	0.8	0.6	0.4	0.2	0

Plant tools are utilised to monitor the growth of green algal species which can form dense mats in response to localised nutrient enrichment. The tool for marine macroalgae uses basic indices to assess nutrient enrichment and disturbance pressures; and specifically the Macroalgal Blooming Tool (MBT) is designed to determine the extent of algal cover and associated biomass of green algal species which develop in response to local nutrient enrichment pressure.

The secondary response measurement of dissolved oxygen concentration is also used in the assessment of trophic status. The DIN thresholds are useful for targeting and prioritising biological monitoring. The biological tools can also be used to help show in general terms whether water bodies that are at worse than good status are improving.

2.8.2 Assessment methods for macroalgae

The assessment methods for macroalgae were developed for the WFD. Status is classified into five categories from high to bad status. Moderate to bad status is indicative of pressure such as nutrient enrichment and eutrophication. The Reduced and Full Species List (RSL) for marine macroalgae uses basic indices to assess nutrient enrichment and disturbance pressures. The use of this tool is restricted to rocky shore environments. The indices are:

- Shore description;
- Species richness;
- Proportion of chlorophyta (green seaweed);
- Proportion of rhodophyta (red seaweed);
- Ecological Status Group Ratio – ESG ratio indicates shift from a pristine state (EGS1 – late successionals or perennials) to a degraded state (ESG2 – opportunistic or annuals); and
- Proportion of opportunists.

The Macroalgal Blooming Tool (MBT) is designed to determine the extent of algal cover and associated biomass of green algal species which develop in response to local nutrient enrichment pressure. The use of this tool is restricted to specific sedimentary habitats which favour the growth of green algal species which form dense mats in response to localised nutrient enrichment. The indices are:

- Total extent of macroalgae bed;
- % cover of available intertidal habitat at site (derived measure) and at quadrat level;
- Biomass of opportunistic macroalgal mats (g m^{-2});
- Biomass over available intertidal habitat; and
- Presence of entrained algae.

2.8.3 Angiosperms

This is reported as an Ecological Quality Ratio (EQR). An EQR with a value of one represents reference conditions and a value of zero represents a severe impact. The EQR is divided into five ecological status classes (high, good, moderate, poor and bad) that are defined by the changes in the biological community in response to disturbance. Once the EQR score and ecological status class have been calculated an assessment must be made to consider the certainty of the classification (i.e. confidence in the assigned class). The basic indices are:

- Taxonomic composition – seagrass species present.
- Shoot density – measured as the estimated percentage cover of seagrass using ≤1m^2 quadrates in a sampling grid.
- Bed extent – measured as area cover in m^2 of the continuous bed (deemed to be at >5% shoot density) and, where possible, the whole bed (<5% shoot density).

2.8.4 Dissolved oxygen (DO) classification

The amount of oxygen dissolved in a water body is an indication of the degree of health of the area and its ability to support a balanced aquatic ecosystem. The discharge of an organic waste or nutrient to a water body imposes an oxygen demand on it. If there is an excessive amount of organic matter, the oxidation of waste by microorganisms will consume oxygen more rapidly than it can be replenished. When this happens, the dissolved oxygen is depleted and can have detrimental effects on the higher forms of life. DO classification is based on comparison of a 5th percentile against WFD reference standards **(Table 22)**.

Table 22: DO thresholds for transitional and coastal marine waters

WFD Status	Marine 5%ile	Objectives
HIGH	≥5.7 mg/L	All life stages of salmonids and transitional fish
GOOD	≥4.0 <5.7 mg/L	Presence of salmonids and transitional fish
MODERATE	≥2.4 <4.0 mg/L	Most life stages of non-salmonid adults
POOR	≥1.6 <2.4 mg/L	Presence of non-salmonids, poor survival of salmonids
BAD	<1.6 mg/L	No salmonids present, marginal survival of resident species

2.9 Annex IIAc Designations Methodology

2.9.1 Bathing Waters

Designations are made where further treatment is required to fulfil the requirements of another Directive, in this case the mandatory standards of the Bathing Water Directive. Until the end of the 2014 bathing season, the less stringent standards of Bathing Water Directive 76/160/EC still applied.

In 2015, the revised Bathing Water Directive (2006/7/EC) comes into effect and introduces more stringent standards for bathing water quality. The revised Bathing Water Directive (rBWD) requires Member States to assess compliance based over four years. The new standards are approximately twice as stringent as those set in the 1976 Bathing Water Directive, so it follows that approximately twice the number of bathing waters may be "at risk" of not meeting the appropriate ("sufficient") standard. Compliance with these standards is derived using bathing water data from the last four bathing seasons on 95th and 90th percentile evaluations **(Table 23)**.

Table 23: **Bathing water compliance standards (revised Bathing Water Directive 2006/7/EC)**

	Excellent	**Good**	**Sufficient**
E. coli	250*	500*	500**
Intestinal Enterococci	100*	200*	185**
* *Based upon 95-percentile evaluation over four seasons* ** *Based upon 90-percentile evaluation over four seasons*			

The revised Bathing Water Directive (rBWD) requires Member States to ensure that, by the end of the 2015 bathing season, all bathing waters meet at least "sufficient" and take realistic and proportionate measures with a view to increasing the number of bathing waters meeting "good" and "excellent". In 2014 all bathing waters met at least "sufficient", based upon projected compliance. In the previous three years (2011 – 2013) three bathing waters were classed as "poor" on at least one occasion based upon projected compliance with the rBWD. These were Ballyholme, Ballywalter and Newcastle.

2.9.2 Shellfish Waters

The Shellfish Waters Directive (2006/113/EC) was subsumed into the WFD (2000/60/EC) in December 2013. Under the WFD, shellfish water protected areas must meet their WFD objective and meet at least Class B in accordance with the EU Hygiene Regulations (EC/852/2004, EC/853/2004 and EC854/2004) and make progress towards Class A. The criteria for classification are set out in **Table 24**. In addition, shellfish water protected areas will be managed to ensure no deterioration.

Table 24: EC Coliform Standards for categorising shellfish flesh under the Food Hygiene Regulations, (EC) 852/2004 (EC) 853/2004 and (EC) 854/2004

Category	E.coli per 100g flesh and intravalvular liquid	Post-harvest treatment required
A	<230	May go directly for human consumption if end product standard met.
B	90% results <4600 Remaining 10% results <46000 100% results <46000	Must be subject to purification or cooked by an approved method.
C	<46,000	Must be subject to relaying for a period of at least 2 months or cooked by an approved method.
Prohibited	>46,000 E.coli/100g of flesh	Harvesting not permitted.

2.10 Nutrient Budget Analysis 2001-2009

An investigation was undertaken by Agri-Food and Biosciences Institute (AFBI) for NIEA to determine the sources of nutrient loadings to the two largest freshwater lakes (Lough Neagh and Lough Erne), the six transitional waters (River Foyle, Lower Bann, Inner Lagan, Quoile Basin, Dundrum Bay and the Tidal Newry River) and four sea loughs (Lough Foyle, Belfast Lough (Inner and Outer Belfast Lough), Strangford Lough, and Carlingford Lough) of Northern Ireland for periods 2001-2003, 2004-2006 and 2007-2009. The Northern Ireland areal coverage of the study is extensive, encompassing approximately 80% of the region.

The primary focus of the investigation was nitrate and phosphorus loadings. The combined input of nitrate and ammonium, termed Dissolved Inorganic Nitrogen (DIN), was also calculated for the catchments, with the exception of Lough Neagh and Lough Erne. The loadings were partitioned between the following sources in each catchment: Waste Water Treatment Works (WWTWs), lowland agriculture, rough grazing, forested land and industrial inputs. WWTWs and lowland agriculture were the predominant nutrient sources in all water bodies.

The loadings given are cumulative in that they include inputs from associated waters. Thus the loadings to Lough Foyle include the nutrient inputs from the River Foyle, the Inner Lagan contributes to Inner Belfast Lough, which in turn contributes to Outer Belfast Lough, the Tidal Newry River contributes to Carlingford Lough, and the Quoile Basin to Strangford Lough.

2.10.1 Methodology

Each inflowing river entering a lake or sea lough was identified which had a NIEA sampling point close to where it discharged, utilising nutrient concentration data collected by NIEA as part of statutory river monitoring for Northern Ireland. Loading estimates for two nutrient fractions have been calculated for the catchments: soluble phosphorus (PSOL or SRP) and total oxidised nitrogen (TON), which is the sum of nitrate nitrogen (NO3-N) and nitrite nitrogen (NO2-N). As the latter is a very small fraction of TON, TON can be taken to be synonymous with nitrate and is hereafter referred to as nitrate.
A corresponding daily flow record for each monitored river was assembled based on NIEA data sets and data sets acquired by the Rivers Agency, c.36 samples per period per river. Loads were calculated as a product of average flow weighted mean concentration and the annual runoff.

For each catchment, loadings of TON, PSOL and DIN were calculated as mean concentration over each three year period 2001-2003, 2004-2006 and 2007-2009 multiplied by WWTW flow for these periods. The data was acquired by Northern Ireland Water (NIW, previously known as the Water Service). Whilst this is the best available flow data, caution should be applied to the accuracy and reliability of the flow data on the basis that all flow meters are not Monitoring Certification Scheme (MCERTS) standard. Effluent quality data from NIW were used where available, although for some smaller works 2001-2003 data were used to compile a minor WWTW concentration database that could be linked to each river catchment. Data for the smallest WWTWs were not available but it was estimated that these only comprise a total of around 4000 population equivalents, which is negligible when spread throughout the country. Effluent flow data were only available for some of the small WWTWs and flows for the remainder were estimated from these based on p.e. figures.[6]

2.10.2 Land Use in Northern Ireland

Co-ORdinated INformation on the Environment (CORINE) land use data for the catchments was determined by GIS procedures at AFBI. The different land use classifications employed under the CORINE scheme and their abundance in Northern Ireland are given in **Appendix 1**. Using nutrient

[6] As defined in the Urban Waste Water Treatment Directive, 1 population equivalent (PE) means the organic biodegradable load having a BOD of 60g of oxygen per day

export coefficients, land use is used to estimate what are minor nutrient loadings from uplands, forestry and other land uses (**Appendix 2**). The diffuse nutrient loading is calculated by the difference from the river nutrient load, less the combined loading of WWTWs and the sum of the minor nutrient loadings. This diffuse loading is dominated by the agricultural contribution but also will include loadings from rural single dwellings and small p.e.'s less than 10 in size. It tends to accumulate the errors that arise in estimating either river, WWTWs or contribution from other sources.

Agricultural land, representing the combined area of grassland and arable land was the largest category of land cover across Northern Ireland in the period 2001-2009 at 78%. Upland moorland and forest were the next highest categories at 12% and 5% with the urban sources (WWTWs) contributing only 3.3% to the overall area in Northern Ireland (**Table 25**).

Table 25: Coverage of major land uses in Northern Ireland, 2001-2009

		Percentage of Overall Area in Northern Ireland				
	Total Area km^2	Forest	Urban and Other	Moorland	Water	Agricultural Land
Northern Ireland	14292	5.8	3.3	12.1	0.8	78

Where data are available, a summary of the nutrient budget phosphorus loadings is presented for each of the catchments identified as sensitive areas within the three main River Basin Districts (RBD) or parts of International RBD (IRBD) within Northern Ireland; North Eastern, Neagh Bann and North Western. **Appendix 3** presents the mean annual loadings and % total loads of nitrate, PSOL and DIN in the individual catchments compared with overall Northern Ireland loadings.

2.11 SIMulated CATchment (SIMCAT) River Modelling, 2005-2009

SIMCAT is a computer model which provides a SIMulation of the flow and quality at any point within a water CATchment. It is a one dimensional simplified river model developed by the English Environment Agency to manage discharges to rivers and it enables the impact of discharges or abstractions from inputs such as WWTWs and industries to a river to be assessed in terms of water quality or flow. It utilises routine monitoring data for both rivers and effluents and can be used to run 'what-if' scenarios to ensure that water quality standards are met, at an individual reach or at the catchment scale level.

The purpose of the modelling work was to assist in the assessment and monitoring of river water quality as required by the WFD. The WFD requires Member States to develop RBMPs to protect, manage and control the use and quality of surface waters and ground waters in order to enhance and improve the aquatic environment. One of the supplementary measures contained within RBMP1 was to develop mathematical (river) models for all of Northern Ireland to assess the cumulative impacts of discharges at a catchment scale. SIMCAT can support setting discharge consents to achieve water quality targets and also assist in the testing of proposed strategic actions, such as lowering phosphorus standards at all WWTWs.

One of the limitations of SIMCAT as a simplified river model is that estuarine and coastal waters are ignored and this includes the point discharges made to them. Therefore the discharges made from the WWTWs discharging to Belfast Lough are ignored. A separate assessment has therefore been carried out in relation to the contribution that WWTWs make to the loading of the marine waters of Belfast Lough. However, this is only an input assessment and takes no account of the processing and interactions that take place within the Lough.

2.11.1 Methodology

A SIMCAT model covering the whole of Northern Ireland was developed, based on the GIS river water body network established under WFD. The model produce results for the following determinands: river flow (Ml/d), biochemical oxygen demand - BOD (mg/l), saline ammonia (Total Ammonia) - NH_4^+ (mg/l), free ammonia (un-ionised ammonia) - NH_3 (mg/l), dissolved oxygen - DO (mg/l), soluble reactive phosphorus - SRP (Orthophosphate) PO_4-P (mg/l), total phosphorus - TP (mg/l), nitrate - NO_3, and total oxidised nitrogen - TON (mg/l).

SIMCAT consists of four separate models. The models match the River Basin District Areas, except for the North Western RBD which was further split between the Foyle and the Erne catchments. All except the North Eastern model have cross border rivers. Each was calibrated against the Low Flows Enterprise (LFE) NI flow model and this provided the base hydraulic model used to verify the base model structure. Following satisfactory calibration of the SIMCAT hydraulic model the model was populated with water quality data for the period 2005 - 2009. This was considered to be the most consistent data set for building the initial SIMCAT model and to allow for calibration of the catchment interactions and processes represented by the model. During development, 4820 river reaches were modelled along with 340 discharges, 342 abstractions, 713 monitoring stations and 90 flow gauging stations.

Where data are available, a summary of the results of the SIMCAT SRP loadings from point and diffuse sources is presented for each of the catchments identified as sensitive areas within the three main River Basin Districts (RBD) or parts of International RBD (IRBD) within Northern Ireland; North Eastern, Neagh Bann and North Western. Some caution should be taken when interpreting SIMCAT due to the time period of data collection (2005-2009), therefore it is difficult to draw any firm comparisons with the classifications derived from 2008-2013 used in this report. At this juncture the outputs will be used as indicative only, and as a starting point to consider areas where further monitoring or more current data should be considered prior to any significant investment decisions being made.

3. REVIEW OF TROPHIC STATUS ASSESSMENTS - CATCHMENT APPROACH

Over the period 2009-2013, NIEA monitored SRP concentrations at 472 surface freshwater stations across Northern Ireland. Under existing water body delineations SRP data was used to classify 521 water bodies. With the revised water body delineations, SRP data is available for 404 water bodies. Macrophyte surveys were carried out on a catchment basis at 476 river monitoring stations over the period 2008-2013. Under existing water body delineations macrophyte data was used to classify 519 water bodies. With the revised water body delineations, macrophyte data is available for 406 water bodies. Benthic diatoms samples were collected at 465 selected river stations over the period 2009-2013. Under existing water body delineations diatom data was collected in 435 water bodies. With the revised water body delineations, diatom data is available for 340 water bodies. Prior to 2009, the number of water bodies classified for diatoms was relatively low due to the structure of the monitoring programme. Since 2009 the number of water bodies classified has increased, although due to the rolling programme there are still some monitoring gaps. The WFD classification for diatoms is ideally based on 6 samples per site. However, due to resource limitations, the classification is based on either 3 or 4 samples depending on the confidence of class for the site. A classification is carried out after 3 samples have been analysed and sampling stations with a confidence of class >90% (of the good/moderate boundary) would not require a fourth sample to be analysed, where all 3 samples classify on the same side of the good/moderate boundary.

NIEA also monitored TP concentrations at 21 surveillance lake sites across Northern Ireland over the period 2011-2013. Macrophytes and benthic diatoms were also surveyed for each lake site on a three-year rolling basis. Samples for chlorophyll-*a* analysis were collected at monthly intervals giving a total of 12 samples every year. In the period 2006-2011 phytoplankton samples were collected in spring, summer and autumn at each lake on a three year rolling basis. The adaption of the new phytoplankton tool (PLUTO) means that all surveillance lakes from 2012 onwards are sampled in July, August and September for three consecutive years to give a total of 9 samples.

Over the period 2010-2013, DOE Marine Division monitored DIN at least once per year at 17 transitional and 52 coastal sites around Northern Ireland. In addition, a nutrient assessment was made at 531 points during a coastal transect survey carried out by AFBI on behalf of DOENI in 2010. Macro-algal surveys were carried out in 23 water bodies over the period 2008-2013 along with Angiosperm assessments in 5 coastal areas. Chlorophyll-α was monitored at least once per year and sometimes up to six times per year (March to September) at 94 sites over the period 2010-2013 resulting in 1400 samples analysed. **Appendix 4** presents a map showing the eutrophication related

marine monitoring network over the period 2010-2013 with the sites focussed on areas assessed previously to be most pressured.

Results for each of the parameters are considered in turn and assessed using the WFD classification systems. The results for each parameter are then collated using the WFD overall classification criterion of deferring to the lowest class in each case to give an overall WFD Trophic classification for a water body. Classifications of water bodies are based on catchments within the three main River Basin Districts (RBD) or parts of International RBD (IRBD) within Northern Ireland; North Eastern, Neagh Bann and North Western, are presented in the following sections (**Table 26**).

Table 26: Location of catchments within RBDs and relevant heading in the report

North Eastern RBD		
Strangford Lough, Lecale and Mourne	**Belfast Lough and Lagan**	**Bush and Glens**
• Strangford Lough (North End) • Paddy's Point and Reagh Bay Shellfish Water • Ballyholme Bathing Water • Ballyholme Bathing Water Catchment • Inner Dundrum Bay • Dundrum Bay Catchment • Newcastle Bathing Water • Newcastle Bathing Water Catchment • Quoile Catchment • Quoile Pondage • River Enler Catchment	• River Lagan Catchment • Tidal Lagan • Inner Belfast Lough • Inner Belfast Lough Catchment	• River Bush Catchment

Neagh Bann RBD		
Carlingford and Newry	**Lough Neagh North and Lower Bann**	**Lough Neagh South**
• River Newry Catchment	• Lower Bann Catchment • Lough Neagh Catchment	• Lough Neagh Catchment

North Western RBD	
Lough Foyle and Foyle River	***Lough Erne and Melvin***
• River Foyle Catchment • River Faughan Catchment • River Roe Catchment	• Lough Erne Catchment

3.1 North Eastern RBD

3.1.1 Trophic Status of Belfast Lough and Lagan, 2008-2013

The Tidal River Lagan and Inner Belfast Lough were designated as Sensitive Areas (Eutrophic) under the UWWTD in 2001 following a recommendation from the 1999 study (Charlesworth and Service, 1999). The 2005 Sensitive Area review recognised the River Lagan catchment as eutrophic and recommended designation. It was subsequently designated as Sensitive (Eutrophic) under the UWWTD in July 2006 (**Figure 2**). The freshwater River Lagan Designated Sensitive Area covers an area of 550km^2 representing 3.5% of Northern Ireland's land area, whilst the catchment of the tidal River Lagan represents approximately 1% of Northern Ireland's land area. In June 2011, Ballyholme Bathing Water and River Catchment Area were designated as a Sensitive Area Bathing Water, covering an area 21.9km^2, representing approximately 0.2% of Northern Ireland's land area. Outer Belfast Lough is not currently designated as a Sensitive Area.

The River Lagan rises as a spring at Slieve Croob, 30km to the south west of Belfast and is some 70km long. The largest tributary is the Ravernet River, which is approximately 13km long and joins the Lagan immediately upstream of Lisburn. To the north west of the catchment at Stranmillis Weir, the river enters the 4.5km long tidal impoundment, the downstream end of which is the Lagan Weir. This marks the lower limit of the River Lagan and the start of the fully tidal Inner Belfast Lough. In the River Lagan catchment, there are three qualifying WWTWs, Newtownbreda (p.e. 40,003), Dunmurry (p.e. 53,605) and New Holland (p.e. 66, 017). The main populated areas include the cities of Belfast and Lisburn. Belfast is located at the south western end of Belfast Lough and is the busiest port in Northern Ireland. The Belfast Harbour Estate (approximately 2,000 acres) is the busiest passenger port in Northern Ireland and handles 60% of Northern Ireland's sea borne trade. George Best Belfast City Airport is also situated on the Estate.

The other main rivers entering the lough directly are the Woodburn River, Kilroot River, Ballyholme River, Crawfordsburn River and Three Mile Water. There are three qualifying WWTWs which discharge directly into Inner Belfast Lough: Belfast (p.e. 370,779), Newtownabbey (p.e. 87,914) and Kinnegar (p.e. 78,600). Although the Inner Lough has a high mixing capacity, the tidal currents are weak and oscillatory resulting in a predominantly sheltered area where the currents are dominated by tides and the area covers approximately 399km^2. The Outer Lough is exposed and water exchange with the North Channel is rapid. A clockwise rotatory current has been documented in the Outer Lough (Parker *et al.*, 1988) and these physical conditions result in reduced potential for eutrophication. The physical oceanography of the Inner and Outer Lough results in significant chemical and biological

differences. Currently, the only designated area within Outer Belfast Lough is Ballyholme Bathing Water and River Catchment. The Cotton River rises to the north of Newtownards and flows northwards through Bangor where it discharges into Ballyholme Bay. There are two qualifying WWTWs which discharge into Outer Belfast Lough, Carrickfergus (p.e. 32,042) and North Down and Ards (p.e. 78,983).

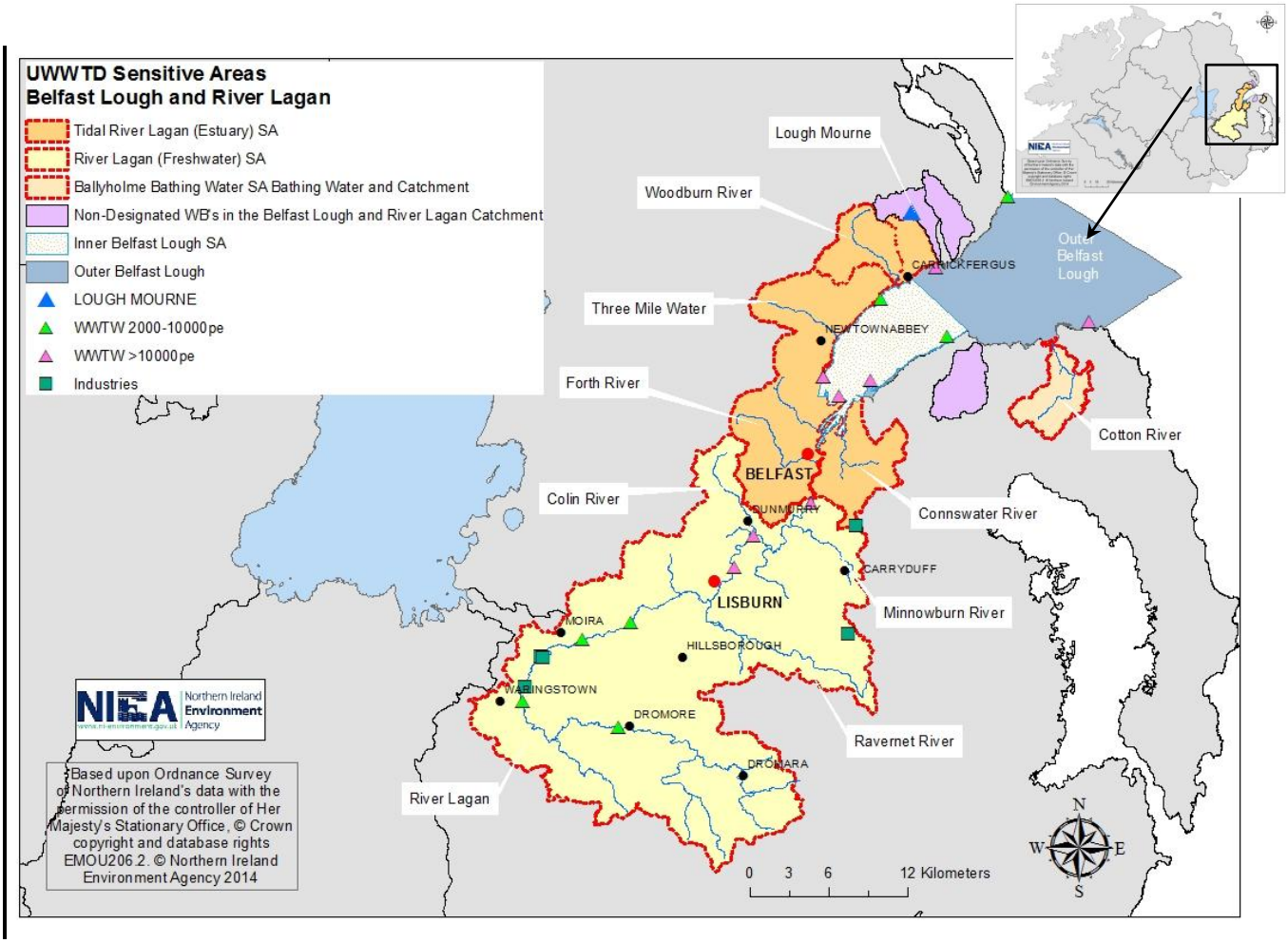

Figure 2: Extent of Sensitive Areas designations in the River Lagan, Tidal River Lagan and Inner Belfast Lough

Overall Freshwater Trophic Status

Over the period 2008-2013, when current water body delineations were applied, the trophic status of 26 water bodies were assessed in the Belfast Lough and Lagan catchments. Over the same period, this decreased to 22 when the revised river water body delineations were considered. A summary of results are presented in a graph in **Figure 3** and further detail can be found in **Appendix 5** and **6**.

When current standards and river water body delineations were applied, only 8% of river water bodies in the Belfast Lough and Lagan catchments were considered to be high/good trophic status. With the new standards and new water body delineations applied, the number of water bodies considered to be high/good trophic status decreased to 5%.

In the period 2008-2013, 92% of river water bodies in the Belfast Lough and Lagan catchments are classed as moderate/poor status (predominantly high confidence in class of 'moderate or worse') with current standards and river water body delineations. Results also show that the main driver of eutrophic conditions in these freshwater catchments are due to elevated levels of SRP and resulting disturbances to the diatom communities, with 50% of water bodies failing the SRP standard, 81% of water bodies failing the TDI standard and 27% failing the macrophyte standard.

The number of water bodies that are classed as moderate/poor trophic status generally remained the same at 95%, (predominantly medium confidence in class of 'moderate or worse') when the revised water body delineations and standards are applied. No river water bodies are classed as bad trophic status, equating to eutrophic status. Results also show that the main driver for eutrophic conditions in these freshwater catchments is elevated levels of SRP on a larger scale (91%) due to the revised standards. The resulting disturbances to the diatom and macrophyte communities are 55% and 32% respectively.

Macrophytes

When current standards and river water body delineations were applied, 58% of river water bodies in the Belfast Lough and Lagan catchments were considered to be high/good status for macrophytes whilst 4% of water bodies were reported as poor status. The number of water bodies considered to be high/good status for macrophytes remained relatively the same at 59% and likewise, 5% of water bodies were reported as poor status as a result of the amalgamation of water bodies due to the revised delineations.

Diatoms

When current standards and river water body delineations were applied, 100% of river water bodies fail the TDI standard in the Belfast Lough and Lagan catchments, of which 46% achieve poor diatom status. With the new standards and new water body delineations applied, this decreases to 55% of river water bodies failing the TDI standard. No water bodies were classified as poor diatom status.

SRP

When current standards and river water body delineations were applied, results show that the main driver for moderate or worse status in the catchments is SRP, with 50% of river water bodies failing the SRP standard in the Belfast Lough and Lagan catchments. No water bodies were classified as poor SRP status. With the new standards and new water body delineations applied, this increases to 91% of river water bodies failing the SRP standard and 14% of water bodies reported as poor status. The revised standards benefit from improvements in understanding of the relationship between phosphorus concentrations and the response of river plant communities. As the revised standards are site specific, the degree to which they are more stringent than the existing type specific standards varies considerably from site to site.

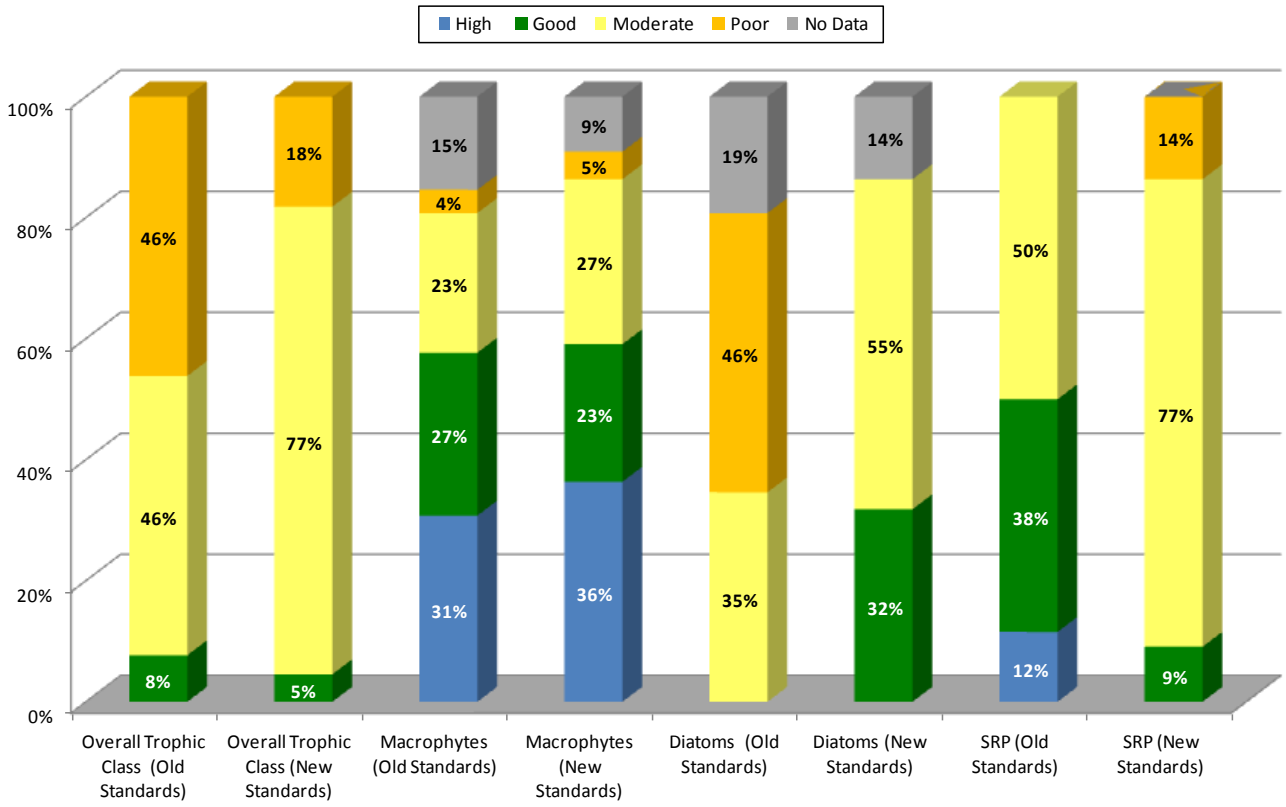

Figure 3: Comparison of the WFD Classification of Trophic Indicator Quality Elements for River Water Bodies in the Belfast Lough and Lagan Catchments using current standards and river water body delineations with the revised water body delineations and standards in the period 2008-2013 *(based on SRP, macrophytes and diatoms)*

The distribution of all water body classes across the catchments using current standards and river water body delineations are shown in **Figure 4**; based on 26 river water bodies, 1 lake water body and 5 marine water bodies. Revised standards and river water body delineations are shown in **Figure 5**;

based on 22 river water bodies, 1 lake water body and 5 marine water bodies. Distribution of overall WFD trophic classes (2008-2013) are based on SRP, macrophytes and diatoms in river water bodies; TP, phytoplankton, macrophytes and diatoms in lake water bodies and DIN, macro algae and chlorophyll-*a* in marine water bodies (see **Appendix 5, 6, 7** and **8** for full results).

Lough Mourne, the only classified lake in the catchment, is classed as Poor trophic status using both current and new standards with medium confidence in class of impact occurring. Lough Mourne is a HMWB and fails its lake level standards. Macrophyte status is not included in assessment of trophic status, as described in **Section 1.3.3**, and the driver for failure is due to elevated TP concentrations and the resulting impact on the phytoplankton community.

Of the 5 marine water bodies in the catchments, 4 are assessed as being at poor and bad overall status, with only Outer Belfast Lough being at good status when assessed against all eutrophication related standards (**Figures 4 and 5)**. Of the 4 water bodies that failed on the nutrient standard, all of these also failed against corroborative biological response plant tool assessments (**Appendix 9**). The Dissolved Inorganic Nitrogen and Chlorophyll failures in the Tidal Lagan and Belfast Harbour have been considerable, and have been repeated year-on-year through the assessment period and previously

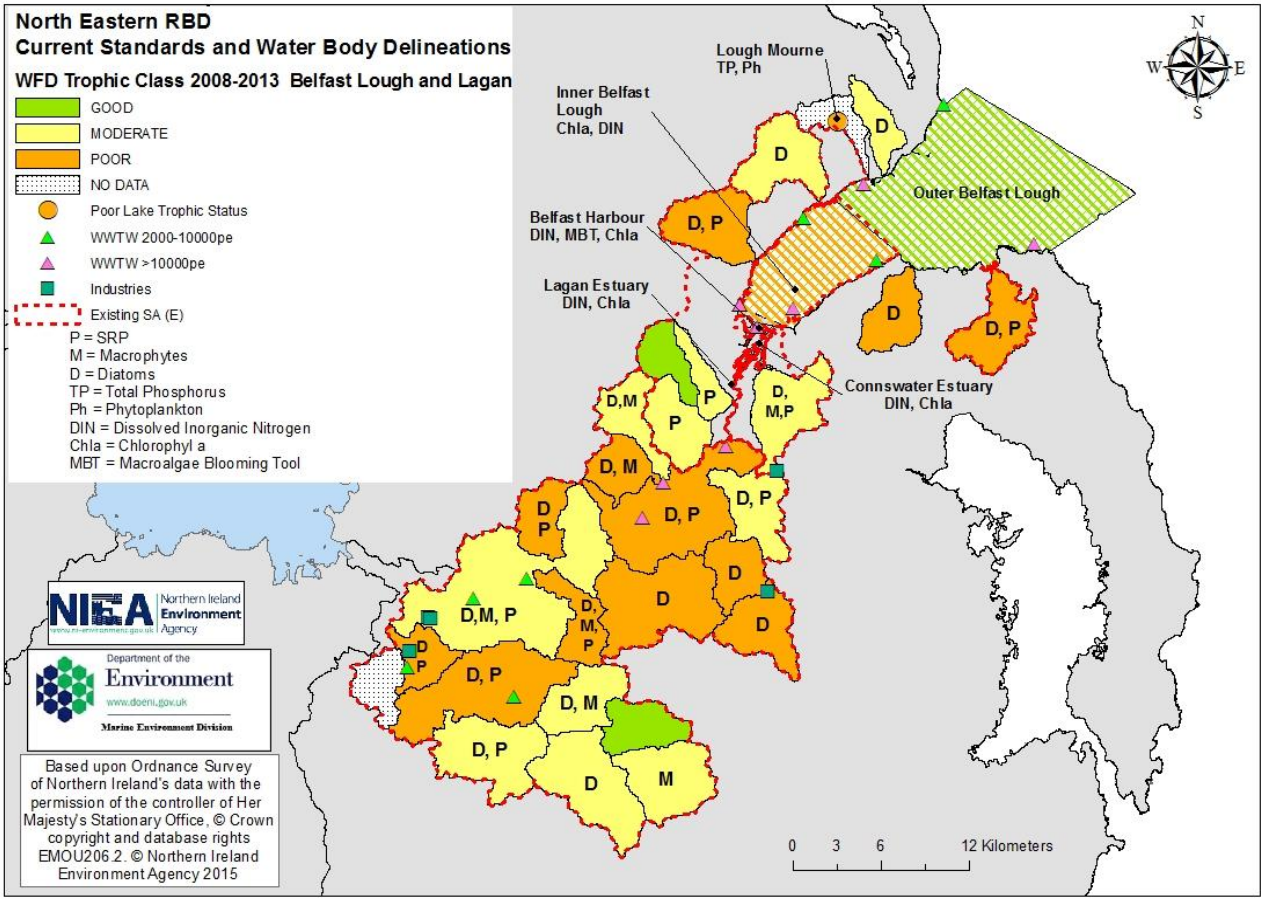

Figure 4: Distribution of Overall WFD Trophic Classes in the Belfast Lough and Lagan Catchment using current standards and river water body delineations

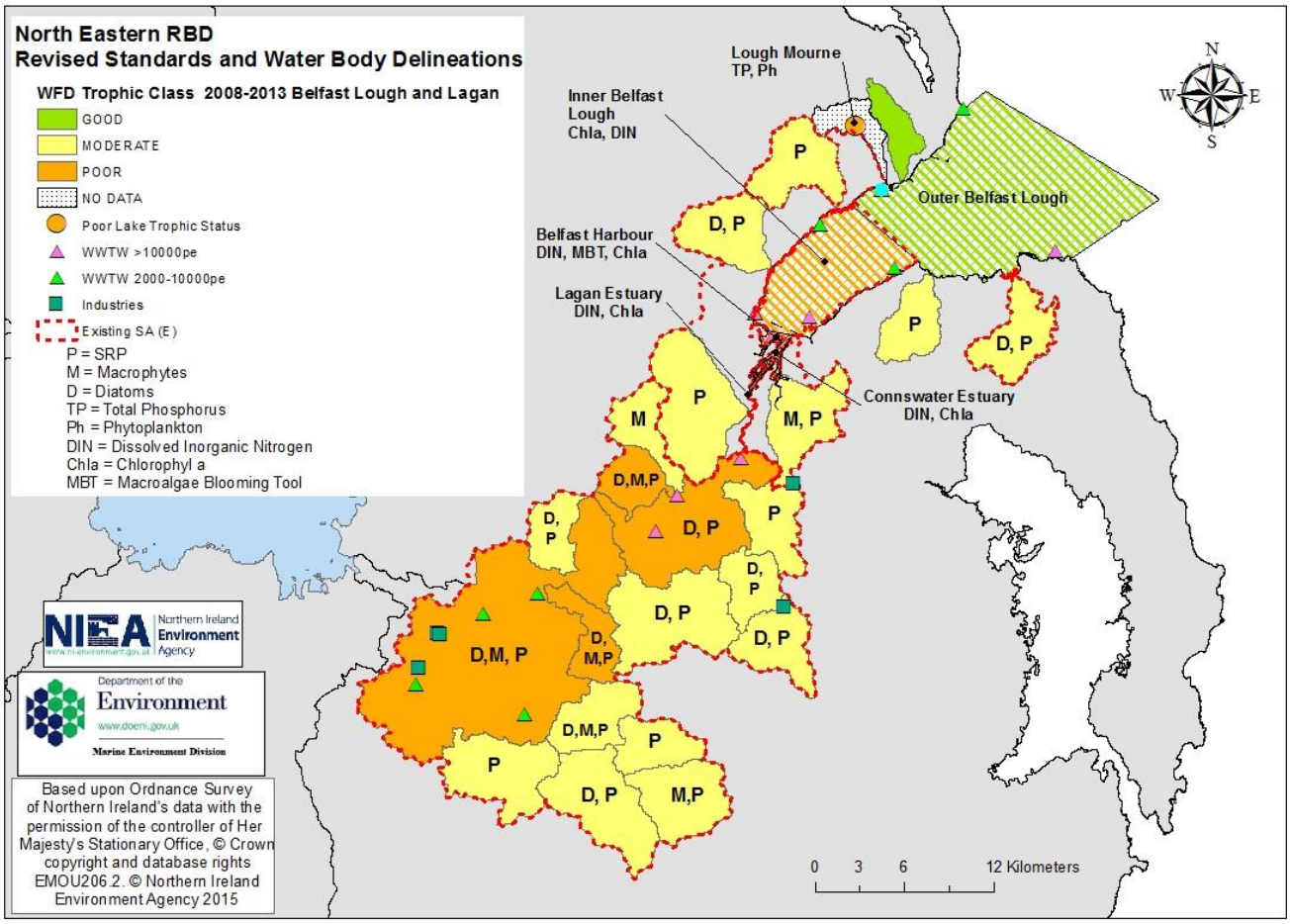

Figure 5: Distribution of Overall WFD Trophic Classes in the Belfast Lough and Lagan Catchment using revised standards and river water body delineations

Figure 6 shows that of the 24 river water bodies in the catchments classed as moderate or worse when using current standards and water body delineations, 10 fail on one trophic parameter standard (predominantly diatoms), 11 fail on two trophic parameters (predominantly diatoms and SRP) and 3 fail on all three parameters, i.e., macrophytes, diatoms and SRP.

Of the 21 river water bodies in the catchments that were classed as moderate or worse using the revised water body delineations and standards, 7 fail on one trophic parameter standard (predominantly SRP), 10 fail on two trophic parameters (predominantly diatoms and SRP) and 4 fail on all three parameters, i.e., macrophytes, diatoms and SRP (**Figure 6**).

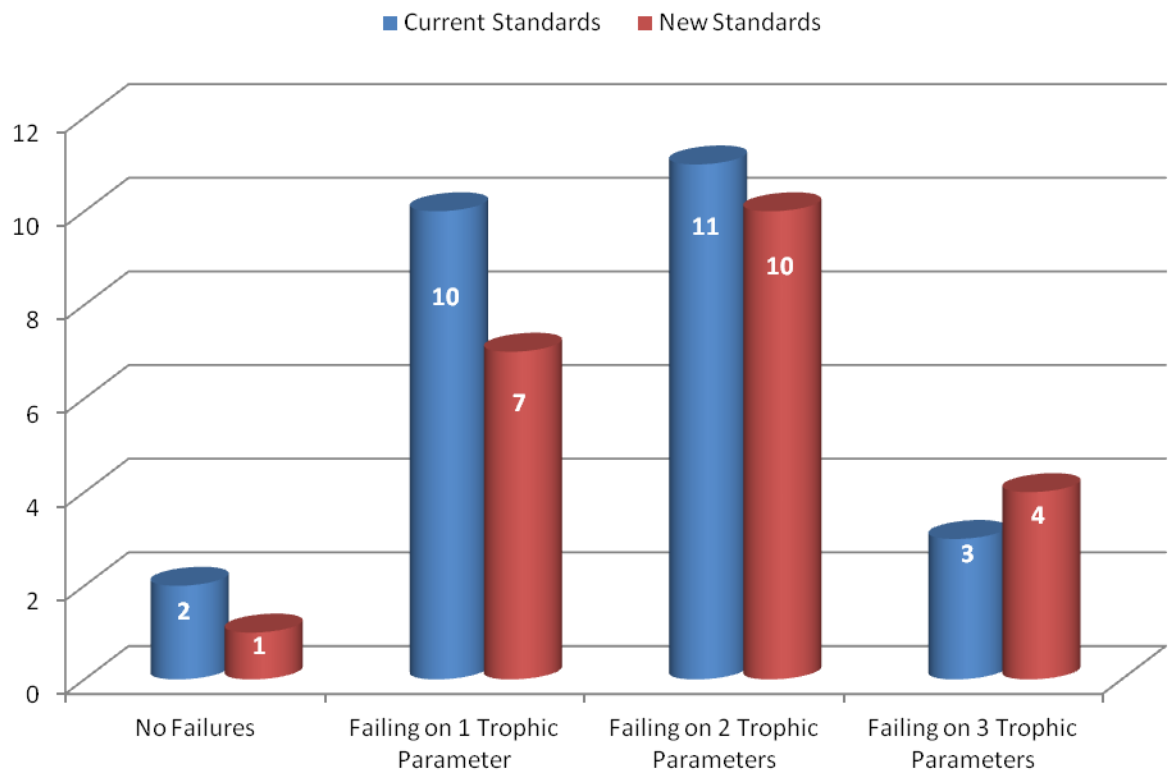

Figure 6: WFD trophic parameter failures using current standards and river water body delineations compared with the revised water body delineations and standards in the Belfast Lough and Lagan Catchment

Summary of findings from the nutrient budget study and SIMCAT modelling of the Belfast Lough and Lagan catchment

Figure 7 shows the percentage total loadings and sources of PSOL, TON and DIN in the Belfast Lough and Lagan catchments from the nutrient budget study. Both the Lagan and the Belfast Lough Catchments are heavily urbanised and the freshwater Lagan receives a high proportion of PSOL from WWTWs from Lisburn and the southern suburbs of Belfast (Foy and Girvan, 2004). The breakdown of PSOL sources show that the contribution from WWTWs is 62%, 81% and 78% respectively in the Lagan, Inner Belfast Lough and Outer Belfast Lough. In contrast, relatively low contributions from agricultural sources to the Tidal River Lagan (27%) and Inner and Outer Belfast Lough (each 13%) reflect the higher level of contributions from point sources. The nutrient budget study also shows that urban land use contributes 11%, 6% and 9% in the Lagan, Inner Belfast Lough and Outer Belfast Lough catchments respectively.

Agriculture contributes the largest loading source of NO_3 to the Tidal River Lagan (66%) and Inner and Outer Belfast Lough catchments (both 55%), compared with 21%, 33% and 30% coming from

WWTWs sources in the Lagan, Inner Belfast Lough and Outer Belfast Lough catchments respectively. Nutrient budget studies show that in the River Lagan catchment, 69% of the DIN loading comes from agricultural sources whereas 23% can be attributed to WWTWs. Agricultural and WWTWs sources of DIN were similar in the Inner and Outer Belfast Lough catchments, with 50% attributed to agricultural sources in both catchments compared with 42% and 41% respectively in the Inner Belfast Lough and Outer Belfast Lough catchments which is attributed to WWTWs sources. Forestry and rough grazing made the smallest contribution (<1%) in the 3 catchments for all nutrient fractions, reflecting the small area devoted to these land uses. **Appendix 3a** presents the mean annual loadings and % total loads of nitrate, PSOL and DIN in the Belfast Lough and Lagan catchments compared with overall Northern Ireland loadings.

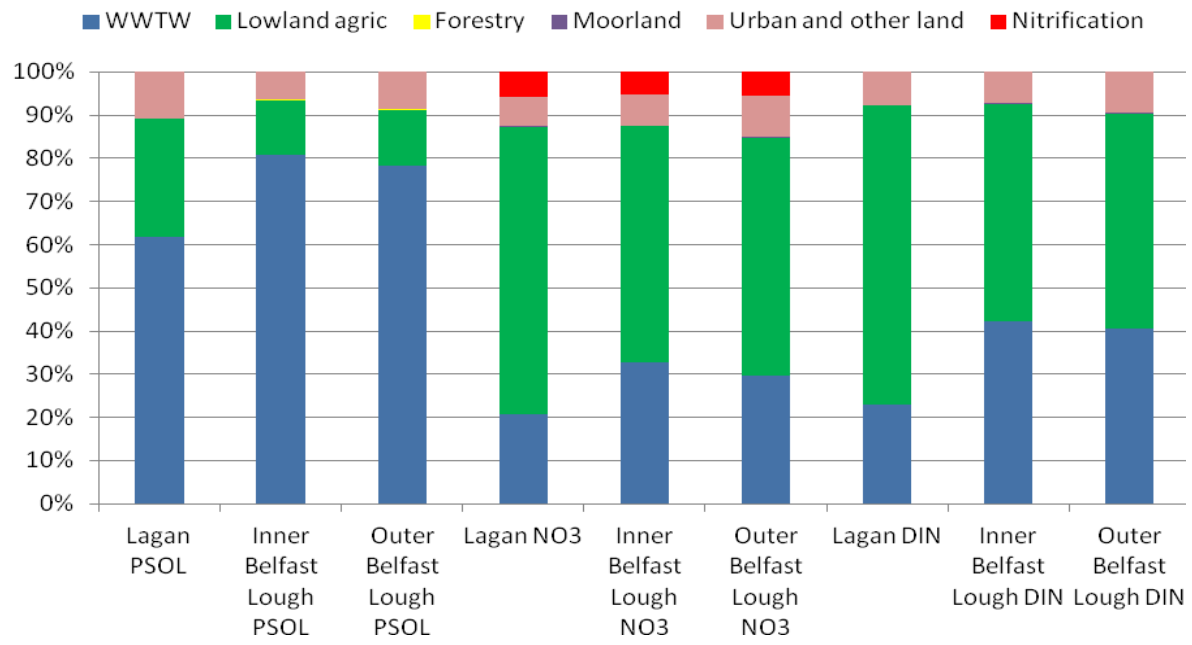

Figure 7: Source of PSOL, NO_3 and DIN loadings to the Tidal River Lagan, Inner and Outer Belfast Lough, 2001-2009

SIMCAT modelling (current performance) of the North Eastern RBD during the period 2005-2009 showed that the total loading of SRP to the Lagan, Inner and Outer Belfast Lough catchments was 324 (tonnes/ yr^{-1}) . The loading of SRP from WWTWs was 248 (tonnes/ yr^{-1}) over the same period, therefore contributing 76.5% to the overall SRP loading in the Lagan, Inner and Outer Belfast Lough catchments. Schematic diagrams are presented in **Figure 8a and 8b** illustrating the loading from individual rivers in the catchments.

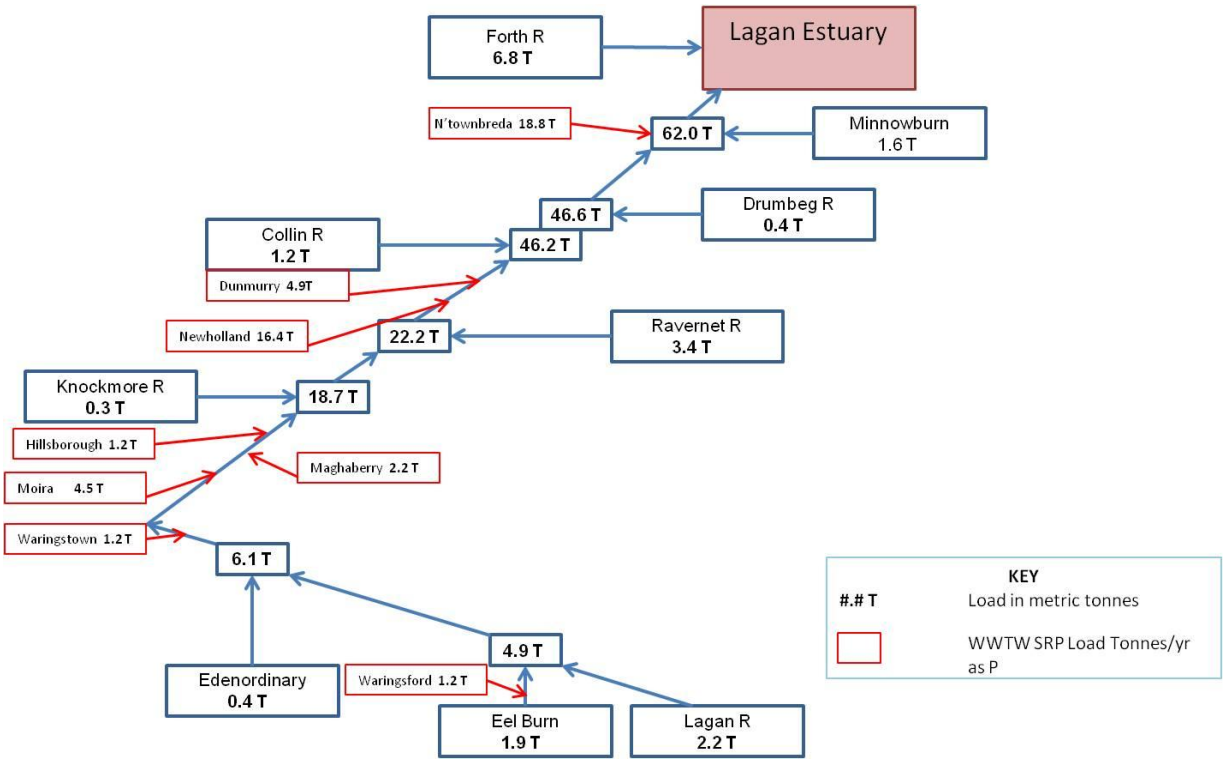

Figure 8a: Schematic of the SRP loadings (tonnes/ yr^{-1}) of rivers within the Lagan catchments, 2005-2009 (Current performance, SIMCAT Model)

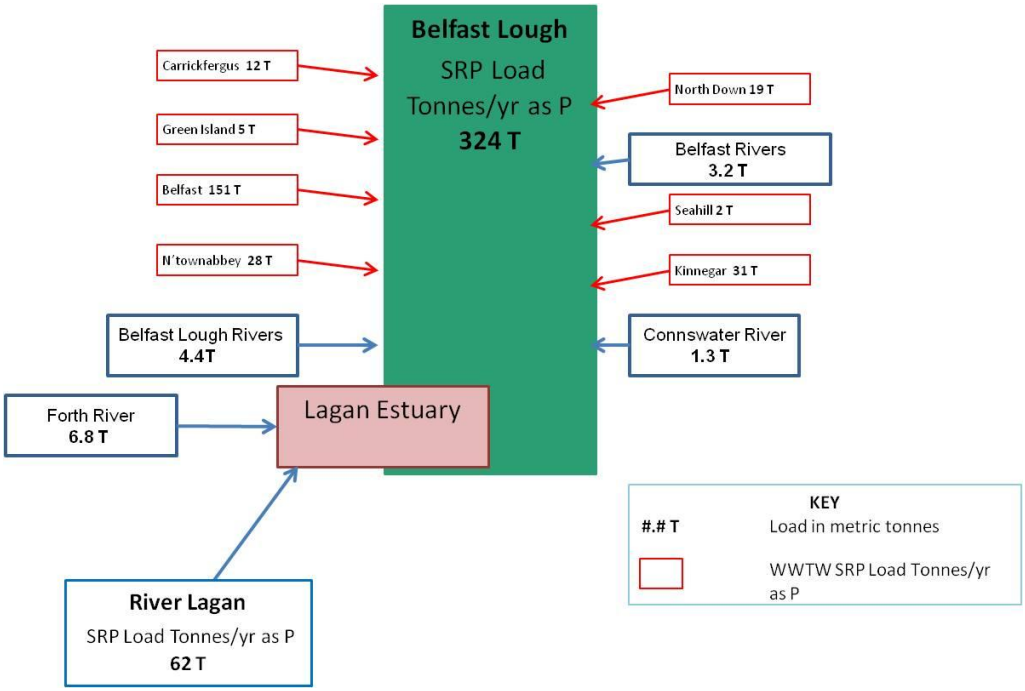

Figure 8b: Schematic of the SRP loadings (tonnes/ yr^{-1}) of rivers within the Inner and Outer Belfast Lough catchments, 2005-2009 (Current performance, SIMCAT Model)

Conclusion and recommendations for Belfast Lough and Lagan catchments

Overall, both the freshwater and marine data support the existing identification of the River Lagan, Lagan Estuary and Inner Belfast Lough (including Connswater Estuary, and Belfast Harbour) as eutrophic (see **Appendix 5, 6, 7** and **8** for full results).

Using the weight of evidence approach, there is no proposed extension to the existing freshwater and marine Sensitive Area designations. There are 2 outlier undesignated freshwater water bodies in the Belfast Lough and Lagan catchments and the evidence to support this decision is presented in **Appendix 10**. There is no risk of deterioration to less than Good status in these water bodies in relation to eutrophic parameters. The local evidence for Lough Mourne suggests that the significant fluctuation in water levels is a contributing factor for failing eutrophic water quality standards. There is a small improvement in the underlying data and risk assessments suggest the lake water body is not at risk of deterioration. Predominant land use in the water body is improved grassland and forestry. Failure of eutrophic status cannot be attributed to qualifying sewage treatment work discharges therefore no UWWTD control measures can be put in place. Designation of the Lough Mourne water body is not recommended during this reporting period.

Further monitoring of marine, river and lake water bodies is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence to support the current designations for the River Lagan, Lagan Estuary and Inner Belfast Lough (including Connswater Estuary, and Belfast Harbour) for the next review period.

3.1.2 Trophic Status of Bush and Glens, 2008-2013

An assessment of the trophic status of the River Bush, carried out for the 2005 Sensitive Area review, recognised that the River Bush catchment is eutrophic and recommended designation. It was subsequently designated as Sensitive (Eutrophic) under the UWWTD in July 2006 (**Figure 9**). The designated Bush River catchment covers an area of approximately 329km^2 representing 2.3% of Northern Ireland's land area. It rises approximately 450m above sea level in the Antrim Plateau in the south of the catchment. As it flows north, it is joined by the Dervock, Burn Gushet and Moss-side rivers and continues northwards through Bushmills, the largest agglomeration in the catchment, to the Atlantic Ocean.

The Glens and Rathlin catchments cover an area of approximately 507km^2. They comprise all 9 Glens of Antrim and also Rathlin Island. The main rivers throughout this area all rise within the Glens and

ultimately flow into the North Channel with the exception of the Glenshesk which flows into the Atlantic. The main towns are Ballycastle to the north, with a number of small coastal villages scattered between i.e. Cushendun, Cushendall, Glenarm and Carnlough. The Glens and Rathlin catchments are not currently designated as Sensitive Areas under the UWWTD.

Most of the coastline in the catchment consists of high salinity, well mixed and dynamic coastal waters. Some areas are affected by a number of significant freshwater inputs such as the Foyle and the Bann, with numerous smaller direct inputs from rivers such as the Bush. Atlantic exposure and proximity to the deep waters of the North Channel make this a very dynamic site. Larne Lough is a sea lough, enclosed to the east by the peninsula of Islandmagee. The northern parts are wider and relatively deep becoming shallower further south, with tidal influences restricted somewhat by Magheramorne.

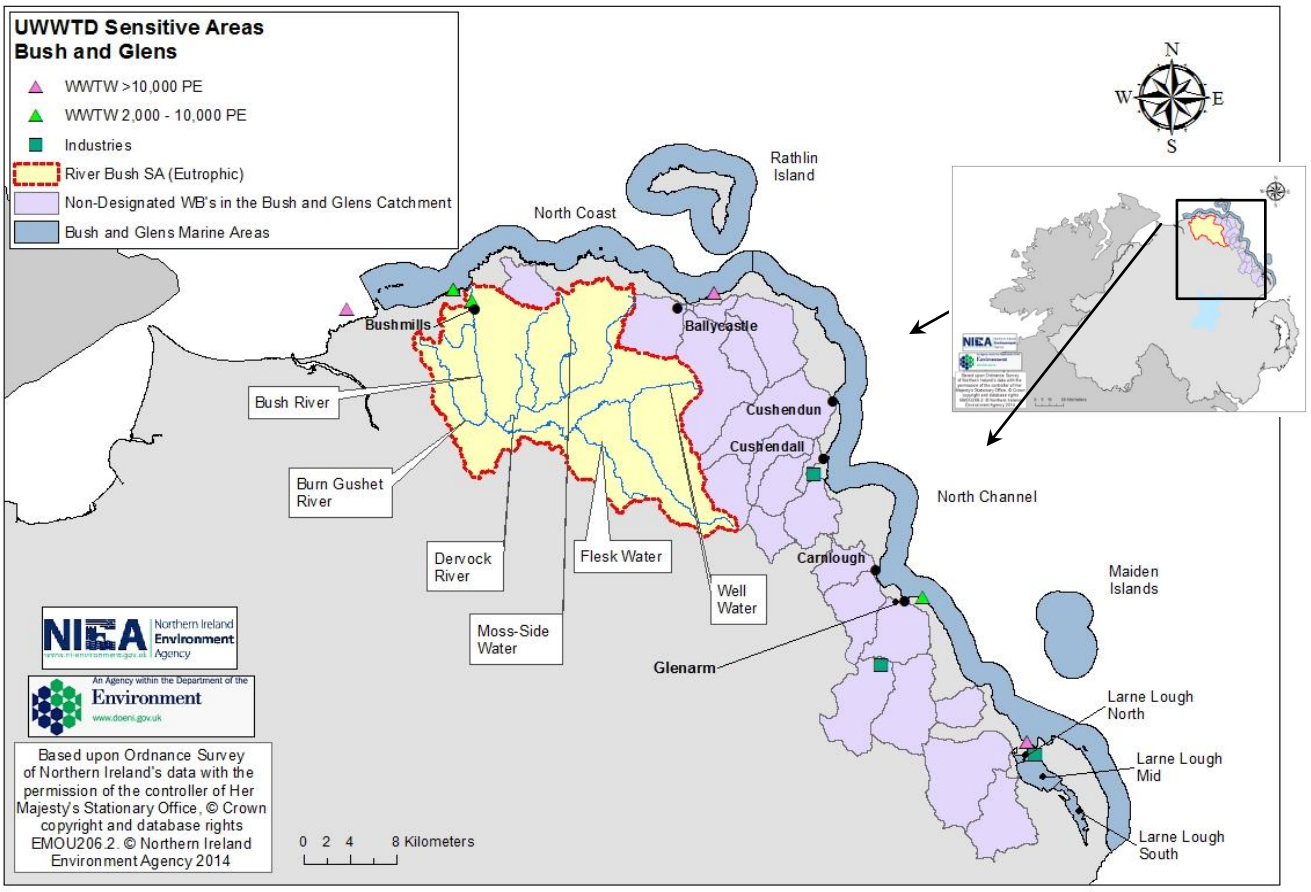

Figure 9: Extent of Sensitive Areas designations in the Bush and Glens catchments

Overall Freshwater Trophic Status

Over the period 2008-2013, when current water body delineations were applied, the trophic status of 37 water bodies were assessed in the Bush and Glens catchments. Over the same period, this

decreased to 28 when the revised river water body delineations were considered. A summary of results are presented in a graph in **Figure 10** and further detail can be found in **Appendix 5** and **6**.

