Planning for third cycle River Basin Management Plan 2021 - 2027

December 2019

Consultation on Significant Water management Issues

Appendix 2: Overall water quality status interim results 2018 and pressure analysis

NIEA Northern Ireland Environment Agency
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Overall water quality status interim results and pressure analysis

2.1 Comparison of overall water body status from 2015-2018

This chapter sets out the changes in WFD status assessment between the 2015 classification and the 2018 interim classification update. In 2015, Northern Ireland published the second cycle River Basin Plans including the status for all water bodies (rivers, lakes, groundwater, transitional and coastal water bodies), the objectives that water bodies should achieve by 2021 and a Programme of Measures to achieve the objectives. In 2015, just over 37.4 % of all water bodies were at 'good' status.

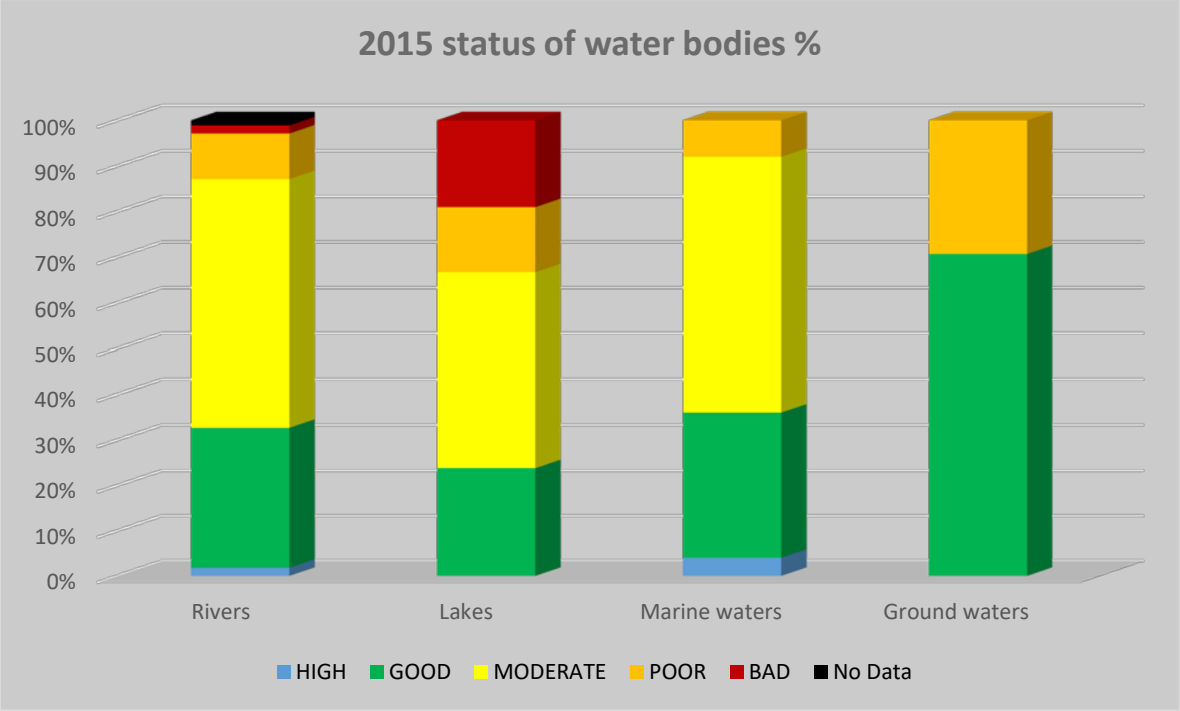


Figure 3: 2015 Status of water bodies

In 2018, an interim assessment of the status of all water bodies was carried out to determine progress towards achieving the objectives set for each of these water bodies to reach by 2021. The current interim classification update indicates there has been a slight decline from 2015 where 37.4 % of all water bodies were at 'good or better' to 36.6 % at 'good or better' in 2018.

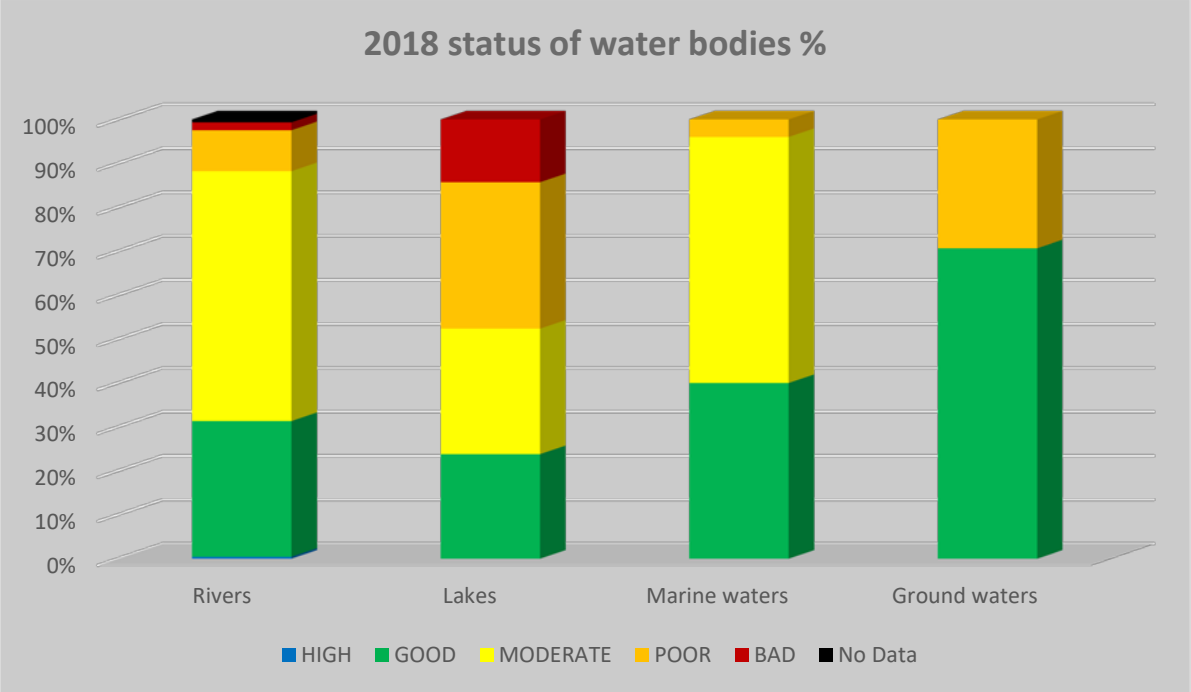


Figure 4: 2018 Status of water bodies

2.2 Are we on track to achieve the objectives set for 2021

The target for the end of the second cycle in 2021 is to have up to 70 % of Northern Ireland water bodies at 'good or better' status.