When current standards and river water body delineations were applied, 51% of river water bodies in the Bush and Glens catchments are considered to be high/good trophic status. With the new standards and new water body delineations applied, the number of water bodies considered to be high/good trophic status increased to 75%.

There is a change in the number of river water bodies that are classed as moderate trophic status, which is indicative of 'may become eutrophic' conditions, when the revised water body delineations and standards are applied. Under current standards and river water body delineations, 49% of river water bodies in the Bush and Glens catchments are considered to be moderate trophic status with predominantly medium confidence in class of 'good or better'. No river water bodies are considered to be classed as poor or bad, equating to eutrophic status. Results show that the main driver for moderate status in these catchments is diatoms, with 43% of water bodies failing the TDI standard.

With the new standards and revised river water body delineations applied, the number of water bodies considered to be moderate trophic status decreased to 25%, with predominantly medium confidence in class of 'good or better'. Again, no river water bodies are considered to be classed as poor or bad, equating to eutrophic status. The revision of standards and water bodies has caused a significant change in the trophic status of the diatom communities, with all water bodies classed as high or good status. Hence, the main drivers of moderate status can now be attributed to elevated levels of SRP (14%) and the resulting disturbances to the macrophyte communities (11%).

Macrophytes

When current standards and river water body delineations were applied, 92% of river water bodies in the Bush and Glens catchments are considered to be high/good status for macrophytes. The number of water bodies considered to be high/good status for macrophytes remained relatively the same at 89% as a result of the application of the new standards and river water body delineations.

Diatoms

When current standards and river water body delineations were applied, results show that the main driver for moderate status in the catchments is diatoms, with 43% of river water bodies failing the TDI standard in the Bush and Glens catchments. With the new standards and river water body delineations applied, 100% of river water bodies are considered to be high/good status for the TDI

standard. The expected TDI has been reduced so more sites are meeting or exceeding expected conditions with TDI4.

SRP

When current standards and river water body delineations were applied, 100% of river water bodies in the Bush and Glens catchments are considered to be high/good status for SRP. With the new standards applied, 14% of river water bodies in the Bush and Glens catchments failed the revised SRP standard.

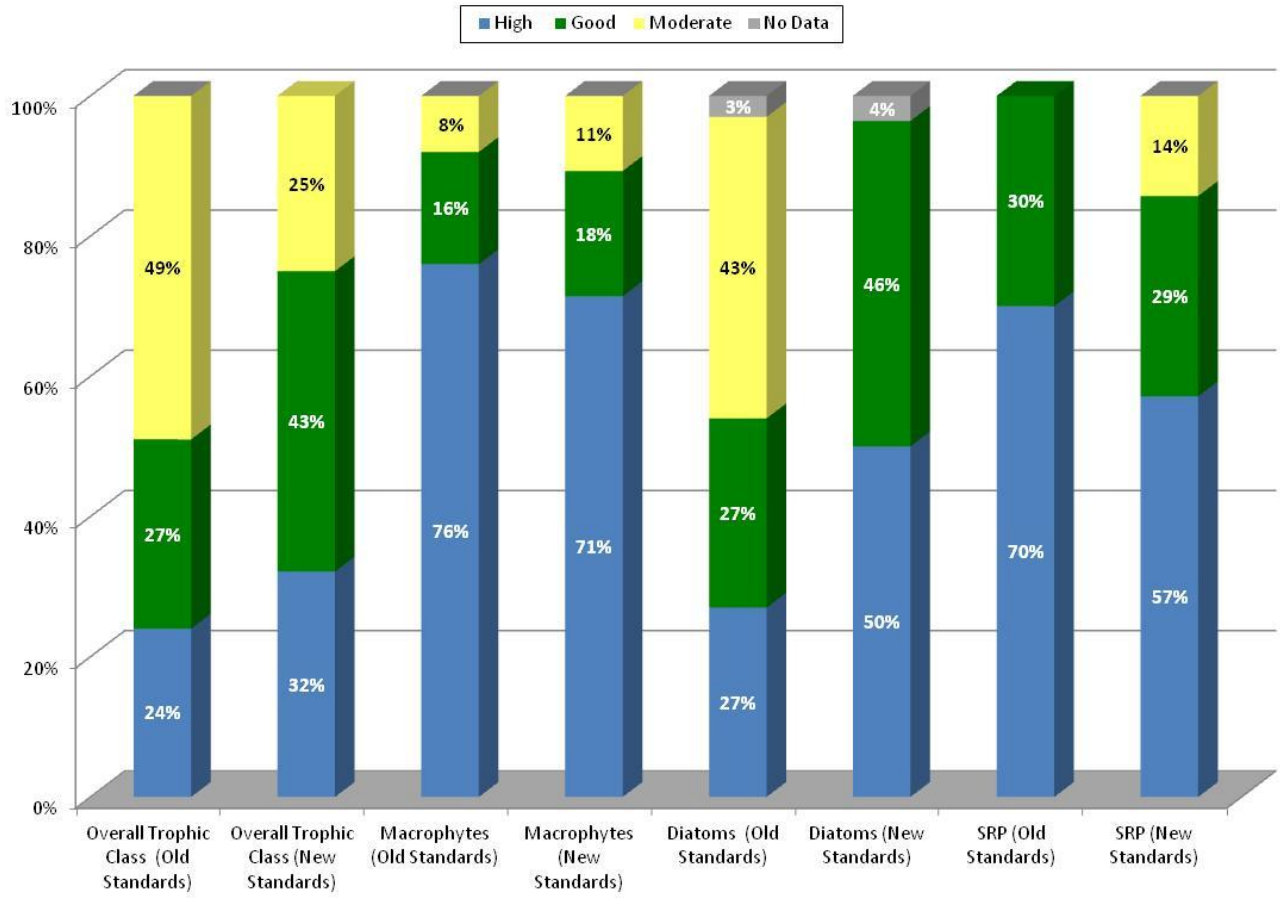

Figure 10: Comparison of the WFD Classification of Trophic Indicator Quality Elements for River Water Bodies in the Bush and Glens Catchments using current standards and river water body delineations with the revised standards and river water body delineations in the period 2008-2013 *(based on SRP, macrophytes and diatoms)*

The distribution of all water body classes across the catchments using current standards and river water body delineations are shown in **Figure 11**; based on 37 river water bodies and 7 marine water bodies. Revised standards and river water body delineations are shown in **Figure 12**; based on 28

river water bodies and 7 marine water bodies. Distribution of overall WFD trophic classes (2008-2013) are based on SRP, macrophytes and diatoms in river water bodies and DIN, macro algae and chlorophyll-α in marine water bodies (see **Appendix 5, 6** and **8** for full results).

There are no lakes in the Bush and Glens catchments. All 7 marine water bodies in the catchments are classed as high/good (**Appendix 9**). The more restricted areas contained in Larne Lough are consistently at good status, and the coastal water bodies in the catchment are all at high status with large-scale circulation provided by local coastal and tidal currents.

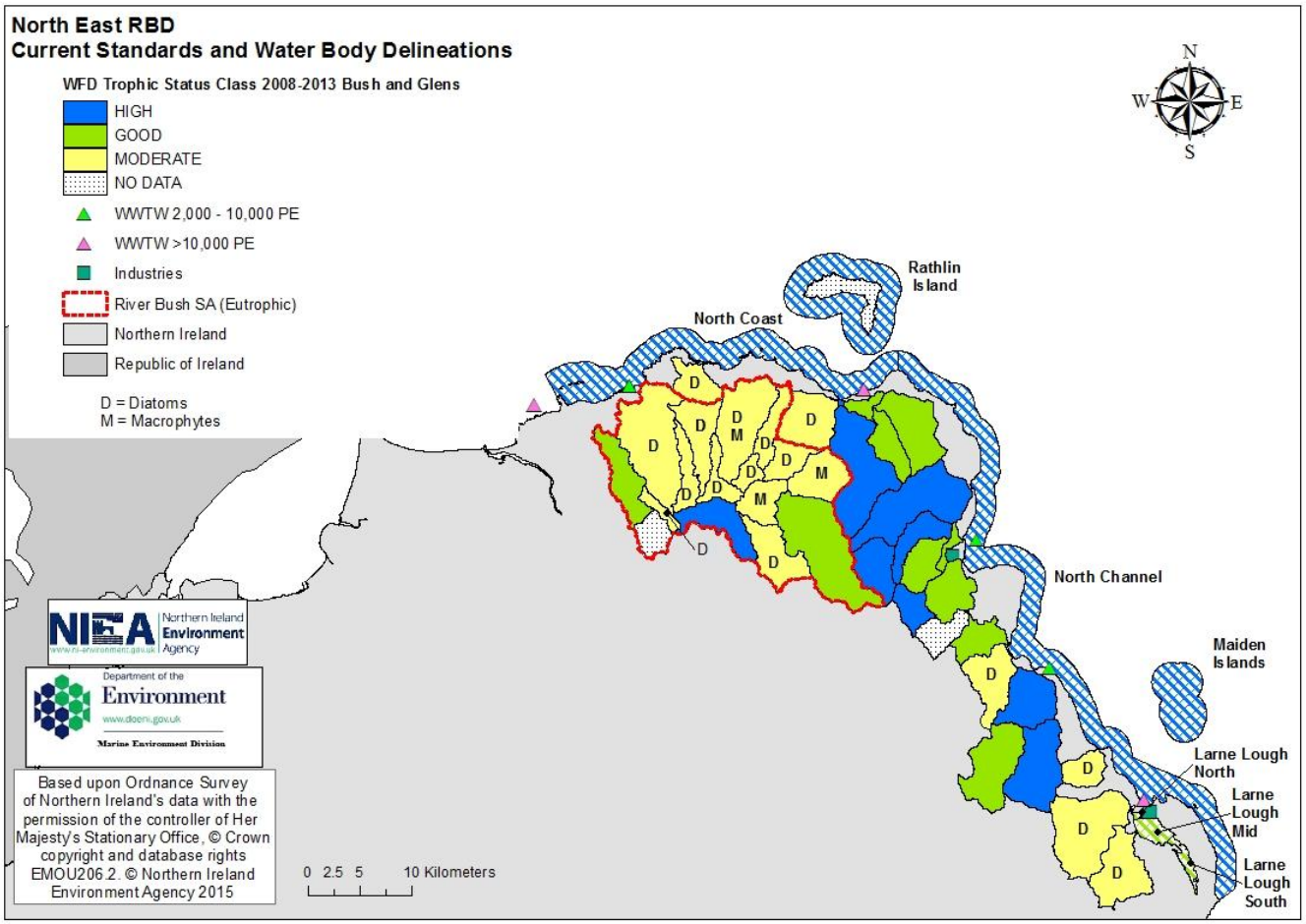

Figure 11: Distribution of Overall WFD Trophic Classes in the Bush and Glens Catchments using current standards and river water body delineations

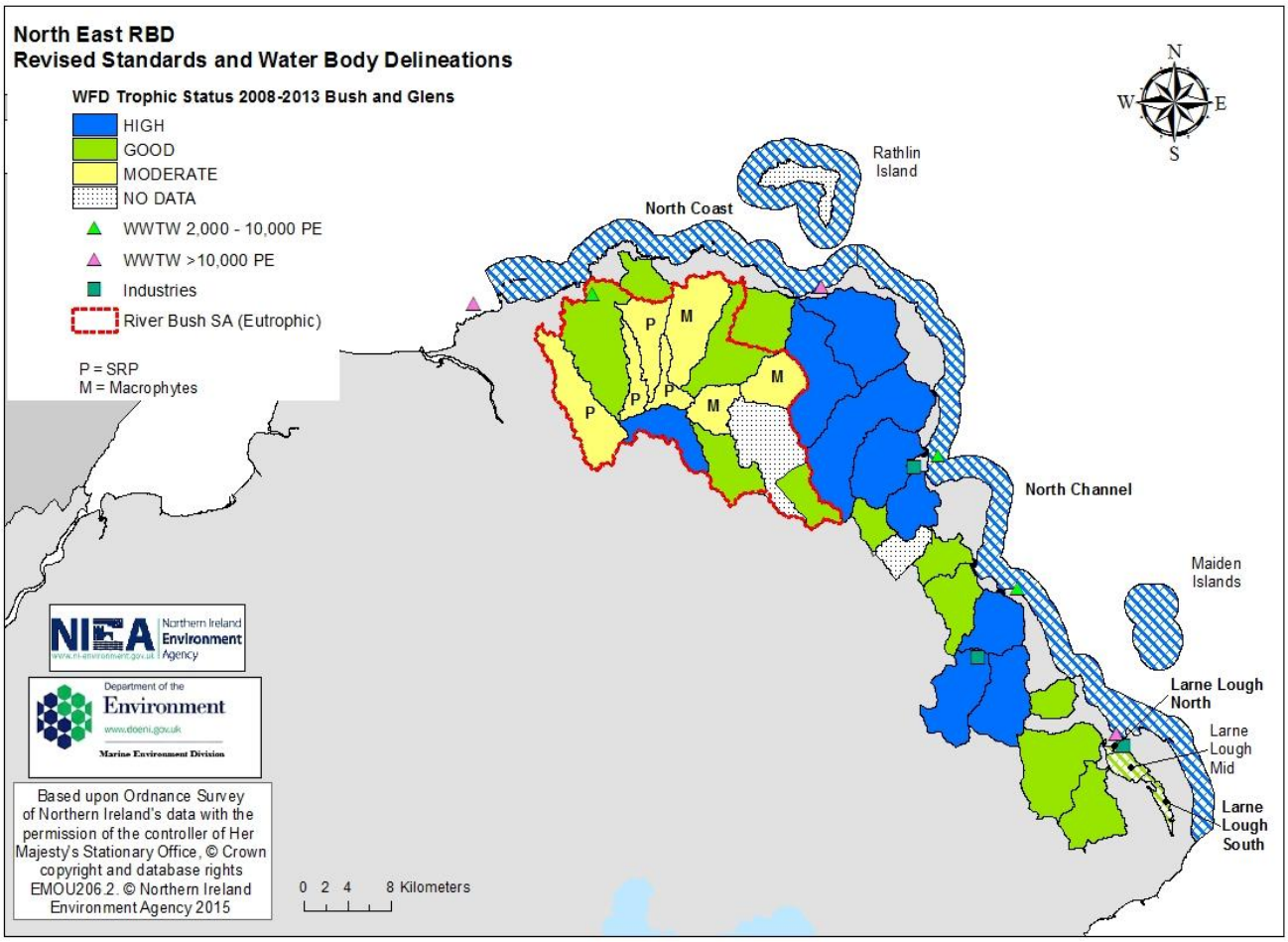

Figure 12: Distribution of Overall WFD Trophic Classes in the Bush and Glens Catchments using revised standards and river water body delineations

Figure 13 shows that of the 18 river water bodies in the catchments classed as moderate when using current standards and water body delineations, 17 fail on one trophic parameter standard, predominantly diatoms and only 1 fails on two trophic parameters. Within the Bush catchment, there are no water bodies with failures of SRP concentrations using current standards.

Of the 7 river water bodies in the catchments that were classed as moderate using the revised standards and river water body delineations, all fail on one trophic parameter standard, either macrophytes or SRP. Within the Bush and Glens catchments, there are no water bodies with failures of the revised TDI standard (**Figure 13**).

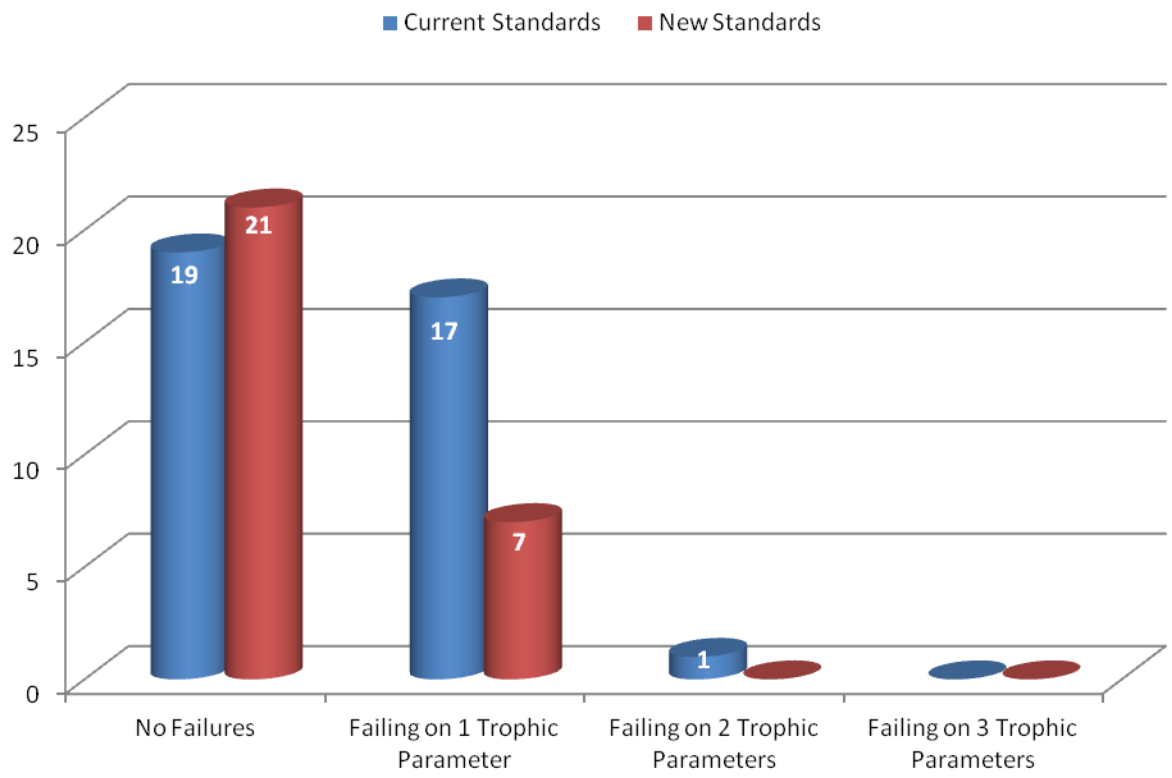

Figure 13: WFD trophic parameter failures using current standards and river water body delineations compared with the revised water body delineations and standards in the Bush and Glens Catchment

Summary of findings from the nutrient budget study and SIMCAT river modelling of the Bush and Glens Rivers

No information from the nutrient budget study is available for this catchment

SIMCAT modelling of the North Eastern RBD showed that the total loading of SRP to the Bush and Glens catchments was 28.9 (tonnes/ yr^{-1}) during the period 2005-2009. The loading of SRP from WWTWs was 2.7 (tonnes/ yr^{-1}) over the same period, therefore contributing 9% to the overall SRP loading in the Bush and Glens catchments. A schematic diagram is presented in **Figure 14** to illustrate the loading from individual rivers in the Bush and Glens catchments.

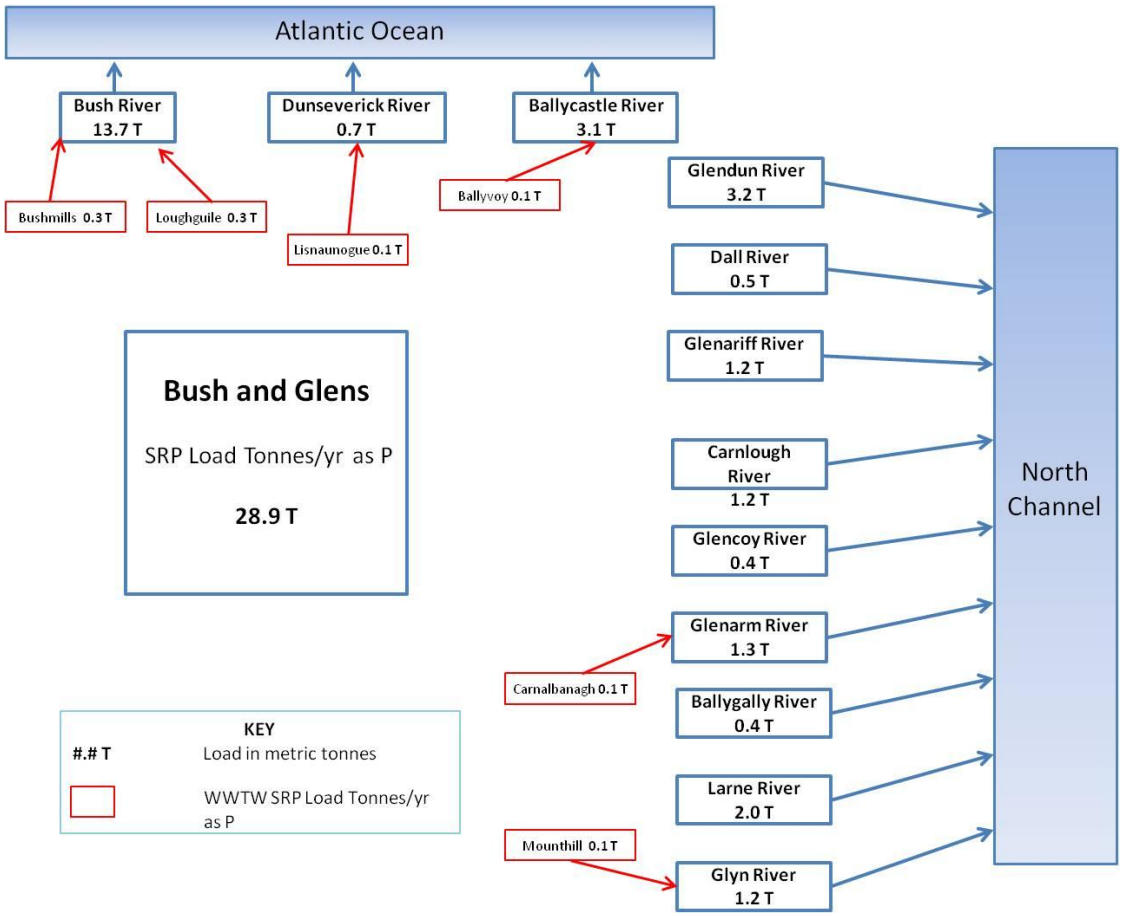

Figure 14: Schematic of the SRP loadings (tonnes/ yr^{-1}) of rivers within the Bush and Glens catchments, 2005-2009

Conclusion and recommendations for the Bush and Glens catchments

Overall, both the freshwater and marine data supports the existing identification of the River Bush as eutrophic (see **Appendix 5, 6** and **8** for full results). Although water quality in relation to eutrophic pressures is improving within the existing designated Bush catchment, removal of the designation may compromise such improvements.

Using the weight of evidence approach, there is no proposed extension to the existing freshwater and marine Sensitive Area designations in the Bush and Glens catchments. There are a number of outlier undesignated freshwater water bodies in the River Bush and Glens catchments which are classified as good or high overall eutrophic classification. There is high/ medium certainty of good or better eutrophic status for these water bodies and there is no risk of deterioration to less than Good status for any of the eutrophic parameters in these water bodies. They are not considered for designation due to a lack of eutrophic impact. There are six outlier undesignated freshwater water bodies

classified as moderate trophic status and the evidence to support the decision not to designate them as Sensitive Areas is presented in **Appendix 10.**

Further monitoring is recommended to continue to assess trends in eutrophic indicators, to ensure continual ongoing improvement in water quality and to provide evidence to support the designation of the River Bush during the next review period.

3.1.3 Trophic Status of Strangford Lough, Lecale and Mourne, 2008-2013

Strangford Lough, Lecale and Mourne have been divided into three main areas consistent with the WFD for the purposes of this report: Strangford North End, River Enler and Quoile Pondage. Numerous smaller rivers and streams exist throughout the area all entering Strangford Lough at various points. Killyleagh WWTWs (p.e. 7228) discharges into Strangford Lough. There is one qualifying works at the North End of Strangford, Ballyrickard (p.e. 40,883).

The Quoile Pondage was identified as being eutrophic and was designated as Sensitive (Eutrophic) under the UWWTD in December 2001 (**Figure 15**). The 2005 Sensitive Area review recognised that the Enler River, as well as Paddy's Point and Reagh Bay Shellfishery were eutrophic and were subsequently designated as Sensitive Areas (Eutrophic) under the UWWTD in 2006, followed by the Strangford Lough North catchment in June 2011.

In the River Enler catchment, the main rivers are the Enler and the River Blackwater (Ards). The Comber and Blackwater Rivers both rise 110m above sea level in the west and south of the catchment. The Enler River rises 170m above sea level in the north of the catchment. As it flows south, it is joined by the Ballystockart River where it continues southwards through Comber the largest agglomeration in the catchment, into Strangford Lough.

Strangford Lough has a high-water area of 182.8km^2 (though approximately 30% of the area is intertidal) and serves a catchment of 771.5km^2 with two main freshwater inputs at Comber and Downpatrick. Depths range from around 10m to over 60m at the deepest point, with an 8 km long, deep (40+ meters) and fast flowing (8+ knots) channel, known as The Narrows, connecting the Lough to the open sea. The coastal stretch of the catchment runs from the northern limit of the Ards Peninsula at the mouth of Belfast Lough through Outer Dundrum Bay and along the Mourne Coast to the mouth of Carlingford Lough. Strangford North End is typified by extensive areas of shallow intertidal mudflats, sandflats and saltmarshes with longer residence times than the southern end.

The Quoile catchment covers an area of approximately 244km^2. The catchment has two differing headwaters, rising around Saintfield to the north and Ballynahinch in the northwest. The Glasswater and Ballynahinch Rivers merge to form the Annacloy River before becoming the Quoile River which flows into the impoundment (Quoile Pondage) retained by the Quoile Barrage. The Quoile Pondage is different in character from the rest of the Lough in that it is an impounded estuary dominated by freshwater. This was constructed in 1957 to prevent flooding in the Downpatrick area and refurbished as well as improved in 2007. The major towns include Downpatrick, Saintfield, Ballynahinch with the smaller towns of Drumaness and Annacloy. There is one qualifying WWTWs at Downpatrick (p.e. 17,284).

In the Newcastle catchment, the Shimna and Burren rivers drain from the Mourne Mountains and enter the Irish Sea at Newcastle. There is one qualifying WWTWs at Newcastle (p.e. 16,271) and a smaller WWTWs located at Annsborough (p.e. 5,967).

Further south, the Kilkeel and Annalong rivers drain into the Irish Sea. There is one qualifying WWTWs at Kilkeel (p.e. 12,337) and a smaller WWTWs located at Annalong (p.e. 3,135). This area is not currently designated.

The Carrigs, Moneycarragh and Blackstaff Rivers all drain into Dundrum Bay Inner at Dundrum WWTWs (p.e. 2,613) which is important as a shellfish water and lies within the Murlough Special Area of Conservation. Ballykinler WWTWs (p.e. 2,260) also discharges into Dundrum Bay. Dundrum Bay Outer includes the sea area that extends one nautical mile from the coastline between St. John's Point and Glassdrumman and contains three identified bathing waters.

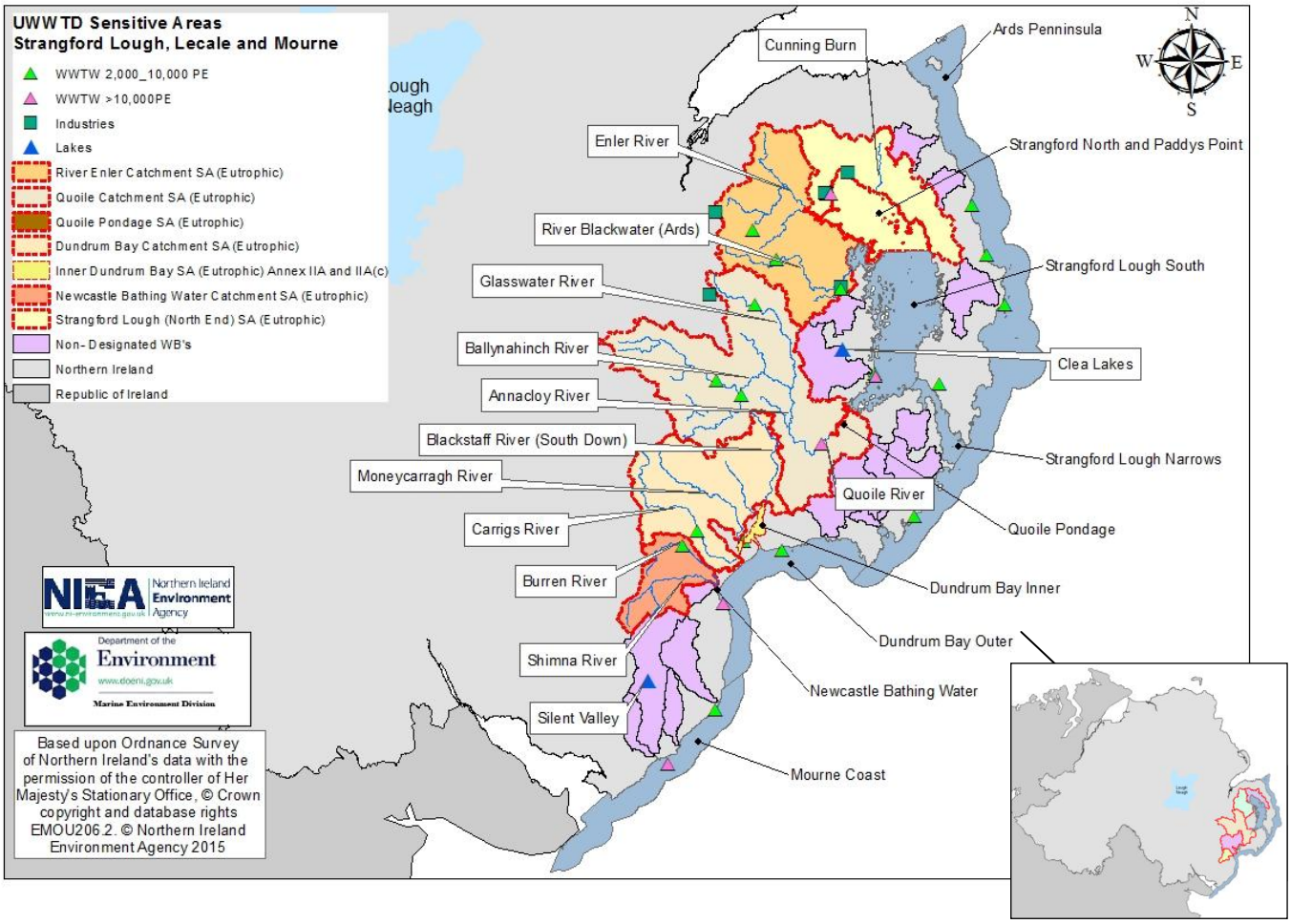

Figure 15: Location of Sensitive Areas designations in Strangford Lough, Mourne and Lecale

Overall Freshwater Trophic Status

Over the period 2008-2013, when current water body delineations were applied, the trophic status of 42 water bodies were assessed in the Strangford Lough, Mourne and Lecale catchments. Over the same period, this decreased to 35 when the revised river water body delineations were considered. A summary of results are presented in a graph in **Figure 16** and further detail can be found in **Appendix 5** and **6.**

When current standards and river water body delineations are applied, 31% of river water bodies in the Strangford Lough, Mourne and Lecale catchments are considered to be high/good trophic status. With the new standards and new water body delineations applied, 29%, of water bodies are considered to be high/good trophic status.

In the period 2008-2013, 69% of river water bodies in the Strangford Lough, Mourne and Lecale catchments are classed as moderate/poor status (predominantly medium confidence in class of

'moderate or worse') with current standards and river water body delineations. No river water bodies are classed as bad trophic status, equating to eutrophic status. Results also show that the main driver of eutrophic conditions in these freshwater catchments are due to elevated levels of SRP and resulting disturbances to the diatom communities, with 29% of water bodies failing the SRP standard, 55% of water bodies failing the TDI standard and 31% failing the macrophyte standard.

The number of water bodies that are classed as moderate/poor trophic status generally remained the same at 71%, (predominantly high confidence in class of 'moderate or worse') when the revised water body delineations and standards are applied. No river water bodies are classed as bad trophic status, equating to eutrophic status. Results also show that the main drivers for eutrophic conditions in these freshwater catchments are elevated levels of SRP on a larger scale (54%) due to the revised standards. The resulting disturbance to the diatom and macrophyte communities is 14% and 26% respectively.

Macrophytes

When current standards and river water body delineations were applied, 60% of river water bodies in the Strangford Lough, Mourne and Lecale catchments are considered to be high/good status for macrophytes and 7% were classed as poor. The number of water bodies considered to be high/good status for macrophytes remained relatively the same at 62%, and likewise 6% of water bodies were classed as poor, as a result of the amalgamation of water bodies due to the revised delineations.

Diatoms

When current standards and river water body delineations were applied, 55% of river water bodies fail the TDI standard in the Strangford Lough, Mourne and Lecale catchments. 14% of water bodies were classed as poor diatom status. With the new standards and new water body delineations applied, this decreases to 14% of river water bodies failing the TDI standard. No water bodies were classified as poor diatom status.

SRP

When current standards and river water body delineations were applied, 64% of river water bodies are considered to be high/good status for SRP in the Strangford Lough, Mourne and Lecale catchments, whilst 5% were classed as poor. With the new standards and new water body delineations applied, this decreases to 37% of river water bodies achieving high or good status for the SRP standard, whilst the number of water bodies classed as poor increased to 26%. As the revised standards are site specific, the degree to which they are more stringent than the existing type specific standards varies considerably from site to site.

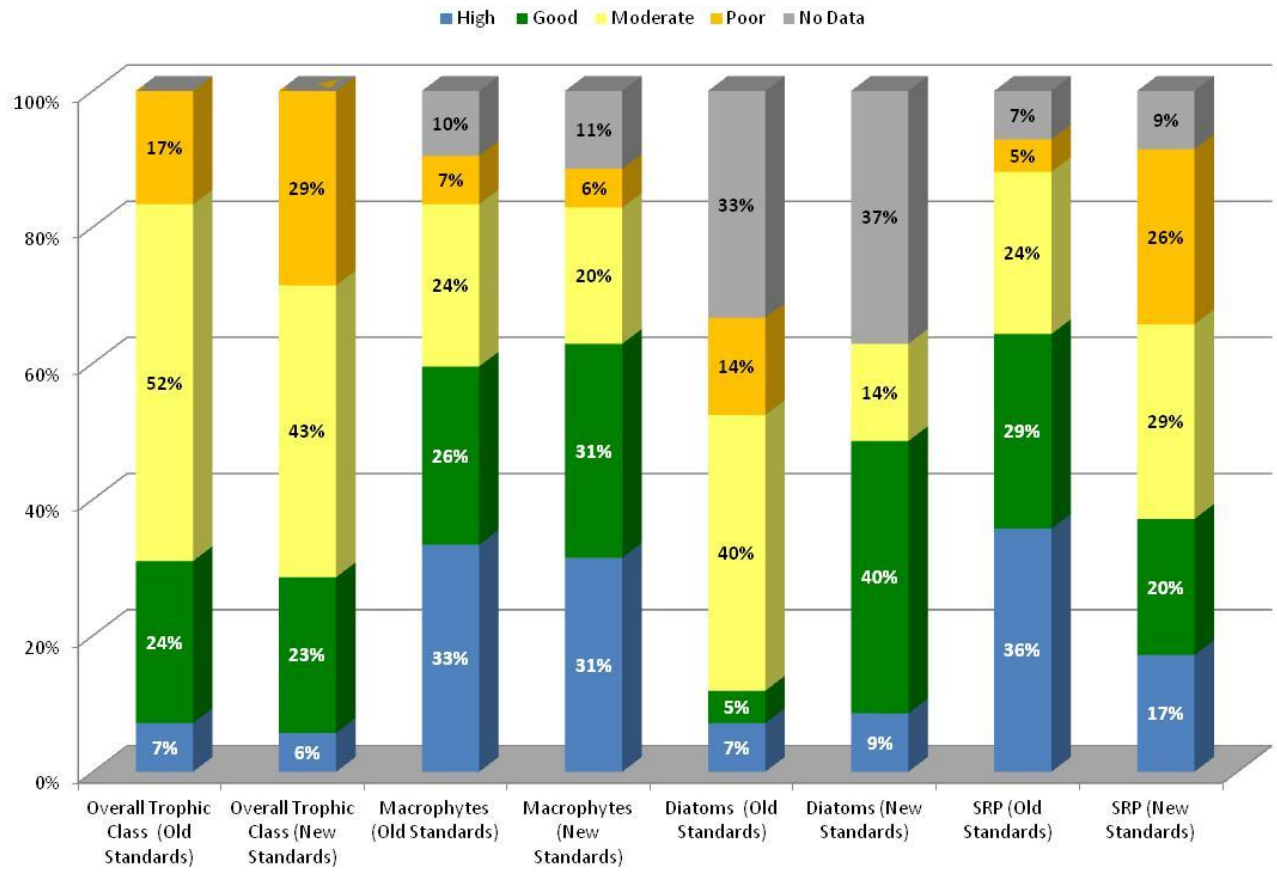

Figure 16: Comparison of the WFD Classification of Trophic Indicator Quality Elements for River Water Bodies in the Strangford Lough, Mourne and Lecale Catchments using current standards and river water body delineations with the revised water body delineations and standards in the period 2008-2013 *(based on SRP, macrophytes and diatoms)*

The distribution of all water body classes across the catchments using current standards and river water body delineations are shown in **Figure 17**; based on 42 river water bodies, 2 lake water bodies and 8 marine water bodies. Revised standards and river water body delineations are shown in **Figure 18**; based on 35 river water bodies, 2 lake water bodies and 8 marine water bodies. Distribution of overall WFD trophic classes (2008-2013) are based on SRP, macrophytes and diatoms in river water bodies; TP, phytoplankton, macrophytes and diatoms in lake water bodies and DIN, angiosperms, macroalgae and chlorophyll-α in coastal water bodies and shellfish water status.

There are two main lake water bodies in the Strangford Lough, Mourne and Lecale catchments. One of the lakes, Clea Lakes, is classed as poor trophic status (with high confidence in class of impact occurring) using both current standards and revised standards. The main driver for this status is elevated TP concentrations and resulting disturbance to the phytoplankton and macrophyte communities. The other lake, Silent Valley is classified as high trophic status (with high confidence in

class of no impact occurring) using both current standards and revised standards. TP concentration, phytoplankton and diatom communities are not impacted and as it is a HMWB, macrophytes are not included in trophic status assessment (see **Section 1.3.3**).

Of the 8 marine water bodies in the catchments, Ards Peninsula alone is classed as high status. A further 5 marine water bodies are classed as good, with Dundrum Bay Inner and the Quoile Pondage being the only marine areas failing against any of the eutrophication related assessment parameters. Dundrum Bay Inner failed against the Macroalgal and Angiosperm tools and shellfish water status. Inner Dundrum Bay was found to be eutrophic and was subsequently designated after an interim review of the trophic status was carried out in 2013. The absence of a significant or sustained saline influence in the Quoile prevented the use of WFD marine assessment tools (which are salinity calibrated) (**Appendix 9**).

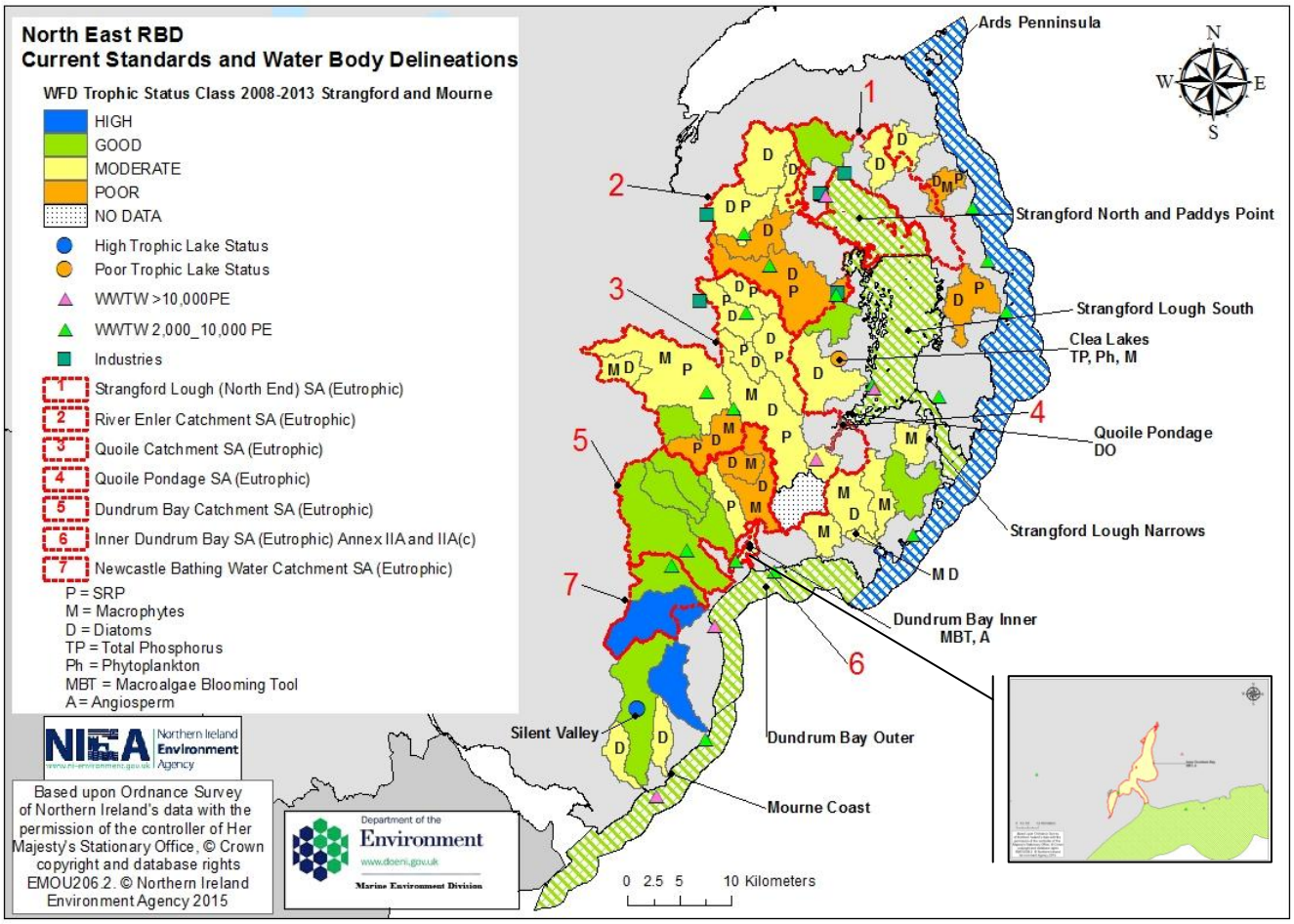

Figure 17: Distribution of Overall WFD Trophic Classes in the Strangford Lough and Mourne Catchments using current standards and river water body delineations

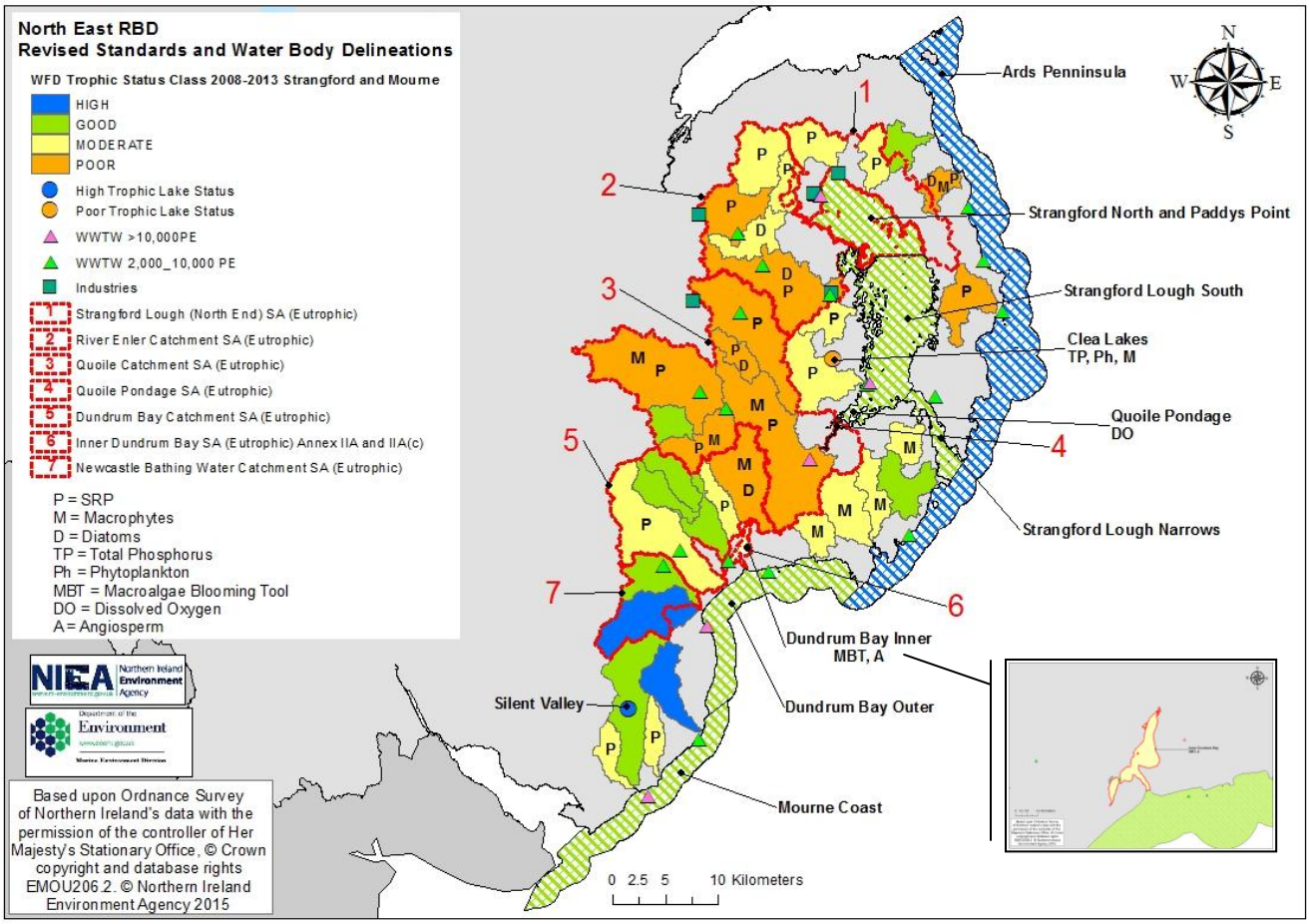

Figure 18: Distribution of Overall WFD Trophic Classes in the Strangford Lough and Mourne Catchments using revised standards and river water body delineations

Figure 19 shows that of the 29 river water bodies in the catchments classed as moderate or worse when using current standards and water body delineations, 13 fail on one trophic parameter standard (predominantly diatoms), 13 also fail on two trophic parameters and 3 fail on all three parameters, i.e., macrophytes, diatoms and SRP.

Of the 25 river water bodies in the catchments that were classed as moderate or worse using the revised water body delineations and standards, 18 fail on one trophic parameter standard (predominantly SRP), 6 fail on two trophic parameters (predominantly SRP and macrophytes) and only 1 fails on all three parameters, i.e., macrophytes, diatoms and SRP (**Figure 19**).

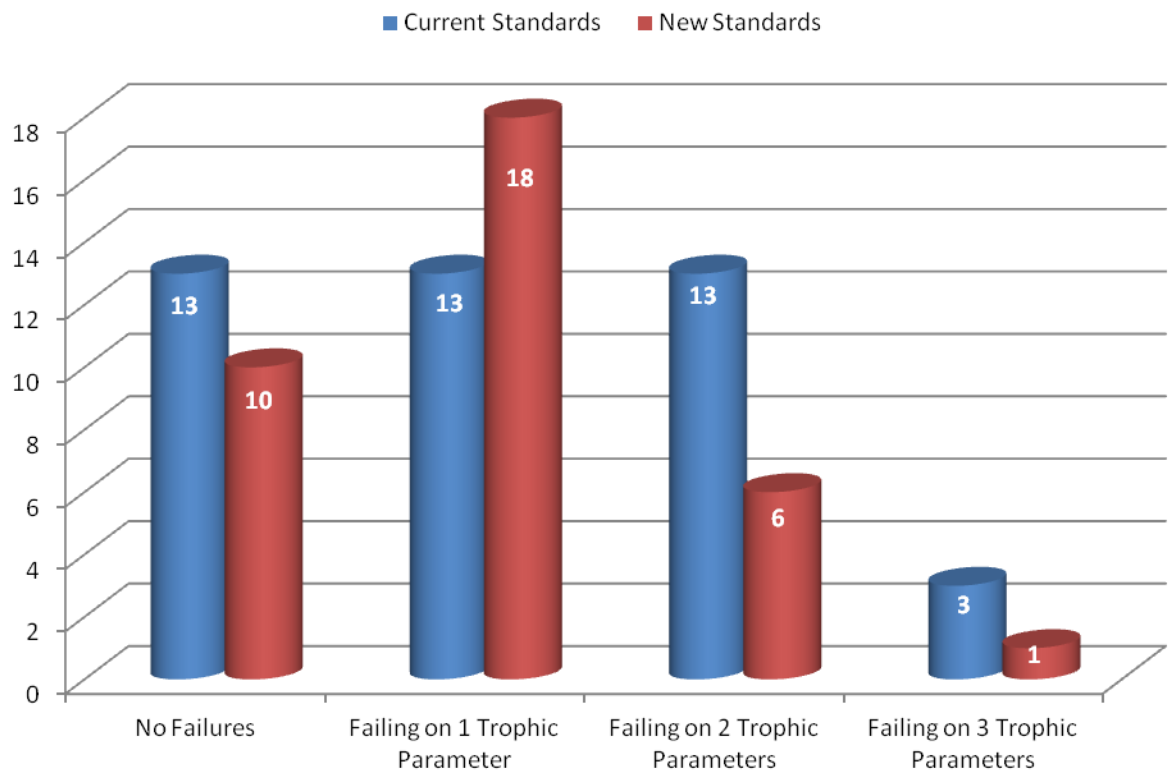

Figure 19: WFD trophic parameter failures using current standards and river water body delineations compared with the revised water body delineations and standards in the Strangford Lough, Mourne and Lecale Catchments

Summary of findings from the nutrient budget study and SIMCAT river modelling of the Strangford Lough, Mourne and Lecale catchment

Figure 20 shows the percentage total loadings and sources of nitrate, PSOL and DIN to Strangford Lough, Quoile and Dundrum Bay. Agriculture contributes the largest loading source of PSOL in the Quoile (64%) and Dundrum Bay (65%) catchments whereas WWTWs sources contribute the largest loading in the Strangford catchment (55%). The nutrient budget study highlights the relatively low contributions from point sources, with WWTWs loadings to the Quoile and Dundrum Bay both amounting to 31%.

Agriculture contributes the largest loading source of NO_3 to Strangford Lough (81%), the Quoile (84%) and Dundrum Bay (93%), compared with 13%, 9% and 2% coming from WWTWs sources in Strangford Lough, Quoile and Dundrum Bay catchments respectively. Nutrient budget studies show that agriculture significantly contributes the largest loading source of DIN to Strangford Lough (79%), the Quoile (87%) and Dundrum Bay (96%), compared with 19%, 11% and 4% in Strangford Lough, Quoile and Dundrum Bay catchments respectively which is attributed to WWTWs sources. Forestry

and rough grazing made the smallest contribution (≤2%) in the 3 catchments for all nutrient fractions, reflecting the small area devoted to these land uses. **Appendix 3b** presents the mean annual loadings and % total loads of nitrate, PSOL and DIN in the Strangford Lough, Quoile and Dundrum Bay catchments compared with overall Northern Ireland loadings.

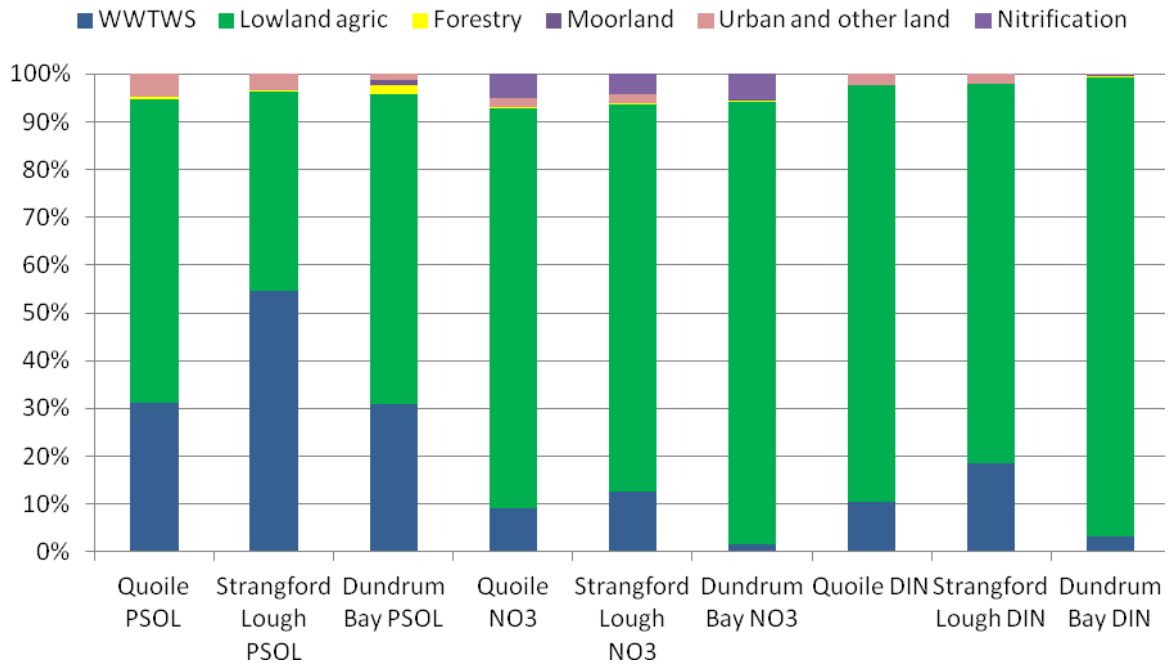

Figure 20: Source of PSOL, NO_3 and DIN loadings to Strangford Lough, Quoile and Dundrum Bay, 2001-2009

SIMCAT modelling (current performance) of the North Eastern RBD during the period 2005-2009 showed that the total loading of SRP to the Strangford Lough, Mourne and Lecale catchments was 43.4 (tonnes/ yr^{-1}). The loading of SRP from WWTWs was 12.1 (tonnes/ yr^{-1}) over the same period, therefore contributing 29% to the overall SRP loading in the Strangford Lough, Mourne and Lecale catchments. A schematic diagram is presented in **Figure 21** illustrating the loading from individual rivers in the catchments.

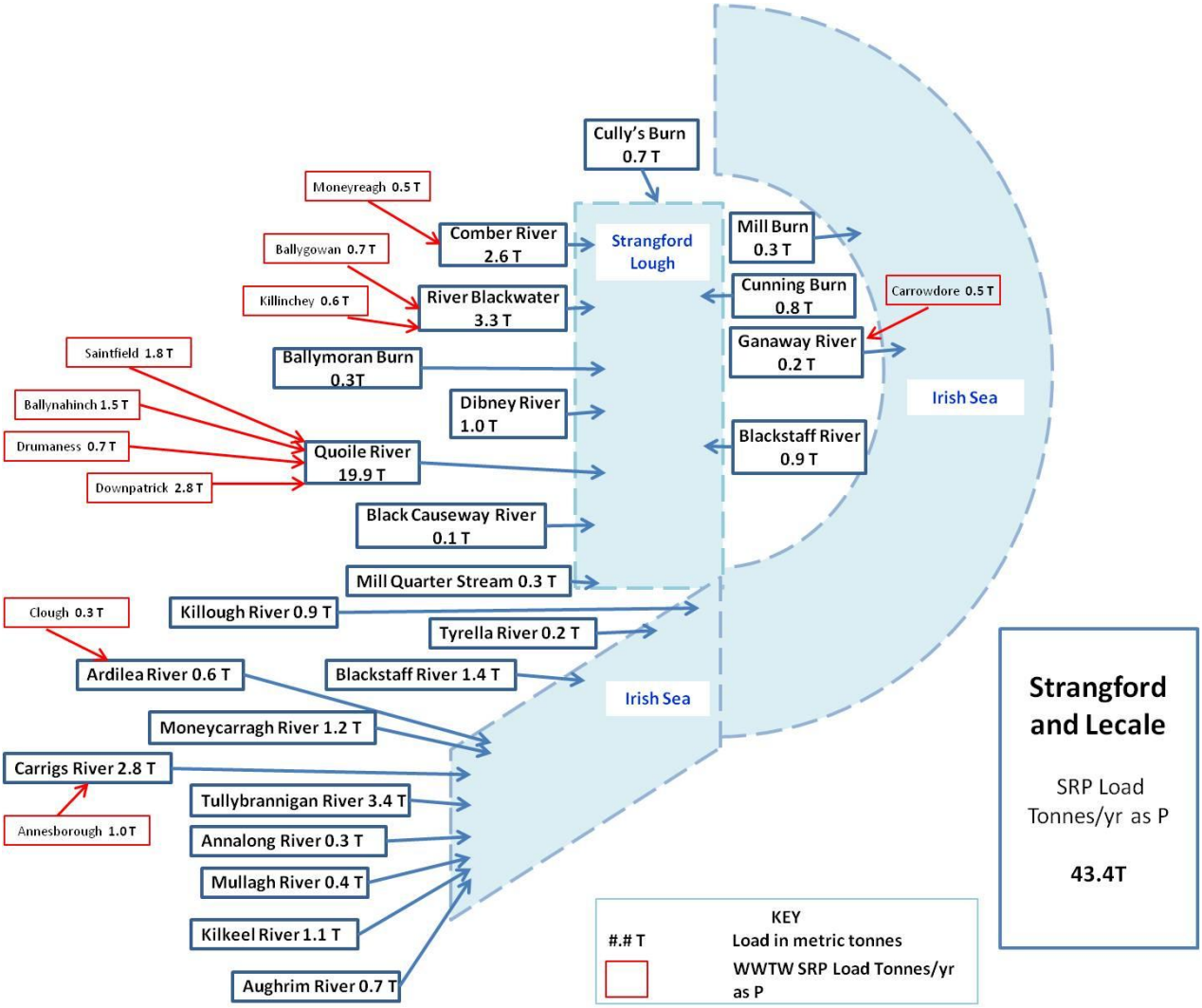

Figure 21: Schematic of the SRP loadings (tonnes/ yr^{-1}) of rivers within the Strangford and Lecale catchments, 2005-2009

Conclusion and recommendations for the Strangford and Lecale catchments

Overall, both the freshwater and marine data supports the existing identification of the Enler River, North Strangford Lough, Quoile Pondage catchments, Inner Dundrum Bay (and catchment) and the Shimna and Burren catchments as eutrophic (see **Appendix 5, 6, 7** and **8** for full results).

Using the weight of evidence approach, there is no proposed extension to the existing freshwater and marine Sensitive Area designations in the Strangford Lough, Lecale and Mourne catchments. There are two outlier undesignated freshwater water bodies in the Strangford Lough, Lecale and Mourne catchments which are classified as good or high overall eutrophic classification. There is high/medium certainty of good or better eutrophic status for these water bodies and there is no risk of deterioration

to less than Good status for any of the eutrophic parameters in these water bodies. They are not considered for designation due to a lack of eutrophic impact. There are nine outlier undesignated freshwater water bodies classified as moderate or poor trophic status and the evidence to support the decision not to designate them as Sensitive Areas is presented in **Appendix 10**. The primary reason for not proposing any further candidate areas in the Strangford Lough, Lecale and Mourne catchment is the absence of WWTWs in the non designated freshwater catchments. It is likely that diffuse inputs are the key source of enrichment in these catchments and the main challenges ahead are to continue to manage diffuse organic inputs through working with land managers, particularly in the Ards Peninsula.

Further monitoring is recommended to continue to assess trends in eutrophic indicators, to ensure continual ongoing improvement in water quality and to provide evidence to support the designation of the Enler River, North Strangford Lough, Quoile Pondage catchments, Dundrum Bay Inner (and catchment) and the Shimna and Burren catchments during the next review period.

3.2 Neagh Bann RBD

The Lough Neagh catchment was designated as a Sensitive Area (Eutrophic) under the UWWTD in 1994. The Lough Neagh Designated SA (Eutrophic) covers an area of approximately 4806km^2, representing 34% of Northern Irelands land area. For the purposes of this report, the Lough Neagh catchment is divided into 2 sections; Lough Neagh North (and Lower Bann) and Lough Neagh South, as shown in **Figure 22**.

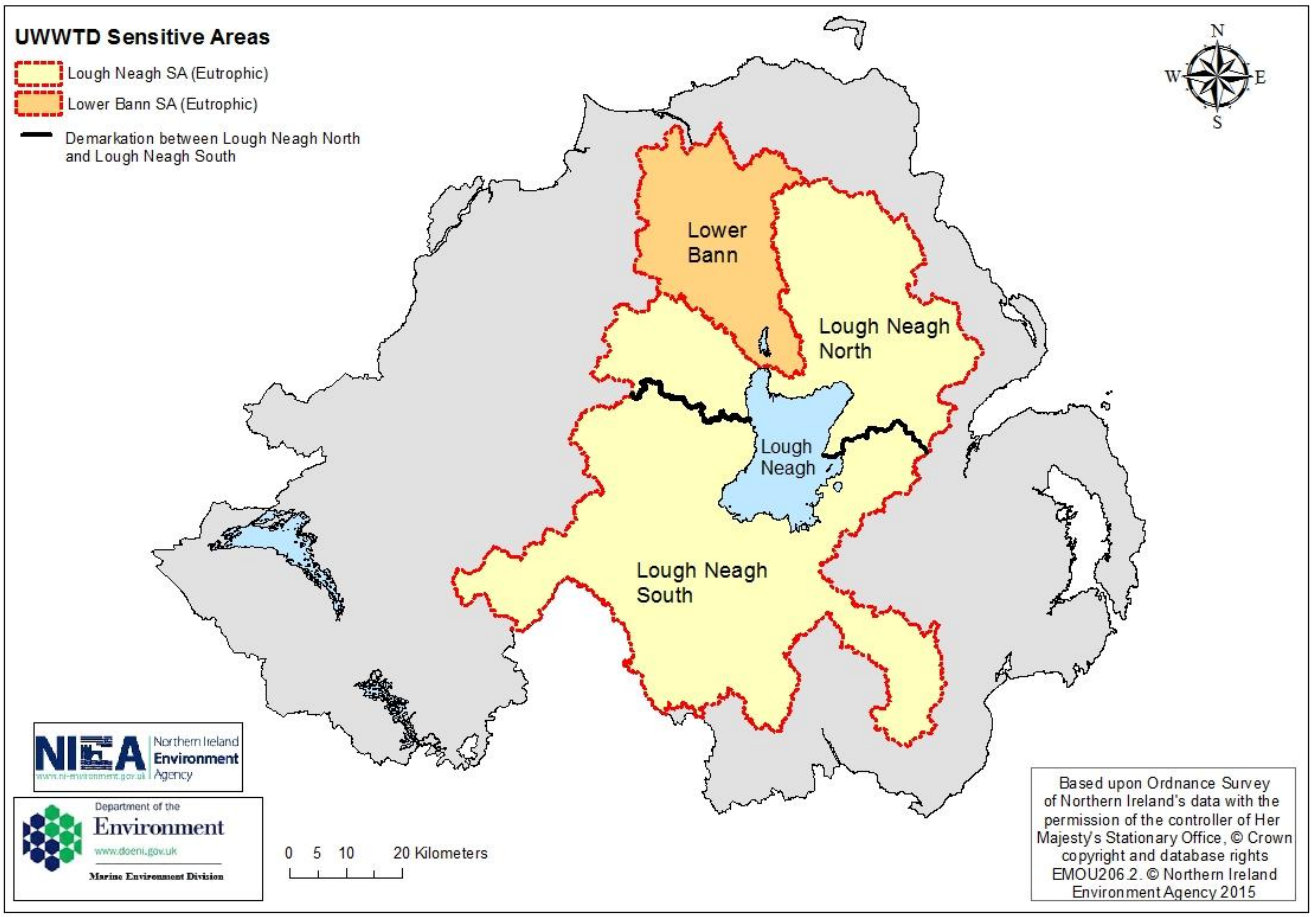

Figure 22: Demarcation of Sensitive Areas designations in Lough Neagh catchment

3.2.1 Trophic Status of North Lough Neagh and Lower Bann, 2008-2013

The lake water body Lough Neagh is covered within this section of the Review and was designated as a Sensitive Area (Eutrophic) under the UWWTD in 1994. The 2005 Sensitive Area review recognised that the Lower Bann catchment is eutrophic and recommended designation. The Lower Bann catchment was subsequently designated as Sensitive (Eutrophic) under the UWWTD in July 2006, covering an area of approximately 834km^2, representing 6% of Northern Irelands land area (**Figure 23**).

Lough Neagh is a freshwater lake that dominates the catchment and covers 383km^2. The Lough is shallow at its margins, being only 9m deep on average, with a maximum depth of 30m. The deepest part of Lough Neagh is towards the outflow in Toome Bay. The Lough drains 38% of Northern Ireland's surface land area and five out of the six counties in Northern Ireland surround it. Numerous rivers and streams exist throughout the area, all entering Lough Neagh at various points. The main

rivers flowing into the northern section of the Lough are the Lower Bann, Moyola, Six Mile Water, Main and Braid.

The Lower Bann Catchment covers an area of approximately 834km^2 representing 6% of Northern Ireland's land area. It includes the sub-catchments Lower Bann, Agivey River, Ballymoney River, Clady River, Aghadowey River and Macosquin River. The Lower Bann flows from the north end of Lough Neagh at Toome into Lough Beg and northwards via Kilrea and Coleraine where it becomes tidal, to drain into the Atlantic Ocean at Castlerock. The entire coastline in the catchment is in Portstewart Bay and consists of high salinity, well mixed coastal waters. Some areas are affected by a number of significant freshwater inputs such as the Foyle and the Bann, Atlantic exposure makes this a very dynamic site. The transitional Bann Estuary is heavily modified and partly mixed/stratified, mesotidal and mesohaline.

The Lower Bann River is unique in Northern Ireland in that it is the only river to drain from the largest lake in NI to the coast. The most downstream freshwater monitoring point on the Lower Bann River is at the weir at the Cutts in Coleraine. Beyond this point, the river becomes tidal. Coleraine and Ballymoney are the main towns in the catchment. The largest WWTWs in the catchment is North Coast WWTW (North Coast at Craigtownmore), which has a p.e. of approximately 77,653 and discharges to tidal waters approximately 2.5 miles downstream of the weir. It does not impinge on the freshwater Lower Bann because of the physical barrier of the weir; therefore it is not included as a freshwater qualifying works. The town of Ballymoney is currently served by Ballymoney (Glenstall) WWTW (p.e. 21,810). There are also a number of smaller WWTWs in the catchment; Kilrea (p.e. 2,578), Portglenone (p.e. 3,476) and Garvagh (p.e. 2,773).

The River Braid drains into the River Main near Ballymena and ultimately flows into Lough Neagh at Randalstown Forest, covering an area approximately 714km². Both the Braid and the Main have tributaries feeding them such as Kells Water, Ahoghill Burn, Artoges River and the Clogh River. The main towns are Ballymena and Randalstown and there are several smaller towns throughout the area, such as Ahoghill, Cullybacky, Broughshane, Dunloy, Cloughmills and Kells. The largest WWTWs in the catchment is Tullygarley (Ballymena), with a p.e. of approximately 113,825.

The Moyola drains into Lough Neagh at Moyola Water Foot and has an area of approximately 313km². The river rises in the Sperrin Mountains in the west and flows eastwards towards Lough Neagh between Ballyronan and Toome. The river joins with a number of significant tributaries such as the White Water, Glengomna River, Altalacky Burn and the Altagoan Burn. The main towns are Magherfelt, Castledawson, Draperstown and Tobermore. The largest WWTWs in the catchment is

Magherafelt, with a p.e. of approximately 16,090, with 2 smaller WWTWs located at Maghera (p.e. 6,586) and Draperstown (p.e. 3,263).

The Six Mile Water covers an area approximately 302km^2 and the upper reaches rise in the western part of the catchment near the Antrim Hills and Ballynure. The river flows westward towards Lough Neagh at Antrim, where it is joined by a number of significant tributaries such as Ballymartin Water, Clady Water, Doagh River and Rathmore Burn. The Six Mile Water drains into Lough Neagh at Antrim Boat Club just south of Shane's Castle. The main towns are Ballyclare and Antrim, but there are also several other significant towns throughout the area, such as Templepatrick, Ballynure, Parkgate, Mallusk and Doagh. A large industrial estate is present in the catchment at Mallusk. This is situated on the Ballymartin Water which flows into the Six Mile Water. There are 2 qualifying WWTWs in the catchment, Antrim and Ballyclare. Antrim WWTW discharges into northern Lough Neagh with a p.e. of approximately 65,961 whilst Ballyclare WWTW has a p.e. of around 16,750.

There is one further qualifying WWTW which discharges directly to the south eastern part of the Lough which is also the largest, Ballynacor with a p.e. of 111,400. It serves Portadown, Craigavon and Lurgan.

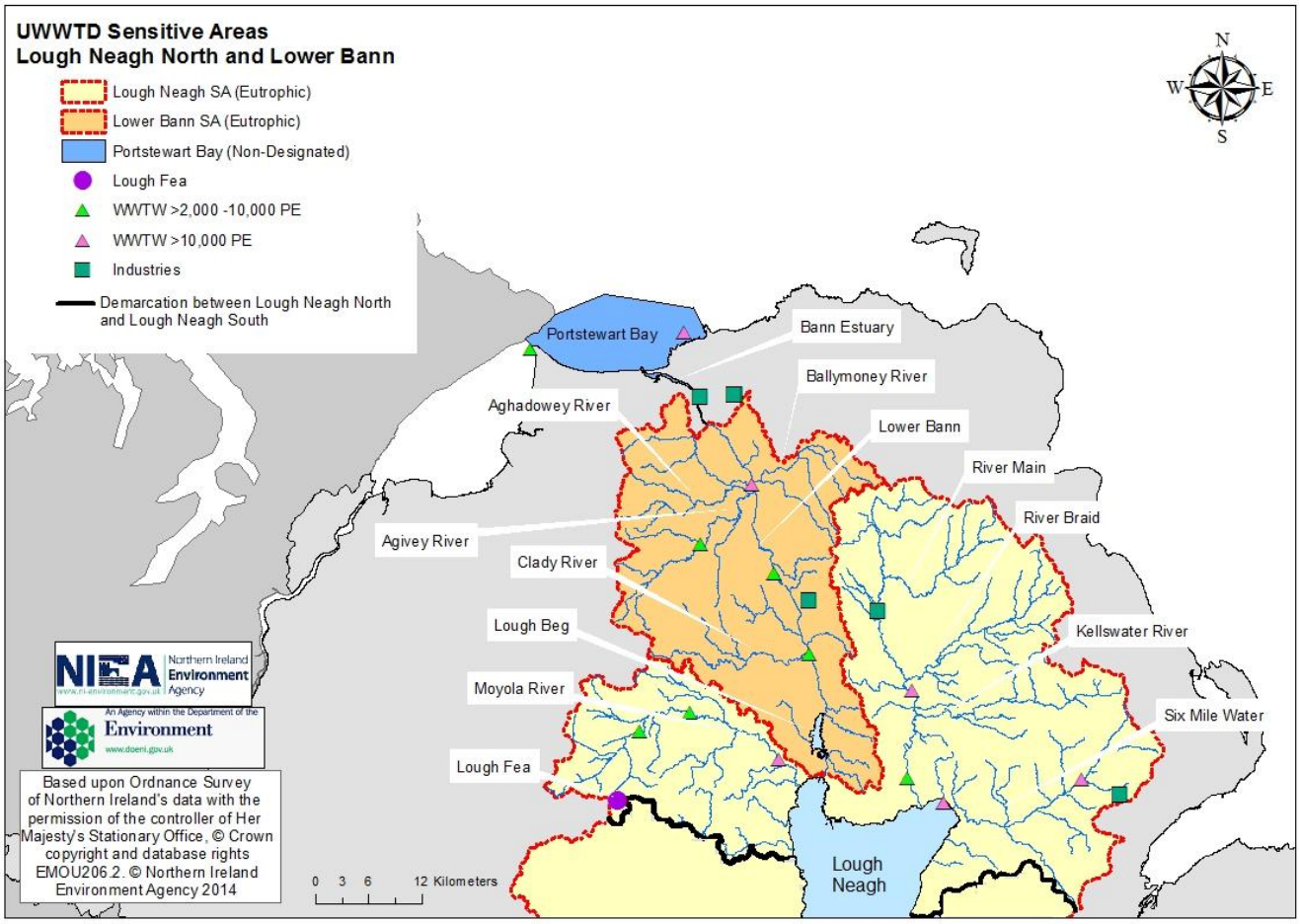

Figure 23: Extent of Sensitive Areas designations in Lough Neagh North and Lower Bann

Overall Freshwater Trophic Status

Over the period 2008-2013, when current water body delineations were applied, the trophic status of 106 water bodies were assessed in the Lough Neagh North and Lower Bann catchments. Over the same period, this decreased to 86 when the revised river water body delineations were considered. A summary of results can be found in a graph in **Figure 24** and further detail can be found in **Appendix 5** and **6**.

When current standards and river water body delineations were applied, 26% of river water bodies in the Lough Neagh North and Lower Bann catchments are considered to be high/good trophic status therefore 74% of river water bodies are classed as worse than moderate (predominantly medium confidence in class of 'moderate or worse'). No river water bodies are classed as bad trophic status. Results also show that the main driver of eutrophic conditions in these freshwater catchments is due to disturbances to the diatom communities, and to a lesser extent the macrophyte communities. A high proportion (73%) of water bodies in the catchments failed the TDI standard and 15% of water

bodies failed the macrophyte standard which suggests that despite low SRP concentrations (5% failure) there is an impact occurring.

With the new standards and new water body delineations applied, the number of water bodies considered to be high/good trophic status substantially increased to 66%, as shown in Figure 21. The number of water bodies that are classed as moderate/poor trophic status decreased to 33%, (predominantly medium confidence in class of 'good or better'). No river water bodies are classed as bad trophic status[7]. Results also show that the drivers for eutrophic conditions in these freshwater catchments are elevated levels of SRP (15%) and the resulting disturbance to the diatom and macrophyte communities at 16% and 13% respectively.

Diatoms

When current standards and river water body delineations were applied, results show that the main driver for moderate or worse status in the catchments is disturbance to diatom communities with only 24% of river water bodies passing the TDI standard in the Lough Neagh North and Lower Bann catchments. 8% of water bodies are classed as poor status. With the new standards and new water body delineations applied, this substantially increases to 79% of river water bodies passing the TDI standard, only 16% of water bodies were classified as moderate status and no water bodies were classified as poor status.

Macrophytes

When current standards and river water body delineations were applied, 81% of river water bodies in the Lough Neagh North and Lower Bann catchments are considered to be high/good status for macrophytes, whilst 4% were classed as poor status. The number of water bodies considered to be high/good status for macrophytes remained the same at 82%, likewise, 3% were classed as poor as a result of the amalgamation of water bodies due to the revised delineations.

SRP

When current standards and river water body delineations were applied, 90% of river water bodies pass the SRP standard in the Lough Neagh North and Lower Bann catchments. With the new standards and new water body delineations applied, this decreases to 78% of river water bodies passing the SRP standard.

[7] As a result of the delineation of river water bodies, GBNI1NB030308243 is now classified using the lake classification result.

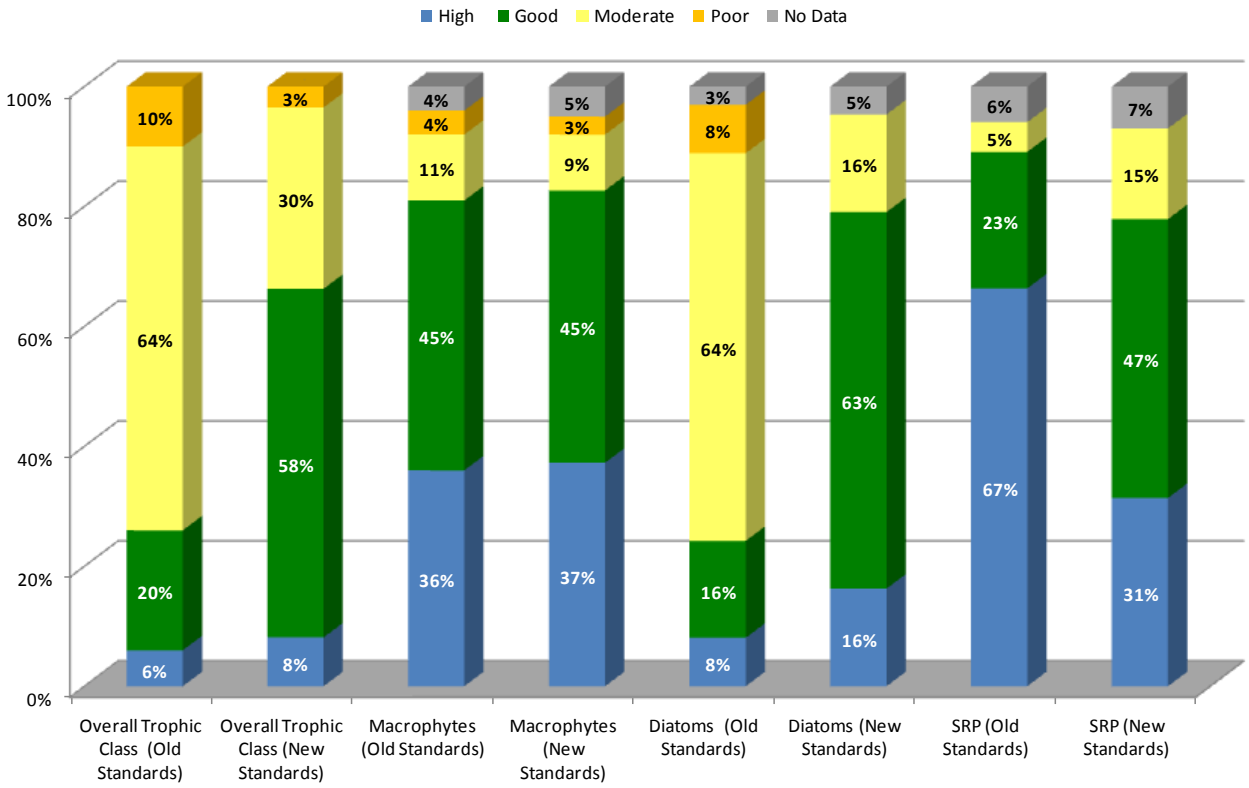

Figure 24: Comparison of the WFD Classification of Trophic Indicator Quality Elements for River Water Bodies in the Lough Neagh North and Lower Bann Catchments using current standards and river water body delineations with the revised water body delineations and standards in the period 2008-2013 *(based on SRP, macrophytes and diatoms)*

The distribution of all water body classes across the catchments using current standards and river water body delineations are shown in **Figure 25**, based on 106 river water bodies, 3 lake water bodies and 2 marine water bodies. Revised standards and river water body delineations are shown in **Figure 26**; based on 86 river water bodies, 3 lake water bodies and 2 marine water bodies. Distribution of overall WFD trophic classes (2008-2013) are based on SRP, macrophytes and diatoms in river water bodies; TP, phytoplankton, macrophytes and diatoms in lake water bodies and DIN, angiosperms, macroalgae and chlorophyll-α in marine water bodies (see **Appendix 5, 6, 7** and **8** for full results).

There are three main lakes in the Lough Neagh North and Lower Bann catchments. Lough Neagh, the largest lake in Northern Ireland, is classed as bad trophic status or exhibiting hypereutrophic conditions (with high confidence in class of impact occurring) using both current standards and revised standards. The main drivers for the status are elevated TP concentrations resulting in disturbances to the diatom, macrophyte and plankton communities. Lough Beg, situated at the north end outflow of Lough Neagh is classed as poor trophic status (with high confidence in class of impact occurring)

using both current standards and revised standards. The main drivers again being elevated TP concentrations resulting in disturbance to the microflora and to a lesser extent, to the phytoplankton communities. Macrophytes are not included in the trophic assessment as it is a HMWB. Lough Fea, situated west of Lough Neagh is classed as high trophic status (with high confidence in class of no impact occurring) using both current standards and revised standards. Macrophytes are not included in the trophic assessment as it is a HMWB (See **Section 1.3.3**).

Figures 25 and 26 show that one of the two marine water bodies in the catchment: Portstewart Bay is classed at high trophic status. The other, the River Bann Estuary, is classed as poor status failing both the DIN and Chlorophyll standard (**Appendix 9**). The Bann Estuary has not been recommended for identification in previous reports since the high nutrients have been shown to be 97% from upstream freshwater sources. The failures against both causative and response parameters are consistent and repeated through the assessment period.

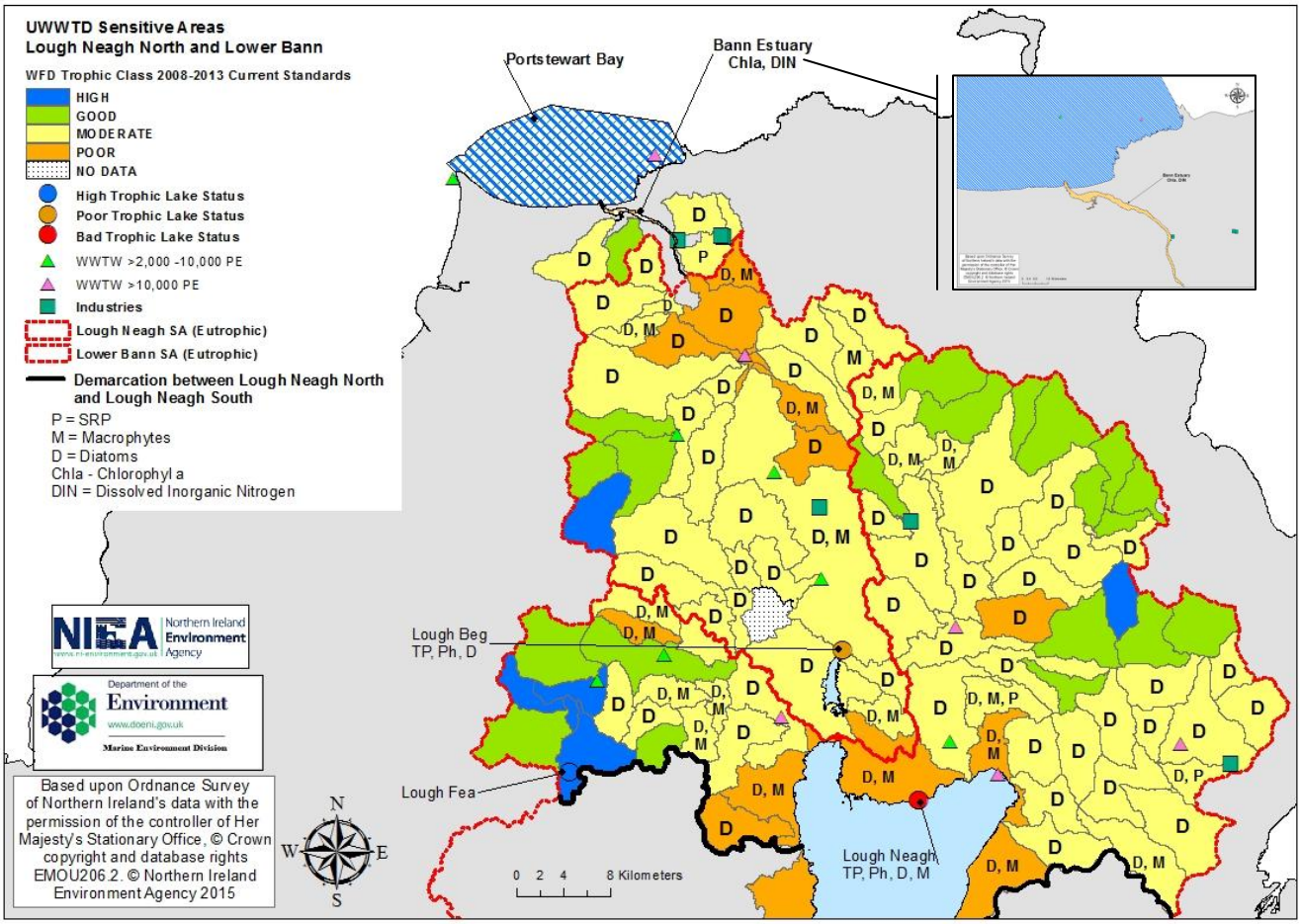

Figure 25: Distribution of Overall WFD Trophic Classes in the Lough Neagh North and Lower Bann Catchments using current standards and river water body delineations

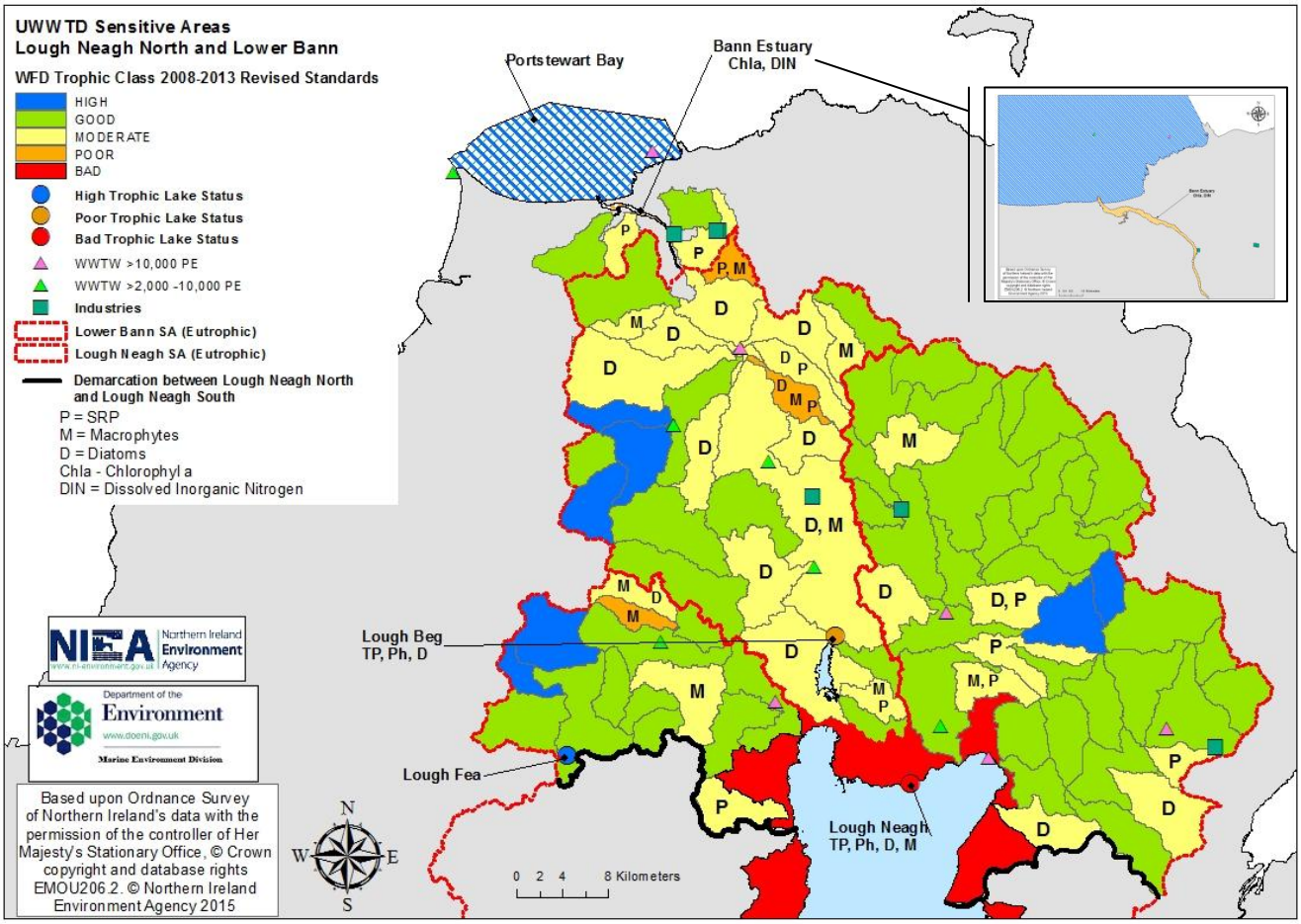

Figure 26: Distribution of Overall WFD Trophic Classes in the Lough Neagh North and Lower Bann Catchment using revised standards and river water body delineations

Figure 27 shows that of the 79 river water bodies in the catchments classed as moderate or worse when using current standards and water body delineations, 62 fail on one trophic parameter standard (predominantly diatoms), 15 fail on two trophic parameters (predominantly diatoms and macrophytes) and 2 fail on all three parameters, i.e., macrophytes, diatoms and SRP.

Of the 29 river water bodies in the catchments classed as moderate using the revised water body delineations and standards, 21 fail on one trophic parameter standard (predominantly diatoms), 7 fail on two trophic parameters (predominantly macrophytes and SRP) and only 1 fails on all three parameters, i.e., macrophytes, diatoms and SRP (**Figure 27**).

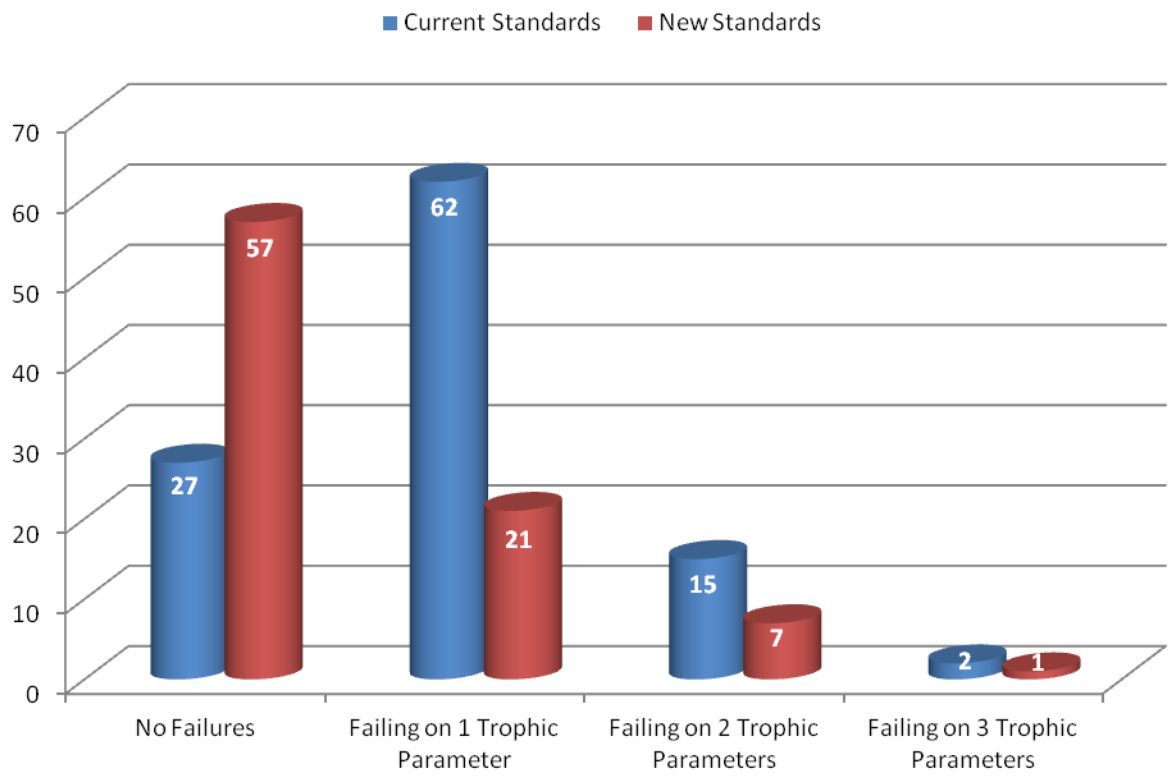

Figure 27: WFD trophic parameter failures using current standards and river water body delineations compared with the revised water body delineations and standards in the Lough Neagh North and Lower Bann Catchments

Summary of findings from the nutrient budget study and SIMCAT river modelling of the Lough Neagh North and Lower Bann catchments

Figure 28 shows the percentage total loadings and sources of PSOL and TON to Lough Neagh North and Lower Bann catchments. The breakdown of PSOL sources show that the contribution from agriculture is 61% and 50% respectively in the Lough Neagh North and Lower Bann catchments, compared with relatively low contributions from WWTWs sources to Lough Neagh North (27%) and Lower Bann (36%). The nutrient budget study also shows that urban land use contributes 7% and 10% in Lough Neagh North and Lower Bann catchments respectively.

Agriculture contributes the largest loading source of NO_3 to Lough Neagh North (89%) and Lower Bann catchments (94%), compared with 7% and 2% respectively in Lough Neagh North and Lower Bann catchments which is attributed to WWTWs loadings, reflecting the low level of contributions from point sources. Forestry and rough grazing made the smallest contribution (≤3%) in the 2 catchments for all nutrient fractions, reflecting the small area devoted to these land uses. **Appendix 3c** presents

the mean annual loadings and % total loads of nitrate and PSOL in Lough Neagh North and Lower Bann catchments compared with overall Northern Ireland loadings.

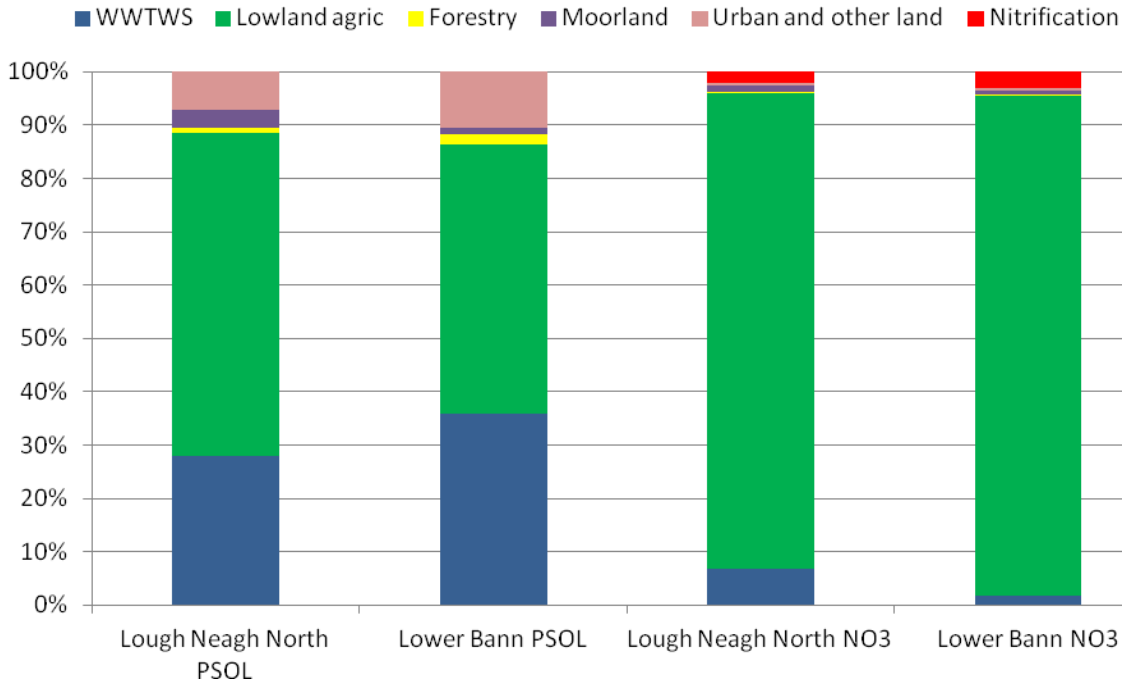

Figure 28: Source of PSOL and NO_3 loadings to Lough Neagh North and Lower Bann, 2001-2009

SIMCAT modelling (current performance) of the Neagh Bann RBD during the period 2005-2009 showed that the Moyola, Braid and Main Rivers, Six Mile Water and peripheral rivers contribute 72.5 (tonnes SRP/ yr^{-1}) into Lough Neagh. The total riverine loading of SRP to the headwaters of the Lower Bann was 224.4 (tonnes/ yr^{-1}) and increased to 265.7 at the mouth of the river. Lough Neagh itself contributes 1.9 (tonnes SRP/yr^{-1}) due to internal lake processes. The loading of SRP from WWTWs in the Neagh North catchments was 17 (tonnes/ yr^{-1}) whilst the loading of SRP from WWTWs in the Lower Bann was 13.5 (tonnes/ yr^{-1}). A schematic diagram is presented in **Figure 29** illustrating the loading from individual rivers in the catchments.

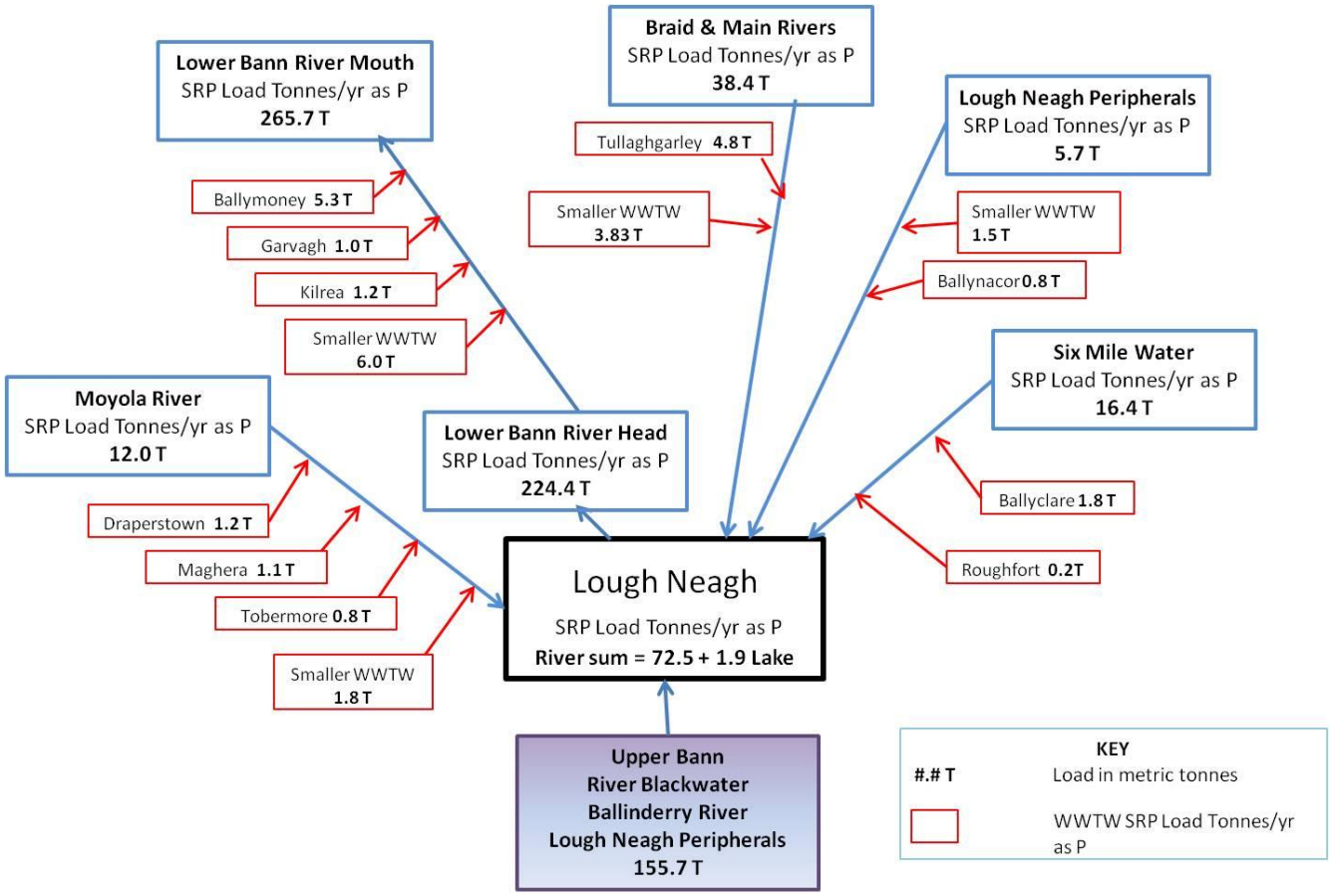

Figure 29: Schematic of the SRP loadings (tonnes/ yr^{-1}) of rivers within the Lough Neagh North and Lower Bann catchments, 2005-2009 (Current performance, SIMCAT Model)

Conclusion and recommendations for Lough Neagh North and Lower Bann catchments

Overall, both the freshwater and marine data supports the existing identification of the Lower Bann and Lough Neagh North catchments as eutrophic (see **Appendix 5, 6, 7** and **8** for full results).

Using the weight of evidence approach, there is no proposed extension to the existing freshwater and marine Sensitive Area designations. All river water bodies in the Lough Neagh North catchment are designated as Sensitive Area (Eutrophic). There are two outlier undesignated freshwater water bodies in the Lower Bann catchment which are classified as good overall eutrophic class when revised standards and water body delineations are used. There is high/medium certainty of good or better eutrophic status for these water bodies and there is no risk of deterioration to less than Good status for any of the eutrophic parameters therefore they are not considered for designation due to a lack of eutrophic impact. There are two outlier undesignated freshwater water bodies in the Lower Bann catchment classified as moderate trophic status (using revised standards and water body delineations)

and the evidence to support the decision not to designate them as Sensitive Areas is presented in **Appendix 10**.

Further monitoring is recommended to continue to assess trends in eutrophic indicators, improve confidence in class and to provide evidence to support the designation of the Lower Bann and Lough Neagh North during the next review period.

3.2.2 Trophic Status of Lough Neagh South, 2008-2013

Lough Neagh was designated as a Sensitive Area (Eutrophic) under the UWWTD on 20th December 1994 thus recognising that the Lough Neagh catchments are eutrophic (**Figure 30**). The Lough Neagh Designated SA (Eutrophic) covers an area of approximately 4806km^2, representing 34% of Northern Irelands land area. For the purposes of this report, the Lough Neagh catchment is divided into 2 sections; Lough Neagh North and Lough Neagh South. The lake water body, Lough Neagh, is covered within Lough Neagh North and Lower Bann catchment report (**Section 3.2.1**).

The Upper Bann rises in the Mourne Mountains from several tributaries including the Leitrim River, the Muddock River, the Rocky River and the Upper Bann reach. It flows northwards through Banbridge and joins with the Cusher River, south of Portadown. The Upper Bann drains into Lough Neagh at Bannfoot and covers an area of 397km². The main towns in Upper Bann are Banbridge and Portadown. There are also many small towns in the area including Tandragee, Markethill and Rathfriland. The largest WWTWs in the catchment is Banbridge with a PE of approximately 22,295 and smaller WWTWs at Tandragee (PE 15,527), Gilford (p.e. 2,447), Hilltown (p.e. 2,170) and Markethill (p.e. 2,529).

The River Blackwater drains into Lough Neagh at Maghery and covers an area of 1103km². The River Blackwater rises in the west of the catchment near the towns of Clogher and Fivemiletown and flows westward to Lough Neagh. There are several significant tributaries of the River Blackwater; the Oona Water, Callan, Tall, Torrent and Tynan Rivers. The main towns in the River Blackwater catchment are Armagh and Dungannon with significant smaller towns of Augher, Clogher, Aughnacloy and Richhill. The largest WWTWs in the catchment are Moygashel (p.e. 84,836), Armagh (p.e. 17,067) and Coalisland (p.e. 10,014). Smaller WWTWs are located at Richhill (p.e. 2,567), Moy (p.e. 3,696) and Keady (p.e. 4,576).

The Ballinderry River rises 210m above sea level in the Sperrin Mountains and flows eastwards for 47km into Lough Neagh, covering an area of approximately 487km^2. There are several significant tributaries of the Ballinderry River including; Lissan Water, Rock River, Claggan River and Ballymully River.The main town in the catchment is Cookstown with two other smaller towns, Pomeroy and Stewartstown. There are a number of significant villages in the catchment including Moneymore and Coagh and many smaller villages and hamlets throughout the area. The largest WWTWs in the catchment is Cookstown with a p.e. of approximately 19,636 and a smaller WWTW is located at Moneymore (p.e. 2,829).

The Glenavy River rises in Stonyford and flows a short distance of 23km westwards through the upland areas to the west of Belfast (White Hill), finally draining into Lough Neagh. The Rushyhill and the Stonyford Rivers converge to form the Glenavy River, covering an area approximately 44km^2. The Glenavy River passes through Glenavy, a village with a population of around 1070. There is one WWTW in the catchment at Glenavy (p.e. 2,112).

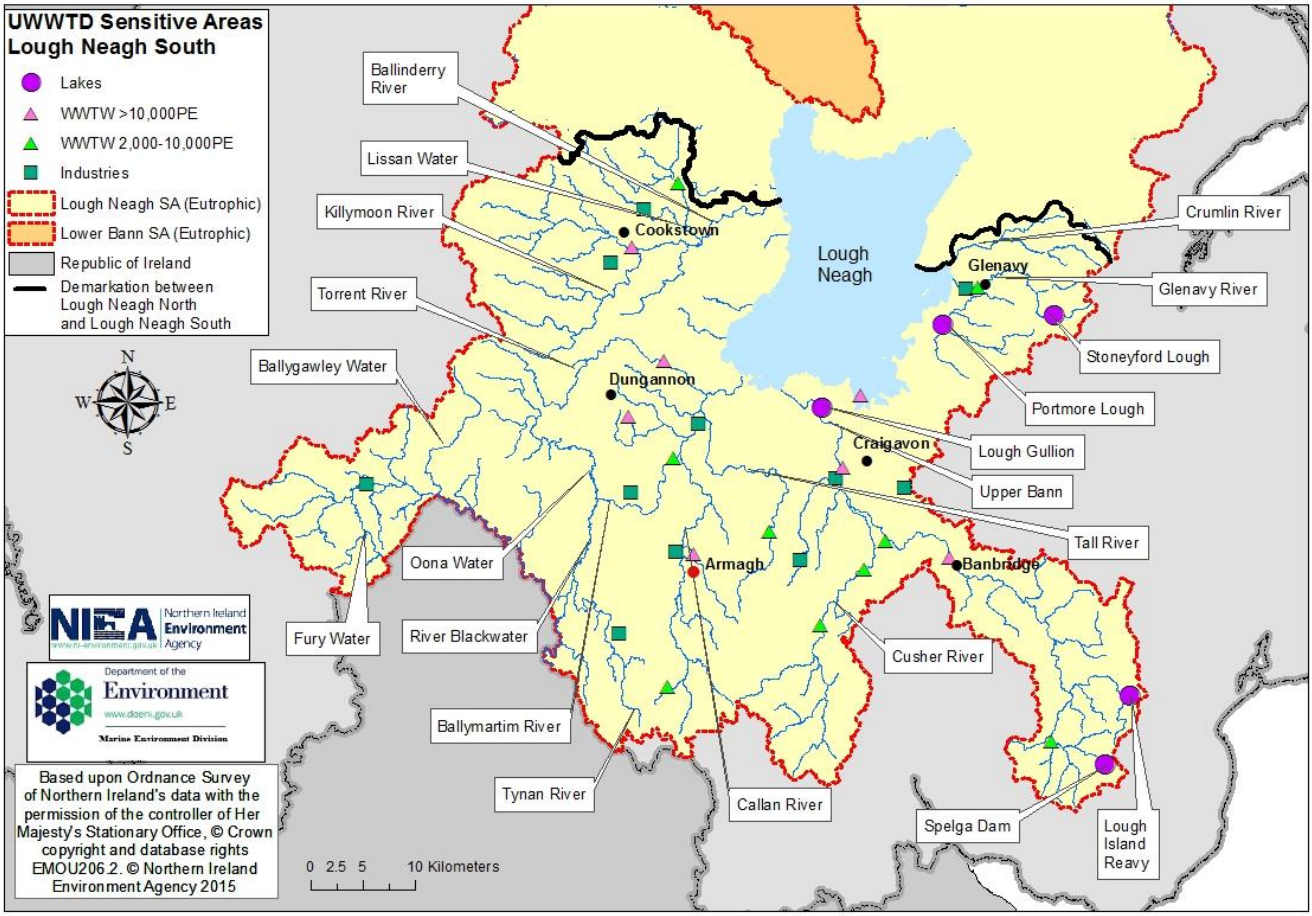

Figure 30: Extent of Sensitive Areas designation in Lough Neagh South catchments

Overall Freshwater Trophic Status

Over the period 2008-2013, when current water body delineations were applied, the trophic status of 105 water bodies were assessed in the Lough Neagh South catchments. Over the same period, this decreased to 78 when the revised river water body delineations were implemented. A summary of results can be found in a graph presented in **Figure 31** and further detail can be found in **Appendix 5** and **6**.

When current standards and river water body delineations were applied, 34% of river water bodies in the Lough Neagh South catchments are considered to be high/good trophic status. 66% of river water bodies in the Lough Neagh South catchments are classed as moderate/poor status (predominantly medium confidence in class of 'moderate or worse'). No river water bodies are classed as bad trophic status. Results also show that the main driver of eutrophic conditions in these freshwater catchments are due to disturbances to the diatom communities, and to a lesser extent the macrophyte communities in response to elevated levels of SRP although only 9% of water bodies failed the SRP standard. 54% of water bodies in the catchments failed the TDI standard and 27% of water bodies failed the macrophyte standard which suggests that despite low SRP concentrations there is an impact occurring.

With the new standards and new water body delineations applied, the number of water bodies considered to be high/good trophic status increased to 41%. The number of water bodies that are classed as moderate/poor trophic status decreased to 59%, (predominantly medium confidence in class of 'moderate or worse'). No river water bodies are classed as bad trophic status[8]. Results also show that the drivers for eutrophic conditions in these freshwater catchments are elevated levels of SRP (44%) and the resulting disturbance to the macrophyte and diatom communities at 24% and 19% respectively.

Macrophytes

When current standards and river water body delineations were applied, 68% of river water bodies in the Lough Neagh South catchments are considered to be high/good status for macrophytes whilst 7% were classed as poor status. The number of water bodies considered to be high/good status for macrophytes remained relatively the same at 73%, likewise 8% were classed as poor status as a result of the amalgamation of water bodies due to the revised delineations.

[8] As a result of the delineation of river water bodies, GBNI1NB030308243 is now classified using the lake classification result.

Diatoms

When current standards and river water body delineations were applied, results show that the main driver for moderate or worse status in the catchments is disturbance to diatom communities with 46% of river water bodies passing the TDI standard in the Lough Neagh South catchments. 13% were classed as poor status. With the new standards and new water body delineations applied, this substantially increases to 81% of river water bodies passing the TDI standard, only 19% of water bodies were classified as moderate status and no water bodies were classified as poor status.

SRP

When current standards and river water body delineations were applied, 83% of river water bodies pass the SRP standard in the Lough Neagh South catchments, whilst 1% was classed as poor status. With the new standards and new water body delineations applied, this decreases to 46% of river water bodies passing the SRP standard, with 5% classed as poor status.

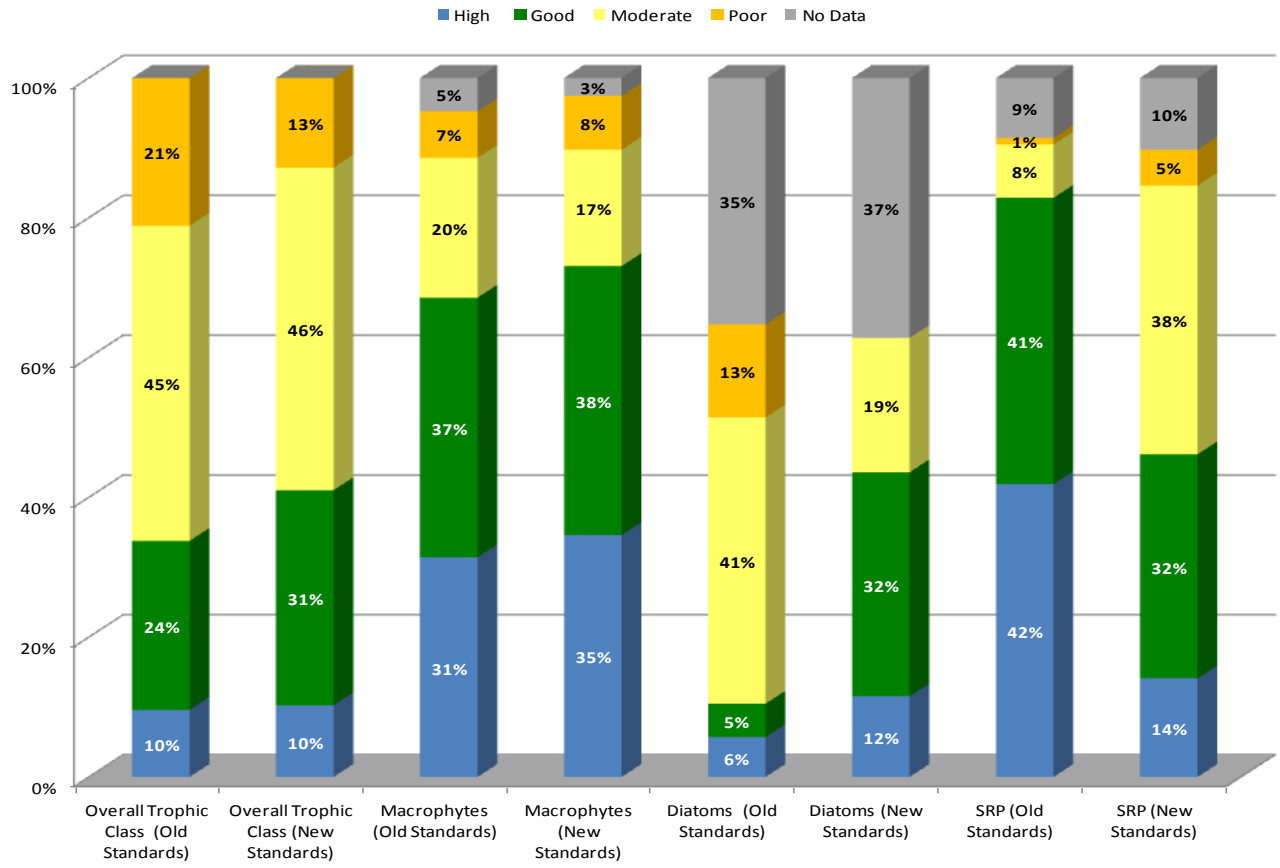

Figure 31: Comparison of the WFD Classification of Trophic Indicator Quality Elements for River Water Bodies in the Lough Neagh South Catchments using current standards and river water body delineations with the revised water body delineations and standards in the period 2008-2013 *(based on SRP, macrophytes and diatoms)*

The distribution of all water body classes across the catchments using current standards and river water body delineations are shown in **Figure 32**; based on 105 river water bodies and 5 lake water bodies. Revised standards and river water body delineations are shown in **Figure 33**; based on 78 river water bodies and 5 lake water bodies. Distribution of overall WFD trophic classes (2008-2013) are based on SRP, macrophytes and diatoms in freshwater river water bodies and TP, phytoplankton, macrophytes and diatoms in lake water bodies (see **Appendix 5, 6** and **7** for full results).

There are five lake water bodies in the catchments other than Lough Neagh (which is classed as bad trophic status, refer to **Section 3.2.1** for more detail). Using both current and new standards, two of these lake water bodies (40%) are also classed as bad trophic status or exhibiting hypereutrophic conditions (with high confidence in class of impact occurring) with the main drivers for status in Lough Gullion and Portmore Loughs being elevated TP concentrations resulting in disturbances to the diatom, planktonic and macrophyte communities. Using new standards, the phytoplankton classification for Lough Gullion changes to good, although the overall trophic status remains poor. Stoneyford Reservoir is classed as poor trophic status (with high confidence in class of impact occurring) using both current and new standards. The main drivers using current standards are elevated TP concentrations resulting in disturbances to the diatom, planktonic and macrophyte communities. Using new standards, the phytoplankton classification changes to good, although the overall trophic status remains poor. Elevated TP concentrations result in disturbances to the diatom and macrophyte communities. Using both current and new standards, Spelga Dam, is classed as high trophic status (with high confidence of no impact occurring) with TP, phytoplankton and diatom classes all reported as high status. Macrophytes are not included as the lake is designated as a HMWB. The other lake water body, Lough Island Reavy Reservoir is classed as good trophic status using both current and new standards. Phytoplankton and diatom classes are reported as high or good status and macrophyte status is not included as the lake is designated as a HMWB (see **Section 1.3.3**).

There are no marine water bodies in the Lough Neagh South catchment.

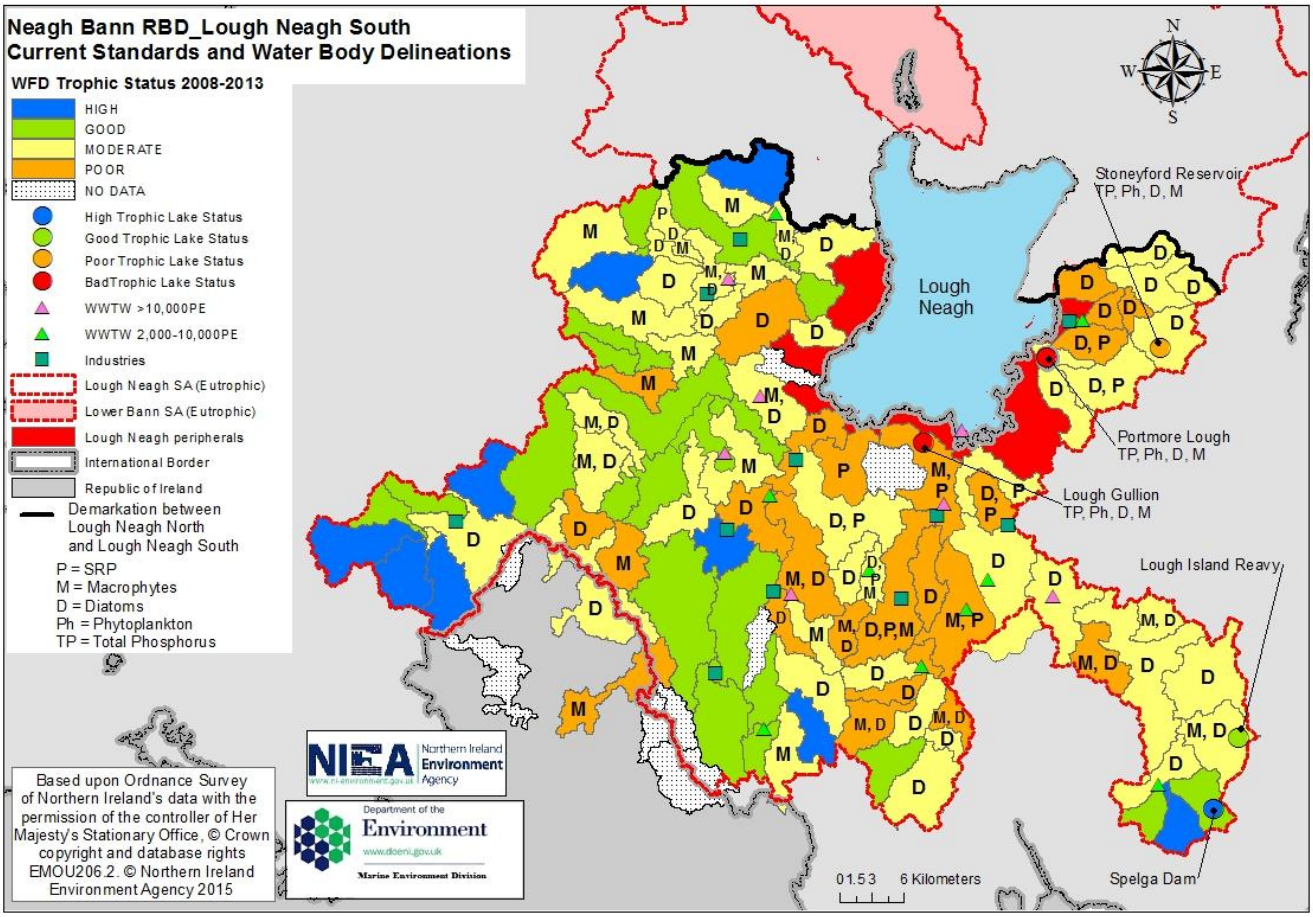

Figure 32: Distribution of Overall WFD Trophic Classes in the Lough Neagh South Catchments using current standards and river water body delineations

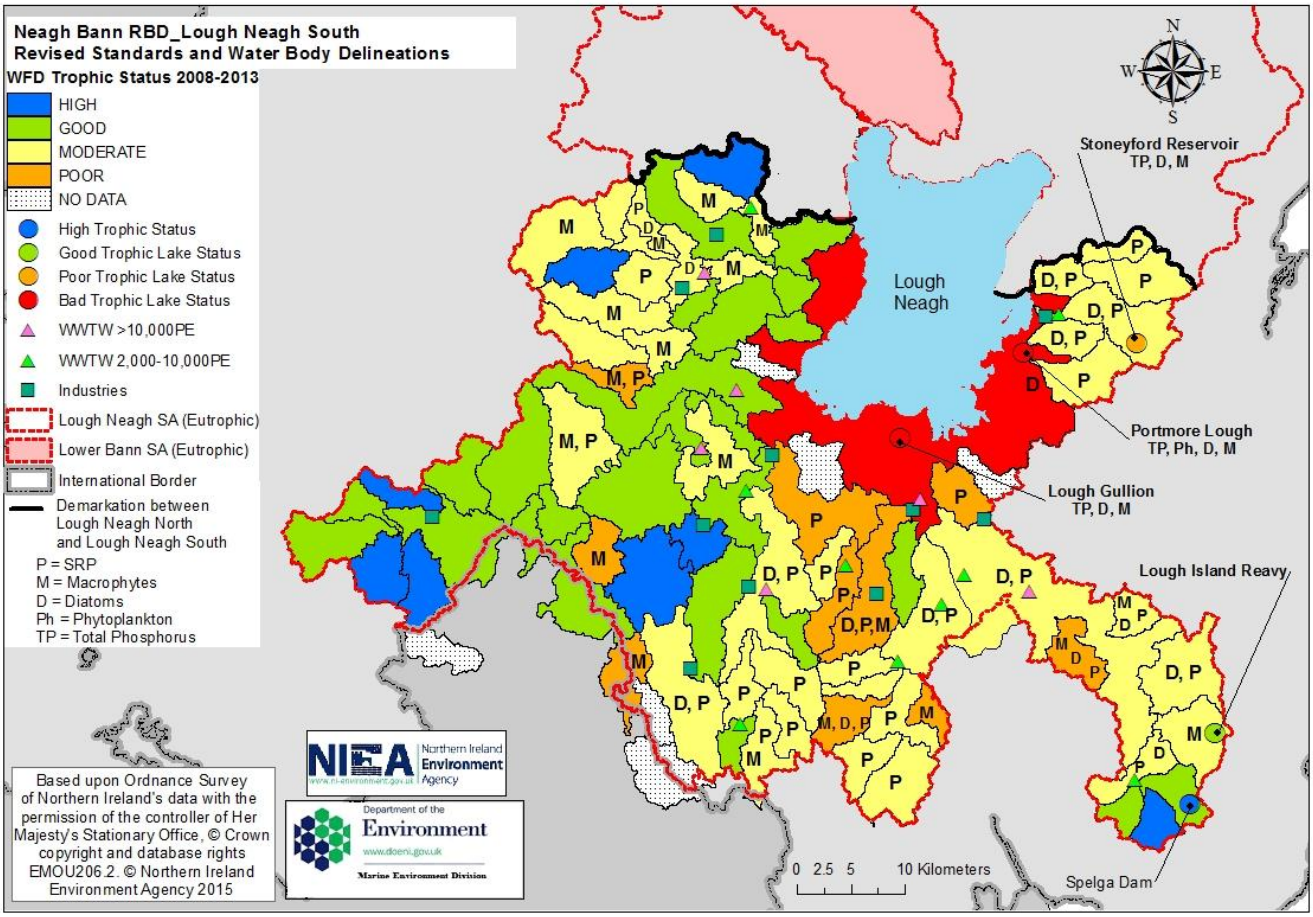

Figure 33: Distribution of Overall WFD Trophic Classes in the Lough Neagh South Catchments using revised standards and river water body delineations

Figure 34 shows that of the 69 river water bodies in the catchments classed as moderate or worse when using current standards and water body delineations, 47 fail on one trophic parameter standard (predominantly diatoms), 18 fail on two trophic parameters (predominantly diatoms and macrophytes) and 3 fail on all three parameters, i.e., macrophytes, diatoms and SRP.