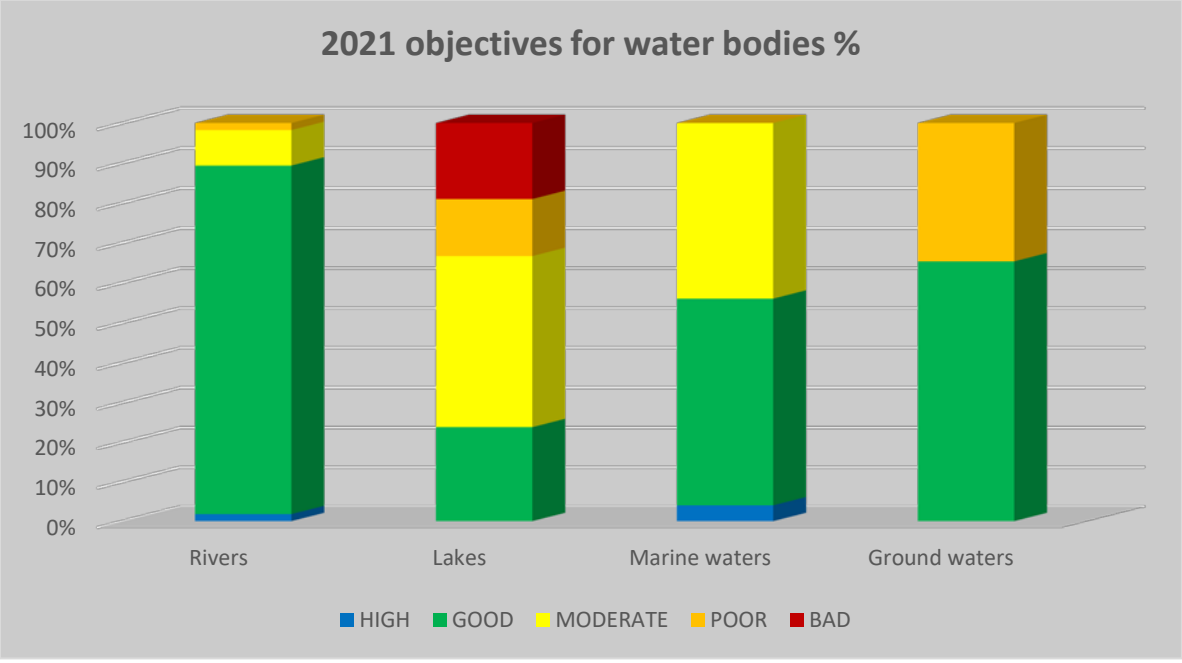


Figure 5: 2021 Objectives of water bodies

The 2018 classification update has shown a mix of results with variance both toward good status and away from good status. The changes from the 2015 status show an

almost static scenario with efforts to improve less than good water bodies offset by water bodies at good in 2015 declining. As a result, although some water bodies have improved in status, progress towards the 2021 target has been negated by deterioration in others.

2.3 Analysis of all water bodies

2.3.1 Rivers

The most notable changes have been picked up in the river water bodies. There are 450 river water bodies in total. In 2015, 32.7 % were classified as 'Good' or better and in 2018, this figure has reduced to 31.3 %. 37 river water bodies have improved in classification status but 52 river water bodies have deteriorated. 32 of those 52 water bodies deteriorated from 'good or better' to 'moderate or worse', becoming 'failing' water bodies. Further details regarding the pressures associated with these changes are presented in the next section.

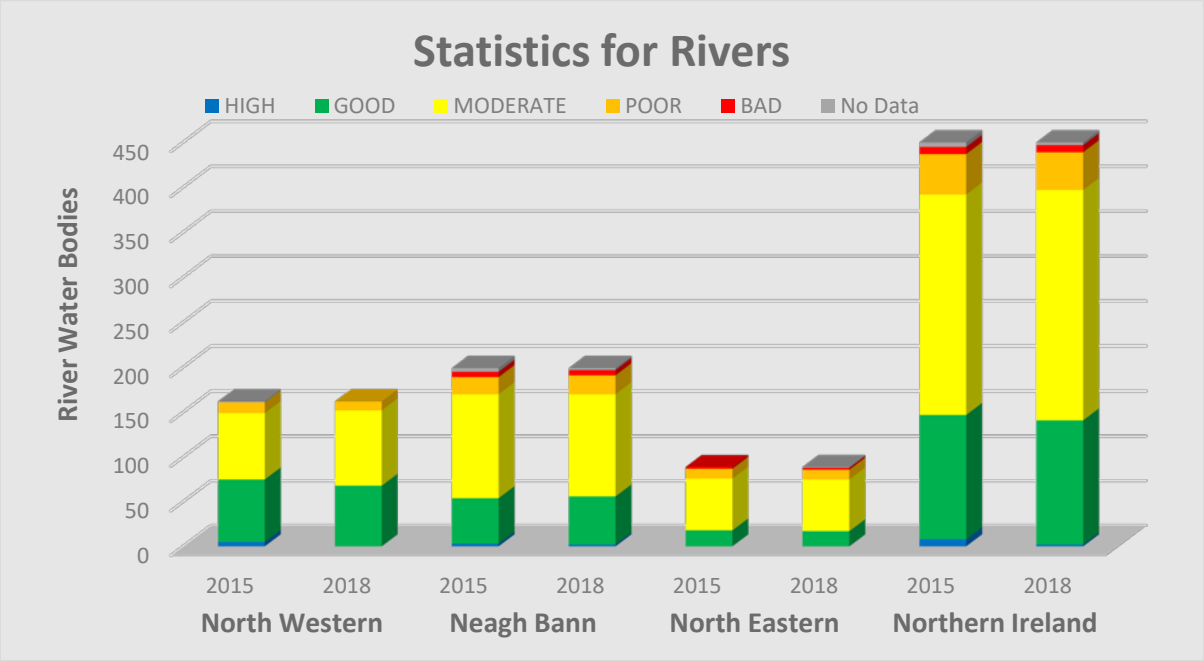


Figure 6: Statistics for rivers

In the case of 2018 status assessment for rivers, there is a degree of flux, and different parameters are showing different scales and direction of change. For example, assessments for both river invertebrates and aquatic plants have shown over 5 % improvement from 'moderate or worse' to 'good or better' in river water bodies.