Of the 46 river water bodies in the catchments classed as moderate or worse using the revised water body delineations and standards, 29 fail on one trophic parameter standard (predominantly diatoms), 12 fail on two trophic parameters (predominantly diatoms and SRP) and 5 fail on all three parameters, i.e., macrophytes, diatoms and SRP (**Figure 34**).

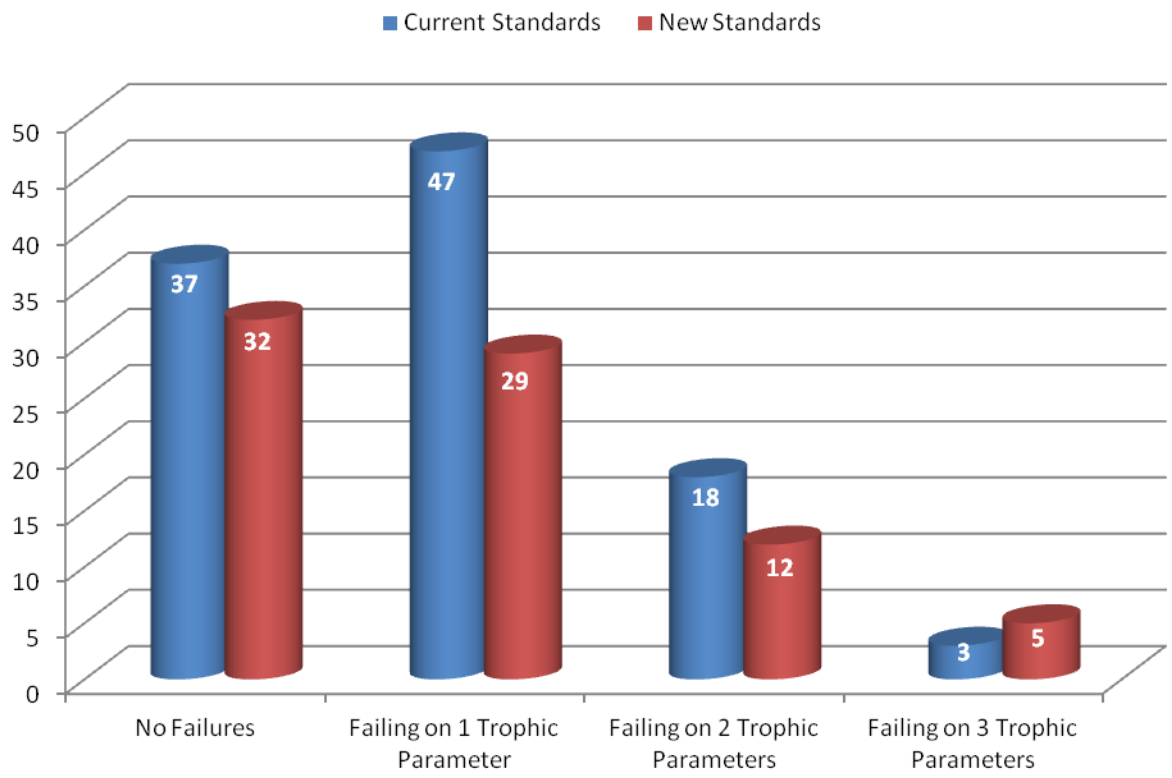

Figure 34: WFD trophic parameter failures using current standards and river water body delineations compared with the revised water body delineations and standards in the Lough Neagh South Catchments

Summary of findings from the nutrient budget study and SIMCAT river modelling of the Lough Neagh South catchments

Figure 35 shows the percentage total loadings and sources of PSOL and TON to Lough Neagh South catchments. The breakdown of PSOL sources show that the contribution from agriculture is 71% in Lough Neagh South catchments, compared with relatively low contributions from WWTWs sources to Lough Neagh North (24%). The nutrient budget study also shows that urban land use contributes 3% to the catchment.

Agriculture also contributes the largest loading source of NO_3 to Lough Neagh South (86%) compared with 12% which is attributed to WWTWs loadings, reflecting the low level of contributions from point sources. Forestry and rough grazing made the smallest contribution (≤1%) in the catchment for all nutrient fractions, reflecting the small area devoted to these land uses. **Appendix 3d** presents the mean annual loadings and % total loads of nitrate and PSOL in Lough Neagh South catchments compared with overall Northern Ireland loadings.

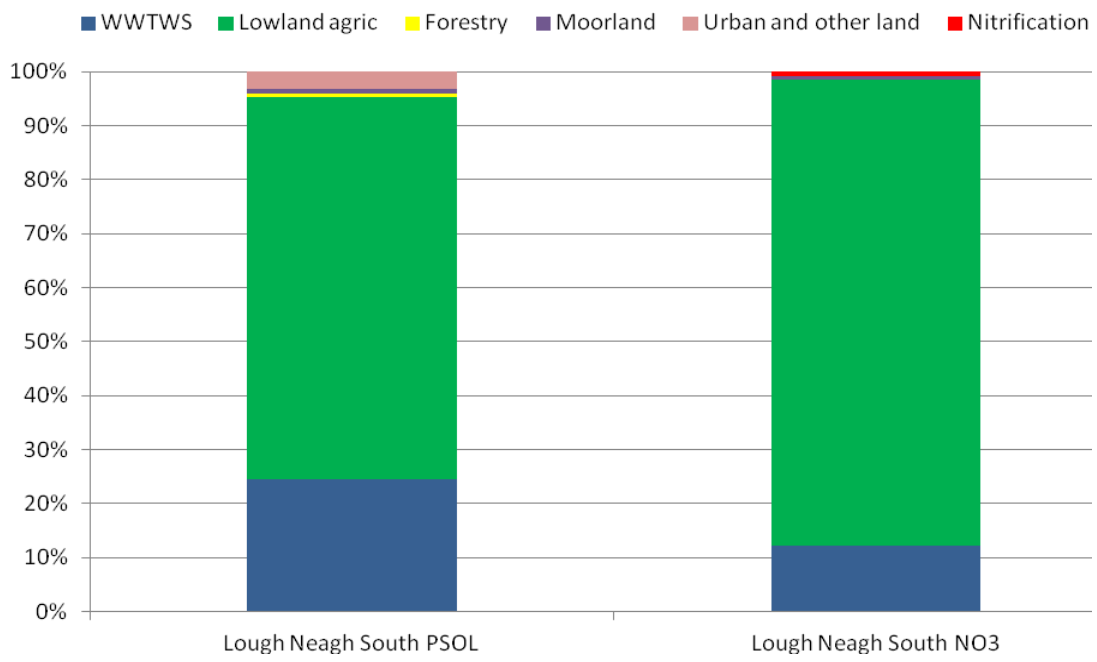

Figure 35: Source of PSOL and NO_3 loadings to Lough Neagh South, 2001-2009

SIMCAT modelling (current performance) of the Neagh Bann RBD during the period 2005-2009 showed that the total loading of SRP to the Lough Neagh South catchments was 149.8 (tonnes/ yr^{-1}). The loading of SRP from WWTWs in the Lough Neagh South catchments was 38.6 (tonnes/ yr^{-1}) over the same period, representing 26% of the total loading to Lough Neagh (South). A schematic diagram is presented in **Figure 36** illustrating the loading from individual rivers in the catchments.

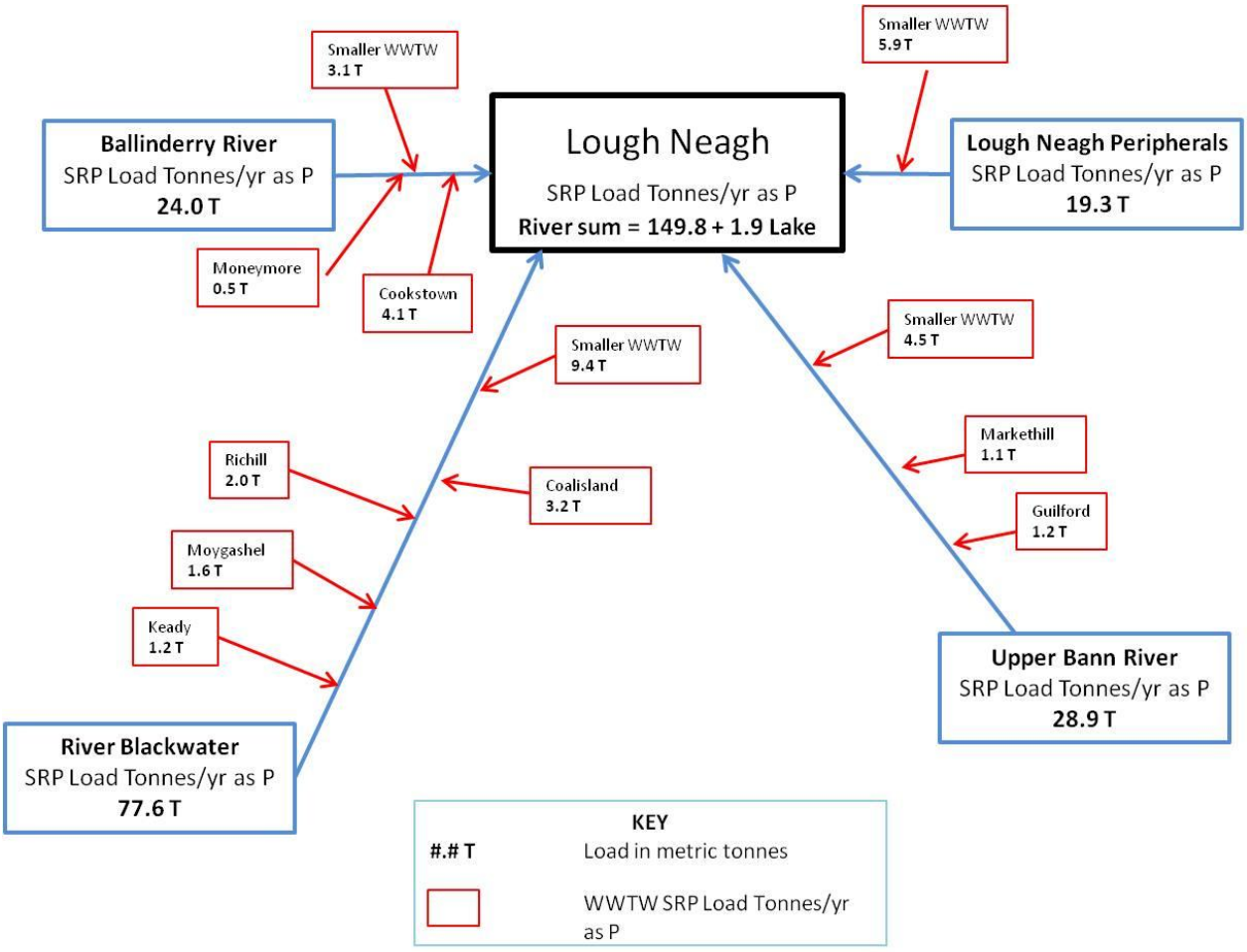

Figure 36: Schematic of the SRP loadings (tonnes/ yr^{-1}) of rivers within the Lough Neagh South catchments, 2005-2009 (Current performance, SIMCAT Model)

Conclusions and recommendations for Lough Neagh South catchments

Overall, the freshwater data supports the existing identification of the Lough Neagh South catchments as eutrophic (see **Appendix 5, 6** and **7** for full results).

There are no outlier undesignated freshwater water bodies in the Lough Neagh South catchments; therefore there is no proposed extension to the existing freshwater Sensitive Area (Eutrophic) designation. Further monitoring is recommended to continue to assess trends in eutrophic indicators and to provide evidence to support the designation of the Lough Neagh South catchments during the next review period.

3.2.3 Trophic Status of Carlingford and Newry, 2008-2013

The Newry River catchment was designated as Sensitive Areas (Eutrophic) under the UWWTD on 28th July 2006 thus recognising that the catchment is impacted by eutrophication (**Figure 37**). The Newry River Designated Sensitive Area covers an area of approximately 275km^2 representing 2% of Northern Ireland's land area.

The Newry River rises 230m above sea level as the Jerrettspass River in the north of the catchment. As it flows south, it is joined by the Clanrye and Bessbrook Rivers where it continues southwards as the Newry River through Newry City into the tidal Newry River and ultimately into Carlingford Lough. The estuarine limit of the Newry River is considered to be at the weir at Newry Town Hall in the city centre. The Newry Canal runs adjacent to the Newry River and the Newry Estuary discharging at Victoria Lock, downstream of Newry City. Other river systems that discharge directly into Carlingford Lough or coastal waters include the White Water River, Kilbroney River and Cassey Water. There are also a number of smaller distinct river systems such as the Creggan River, Fane River, Kilcurry River and Flurry River that flow southwards into the Republic of Ireland. Newry is the main town, with several smaller towns throughout the area including Crossmaglen, Rostrevor, Rathfriland, Bessbrook and Scarva.

The largest WWTW in the catchment is Newry WWTW with a p.e. of around 59,406. However, this discharges into the tidal Newry River and therefore does not directly affect the freshwater catchment. There are no WWTW with a p.e greater than 10,000 in the freshwater catchment. However, there are a number of smaller WWTW. The largest of these is Rathfriland WWTW with a p.e. of around 3,977 discharging into the upper reaches of the Clanrye River.

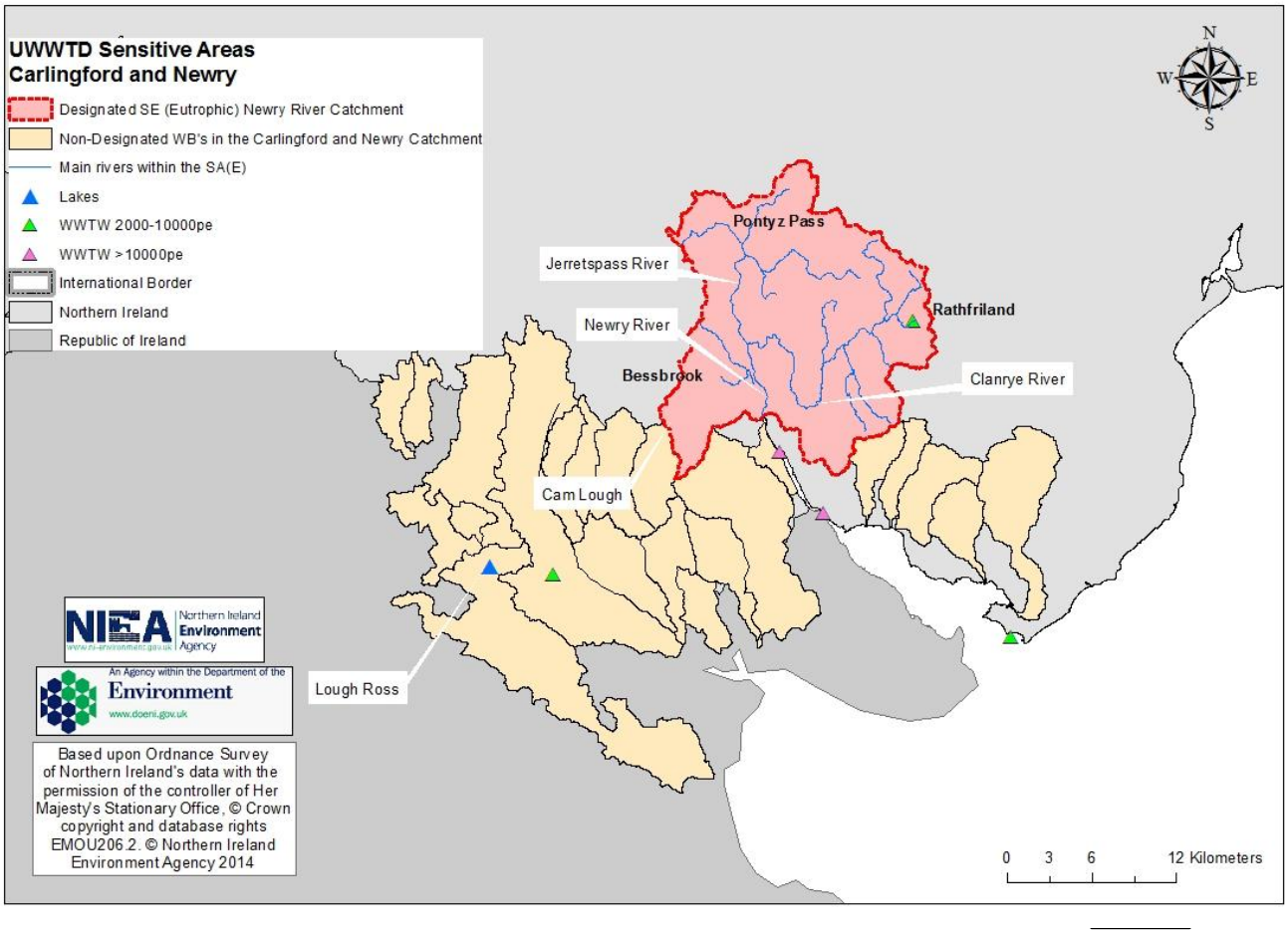

Figure 37: Extent of Sensitive Area designation in Carlingford and Newry catchments

Overall Trophic Status

Over the period 2008-2013, when current water body delineations were applied, the trophic status of 29 water bodies were assessed in the Newry River catchments. Over the same period, this decreased to 21 when the revised river water body delineations were considered. A summary of results can be found in a graph in **Figure 38** and further detail can be found in **Appendix 5** and **6**.

When current standards and river water body delineations were applied, 24% of river water bodies in the Newry River catchments are considered to be high/good trophic. 72% of river water bodies are classed as moderate and 3% are classed as poor trophic status (confidence in class of 'moderate or worse' is predominantly medium). No river water bodies are classed as bad trophic status. Results also show that the main driver of eutrophic conditions in the Newry River catchments are due to disturbances to the diatom communities, and to a lesser extent the macrophyte communities in response to elevated levels of SRP although only 10% of water bodies failed the SRP standard. A high proportion (59%) of water bodies in the catchments failed the TDI standard and 28% of water

bodies failed the macrophyte standard which suggests that despite low SRP concentrations there is an impact occurring.

With the new standards and new water body delineations applied, the number of water bodies considered to be high/good trophic status increased to 33%. The number of water bodies that are classed as moderate/poor trophic status generally remained the same at 67% (confidence in class of 'moderate or worse' is predominantly medium). No river water bodies were classed as bad trophic status. Results also show that failure of the SRP standard in 43% of the water bodies is the main driver for moderate/poor status. The resulting disturbances to the macrophyte and diatom communities are 38% and 29% respectively.

Macrophytes

When current river water body delineations are applied, 69% of river water bodies in the Newry River catchments are considered to be high/good status for macrophytes and 3% were classed as poor status. As a result of the revised delineations, the number of water bodies considered to be high/good status for macrophytes decrease to 57% whilst the number of water bodies classed as poor was 5%.

Diatoms

When current standards and river water body delineations were applied, results show that the main driver for moderate or worse status in the catchments is disturbance to diatom communities with only 24% of river water bodies passing the TDI standard in the Carlingford and Newry catchments. No water bodies were classified as poor diatom status. With the new standards and new water body delineations applied, 52% of river water bodies pass the TDI standard, 29% of water bodies were classified as moderate status and no water bodies were classified as poor status.

SRP

When current standards and river water body delineations were applied, 86% of river water bodies pass the SRP standard, 10% of water bodies were classified as moderate status and no water bodies were classified as poor status in the Newry River catchments. With the new standards and new water body delineations applied, this decreases to 52% of river water bodies passing the SRP standard, 38% of water bodies were classified as moderate status and 5% of water bodies were classified as poor status.

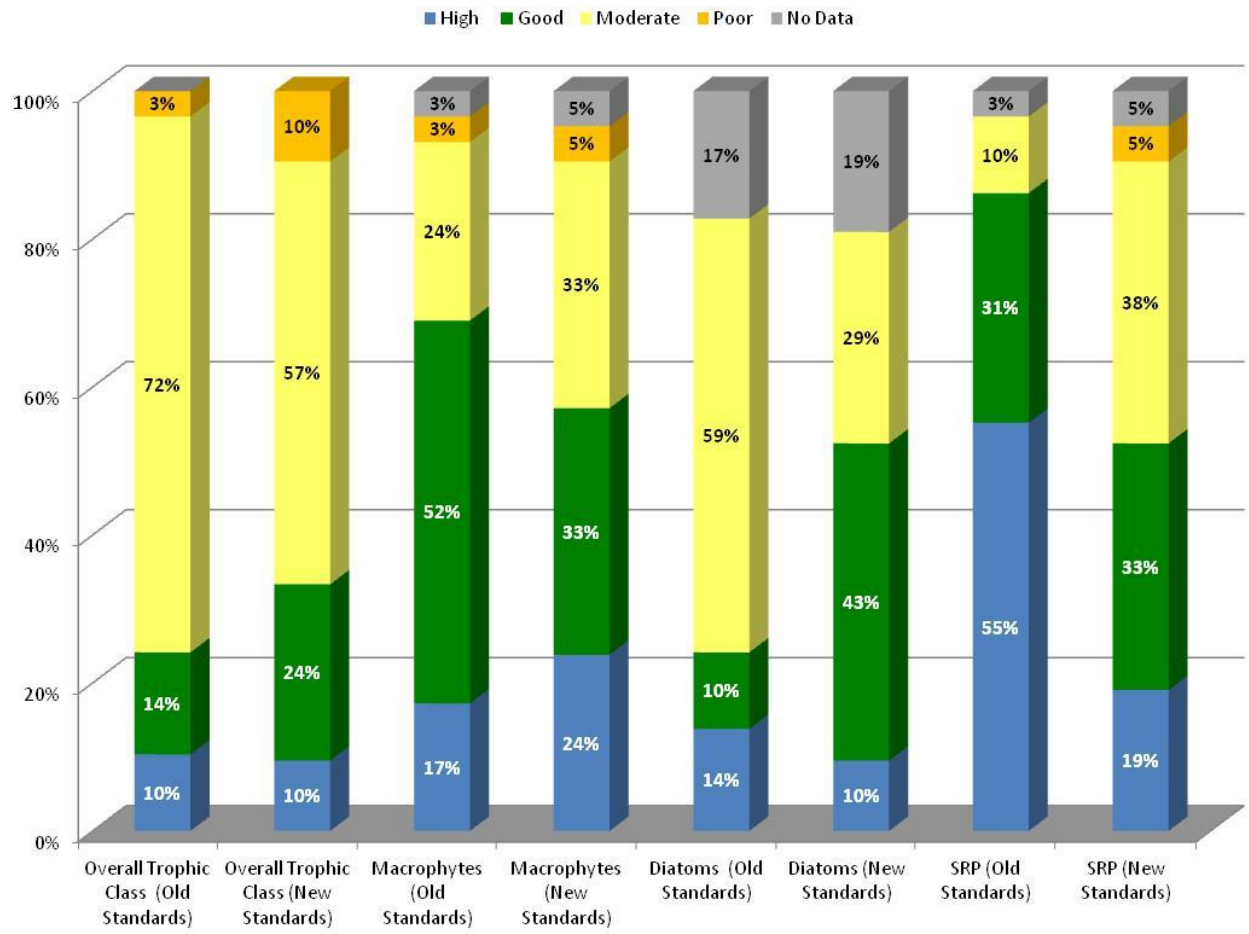

Figure 38: Comparison of the WFD Classification of Trophic Indicator Quality Elements for River Water Bodies in the Newry River Catchments using current standards and river water body delineations with the revised water body delineations and standards in the period 2008-2013 *(based on SRP, macrophytes and diatoms)*

The distribution of all water body classes across the catchments using current standards and river water body delineations are shown in **Figure 39**; based on 29 river water bodies, 2 lake water bodies and 2 marine water bodies. Revised standards and river water body delineations are shown in **Figure 40**; based on 21 river water bodies, 2 lake water bodies and 2 marine water bodies. Distribution of Overall WFD Trophic Classes (2008 - 2013) are based on SRP, macrophytes and diatoms in river water bodies; TP, phytoplankton, macrophytes and diatoms in lake water bodies and DIN, macroalgae and chlorophyll-α in coastal water bodies (see **Appendix 5, 6, 7** and **8** for full results).

There are two main lake water bodies in the catchments which are both designated as HMWBs, therefore macrophytes are not included in the assessment of their trophic status. Cam Lough is classed as poor trophic status (with medium confidence of impact occurring) using both current and

new standards. The main driver for status using current standards is elevated TP concentrations resulting in disturbances to the plankton community. Using new standards, phytoplankton status improves to moderate but the elevated TP concentrations continue to drive trophic status. Lough Ross is also classed as poor trophic status or exhibiting hypereutrophic conditions (with high confidence in class of impact occurring) using current and new standards. The main driver for status using current standards is elevated TP concentrations resulting in disturbances to the plankton community. Using new standards, phytoplankton status improves to Moderate but the elevated TP concentrations continue to drive overall trophic status.

Figures 39 and 40 show that the two marine water bodies in the catchment, the Newry River and Carlingford Lough both failed against assessment of combined WFD marine tools (**Appendix 9**). Newry River has shown a fall from moderate to poor status for DIN since the previous assessment and a failure year-on-year against Chlorophyll standards not observed in previous reports. This shows an overall deterioration in trophic status since the previous report. A Sensitive Area (Eutrophic) designation is now recommended on the basis of trophic status of the UWWTD, in order to prevent the further deterioration of Newry River transitional water body. Carlingford Lough received an overall moderate classification as DIN results fluctuated between the upper limits of a good to a significant poor within the period of the report. This is consistent with previous assessments which also showed no biological response across plant tools.

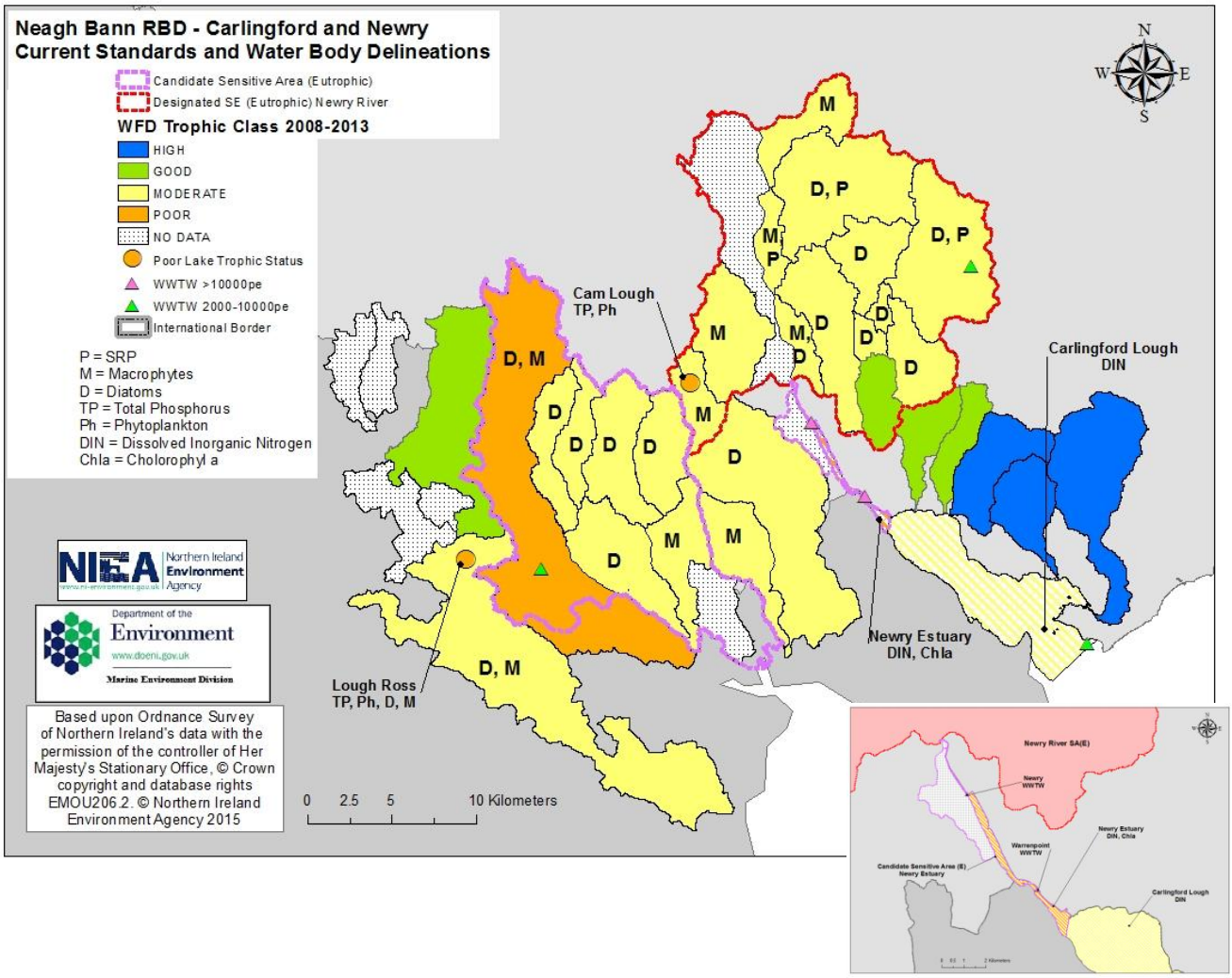

Figure 39: Distribution of Overall WFD Trophic Classes in the Carlingford and Newry Catchments using current standards and river water body delineations

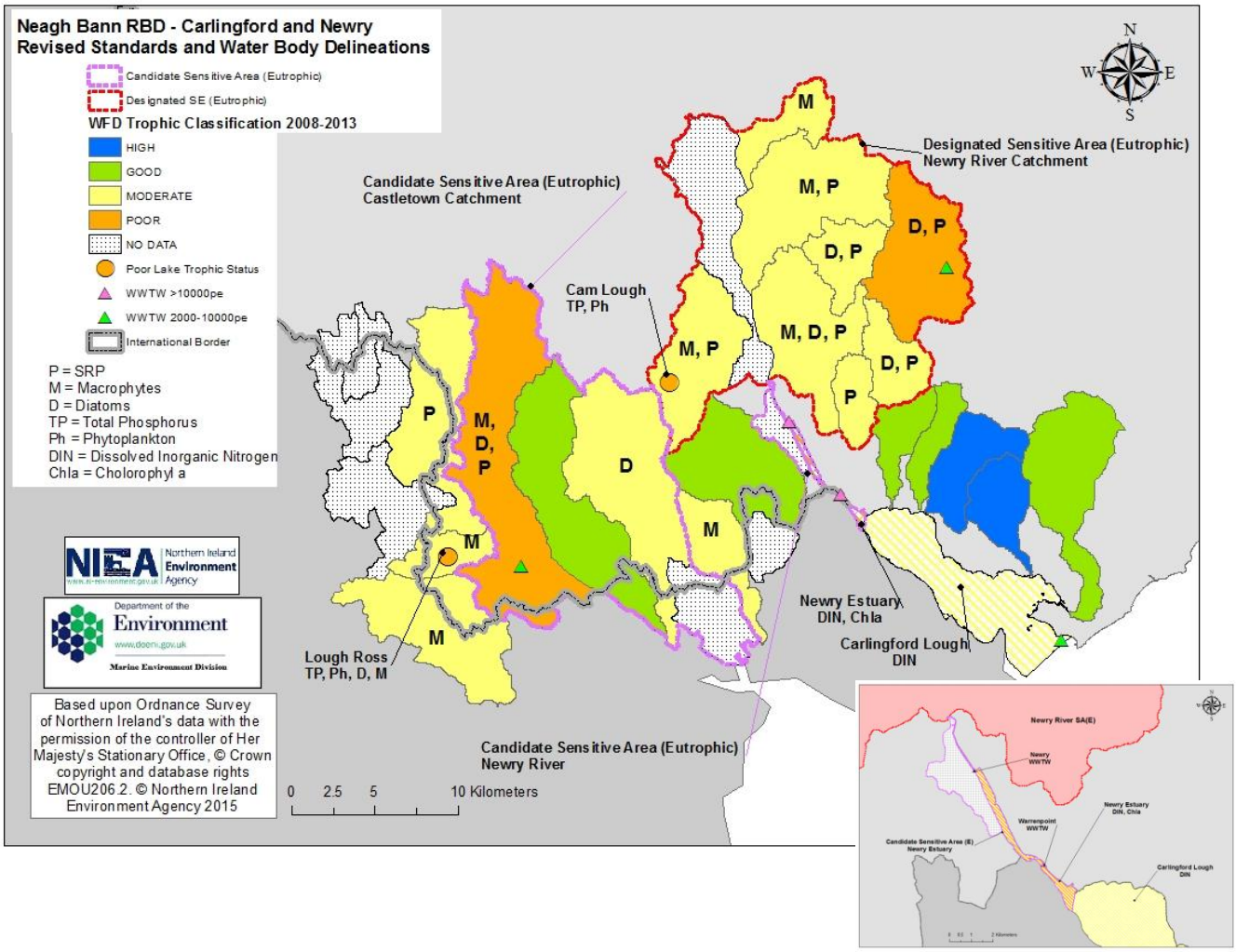

Figure 40: Distribution of Overall WFD Trophic Classes in the Carlingford and Newry Catchments using revised standards and river water body delineations

Figure 41 shows that of the 22 river water bodies in the catchments classed as moderate or worse when using current standards and water body delineations, 16 fail on one trophic parameter standard (predominantly diatoms) and 6 fail on two trophic parameters (predominantly diatoms and either macrophytes or SRP).

Of the 14 river water bodies in the catchments classed as moderate or worse using the revised water body delineations and standards, 7 fail on one trophic parameter standard (predominantly macrophytes), 5 fail on two trophic parameters (predominantly diatoms and SRP) and 2 fail on all three parameters, i.e., macrophytes, diatoms and SRP (**Figure 41**).

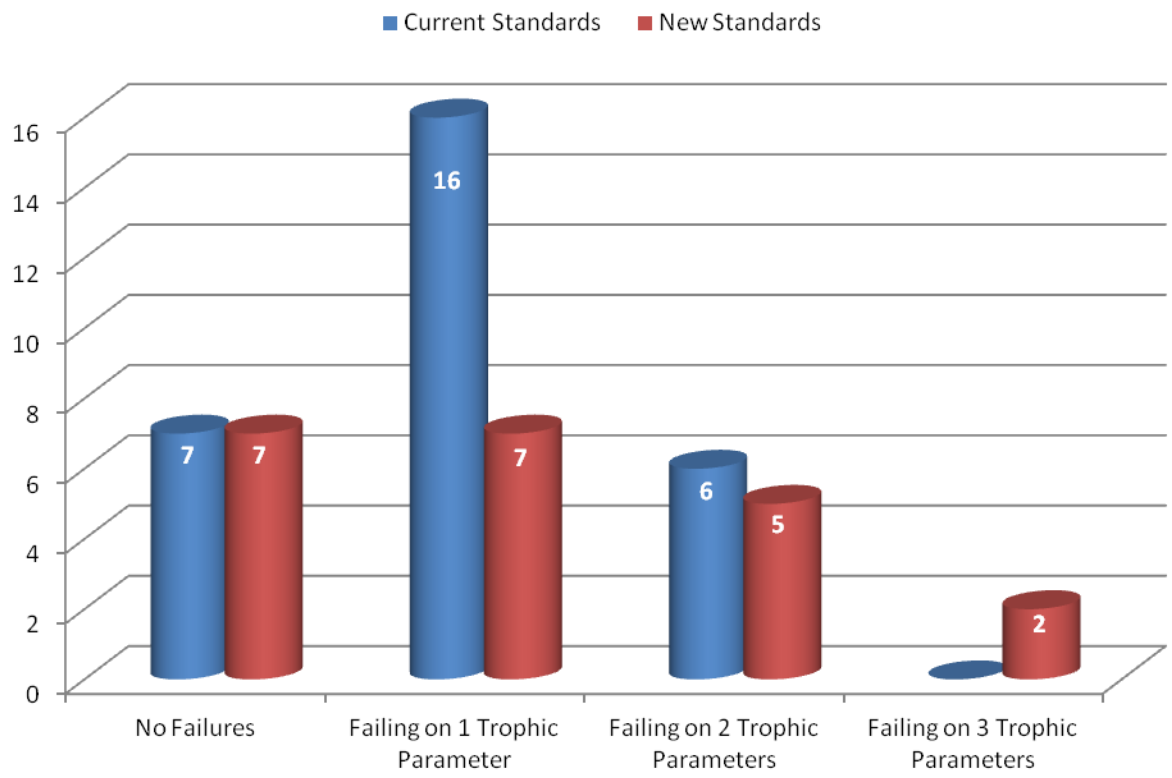

Figure 41: WFD trophic parameter failures using current standards and river water body delineations compared with the revised water body delineations and standards in the Carlingford and Newry Catchments

Summary of findings from the nutrient budget study and SIMCAT river modelling of the Carlingford and Newry catchments

Figure 42 shows the percentage total loadings and sources of PSOL, TON and DIN to the Carlingford and Newry catchments. Agricultural and WWTW sources of PSOL were similar in the catchments, with 49% attributed to agricultural sources in both catchments compared with 48% and 45% respectively in the Newry and Carlingford Lough catchments which can be attributed to WWTW sources. The nutrient budget study also shows that urban land use contributes ≤4% in each of the catchments.

Agriculture contributes the largest loading source of NO_3 to Newry River (89%) and Carlingford Lough catchments (87%), compared with 4% and 3% respectively in each catchment which is attributed to WWTW loadings, reflecting the low level of contributions from point sources. Nutrient budget studies show that agriculture significantly contributes the largest loading source of DIN to Newry River (83%) and Carlingford Lough (84%), compared with 16% and 13% respectively in the catchments which can be attributed to WWTW sources. Forestry and rough grazing made the smallest contribution (≤2%) in the 2 catchments for all nutrient fractions, reflecting the small area devoted to these land uses.

Appendix 3e presents the mean annual loadings and % total loads of nitrate, PSOL and DIN in the Carlingford Lough and Newry River catchments compared with overall Northern Ireland loadings.

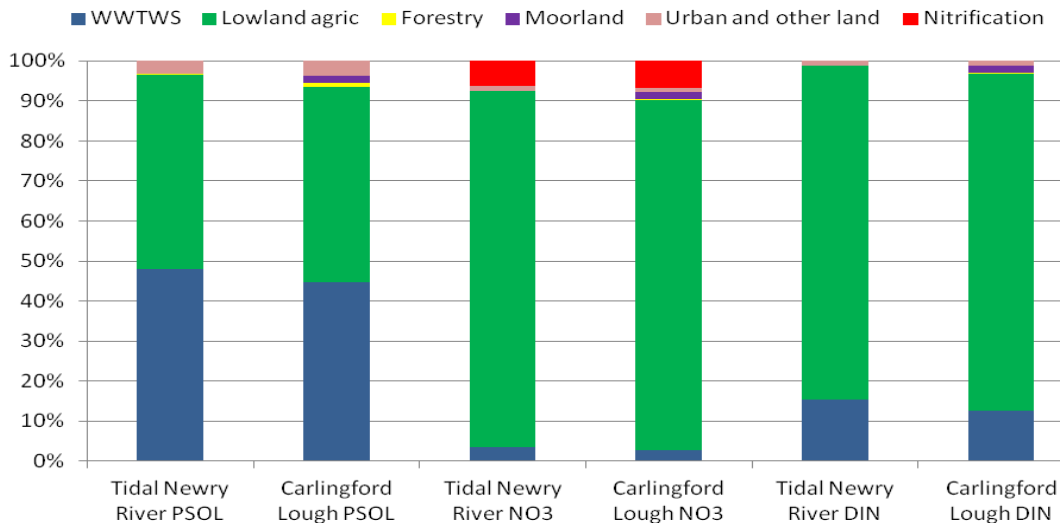

Figure 42: Source of PSOL, NO_3 and DIN loadings to Carlingford and Newry, 2001-2009

SIMCAT modelling (current performance) of the Neagh Bann RBD during the period 2005-2009 showed that the total loading of SRP to the Carlingford and Newry catchments was 25 (tonnes/yr^{-1}). The loading of SRP from WWTWs was 9.7 (tonnes/yr^{-1}) over the same period, representing 39% of the total loading to the rivers in the Carlingford and Newry catchments. A schematic diagram is presented in **Figure 43** illustrating the loading from individual rivers in the catchments.

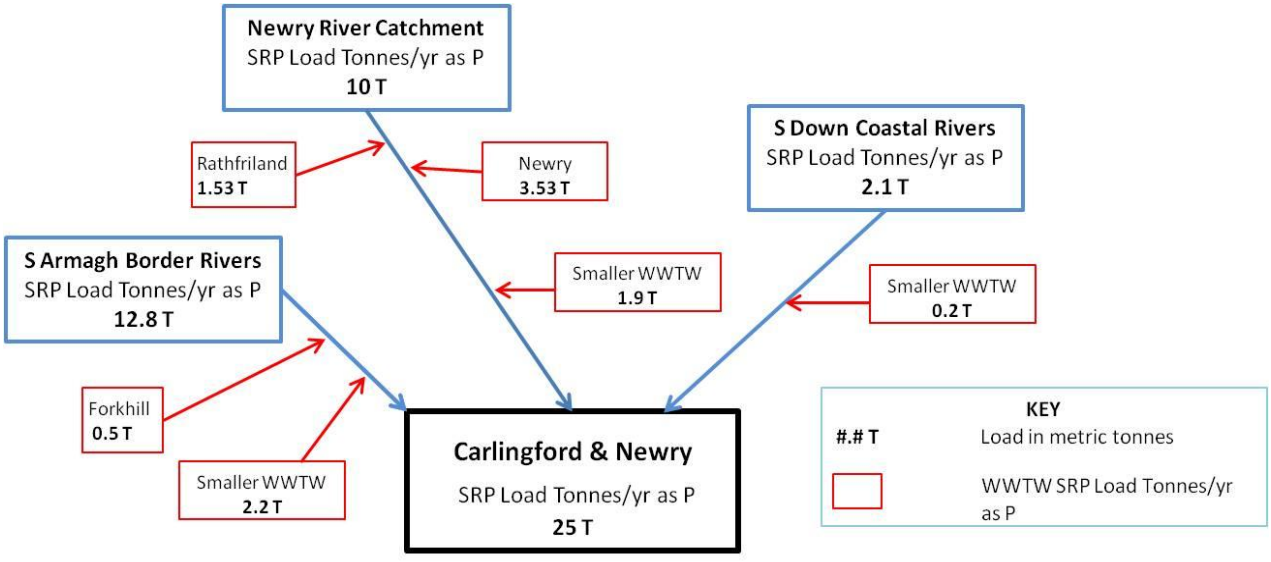

Figure 43: Schematic of the SRP loadings (tonnes/ yr^{-1}) of rivers within the Carlingford and Newry catchments, 2005-2009 (Current performance, SIMCAT Model)

Conclusion and recommendations for the Carlingford and Newry catchments

Overall, both the freshwater and marine data supports the existing identification of the Newry River catchment as eutrophic (see **Appendix 5, 6, 7** and **8** for full results).

The Newry River has shown a fall from moderate to poor status for DIN since the previous assessment and a failure year-on-year against Chlorophyll standards not observed in previous reports. This shows an overall deterioration in trophic status since the previous report. It is recommended to designate the Newry River transitional water body as a candidate Sensitive Area (Eutrophic) on the basis of trophic status under the UWWTD, in order to prevent the further deterioration of Newry River transitional water body.

The evidence presented in this report would suggest the Castletown catchment is 'eutrophic' or 'may become eutrophic in the near future if protective action is not taken' and is exhibiting some form of undesirable disturbance to the biology as a result of nutrient enrichment. In particular, the Creggan River showed evidence of degraded flora and diatom communities due to elevated SRP concentrations. Very few plant species were recorded during the macrophyte survey conducted in 2011 which resulted in Poor status in the water body. There was also an indication that nutrient levels are higher than normal so as to cause an imbalance to the diatom communities, resulting in Moderate status. Moderate status was also reported for SRP. Assessment of the concentrations of phosphorus (SRP) indicated that the Creggan River is showing signs of becoming eutrophic in the near future. The Castletown River enters the Republic of Ireland and flows through Dundalk where it enters the Irish Sea at the Castletown Estuary which is designated as a Sensitive Area (Eutrophic). The evidence to support the decision to designate the Castletown catchment as a candidate Sensitive Area is presented in **Appendix 10**.

Using the weight of evidence approach, there is no recommendation to propose designation in the Fane, Flurry or Kilkeel and Mourne freshwater catchments. There are five outlier undesignated freshwater water bodies in the Kilkeel and Mourne stream catchment which are classified as good or high overall eutrophic class when revised standards and water body delineations are used. There is high/medium certainty of good or better eutrophic status for these water bodies and there is no risk of deterioration to less than good status for any of the eutrophic parameters therefore they are not considered for designation due to a lack of eutrophic impact. There are two outlier undesignated freshwater water bodies in the Flurry catchment and the evidence to support the decision not to designate them as Sensitive Areas is presented in **Appendix 10**. There are three outlier undesignated freshwater water bodies (using revised water body delineations) in the Fane catchment and the

evidence to support the decision not to designate them as Sensitive Areas is also presented in **Appendix 10**.

Designation of the catchment is based on new water body delineations. Further investigation is required to confirm where appropriate treatment is required at any WWTWs (particularly Crossmaglen) or if other measures are required to meet WFD requirements. This may take the form of river walks and /or further monitoring if resources are available. Further monitoring is also recommended to continue to assess trends in eutrophic indicators, improve confidence in class and to provide evidence to support the designation of the Newry River catchment during the next review period.

3.3 North Western RBD

3.3.1 Trophic Status of Lough Foyle and Foyle Rivers, 2008-2013

Lough Foyle and Foyle Rivers have been divided into three main freshwater areas for the purposes of this report: Foyle, Roe and Faughan. The Foyle River, River Roe and River Faughan catchments were designated as Sensitive Areas under the UWWTD on 28th July 2006 thus recognising the catchments as eutrophic (**Figure 44**).

The freshwater Foyle Catchment covers an area of 1729km^2 representing 12% of Northern Ireland's land area. The River Foyle system includes a number of tributaries, the largest of which are the Mourne, which lies in Northern Ireland, and the Finn, which lies in the central plain of Donegal in the Republic of Ireland. These two tributaries join at Strabane to form the River Foyle. The Mourne and Strule Rivers are greatly extended by a number of tributaries one of which, the Derg, flows eastwards from its source in Lough Derg. Strabane is situated by the Mourne/Finn confluence, and the Drumragh and Camowen Rivers combine to form the River Strule in Omagh. Other major tributaries of the River Mourne are the Drumragh, Owenkillew, Glenelly, Owenreagh, Fairywater and Camowen. The Glenelly and Owenkillew Rivers both rise in the highest parts of the Sperrin Mountains situated in the north-eastern area of the catchment. The estuarine limit of the Foyle is considered to be at Lifford Bridge, which is immediately downstream of the Mourne and Finn confluence. Omagh is the largest town in the freshwater catchment but there are numerous smaller towns and villages scattered throughout the area – Fintona, Dromore, Carrickmore and Beragh, Strabane, Sion Mills, Castlederg, Plumbridge, Gortin and Greencastle. In the River Foyle catchment, the largest WWTW is Culmore WWTW with a p.e. of around 131,679. However, this discharges into the tidal River Foyle (as does Strabane WWTW) and therefore does not directly affect the freshwater catchment. The qualifying

works in the freshwater catchment is Omagh WWTW (p.e. 39,927), with a number of smaller agglomerations in the catchment, Castlederg (p.e. 3,931), Sion Mills (p.e. 3,544), Newtownstewart (p.e. 2,168) and Dromore (p.e. 2,032).

The Burn Dennet system covers an area of approximately 491km^2. The River Foyle below Strabane becomes more slow-flowing and is transitional due to the influence of Lough Foyle. The Glenmornan and Burn Dennett Rivers rise in the Sperrins and flow westwards to join the River Foyle below Ballymagorry, which then flows northwards through Londonderry, the largest agglomeration in the catchment, into Lough Foyle. There is one qualifying WWTW at Strabane (p.e. 20,691). This area is not currently designated as a Sensitive Area (Eutrophic) under the UWWTD.

The River Faughan catchment covers an area of approximately 296km^2 representing 2% of Northern Ireland's land area. The River Faughan rises 670m above sea level as the Park/Faughan River in the Sperrin Mountains in the south of the catchment. As it flows north, it is joined by the Glenrandal and Burntollet Rivers where it continues northwards as the River Faughan through the east of County Londonderry to the tidal River Foyle. There are no WWTWs with a p.e. greater than 10,000 in the freshwater catchment. However, there are a number of smaller WWTWs. The largest of these is Claudy WWTW with a p.e. of around 2,722.

The River Roe Catchment covers an area of approximately 385km^2 representing 3% of Northern Ireland's land area and includes the sub-catchments of the Curly River, Castle River, the Owenrigh and Owenbeg Rivers. The Roe River rises 250m above sea level in the south of the catchment in Glenshane Forest and flows north west towards Dungiven (p.e. 4,743) before flowing north via Limavady (p.e. 16,211) and ultimately into Lough Foyle. The most downstream freshwater monitoring point on the Roe is at Roe Bridge, approximately 6 miles downstream of Limavady. Beyond this point the river becomes tidal.

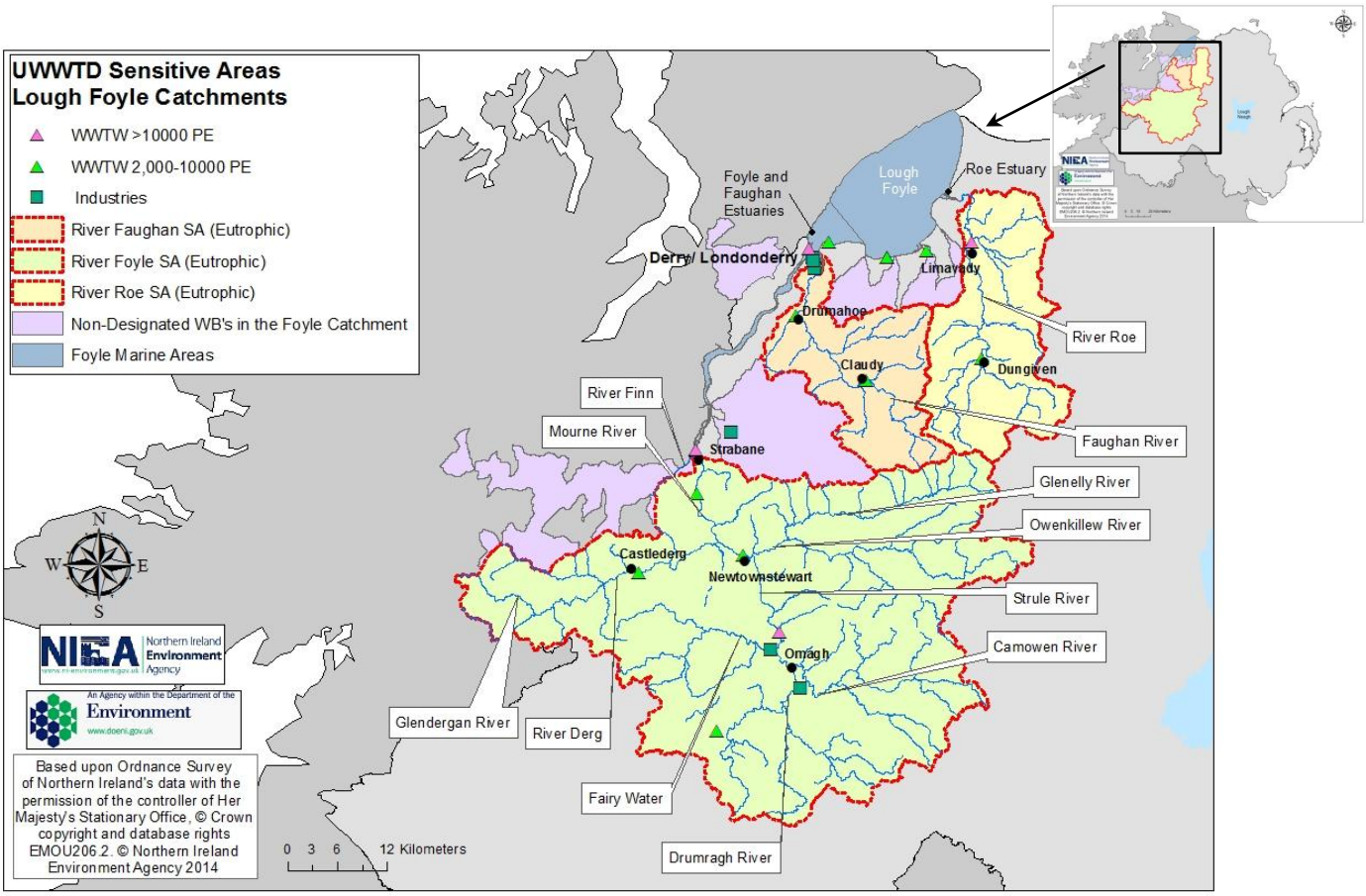

Figure 44: Extent of Sensitive Areas designations in the Lough Foyle and River Foyle catchments

Overall Trophic Status

Over the period 2008-2013, when current water body delineations were applied, the trophic status of 113 water bodies were assessed in the Foyle catchments. Over the same period, this decreased to 89 when the revised river water body delineations were implemented. A summary of results can be found in a graph presented in **Figure 45** and further results can be found in **Appendix 5** and **6**.

When current standards and river water body delineations were applied, 57% of river water bodies in the Foyle catchments are considered to be high/good trophic status. 42% of river water bodies are classed as moderate and 1% is classed as poor trophic status (confidence in class of 'moderate or worse' is medium). No river water bodies are classed as bad trophic status. Results also show that of the water bodies which are classed as moderate or worse, only 7% fail the macrophyte standard but 40% fail the TDI standard thus indicating an impact on the diatom communities

With the new standards and new water body delineations applied, the number of water bodies considered to be high/good trophic status increased to 78%. The number of water bodies that are classed as moderate trophic status declined to 22% (eutrophic confidence in class of 'good or better' is predominantly medium). No river water bodies were classed as poor or bad trophic status. Results also show that failure of the TDI standard in 13% of the water bodies is the main driver for moderate status. Only 7% and 6% of the water bodies are classed as moderate for SRP and macrophytes respectively.

Macrophytes

When current river water body delineations are applied, 92% of river water bodies in the Lough Foyle and River Foyle catchments are considered to be high/good status for macrophytes. 1% was classed as poor status. As a result of the revised delineations, the number of water bodies considered to be high/good status for macrophytes remain generally the same at 93%. No water bodies were classified as poor macrophyte status.

Diatoms

When current standards and river water body delineations were applied, results show that the main driver for moderate or worse status in the catchments is disturbance to diatom communities with 48% of river water bodies passing the TDI standard in the Foyle River catchments. With the new standards and new water body delineations applied, 71% of river water bodies pass the TDI standard.

SRP

When current standards and river water body delineations were applied, 98% of river water bodies pass the SRP standard in the Foyle catchments. With the new standards and new water body delineations applied, this decreases to 92% of river water bodies passing the SRP standard and 7% of water bodies were classified as moderate status.

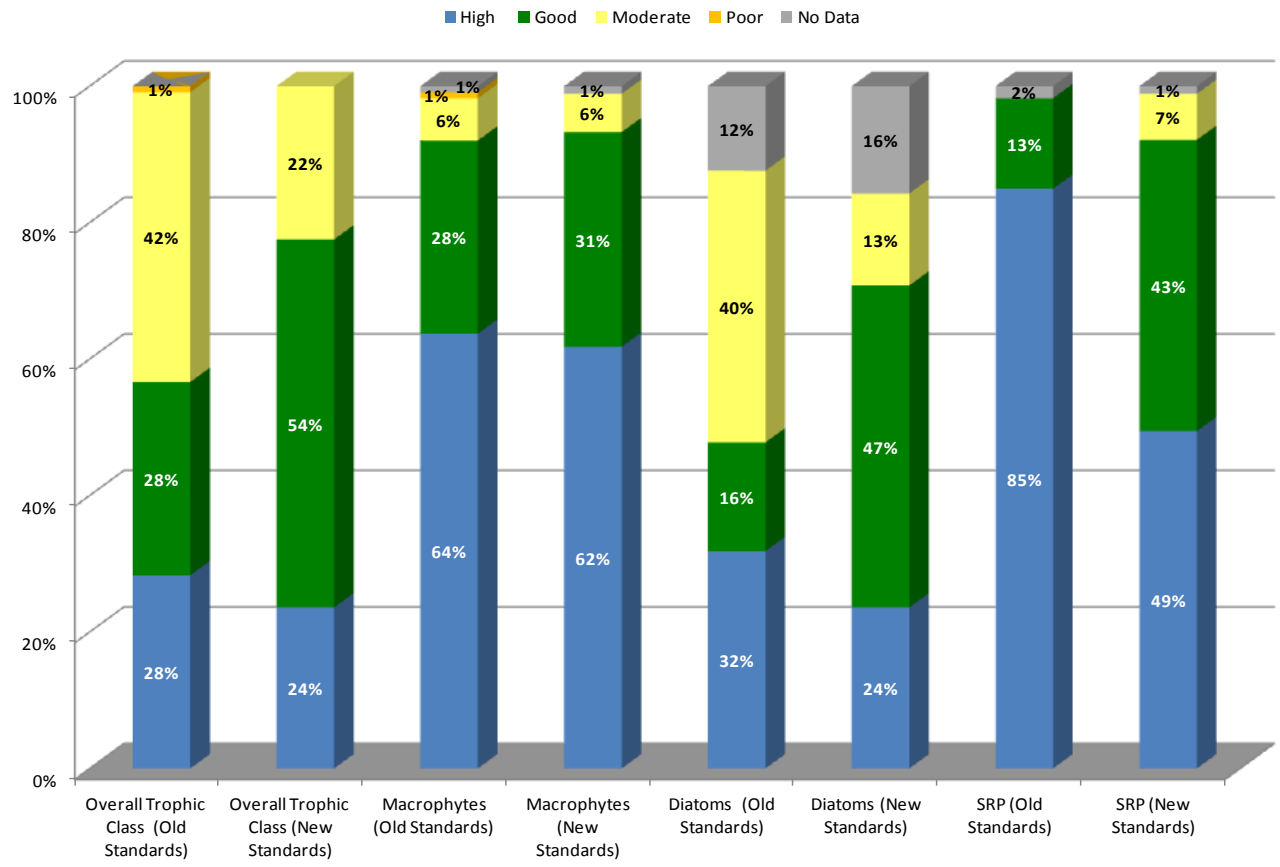

Figure 45: Comparison of the WFD Classification of Trophic Indicator Quality Elements for River Water Bodies in the Foyle Catchments using current standards and river water body delineations with the revised water body delineations and standards in the period 2008-2013 *(based on SRP, macrophytes and diatoms)*

The distribution of all water body classes across the catchments using current standards and river water body delineations are shown in **Figure 46**; based on 113 river water bodies and 3 marine water bodies. Revised standards and river water body delineations are shown in **Figure 47**; based on 89 river water bodies and 3 marine water bodies. Distribution of overall WFD trophic classes (2008-2013) are based on SRP, macrophytes and diatoms in river water bodies and DIN, macroalgae, angiosperms and chlorophyll-α in marine water bodies (See **Appendix 5, 6** and **8** for full results)

There are no lakes greater than 50 ha in the Foyle catchments.

Of the three marine water bodies in the catchments, only the coastal Lough Foyle is classed as being at good trophic status. The Foyle and Faughan estuary is classed as moderate, failing the DIN criteria consistently but passing the biological criteria over the period of the report, however some improvement has been seen in the biological response in recent years and further monitoring is

recommended. DIN results for Foyle and Faughan from 2010-2012 varied between good and moderate. However the final year (2013) was found to have a significantly bad DIN result like other areas (may be attributed to weather/rainfall). Like previous reports there were no failures in response/plant tools.

Likewise, the Roe estuary failed the nutrient standard but passed against the Chlorophyll-*a* and Macroalgal plant tools, however the Chlorophyll assessment in particular was based on one year's sampling over the period of the report and therefore requires more monitoring. The Roe was found to have significant moderate DIN results from 2010-2012; due to this and the subsequent poor result in 2013 being marginal the overall classification was found to be moderate. There were no failures in biological response plant assessments. This is a deterioration in DIN status from previous assessments, which may be partly attributable to more robust sampling strategies.

<u>New water body delineations: Foyle and Faughan/Upper Foyle - Roe merger with Foyle Coastal</u>

A review of water bodies within the Northe Western RBD has proposed two signiciant changes for the 2nd RBP cycle.The newly proposed "Foyle Harbour and Faughan" HMWB will lose its upstream portion, which will be the "Upper Foyle" water body. Following reassessment, both of the new designations would continue to fail the nutrient standard without any demonstrable plant response.

It is proposed that the Roe Transitional water body is merged witht the Foyle Coastal Water body from the start of the WFD 2nd cycle RBP (2015-2021). Monitoring of the transitional water water body during the 1st cycle demonstrated a number of issues associated with the satisfactory monitoring and classification of this system using existing biological quality element metrics. The hydropgraphic nature of the system means that at low water a large proportion of the system dries out completely and together with the limited salinity intrusion into the water body means that there is very limited development of estuarine flora and fauna within the transitional reach. A review of the monitoring programmes conducted during the first cycle demonstrated that many of the biological quality elements were either absent or dimininished and as a result there is little to justify the development of a full programme for the second cycle. The failure of the the nutrient standard in the Roe during the period of this report reflects the nutrient loading associated with the freshwater inputs. Actions to improve this situation will be addressed under the existing sensitive area designation of the freshwater catchment.

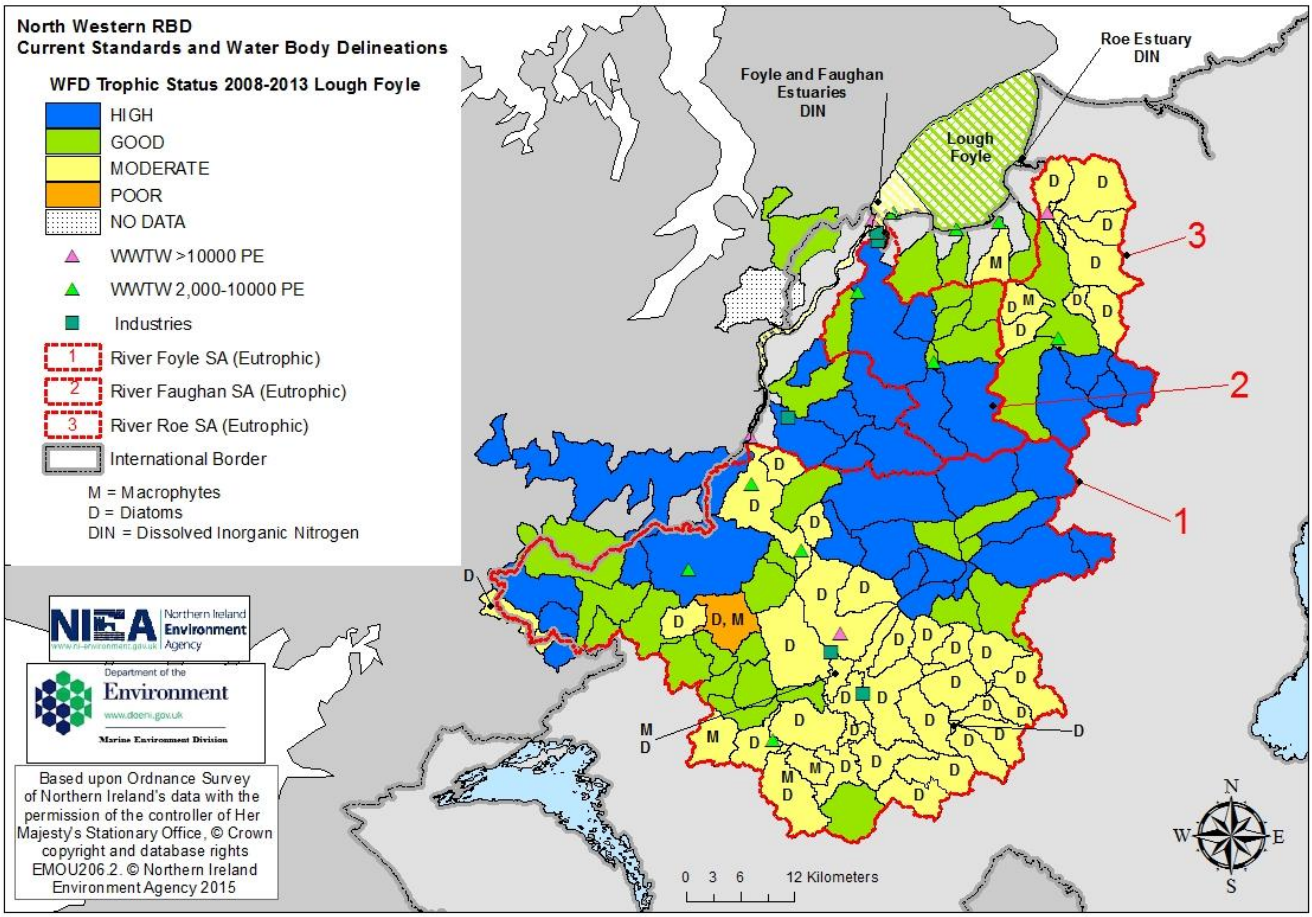

Figure 46: Distribution of Overall WFD Trophic Classes in the Foyle Catchment using current standards and river water body delineations

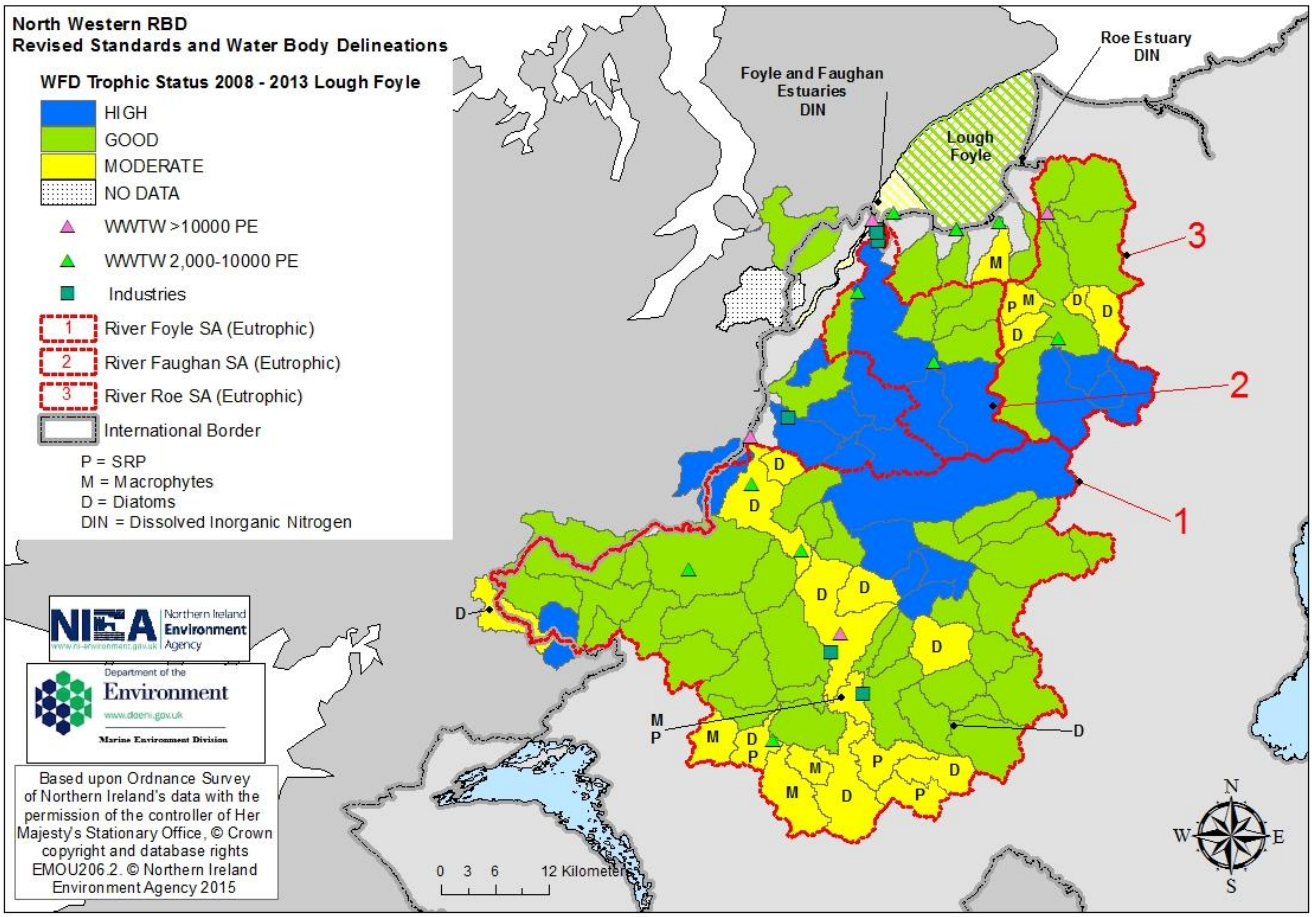

Figure 47: Distribution of Overall WFD Trophic Classes in the Foyle Catchment using revised standards and river water body delineations

Figure 48 shows that of the 49 river water bodies in the catchments classed as moderate or worse when using current standards and water body delineations, 45 fail on one trophic parameter standard (predominantly diatoms) and 4 fail on two trophic parameters (diatoms and macrophytes). Of the 20 river water bodies in the catchments classed as moderate or worse using the revised water body delineations and standards, 17 fail on one trophic parameter standard (predominantly diatoms), and 3 fail on two trophic parameters (predominantly diatoms and SRP).

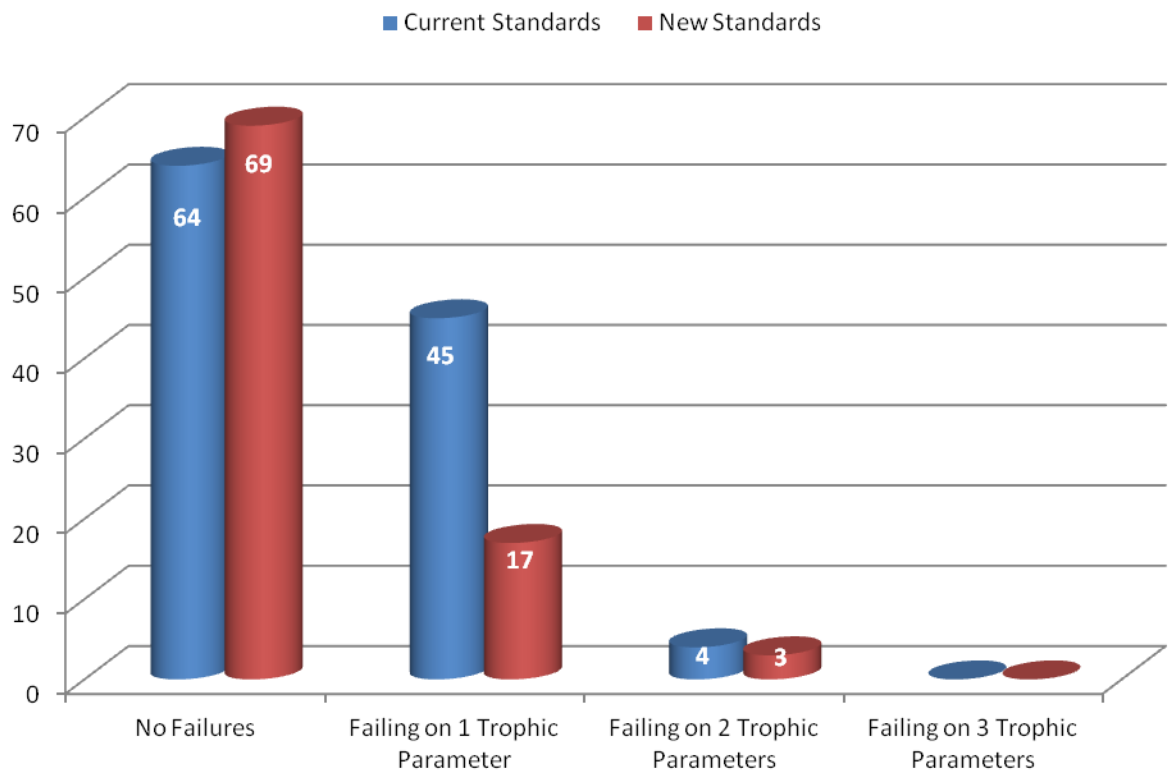

Figure 48: WFD trophic parameter failures using current standards and river water body delineations compared with the revised water body delineations and standards in the Foyle Catchments

Summary of findings from the nutrient budget study and SIMCAT river modelling of the Lough Foyle and River Foyle catchments

Figure 49 shows the percentage total loadings and sources of PSOL and TON to Lough Foyle and River Foyle catchments. The breakdown of PSOL reflects the higher level of contributions from point sources. The loading from WWTW sources is 51% in the River Foyle and 46% in Lough Foyle. In contrast, contributions from agricultural sources to the River Foyle are 40% and to Lough Foyle are 41%. The nutrient budget study also shows that moorland contributes 5% and 7% in the River Foyle and Lough Foyle catchments respectively.

Agriculture contributes the largest loading source of NO_3 to the River Foyle (82%) and Lough Foyle catchments (75%), compared with 3% and 8% respectively in each catchment which is attributed to WWTW loadings, reflecting the low level of contributions from point sources. Nutrient budget studies show that agriculture significantly contributes the largest loading source of DIN to River Foyle (84%) and Lough Foyle (82%), compared with 9% and 12% respectively in the catchments which can be attributed to WWTW sources. Forestry and urban land made the smallest contribution (≤2%) in the 2

catchments for all nutrient fractions, reflecting the small area devoted to these land uses. **Appendix 3f** presents the mean annual loadings and % total loads of nitrate and PSOL in the Lough Foyle and River Foyle catchments compared with overall Northern Ireland loadings.

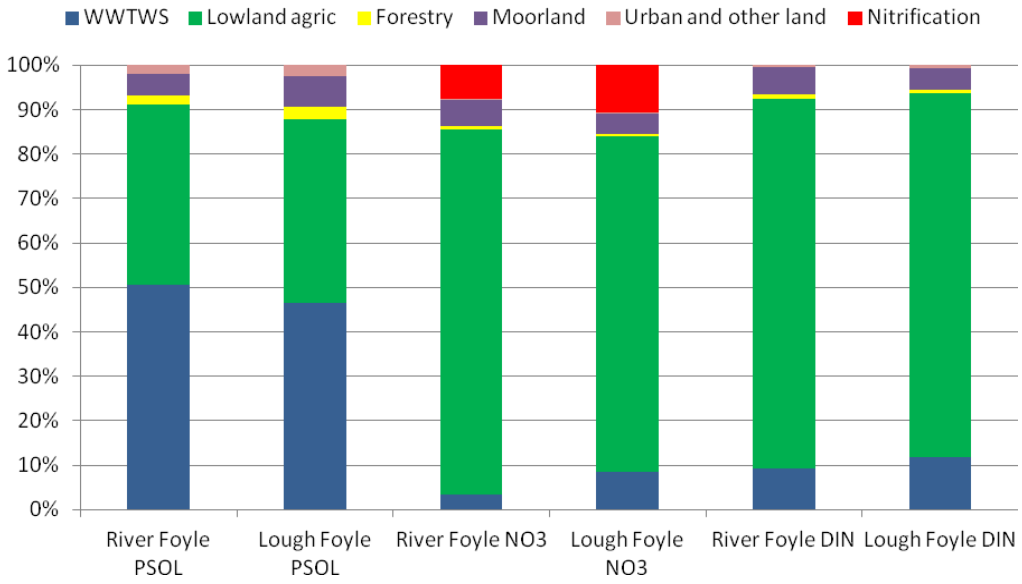

Figure 49: Source of PSOL and NO_3 loadings to Lough Foyle and Foyle River, 2001-2009

SIMCAT modelling (current performance) of the North Western RBD during the period 2005-2009 showed that the total loading of SRP to the Foyle catchments was 99.8 (tonnes/ yr^{-1}). The loading of SRP from WWTWs was 28.1 (tonnes/ yr^{-1}) over the same period, representing 28% of the total loading to the rivers in the Foyle catchments. A schematic diagram is presented in **Figure 50** illustrating the loading from individual rivers in the catchments.

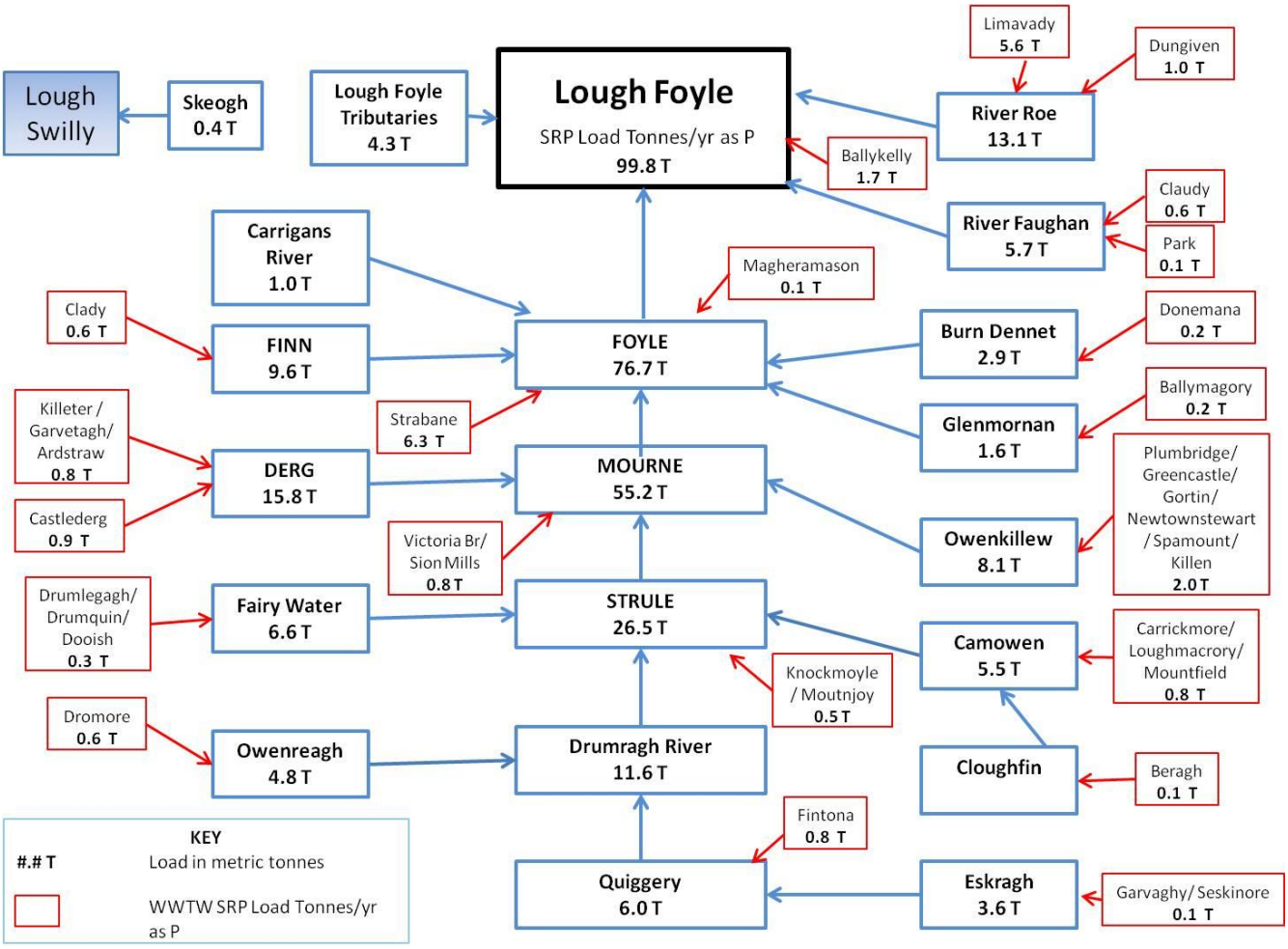

Figure 50: Schematic of the SRP loadings (tonnes/ yr^{-1}) of rivers within the Foyle catchments, 2005-2009 (Current performance, SIMCAT Model)

Conclusion and recommendations for the Foyle catchments

Overall, both the freshwater and marine data supports the existing identification of the Lough Foyle and Foyle River catchments as eutrophic (see **Appendix 5, 6** and **8** for full results). There is sufficient evidence that the upstream areas of the Foyle catchment are improving although removal of the designation is likely to compromise further progression in improved eutrophic water quality.

Using the weight of evidence approach, there is no proposed extension to the existing freshwater and marine Sensitive Area designations. There are a number of outlier undesignated freshwater water bodies in the Lough Foyle and Foyle River catchments which are classified as good or high overall eutrophic classification. There is high/medium certainty of good or better eutrophic status for these water bodies and there is no risk of deterioration to less than Good status for any of the eutrophic parameters, therefore they are not considered for designation due to a lack of eutrophic impact. There

is one outlier undesignated freshwater water body classified as moderate trophic status and the evidence to support the decision not to designate it as a Sensitive Area is presented in **Appendix 10**.

Further monitoring is recommended to continue to assess trends in eutrophic water quality and improve confidence in class and provide evidence to support the designation of the Foyle, Faughan and Roe catchments in the next review period.

3.3.2 Trophic Status of Lough Erne and Melvin, 2008-2013

Lough Erne (Upper and Lower) was designated as a Sensitive Area (Eutrophic) under the UWWTD in 1994 thus recognising that the catchment is impacted by eutrophication (**Figure 51**). The Lough Erne Designated Sensitive Area covers an area of 1895km^2 representing 13.4% of Northern Ireland's land area. In the far west of the catchment, the small section of Lough Melvin which is located in Northern Ireland and the rivers which drain into it, namely the County River, Glen River and Roogagh River is not currently designated. This area is approximately 198km^2, representing 1.4% of Northern Ireland's land area.

The River Erne rises in the Republic of Ireland and flows north-westerly via both Upper Lough Erne & Lower Lough Erne before ultimately draining into Donegal Bay at Kildoney Point. The northern part of the catchment contains the Lower Lough, Lough Scolban, Keenaghan Lough, Castlehume Lough and all the rivers and tributaries that flow into it e.g. Ballinamallard, Trillick, Ballycassidy, Hollow, Mantlin, Kesh and Bannagh. The main town is Irvinestown with a number of smaller towns and villages including Ballinamallard, Trillick, Lisnarrick, Kesh and Belleek. The southern area of the catchment contains the Upper Lough and all the rivers and tributaries that flow into it e.g. Newtownbutler, Lough-A-Hache, Colebrook, Tempo, Swanlinbar, Finn and Woodford. The WWTW at Enniskillen is the only qualifying works in the catchment and has a p.e. of 24,977. The main towns in the area are Enniskillen, Lisnaskea, Fivemiletown, Lisbellaw and Newtownbutler with a number of smaller towns and villages including Tempo, Brookeborough, Derrylin, Bellanaleck and Kinawley.

Lough Melvin and Arney rivers are located to the west of the catchment and there are several distinct river systems including the Arney, Sillees, Lurgan, Glen and Roogagh. The main towns are Derrygonnelly, Garrison, Boho and Bellanaleck. There are also several smaller towns dispersed throughout the area.

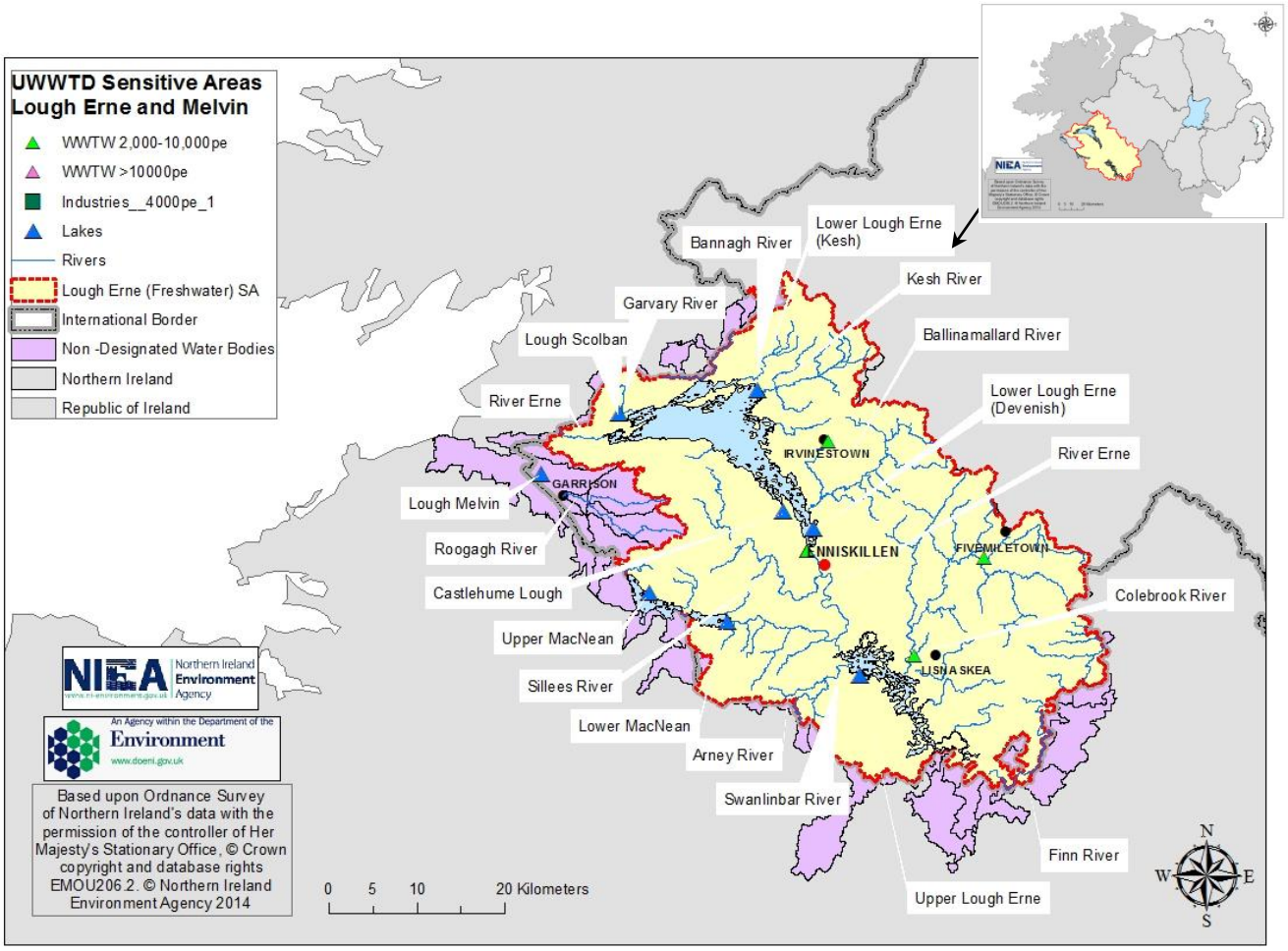

Figure 51: Extent of Sensitive Area designation in the Lough Erne and Melvin catchments

Overall Freshwater Trophic Status

Over the period 2008-2013, when current water body delineations were applied, the trophic status of 87 water bodies were assessed in the Erne catchments. Over the same period, this decreased to 67 when the revised river water body delineations were considered. A summary of results can be found in **Figure 52** and further detail is found in **Appendix 5** and **6**.

When current standards and river water body delineations were applied, 61% of river water bodies in the Erne catchments are considered to be high/good trophic status. 37% of river water bodies are classed as moderate and 2% are classed as poor trophic status (predominantly medium confidence in class of 'good or better'). No river water bodies are classed as bad trophic status. Results also show that of the water bodies which are classed as moderate or worse, only 14% fail the macrophyte standard but 37% fail the TDI standard thus indicating an impact on the diatom communities

With the new standards and new water body delineations applied, the number of water bodies considered to be high/good trophic status increased to 79%. The number of water bodies that are

classed as moderate trophic status declined to 19% and 1% was classed as poor trophic status (predominantly medium confidence in class of 'good or better'). No river water bodies were classed as bad trophic status. Results also show that failure of the macrophyte standard in 13% of the water bodies is the main driver for moderate status. Only 7% and 6% of the water bodies are classed as moderate for SRP and diatoms respectively.

Macrophytes

When current river water body delineations are applied, 77% of river water bodies in the Erne catchments are considered to be high/good status for macrophytes, whilst 1% was classed as poor status. As a result of the revised delineations, the number of water bodies considered to be high/good status for macrophytes remain generally the same at 76%. Likewise, 1% of water bodies were classed at poor status.

Diatoms

When current standards and river water body delineations were applied, results show that the main driver for moderate or worse status in the catchments is disturbance to diatom communities with 28% of river water bodies passing the TDI standard in the Erne catchments. 1% of water bodies were classed as poor status. With the new standards and new water body delineations applied, 67% of river water bodies pass the TDI standard. No water bodies were classified as poor diatom status.

SRP

When current standards and river water body delineations were applied, 97% of river water bodies pass the SRP standard in the Erne catchments. With the new standards and new water body delineations applied, this decreases to 88% of river water bodies passing the SRP standard and 7% of water bodies were classified as moderate.

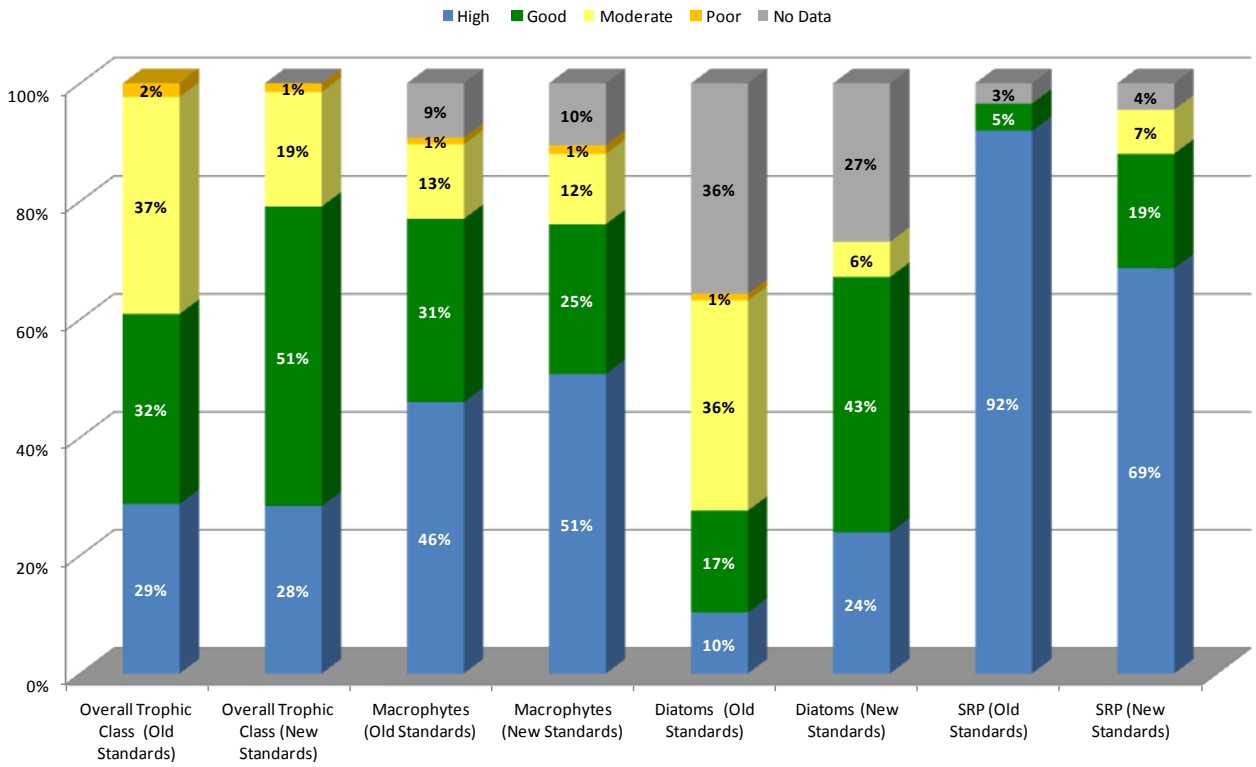

Figure 52: Comparison of the WFD Classification of Trophic Indicator Quality Elements for River Water Bodies in the Lough Erne and Melvin Catchments using current standards and river water body delineations with the revised water body delineations and standards in the period 2008-2013 *(based on SRP, macrophytes and diatoms)*

The distribution of all water body classes across the catchments using current standards and river water body delineations are shown in **Figure 53**; based on 87 river water bodies and 8 lake water bodies. Revised standards and river water body delineations are shown in **Figure 54**; based on 67 river water bodies and 8 lake water bodies. Distribution of Overall WFD Trophic Classes (2008-2013) are based on SRP, macrophytes and diatoms in river water bodies and TP, phytoplankton, macrophytes and diatoms in lake water bodies (See **Appendix 5, 6 and 7** for full results).

There are eight lake water bodies in the Lough Erne and Melvin catchments. The largest lake, Lower Lough Erne is split into two water bodies, namely Kesh and Devenish and is designated a HMBW. Lower Lough Erne at Devenish is classified as moderate trophic status (with medium confidence of impact occurring) using both current and revised standards. The main driver for this status is elevated TP concentrations and resulting disturbance to the diatom communities. Lower Lough Erne at Kesh is classified as moderate trophic status (with high confidence of impact occurring) using current standards. Elevated TP concentrations and the resulting disturbances to the phytoplankton and diatom communities drive the moderate trophic status. When revised standards are applied, Lower Lough

Erne at Kesh is classified as moderate trophic status (with medium confidence of impact occurring). The phytoplankton is classified as good status but again, the main driver for this status is elevated TP concentrations and resulting disturbance to the diatom communities.

Lough Melvin and Upper Lough MacNean are also classed as moderate trophic status, with a low confidence of impact occurring, using both current and revised standards. The driver for this status is disturbance to the macrophyte communities (moderate classification). TP concentration, phytoplankton and diatom communities are not impacted and are reported as high/good status.

Upper Lough Erne is classed as moderate trophic status (with medium confidence in class of impact occurring) using both current standards and revised standards. The main driver for this status is elevated TP concentrations and resulting disturbance to the diatom communities. As it is a HMWB, macrophytes are not included in trophic status assessment (see **Section 1.3.3**).

Using current standards, Lower Lough MacNean is classed as bad trophic status (with medium confidence of impact occurring) having disturbances to the macrophyte communities (bad status) and phytoplankton communities (moderate status) despite low levels of TP. When revised standards are applied, Lower Lough MacNean is still classed as bad trophic status (with low confidence of impact occurring) due to disturbances to the macrophyte community.

The other two lake water bodies, Lough Scolban and Castlehume Lough are classed as good trophic status with high confidence of no impact occurring, using both current standards and revised standards.

There are no marine water bodies in the Erne catchments.

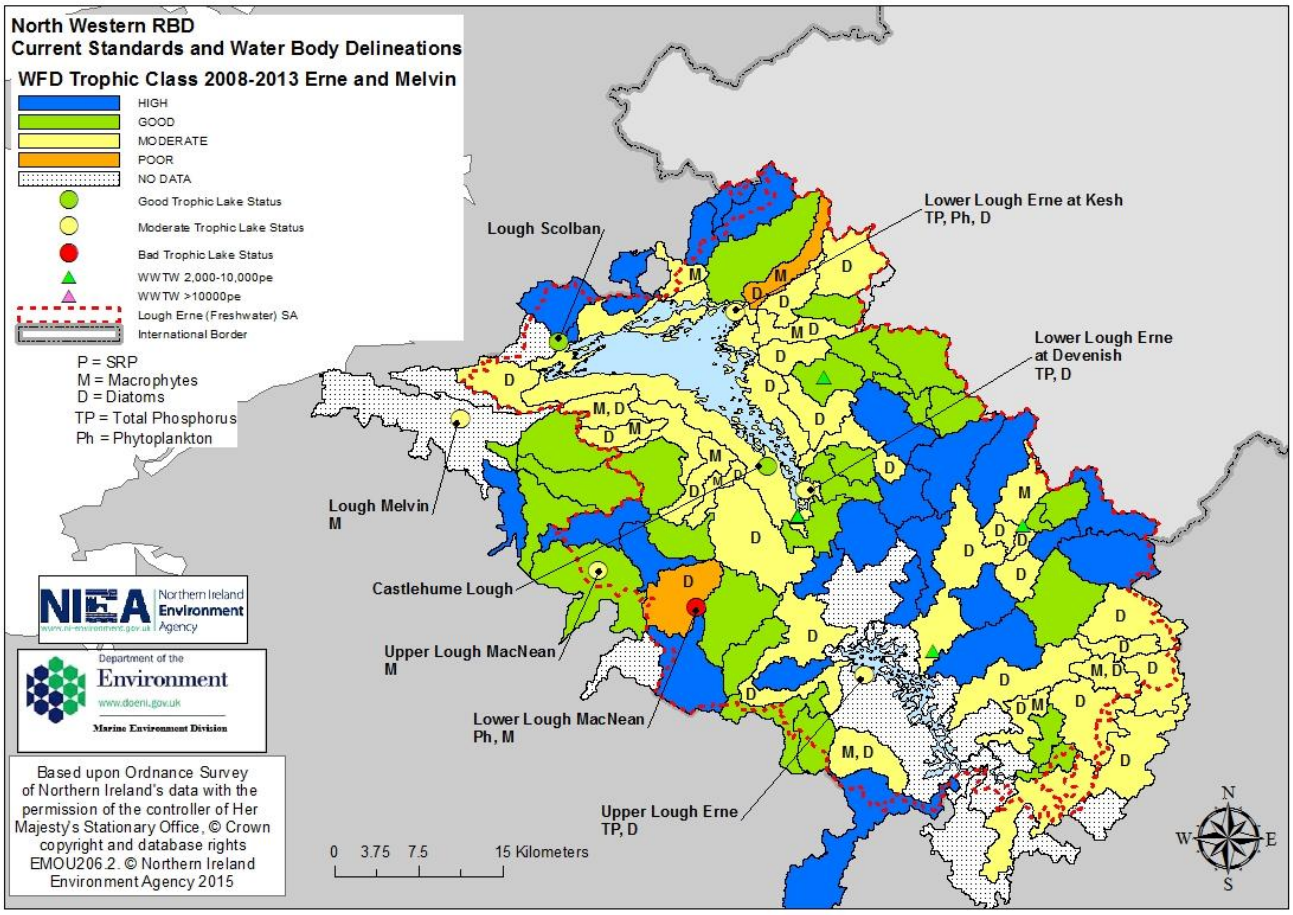

Figure 53: Distribution of Overall WFD Trophic Classes in the Lough Erne and Melvin Catchments using current standards and river water body delineations

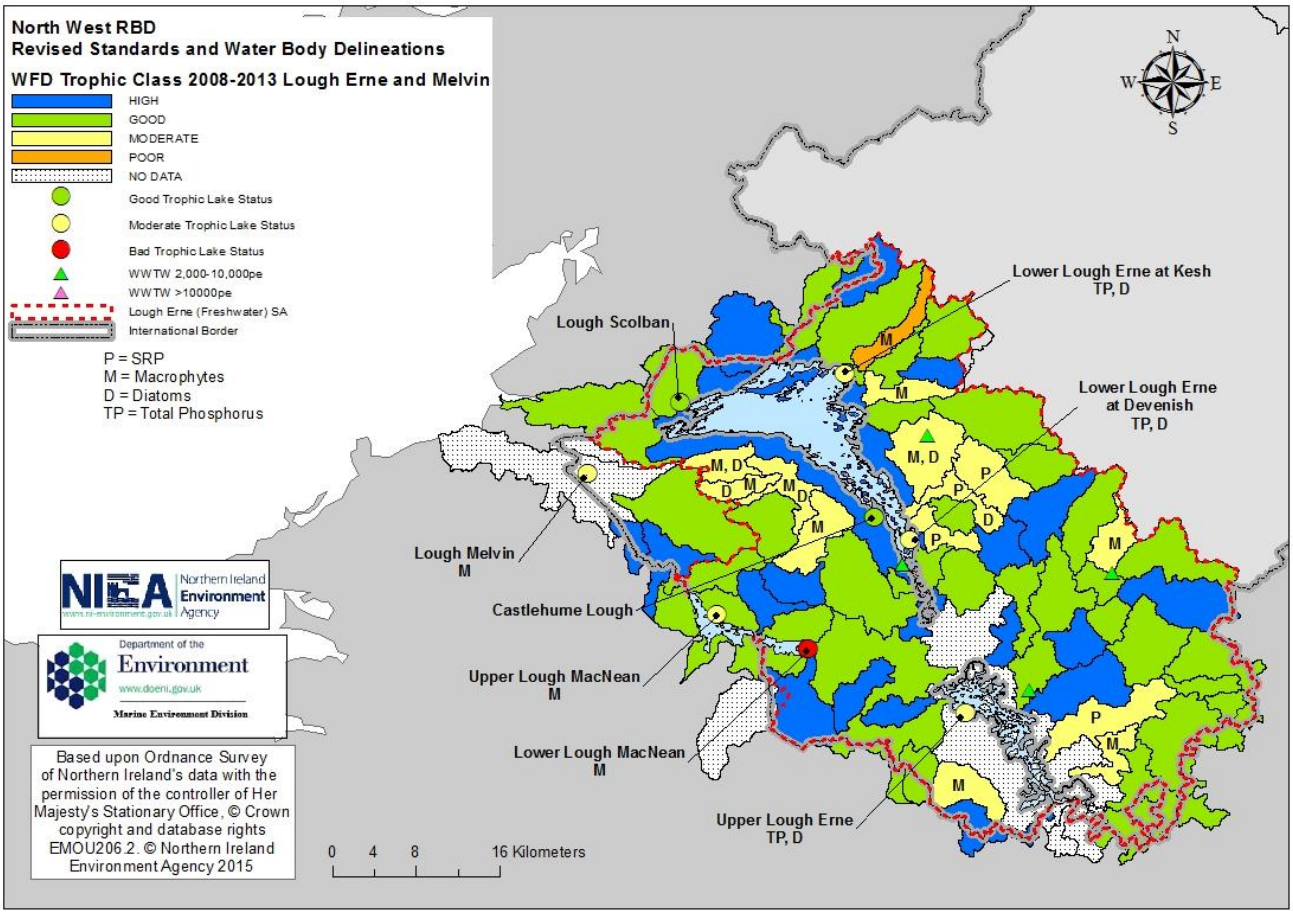

Figure 54: Distribution of Overall WFD Trophic Classes in the Lough Erne and Melvin Catchments using revised standards and river water body delineations

Figure 55 shows that of the 34 river water bodies in the catchments classed as moderate or worse when using current standards and water body delineations, 24 fail on one trophic parameter standard (predominantly diatoms) and 10 fail on two trophic parameters (diatoms and macrophytes). Of the 14 river water bodies in the catchments was classed as moderate or worse using the revised water body delineations and standards, 10 fail on one trophic parameter standard (predominantly macrophytes), and 4 fail on two trophic parameters (predominantly diatoms and macrophytes).

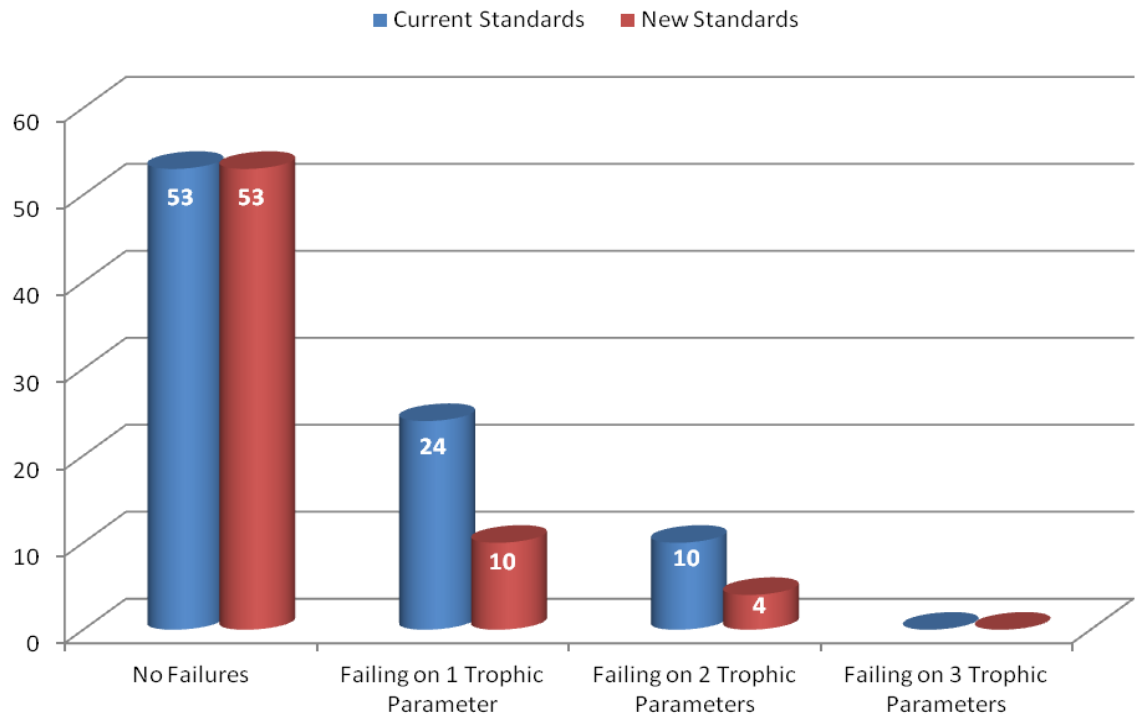

Figure 55: WFD trophic parameter failures using current standards and river water body delineations compared with the revised water body delineations and standards in the Lough Erne and Melvin Catchments

Summary of findings from the nutrient budget study and SIMCAT river modelling of the Lough Erne and Melvin catchments

Figure 56 shows the percentage total loadings and sources of PSOL and TON to the Lough Erne and Melvin catchments. The breakdown of PSOL loading reflects the higher level of contributions from agricultural sources (76%) in the catchment. In contrast, contributions from WWTW sources to the Lough Erne and Melvin catchments are 10%. The nutrient budget study also shows that forestry contributes 7% and moorland contributes 5%.

Agriculture contributes the largest loading source of NO_3 to the Lough Erne and Melvin catchments (86%), compared with 3% which is attributed to WWTW loadings, reflecting the low level of contributions from point sources. The nutrient budget study also shows that moorland contributes 4% of the NO_3 loading contribution to the catchments.Urban land made the smallest contribution (≤2%) in the catchments for all nutrient fractions, reflecting the small area devoted to this land use. **Appendix 3g** presents the mean annual loadings and % total loads of nitrate and PSOL in the Lough Erne and Melvin catchments compared with overall Northern Ireland loadings.

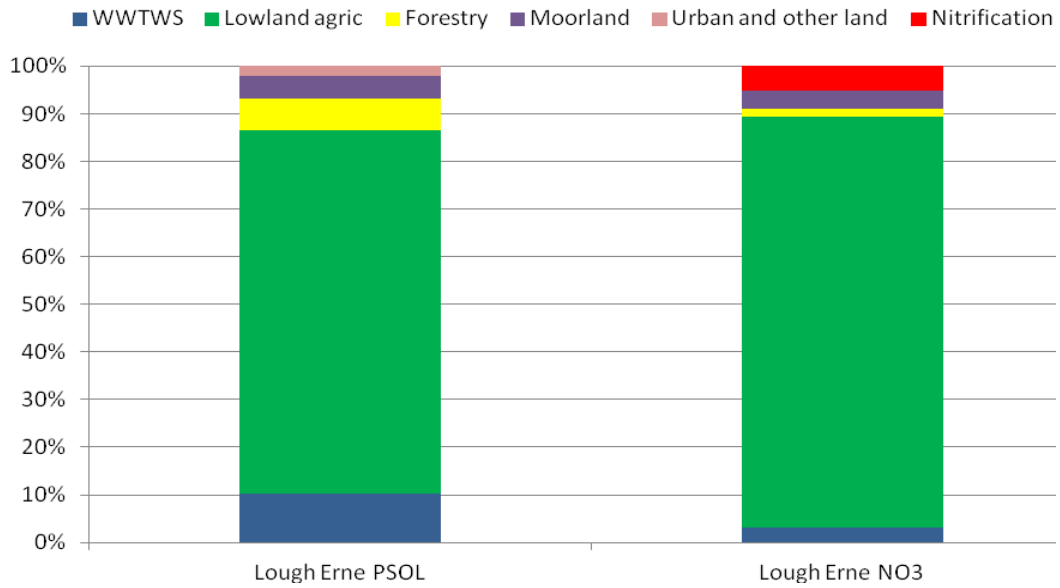

Figure 56: Source of PSOL and NO_3 loadings to Lough Erne and Lough Melvin, 2001-2009

SIMCAT modelling (current performance) of the North Western RBD during the period 2005-2009 showed that the total loading of SRP to the Lough Erne and Melvin catchments was 79.5 (tonnes/yr^{-1}). The loading of SRP from WWTWs was 5.8 (tonnes/yr^{-1}) over the same period, representing 7.3% of the total loading to the rivers in the Upper Lough Erne catchments. The total loading of SRP to the Lower Lough Erne catchments was 101.1 (tonnes/yr^{-1}). The loading of SRP from WWTWs was 3.8 (tonnes/yr^{-1}) over the same period, representing 3.8% of the total loading to the rivers in the Lower Lough Erne catchments. The total loading of SRP to the Lough Melvin catchments was 2.8 (tonnes/yr^{-1}). The loading of SRP from WWTWs was 0.1 (tonnes/yr^{-1}) over the same period, representing 4% of the total loading to the rivers in the Lough Melvin catchments. Schematic diagrams are presented in **Figures 57a, 57b and 57c** illustrating the loading from individual rivers in the catchments.

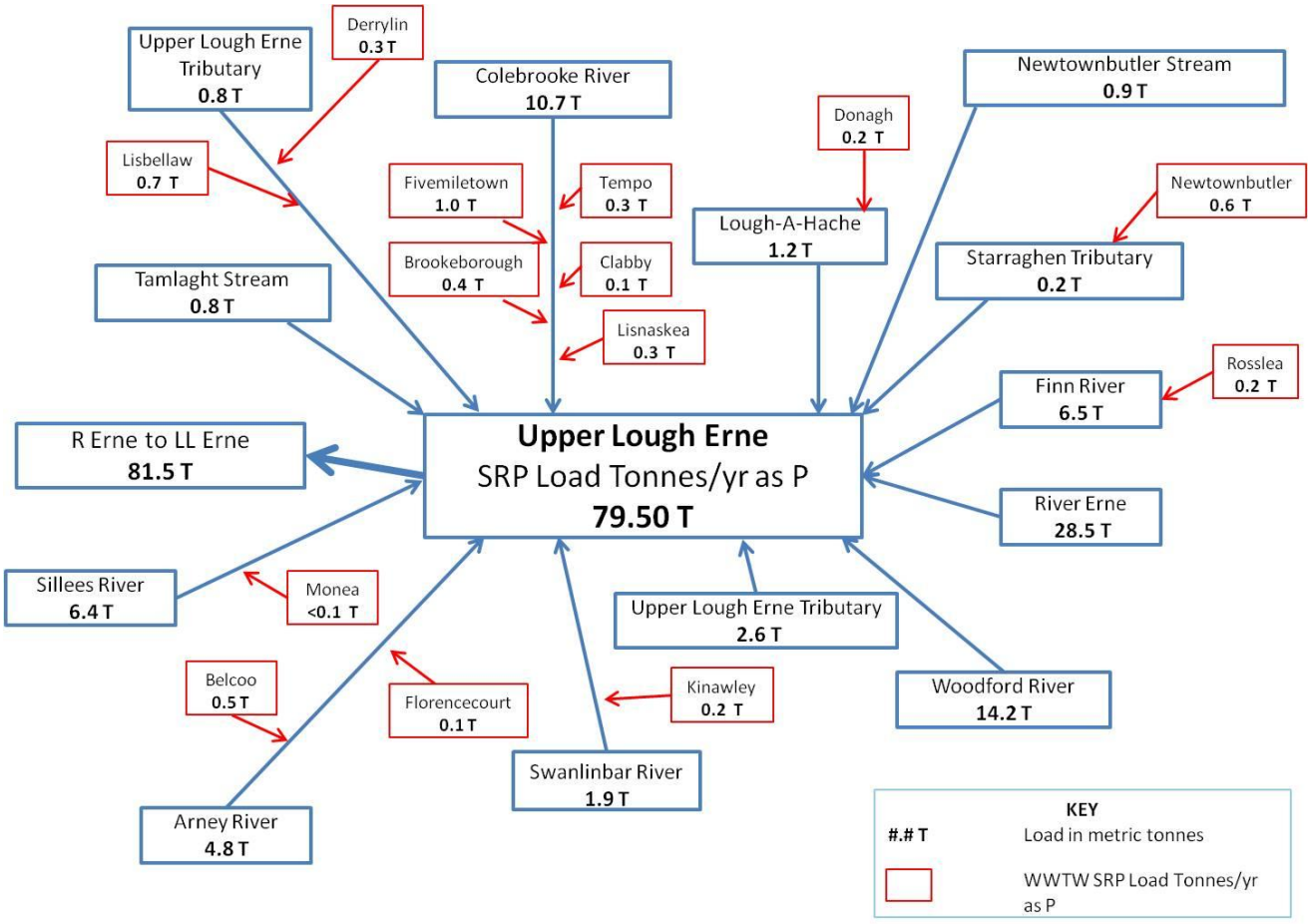

Figure 57a: Schematic of the SRP loadings (tonnes/yr^{-1}) of rivers within the Upper Lough Erne catchments, 2005-2009 (Current performance, SIMCAT Model)

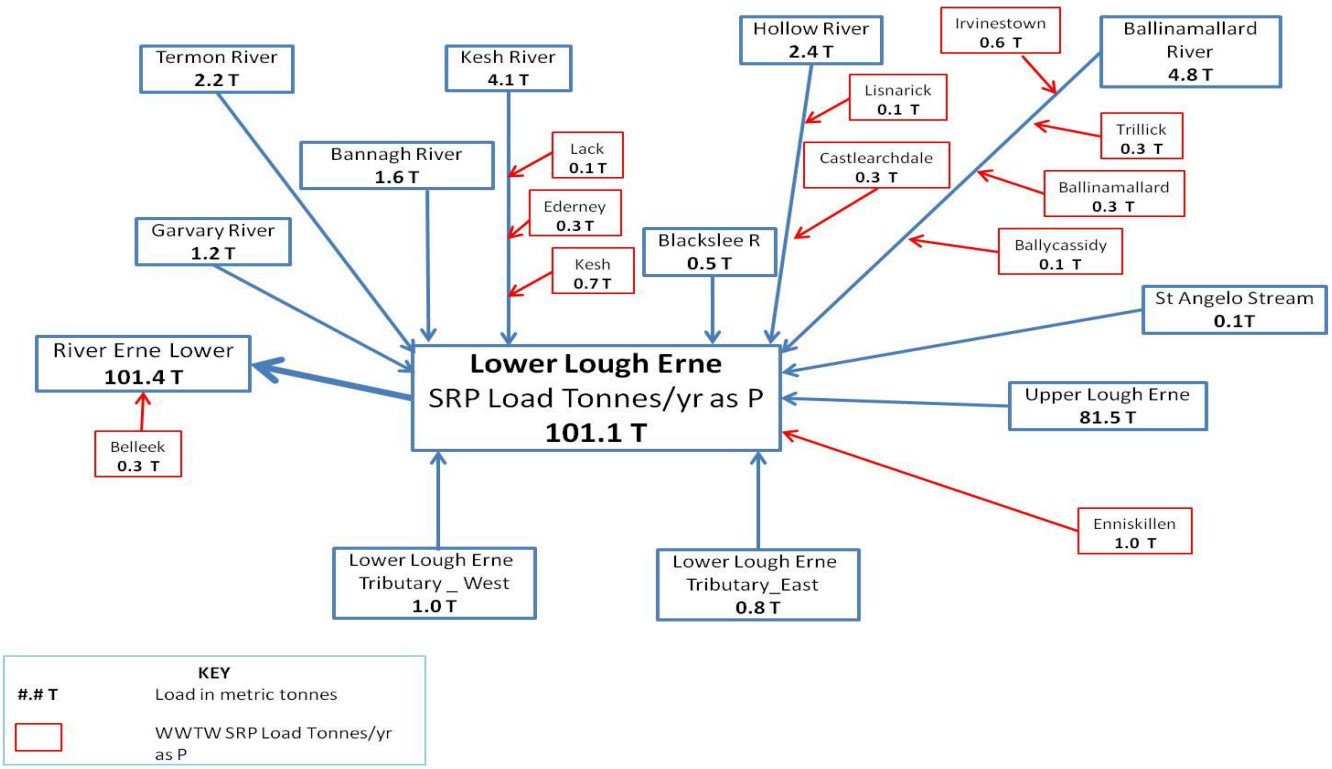

Figure 57b: Schematic of the SRP loadings (tonnes/ yr^{-1}) of rivers within the Lower Lough Erne catchments, 2005-2009 (Current performance, SIMCAT Model)

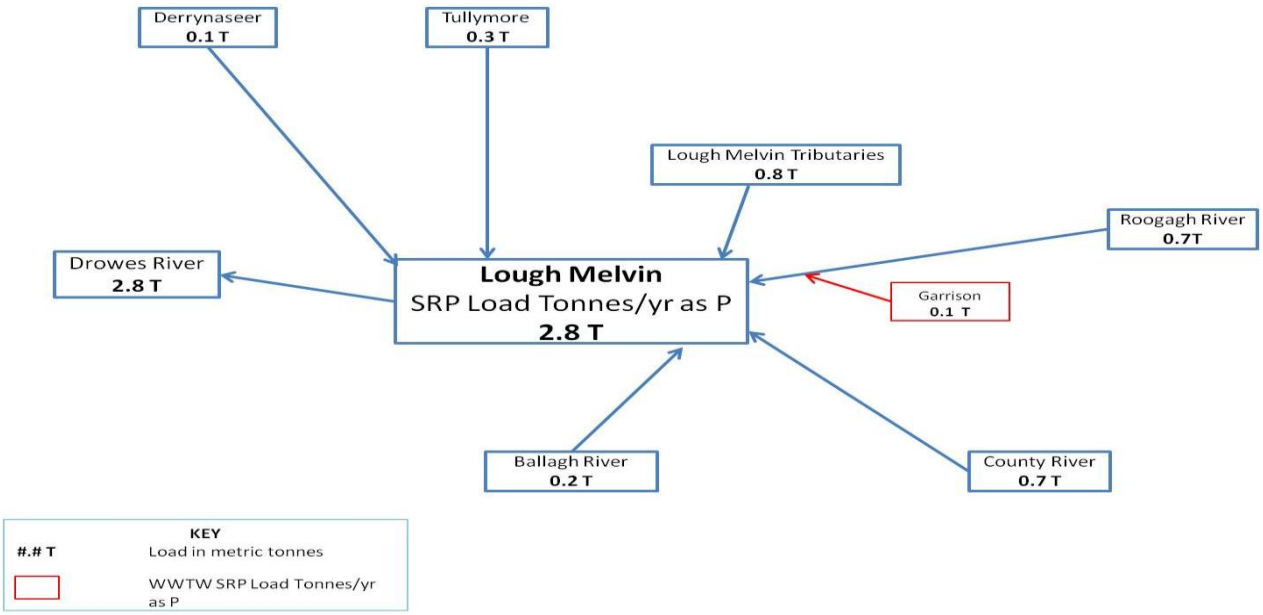

Figure 57c: Schematic of the SRP loadings (tonnes/yr^{-1}) of rivers within the Lough Melvin catchments, 2005-2009 (Current performance, SIMCAT Model)

Conclusion and recommendations for the Lough Erne and Melvin catchments

Overall, the freshwater data supports the existing identification of the Lough Erne and Melvin catchments as eutrophic (see **Appendix 5, 6** and **7** for full results).