In Northern Ireland WFD river water body status is assessed using up to 40 different

assessments, covering water chemistry, (including nutrients, oxygen levels, acidity, metals, pesticides, flame retardants, etc.), biology (including plants, diatoms, invertebrates and fish), physical habitat assessments and physical conditions. Assessments for 2018 are based on more comprehensive monitoring: overall 4106 assessments were made for the 2015 classification for rivers, increasing to 4425 for 2018. The percentage of individual criteria assessments at 'good' status has improved marginally from 81.3 % for 2015 to 82.0 % for 2018, however the WFD operates on the basis of one-out-all-out, and so overall status is determined by the lowest ranked assessment in the category.

	WFD 2015	**WFD 2018**
Total number of tests	4106	4425
Number of tests at high or good	3339	3629
% at good or better	81.3	82

Table 1: Assessments carried out in 2018 compared to 2015

The 2nd cycle RBMPs set out 136 existing and new measures to improve water status with the aim of achieving up to 70 % of water bodies at good status by 2021. The river water bodies where only one assessment out of over 40 assessments had failed, were the main target for catchment investigation. On the basis of this approach, with the aim of improving this single failing element, an interim target of achieving 43 % of river water bodies at good status by 2018 was set.

What is causing the deterioration in rivers?

Due to the broad range of assessments, which reflect different pressures, it is rare that one single factor will dominate. However, when we look at the individual quality elements monitored in the 450 river water bodies in 2015, compared to 2018, the biggest change observed was due to deterioration caused by increases in levels of soluble reactive phosphorus, with 7.8 % of river water bodies moving from 'good or better' to 'moderate or worse'.

Figure 7 below highlights the percentage change for the individual quality elements at Good or Better between 2015 and 2018 for the 450 river water bodies. The quality elements which have improved are in green and those which have deteriorated are in red. Overall, 7.3 % of rivers water bodies improved for Dissolved Oxygen, 6 % for pH, 5.8 % for macrophytes, 5.3 % for invertebrates and

4.6 % for ammonia. The individual quality elements that deteriorated for the 450 river water bodies are: 0.4 % (of the 450 water bodies) due to fish, 1.1 % due to diatoms, 1.5 % due to morphology and 7.8 % due to soluble reactive phosphorus (SRP). More detail on assessment of deterioration in rivers can be found in the supporting document on the website[1].

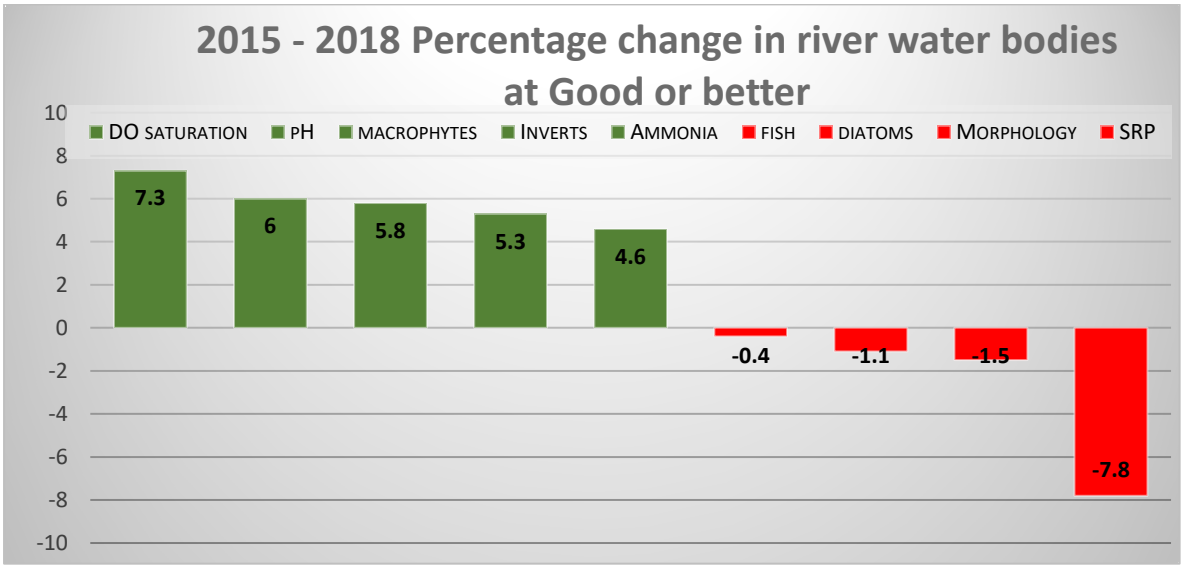


Figure 7: Percentage change in river water bodies at good or better status (2015-2018)

SRP is a plant nutrient which can lead to rapid growth of algae and other plants in rivers. The impact on the type and abundance of plant species can negatively impact on other aspects of water quality (e.g. oxygen levels) and the characteristics of river habitats. These changes can cause undesirable disturbances to populations of water animals, such as invertebrates and fish. The level of SRP in rivers has been identified as a key indicator under Northern Ireland's Programme for Government, and eutrophication of rivers and lakes is the most significant reason for poor water quality in freshwaters.

In addition to the decline in classification from 'good or better' to 'moderate or worse' in 7.8 % of the rivers, increases in levels of SRP have resulted in 22 % of rivers dropping at least one class for SRP. This decline has not resulted in an overall classification decline due to the other parameters already being at the lower classification status.