Using the weight of evidence approach, there is no proposed extension to the existing freshwater Sensitive Area (Eutrophic) designations. There are four outlier undesignated freshwater water bodies in the Melvin catchments which are classified as good or high overall eutrophic classification. There is high/medium certainty of good or better eutrophic status for these water bodies, therefore they are not considered for designation due to a lack of eutrophic impact. There is no risk of deterioration to less than Good status for any of the eutrophic parameters in these water bodies. Lough Melvin is classified as moderate eutrophic status, with macrophytes the only failing element. Nutrients and all other trophic BQE present good or high status with low certainty of eutrophication. There is no proposed extension to the existing designation as the failure in the lake water body is on one BQE only, namely macrophytes.

Further monitoring is recommended to continue to assess trends in eutrophic indicators, to ensure continual ongoing improvement in water quality and to provide evidence to support the designation of the Lough Erne and Melvin catchments during the next review period.

4. ANNEX IIAc DESIGNATIONS

In addition to the trophic status studies, an assessment has been made of sites which may require designation under Annex IIA of the UWWTD.

4.1 Bathing Waters

The revised Bathing Water Directive (rBWD) requires Member States to ensure that, by the end of the 2015 bathing season, all bathing waters meet at least "sufficient" and take realistic and proportionate measures with a view to increasing the number of bathing waters meeting "good" and "excellent". Over the period of the review, three sites have failed to meet the "sufficient" standard of the rBWD on at least one occasion. These are Ballyholme, Ballywalter and Newcastle. Of these, Ballyholme and Newcastle are already designated under Annex IIAc. In addition to this, Carnlough failed in 2014 to meet the mandatory standard of the 1976 Bathing Water Directive. A summary of bathing water quality in the period 2010-2014 against both old and new standards is shown in **Appendix 11.**

During the last review period, a new WWTW was completed in 2009 to serve the North Down and Ards area. This works has secondary treatment and UV disinfection during the bathing season and contributes to the protection of primarily Groomsport but also Ballyholme bathing waters. Despite these measures, Ballyholme continues to be vulnerable to bathing water failures. It failed to meet the new rBWD standards in 2011, 2012 and 2013, but met sufficient in 2014. Problems have been attributed to the Bangor sewerage system and there are also concerns about agricultural inputs to the Cotton River. NIW has upgraded the Bangor sewer network and interim refurbishment work was completed at Luke's Point sewage pumping station in July 2010. Further work is progressing on identified impacting CSO's and new attenuation tanks at Luke's Point and Quay Street, close to the marina, which will further reduce spills potentially impacting on the Ballyholme bathing water. It is therefore recommended that Ballyholme bathing water retains its sensitive area status under Annex IIAc.

Newcastle already has an Annex IIAc designation. In 2013, prior to the commencement of the bathing season, a new wastewater treatment works was commissioned. The new works provides secondary treatment with bacterial reduction during the bathing water season. Since then, Newcastle bathing water compliance has been rated Excellent under the 1976 Directive and rated Good under the rBWD in both 2013 and 2014. It is recommended that in order to maintain bathing water quality at current levels and prevent deterioration, Newcastle retains its sensitive area status under Annex IIAc.

At Carnlough, wastewater is pumped away to Glenarm and is discharged after screening via a long sea outfall more than 4km to the south east of the bathing water. The Carnlough catchment has a significant amount of improved grassland. These areas can be subject to the application of chemical fertilizers and organic wastes, which can contribute to pollution in the surrounding area and has the potential to affect the bathing water. For this review period it is not recommended that Carnlough is designated as a sensitive area due to the prevalence of agriculture within the catchment and because recent results show compliance with the revised Bathing Water Directive standards. However, it is recommended that this bathing water is reviewed after the 2015 bathing season.

4.2 Shellfish Waters

The Shellfish Waters Directive (2006/113/EC) was subsumed into the WFD (2000/60/EC) in December 2013. Under the WFD, shellfish water protected areas must meet their WFD objective and meet at least Class B in accordance with the Hygiene Regulations (EC/852/2004, EC/853/2004 and EC854/2004). In addition, shellfish water protected areas will be managed to ensure no deterioration. The full annual classification per species is shown in **Appendix 12**.

Inner Dundrum Bay was found to be eutrophic after an interim review of the trophic status was carried out in 2013. In 2012 and late 2014 the shellfish water within Dundrum Inner South (mussel production area - AFFNI 95) deteriorated and was reclassified as Class C (provisional) based upon the bacteriological quality of the shellfish flesh (under the EU Hygiene Regulations). As a result of both the trophic status assessment and the deterioration in shellfish class, Dundrum Inner Bay was designated in August 2014 under Annex IIA(a) and IIA(c) of the UWWTD. The deterioration in shellfish class is highlighted in **Appendix 12**.

Strangford Lough North was identified as a sensitive area under Annex IIA(c) following the 2005 review. As a result of this Ballyrickard WWTW has year-round bacterial reduction. In this review period, the shellfish water protected areas in Strangford Lough North have met Class A or Class A provisional and for this reason it is recommended that Strangford Lough North retains its designation.

4.3 Summary of Annex IIA Designations

It is recommended that both Ballyholme and Newcastle bathing waters retain their designations under Annex IIA(c) and it is recommended that Dundrum Inner South and Strangford Lough North shellfish water protected areas retain their designations under Annex IIAa and IIAc. No additional designations are proposed but Carnlough bathing water quality will be reviewed after the 2015 bathing season.

5. CONCLUSIONS

The results presented in this review of the WFD assessment of trophic status of freshwater and marine water bodies broadly aligns with previous assessments under both the ND and the UWWTD but with the addition of two further proposed areas for designation. Since the introduction of the NAP and Phosphorus Regulations in 2007 improvements in freshwater quality have been observed, particularly for phosphorus. It is anticipated that improvements may be slower to manifest themselves in WWTWs where investment has been made and also in the marine receiving waters.

5.1 Summary of Trophic Status of North Eastern RBD

- This assessment supports the existing identifications of the River Bush, River Lagan, Enler River, River Quoile, Inner Belfast Lough, Tidal Lagan, North Strangford Lough, Inner Dundrum Bay (2014) and Quoile Pondage catchments and the Shimna and Burren river water bodies.

- No new sensitive areas (eutrophic) identifications are recommended.

5.2 Summary of Trophic Status of Neagh Bann RBD

- This assessment supports the existing identifications of the Lower Bann, Lough Neagh and Newry River catchments.

- The **Castletown Catchment** is designated as a Sensitive Area (Eutrophic) as the Creggan River displays characteristics symptomatic of eutrophic conditions or 'may become eutrophic if protective action is not taken in the near future'. This catchment crosses the international border with the Republic of Ireland and discharges into the Castletown Estuary which was identified as a Sensitive Area under the UWWTD[9] on 14th June 2001.

- The **Newry River transitional water body** is designated as a Sensitive Area (Eutrophic) having shown a deterioration in both nutrient and plant status over the period of the report.

[9] Urban Waste Water Treatment Regulations 2001, S.I. No 254 of 2001, http://www.irishstatutebook.ie/2001/en/si/0254.html

- It is recommended that the checking procedure is invoked in Carlingford Lough which failed the nutrient standard (moderate) but passed the biological criteria. More extensive biological monitoring is also recommended in the catchments of these areas. The Lower Bann Estuary also failed the DIN criteria. The Bann Estuary is totally dominated by the freshwater system which is already identified as eutrophic. The system will be kept under review.

5.3 Summary of Trophic Status of North Western RBD

- The existing identifications of the freshwater Foyle River and Upper and Lower Lough Erne catchments are supported.

- No new sensitive areas (eutrophic) identifications are recommended.

- In the case of the transitional marine Foyle and Faughan which received an overall classification of poor, results from 2010-2012 varied between good and moderate. However the final year 2013 was found to have a significantly poor DIN result which determined an overall moderate classification.

5.4 Summary of Trophic Status of Freshwater Rivers and Lakes

The recent revisions in the methodology for assessment of some biological determinands in both rivers and lakes, particularly DARLEQ, have ensured that assessments are robust, standards are correctly set and that they present an accurate appraisal of trophic status. It is recommended to continue monitoring in all water bodies with a particular focus on non-identified marginal water bodies and those identified as eutrophic or at risk of becoming eutrophic. It is also important that monitoring continues to demonstrate improvements are sustained.

The assessment of trophic status of freshwater bodies in this review period using WFD indicators shows that 56% of river water bodies and 57% of lake water bodies were classed as moderate status or worse using current standards and water body delineations. Using revised standards and water body delineations, 39% of river water bodies were classed as moderate status or worse. The number of lake water bodies classed as moderate or worse remained the same at 57%. Results in this review support the identification of the existing sensitive areas (eutrophic) as the freshwaters within the

following catchments: River Bush; River Lagan; Quoile Pondage; Enler River; Newry River; Lower Bann River; River Roe; River Faughan; Foyle River; Lough Neagh and Lough Erne. Evidence in this review supports the recommendation of the Castletown catchment as a candidate Sensitive Area (Eutrophic).

Assessments of SRP under the Nitrates Action Programme Review in 2014 found that levels of SRP are generally decreasing overall across Northern Ireland although they are still higher than desired. This is evident when looking at how many freshwater bodies failed on biology standards alone without failing the supporting nutrient standard. It is recommended in these cases that closer investigation, i.e. further monitoring in the non-identified marginal freshwater bodies, should be undertaken. Areas in particular where this applies are: Belfast Lough (North), North Down and Ards Peninsula, South East Down Streams, Kilkeel and Mourne Streams, Lower Bann, Fane, Flurry and Lough Foyle. Some very small rivers and streams occur in these water bodies and their nature is such that any pressures will manifest more quickly and can make them susceptible to nutrient enrichment. Any further monitoring should be as part of a targeted monitoring programme but will have to be balanced against the need for retention of an overall monitoring network for this and other Directive purposes.

5.5 Summary of Trophic Status of Transitional/Coastal waters

Eutrophication problems in transitional water bodies were largely restricted to a number of small estuaries and embayments. Indeed the UK initial marine assessment based on Charting Progress 2 indicated that eutrophication problems in UK seas are restricted to such areas. Foyle and Faughan, and the Roe estuaries are the only transitional water bodies that fail the nutrient test and do not display any secondary biological response**.** The remainder of the transitional areas that were assessed also showed elevated Chlorophyll-*a* biomass in addition to drops in dissolved oxygen levels in some areas. In coastal waters, only Belfast Harbour and Inner Belfast Lough failed both nutrient and WFD plant tool standards.

In spite of nutrient reduction programmes, a number of the small marine eutrophication problem areas in coastal and transitional waters are likely to remain at their current status. Revisions of the Directives and ongoing refinements to approaches to implementation can mean that revised standards might be adopted, particularly where there is no biological response to nutrient failures and which then might require adjustments to existing status. The UK Water Framework Directive Technical Advisory Group (UKTAG) has prioritised addressing concerns about some of the existing standards, and gaps in our understanding of the relationships between pressures and ecological impact. This work is proposed to

take place over the next 2-3 years with the latest deadline for standards work being late 2016 / early 2017 in order to feed into the 3rd river basin planning cycle. This would reduce the mismatches between chemical standards and biological tools, particularly N in estuaries, to align standards in a better way, improve validation and reduce the need for derogations/ alternative objectives. Further refinements to the existing standards are likely to have a significant beneficial impact.

Nutrient Assessment

There are a number of water bodies that fail the DIN criteria (moderate status or worse) in this assessment period. These include Belfast Harbour and Inner Belfast Lough, Carlingford Lough and all of the transitional water bodies where assessment was possible (the Quoile Pondage was reviewed on dissolved oxygen alone in the absence of any significant saline influence). All of these failed in the previous review. In particular, the water bodies in the Belfast Lough and Lagan catchment demonstrated consistent and significant excesses of nutrient as Dissolved Inorganic Nitrogen.

The Lower Bann Estuary fails on DIN and Chlorophyll-*a* assessment. However, earlier studies have shown that the nutrient enrichment is associated with the Lough Neagh and Lower Bann freshwater catchment which are already identified as a sensitive area (eutrophic). Although failing nutrient and plant standards consistently; no action is recommended based on the justification for non-designation given in previous reports i.e. over 90% of nutrient loadings are attributable to upstream sources, notably Lough Neagh.

Chlorophyll-*a* Assessment

The majority of Northern Ireland WFD transitional water bodies (with the exception of the Foyle and Faughan, and the Roe estuaries) fail the WFD Chlorophyll-*a* standard **(Appendix 8 and Appendix 9).** In addition, Belfast Harbour and Inner Belfast Lough show significant failures.These two adjacent areas are the only coastal water bodies that fail both the nutrient and Chlorophyll-*a* standards. The River Lagan and Belfast Harbour consistently displayed ‘Bad’ status for Chlorophyll-*a* over the assessment period.

Macroalgal assessment

Belfast Harbour and Inner Dundrum Bay are the only water bodies (where the tool was applicable) to fall below good status for the Macroalgal tool. In the case of Belfast Harbour this may be equally due to the physical characteristics of the harbour as much as nutrient enrichment.

Angiosperms

Inner Dundrum Bay was the only area where the tool was applicable to fail WFD tool assessment. The 2012 seagrass assessment found that large areas where seagrass had previously been reported (2003), were no longer present. Instead, these areas were covered in opportunistic algae which have in all likelihood smothered the underlying seagrass. After an interim assessment carried out in 2013, Inner Dundrum Bay was designated under Annex IIAa and IIAc for trophic status and shellfish classification, respectively.

Dissolved Oxygen

In general, DO levels tend not to be an issue in coastal marine waters; however some transitional and heavily modified water bodies have exhibited short lived and intermittent yet still significant DO depressions e.g. the barraged Quoile and the impounded River Lagan.

5.6 Recommendations

1. It is recommended that the **Castletown** catchment is designated as a Sensitive Area (Eutrophic) as water bodies within the catchment are displaying characteristics symptomatic of eutrophic conditions or 'may become eutrophic if protective action is not taken.

2. The **Newry River transitional water body** is designated as a Sensitive Area (Eutrophic) having shown a deterioration in both nutrient and plant status.

3. The checking procedure will be applied in **Carlingford Lough** which has demonstrated nutrient failures without an observed biological response during the assessment period.

4. It is recommended that both **Ballyholme** and **Newcastle** bathing waters retain their designations under Annex IIA(c).

5. It is recommended that **Dundrum Inner South** and **Strangford Lough North** shellfish water protected areas retain their designations under Annex IIA(a) and IIA(c).

6. The proposed co-option of **Roe Estuary** water body into coastal Lough Foyle.

7. Further biological monitoring of **Foyle and Faughan/Upper Foyle** marine water bodies based on representative new water body sites.

8. Further biological monitoring or river and lake water bodies is required to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period.

9. Further assessment (e.g. nutrient budgets and economic analysis) may be required in some catchments, particularly the Castletown catchment as part of the development of future programme of measures (POM) under WFD RBMP to determine if additional measures are required to address nutrient inputs from WWTWs serving a p.e. less than 10,000.

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Useful Web Site Addresses

www.ni-environment.gov.uk
www.doeni.gov.uk
www.ospar.org
www.environment-agency.co.uk
www.defra.gov.uk
www.wfduk.org/'Recommendations of the classification schemes for surface waters'.

Appendix 1: Corine land use data for Northern Ireland

Corine land use class coverage for Northern Ireland and border regions of Republic of Ireland (combined area 17024km^2) with their amalgamation into six major classes: Urban/industrial, arable, grassland, forest, rough grazing and other land.

CORINE LAND COVER CLASSES 17024km^2	% total
Urban/Industrial (3.1%)	
1.1.1. Continuous urban fabric	0.3
1.1.2. Discontinuous urban fabric	1.9
1.2.1. Industrial or commercial units	0.2
1.2.2. Road & rail networks and associated land	0.0
1.2.3 & 1.2.4 Sea ports & Airports	0.1
1.3.1 & 1.3.2 Mineral extraction site & Dump	0.2
1.4.1. Green urban areas	0.1
1.4.2. Sport and leisure facilities	0.3
Arable land (2.6%)	
2.1.1.& 2.1.2 Non irrigated and irrigated arable land	2.2
2.4.1. Annual crops associated with permanent crops	0.4
Agricultural grassland (72.9%)	
2.3.1.1. Good pasture	30.3
2.3.1.2. Poor pasture	5.4
2.3.1.3. Mixed pasture	18.7
2.4.2. Complex cultivation patterns	8.6
2.4.3. Land principally occupied by agriculture	5.5
3.2.1. Natural grassland	4.3
Forest (5.6%)	
3.1.1. Broad leaved forest	0.6
3.1.2. Coniferous forest	4.0
3.2.4. Transitional woodland-scrub	0.8
3.1.3. Mixed forest	0.2
Rough grazing (11.9%)	
3.2.2. Moors and heathlands	2.2
4.1.2.1. Unexploited peat bogs	9.4
4.1.2.2. Exploited peat bogs	0.2
Other land and water bodies (4.0%)	
3.3.1. Beaches, dunes, sand	0.1
3.3.3 & 3.3.4 Sparsely vegetated areas & Burnt areas	0.0
4.1.1. Inland marshes	0.2
4.2.1 & 4.2.3 Salt marshes & Intertidal flats	0.0
5.1.1 Stream courses	0.1
5.1.2. Water bodies	3.7

Appendix 2: Nutrient Export Coefficients

Nutrient export coefficients used to determine loss rates in catchment budgets

Nutrient	Land use type	Urban land	Rough grazing	Forest	Other land	Agricultural land
	Nutrient export coefficient					
Nitrate	Tonnes N $km^{-2}yr^{-1}$	0.20	0.20	0.20	0.20	
Ammonium	Tonnes N $km^{-2}yr^{-1}$	0.03	0.03	0.03	0.03	0.05
DRP	Tonnes P $km^{-2}yr^{-1}$	0.03	0.01	0.02	0.03	

** Abstracted from 'An evaluation of nitrogen sources and inputs to tidal waters in Northern Ireland' March 2004*

Appendix 3: Nutrient Budget Summaries

Appendix 3a: Nutrient Budget Summary of PSOL, NO_3 and DIN loadings to the Tidal River Lagan, Inner and Outer Belfast Lough compared with Northern Ireland loadings, 2001-2009

PSOL Loading (MAL 01-09 t P yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry
Northern Ireland	*515*	*509*	*56*	*30*	*18*
	45.7%	*45.1%*	*5%*	*2.7%*	*1.6%*
Tidal River Lagan	66	29	11	<1	<1
	62%	27%	11%	<0.1%	<0.1%
Inner Belfast Lough	203	32	16	<1	<1
	81%	13%	6%	<0.1%	<0.1%
Outer Belfast Lough	224	37	25	<1	<1
	78 %	13%	9%	<0.1%	<0.1%

Nitrate Loading (MAL 01-09 t NO3-N yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry	Nitrification
Northern Ireland	*478*	*4297*	*67*	*107*	*22*	*214*
	9%	*83%*	*1%*	*2%*	*1%*	*4%*
Tidal River Lagan	215	690	69	2	0	61
	21%	66%	7%	<0.1%	0%	6%
Inner Belfast Lough	440	735	96	2	1	70
	33%	55%	7%	<0.1%	<0.1%	5%
Outer Belfast Lough	462	858	148	2	1	85
	30%	55%	10%	<0.1%	<0.1%	5%

DIN Loading (MAL 01-09 t NO3-N yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry
Northern Ireland	*2523*	*14401*	*272*	*380*	*92*
	14%	*81%*	*2%*	*2%*	*1%*
Tidal River Lagan	254	759	84	2	1
	23%	69%	8%	<0.1%	<0.1%
Inner Belfast Lough	683	812	118	3	1
	42%	50%	8%	<0.1%	<0.1%
Outer Belfast Lough	772	949	181	3	2
	41%	50%	9%	<0.1%	<0.1%

Appendix 3b: Nutrient Budget Summary of PSOL, NO_3 and DIN loadings to Strangford Lough, Quoile and Dundrum Bay compared with Northern Ireland loadings, 2001-2009

SRP Loading (MAL 01-09 t P yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry
Northern Ireland	*515*	*509*	*56*	*30*	*18*
	45.7%	*45.1%*	*5%*	*2.7%*	*1.6%*
Strangford Lough	44	34	3	0	<1
	55%	42%	3%	0%	<0.01%
Quoile	7	15	1	0	<1
	31%	64%	5%	0%	<0.01%
Dundrum Bay	2	5	<1	<1	<1
	31%	65%	1%	1%	2%

Nitrate Loading (MAL 01-09 t NO3-N yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry	Nitrification
Northern Ireland	*478*	*4297*	*67*	*107*	*22*	*214*
	9%	*83%*	*1%*	*2%*	*1%*	*4%*
Strangford Lough	*109*	*703*	*17*	*0*	*1*	*37*
	13%	81%	2%	0%	<0.1%	4%
Quoile	30	281	7	0	0	17
	9%	84%	2%	0%	0%	5%
Dundrum Bay	4	274	1	1	1	15
	2%	93%	<0.1%	<0.1%	<0.1%	5%

DIN Loading (MAL 01-09 t NO3-N yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry
Northern Ireland	*2523*	*14401*	*272*	*380*	*92*
	14%	*81%*	*2%*	*2%*	*1%*
Strangford Lough	*178*	*767*	*20*	*0*	*1*
	19%	79%	2%	0%	<0.1%
Quoile	37	311	8	0	0
	11%	87%	2%	0%	0%
Dundrum Bay	10	295	1	1	1
	4%	96%	<0.1%	<0.1%	<0.1%

Appendix 3c: Nutrient Budget Summary of PSOL and NO_3 loadings to Lough Neagh North and Lower Bann compared with Northern Ireland loadings, 2001-2009

PSOL Loading (MAL 01-09 t P yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry
Northern Ireland	*515*	*509*	*56*	*30*	*18*
	45.7%	*45.1%*	*5%*	*2.7%*	*1.6%*
Neagh North	23	50	6	3	1
	28%	61%	7%	3%	1%
Lower Bann	19	26	5	1	1
	36%	50%	10%	1%	2%

Nitrate Loading (MAL 01-09 t NO3-N yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry	Nitrification
Northern Ireland	*478*	*4297*	*67*	*107*	*22*	*214*
	9%	*83%*	*1%*	*2%*	*1%*	*4%*
Neagh North	152	1977	7	30	3	48
	7%	89%	<0.1%	2%	<0.1%	2%
Lower Bann	21	1085	6	8	4	34
	2%	94%	<0.1%	1%	<0.1%	3%

Appendix 3d: Nutrient Budget Summary of PSOL and NO_3 loadings to Lough Neagh South compared with Northern Ireland loadings, 2001-2009

PSOL Loading (MAL 01-09 t P yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry
Northern Ireland	*515*	*509*	*56*	*30*	*18*
	45.7%	*45.1%*	*5%*	*2.7%*	*1.6%*
Neagh South	55	158	7	2	2
	24%	71%	3%	1%	1%

Nitrate Loading (MAL 01-09 t NO3-N yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry	Nitrification
Northern Ireland	*478*	*4297*	*67*	*107*	*22*	*214*
	9%	*83%*	*1%*	*2%*	*1%*	*4%*
Neagh South	479	3403	8	19	5	28
	12%	86%	<0.1%	1%	<0.1%	1%

Appendix 3e: Nutrient Budget Summary of PSOL, NO_3 and DIN loadings to Carlingford and Newry compared with Northern Ireland loadings, 2001-2009

PSOL Loading (MAL 01-09 t P yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry
Northern Ireland	*515*	*509*	*56*	*30*	*18*
	45.7%	*45.1%*	*5%*	*2.7%*	*1.6%*
Newry	10	11	1	<0.1	<0.1
	48%	49%	3%	<0.1%	<0.1%
Carlingford Lough	11	12	1	<1	<1
	45%	49%	4%	2%	4%

Nitrate Loading (MAL 01-09 t NO3-N yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry	Nitrification
Northern Ireland	*478*	*4297*	*67*	*107*	*22*	*214*
	9%	*83%*	*1%*	*2%*	*1%*	*4%*
Newry	13	346	4	0	0	24
	4%	89%	1%	0%	0%	6%
Carlingford Lough	15	473	6	9	1	36
	3%	87%	1%	2%	<0.1%	7%

DIN Loading (MAL 01-09 t NO3-N yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry
Northern Ireland	*2523*	*14401*	*272*	*380*	*92*
	14%	*81%*	*2%*	*2%*	*1%*
Newry	69	371	5	0	0
	16%	83%	1%	0%	0%
Carlingford Lough	77	512	7	11	2
	13%	84%	1%	2%	<0.1%

Appendix 3f: Nutrient Budget Summary of PSOL, NO_3 and DIN loadings to Lough Foyle and Foyle River compared with Northern Ireland loadings, 2001-2009

PSOL Loading (MAL 01-09 t P yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry
Northern Ireland	*515*	*509*	*56*	*30*	*18*
	45.7%	*45.1%*	*5%*	*2.7%*	*1.6%*
Foyle River	111	89	4	10	5
	51%	40%	2%	5%	2%
Lough Foyle	126	112	7	19	8
	46%	41%	2%	7%	3%

Nitrate Loading (MAL 01-09 t NO3-N yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry	Nitrification
Northern Ireland	*478*	*4297*	*67*	*107*	*22*	*214*
	9%	*83%*	*1%*	*2%*	*1%*	*4%*
Foyle River	95	2367	5	172	23	218
	3%	82%	<0.1%	6%	1%	8%
Lough Foyle	57	514	2	31	4	73
	8%	75%	<0.1%	5%	1%	11%

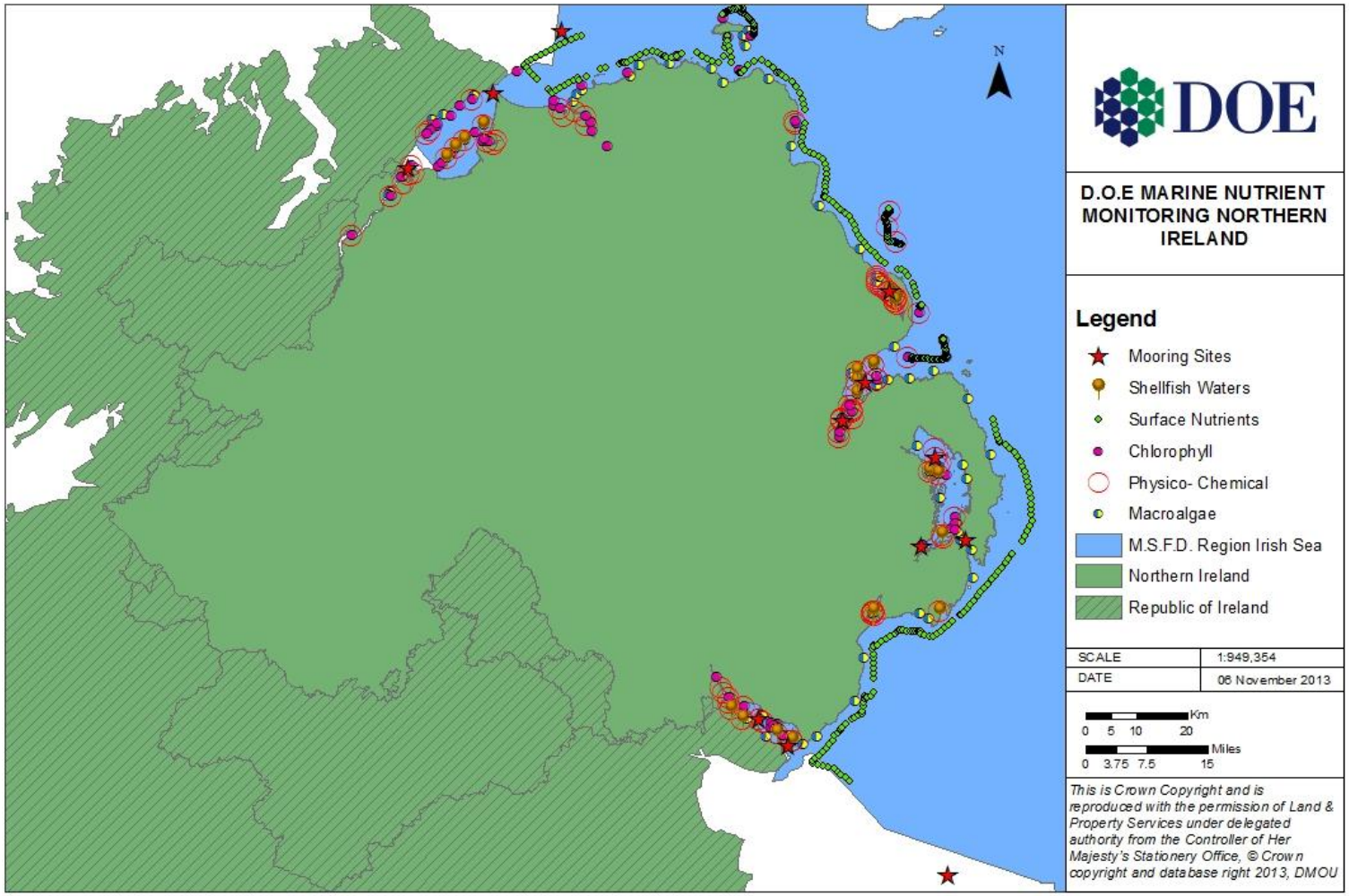
DIN Loading (MAL 01-09 t NO3-N yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry
Northern Ireland	*2523*	*14401*	*272*	*380*	*92*
	14%	*81%*	*2%*	*2%*	*1%*
Foyle River	301	2749	12	203	32
	9%	84%	<0.1%	6%	1%
Lough Foyle	88	609	5	36	6
	12%	82%	<0.1%	5%	1%

Appendix 3g: Nutrient Budget Summary of PSOL and NO_3 loadings to Lough Erne and Lough Melvin compared with Northern Ireland loadings, 2001-2009

PSOL Loading (MAL 01-09 t P yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry
Northern Ireland	*515*	*509*	*56*	*30*	*18*
	45.7%	*45.1%*	*5%*	*2.7%*	*1.6%*
Lough Erne	10	74	2	5	7
	10%	76%	2%	5%	7%

Nitrate Loading (MAL 01-09 t NO3-N yr-1 and %)	WWTWs	Lowland agriculture	Urban and other land	Moorland	Forestry	Nitrification
Northern Ireland	*478*	*4297*	*67*	*107*	*22*	*214*
	9%	*83%*	*1%*	*2%*	*1%*	*4%*
Lough Erne	41	1149	2	50	23	67
	3%	86%	<0.1%	4%	2%	5%

Appendix 4: Map showing Eutrophication Related Marine Monitoring Network over Reporting Period 2010-2013



Appendix 5: WFD Trophic Classification of River Water Bodies using Current Standards and Water body Delineations

Bush and Glens Rivers

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE040403011	Ballygalley Burn	NE Coast	MODERATE	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE040403012	Glenarm River	NE Coast	HIGH	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040403014	Glenshesk River Lower	NE Coast	HIGH	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040403015	Glendun River Lower	NE Coast	HIGH	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040403016	Carey River Upper	NE Coast	GOOD	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NE040403017	Glenmakeeran River	NE Coast	GOOD	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NE040403018	Carey River Lower	NE Coast	GOOD	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NE040403024	Glenaan/Dall River Upper	NE Coast	HIGH	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040403025	Glenaan/Dall River Lower	NE Coast	GOOD	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NE040403026	Ballyemon River	NE Coast	GOOD	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NE040403027	Glenariff River Lower	NE Coast	GOOD	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NE040403033	Tow River	NE Coast	MODERATE	HIGH	MODERATE	HIGH	Moderate or worse	is	MEDIUM
GBNI1NE040403034	Dunseverick River	NE Coast	MODERATE	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE040403039	Glenshesk River Upper	NE Coast	HIGH	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040403045	Owencloghy River	NE Coast	GOOD	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NE040403048	Linford Water	NE Coast	HIGH	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040403052	Glendun River Upper	NE Coast	HIGH	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040403060	Carnlough River	NE Coast	GOOD	GOOD	HIGH	HIGH	Good or better	is	MEDIUM
GBNI1NE040403061	Glencloy River	NE Coast	MODERATE	GOOD	MODERATE	HIGH	Moderate or worse	is	MEDIUM
GBNI1NE040403062	Glenariff R Upper/Essathoham Burn	NE Coast	HIGH	HIGH	HIGH	HIGH	Good or better	is	HIGH

Bush and Glens Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE040404001	Bush River 3	Bush	**MODERATE**	MODERATE	GOOD	HIGH	Moderate or worse	is	MEDIUM
GBNI1NE040404002	Dervock River 2	Bush	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE040404003	Dervock River 3	Bush	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	MEDIUM
GBNI1NE040404004	Dervock River 1 (Lower)	Bush	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE040404035	Moss-side Water	Bush	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE040404036	Liscolman Feeder	Bush	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE040404037	Dervock River 4 (Upper)	Bush	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	MEDIUM
GBNI1NE040404038	Well Water	Bush	**MODERATE**	MODERATE	GOOD	HIGH	Moderate or worse	is	MEDIUM
GBNI1NE040404040	Inver Burn	Bush	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	MEDIUM
GBNI1NE040404042	Bush River 1 (Lower)	Bush	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE040404049	Bush River 4 (Upper)	Bush	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	MEDIUM
GBNI1NE040404050	Flesk Water	Bush	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	MEDIUM
GBNI1NE040404051	Bush River 2	Bush	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	HIGH
GBNI1NE040404053	Burn Gushet River Upper	Bush	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NE040404054	Burn Gushet River Lower	Bush	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE040405046	Glynn/Glenoe River	Belfast Lough (North) Bush and Glens	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE040405047	Larne River	Belfast Lough (North) Bush and Glens	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM

Belfast Lough and River Lagan Rivers

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE050501082	Kilroot River	Belfast Lough (North)	HIGH	GOOD	MODERATE	**MODERATE**	Moderate or worse	is	MEDIUM
GBNI1NE050501118	Three Mile Water	Belfast Lough (North)	MODERATE	HIGH	POOR	**POOR**	Moderate or worse	is	HIGH
GBNI1NE050501120	Woodburn River	Belfast Lough (North)	GOOD	GOOD	MODERATE	**MODERATE**	Moderate or worse	is	MEDIUM
GBNI1NE050502083	Crawfordsburn River	North Down & Ards Peninsula	GOOD	HIGH	POOR	**POOR**	Moderate or worse	is	HIGH
GBNI1NE050502084	Ballyholme Bay River - Cotton River	North Down & Ards Peninsula	MODERATE	HIGH	POOR	**POOR**	Moderate or worse	is	HIGH
GBNI1NE050503001	Hillsborough Park Lake Stream	Lagan	MODERATE	MODERATE	POOR	**POOR**	Moderate or worse	is	HIGH
GBNI1NE050503002	Blackstaff River Lower	Lagan	MODERATE	NO DATA	NO DATA	**MODERATE**	Moderate or worse	is	LOW
GBNI1NE050503003	Blackstaff River Upper	Lagan	MODERATE	NO DATA	NO DATA	**MODERATE**	Moderate or worse	is	LOW
GBNI1NE050503046	River Lagan 5	Lagan	GOOD	MODERATE	MODERATE	**MODERATE**	Moderate or worse	is	MEDIUM
GBNI1NE050503047	Ravernet River Lower	Lagan	GOOD	HIGH	POOR	**POOR**	Moderate or worse	is	HIGH
GBNI1NE050503048	River Lagan 6	Lagan	GOOD	GOOD	NO DATA	**GOOD**	Good or better	is	LOW
GBNI1NE050503070	Ravernet River Upper	Lagan	GOOD	HIGH	POOR	**POOR**	Moderate or worse	is	HIGH
GBNI1NE050503071	Ravernet Trib	Lagan	GOOD	HIGH	POOR	**POOR**	Moderate or worse	is	HIGH
GBNI1NE050503087	Connswater River	Lagan	MODERATE	MODERATE	MODERATE	**MODERATE**	Moderate or worse	is	MEDIUM
GBNI1NE050503088	Minnowburn River	Lagan	MODERATE	GOOD	MODERATE	**MODERATE**	Moderate or worse	is	MEDIUM
GBNI1NE050503096	River Lagan 7 (Upper)	Lagan	HIGH	MODERATE	NO DATA	**MODERATE**	Moderate or worse	is	LOW
GBNI1NE050503098	Eel Burn	Lagan	GOOD	HIGH	MODERATE	**MODERATE**	Moderate or worse	is	MEDIUM
GBNI1NE050503101	River Lagan 4	Lagan	MODERATE	GOOD	POOR	**POOR**	Moderate or worse	is	HIGH
GBNI1NE050503102	River Lagan 3	Lagan	MODERATE	GOOD	POOR	**POOR**	Moderate or worse	is	HIGH
GBNI1NE050503103	River Lagan 2	Lagan	MODERATE	MODERATE	MODERATE	**MODERATE**	Moderate or worse	is	MEDIUM
GBNI1NE050503104	Derriaghy River	Lagan	GOOD	POOR	POOR	**POOR**	Moderate or worse	is	HIGH

Belfast Lough and River Lagan Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE050503105	Edenordinary Stream	Lagan	MODERATE	HIGH	MODERATE	**MODERATE**	Moderate or worse	is	MEDIUM
GBNI1NE050503106	Brookmount Stream	Lagan	MODERATE	NO DATA	POOR	**POOR**	Moderate or worse	is	HIGH
GBNI1NE050503108	River Lagan 1 (Lower)	Lagan	MODERATE	GOOD	POOR	**POOR**	Moderate or worse	is	HIGH
GBNI1NE050503117	Collin River	Lagan	HIGH	MODERATE	MODERATE	**MODERATE**	Moderate or worse	is	MEDIUM
GBNI1NE050503119	Forth River	Lagan	GOOD	NO DATA	NO DATA	**GOOD**	Good or better	is	LOW

Strangford, Mourne and Lecale Rivers

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE050504006	Ballymorran Burn	SE Down Streams	**GOOD**	NO DATA	NO DATA	GOOD	Good or better	is	LOW
GBNI1NE050504009	Dibney River	SE Down Streams	**MODERATE**	NO DATA	MODERATE	GOOD	Moderate or worse	is	LOW
GBNI1NE050504010	Black Causeway Stream	SE Down Streams	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	LOW
GBNI1NE050504011	Glasswater River Lower	Quoile	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050504012	Carson Dam Trib	Quoile	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050504020	Enler River Lower	Comber	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE050504021	Mill Burn	North Down & Ards Peninsula (Strangford)	**MODERATE**	HIGH	MODERATE	NO DATA	Moderate or worse	is	LOW
GBNI1NE050504022	Blackstaff River	North Down & Ards Peninsula (Strangford)	**POOR**	HIGH	POOR	POOR	Moderate or worse	is	HIGH
GBNI1NE050504023	Comber Trib	North Down & Ards Peninsula (Strangford)	**POOR**	NO DATA	POOR	NO DATA	Moderate or worse	is	LOW
GBNI1NE050504031	Ganaway Burn	North Down & Ards Peninsula (Strangford)	**POOR**	MODERATE	POOR	POOR	Moderate or worse	is	HIGH
GBNI1NE050504050	Annacloy River - Ballynahinch R Lower	Quoile	**MODERATE**	MODERATE	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050504051	Quoile River	Quoile	**MODERATE**	MODERATE	NO DATA	GOOD	Moderate or worse	is	LOW
GBNI1NE050504053	McAuleys Lake Feeders	Quoile	**GOOD**	GOOD	NO DATA	NO DATA	Good or better	is	LOW
GBNI1NE050504055	Ballynahinch River Upper	Quoile	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE050504056	Ballynahinch River Middle	Quoile	**MODERATE**	MODERATE	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NE050504057	Blackwater River	Blackwater Ards	**POOR**	GOOD	POOR	MODERATE	Moderate or worse	is	HIGH
GBNI1NE050504058	Ballyarnet Burn	SE Down Streams	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	MEDIUM
GBNI1NE050504064	Glasswater River Upper	Quoile	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050504065	Ballynahinch Feeder	Quoile	**MODERATE**	GOOD	MODERATE	MODERATE	Moderate or worse	is	MEDIUM

Strangford, Mourne and Lecale Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE050504066	Drumaness Trib	Quoile	**POOR**	POOR	MODERATE	MODERATE	Moderate or worse	is	HIGH
GBNI1NE050504080	Enler River Upper	Comber	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE050504081	Ballystockart River	Comber	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050504085	Cullys Burn	North Down & Ards Peninsula (Strangford)	**GOOD**	NO DATA	NO DATA	GOOD	Good or better	is	LOW
GBNI1NE050504086	Cunning Burn	North Down & Ards Peninsula (Strangford)	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE050505035	Tullybranigan River	Kilkeel & Mourne Streams	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE050505036	Annalong River	Kilkeel & Mourne Streams	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE050505037	Killough River	SE Down Streams	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	MEDIUM
GBNI1NE050505044	Mullagh River	Kilkeel & Mourne Streams	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE050505052	Loughinisland Trib	SE Down Streams	**POOR**	POOR	POOR	HIGH	Moderate or worse	is	HIGH
GBNI1NE050505059	Moneycarragh Feeder	SE Down Streams	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	LOW
GBNI1NE050505060	Ardilea River	SE Down Streams	**MODERATE**	GOOD	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NE050505061	Blackstaff River	SE Down Streams	**POOR**	POOR	POOR	HIGH	Moderate or worse	is	HIGH
GBNI1NE050505062	Rathmullan Burn	SE Down Streams	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	LOW
GBNI1NE050505063	Moneycarragh River Lower	SE Down Streams	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	MEDIUM
GBNI1NE050505067	Moneycarragh River Upper	SE Down Streams	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	MEDIUM
GBNI1NE050505068	Killough River	SE Down Streams	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	LOW
GBNI1NE050505069	Ballyviggis Stream	SE Down Streams	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	MEDIUM
GBNI1NE050505097	Aughrim River	Kilkeel & Mourne Streams	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	MEDIUM

Strangford, Mourne and Lecale Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE050505110	Shimna River	Kilkeel & Mourne Streams	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE050505111	Burren River	Kilkeel & Mourne Streams	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NE050505113	Carrigs River	SE Down Streams	**GOOD**	HIGH	NO DATA	GOOD	Good or better	is	MEDIUM
GBNI1NE050505114	Kilkeel River	Kilkeel & Mourne Streams	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	MEDIUM

Lough Neagh North and Lower Bann Rivers

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030301064	Agivey River 1 (Lower)	Lower Bann - Agivey	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301065	Ballymoney River Lower	Lower Bann -	**POOR**	HIGH	POOR	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030301066	Agivey River 2	Lower Bann - Agivey	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301068	Inverroe Water	Lower Bann -	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030301069	Knockoneill-Dunglady River	Lower Bann - Claudy	**MODERATE**	NO DATA	MODERATE	HIGH	Moderate or worse	is	**LOW**
GBNI1NB030301070	Eden-Lonagher Burn	Lower Bann -	**POOR**	POOR	POOR	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030301071	Bann Brook	Lower Bann -	**GOOD**	NO DATA	NO DATA	GOOD	Good or better	is	**LOW**
GBNI1NB030301072	Mayoghill River	Lower Bann - Agivey	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301073	Macosquin River Lower	Lower Bann - Macosquin	**POOR**	GOOD	POOR	HIGH	Moderate or worse	is	**HIGH**
GBNI1NB030301074	Macosquin River Middle	Lower Bann - Macosquin	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301075	Agivey River 3	Lower Bann - Agivey	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030301076	Shinny Water	Lower Bann - Macosquin	**MODERATE**	MODERATE	MODERATE	NO DATA	Moderate or worse	is	**LOW**
GBNI1NB030301077	Black Burn	Lower Bann - Macosquin	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301078	Clady River Lower	Lower Bann - Claudy	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301079	Clady River Uppper	Lower Bann - Claudy	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301081	Grillagh River Lower	Lower Bann - Claudy	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301146	Ballymoney River Upper	Lower Bann -	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	**LOW**
GBNI1NB030301147	Drumawhiskey River	Lower Bann -	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030301149	Lower Bann - Middle	Lower Bann -	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301152	Mullaghardry Point Stream	Lower Bann -	**MODERATE**	GOOD	MODERATE	NO DATA	Moderate or worse	is	**LOW**
GBNI1NB030301153	Doorish Point Stream	Lower Bann -	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**

Lough Neagh North and Lower Bann Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030301155	Curragh Burn	Lower Bann - Claudy	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301163	Ivy Burn	Lower Bann -	**POOR**	GOOD	POOR	NO DATA	Moderate or worse	is	**MEDIUM**
GBNI1NB030301166	Culmore River	Lower Bann -	**POOR**	GOOD	POOR	HIGH	Moderate or worse	is	**HIGH**
GBNI1NB030301169	Lower Bann - Upper & Scab Island Stream	Lower Bann -	**MODERATE**	NO DATA	MODERATE	GOOD	Moderate or worse	is	**LOW**
GBNI1NB030301211	Breckagh Burn	Lower Bann -	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301213	Agadowey River & Cam Burn	Lower Bann - Agivey	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301214	Lower Bann - Lower	Lower Bann -	**POOR**	GOOD	POOR	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030301215	Agivey River 4 (Upper)	Lower Bann - Agivey	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB030301216	Brockagh Water	Lower Bann - Agivey	**GOOD**	HIGH	GOOD	NO DATA	Good or better	is	**MEDIUM**
GBNI1NB030301219	Knockantern Wood Trib	Lower Bann -	**POOR**	POOR	MODERATE	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030301220	Ballymoney River Middle	Lower Bann -	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030301221	Articlave River	Lower Bann -	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301222	Dundooan Feeder	Lower Bann -	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030301223	Ballyversal Stream	Lower Bann -	**POOR**	POOR	NO DATA	MODERATE	Moderate or worse	is	**HIGH**
GBNI1NB030301224	Mettican River	Lower Bann - Agivey	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030301225	Macosquin River Upper	Lower Bann - Macosquin	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030301230	Grillagh River Upper	Lower Bann - Claudy	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030302010	Braid River 2	Main - Braid	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030302011	Clogh River Upper	Main - Clogh	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030302013	River Main 4	Main	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030302014	Kellswater Lower	Main - Kellswater	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**

Lough Neagh North and Lower Bann Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030302015	Braid River 5	Main - Braid	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030302016	Priests Burn	Main - Braid	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030302017	Deerfin Burn	Main - Braid	**POOR**	GOOD	POOR	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030302018	Braid River 1 (Lower)	Main - Braid	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030302019	Clogh River Lower	Main - Clogh	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030302020	Braid River 3	Main - Braid	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030302021	Devenagh Burn	Main - Braid	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030302022	Artoges River	Main - Braid	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030302023	Braid River 4	Main - Braid	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030302024	River Main Tributary	Main	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030302148	River Main 6 (Upper)	Main	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030302150	River Main 1 (Lower)	Main	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030302156	River Main 5 - Killagan Lower - Damstown Burn	Main	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030302157	Aghill Burn	Main	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030302158	River Main 3	Main	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030302159	Ahoghill Burn	Main	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030302160	River Main 2	Main	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030302161	Kellwater Upper	Main - Kellswater	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030302164	Sharvogues Burn	Main	**MODERATE**	MODERATE	MODERATE	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NB030302165	Dunnstown Burn	Main	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**

Lough Neagh North and Lower Bann Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030302168	Connor Burn	Main - Kellswater	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030302199	Glenwhirry River Upper	Main - Kellswater	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030302201	Glenwhirry River Lower	Main - Kellswater	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030302212	Killagan Upper	Main	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030302231	Braid River 6 (Upper)	Main - Braid	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030302232	Killycarn Trib (Braid)	Main - Braid	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030302233	Glenravel Water - Ballysallagh Water -Cargan Water	Main - Clogh	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030302234	Cloghmills Water	Main	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030302235	Douglas Burn (Glenwhirry)	Main - Kellswater	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB030302236	Glen Burn	Main - Braid	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030302237	Skerry Water	Main - Clogh	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030303002	Altagoan Burn	Moyola	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030303003	Moyola River 4	Moyola	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB030303004	Keenaght Water	Moyola	**MODERATE**	GOOD	MODERATE	NO DATA	Moderate or worse	is	**LOW**
GBNI1NB030303005	White Water - Black Water	Moyola	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB030303006	Moyola River 3	Moyola	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB030303007	Grange Water Trib	Moyola	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030303008	Grange Water Lower	Moyola	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030303009	Back Burn Upper	Moyola	**POOR**	POOR	MODERATE	HIGH	Moderate or worse	is	**HIGH**

Lough Neagh North and Lower Bann Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030303139	Grange Water Middle	Moyola	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030303143	Grange Water Upper	Moyola	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030303144	Magherafelt Burn	Moyola	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030303154	Moyola River 1 (Lower)	Moyola	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030303167	Back Burn - Milltown Burn Lower	Moyola	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030303210	Glengomna Water	Moyola	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB030303226	Back Burn - Milltown Burn Upper	Moyola	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030303227	Altalacky River	Moyola	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030303228	Moyola River 2	Moyola	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030303241	Moyola River 5 (Upper)	Moyola	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030305001	Doagh River Lower	Six Mile Water	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030305121	Doagh River Upper	Six Mile Water	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030305122	Six Mile Water Lower	Six Mile Water	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030305124	Rathmore Burn	Six Mile Water	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030305128	Four Mile Burn	Six Mile Water	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030305162	Holywell Burn	Six Mile Water	**MODERATE**	GOOD	MODERATE	NO DATA	Moderate or worse	is	**LOW**
GBNI1NB030305202	Six Mile Water Upper	Six Mile Water	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030305203	Castle Water (for FFD this is 6mile source)	Six Mile Water	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030305204	Six Mile Water Middle	Six Mile Water	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030305205	Lisnalinchy Burn	Six Mile Water	**MODERATE**	GOOD	MODERATE	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NB030305206	Ballymartin Water	Six Mile Water	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030305207	Clady Water	Six Mile Water	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**

Lough Neagh North and Lower Bann Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030306127	Dunore River	Lough Neagh Peripherals	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030306140	Mourneview Stream	Lough Neagh Peripherals	**MODERATE**	GOOD	MODERATE	NO DATA	Moderate or worse	is	**LOW**
GBNI1NB030306141	Salterstown River	Lough Neagh Peripherals	**POOR**	HIGH	POOR	MODERATE	Moderate or worse	is	**HIGH**
GBNI1NB030306142	Derrycaw Stream	Lough Neagh Peripherals	**POOR**	NO DATA	NO DATA	POOR	Moderate or worse	is	**LOW**
GBNI1NB030306192	Craigavon Rivers	Lough Neagh Peripherals	POOR	NO DATA	POOR	MODERATE	Moderate or worse	is	**HIGH**
GBNI1NB030306194	Tunny Cut - Aghalee Burn	Lough Neagh Peripherals	**MODERATE**	HIGH	MODERATE	NO DATA	Moderate or worse	is	**LOW**
GBNI1NB030306195	Closet River	Lough Neagh Peripherals	**MODERATE**	NO DATA	NO DATA	MODERATE	Moderate or worse	is	**LOW**
GBNI1NB030306208	Various small streams	Lough Neagh Peripherals	**POOR**	POOR	POOR	MODERATE	Moderate or worse	is	**HIGH**

Lough Neagh South Rivers

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030304053	Ballinderry River 5	Ballinderry	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030304054	Kildress Stream	Ballinderry	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NB030304055	Coolmaghery Trib Lower	Ballinderry	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	**LOW**
GBNI1NB030304056	Drumard Stream	Ballinderry	MODERATE	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030304057	Ballymully River Trib	Ballinderry	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	**LOW**
GBNI1NB030304058	Ballinderry River 4	Ballinderry	MODERATE	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030304059	Lissan Water Lower	Ballinderry	**GOOD**	HIGH	NO DATA	GOOD	Good or better	is	**MEDIUM**
GBNI1NB030304060	Ballinderry River 3	Ballinderry	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030304061	Killymoon River	Ballinderry	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030304062	Gortin Water	Ballinderry	**MODERATE**	MODERATE	MODERATE	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NB030304063	Ballinderry River 2	Ballinderry	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	**LOW**
GBNI1NB030304097	Claggan River	Ballinderry	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	**LOW**
GBNI1NB030304133	Ballymully River Upper	Ballinderry	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB030304134	Ballymully River Lower	Ballinderry	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030304135	Lissan Water Upper	Ballinderry	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030304136	Ballinderry River 1 (Lower)	Ballinderry	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030304137	Ballynargan Stream	Ballinderry	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030304138	Kingsmill Stream	Ballinderry	**POOR**	GOOD	POOR	HIGH	Moderate or worse	is	**HIGH**
GBNI1NB030304176	Tullynacross Trib	Ballinderry	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	**LOW**
GBNI1NB030304177	Rock River	Ballinderry	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	**LOW**
GBNI1NB030304178	Coolmaghery Trib Upper	Ballinderry	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	**LOW**

Lough Neagh South Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030304179	Corrycroar Trib	Ballinderry	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	**LOW**
GBNI1NB030304181	Tullaran Trib	Ballinderry	**POOR**	POOR	NO DATA	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030304240	Ballinderry River 6 (Upper)	Ballinderry	**MODERATE**	MODERATE	HIGH	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030306082	Glenavy River Upper	Glenavy	**POOR**	GOOD	POOR	HIGH	Moderate or worse	is	**HIGH**
GBNI1NB030306083	Stonyford River - Rushyhill River	Glenavy	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030306084	Glenavy River Lower	Glenavy	**POOR**	GOOD	POOR	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030306085	Crew Burn	Lough Neagh Peripherals	**POOR**	HIGH	POOR	MODERATE	Moderate or worse	is	**HIGH**
GBNI1NB030306087	Crumlin River Lower	Crumlin	**POOR**	GOOD	POOR	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030306125	Dundesert River	Crumlin	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030306126	Crumlin River Middle	Crumlin	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030306193	Ballinderry River	Lough Neagh Peripherals	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NB030306198	Crumlin River Upper	Crumlin	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030307025	River Rhone Upper	Blackwater	**GOOD**	GOOD	NO DATA	NO DATA	Good or better	is	**LOW**
GBNI1NB030307026	Callan River 1 (Lower)	Blackwater - Callan	**POOR**	MODERATE	POOR	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030307027	River Blackwater 2	Blackwater	**POOR**	HIGH	POOR	HIGH	Moderate or worse	is	**HIGH**
GBNI1NB030307028	Callan River 2	Blackwater - Callan	**POOR**	HIGH	POOR	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030307033	Oona Water 4 (Upper)	Blackwater	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030307034	Killymaddy Trib	Blackwater	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030307035	Oona Water 3	Blackwater	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030307036	River Rhone Lower	Blackwater	**MODERATE**	MODERATE	NO DATA	GOOD	Moderate or worse	is	**LOW**

Lough Neagh South Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030307037	Mullyroddan Trib	Blackwater	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030307038	Oona Water 2	Blackwater	**GOOD**	HIGH	NO DATA	GOOD	Good or better	is	**MEDIUM**
GBNI1NB030307039	Oona Water 1 (Lower)	Blackwater	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030307040	River Blackwater 4 - Tynan R Lower	Blackwater	**GOOD**	HIGH	NO DATA	GOOD	Good or better	is	**MEDIUM**
GBNI1NB030307041	River Blackwater Trib (Aughnacloy)	Blackwater	**POOR**	GOOD	POOR	NO DATA	Moderate or worse	is	**MEDIUM**
GBNI1NB030307042	Crilly Feeder	Blackwater	**POOR**	POOR	NO DATA	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030307043	River Blackwater 3	Blackwater	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NB030307044	Callan River 3	Blackwater - Callan	**GOOD**	HIGH	NO DATA	GOOD	Good or better	is	**MEDIUM**
GBNI1NB030307045	Ballymartrim River	Blackwater	**GOOD**	HIGH	NO DATA	GOOD	Good or better	is	**MEDIUM**
GBNI1NB030307047	Kilmore Trib (aka Annaboe Trib)	Blackwater - Tall	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030307048	Butter Water	Blackwater - Callan	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030307049	Clay River	Blackwater - Callan	**GOOD**	GOOD	NO DATA	NO DATA	Good or better	is	**LOW**
GBNI1NB030307050	Tamnamore Stream	Blackwater	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030307051	River Blackwater 8	Blackwater	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030307052	River Blackwater 7	Blackwater	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030307095	Tynan River/Balteagh Stream Upper	Blackwater	**GOOD**	NO DATA	NO DATA	GOOD	Good or better	is	**LOW**
GBNI1NB030307099	Cor River Lower	Blackwater	**POOR**	POOR	NO DATA	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030307106	Tall River Upper	Blackwater - Tall	**POOR**	MODERATE	POOR	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030307108	Tall River Middle	Blackwater - Tall	**MODERATE**	MODERATE	MODERATE	MODERATE	Moderate or worse	is	**MEDIUM**

Lough Neagh South Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030307109	Killeen Water	Blackwater - Callan	**MODERATE**	HIGH	MODERATE	NO DATA	Moderate or worse	is	**LOW**
GBNI1NB030307111	Ballymacone River	Blackwater - Callan	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NB030307112	Callan River 4 (Upper)	Blackwater - Callan	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	**LOW**
GBNI1NB030307129	Tall River Lower	Blackwater - Tall	**MODERATE**	GOOD	MODERATE	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NB030307132	River Blackwater 1 (Lower)	Blackwater	**POOR**	HIGH	POOR	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030307145	Torrent River Lower	Blackwater - Torrent	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030307173	Torrent River Upper	Blackwater - Torrent	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030307175	Ballygawley Water	Blackwater	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030307180	River Blackwater Feeder (Ballygreenan)	Blackwater	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NB030307196	River Blackwater 9 (Upper)	Blackwater	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NB030307238	Fury River	Blackwater	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB030307239	River Blackwater Trib (Lisboy)	Blackwater	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB030307242	River Blackwater Trib (Roy)	Blackwater	**GOOD**	HIGH	GOOD	NO DATA	Good or better	is	**MEDIUM**
GBNI1NB030307243	River Blackwater Trib (Killyfaddy)	Blackwater	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030308088	Upper Bann 6	Upper Bann	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB030308089	Upper Bann 7 (Upper)	Upper Bann	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030308091	Annagh River	Upper Bann	**POOR**	HIGH	POOR	NO DATA	Moderate or worse	is	**MEDIUM**
GBNI1NB030308092	Cusher River 4	Upper Bann - Cusher	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030308093	Cusher River 2	Upper Bann - Cusher	**POOR**	HIGH	POOR	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030308094	Cusher River 3	Upper Bann - Cusher	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030308100	Upper Bann 5	Upper Bann	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**

Lough Neagh South Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030308101	Rocky R - Shankys River	Upper Bann	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB030308102	Leitrim River (aka Carcullion)	Upper Bann	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030308103	Upper Bann 1 (Lower)	Upper Bann	**POOR**	POOR	MODERATE	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030308107	Cusher River 1 (Lower)	Upper Bann - Cusher	**POOR**	MODERATE	POOR	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030308110	Ballybay River	Upper Bann	**POOR**	MODERATE	POOR	MODERATE	Moderate or worse	is	**HIGH**
GBNI1NB030308113	Whitecross Stream	Upper Bann - Cusher	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB030308114	Cusher River 5 (Upper)	Upper Bann - Cusher	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030308117	Tullyorior Trib	Upper Bann	**POOR**	POOR	MODERATE	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030308118	Loughgilly River	Upper Bann - Cusher	**POOR**	POOR	MODERATE	NO DATA	Moderate or worse	is	**HIGH**
GBNI1NB030308119	Markethill River	Upper Bann - Cusher	**MODERATE**	NO DATA	MODERATE	GOOD	Moderate or worse	is	**LOW**
GBNI1NB030308120	Mowhan River	Upper Bann - Cusher	**POOR**	POOR	MODERATE	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB030308184	Upper Bann 4	Upper Bann	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030308186	Eel Burn	Upper Bann	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030308187	Drumadonnell River	Upper Bann	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030308188	Muddock River	Upper Bann	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030308189	Upper Bann 2	Upper Bann	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030308197	Upper Bann 3	Upper Bann	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB030308199	River Blackwater 6	Blackwater	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB030308201	River Blackwater 5	Blackwater	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**

Carlingford and Newry Rivers

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB060601003	Clanrye River North	Newry	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB060601004	Clanrye River 3	Newry	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB060601005	Clanrye River 2	Newry	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB060601018	Mayobridge River	Newry	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB060601020	Derryleckagh Lake Outflow	Newry	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	**LOW**
GBNI1NB060601021	Clanrye River 4 (Upper) - Lissize River	Newry	**MODERATE**	NO DATA	MODERATE	MODERATE	Moderate or worse	is	**LOW**
GBNI1NB060601024	Jerrettspass River Trib	Newry	**MODERATE**	GOOD	MODERATE	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NB060601025	Loughbrickland Stream	Newry	**MODERATE**	MODERATE	NO DATA	NO DATA	Moderate or worse	is	**LOW**
GBNI1NB060601044	Clanrye River 1 (Lower)	Newry	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB060602001	Cully Water Upper	Castletown	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB060602002	Forkhill River Trib	Castletown	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB060602017	Cam Lough (discharges to Bessbrook R)	Flurry	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	**LOW**
GBNI1NB060602029	Creggan River	Castletown	**POOR**	POOR	MODERATE	GOOD	Moderate or worse	is	**HIGH**
GBNI1NB060602034	Cully Water Lower	Castletown	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB060602035	Forkill River Upper (aka Kilcurry)	Castletown	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB060602036	Ummercam River	Castletown	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB060602037	Forkill River Lower (aka Kilcurry)	Castletown	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB060602038	Kilnasaggart River (aka Ballymascallan)	Flurry	**MODERATE**	MODERATE	GOOD	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB060602039	Flurry River	Flurry	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NB060603027	County Water	Fane	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NB060604011	Cassy Water	Kilkeel & Mourne Streams	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**

Carlingford and Newry Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB060604040	Ghann River	Kilkeel & Mourne Streams	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NB060604041	Kilbroney River	Kilkeel & Mourne Streams	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB060604042	Moygannon River	Kilkeel & Mourne Streams	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NB060604045	White Water River	Kilkeel & Mourne Streams	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NB060604046	Newry River	Newry	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NB060604047	Jerrettspass River	Newry	**MODERATE**	MODERATE	NO DATA	MODERATE	Moderate or worse	is	**LOW**
GBNI1NB060604049	Bessbrook River	Newry	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	**LOW**
GBNI1NB060604052	Fane River Lower	Fane	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**

Foyle Rivers

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW010101045	Burn Dennett River Middle	Burn Dennett	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010101069	Altinaghrea Burn	Burn Dennett	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW010101070	Burn Dennett River Lower	Burn Dennett	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010101071	Burn Dennett River Upper	Burn Dennett	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010101072	Dunnyboe Burn	Burn Dennett	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW010101075	Glenmornan River	Foyle (with Deele)	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW010101076	Sandville Burn	Burn Dennett	**HIGH**	HIGH	NO DATA	NO DATA	Good or better	is	**LOW**
GBNI1NW010102001	Cranny Burn	Drumragh - Owenreagh (South)	**MODERATE**	MODERATE	GOOD	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102002	Fairywater River Middle	Fairywater	**POOR**	POOR	MODERATE	HIGH	Moderate or worse	is	**HIGH**
GBNI1NW010102003	Black Water (Drumquin) Lower	Fairywater	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102004	Drumquin River Upper	Fairywater	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102005	Lough Catherine Stream Lower	Derg	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102006	Drumragh River	Drumragh (with Quiggery)	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102007	Quiggery Water Lower	Drumragh (with Quiggery)	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102008	Eskragh Water Lower	Drumragh (with Quiggery)	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102009	Black Water (Drumquin) Upper	Fairywater	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102010	Fairywater River Upper	Fairywater	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102011	Owenkillew River 3	Upper Owenkillew	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102016	Lough Catherine Stream Upper	Derg	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**

Foyle Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW010102017	Creevan Burn	Drumragh - Owenreagh (South)	**GOOD**	HIGH	HIGH	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102018	Owenreagh River Lower	Drumragh - Owenreagh (South)	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102019	Quiggery Water Middle	Drumragh (with Quiggery)	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102020	Strule River Middle	Strule	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102021	Cappagh Burn	Strule	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102022	Owenreagh River Lower	Owenreagh (East)	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102023	Glensawisk Burn	Owenreagh (East)	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102024	Cashel Burn	Owenreagh (East)	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102025	Glenlark River	Upper Owenkillew	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102026	Owenkillew 4	Upper Owenkillew	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102027	Owenkillew River 2	Lower Owenkillew	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102028	Owenkillew River 1 (Lower)	Lower Owenkillew	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102029	Drumnakilly Burn Upper	Camowen	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102030	Claggan (Coolnagreana) Burn	Camowen	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102031	Drumnakilly Burn Lower	Camowen	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102032	Granagh Burn	Camowen	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102033	Camowen River 1 (Lower)	Camowen	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102034	Camowen River 3	Camowen	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102035	Cloghfin River Lower	Camowen	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102036	Glashagh Burn	Camowen	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102037	Cloghfin River Middle	Camowen	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**

Foyle Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW010102038	Owenreagh River Middle	Owenreagh (East)	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102039	Glenscollip Burn	Camowen	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102040	Magheragart Burn Lower	Drumragh - Owenreagh (South)	**MODERATE**	MODERATE	GOOD	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102041	Fairywater River Lower	Fairywater	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102043	Glenmacoffer Burn	Lower Owenkillew	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102046	Owenreagh River Upper	Drumragh - Owenreagh (South)	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	**LOW**
GBNI1NW010102047	Shanaghy Burn (aka Tievemore Burn)	Derg	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102048	Glenelly River Middle	Lower Owenkillew	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102050	Killen (Drumnahon) Burn	Derg	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102051	Derrynaseer Trib	Drumragh - Owenreagh (South)	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102052	Drumquin River Lower - Glenrone River	Fairywater	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102053	Owenreagh River Middle	Drumragh - Owenreagh (South)	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102054	Magheragart Burn Upper	Drumragh - Owenreagh (South)	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102056	Derg River 3	Derg	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW010102059	Derg River 4 (Upper)	Derg	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102064	Mourne Beg River Lower	Derg	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102066	Mourne Beg River Upper	Derg	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102067	Glendergan River	Derg	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102073	Glenelly River Lower	Lower Owenkillew	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102074	Mourne River- Strule River Lower	Mourne & Mourne/Strule	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**

Foyle Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW010102075	Douglas Burn	Mourne	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102077	Cavanlee River	Mourne	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102080	Camowen River 4 (Upper)	Camowen	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102081	Owenkillew River 6 (Upper)	Upper Owenkillew	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102082	Quiggery Water Upper	Drumragh (with Quiggery)	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102083	Glenelly River Upper	Lower Owenkillew	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102084	Altanagh Burn	Camowen	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102085	Coneyglen River	Upper Owenkillew	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102086	Owenkillew River 5	Upper Owenkillew	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102087	Cloghfin River Upper	Camowen	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102088	Cloghfin River Trib	Camowen	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102089	Eskragh Water Upper	Drumragh (with Quiggery)	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102090	Routing/Garvaghy Burn	Drumragh (with Quiggery)	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102091	Owenreagh River Upper	Owenreagh (East)	**GOOD**	HIGH	HIGH	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102092	Camowen River 2	Camowen	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102093	Strule River Upper	Strule	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102094	Derg River 2	Derg	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102095	Derg River 1 (Lower)	Derg	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102096	Glenknock Burn	Lower Owenkillew	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010103063	Finn River	Finn	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010103064	Leaghany River	Derg	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010103065	unknown - ROI	Derg	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**

Foyle Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW020202005	Owenalena River	Roe	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW020202010	Owenrigh River	Roe	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW020202011	Castle River Lower	Roe	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW020202012	Gelvin River Lower	Roe	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW020202013	Curly River Lower	Roe	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW020202014	Bovevagh River	Roe	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW020202015	River Roe 3	Roe	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW020202018	River Roe 2	Roe	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020202023	Owenbeg River	Roe	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020202024	River Roe 1 (Lower)	Roe	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW020202032	Wood Burn	Roe	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW020202039	Gelvin River Upper	Roe	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW020202043	River Roe 4 (Upper)	Roe	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW020202044	Castle River Trib	Roe	**MODERATE**	HIGH	MODERATE	NO DATA	Moderate or worse	is	**LOW**
GBNI1NW020202045	Castle River Upper	Roe	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW020202049	Curly River Upper	Roe	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW020203027	Burnfoot River	Lough Foyle (South)	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020203028	Ballykelly River	Lough Foyle (South)	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	**LOW**
GBNI1NW020203029	Faughanvale River	Lough Foyle (South)	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020203030	Muff River	Lough Foyle (South)	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020204002	Faughan River Middle	Faughan	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**

Foyle Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW020204003	Burntollet River Middle	Faughan	**GOOD**	HIGH	HIGH	GOOD	Good or better	is	**MEDIUM**
GBNI1NW020204017	Burntollet River Upper/Loughermore River	Faughan	**GOOD**	HIGH	HIGH	GOOD	Good or better	is	**MEDIUM**
GBNI1NW020204025	Meenarnet Burn	Faughan	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW020204026	Foreglen River	Faughan	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020204031	Faughan River Lower	Faughan	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW020204033	Faughan River Upper	Faughan	**HIGH**	NO DATA	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020204034	Burngibbagh	Faughan	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020204035	Burntollet River Lower	Faughan	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW020204038	Glenrandal River	Faughan	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW393901002	Skeoge River	Burnfoot	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**

Erne and Melvin Rivers

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW353502002	Roogagh River Lower	Roogagh	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW353502003	Glen River	Roogagh	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW353502004	Roogagh River Upper	Roogagh	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW353502005	Count River Upper - Lattone Trib	County	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601001	Arney River Upper	Arney	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601002	Ballycassidy River Upper	Ballinamallard	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	**LOW**
GBNI1NW363601003	Sillees River 2	Sillees	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601004	Sillees River 3	Sillees	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601005	Hollow River	Lower Erne	**MODERATE**	GOOD	MODERATE	NO DATA	Moderate or worse	is	**LOW**
GBNI1NW363601006	Kesh River	Kesh	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601007	Lurgan River	Arney	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363601008	Trillick Trib Lower	Ballinamallard	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601009	Ballycassidy River Lower	Ballinamallard	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW363601010	Boho Trib	Sillees	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601011	Salry River	Ballinamallard	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601012	Ballinamallard River 3	Ballinamallard	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601013	Garvary River Lower	Lower Erne	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363601032	St Angelo Stream	Lower Erne	**GOOD**	NO DATA	NO DATA	GOOD	Good or better	is	**LOW**
GBNI1NW363601033	Trillick Trib Upper	Ballinamallard	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601036	Black River	Arney	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363601040	Arney River Lower	Arney	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**

Erne and Melvin Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW363601041	Blackslee Burn - mainly Lower Lough Erne	Lower Erne	**MODERATE**	HIGH	MODERATE	NO DATA	Moderate or worse	is	**LOW**
GBNI1NW363601042	Ballinamallard River 1 (Lower)	Ballinamallard	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601044	Sillees River 1 (Lower)	Erni -Sillees	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601045	Ballinamallard River 4 (Upper)	Ballinamallard	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601046	Ballinamallard River 2	Ballinamallard	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363601047	Edenclaw Trib	Kesh	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601048	Glendurragh River Lower	Kesh	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601049	Florencecourt River	Arney	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601053	Mantlin River	Kesh	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601055	Screenagh River	Sillees	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601056	Sillees River 4	Sillees	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601057	Ballinamallard Trib West	Ballinamallard	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601058	Bannagh River - Drumnagreshial Trib	Bannagh	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601059	Dooraa Trib	Kesh	**POOR**	POOR	MODERATE	HIGH	Moderate or worse	is	**HIGH**
GBNI1NW363601060	Glendurragh River Upper - Coolaghty R - Lack R	Kesh	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601072	River Erne Lower	Lower Erne	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601073	Sillees River 5 (Upper)	Sillees	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601074	Carrick Lough Feeder	Sillees	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601080	Garvary River Upper	Lower Erne	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363601084	Cladagh River	Arney	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**

Erne and Melvin Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW363602014	Colebrooke River 2	Colebrooke	**MODERATE**	NO DATA	MODERATE	HIGH	Moderate or worse	is	**LOW**
GBNI1NW363602016	Aghavea River	Colebrooke	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602017	Ballina Trib	Upper Erne	**HIGH**	NO DATA	NO DATA	HIGH	Good or better	is	**LOW**
GBNI1NW363602018	Colebrooke River 1 (Lower)	Colebrooke	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363602019	Colebrooke River 4	Colebrooke	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602020	Raw River	Colebrooke	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363602021	Cleen River Lower	Colebrooke	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602022	Tempo River Lower	Colebrooke	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602023	Colebrooke River 3	Colebrooke	**MODERATE**	NO DATA	MODERATE	HIGH	Moderate or worse	is	**LOW**
GBNI1NW363602024	Lough-a-hache River	Upper Erne	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW363602025	Hollybrook River	Colebrooke	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602026	Drumshancorick River	Finn (Fermanagh)	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363602028	Newtownbutler River	Upper Erne	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363602029	Derryhooly Trib	Woodford	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363602030	Cooneen Water	Colebrooke	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602035	Lough Erne tribs	Upper Erne	**HIGH**	NO DATA	NO DATA	HIGH	Good or better	is	**LOW**
GBNI1NW363602038	Tamlaght Trib	Upper Erne	**HIGH**	NO DATA	NO DATA	HIGH	Good or better	is	**LOW**
GBNI1NW363602039	River Erne Upper	Upper Erne	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602043	Tempo River Upper	Colebrooke	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363602050	Swanlinbar River Lower - Moher River	Swanlinbar	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363602051	Kinglass Trib	Swanlinbar	**HIGH**	NO DATA	NO DATA	HIGH	Good or better	is	**LOW**

Erne and Melvin Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW363602054	Pubble Burn	Colebrooke	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602067	Woodford River	Woodford	**HIGH**	NO DATA	NO DATA	HIGH	Good or better	is	**LOW**
GBNI1NW363602081	Cleen River Middle	Colebrooke	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602082	Cleen River Upper	Colebrooke	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602083	Ramult Burn	Colebrooke	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	**LOW**
GBNI1NW363602085	Many Burns River	Colebrooke	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602086	Colebrooke River 5 (Upper)	Colebrooke	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602087	Termon River (Tribs)	Termon	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602088	Termon River Upper	Termon	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602089	Termon River Middle	Termon	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602090	Termon River Lower	Termon	**MODERATE**	MODERATE	GOOD	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363602091	Waterfoot River	Lower Erne	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363602092	Belcoo River	Arney	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602093	Drunharriff Burn	Arney	**POOR**	HIGH	POOR	NO DATA	Moderate or worse	is	**MEDIUM**
GBNI1NW363602094	Swanlinbar River Upper	Swanlinbar	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602095	Owengarr River	Erne -Swanlinbar	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602097	Finn River Lower	Finn (Fermanagh)	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363602100	Starraghen Trib Lower	Upper Erne	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602101	Starraghen Trib - Trib	Upper Erne	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602102	Starraghen Trib Upper	Upper Erne	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**

Erne and Melvin Rivers (Continued)

RWBID (Current WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW363602103	Lacky River - Killylacky River Lower	Finn (Fermanagh)	**MODERATE**	GOOD	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363602104	Killylacky River Upper	Finn (Fermanagh)	**MODERATE**	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363602105	Finn River Middle	Finn (Fermanagh)	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363602106	Finn River Upper	Finn (Fermanagh)	**MODERATE**	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**

Appendix 6: WFD Trophic Classification of River Water Bodies using New Standards and Water body Delineations

Bush and Glens Rivers

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE040403011	Ballygalley Burn	NE Coast	**GOOD**	HIGH	HIGH	GOOD	Good or better	is	MEDIUM
GBNI1NE040403012	Glenarm River	NE Coast	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040403027	Glenariff River	NE Coast	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040403033	Tow River	NE Coast	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NE040403034	Dunseverick River	NE Coast	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NE040403045	Owencloghy Water	NE Coast	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040403048	Linford Water	NE Coast	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040403060	Carnlough River	NE Coast	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	MEDIUM
GBNI1NE040403061	Glencloy River	NE Coast	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NE040403062	Essathohan Burn	NE Coast	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NE040404001	Bush River (Armoy)	Bush	**MODERATE**	MODERATE	HIGH	HIGH	Moderate or worse	is	MEDIUM
GBNI1NE040404002	Dervock River (Ballynagor)	Bush	**MODERATE**	HIGH	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE040404004	Dervock River (Dervock)	Bush	**MODERATE**	HIGH	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE040404035	Moss-side Water	Bush	**MODERATE**	MODERATE	GOOD	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE040404036	Liscolman Feeder	Bush	**MODERATE**	HIGH	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE040404038	Well Water	Bush	**MODERATE**	MODERATE	HIGH	HIGH	Moderate or worse	is	MEDIUM
GBNI1NE040404042	Bush River (Bushmills)	Bush	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NE040404050	Flesk Water	Bush	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NE040404051	Bush River (Stranocum)	Bush	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	HIGH
GBNI1NE040405046	Glynn River	Belfast Lough (North)	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NE040405047	Larne (Inver) River	Belfast Lough (North)	**GOOD**	HIGH	HIGH	GOOD	Good or better	is	MEDIUM
GBNI1NE040405116	Doughery Water	Bush	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NE040405117	Burn Gushet River	Bush	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM

Bush and Glens Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE040405118	Carey River	NE Coast	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040405119	Glenshesk River	NE Coast	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040405120	Glendun River	NE Coast	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040405121	River Dall	NE Coast	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE040405127	Bush River (Ballyhoe)	Bush	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	MEDIUM

Belfast Lough and River Lagan Rivers

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE050501082	Kilroot River	Belfast Lough (North)	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NE050501118	Three Mile Water	Belfast Lough (North)	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050501120	Woodburn River	Belfast Lough (North)	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050502083	Crawfordsburn River	North Down & Ards Peninsula	**MODERATE**	HIGH	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050502084	Ballyholme River	North Down & Ards Peninsula	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050503001	Hillsborough Park Lake Stream	Lagan	**POOR**	MODERATE	MODERATE	POOR	Moderate or worse	is	HIGH
GBNI1NE050503046	River Lagan (Bull's Brook)	Lagan	**MODERATE**	MODERATE	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050503047	Ravernet River (Sprucefield)	Lagan	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050503048	River Lagan (Larch Hill)	Lagan	**MODERATE**	GOOD	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NE050503070	Ravernet River (Mount Pleasant)	Lagan	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050503071	Ravernet Tributary	Lagan	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050503087	Connswater	Lagan	**MODERATE**	MODERATE	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050503088	Minnowburn	Lagan	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050503096	River Lagan (Dromara)	Lagan	**MODERATE**	MODERATE	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NE050503098	Eel Burn (Lagan)	Lagan	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050503104	Derriaghy River	Lagan	**POOR**	POOR	MODERATE	MODERATE	Moderate or worse	is	HIGH
GBNI1NE050503105	Edenordinary Stream	Lagan	**MODERATE**	HIGH	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050503106	Brookmount Stream	Lagan	**MODERATE**	NO DATA	MODERATE	MODERATE	Moderate or worse	is	LOW
GBNI1NE050503108	River Lagan (Stranmillis)	Lagan	**POOR**	GOOD	MODERATE	POOR	Moderate or worse	is	HIGH

Belfast Lough and River Lagan Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE050503117	Collin Glen River	Lagan	**MODERATE**	MODERATE	GOOD	GOOD	Moderate or worse	is	MEDIUM
GBNI1NE050505126	Blackstaff (Belfast) River	Lagan	**MODERATE**	NO DATA	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NE050505127	River Lagan (Lisburn)	Lagan	**POOR**	MODERATE	MODERATE	POOR	Moderate or worse	is	HIGH

Strangford, Mourne and Lecale Rivers

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE050504006	Ballymorran Burn	SE Down Streams	**MODERATE**	NO DATA	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NE050504009	Dibney River	SE Down Streams	**MODERATE**	NO DATA	GOOD	MODERATE	Moderate or worse	is	LOW
GBNI1NE050504010	Black Causeway Stream	SE Down Streams	**MODERATE**	MODERATE	NO DATA	HIGH	Moderate or worse	is	LOW
GBNI1NE050504020	Enler River (Comber)	Comber	**MODERATE**	HIGH	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050504021	Mill Burn (Ards)	North Down & Ards Peninsula (Strangford)	**GOOD**	HIGH	GOOD	NO DATA	Good or better	is	MEDIUM
GBNI1NE050504022	Blackstaff (Ards) River	North Down & Ards Peninsula (Strangford)	**POOR**	HIGH	GOOD	POOR	Moderate or worse	is	HIGH
GBNI1NE050504023	Comber Tributary	North Down & Ards Peninsula (Strangford)	**MODERATE**	NO DATA	MODERATE	NO DATA	Moderate or worse	is	LOW
GBNI1NE050504031	Ganaway Burn	North Down & Ards Peninsula (Strangford)	**POOR**	MODERATE	MODERATE	POOR	Moderate or worse	is	HIGH
GBNI1NE050504053	McAuleys Lake Feeder	Quoile	**GOOD**	GOOD	NO DATA	NO DATA	Good or better	is	LOW
GBNI1NE050504057	Blackwater (Ards) River	Quoile	**POOR**	GOOD	MODERATE	POOR	Moderate or worse	is	HIGH
GBNI1NE050504058	Ballyarnet Burn	Quoile	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	MEDIUM
GBNI1NE050504065	Ballynahinch Feeder	Quoile	**POOR**	GOOD	MODERATE	POOR	Moderate or worse	is	HIGH
GBNI1NE050504066	Drumaness Tributary	Comber	**POOR**	POOR	GOOD	POOR	Moderate or worse	is	HIGH
GBNI1NE050504080	Enler River (Dundonald)	North Down & Ards Peninsula (Strangford)	**MODERATE**	HIGH	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050504081	Ballystockart River	North Down & Ards Peninsula (Strangford)	**POOR**	HIGH	GOOD	POOR	Moderate or worse	is	HIGH
GBNI1NE050504085	Cully's Burn	Kilkeel & Mourne Streams	**MODERATE**	NO DATA	NO DATA	MODERATE	Moderate or worse	is	LOW

Strangford, Mourne and Lecale Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NE050504086	Cunning Burn	Kilkeel & Mourne Streams	**MODERATE**	HIGH	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050505036	Annalong River	Kilkeel & Mourne Streams	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE050505044	Mullagh River	SE Down Streams	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050505059	Moneycarragh Feeder	SE Down Streams	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	LOW
GBNI1NE050505060	Ardilea River	SE Down Streams	**MODERATE**	GOOD	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NE050505062	Rathmullan Burn	SE Down Streams	**MODERATE**	MODERATE	NO DATA	GOOD	Moderate or worse	is	LOW
GBNI1NE050505063	Moneycarragh River (Dundrum)	SE Down Streams	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	LOW
GBNI1NE050505067	Moneycarragh River (Claragh)	SE Down Streams	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	LOW
GBNI1NE050505068	Killough River	Kilkeel & Mourne Streams	**MODERATE**	MODERATE	NO DATA	GOOD	Moderate or worse	is	LOW
GBNI1NE050505097	Aughrim River	Kilkeel & Mourne Streams	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NE050505111	Burren River	Kilkeel & Mourne Streams	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NE050505113	Carrigs River	SE Down Streams	**MODERATE**	HIGH	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NE050505114	Kilkeel River	Kilkeel & Mourne Streams	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NE050505115	Quoile River	Quoile	**POOR**	MODERATE	NO DATA	POOR	Moderate or worse	is	HIGH
GBNI1NE050505122	Blackstaff (South Down) River	North Down & Ards Peninsula (Strangford)	**POOR**	POOR	MODERATE	GOOD	Moderate or worse	is	HIGH
GBNI1NE050505123	Shimna River	Kilkeel & Mourne Streams	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NE050505124	Glasswater River	Quoile	**POOR**	HIGH	GOOD	POOR	Moderate or worse	is	HIGH
GBNI1NE050505125	Ballynahinch River	Quoile	**POOR**	MODERATE	GOOD	POOR	Moderate or worse	is	HIGH
GBNI1NE050505129	Ballyviggis River	SE Down Streams	**MODERATE**	MODERATE	HIGH	HIGH	Moderate or worse	is	MEDIUM

Lough Neagh North and Lower Bann Rivers

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030301068	Inverroe Water	Lower Bann -	GOOD	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030301069	Knockoneill River	Lower Bann - Claudy	GOOD	NO DATA	GOOD	GOOD	Good or better	is	LOW
GBNI1NB030301070	Eden Burn	Lower Bann -	POOR	POOR	MODERATE	MODERATE	Moderate or worse	is	HIGH
GBNI1NB030301071	Bann Brook	Lower Bann -	MODERATE	NO DATA	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NB030301072	Mayoghill River	Lower Bann - Agivey	MODERATE	HIGH	MODERATE	HIGH	Moderate or worse	is	MEDIUM
GBNI1NB030301073	Macosquin River (Milltown)	Lower Bann - Macosquin	MODERATE	GOOD	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030301075	Agivey River (Garvagh)	Lower Bann - Agivey	HIGH	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NB030301076	Shinny Water	Lower Bann - Macosquin	MODERATE	MODERATE	GOOD	NO DATA	Moderate or worse	is	LOW
GBNI1NB030301146	Greenshields River	Lower Bann -	MODERATE	MODERATE	NO DATA	GOOD	Moderate or worse	is	LOW
GBNI1NB030301147	Drumawhiskey River	Lower Bann -	MODERATE	GOOD	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030301149	Lower Bann (Kilrea)	Lower Bann -	MODERATE	MODERATE	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030301152	Mullaghardry Point Stream	Lower Bann -	GOOD	GOOD	GOOD	NO DATA	Good or better	is	LOW
GBNI1NB030301153	Doorish Point Stream	Lower Bann -	MODERATE	MODERATE	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030301163	Ivy Burn	Lower Bann -	GOOD	GOOD	GOOD	NO DATA	Good or better	is	LOW
GBNI1NB030301166	Culmore River	Lower Bann -	MODERATE	GOOD	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030301169	Lower Bann (Toome)	Lower Bann -	MODERATE	NO DATA	MODERATE	GOOD	Moderate or worse	is	LOW
GBNI1NB030301211	Breckagh Burn	Lower Bann -	GOOD	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030301213	Agadowey River	Lower Bann - Agivey	MODERATE	GOOD	MODERATE	HIGH	Moderate or worse	is	MEDIUM
GBNI1NB030301214	Lower Bann (Coleraine)	Lower Bann -	MODERATE	GOOD	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030301215	Agivey River (Glen Ullin)	Lower Bann - Agivey	HIGH	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NB030301216	Brockagh Water	Lower Bann - Agivey	GOOD	HIGH	GOOD	NO DATA	Good or better	is	MEDIUM
GBNI1NB030301219	Knockantern Wood Tributary	Lower Bann -	POOR	POOR	GOOD	MODERATE	Moderate or worse	is	HIGH
GBNI1NB030301221	Articlave River	Lower Bann -	GOOD	HIGH	GOOD	HIGH	Good or better	is	MEDIUM

Lough Neagh North and Lower Bann Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030301222	Dundooan Feeder	Lower Bann -	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030301223	Ballyversal Stream	Lower Bann -	**MODERATE**	NO DATA	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NB030301224	Mettican River	Lower Bann - Agivey	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NB030302010	Braid River (Rabbit Hill)	Main - Braid	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030302014	Kellswater (Kells)	Main - Kellswater	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030302016	Priests Burn	Main - Braid	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030302017	Deerfin Burn	Main - Braid	**MODERATE**	GOOD	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030302018	Braid River (Ballymena)	Main - Braid	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030302021	Devenagh Burn	Main - Braid	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030302022	Artoges River	Main - Braid	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030302150	River Main (Randalstown)	Main	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030302157	Aghill Burn	Main	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030302158	River Main (Cullybackey)	Main	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030302159	Ahoghill Burn	Main	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030302160	River Main (Slaght)	Main	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030302161	Kellswater (Moorfields)	Main - Kellswater	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NB030302164	Sharvogues Burn	Main	**MODERATE**	MODERATE	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030302165	Dunnstown Burn	Main	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030302168	Connor Burn	Main - Kellswater	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030302212	Killagan Water	Main	**GOOD**	HIGH	HIGH	GOOD	Good or better	is	MEDIUM
GBNI1NB030302233	Glenravel Water	Main - Clogh	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	MEDIUM
GBNI1NB030302234	Cloghmills Water	Main	**GOOD**	HIGH	HIGH	GOOD	Good or better	is	MEDIUM
GBNI1NB030302235	Douglas Burn (Glenwhirry)	Main - Kellswater	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH

Lough Neagh North and Lower Bann Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030302236	Glen Burn	Main - Braid	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030302237	Skerry Water	Main - Clogh	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	MEDIUM
GBNI1NB030303002	Altagoan Burn	Moyola	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030303004	Keenaght Water	Moyola	**GOOD**	GOOD	HIGH	NO DATA	Good or better	is	MEDIUM
GBNI1NB030303009	Black Burn	Moyola	**POOR**	POOR	GOOD	GOOD	Moderate or worse	is	HIGH
GBNI1NB030303143	Grange Water (Longfield)	Moyola	**GOOD**	GOOD	NO DATA	HIGH	Good or better	is	MEDIUM
GBNI1NB030303144	Magherafelt Burn	Moyola	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030303154	Moyola River (Castledawson)	Moyola	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030303167	Back Burn	Moyola	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030303210	Glengomna Water	Moyola	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NB030303226	Milltown Burn	Moyola	**MODERATE**	MODERATE	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030303227	Douglas River	Moyola	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NB030303228	Moyola River (Tobermore)	Moyola	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030303241	Moyola River (Six Towns)	Moyola	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030305122	Six Mile Water (Antrim)	Six Mile Water	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030305124	Rathmore Burn	Six Mile Water	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030305128	Four Mile Burn	Six Mile Water	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030305162	Holywell Burn	Six Mile Water	**GOOD**	GOOD	HIGH	NO DATA	Good or better	is	MEDIUM
GBNI1NB030305202	Six Mile Water (Millikenstown)	Six Mile Water	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030305203	Castle Water	Six Mile Water	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030305204	Six Mile Water (Ballyclare)	Six Mile Water	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM

Lough Neagh North and Lower Bann Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030305205	Lisnalinchy Burn	Six Mile Water	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030305206	Ballymartin Water	Six Mile Water	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030305207	Clady Water	Six Mile Water	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030306127	Dunore River	Lough Neagh Peripherals	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030306140	Mourneview Stream	Lough Neagh Peripherals	**GOOD**	GOOD	HIGH	NO DATA	Good or better	is	MEDIUM
GBNI1NB030308205	Moyola River (Straw)	Moyola	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030308206	Grange Water (Curran)	Moyola	**MODERATE**	MODERATE	GOOD	HIGH	Moderate or worse	is	MEDIUM
GBNI1NB030308209	Closet River	Lough Neagh Peripherals	**POOR**	NO DATA	GOOD	POOR	Moderate or worse	is	MEDIUM
GBNI1NB030308210	River Main (Glarryford)	Main	**MODERATE**	MODERATE	GOOD	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030308211	Clogh River	Main - Clogh	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030308212	Braid River (Broughshane)	Main - Braid	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030308214	Braid River (Aghacully)	Main - Braid	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030308215	Doagh River	Six Mile Water	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030308220	Macosquin River (Macosquin)	Lower Bann - Macosquin	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030308221	Ballymoney River	Lower Bann -	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030308233	Clady River	Six Mile Water	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030308234	Grillagh River	Lower Bann - Claudy	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030308237	Agivey River (Bovagh)	Lower Bann - Agivey	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030308241	Glenwhirry River	Main - Kellswater	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	MEDIUM
GBNI1NB030308244	River Main (Dunloy)	Main	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM

Lough Neagh South Rivers

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030304054	Kildress Stream	Ballinderry	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	HIGH
GBNI1NB030304056	Drumard Stream	Ballinderry	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030304057	Ballymully River Tributary (Feenan More)	Ballinderry	**MODERATE**	MODERATE	NO DATA	GOOD	Moderate or worse	is	LOW
GBNI1NB030304061	Killymoon River	Ballinderry	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030304062	Gortin Water	Ballinderry	**MODERATE**	MODERATE	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030304063	Ballinderry River (Derrygonnigan)	Ballinderry	**MODERATE**	MODERATE	NO DATA	GOOD	Moderate or worse	is	LOW
GBNI1NB030304097	Claggan River	Ballinderry	**MODERATE**	MODERATE	NO DATA	GOOD	Moderate or worse	is	LOW
GBNI1NB030304133	Ballymully River (Ratheane)	Ballinderry	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NB030304134	Ballymully River (Ballygonny)	Ballinderry	**MODERATE**	MODERATE	GOOD	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030304136	Ballinderry River (Coagh)	Ballinderry	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030304137	Ballynargan Stream	Ballinderry	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	LOW
GBNI1NB030304138	Kingsmill Stream	Ballinderry	**GOOD**	GOOD	HIGH	HIGH	Good or better	is	MEDIUM
GBNI1NB030304176	Tulnacross Tributary	Ballinderry	**MODERATE**	GOOD	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NB030304177	Rock River	Ballinderry	**MODERATE**	MODERATE	NO DATA	GOOD	Moderate or worse	is	LOW
GBNI1NB030304181	Tullyaran Tributary	Ballinderry	**POOR**	POOR	NO DATA	MODERATE	Moderate or worse	is	HIGH
GBNI1NB030304240	Ballinderry River (Dunamore)	Ballinderry	**MODERATE**	MODERATE	HIGH	HIGH	Moderate or worse	is	MEDIUM
GBNI1NB030306085	Crew Burn	Lough Neagh Peripherals	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030306087	Crumlin River (Crumlin)	Crumlin	**MODERATE**	GOOD	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030306125	Dundesert River	Crumlin	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030306141	Salterstown River	Lough Neagh Peripherals	**MODERATE**	HIGH	GOOD	MODERATE	Moderate or worse	is	MEDIUM

Lough Neagh South Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030306193	Ballinderry (Antrim) River	Lough Neagh Peripherals	**MODERATE**	HIGH	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030307025	River Rhone (Moygashel)	Blackwater	**GOOD**	GOOD	NO DATA	NO DATA	Good or better	is	LOW
GBNI1NB030307036	River Rhone (Dungannon)	Blackwater	**MODERATE**	MODERATE	NO DATA	GOOD	Moderate or worse	is	LOW
GBNI1NB030307041	River Blackwater Tributary (Aughnacloy)	Blackwater	**GOOD**	GOOD	GOOD	NO DATA	Good or better	is	LOW
GBNI1NB030307042	Crilly Feeder	Blackwater	**POOR**	POOR	NO DATA	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030307043	River Blackwater (Benburb)	Blackwater	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	HIGH
GBNI1NB030307044	Callan River (Milford)	Blackwater - Callan	**MODERATE**	HIGH	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NB030307045	Ballymartrim River	Blackwater	**GOOD**	HIGH	NO DATA	GOOD	Good or better	is	MEDIUM
GBNI1NB030307047	Kilmore Tributary	Blackwater - Tall	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030307048	Butter Water	Blackwater - Callan	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030307049	Clay River	Blackwater - Callan	**GOOD**	GOOD	NO DATA	NO DATA	Good or better	is	LOW
GBNI1NB030307050	Tamnamore Stream	Blackwater	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	LOW
GBNI1NB030307109	Killeen Water	Blackwater - Callan	**GOOD**	HIGH	GOOD	NO DATA	Good or better	is	MEDIUM
GBNI1NB030307111	Ballymacone River	Blackwater - Callan	**MODERATE**	HIGH	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NB030307112	Callan River (Tassagh)	Blackwater - Callan	**MODERATE**	MODERATE	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NB030307129	Tall River (Derrycrew)	Blackwater - Tall	**POOR**	GOOD	GOOD	POOR	Moderate or worse	is	HIGH

Lough Neagh South Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030307175	Ballygawley Water	Blackwater	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	LOW
GBNI1NB030307180	River Blackwater Tributary (Ballygreenan)	Blackwater	**GOOD**	HIGH	NO DATA	GOOD	Good or better	is	MEDIUM
GBNI1NB030307196	River Blackwater (Ratory)	Blackwater	**GOOD**	HIGH	NO DATA	GOOD	Good or better	is	MEDIUM
GBNI1NB030307238	Fury River	Blackwater	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NB030307239	River Blackwater Tributary (Lisboy)	Blackwater	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NB030307242	Knockmany (Blackwater) Burn	Blackwater	**HIGH**	HIGH	HIGH	NO DATA	Good or better	is	HIGH
GBNI1NB030307243	River Blackwater Tributary (Killyfaddy)	Blackwater	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	LOW
GBNI1NB030308091	Annagh River	Upper Bann	**GOOD**	HIGH	GOOD	NO DATA	Good or better	is	MEDIUM
GBNI1NB030308100	Upper Bann (Ballycoshone)	Upper Bann	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030308101	Rocky River	Upper Bann	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NB030308102	Leitrim River	Upper Bann	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030308110	Ballybay River	Upper Bann	**POOR**	MODERATE	MODERATE	POOR	Moderate or worse	is	HIGH
GBNI1NB030308113	Whitecross Stream	Upper Bann - Cusher	**MODERATE**	HIGH	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030308114	Cusher River (Windy Gap)	Upper Bann - Cusher	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030308117	Tullyorior Tributary	Upper Bann	**POOR**	POOR	MODERATE	MODERATE	Moderate or worse	is	HIGH
GBNI1NB030308118	Loughgilly River	Upper Bann - Cusher	**POOR**	POOR	GOOD	NO DATA	Moderate or worse	is	MEDIUM
GBNI1NB030308119	Markethill River	Upper Bann - Cusher	**MODERATE**	NO DATA	GOOD	MODERATE	Moderate or worse	is	LOW

Lough Neagh South Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030308120	Mowhan River	Upper Bann - Cusher	**POOR**	POOR	MODERATE	MODERATE	Moderate or worse	is	HIGH
GBNI1NB030308186	Eel Burn (Upper Bann)	Upper Bann	**MODERATE**	MODERATE	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030308187	Drumadonnell River	Upper Bann	**MODERATE**	GOOD	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030308188	Muddock River	Upper Bann	**MODERATE**	MODERATE	GOOD	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030308201	River Blackwater (Annaghroe)	Blackwater	**GOOD**	HIGH	NO DATA	GOOD	Good or better	is	MEDIUM
GBNI1NB030308203	River Blackwater (Argory)	Blackwater	**GOOD**	HIGH	NO DATA	GOOD	Good or better	is	MEDIUM
GBNI1NB030308204	River Blackwater (Caledon)	Blackwater	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	HIGH
GBNI1NB030308207	Crumlin River (Dundrod)	Crumlin	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030308208	Glenavy River	Glenavy	**MODERATE**	GOOD	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030308213	Oona Water (Killymaddy)	Blackwater	**MODERATE**	MODERATE	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030308216	Cusher River (Mount Norris)	Upper Bann - Cusher	**MODERATE**	GOOD	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030308217	Oona Water (Eglish)	Blackwater	**GOOD**	HIGH	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB030308218	Cusher River (Tandragee)	Upper Bann - Cusher	**MODERATE**	GOOD	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030308219	Upper Bann (Spelga)	Upper Bann	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB030308222	Torrent River	Blackwater - Torrent	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	LOW
GBNI1NB030308223	River Blackwater (Augher)	Blackwater	**GOOD**	GOOD	HIGH	GOOD	Good or better	is	MEDIUM
GBNI1NB030308224	Tall River (Richhill)	Blackwater - Tall	**POOR**	GOOD	GOOD	POOR	Moderate or worse	is	HIGH
GBNI1NB030308225	Callan River (Derryscollop)	Blackwater - Callan	**MODERATE**	GOOD	MODERATE	MODERATE	Moderate or worse	is	MEDIUM

Lough Neagh South Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB030308230	Ballinderry River (Cookstown)	Lough Neagh Peripherals	**MODERATE**	HIGH	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB030308231	Lissan Water	Ballinderry	**GOOD**	GOOD	NO DATA	GOOD	Good or better	is	LOW
GBNI1NB030308232	Coolmaghery Tributary	Ballinderry	**MODERATE**	GOOD	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NB030308236	Tynan River	Blackwater	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030308242	Upper Bann (Gilford)	Upper Bann	**MODERATE**	GOOD	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB030308245	Cor River	Blackwater	**POOR**	POOR	NO DATA	HIGH	Moderate or worse	is	MEDIUM

Carlingford and Newry Rivers

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NB060601003	Clanrye North River	Newry	**MODERATE**	GOOD	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB060601018	Mayobridge River	Newry	**MODERATE**	HIGH	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB060601020	Derryleckagh Stream	Newry	**MODERATE**	GOOD	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NB060601021	Clanrye River	Newry	**POOR**	NO DATA	MODERATE	POOR	Moderate or worse	is	HIGH
GBNI1NB060601025	Loughbrickland Stream	Newry	**MODERATE**	MODERATE	NO DATA	NO DATA	Moderate or worse	is	LOW
GBNI1NB060602038	Kilnasaggart River	Flurry	**MODERATE**	MODERATE	GOOD	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB060603027	County Water	Fane	**MODERATE**	HIGH	GOOD	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB060604011	Cassy Water	Kilkeel & Mourne Streams	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NB060604040	Ghann River	Kilkeel & Mourne Streams	**GOOD**	GOOD	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB060604041	Kilbroney River	Kilkeel & Mourne Streams	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	HIGH
GBNI1NB060604042	Moygannon River	Kilkeel & Mourne Streams	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB060604045	White Water River	Kilkeel & Mourne Streams	**GOOD**	HIGH	GOOD	HIGH	Good or better	is	MEDIUM
GBNI1NB060608226	Jerrettspass River	Newry	**MODERATE**	MODERATE	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NB060608227	Newry River	Newry	**MODERATE**	MODERATE	MODERATE	MODERATE	Moderate or worse	is	MEDIUM
GBNI1NB060608228	Forkill River	Castletown	**MODERATE**	GOOD	MODERATE	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB060608235	Cully Water	Castletown	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB060608240	Bessbrook (Newry) River	Newry	**MODERATE**	MODERATE	NO DATA	MODERATE	Moderate or worse	is	LOW
GBNI1NB060608246	Creggan River	Castletown	**POOR**	POOR	MODERATE	MODERATE	Moderate or worse	is	HIGH
GBNI1NB060608247	Flurry River (Meigh)	Flurry	**GOOD**	GOOD	GOOD	GOOD	Good or better	is	MEDIUM
GBNI1NB060608249	Fane River (Cullaville)	Fane	**MODERATE**	MODERATE	GOOD	GOOD	Moderate or worse	is	MEDIUM
GBNI1NB060608250	Fane River (Ballynacarry)	Fane	**MODERATE**	MODERATE	GOOD	GOOD	Moderate or worse	is	MEDIUM

Foyle Rivers

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW010101045	Burn Dennett River (Dunnamanagh)	Burn Dennett	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010101069	Altinaghrea Burn	Burn Dennett	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW010101070	Burn Dennett River (Milltown)	Burn Dennett	GOOD	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010101071	Burn Dennett River (Ballynamallaght)	Burn Dennett	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010101072	Dunnyboe Burn	Burn Dennett	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW010101075	Glenmornan River	Foyle (with Deele)	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW010101076	Sandville Burn	Burn Dennett	**HIGH**	HIGH	NO DATA	NO DATA	Good or better	is	**LOW**
GBNI1NW010102001	Cranny Burn	Drumragh - Owenreagh (South)	MODERATE	MODERATE	HIGH	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102006	Drumragh River	Drumragh (with Quiggery)	MODERATE	HIGH	MODERATE	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NW010102008	Eskragh Water (Seskinore)	Drumragh (with Quiggery)	MODERATE	GOOD	GOOD	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NW010102017	Creevan Burn	Drumragh - Owenreagh (South)	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102018	Ballynahatty (Drumragh) Water	Drumragh - Owenreagh (South)	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102021	Cappagh Burn	Strule	MODERATE	HIGH	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW010102023	Glensawisk Burn	Owenreagh (East)	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102024	Cashel Burn	Owenreagh (East)	GOOD	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102025	Glenlark River	Upper Owenkillew	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102027	Owenkillew River (Gortin)	Lower Owenkillew	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**

Foyle Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW010102028	Owenkillew River (Killymore)	Lower Owenkillew	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102032	Granagh Burn	Camowen	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102033	Camowen River (Omagh)	Camowen	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102035	Cloghfin River (Beragh)	Camowen	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102036	Glashagh Burn	Camowen	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102039	Glenscollip Burn	Camowen	GOOD	GOOD	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102041	Fairywater River (Dunwish)	Fairywater	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102043	Glenmacoffer Burn	Lower Owenkillew	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010102046	Owenreagh (Drumragh) River (Dullaghan)	Drumragh - Owenreagh (South)	MODERATE	MODERATE	NO DATA	GOOD	Moderate or worse	is	**LOW**
GBNI1NW010102047	Tievemore Burn	Derg	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102050	Killen Burn	Derg	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102051	Derrynaseer Tributary	Drumragh - Owenreagh (South)	GOOD	GOOD	HIGH	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102053	Owenreagh (Drumragh) River (Drumlish)	Drumragh - Owenreagh (South)	MODERATE	HIGH	MODERATE	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NW010102056	Derg River (Legvin)	Derg	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW010102064	Mourne Beg River (Lisnacloone)	Derg	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102066	Mourne Beg River (Derrygoonan)	Derg	GOOD	GOOD	GOOD	GOOD	Good or better	is	**MEDIUM**

Foyle Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW010102067	Glendergan River	Derg	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102074	Mourne River	Mourne & Mourne/Strule	MODERATE	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102075	Douglas Burn (Foyle)	Mourne	GOOD	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102077	Cavanlee River	Mourne	MODERATE	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102081	Davagh Water	Upper Owenkillew	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102085	Coneyglen River	Upper Owenkillew	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102086	Owenkillew River (Glenhull)	Upper Owenkillew	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102089	Eskragh Water (Eskragh)	Drumragh (with Quiggery)	MODERATE	GOOD	GOOD	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NW010102090	Routing Burn	Drumragh (with Quiggery)	MODERATE	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010102091	Owenreagh (East) River (Greencastle)	Owenreagh (East)	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102092	Camowen River (Ramackan)	Camowen	GOOD	GOOD	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102094	Derg River (Killeter)	Derg	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010102095	Derg River (Millbrook)	Derg	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010102096	Glenknock Burn	Lower Owenkillew	GOOD	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010103065	Owenboy Burn	Derg	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW010104040	Glenelly River	Lower Owenkillew	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010104041	Owenreagh (East) River (Drumlea)	Owenreagh (East)	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW010104042	Drumquin River	Fairywater	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**

Foyle Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW010104043	Owenkillew River (Drumlea)	Upper Owenkillew	GOOD	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010104044	Fairywater River (Envagh)	Fairywater	GOOD	GOOD	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010104045	Strule River	Strule	MODERATE	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010104046	The Black Water (Drumquin)	Fairywater	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010104047	Camowen River (Termon)	Camowen	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010104048	Cloghfin River (Ballykeel)	Camowen	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW010104049	Quiggery Water	Drumragh (with Quiggery)	MODERATE	GOOD	GOOD	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NW010104050	Magheragart Burn	Drumragh - Owenreagh (South)	MODERATE	MODERATE	GOOD	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010104068	Derg River (Crocknacunny)	Derg	MODERATE	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010104070	Drumnakilly Burn	Camowen	MODERATE	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW010104073	Lough Catherine Stream	Derg	GOOD	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW010104074	Finn River	Finn	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW020202005	Owenalena River	Roe	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW020202010	Owenrigh River	Roe	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW020202012	Gelvin River (Benview)	Roe	MODERATE	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW020202014	Bovevagh River	Roe	MODERATE	MODERATE	GOOD	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NW020202015	River Roe (Benady)	Roe	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**

Foyle Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW020202018	River Roe (Limavady)	Roe	GOOD	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020202023	Owenbeg River	Roe	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020202024	River Roe (Ballycarton)	Roe	GOOD	GOOD	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW020202032	Wood Burn	Roe	MODERATE	HIGH	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW020202039	Gelvin River (Lenamore)	Roe	MODERATE	GOOD	MODERATE	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW020202043	River Roe (Corick)	Roe	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW020203027	Bessbrook (Foyle) River	Lough Foyle (South)	GOOD	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020203028	Ballykelly River	Lough Foyle (South)	MODERATE	MODERATE	NO DATA	GOOD	Moderate or worse	is	**LOW**
GBNI1NW020203029	Faughanvale River	Lough Foyle (South)	GOOD	GOOD	HIGH	GOOD	Good or better	is	**MEDIUM**
GBNI1NW020203030	Muff River	Lough Foyle (South)	GOOD	GOOD	NO DATA	GOOD	Good or better	is	**LOW**
GBNI1NW020204025	Cullion Burn	Faughan	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW020204026	Foreglen River	Faughan	GOOD	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020204033	Faughan River (Park)	Faughan	**HIGH**	NO DATA	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020204034	Burngibbagh	Faughan	GOOD	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020204035	Burntollet River (Ness Wood)	Faughan	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020204038	Glenrandal River	Faughan	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW020204060	Curly River	Roe	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW020204061	Castle River	Roe	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW020204062	Burntollet River (Loughermore)	Faughan	GOOD	HIGH	HIGH	GOOD	Good or better	is	**MEDIUM**
GBNI1NW020204063	Faughan River (Carmoney)	Faughan	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW393901002	Skeoge River	Burnfoot	GOOD	GOOD	NO DATA	HIGH	Good or better	is	**MEDIUM**

Erne and Melvin Rivers

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW353504065	Roogagh River	Roogagh	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW353504075	County River (Carran West)	County	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW353504076	Count River (Lattone)	County	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363601005	Hollow River	Lower Erne	GOOD	GOOD	GOOD	NO DATA	Good or better	is	**LOW**
GBNI1NW363601007	Lurgan River	Arney	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363601010	Boho Tributary	Sillees	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363601011	Salry River	Ballinamallard	GOOD	GOOD	NO DATA	GOOD	Good or better	is	**LOW**
GBNI1NW363601032	St Angelo Stream	Lower Erne	MODERATE	NO DATA	NO DATA	MODERATE	Moderate or worse	is	**LOW**
GBNI1NW363601036	Black River	Arney	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601041	Blackslee Burn	Lower Erne	**HIGH**	HIGH	HIGH	NO DATA	Good or better	is	**HIGH**
GBNI1NW363601042	Ballinamallard River (Ballinamallard)	Ballinamallard	MODERATE	GOOD	MODERATE	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NW363601044	Sillees River (Drumkeen)	Erni -Sillees	GOOD	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601046	Ballinamallard River (Magheracross)	Ballinamallard	MODERATE	HIGH	NO DATA	MODERATE	Moderate or worse	is	**LOW**
GBNI1NW363601047	Edenclaw Tributary	Kesh	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363601049	Florencecourt River	Arney	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363601053	Mantlin River	Kesh	MODERATE	MODERATE	GOOD	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601055	Screenagh River	Sillees	GOOD	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601056	Sillees River (Derrygonnelly)	Sillees	MODERATE	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601058	Bannagh River	Bannagh	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363601059	Dooraa Tributary	Kesh	POOR	POOR	GOOD	HIGH	Moderate or worse	is	**HIGH**
GBNI1NW363601060	Glendurragh River	Kesh	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**

Erne and Melvin Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW363601073	Sillees River (Lough Navar Forest)	Sillees	MODERATE	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601074	Carrick Lough Feeder	Sillees	MODERATE	MODERATE	MODERATE	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363601084	Cladagh River	Arney	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363602016	Aghavea River	Colebrooke	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602017	Ballina Tributary	Upper Erne	**HIGH**	NO DATA	NO DATA	HIGH	Good or better	is	**LOW**
GBNI1NW363602018	Colebrooke River (Maguiresbridge)	Colebrooke	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW363602020	Raw River	Colebrooke	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602022	Tempo River (Maguiresbridge)	Colebrooke	GOOD	HIGH	NO DATA	GOOD	Good or better	is	**MEDIUM**
GBNI1NW363602024	Lough-a-hache River	Upper Erne	MODERATE	GOOD	GOOD	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NW363602025	Hollybrook River	Colebrooke	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602026	Drumshancorick River	Finn (Fermanagh)	GOOD	HIGH	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW363602028	Newtownbutler River	Upper Erne	MODERATE	MODERATE	HIGH	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363602029	Derryhooly Tributary	Woodford	MODERATE	MODERATE	HIGH	GOOD	Moderate or worse	is	**MEDIUM**
GBNI1NW363602030	Cooneen Water	Colebrooke	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602035	Erne River (Bellanaleck)	Upper Erne	**HIGH**	NO DATA	NO DATA	HIGH	Good or better	is	**LOW**
GBNI1NW363602038	Tamlaght Tributary	Upper Erne	GOOD	NO DATA	NO DATA	GOOD	Good or better	is	**LOW**
GBNI1NW363602039	River Erne (Enniskillen)	Upper Erne	GOOD	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602043	Tempo River (Tempo)	Colebrooke	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363602051	Kinglass Tributary	Swanlinbar	**HIGH**	NO DATA	NO DATA	HIGH	Good or better	is	**LOW**
GBNI1NW363602054	Pubble Burn	Colebrooke	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363602083	Ramult Burn	Colebrooke	MODERATE	MODERATE	NO DATA	GOOD	Moderate or worse	is	**LOW**
GBNI1NW363602085	Many Burns River	Colebrooke	GOOD	HIGH	NO DATA	GOOD	Good or better	is	**MEDIUM**

Erne and Melvin Rivers (Continued)

RWBID (New WB)	Location	River Catchment	Overall Trophic Class	Macrophytes	Diatoms	SRP	Meaning Eutrophic Confidence of:		
GBNI1NW363602088	Termon River (Tullynamaltra)	Termon	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363602092	Belcoo River	Arney	GOOD	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363602093	Drunharriff Burn	Arney	GOOD	HIGH	GOOD	NO DATA	Good or better	is	**MEDIUM**
GBNI1NW363602095	Owengarr River	Erne -Swanlinbar	GOOD	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363604039	Ballinamallard River (Keenogue)	Ballinamallard	GOOD	GOOD	NO DATA	GOOD	Good or better	is	**LOW**
GBNI1NW363604051	Cleen River	Colebrooke	GOOD	HIGH	NO DATA	GOOD	Good or better	is	**MEDIUM**
GBNI1NW363604052	Colebrooke River (Ashbrooke)	Colebrooke	GOOD	NO DATA	GOOD	GOOD	Good or better	is	**LOW**
GBNI1NW363604053	Colebrooke River (Cooneen)	Colebrooke	**HIGH**	HIGH	NO DATA	HIGH	Good or better	is	**HIGH**
GBNI1NW363604054	Swanlinbar River	Swanlinbar	GOOD	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363604055	Kesh River	Kesh	GOOD	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363604056	Trillick Tributary	Ballinamallard	GOOD	HIGH	NO DATA	GOOD	Good or better	is	**MEDIUM**
GBNI1NW363604057	Ballycassidy River	Ballinamallard	MODERATE	GOOD	GOOD	MODERATE	Moderate or worse	is	**MEDIUM**
GBNI1NW363604058	Sillees River (Carr)	Sillees	MODERATE	MODERATE	GOOD	HIGH	Moderate or worse	is	**MEDIUM**
GBNI1NW363604059	Arney River	Arney	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363604064	Termon River (Pettigoe)	Termon	GOOD	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363604066	Lacky River	Finn (Fermanagh)	GOOD	GOOD	HIGH	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363604067	Starraghen Tributary	Upper Erne	GOOD	GOOD	GOOD	GOOD	Good or better	is	**MEDIUM**
GBNI1NW363604072	Garvary River	Lower Erne	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363604078	Waterfoot River	Lower Erne	**HIGH**	HIGH	HIGH	HIGH	Good or better	is	**HIGH**
GBNI1NW363604079	Finn River (Tattymore)	Finn (Fermanagh)	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363604080	Finn River (Wattle Bridge)	Finn (Fermanagh)	GOOD	GOOD	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363604083	Woodford River	Colebrooke	**HIGH**	NO DATA	NO DATA	HIGH	Good or better	is	**LOW**
GBNI1NW363604084	Finn River (Rosslea)	Finn (Fermanagh)	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**
GBNI1NW363604085	River Erne (Belleek)	Lower Erne	GOOD	HIGH	GOOD	HIGH	Good or better	is	**MEDIUM**

Appendix 7: WFD Trophic Classification of Lake Water Bodies (using both current and revised standards)

Catchment	Lake Water Body	Grid Reference	Biological and Phosphorus Standards used	TP Class	Phytoplankton Class	Diatom Class	Macrophyte Class	Overall Trophic Class	Confidence in Class
Belfast Lough and Lagan	Lough Mourne	J416924	Current	Poor	Poor	Good	Moderate	**Poor Trophic Status**	Medium confidence of impact
			New	Poor	Moderate	Good	Moderate	**Poor Trophic Status**	Medium confidence of impact
Strangford Lough, Mourne and Lecale	Clea Lakes	J501550	Current	Poor	Moderate	No Data	Moderate	**Poor Trophic Status**	High confidence of impact
			New	Poor	Moderate	No Data	Moderate	**Poor Trophic Status**	High confidence of impact
	Silent Valley	J307218	Current	High	High	High	Moderate	**High Trophic Status**	High confidence of no impact
			New	High	High	High	Moderate	**High Trophic Status**	High confidence of no impact
Lough Neagh North and Lower Bann	Lough Fea	H756876	Current	High	High	High	Good	**High Trophic Status**	High confidence of no impact
			New	High	High	High	Good	**High Trophic Status**	High confidence of no impact
	Lough Beg	H991981	Current	Poor	Poor	Poor	Moderate	**Poor Trophic Status**	High confidence of impact
			New	Poor	Moderate	Poor	Moderate	**Poor Trophic Status**	High confidence of impact
	Lough Neagh	J056852	Current	Bad	Bad	Poor	Bad	**Bad Trophic Status**	High confidence of impact
			New	Bad	Poor	Poor	Bad	**Bad Trophic Status**	High confidence of impact

Catchment	Lake Water Body	Grid Reference	Biological and Phosphorus Standards used	TP Class	Phytoplankton Class	Diatom Class	Macrophyte Class	Overall Trophic Class	Confidence in Class
Lough Neagh South	Lough Island Reavy	H293338	Current	Good	Good	High	Moderate	**Good Trophic Status**	Low confidence of impact
			New	Good	Good	High	Moderate	**Good Trophic Status**	Low confidence of impact
	Portmore Lough	J114692	Current	Bad	Poor	Poor	Bad	**Bad Trophic Status**	High confidence of impact
			New	Bad	Moderate	Poor	Bad	**Bad Trophic Status**	High confidence of impact
	Lough Gullion	H999613	Current	Poor	Moderate	Moderate	Bad	**Bad Trophic Status**	High confidence of impact
			New	Poor	Good	Moderate	Bad	**Bad Trophic Status**	Medium confidence of impact
	Stoneyford Reservoir	J220701	Current	Poor	Poor	Poor	Moderate	**Poor Trophic Status**	High confidence of impact
			New	Poor	Good	Poor	Moderate	**Poor Trophic Status**	Medium confidence of impact
	Spelga Dam	J269272	Current	High	High	High	Moderate	**High Trophic Status**	High confidence of no impact
			New	High	High	High	Moderate	**High Trophic Status**	High confidence of no impact
Carlingford and Newry	Cam Lough	J025259	Current	Poor	Poor	Good	Moderate	**Poor Trophic Status**	Medium confidence of impact
			New	Poor	Moderate	Good	Moderate	**Poor Trophic Status**	Medium confidence of impact
	Lough Ross	H892154	Current	Poor	Poor	Moderate	Moderate	**Poor Trophic Status**	High confidence of impact
			New	Poor	Moderate	Moderate	Moderate	**Poor Trophic Status**	Medium confidence of impact

Catchment	Lake Water Body	Grid Reference	Biological and Phosphorus Standards used	TP Class	Phytoplankton Class	Diatom Class	Macrophyte Class	Overall Trophic Class	Confidence in Class
Erne and Melvin	Lough Scolban	H005612	Current	High	Good	High	Good	**Good Trophic Status**	High confidence of no impact
			New	High	Good	High	Good	**Good Trophic Status**	High confidence of no impact
	Lough Melvin	G917543	Current	High	Good	Good	Moderate	**Moderate Trophic Status**	Low confidence of impact
			New	High	Good	Good	Moderate	**Moderate Trophic Status**	Low confidence of impact
	Upper Lough Macnean	H040408	Current	Good	Good	Good	Moderate	**Moderate Trophic Status**	Low confidence of impact
			New	Good	Good	Good	Moderate	**Moderate Trophic Status**	Low confidence of impact
	Lower Lough Erne (Kesh)	H226480	Current	Moderate	Moderate	Moderate	Moderate	**Moderate Trophic Status**	High confidence of impact
			New	Moderate	Good	Moderate	Moderate	**Moderate Trophic Status**	Medium confidence of impact
	Lower Lough Erne (Devenish)	H226480	Current	Moderate	Good	Moderate	Moderate	**Moderate Trophic Status**	Medium confidence of impact
			New	Moderate	Good	Moderate	Moderate	**Moderate Trophic Status**	Medium confidence of impact
	Upper Lough Erne	H279314	Current	Moderate	Good	Moderate	Poor	**Moderate Trophic Status**	Medium confidence of impact
			New	Moderate	High	Moderate	Poor	**Moderate Trophic Status**	Medium confidence of impact
	Castlehume Lough	H192501	Current	High	High	Good	Good	**Good Trophic Status**	High confidence of no impact
			New	High	High	Good	Good	**Good Trophic Status**	High confidence of no impact