Change in SRP status from 2015 to 2018	No. of river water bodies (450 in total)

[1] https://www.daera-ni.gov.uk/articles/significant-water-management-issues-2019

Deteriorated in SRP from High to Good	47
Deteriorated in SRP from Good to Moderate	44
Deteriorated in SRP from High to Moderate	2
Deteriorated in SRP from Moderate to Poor	7
Total SRP deteriorations from 2015 to 2018	**100 (22 %)**

Table 2: Change in SRP status from 2015 to 2018

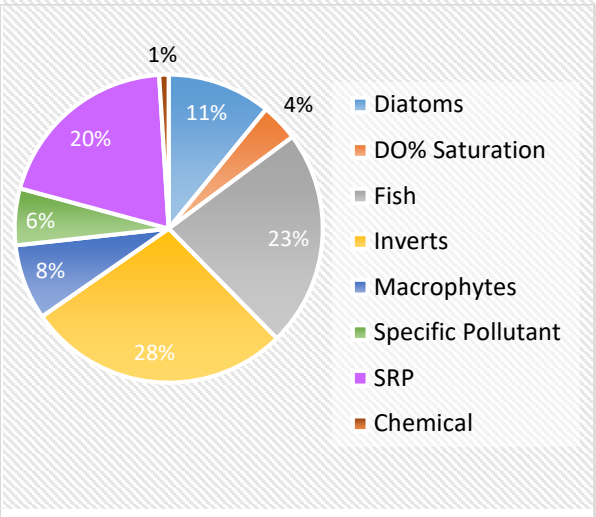
In contrast only 5 water bodies have shown an improvement in SRP, which represents just over 1 %.

Change in SRP status from 2015 to 2018	**No. of river water bodies (450 in total)**
Improved in SRP from Good to High	1
Improved in SRP Moderate to Good	3
Improved in SRP from Poor to Good	1
Total SRP improvements from 2015 to 2018	**5 (1 %)**

Table 3: Change in SRP status from 2015 to 2018

There has also been a significant increase in the number of river water bodies failing for phosphorus as a Single Failing Element (SFE) in 2018. This is shown in the charts below where a comparison is made between the Single Failing Elements in 2015 and in 2018. In 2015, 23 river water bodies failed on SRP alone out of 118 SFE water bodies. In 2018, 43 river water bodies failed for SRP alone out of 107 SFE water bodies.

Only one element failed in 118 out of 450 river water bodies in 2015.
The failure reasons are:



Only one element failed in 107 out of 450 river water bodies in 2018.
The failure reasons are:

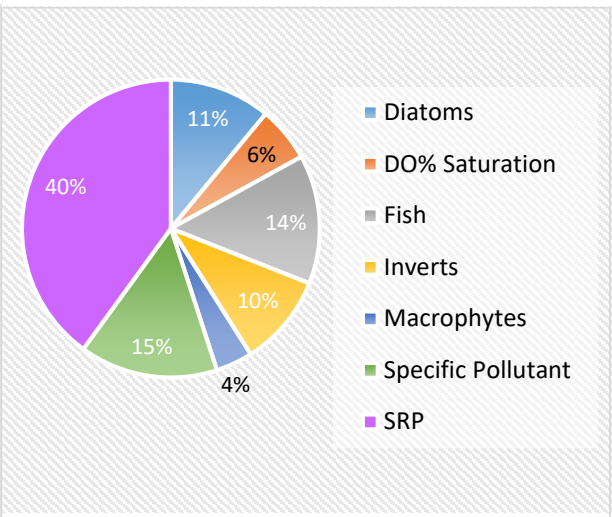


Figure 8: Single failing elements (2015 & 2018)

2.3.2 Lakes

There are 21 lakes in total. The table below compares the 2015 and 2018 classification:

Lake status class	2015	2018
Good	5	5
Moderate	9	6
Poor	3	7
Bad	4	3

Table 4: Lake status in 2015 and 2018

In 2018 Lough Neagh improved from 'bad' to 'poor' and Lower Lough Erne, Upper Lough Erne and Upper Lough MacNean deteriorated from moderate to poor. Although the classification for Lough Neagh showed an improvement from 'bad' to 'poor', the status changes are due to fluctuations around the poor/bad boundary therefore confidence in an actual improvement is low.

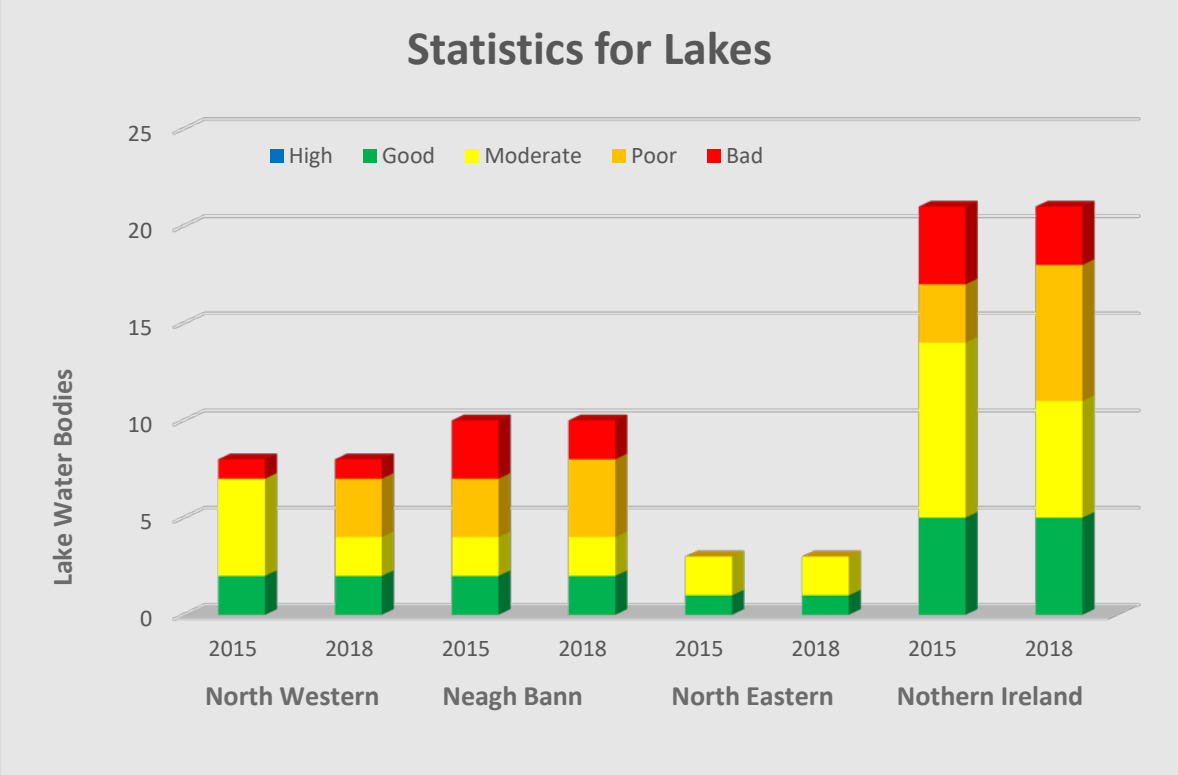


Figure 9: Statistics for lakes

A risk assessment was carried out looking at underlying trends and 2018 status to determine the risk of each lake water body not meeting the objective set for 2021.