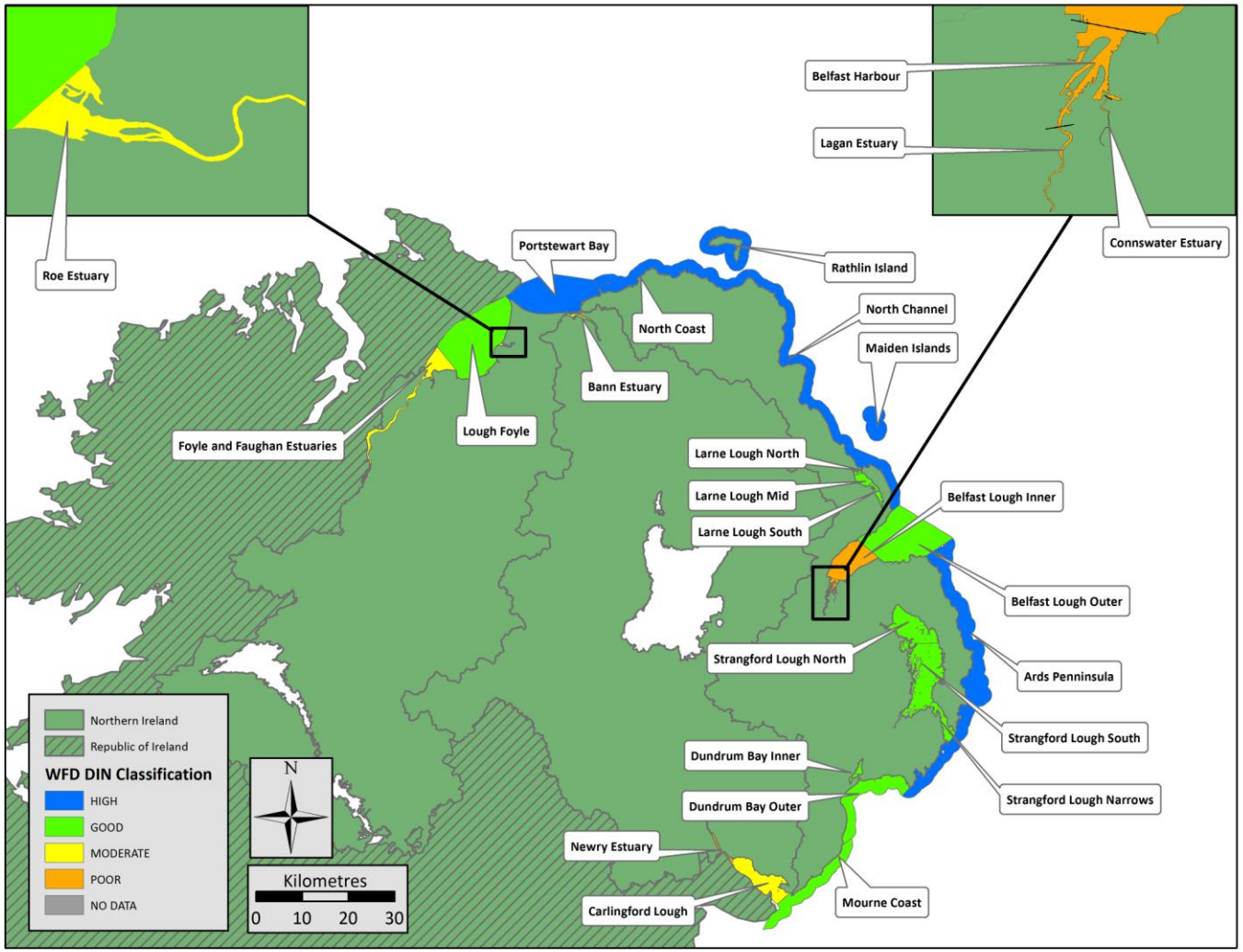
Catchment	Lake Water Body	Grid Reference	Biological and Phosphorus Standards used	TP Class	Phytoplankton Class	Diatom Class	Macrophyte Class	Overall Trophic Class	Confidence in Class
Erne and Melvin (cont'd)	Lower Lough Macnean	H128375	Current	Good	Moderate	Good	Bad	**Bad Trophic Status**	Medium confidence of impact
			New	Good	High	Good	Bad	**Bad Trophic Status**	Low confidence of impact

Appendix 8: WFD Trophic Classification of Marine Water Bodies

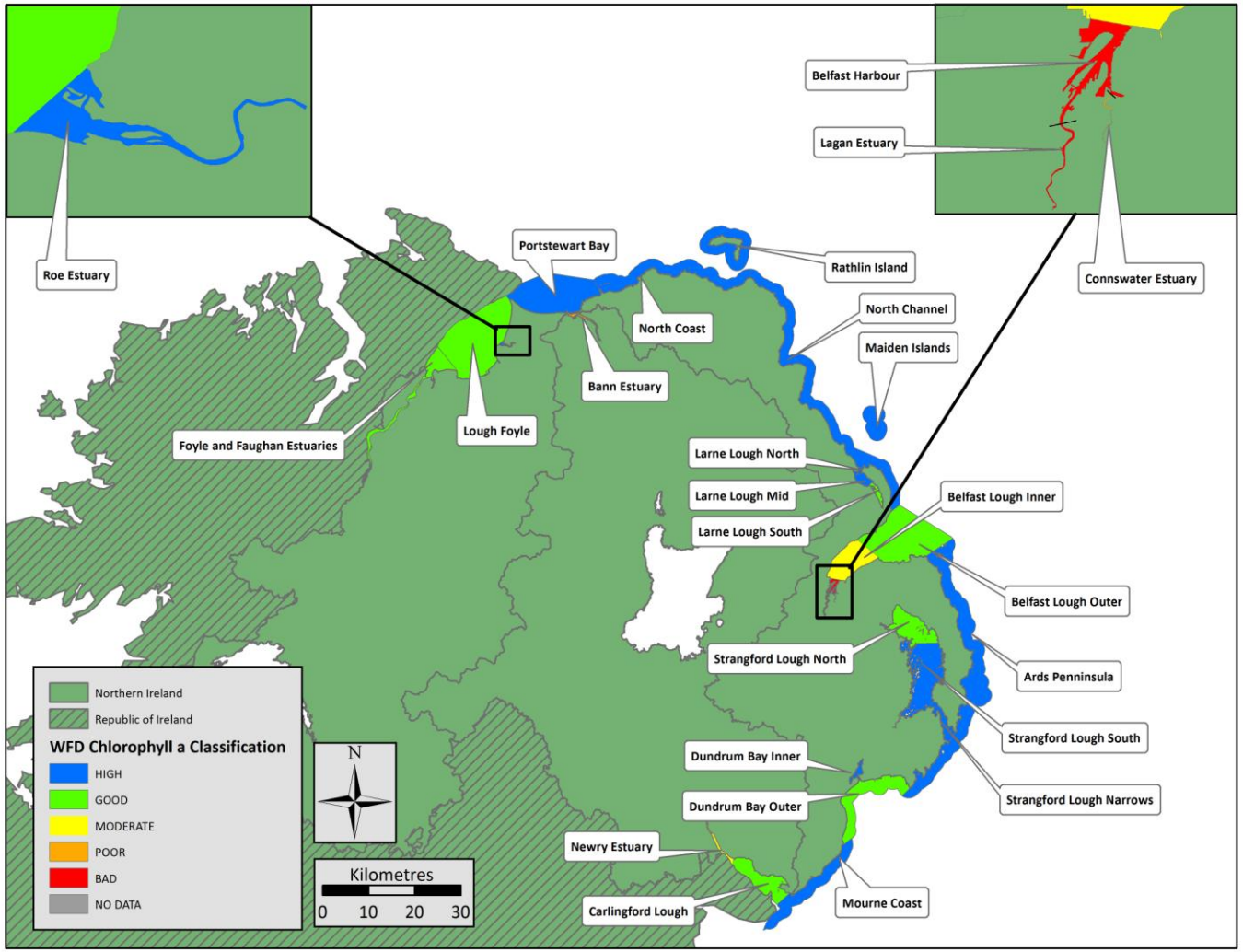
RBD	Water body	DIN	Chpl-a	Macroalgae	Angiosperms	Dissolved Oxygen	Overall
NW	Lough Foyle	GOOD	GOOD	HIGH	HIGH	HIGH	GOOD
NB	Portstewart Bay	HIGH	HIGH	HIGH	TNA	HIGH	HIGH
NE	Rathlin	HIGH	HIGH	HIGH	TNA	HIGH	HIGH
NE	North Coast	HIGH	HIGH	HIGH	TNA	HIGH	HIGH
NE	North Channel	HIGH	HIGH	HIGH	TNA	HIGH	HIGH
NE	Maidens	HIGH	HIGH	HIGH	TNA	HIGH	HIGH
NE	Larne Lough North (HMWB)	GOOD	HIGH	HIGH	TNA	HIGH	GOOD
NE	Larne Lough Mid	GOOD	HIGH	GOOD	TNA	HIGH	GOOD
NE	Larne Lough South	GOOD	GOOD	HIGH	GOOD	HIGH	GOOD
NE	Belfast Lough Outer	GOOD	GOOD	HIGH	TNA	HIGH	GOOD
NE	Belfast Lough Inner	POOR	MODERATE	GOOD	TNA	HIGH	POOR
NE	Belfast Harbour (HWMB)	POOR	BAD	MODERATE	TNA	HIGH	BAD
NE	Ards Peninsula	HIGH	HIGH	HIGH	TNA	HIGH	HIGH
NE	Strangford Lough North	GOOD	GOOD	GOOD	HIGH	HIGH	GOOD
NE	Strangford Lough South	GOOD	HIGH	HIGH	TNA	HIGH	GOOD
NE	Strangford Lough Narrows	GOOD	HIGH	HIGH	TNA	HIGH	GOOD
NE	Dundrum Bay Outer	GOOD	GOOD	HIGH	TNA	HIGH	GOOD
NE	Dundrum Bay Inner	GOOD	HIGH	MODERATE	POOR	HIGH	POOR
NE, NBIRBD	Mourne Coast	GOOD	HIGH	HIGH	TNA	HIGH	GOOD
NBIBRD	Carlingford Lough	MODERATE	GOOD	HIGH	HIGH	HIGH	MODERATE
NW	Foyle and Faughan (HMWB)	MODERATE	GOOD	TNA	TNA	HIGH	MODERATE
NW	Roe Estuary	MODERATE	HIGH	HIGH	TNA	HIGH	MODERATE
NB IRBD	Bann Estuary (HMWB)	MODERATE	POOR	TNA	TNA	HIGH	POOR
NE	Lagan Estuary (HMWB)	POOR	BAD	TNA	TNA	MODERATE	BAD
NE	Connswater (HMWB)	POOR	POOR	HIGH	TNA	GOOD	POOR
NE	Quoile Pondage (HMWB)	**No Data**	**No Data**	**No Data**	TNA	MODERATE	MODERATE
NE	Newry Estuary (HMWB)	POOR	MODERATE	HIGH	TNA	HIGH	POOR

Appendix 9: Maps showing WFD marine assessment status

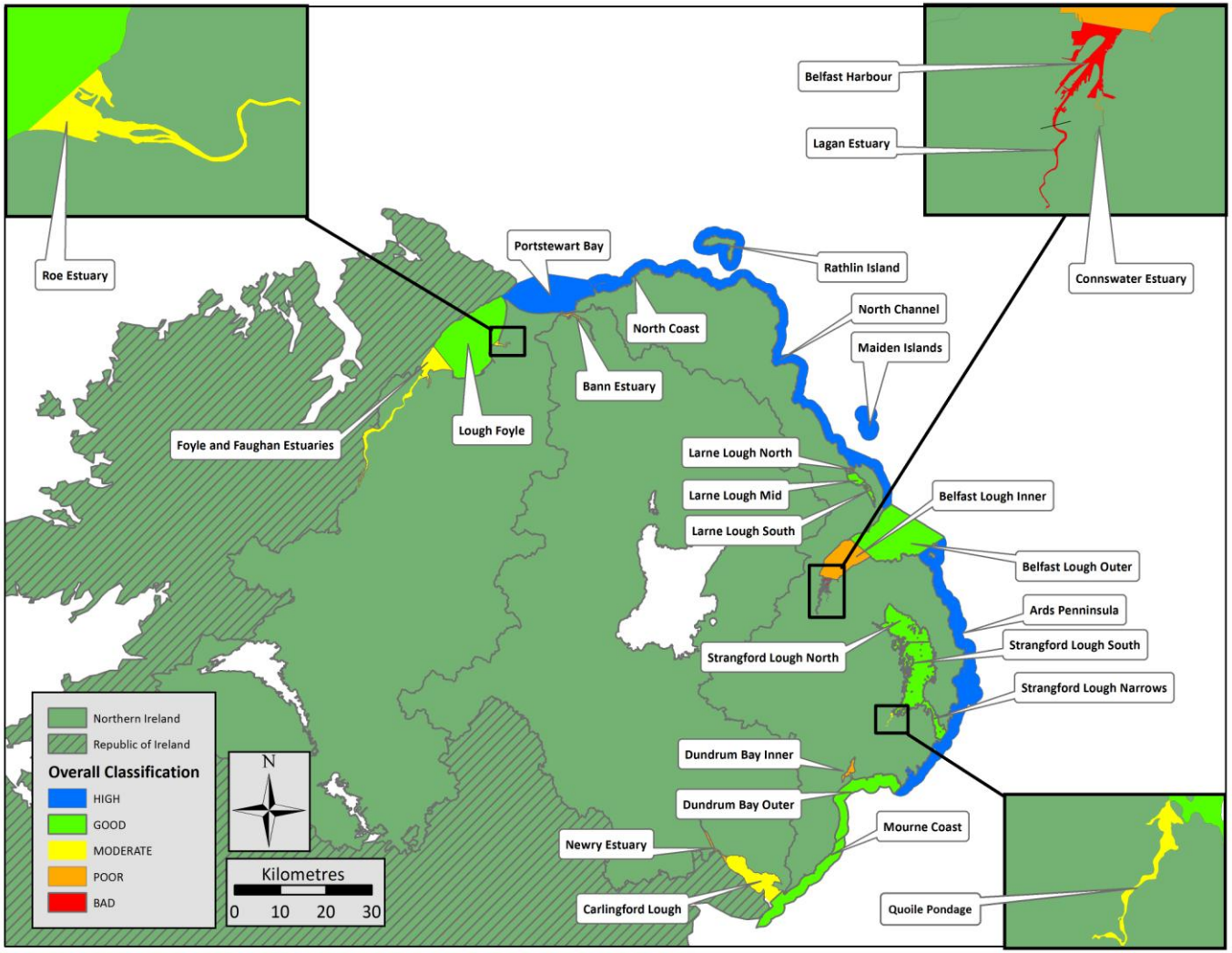
Nutrient assessment (2010-2013)



Chlorophyll-*a* assessment (2010-2013)



All eutrophication related parameters (2010-2013)



Appendix 10: Evidence of maintaining non-designation/recommending designation in freshwater water bodies

Belfast Lough and Lagan

IRBD	NE	
UWWTD Catchment	Belfast Lough and River Lagan Rivers	
River Catchment	Belfast Lough (North)	
Water Body ID	GBNI1NE050501082	
Site Number (s)	F10557	
Location	Kilroot River	
Lake WB Present?	No	
WWTWs Present in WB?	No	
Industry Present in WB?	No	
Standards used	**Current Standards**	**Revised Standards**
Overall Eutrophic Class	**MODERATE**	**GOOD**
Macrophytes	GOOD	GOOD
Diatoms	MODERATE	GOOD
SRP	HIGH	GOOD
Meaning Eutrophic Confidence of:	Moderate or worse is MEDIUM	Good or better is MEDIUM
Failing Element	Diatoms	N/A
Evidence	Using current standards (TDI3), the Mean EQR was 0.56 and the class boundary for Moderate/Poor is 0.52. DARLEQ1 formulated 100% confidence in class of Moderate/Poor diatom status. However, when the revised diatom standards (TDI4) are applied the Mean EQR is 0.68 and the boundary for Good/Moderate status is 0.60. DARLEQ2 formulated 88% confidence in class of High/Good diatom status. Macrophyte and SRP were classified as Good or better status when both standards were applied.	
Decision	**Designation is not recommended**	
	Using the weight of evidence approach, there is no proposed extension to the existing designation as the failure in the water body is on one BQE only, namely diatoms using current standards only. Designation is not recommended due to the change in diatom status from Moderate to Good as a result of the revision of standards. Using revised standards, nutrients and BQE all indicate Good status with medium certainty and there is no risk of deterioration to less than Good status in this water body.	
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period.	

IRBD	NE	
UWWTD Catchment	Belfast Lough and River Lagan Rivers	
River Catchment	North Down and Ards Peninsula	
Water Body ID	GBNI1NE050502083	
Site Number (s)	F10576	
Location	Crawfordsburn River	
Lake WB Present?	No	
WWTWs Present in WB?	No	
Industry Present in WB?	No	
Standards used	**Current Standards**	**Revised Standards**
Overall Eutrophic Class	**POOR**	**MODERATE**
Macrophytes	HIGH	HIGH
Diatoms	POOR	GOOD
SRP	GOOD	MODERATE
Meaning Eutrophic Confidence of:	Moderate or worse is HIGH	Moderate or worse is MEDIUM
Failing Element	Diatoms	SRP
Evidence	Using current standards (TDI3), the Mean EQR for diatoms was 0.49 and the class boundary for Moderate/Poor is 0.52. DARLEQ1 formulated a 100% confidence in class of Moderate/Poor diatom status. However, when the revised diatom standards (TDI4) are applied the Mean EQR is 0.61 and the boundary for Good/Moderate status is 0.60. DARLEQ2 formulated a 46% confidence in class of High/Good diatom status. Using current standards, the Mean EQR for SRP was 82.6, well within the class boundary for Good/Moderate which is ≥ 120. The boundary value for High status is ≥ 50. When the revised standards are applied (which are site specific), the Mean EQR is 104. The boundary for Good/Moderate status is 79 and the boundary for Moderate Poor status is 193, therefore much closer to the Good Moderate boundary.	
Decision	**Designation is not recommended**	
	Designation is not recommended due to the change in diatom status from Poor to Good as a result of the revision of standards. Although SRP fails as a result of the revision of standards, designation is not recommended due to the wider evidence of "the absence of a cause and effect relationship between enrichment by nutrients and the accelerated growth of algae and higher forms of plant life" (Judgement Case C-280/02) , i.e. levels of physico -chemical water quality are exceeded but no biological impacts are being detected. There is medium certainty of eutrophication in this water body and there is no risk of deterioration to less than Good status in this water body for any of the eutrophic parameters.	
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period.	

River Bush and Glens

IRBD	NE	NE	NE	NE	NE	NE
UWWTD Catchment	Bush and Glens	Bush and Glens	Bush and Glens	Bush and Glens	Bush and Glens	Bush and Glens
River Catchment	NE Coast	NE Coast	NE Coast	NE Coast	Belfast Lough (North)	Belfast Lough (North)
Water Body ID	GBNI1NE040403033	GBNI1NE040403034	GBNI1NE040403061	GBNI1NE040403011	GBNI1NE040405047	GBNI1NE040405046
Site Number (s)	F11185	F11212	F10478	F11211	F10555	F10556
LOCATION	Tow River	Dunseverick River	Glencloy River	Ballygalley Burn	Larne River	Glynn/Glenoe River
Lake WB present?	No	No	No	No	No	No
WWTWs Present in WB?	No	No	No	No	No	No
Industry Present in WB?	No	No	No	No	No	No
Standards used	**Current Standards**					
Overall Eutrophic Class	**MODERATE**	**MODERATE**	**MODERATE**	**MODERATE**	**MODERATE**	**MODERATE**
Macrophytes	HIGH	HIGH	GOOD	HIGH	HIGH	HIGH
Diatoms	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
SRP	GOOD	GOOD	HIGH	GOOD	GOOD	GOOD
Meaning Eutrophic Confidence of:	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM
Failing Element	Diatoms	Diatoms	Diatoms	Diatoms	Diatoms	Diatoms
Standards used	**Revised Standards**					
Overall Eutrophic Class	**GOOD**	**GOOD**	**GOOD**	**GOOD**	**GOOD**	**GOOD**
Macrophytes	HIGH	HIGH	GOOD	HIGH	HIGH	HIGH
Diatoms	GOOD	GOOD	GOOD	HIGH	HIGH	GOOD
SRP	HIGH	GOOD	HIGH	GOOD	GOOD	GOOD
Meaning Eutrophic Confidence of:	Good or Better is MEDIUM	Good or Better is MEDIUM	Good or Better is MEDIUM	Good or Better is MEDIUM	Good or Better is MEDIUM	Good or Better is MEDIUM
Failing Element	N/A	N/A	N/A	N/A	N/A	N/A

River Bush and Glens (continued)

Evidence	Using current standards (TDI3), 6 sites failed to achieve Good or better diatom status. However, when the revised diatom standards (TDI4) are applied, all 6 sites achieve High/Good diatom status. Macrophyte and SRP were classified as Good or better status when both standards were applied.
Decision	**Designation is not recommended**
	Using the weight of evidence approach, there is no proposed extension to the existing designation as the failure in the water body is on one BQE only, namely diatoms, whilst using current standards. Designation is not recommended due to the change in diatom status from Moderate to Good/High as a result of the revision of standards. There is also medium certainty of Good or better eutrophic class in these water bodies and there is no risk of deterioration to less than Good status for any of the eutrophic parameters in these water bodies.
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic indicators and to ensure continual ongoing improvement in water quality and provide evidence for the next review period.

Strangford Lough, Lecale and Mourne

IRBD	NE	
UWWTD Catchment	Strangford Lough, Lecale and Mourne	
River Catchment	North Down & Ards Peninsula	
Water Body ID	GBNI1NE050504021	
Site Number (s)	F10572	
LOCATION	Mill Burn	
Lake WB present?	No	
WWTWs Present in WB?	No	
Industry Present in WB?	No	
	Current Standards	**Revised Standards**
Overall Eutrophic Class	**MODERATE**	**GOOD**
Macrophytes	HIGH	HIGH
Diatoms	MODERATE	GOOD
SRP	NO DATA	NO DATA
Meaning Eutrophic Confidence of:	Moderate or worse is LOW	Good or better is MEDIUM
Failing Element	Diatoms	N/A
Evidence	Using current standards (TDI3), the Mean EQR was 0.65 and the class range for Moderate is 0.52 -0.78. DARLEQ1 formulated 97% confidence in class of Moderate/Poor diatom status. However, when the revised diatom standards (TDI4) are applied the Mean EQR is 0.67 and the boundary for Good/Moderate status is 0.60. DARLEQ2 formulated 82% confidence in class of High/Good diatom status. Macrophyte status was reported as High when both standards were used. This is a biological monitoring station therefore no data is available for SRP.	
Decision	**Designation is not recommended**	
	Using the weight of evidence approach, there is no proposed extension to the existing designation as the failure in the water body is on one BQE only, namely diatoms, whilst using current standards. Designation is not recommended due to the change in diatom status from Moderate to Good as a result of the revision of standards. There is also medium certainty of Good or better eutrophic class in these water bodies and there is no risk of deterioration to less than Good status for any of the eutrophic parameters in these water bodies.	
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period.	

IRBD	NE	
UWWTD Catchment	Strangford Lough, Lecale and Mourne	
River Catchment	North Down and Ards Peninsula	
Water Body ID	GBNI1NE050504031	
Site Number (s)	F11213	
LOCATION	Ganaway Burn	
Lake WB present?	No	
WWTWs Present in WB?	No	
Industry Present in WB?	No	
	Current Standards	**Revised Standards**
Overall Eutrophic Class	**POOR**	**POOR**
Macrophytes	MODERATE	MODERATE
Diatoms	POOR	MODERATE
SRP	POOR	POOR
Meaning Eutrophic Confidence of:	Moderate or worse is HIGH	Moderate or worse is MEDIUM
Failing Element	Macrophytes, Diatoms and SRP	Macrophytes, Diatoms and SRP
Evidence	Using current standards (TDI3), the Mean EQR was 0.39 and the class boundary for Moderate/Poor is 0.52. DARLEQ1 formulated a 100% confidence in class of Moderate/Poor diatom status. However, when the revised diatom standards (TDI4) are applied the Mean EQR is 0.52 and the boundary for Good/Moderate status is 0.60. DARLEQ2 formulated a 85% confidence in class of Moderate diatom status. Using current standards for SRP, the Mean EQR was 346, with the class boundary for Moderate which is ≥ 250. The boundary value for Bad status is ≥ 1000; therefore the EQR is much closer to the Moderate boundary. When the revised standards are applied (which are site specific), the Mean EQR is 528. The boundary for Moderate/Poor status is 211 and the boundary for Poor/Bad status is 1090. Macrophyte status was assessed in 2008 and the EQR was 0.58 and the boundary for Good status is 0.60, therefore it was close to Good Status. There was 61% confidence of Moderate status.	
Decision	**Designation is not recommended**	
	Although there are failures in the nutrients and biological standards, designation is not recommended due to the absence of qualifying works or STW 2,000 - 10,000 in the water body and the fact that Ganaway Burn does not flow into a Lough with a Sensitive Area designation. It flows into the coastal Ards Peninsula water body which achieved High trophic status; therefore the Poor quality of Ganaway Burn is not exerting a negative impact on the receiving water. It is a very small stream and eutrophication in this water body is likely to be due to a number of factors.	
Recommendation	Further investigation is required to confirm where measures are required in-line with meeting WFD requirements. This may take the form of river walks and/or further monitoring if resources are available. In the absence of qualifying sewage treatment works in the water body, the main challenges ahead are to continue to manage diffuse organic inputs through working with land managers.	

Strangford Lough, Lecale and Mourne (Continued)

IRBD	NE	
UWWTD Catchment	Strangford Lough, Lecale and Mourne	
River Catchment	North Down and Ards Peninsula	
Water Body ID	GBNI1NE050504022	
Site Number (s)	F10575	
LOCATION	Blackstaff River	
Lake WB present?	No	
WWTWs Present in WB?	No	
Industry Present in WB?	No	
	Current Standards	**Revised Standards**
Overall Eutrophic Class	**POOR**	**POOR**
Macrophytes	HIGH	HIGH
Diatoms	POOR	GOOD
SRP	POOR	POOR
Meaning Eutrophic Confidence of:	Moderate or worse is HIGH	Moderate or worse is HIGH
Failing Element	Diatoms and SRP	SRP
Evidence	Using current standards (TDI3), the Mean EQR was 0.50 and the class boundary for Moderate/Poor is 0.52. DARLEQ1 formulated 100% confidence in class of Moderate/Poor diatom status. However, when the revised diatom standards (TDI4) are applied the Mean EQR is 0.63 and the boundary for Good/Moderate status is 0.60. DARLEQ2 formulated 67% confidence in class of High/Good diatom status. Using current standards for SRP, the Mean EQR was 349, and the class boundary for Moderate/Poor is ≥ 250. The boundary value for Bad status is ≥ 1000; therefore the EQR is much closer to the Moderate boundary. When the revised standards are applied (which are site specific), the Mean EQR is 551. The boundary for Moderate/Poor status is 209 and the boundary for Poor/Bad status is 1085. Macrophyte status was reported as High using both standards.	
Decision	**Designation is not recommended**	
	Designation is not recommended due to the change in diatom status from Poor to Good as a result of the revision of standards. Although the SRP is reported as Poor, this water body is not recommended as a potential new candidate area due to "the absence of a cause and effect relationship between enrichment by nutrients and the accelerated growth of algae and higher forms of plant life", i.e. levels of physico - chemical water quality are exceeded but no biological impacts are being detected when revised standards are applied. Risk assessments yielded no risk of deterioration.	
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period. In the absence of qualifying sewage treatment works in the water body, the main challenges ahead are to continue to manage diffuse organic inputs through working with land managers.	

Strangford Lough, Lecale and Mourne (Continued)

IRBD	NE	NE	NE	NE
UWWTD Catchment	Strangford Lough, Lecale and Mourne	Strangford Lough, Lecale and Mourne	Strangford Lough, Lecale and Mourne	Strangford Lough, Lecale and Mourne
River Catchment	North Down and Ards Peninsula	SE Down Streams	SE Down Streams	SE Down Streams
Water Body ID	GBNI1NE050504010	GBNI1NE050505068	GBNI1NE050505129	GBNI1NE050505062
Site Number (s)	F11217	F11214, F11355	F10603	F10605
LOCATION	Black Causeway Stream	Killough River	Ballyviggis Stream	Rathmullan Burn
Lake WB present?	No	No	No	No
WWTWs Present in WB?	No	No	No	No
Industry Present in WB?	No	No	No	No
Standards used	**Current Standards**			
Overall Eutrophic Class	**MODERATE**	**MODERATE**	**MODERATE**	**MODERATE**
Macrophytes	MODERATE	MODERATE	MODERATE	MODERATE
Diatoms	NO DATA	NO DATA	MODERATE	NO DATA
SRP	HIGH	HIGH	HIGH	HIGH
Meaning Eutrophic Confidence of:	Moderate or worse is LOW	Moderate or worse is LOW	Moderate or worse is MEDIUM	Moderate or worse is LOW
Failing Element	Macrophytes	Macrophytes	Macrophytes and Diatoms	Macrophytes
Standards used	**Revised Standards**			
Overall Eutrophic Class	**MODERATE**	**MODERATE**	**MODERATE**	**MODERATE**
Macrophytes	MODERATE	MODERATE	MODERATE	MODERATE
Diatoms	NO DATA	NO DATA	HIGH	NO DATA
SRP	HIGH	GOOD	HIGH	GOOD
Meaning Eutrophic Confidence of:	Moderate or worse is LOW	Moderate or worse is LOW	Moderate or worse is LOW	Moderate or worse is LOW
Failing Element	Macrophytes	Macrophytes	Macrophytes	Macrophytes

Evidence	4 sites failed to achieve Good or better macrophyte status. The macrophyte assemblages were monitored in this waterbody in 2008. The EQR was 0.52, 0.53, 0.55 and 0.50 respectively and the class boundary for Good/Moderate status is 0.60. The LEAFPACs programme formulated 77%, 75%, 71% and 78% (respectively) confidence of Moderate macrophyte status. Further macrophyte monitoring was carried out in 2014 in these water bodies and there were signs of improvement in the macrophyte assemblages. Ballyviggis achieved High status and Black causeway achieved Good status. SRP and diatom status were High and Good when current and revised standards were applied in 3 of the water bodies. Ballyviggis Stream exhibited Moderate diatom status when using current standards but the class changed to High when revised standards were applied. SRP were classified as Good or better status when both standards were applied.
Decision	**Designation is not recommended**
	Using the weight of evidence approach, there is no proposed extension to the existing designation as the failure in the water bodies are on one BQE only, namely macrophytes and no nutrient failures are present. There is a low certainty of Moderate or worse eutrophic class and there is no risk of deterioration for any of the eutrophic parameters in these water bodies.
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic indicators, improve confidence in class and to provide evidence to support the designation during the next review period.

Strangford Lough, Lecale and Mourne (Continued)

IRBD	NE		NE	
UWWTD Catchment	Strangford Lough, Lecale and Mourne		Strangford Lough, Lecale and Mourne	
River Catchment	Kilkeel & Mourne Streams		Kilkeel & Mourne Streams	
Water Body ID	GBNI1NE050505044		GBNI1NE050505097	
Site Number (s)	F10633		F10641	
LOCATION	Mullagh River		Aughrim River	
Lake WB present?	No		No	
WWTWs Present in WB?	No		No	
Industry Present in WB?	No		No	
	Current Standards	**Revised Standards**	**Current Standards**	**Revised Standards**
Overall Eutrophic Class	**MODERATE**	**MODERATE**	**MODERATE**	**MODERATE**
Macrophytes	GOOD	GOOD	GOOD	GOOD
Diatoms	MODERATE	GOOD	MODERATE	GOOD
SRP	GOOD	MODERATE	GOOD	MODERATE
Meaning Eutrophic Confidence of:	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM
Failing Element	Diatoms	SRP	Diatoms	SRP
Evidence	Using current standards (TDI3), the Mean EQR for diatoms was 0.74 and 0.68 (respectively) and the class boundary for Good/Moderate is 0.78. DARLEQ1 formulated a 73% and 94 % (respectively) confidence in class of Moderate/Poor diatom status. However, when the revised diatom standards (TDI4) are applied the Mean EQR is 0.63 for both water bodies and the boundary for Good/Moderate status is 0.60. DARLEQ2 formulated a 66% and 68% (respectively) confidence in class of High/Good diatom status. Using current standards, the Mean EQR for SRP in both water bodies were 57.4 and 60.9 (respectively), well within the class boundary for Good which is ≥ 120. The boundary value for High status is ≥ 50. When the revised standards are applied (which are site specific), the Mean EQR for Mullagh River is 61.2. The boundary for Good/Moderate status is 56 and the boundary for Moderate/Poor status is 148, therefore much closer to the Good/Moderate boundary. The Mean EQR for Aughrim River is 67. The boundary for Good/Moderate status is 62 and the boundary for Moderate/Poor status is 161, therefore much closer to the Good/Moderate boundary.			

Decision	**Designation is not recommended** Designation is not recommended due to the change in diatom status from Moderate to Good as a result of the revision of standards. Although SRP fails as the result of the revision of standards, designation is not recommended due to the wider evidence of "the absence of a cause and effect relationship between enrichment by nutrients and the accelerated growth of algae and higher forms of plant life" (Judgement Case C-280/02), i.e. levels of physico -chemical water quality are exceeded but no biological impacts are being detected. There is medium certainty of eutrophication in this water body and there is no risk of deterioration to less than Good status in this water body for any of the eutrophic parameters.
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period.

Lough Neagh North and Lower Bann

IRBD	NB	
UWWTD Catchment	Lough Neagh North and Lower Bann	
River Catchment	Lower Bann	
Water Body ID	GBNI1NB030301222	
Site Number (s)	F10412	
LOCATION	Dundooan Feeder	
Lake WB present?	No	
	Current Standards	**Revised Standards**
Overall Eutrophic Class	**MODERATE**	**GOOD**
Macrophytes	HIGH	HIGH
Diatoms	MODERATE	GOOD
SRP	GOOD	GOOD
Meaning Eutrophic Confidence of:	Moderate or worse is MEDIUM	Good or better is MEDIUM
Failing Element	Diatoms	N/A
Evidence	Using current standards (TDI3), the Mean EQR was 0.56 and the class boundary for Moderate/Poor is 0.52. DARLEQ1 formulated 100% confidence in class of Moderate/Poor diatom status. However, when the revised diatom standards (TDI4) are applied the Mean EQR is 0.87 and the boundary for Good/Moderate status is 0.60. DARLEQ2 formulated 91% confidence in class of High/Good diatom status. Macrophyte and SRP were classified as Good or better status when both standards were applied.	
Decision	**Designation is not recommended**	
	Using the weight of evidence approach, there is no proposed extension to the existing designation as the failure in the water body is on one BQE only, namely diatoms, whilst using current standards. Designation is not recommended due to the change in diatom status from Moderate to Good as a result of the revision of standards. There is a medium confidence that overall eutrophic status is Good or better and there is no risk of deterioration to less than Good status for any of the eutrophic parameters in this water body.	
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period.	

IRBD	NB	
UWWTD Catchment	Lough Neagh North and Lower Bann	
River Catchment	Lower Bann	
Water Body ID	GBNI1NB030301223	
Site Number (s)	F11210	
LOCATION	Ballyversal Stream	
Lake WB present?	No	
	Current Standards	**Revised Standards**
Overall Eutrophic Class	**MODERATE**	**MODERATE**
Macrophytes	NO DATA	NO DATA
Diatoms	NO DATA	NO DATA
SRP	MODERATE	MODERATE
Meaning Eutrophic Confidence of:	Moderate or worse is LOW	Moderate or worse is LOW
Failing Element	SRP	SRP
Evidence	Using current standards, the Mean EQR for SRP was 82.6, well within the class boundary for Good which is ≥ 120. The boundary value for High status is ≥ 50. When the revised standards are applied (which are site specific), the Mean EQR is 104. The boundary for Good/Moderate status is 79 and the boundary for Moderate/Poor status is 193, therefore much closer to the Good/Moderate boundary. Biological parameters are not surveyed at this site due to the influence of saline intrusion, therefore only chemical monitoring is conducted in this water body.	
Decision	**Designation is not recommended**	
	Although SRP fails using both current and revised standards, designation is not recommended due to the wider evidence presented showing that the Mean EQR for SRP is close to the Good/Moderate boundary and there is a low confidence of Moderate or worse overall eutrophic class in this water body. This water body is influenced by saline intrusion therefore biological parameters are not considered.	
Recommendation	Further chemical monitoring is recommended in this water body to continue to assess trends in water quality, improve confidence in class and provide evidence for the next review period.	

IRBD	NB	
UWWTD Catchment	Lough Neagh North and Lower Bann	
River Catchment	Lower Bann	
Water Body ID	GBNI1NB030301221	
Site Number (s)	F10416	
LOCATION	Articlave River	
Lake WB present?	No	
	Current Standards	**Revised Standards**
Overall Eutrophic Class	**MODERATE**	**GOOD**
Macrophytes	HIGH	HIGH
Diatoms	MODERATE	GOOD
SRP	HIGH	HIGH
Meaning Eutrophic Confidence of:	Moderate or worse is MEDIUM	Good or better is MEDIUM
Failing Element	Diatoms	N/A
Evidence	Using current standards (TDI3), the Mean EQR was 0.62 and the class boundary for Moderate/Poor is 0.52. DARLEQ1 formulated 99% confidence in class of Moderate/Poor diatom status. However, when the revised diatom standards (TDI4) are applied the Mean EQR is 0.85 and the boundary for Good/Moderate status is 0.60. DARLEQ2 formulated 88% confidence in class of High/Good diatom status. Macrophyte and SRP were classified as Good or better status when both standards were applied.	
Decision	**Designation is not recommended**	
	Using the weight of evidence approach, there is no proposed extension to the existing designation as the failure in the water body is on one BQE only, namely diatoms, whilst using current standards. Designation is not recommended due to the change in diatom status from Moderate to Good as a result of the revision of standards and there is a medium confidence that overall eutrophic status is Good or better and there is no risk of deterioration to less than Good status for any of the eutrophic parameters in this water body.	
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period.	

IRBD	NB	
UWWTD Catchment	Lough Neagh North and Lower Bann	
River Catchment	Lower Bann	
Water Body ID	GBNI1NB030301071	
Site Number (s)	F11209	
LOCATION	Bann Brook	
Lake WB present?	No	
	Current Standards	**Revised Standards**
Overall Eutrophic Class	**GOOD**	**MODERATE**
Macrophytes	NO DATA	NO DATA
Diatoms	NO DATA	NO DATA
SRP	GOOD	MODERATE
Meaning Eutrophic Confidence of:	Good or better is LOW	Moderate or worse is LOW
Failing Element	N/A	SRP
Evidence	Only chemistry monitoring is carried out in this water body due to saline intrusion. Using current standards, the Mean EQR for SRP was 78.2, well within the class boundary for Good which is ≥ 120. The boundary value for High status is ≥ 50. When the revised standards are applied (which are site specific), the Mean EQR is 93.5. The boundary for Good/Moderate status is 89 and the boundary for Moderate/Poor status is 211, therefore much closer to the Good/Moderate boundary.	
Decision	**Designation is not recommended**	
	Using weight-of-evidence based assessments; there is no proposed extension to the existing designation of the Lower Bann catchment. Although SRP fails as the result of the revision of standards, designation is not recommended due to the wider evidence presented, i.e., the mean EQR is very close to the boundary for Good status and there is low certainty of eutrophication.	
Recommendation	Further chemical monitoring is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period.	

Carlingford and Newry

IRBD	NB	
UWWTD Catchment	Carlingford and Newry	
River Catchment	Fane	
Water Body ID	GBNI1NB060604052	
Site Number (s)	F10900	
LOCATION	Fane River Lower	
Lake WB present?	Yes - Lough Ross	
WWTWs Present in WB?	No	
Industry Present in WB?	No	
	Current Standards	**Revised Standards UKGBNI1NB060608250 UKGBNI1NB060608249**
Overall Eutrophic Class	**MODERATE**	**MODERATE**
Macrophytes	MODERATE	MODERATE
Diatoms	MODERATE	GOOD
SRP	HIGH	GOOD
Meaning Eutrophic Confidence of:	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM
Failing Element	Macrophytes and Diatoms	Macrophytes
Evidence	The river macrophyte assemblages were monitored in this water body in 2011. The EQR was 0.54 and the class boundary for Good/Moderate status is 0.60. The LEAFPACs programme formulated 75% confidence in class of Moderate status and 21% confidence of Good status. Using current river standards (TDI3), the Mean EQR was 0.73 and the class boundary for Good/Moderate is 0.78. DARLEQ1 formulated 78% confidence in class of Moderate and 21% confidence of Good diatom status. However, when the revised diatom standards (TDI4) are applied the Mean EQR is 0.66 and the boundary for Good/Moderate status is 0.60. DARLEQ2 formulated 81% confidence in class of High/Good diatom status. SRP status was High and Good when current and revised standards were applied respectively in both water bodies. Lough Ross was surveyed in 2012. The EQR for macrophytes was 0.55 and the class range for Moderate status is 0.42 – 0.68. The Free Index formulated 84% confidence in class of Moderate or worse status. The observed annual mean TP was 55 and the boundary range for Moderate is 40-80. The A/N gig TP calculator placed 100% in Poor status. Phytoplankton was classified as Poor status whilst using current standards but improved to Moderate when revised standards were utilised. Using current lake standards (TDI3), the Mean EQR was 0.54 and the class boundary for Good/Moderate is 0.66. DARLEQ1 formulated 99% confidence in class of Moderate. When the revised diatom lake standards (TDI4) are applied the Mean EQR is 0.65 and the boundary for Good/Moderate status is 0.70. DARLEQ2 formulated 64% confidence in class of Moderate diatom status.	

Decision	**Designation is not recommended** Using the weight of evidence approach, there is no proposed extension to the existing designation as the failure in the river water body is on one BQE only, namely macrophytes, whilst using current standards. Designation is not recommended due to the change in diatom status from Moderate to Good as a result of the revision of standards and there is a medium confidence that overall eutrophic status is Good or better in the river water body. There is no risk of deterioration to less than Good status for any of the eutrophic parameters in this river water body. Although Lough Ross is classified as Poor trophic status it is not having an impact on the water body as a whole or on the water body downstream, therefore eutrophic issues appear to be contained within the lake.
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period. Lough Ross is listed on the monitoring schedule for 2015 and further investigation may be required as part of the WFD Local Area Management Plans. Actions will then be identified as part of the second cycle River Basin Management Plans.

Carlingford and Newry (Continued)

IRBD	NB	
UWWTD Catchment	Carlingford and Newry	
River Catchment	Fane	
Water Body ID	UKGBNI1NB060603027	
Site Number (s)	F10653	
LOCATION	County Water	
Lake WB present?	No	
WWTWs Present in WB?	No	
Industry Present in WB?	No	
	Current Standards	**Revised Standards**
Overall Eutrophic Class	**GOOD**	**MODERATE**
Macrophytes	HIGH	HIGH
Diatoms	GOOD	GOOD
SRP	GOOD	MODERATE
Meaning Eutrophic Confidence of:	Good or Better is MEDIUM	Moderate or worse is MEDIUM
Failing Element		SRP
Evidence	Using current standards, the Mean EQR for SRP was 58.8, well within the class boundary for Good which is ≥ 120. The boundary value for High status is ≥ 50. When the revised standards are applied (which are site specific), the Mean EQR is 66.9. The boundary for Good/Moderate status is 41 and the boundary for Moderate/Poor status is 117, therefore much closer to the Good/Moderate boundary. Macrophytes and Diatoms were High and Good when current and revised standards were applied respectively.	
Decision	**Designation is not recommended**	
	Although the SRP is reported as Moderate, this water body is not recommended as a potential new candidate area due to "the absence of a cause and effect relationship between enrichment by nutrients and the accelerated growth of algae and higher forms of plant life", i.e. levels of physico -chemical water quality are exceeded but no biological impacts are being detected when revised standards are applied. Risk assessments yielded that there is no risk of deterioration to less than Good status for any of the eutrophic parameters in this water body.	
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period.	

Carlingford and Newry (Continued)

IRBD	NB	
UWWTD Catchment	Carlingford and Newry	
River Catchment	Flurry	
Water Body ID	GBNI1NB060602038	
Site Number (s)	F10649	
LOCATION	Kilnasaggart River (aka Ballymascanlon)	
Lake WB present?	No	
WWTWs Present in WB?	No	
Industry Present in WB?	No	
	Current Standards	**Revised Standards**
Overall Eutrophic Class	**MODERATE**	**MODERATE**
Macrophytes	MODERATE	MODERATE
Diatoms	GOOD	GOOD
SRP	HIGH	GOOD
Meaning Eutrophic Confidence of:	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM
Failing Element	Macrophytes	Macrophytes
Evidence	The macrophyte assemblages were monitored in this water body in 2011. The EQR was 0.50 and the class boundary for Good status is 0.60 and Moderate status is 0.40. The LEAFPACs programme formulated 78% confidence in class of Moderate status and 11% confidence of Good status. Diatom and SRP status were Good or better when current and revised standards were applied.	
Decision	**Designation is not recommended**	
	Using the weight of evidence approach, there is no proposed extension to the existing designation as the failure in the water body is on one BQE only, namely macrophytes. There is a medium confidence that overall eutrophic status is Moderate or Worse. There is no risk of deterioration to less than Good status for any of the eutrophic parameters in this water body.	
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period.	

Carlingford and Newry (Continued)

IRBD	NB	
UWWTD Catchment	Carlingford and Newry	
River Catchment	Flurry	
Water Body ID	Current WBID GBNI1NB060602039 Revised WBID GBNI1NB060608247	
Site Number (s)	F10977	
LOCATION	Flurry River	
Lake WB present?	No	
WWTWs Present in WB?	No	
Industry Present in WB?	No	
	Current Standards	**Revised Standards**
Overall Eutrophic Class	**MODERATE**	**GOOD**
Macrophytes	GOOD	GOOD
Diatoms	MODERATE	GOOD
SRP	HIGH	GOOD
Meaning Eutrophic Confidence of:	Moderate or worse is MEDIUM	Good or better is MEDIUM
Failing Element	Diatoms	N/A
Evidence	Using current standards (TDI3), the Mean EQR was 0.76 and the class boundary for Good/Moderate is 0.78. DARLEQ1 formulated 64% confidence in class of Moderate diatom status. However, when the revised diatom standards (TDI4) are applied the Mean EQR is 0.64 and the boundary for Good/Moderate status is 0.60. DARLEQ2 formulated 73% confidence in class of High/Good diatom status. Macrophyte and SRP were classified as Good or better status when both standards were applied.	
Decision	**Designation is not recommended**	
	Using the weight of evidence approach, there is no proposed extension to the existing designation as the failure in the water body is on one BQE only, namely diatoms, whilst using current standards only. There are no trophic parameter failures when revised standards are used. Designation is not recommended due to the change in diatom status from Moderate to Good as a result of the revision of standards and there is a medium confidence that overall eutrophic status is Good or better.	
Recommendation	Further monitoring is recommended to continue to assess trends in eutrophic water quality, improve confidence in class and provide evidence for the next review period.	

Carlingford and Newry (Continued)

IRBD	NB	NB	NB
UWWTD Catchment	Carlingford and Newry	Carlingford and Newry	Carlingford and Newry
River Catchment	Castletown	Castletown	Castletown
Water Body ID	GBNI1NB060602035	GBNI1NB060602002	GBNI1NB060602037
Site Number (s)	F10652	F10652	F10652
LOCATION	Forkhill River Upper (aka Kilcurry)	Forkhill River Trib	Forkill River Lower (aka Kilcurry)
Lake WB present?	No	No	No
WWTWs Present in WB?	No	No	No
Industry Present in WB?	No	No	No
Standards Used	**Current Standards**		
Overall Eutrophic Class	**MODERATE**	**MODERATE**	**MODERATE**
Macrophytes	GOOD	GOOD	GOOD
Diatoms	MODERATE	MODERATE	MODERATE
SRP	HIGH	HIGH	HIGH
Meaning Eutrophic Confidence of:	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM
Failing Element	Diatoms	Diatoms	Diatoms
Standards Used	**Revised Standards** (New water body ID GBNI1NB060608228)		
Overall Eutrophic Class	**MODERATE**		
Macrophytes	GOOD		
Diatoms	MODERATE		
SRP	GOOD		
Meaning Eutrophic Confidence of:	Moderate or worse is MEDIUM		
Failing Element	Diatoms		

Evidence	Using current standards (TDI3), the Mean EQR for diatoms was 0.64 (one monitoring station was used in the reporting of the 3 water bodies) and the class boundary for Good/Moderate is 0.78. DARLEQ1 formulated a 94% confidence in class of Moderate diatom status. When the revised water body delineations are applied, the 3 water bodies join to form 1 water body known as the Forkhill River (GBNI1NB060608228). When the revised diatom standards (TDI4) are applied the Mean EQR is 0.55 and the boundary for Good/Moderate status is 0.60. DARLEQ2 formulated 81% confidence in class of Moderate diatom status. Macrophyte and SRP were classified as Good or better status when both standards were applied.
Decision	**Designation is recommended**
	The weight of evidence in the report would suggest that although failure in the Forkhill River Upper (aka Kilcurry), Forkhill River Trib and Forkill River Lower (aka Kilcurry) is on one BQE only, namely diatoms, designation of the Castletown catchment is recommended due to trophic failures in neighbouring water bodies within the catchment.
Recommendation	Castletown catchment is recommended as a candidate Sensitive Area (Eutrophic). Designation of the catchment is based on new water body delineations.

Carlingford and Newry (Continued)

IRBD	NB	NB	NB
UWWTD Catchment	Carlingford and Newry	Carlingford and Newry	Carlingford and Newry
River Catchment	Castletown	Castletown	Castletown
Water Body ID	GBNI1NB060602001	GBNI1NB060602036	GBNI1NB060602034
Site Number (s)	F10651	F10651	F10651
LOCATION	Cully Water Upper	Ummercam River	Cully Water Lower
Lake WB present?	No	No	No
WWTWs Present in WB?	No	No	No
Industry Present in WB?	No	No	No
Standards Used	**Current Standards**		
Overall Eutrophic Class	**MODERATE**	**MODERATE**	**MODERATE**
Macrophytes	GOOD	GOOD	GOOD
Diatoms	MODERATE	MODERATE	MODERATE
SRP	HIGH	HIGH	HIGH
Meaning Eutrophic Confidence of:	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM	Moderate or worse is MEDIUM
Failing Element	Diatoms	Diatoms	Diatoms
Standards Used	**Revised Standards** (New water body ID GBNI1NB060608235)		
Overall Eutrophic Class	**GOOD**		
Macrophytes	GOOD		
Diatoms	GOOD		
SRP	GOOD		
Meaning Eutrophic Confidence of:	Good or Better is MEDIUM		
Failing Element	n/a		
Evidence	Using current standards (TDI3), 3 water bodies failed to achieve Good or better diatom status. When the revised water body delineations are applied, the 3 water bodies join to form 1 water body known as the Cully Water (GBNI1NB060608235). When the revised diatom standards (TDI4) are applied the water body achieves Good diatom status. Macrophyte and SRP were classified as Good or better status when both standards were applied.		
Decision	**Designation is recommended**		
	The weight of evidence in the report would suggest that although failure in the Cully Water Upper, Ummercam River and Cully Water Lower is on one BQE only, namely diatoms (using only current standards), designation of the Castletown catchment is recommended due to trophic failures in neighbouring water bodies within the catchment.		
Recommendation	Castletown catchment is recommended as a candidate Sensitive Area (Eutrophic). Designation of the catchment is based on new water body delineations.		

IRBD	NB	
UWWTD Catchment	Carlingford and Newry	
River Catchment	Castletown	
Water Body ID	Current WBID GBNI1NB060602029/ Revised WBID UKGBNI1NB060608246	
Site Number (s)	F10918	
LOCATION	Creggan River	
Lake WB present?	No	
	Current Standards	**Revised Standards**
Overall Eutrophic Class	**POOR**	**POOR**
Macrophytes	POOR	POOR
Diatoms	MODERATE	MODERATE
SRP	GOOD	MODERATE
Meaning Eutrophic Confidence of:	Moderate or worse is HIGH	Moderate or worse is HIGH
Failing Element	Macrophytes and Diatoms	Macrophytes, Diatoms and SRP
Evidence	Macrophyte status was assessed in 2011 and the EQR was 0.317 and the boundary for Moderate status is 0.40 and Poor is 0.20. There was 68% confidence of Poor status and 29% confidence of Moderate status. Only 3 species were recorded during the survey. Using current standards (TDI3), the Mean EQR was 0.68 and the class boundary for Good/Moderate is 0.78 and Moderate/Poor is 0.52. DARLEQ1 formulated a 90% confidence in class of Moderate diatom status. However, when the revised diatom standards (TDI4) are applied the Mean EQR is 0.58 and the boundary for Good/Moderate status is 0.60. More recent diatom data is available for this site to further improve confidence in class and the status changes from Moderate to Good (EQR 0.61) with 55% confidence of Good status. More recent diatom data from 2014 has amended the class from Moderate to Good. Using current standards, SRP was Good status (EQR 60.9). When the revised standards are applied (which are site specific), the Mean EQR is 66.4. The boundary for Good/Moderate status is 49 and the boundary for Moderate /Poor status is 134. Crossmaglen WWTWs (p.e. approx 3,000) discharges above the monitoring station. The Cullaville (p.e. 265) and Newtownhamilton (p.e. 1378) are also present in this water body. All were compliant in 2014.	
Decision	**Designation is recommended**	
	The weight of evidence in the report would suggest that the Creggan River water body is eutrophic or 'may become eutrophic in the near future if protective action is not taken'. The water body is suffering from some form of undesirable disturbance to the biology as a result of nutrient enrichment. The water body showed evidence of degraded flora and diatom communities due to elevated SRP concentrations.	
Recommendation	Castletown catchment is recommended as a candidate Sensitive Area (Eutrophic). Designation of the catchment is based on new water body delineations. Further investigation is required to confirm where appropriate treatment is required at any WWTWs (particularly Crossmaglen) or other systems in the catchment or other measures are required in-line with meeting WFD requirements. This may take the form of river walks and/or further monitoring if resources are available.	

Lough Foyle and Foyle River

IRBD	NW	
UWWTD Catchment	Lough Foyle and Foyle Rivers	
River Catchment	Foyle Rivers	
Water Body ID	GBNI1NW020203028	
Site Number (s)	F10180	
Location	Ballykelly River	
Lake WB Present?	No	
WWTWs Present in WB?	Yes, Ballykelly - Secondary Treatment	
Industry Present in WB?	No	
Standards used	**Current Standards**	**Revised Standards**
Overall Eutrophic Class	**MODERATE**	**MODERATE**
Macrophytes	MODERATE	MODERATE
Diatoms	NO DATA	NO DATA
SRP	HIGH	GOOD
Meaning Eutrophic Confidence of:	Moderate or worse is LOW	Moderate or worse is LOW
Failing Element	Macrophytes	Macrophytes
Evidence	The macrophyte assemblages were monitored in this water body in 2013. The EQR was 0.56 and the class boundary for Good/Moderate status is 0.60. The LEAFPACs programme formulated 66% confidence in class of Moderate status and 33% confidence of Good status. SRP status was High and Good when current and revised standards were applied respectively. Diatom status was not determined due to a lack of data.	
Decision	**Designation is not recommended**	
	Using the weight of evidence approach, there is no proposed extension to the existing designation as the failure in the water body is on one BQE only, namely macrophytes. The EQR was relatively close to the Good boundary and there is a low confidence that overall eutrophic confidence is Moderate or worse and there is no risk of deterioration to less than Good status for any of the eutrophic parameters in this water body. Further diatom monitoring was carried out in this water body in 2014 to improve c-in-c. It achieved good diatom status using TDI4 (EQR was 0.69 and the confidence of High/Good status is 91%).	
Recommendation	It is recommended that this water body should be further monitored, particularly in relation to macrophytes, to continue to assess trends in eutrophic water quality.	

Appendix 11: Classification of bathing waters

Annual bathing water compliance against 1976 Bathing Water Directive (76/160/EEC) standards

Bathing Water	2014	2013	2012	2011	2010
Magilligan (Benone)					
Magilligan (Downhill)					
Castlerock					
Portstewart					
Portrush (Mill) West					
Portrush (Curran) East					
Portrush (Whiterocks)					
Portballintrae (Salmon Rock)					
Ballycastle					
Waterfoot					
Carnlough **					
Ballygally					
Brown's Bay					
Helen's Bay					
Crawfordsburn					
Ballyholme					
Groomsport					
Millisle					
Ballywalter					
Tyrella					
Murlough Co. Down					
Newcastle					
Cranfield (Nicholson's)					
Cranfield Bay					

Key:

Compliance with Guideline standards
Compliance with Mandatory standards
Failure to comply with Mandatory standards
Not on Monitoring Programme

Appendix 11 Continued

Annual bathing water compliance against 2006 Bathing Water Directive (2006/7/EC) standards. Compliance is based on four years' data, except where indicated.

	2011-14	2010-13	2009-12	2008-11	2007-10
Magilligan (Benone)					
Magilligan (Downhill)					
Castlerock					
Portstewart					
Portrush (Mill) West					
Portrush (Curran) East					
Portrush (Whiterocks)					
Portballintrae					
Ballycastle					
Waterfoot					
Carnlough					
Ballygally					
Brown's Bay					
Helen's Bay					
Crawfordsburn					
Ballyholme					
Groomsport					
Millisle					
Ballywalter					
Tyrella					
Murlough Co. Down					
Newcastle	**	*			
Cranfield Bay					

** Compliance based upon data from 2013*
*** Compliance based upon data from 2013 and 2014*

Key:	
	Excellent
	Good
	Sufficient
	Poor

Appendix 12: Full Annual Classification of Shellfish Waters

Classified Shellfish Harvesting Areas – Belfast Lough

	2014	2013	2012	2011	2010
C. Fresh (AFFNI 15–B4)	B	B Provisional	B	B	B
Dougold Whitehouse (AFFNI 50-B3)	B	B Provisional	B	B	B
Dougold Carrickfergus (AFFNI 53-B20)	B	B	B	B	B
Folly Roads (AFFN I9-B14)	B	B	B	B	B
Gallagher (AFFNI 60A-B7)	B	B Provisional	B	B	B
Henning (AFFNI 37–B8)	B	B Provisional	B	B	B
Middle Bank (AFFNI 55-B1)	B	B	B	B	C
Ross' Rock (AFFNI 56A-B6)	B	B Provisional	B	B	B
Steele (AFFNI 17B-B5)	B	B Provisional	B	B	B
The Moorings (AFFNI 17A-B11)	B	B Provisional	B	B	B
Urey (AFFNI 54-B12)	B	B	B	B	B
Whitehouse Roads (AFFNI 51 B2)	B	B Provisional	B	B	B

Classified Shellfish Harvesting Areas – Strangford Lough

	2014	2013	2012	2011	2010
Skate Rock (Mussels) (AFFNI 42 – S2)	A Provisional	A Provisional	A Provisional	B	A
Marlfield Bay (Scallops) (AFFNI 43 – S23)	B	B	B	B	B
Paddy's Point (Oysters) (AFFNI 76 – S7) Reagh Bay (Oysters) (AFFNI 93 – S6)	A Provisional	A Provisional**	A*	A*	A*
Paddy's Point (Mussels) (AFFNI 76 – S7)	A Provisional	A Provisional	NIP	NIP	NIP

** Reagh Bay Only; ** Paddy's Point Only; NIP – Not in Production*

Classified Shellfish Harvesting Areas – Carlingford Lough

	2014	2013	2012	2011	2010
Ballyedmond (AFFNI 73 – C7)	A Provisional	A Provisional	A Provisional	B	B
Carriganean (AFFNI 39 – C9)	A Provisional	A Provisional	A Provisional	B	B
Fair Green (AFFNI 84 – C11)	B	B	B	B	B
Flynn (AFFNI 94 – C3)	B	B	B	B	B
Killowen (AFFNI 68 – C4)	B	B	B	B	B
Rostrevor (AFFNI 27 – C1)	B	B	B	B	B

Classified Shellfish Harvesting Areas – Lough Foyle

	2014	2013	2012	2011	2010
Production Area 3 * (Mussels)	B	B	B	B Provisional	B Provisional
Production Area 3 * (Oysters)	B	B	B	B Provisional	B Provisional
Production Area 4 ** (Mussels)	B	B	B	B Provisional	B Provisional
Production Area 4 ** (Oysters)	B	B	B	B Provisional	B Provisional

** Production Area 3 – Longfield Bank*
*** Production Area 4 – Balls Point*

Classified Shellfish Harvesting Areas – Inner Dundrum Bay

	2014	2013	2012	2011	2010
Inner North (Oysters) (AFFNI 95)	B	B	B	B	B
Inner North (Mussels) (AFFNI 95)	B Provisional	B Provisional	N/A	N/A	N/A
Inner South (Mussels) (AFFNI 95)	B (Jan)	B (Jan)	B (Jan)	B	B
	C (Dec)	B (Jun)	C (Aug)		
			Seasonal B (Dec)		

Classified Shellfish Harvesting Areas – Larne Lough

	2014	2013	2012	2011	2010	2009
Millbay Mussels (AFFNI 21A – L1)	B	B	B	B	B	B
Millbay Oysters (AFFNI 21A – L1)	A Provisional	A Provisional	B	B	B	B
Island Shellfish (AFFNI 21B – L5)	B	B	B	B	B	B
Shingle Bay (AFFNI 88 – L3)	A	A Provisional	B	B	A Provisional	A
White Quay Mussels (AFFNI	Declassified	B *	B	B	B	B
White Quay Oysters (AFFNI	Declassified	A Provisional *	B	B	B	B