More detail on the risk of surveillance lakes not meeting their objectives can be found in the supporting documents on the website[2].

The table below shows the number of water bodies at risk of not meeting the 2021 objectives.

All of Northern Ireland	Risk Category	Number of lakes
Total number of lakes		21
Risk of not meeting 2021 objectives	Not at risk	7
	May be at risk	3
	At risk	11

Table 5: lakes at risk of not meeting the 2021 objectives

Overall, 7 lakes were assessed as ‘not at risk’, 3 were assessed as ‘may be at risk’ and 11 lakes were assessed as ‘at risk’ of not meeting their 2021 objectives. Overall only 5 lakes have a prediction of ‘good’ status identified for 2021 based on 2018 classifications. The remaining 16 are not expected to reach ‘Good’ status in this timeframe.

Ecological recovery time can be much longer in lakes in comparison to rivers due to the internal loading of phosphorus. This is due to the release of phosphorus from the sediments of lakes which has built up historically when nutrient inputs were higher than that required for the biology of the lake. Under the correct conditions, the sediments can release substantial pulses of phosphorus to the water for use by plants and animals. This is one of the reasons why lakes do not respond as quickly or noticeably to nutrient reduction programmes or lake restoration works as other habitats.

A study is currently being carried out by Agri-Food and Biosciences Institute (AFBI) looking at the quantification of phosphorus release from sediments in Lough Neagh and factors affecting the recovery of water quality.

In previous reports, NIEA have reported overall status for surface waters as shown above. Going forward, statistics will be available to report Ecological Status and Chemical Status separately, as defined by the Directive. More detail can be found in

[2] https://www.daera-ni.gov.uk/articles/significant-water-management-issues-2019

supporting documents on the website[3].

2.3.3 Groundwater

In 2015, NIEA assessed groundwater quality and quantity status. Groundwater body status has only two classifications: good and poor. 68 % of groundwater bodies are classified as good.

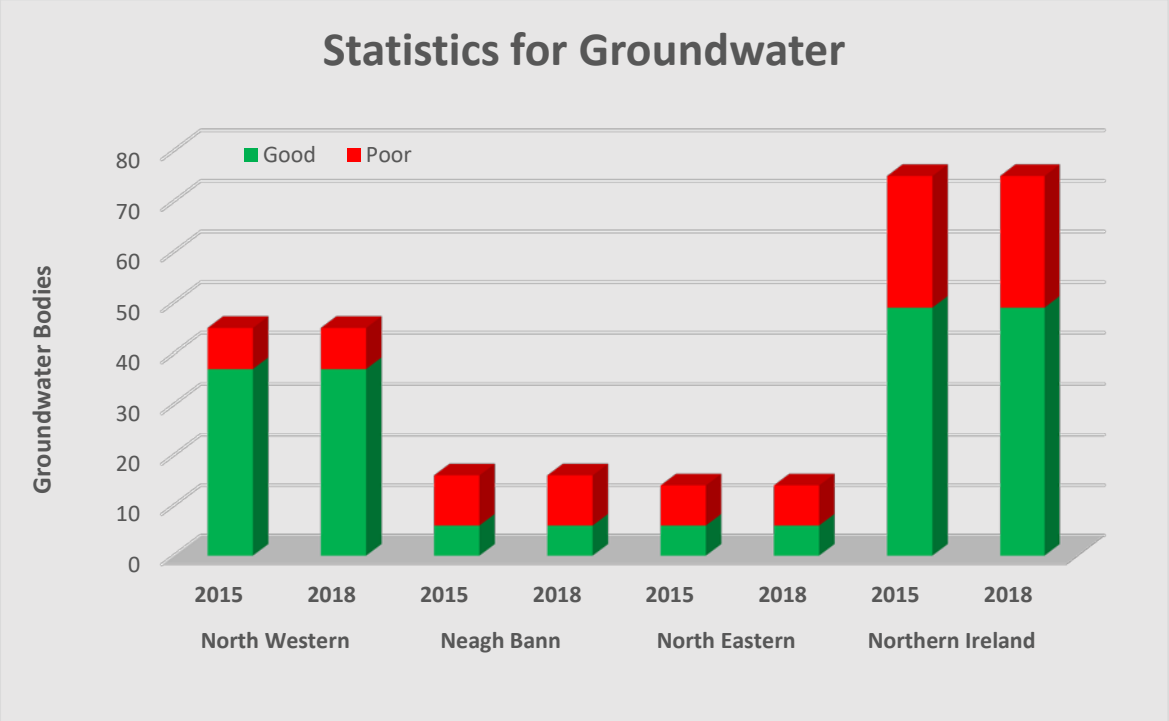


Figure 10: Statistics for groundwater

Flow and transport processes (of dissolved substances) are a lot slower in groundwater than in surface water. As a result the status of groundwater changes at a slower speed and sampling frequencies are lower in comparison to surface water. Due to the lower sampling frequencies no interim classification was carried out in 2018, as only a limited dataset was available at that point in time. From a catchment perspective nutrients are the significant issues in Northern Ireland's water bodies. Groundwater risk assessments have therefore concentrated on assessing potential impacts from nitrate and orthophosphate as well as single element failures that caused poor groundwater body status in the 2015 classification.

To assess the risk, groundwater monitoring data (averages from 2012-2017) have been compared against respective screening and threshold values, as well as compared against historical averages (note the screening and threshold values for orthophosphate are both interim values). For Nitrate and Orthophosphate data from

2008-2011 was used to assess a deterioration or an improvement. For single element failures values derived from the 2015 classification were used to assess a deterioration or an improvement.

For nitrate all monitored groundwater bodies were below their respective screening (25mg NO_3/l) and threshold (37.5mg NO_3/l) values, which means that none of the groundwater bodies are at risk of being at poor status for nitrates. Overall the average nitrate concentrations decreased in 13 (i.e. improvement in water quality) and increased in 11 groundwater bodies (i.e. deterioration in water quality).

For orthophosphate 2 of the monitored groundwater bodies were above their respective interim screening value (0.03mg/l), but all groundwater bodies were below their respective interim threshold value (5mg/l), which means that none of the groundwater bodies are at risk of being at poor status for orthophosphate. Overall the average orthophosphate concentrations decreased in 11 groundwater bodies (i.e. improvement in water quality) and increased in 13 groundwater bodies (i.e. deterioration in water quality).

All groundwater bodies except one, the Faughan groundwater body, are expected to meet their 2021 objectives. The Faughan groundwater body is a superficial groundwater body which was at good status in the last WFD reporting cycle but expected to be at poor status in 2021 due to the impact of a significant point source pressure. Groundwater chemical classification tests were applied to this water body to assess if it has deteriorated (i.e. from good to poor). It is predicted that in the 2021 reporting cycle this water body previously classified as good status will be downgraded to poor status.

The significant water management issues for groundwater are pollution from diffuse and point sources as well as an increase in chloride concentration in the coastal groundwater body Coleraine-Kilrea suggesting saline intrusion.

2.3.4 Transitional and coastal water bodies

There are 25 transitional and coastal water bodies in total. The table below compares the 2015 and 2018 classification.

Transitional & Coastal Status class	2015	2018
High	1	0
Good	8	10
Moderate	14	14
Poor	2	1
Bad	0	0

Table 6: Transitional & Coastal Water body status 2015 & 2018

Overall, 2 water bodies deteriorated, one from 'high' to 'good' and one from 'good' to 'moderate'. 3 water bodies improved, two from 'moderate' to 'good' and the other from 'poor' to 'moderate'.

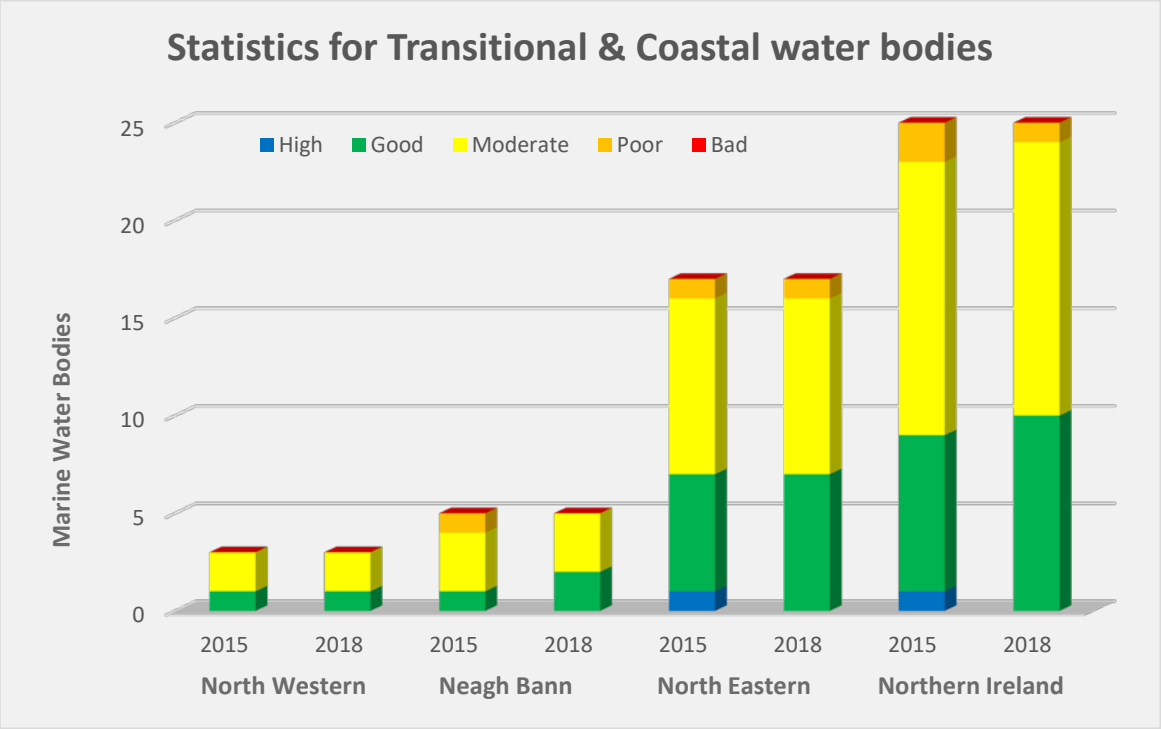


Figure 11: Statistics for transitional and coastal water bodies

There has been a decline in the number of 'high' status marine water bodies from one in 2015 to zero in 2018 and this reflects the development of more comprehensive monitoring data and a better understanding of the marine plant communities in the interim period. In particular, there is now a better assessment of the role of Non-Native Invasive Species (NNIS), for example, *Sargassum muticum*, an opportunistic green algal species impacting the resident macroalgal communities. *Sargassum muticum* has caused one of the high status marine water bodies to decline to good status since the WFD 1st Cycle commenced in 2009. In contrast

however, there has been a small increase in the number of water bodies at 'good status'. 40 % of all marine water bodies were at 'good status' in 2018. Similarly, there has been a slight decrease in the number of water bodies at poor status accounting for 4 % of marine water bodies.

The reasons for failure to achieve good status in marine surface waters are complex and it is rare that one single assessed parameter is responsible. For example, nutrients (Dissolved Inorganic Nitrogen, (DIN)) continue to drive the failures in transitional and coastal sea loughs and account for 32% of water body failures overall. A range of chemical parameters prevent approximately half of all marine waters achieving good status due to persistent contribution.

Reasons for Water body Failure 2015-2018		
	2015	**2018**
Actual No of Failing Water bodies (25 in total)	18	16
% of water bodies with single failing quality elements	20	20
% of failing water bodies with multiple failing quality elements	52	44
% of failing water bodies with DIN failures	32	32
% of failing water bodies with Annex VIII and/or X failures	52	52

Table 7: Reasons for transitional & Coastal water bodies not at 'good or better'

Trend analysis and risk assessment for transitional & coastal water bodies

In the case of Winter DIN, 67 % of Northern Ireland's water bodies were good or better in terms of their nutrient (DIN) status. All water bodies that were classified at good or better status were coastal water bodies with only three systems (Belfast Lough Inner, Belfast Harbour, and Carlingford Lough) being classified as less than good status. Those that failed to achieve good status were all inshore waters, either sea loughs or estuaries (transitional waters).

DIN is one of the most important elements in determining the status of our coastal and transitional waters. There are a number of sources of nutrient enrichment of rivers and marine waters, such as wastewater and septic tanks, but the most significant cause remains the run-off of organic and chemical fertilisers from agricultural land.

2.3.5 Summary of 2018 interim results and progress towards meeting 2021 objectives

As discussed, the most notable changes have been observed in the river water bodies. There are 450 river water bodies monitored in total and since 2015, 37 river water bodies have improved in classification status but 52 river water bodies have deteriorated. There are 21 lakes in total and since 2015, 3 lakes have deteriorated a class and 1 lake has improved a class. There are 25 transitional and coastal water bodies and since 2015, 1 water body has deteriorated and 2 water bodies have improved. There are 74 groundwater sites in total, 51 sites were reported at 'Good' status in 2015 and as the sampling frequencies are lower in comparison to surface water, an interim update is not available for groundwater bodies. In the water environment across Northern Ireland, the results of our most up to date 2018 Cycle 2 Interim Classification Data [3] show that 31 % of river water bodies, 24 % of lakes, 68 % of groundwater bodies and 40 % of transitional & coastal water bodies are currently at good status.

One of the key objectives of the WFD is 'no deterioration' and deterioration is evident across all 4 water body types but most evident in the river water bodies. Change in status in the rivers is expected to be picked up more quickly than any of the other water bodies monitored due to the flow and transport process of dissolved substances being slower to lakes, transitional & coastal and groundwater.

2.4 Additional evidence of an upward trend in nutrients levels causing a deterioration in water quality.

The WFD status assessment between 2015 and 2018 classification uses an average of the data collected in 2015, 2016 & 2017. These assessments will not be repeated again until 2021, however, more recent evidence demonstrates the sustained upward trend in nutrients, both nitrate and phosphorus in freshwaters.

As reported in the 2018 Derogation report[4] the fact that nitrate levels have shown an increase adds to the weight of evidence for deterioration in water quality, as already indicated by increasing levels of phosphorus. In the Article 10 report for 2016, less than 2 % of sites showed an increase in nitrate between the reporting periods (2008-

[3] The WFD 2018 classification includes monitoring data up to the end of 2017). Final classification, using data up to the end of 2020 and covering the complete RBMP2 period will be used in the final plans in 2021.
[4] https://www.daera-ni.gov.uk/articles/nitrates-directive

2011 to 2012-2015). In 2018, 30.8 % of river sites showed an increase in nitrate compared to the baseline year of (2012-2015).

With the additional data analysed in 2018, lakes have also shown deterioration based on Total Phosphorus (TP) concentrations with 20 of the 21 classed as 'Moderate or worse' status using most recent evidence, when previously there were 12. In the 2018 Derogation Report, both the assessments using Nitrates Directive and WFD criteria show deterioration as indicated by the percentage of river and lake sites that are exhibiting increasing nitrate and SRP levels. This adds to the evidence of the sustained upward trend exhibited in the SRP Water Quality indicator in the draft Programme for Government (PfG), which suggests that agricultural activities remain a significant and increasing pressure on water quality.

A key performance target of the NIEA business plan is to secure a 5 % decrease in SRP against the 2017 average in order to support the PfG Outcome 2 indicator (improve water quality) and the 2021 EU WFD water quality status target.

Soluble Reactive Phosphorus in rivers

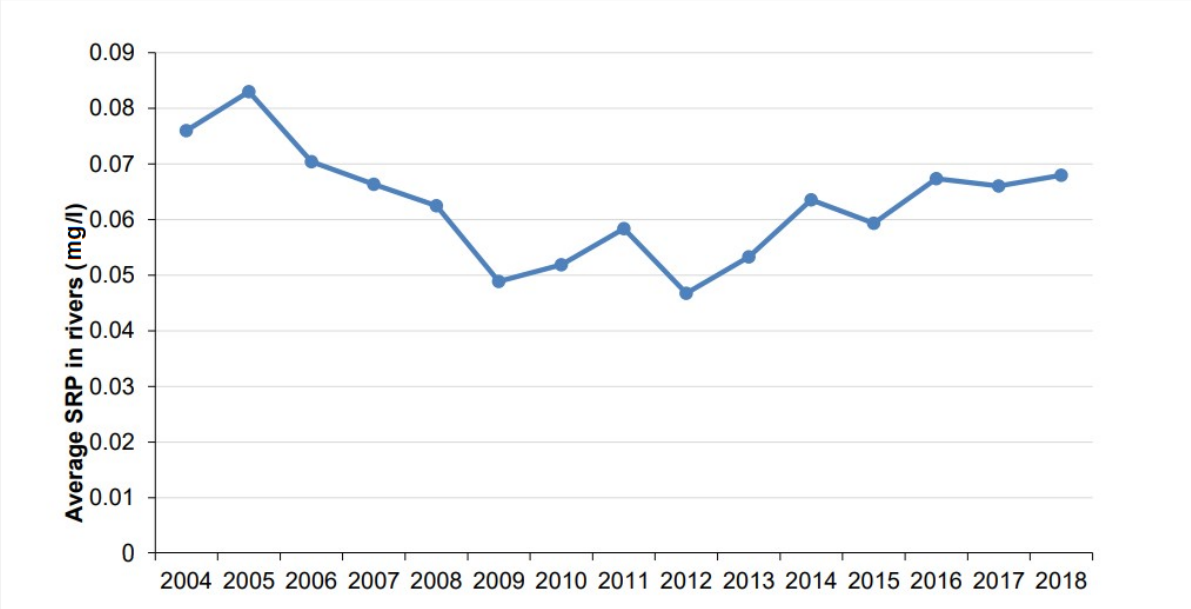


Figure 12: Soluble Reactive Phosphorus in rivers (NI Environmental Statistics Report 2019[5])

In recent years, levels of SRP in the 93 surveillance rivers have increased and there are signs of a sustained upward trend since the low of 0.047mg/l reported in 2012. In

[5] https://www.daera-ni.gov.uk/sites/default/files/publications/daera/ni-environmental-statistics-report-2019.pdf

2018 the average concentration was 0.068mg/l. SRP in river water is considered unchanged since the baseline year of 2015 for PfG reporting purposes but an increasing trend is evident.

Trends in coastal and transitional water bodies

DIN is also an indicator in the draft PfG framework. DIN, which consists of nitrate, nitrite and ammonia is an important indicator of marine nutrient status, as nitrogen is the most important nutrient in limiting marine algal growth. The criteria used to report change for this indicator is +/- 3µM against the baseline year value in 2015, when the level of winter DIN was 26.45µM. A decrease, compared to the baseline year, of greater than 3µM is considered a positive change whilst an increase in concentration of greater than 3 µM is considered a negative change. A value between 23.45µM and 29.45µM is considered as no change.

Average DIN in Marine waters from 2012 - 2018

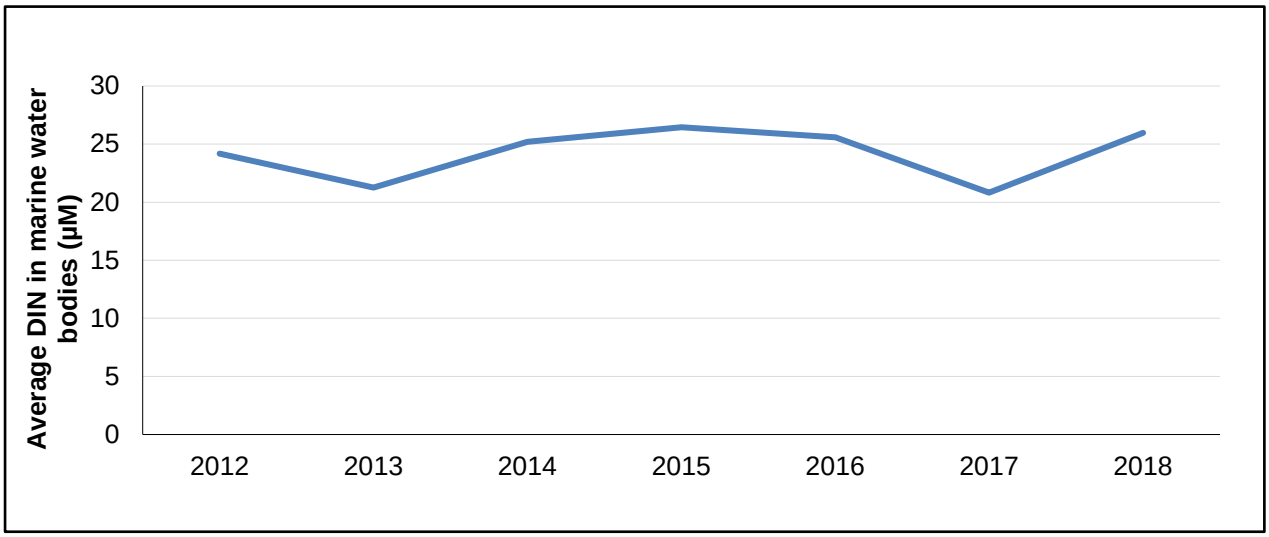


Figure 13: Average dissolved inorganic nitrogen in marine waters (2012-2018)

In Northern Ireland levels of winter DIN have been monitored consistently at 24 marine water bodies since 2012. The levels of winter DIN remained relatively stable between 2012 and 2016. In 2017, winter DIN fell to a low of 20.82µM. This was a 5.6µM decrease on 2015 levels and therefore a positive change since the baseline year for PfG reporting. In 2018, winter DIN increased again to 25.96µM which remains within the bandwidth of no change compared to the 2015 baseline.

2.5 Difficulties encountered in the implementation of the 2nd cycle plans

The responsibility for implementing Northern Ireland's measures falls to a number of Agencies and their Departments. This includes NIEA (Water Management Unit, Regulation Unit and Natural Environment Division); DAERA Marine & Fisheries Division; DAERA Environment, Marine and Fisheries Group Policy; Food & Farming Group, and Forest Service; DfI Water, Rivers and Roads, and NIW. Active engagement between delivery partners and stakeholders is key for the successful delivery of measures through partnerships and catchment projects.

87 % of the 136 national Key Target Measures (KTMs) identified in 2015 plans are now achieved or on track to be achieved. A further 10 % are making slow progress and hence progress is not reflected in 2018 water status figures. Many KTMs which are progressing or are on track to be achieved by 2021 have been delayed in their implementation since 2016. The delay was related to uncertainties regarding funding following the EU referendum and moves towards EU Exit. Examples include the slower progress on the Regulatory Transformation Programme and the delayed starts of INTERREG projects (e.g. CatchmentCARE) and agri-environment schemes. Due to the uncertainties the initiation of projects, implementation of regulations and guidance are now several years behind initial scheduling hopes. The bulk of positive impacts on water quality resulting from the KTMs will occur toward the end of this current cycle, or beyond 2021.

Pressure and Impact analysis

3.1 Pressure and impacts analysis – River Water Bodies

As part of the development of RBMPs, an analysis of anthropogenic pressures is required, in order to assess their potential to give rise to impacts in the water environment. These impacts will be evident through the status assessments presented in the previous section.

This analysis takes into account the **presence** of pressures, such as a particular type of land use (intensive agriculture, forestry etc.) or the location of a facility (WWTWs, Industrial site etc.). It may also take into account the potential risk, for example, the scale and intensity of the activity, or a measure of its compliance with environmental regulations. As more data on pressures, and their impacts becomes available, the analysis is refined.

Pressures may be present in water bodies without giving rise to impacts, due to regulatory controls or mitigation. However, in the context of RBMPs there is a particular need to identify pressures in failing water bodies, in order for appropriate measures to be put in place to protect and improve their status. Evidence provided through monitoring and local knowledge will assist in identifying potential pressures leading to water body failures. However, in some cases the pressure is unknown or further work is required to confirm a potential pressure identified. In such cases further investigations will be initiated at a local level.

As already discussed in the section 2.3.5 changes in status in the rivers are expected to be picked up more quickly and we have therefore concentrated on a pressure analysis for river water bodies. The 2018 interim classification update identified that 306 out of the 450 monitored river water bodies were at less than good status. The regional breakdown is shown in Table 8 below.

	Number of River Water Bodies	Number of River Water Bodies Less than Good in 2018	% River Water Bodies Less than Good in 2018
Northern Ireland	450	306	69
North Western RBD	162	94	58
Neagh Bann RBD	199	141	71
North Eastern RBD	89	71	80

Table 8: River Water bodies at less than good status

Using the monitoring data used to classify the rivers for the 2018 classification in conjunction with pressure data as outlined above it is possible to identify river water bodies as potentially impacted by predetermined pressures. Figures 14-17 show this allocation for both Northern Ireland and a breakdown by the 3 River Basin Districts. It should be noted that a water body can be allocated to more than one pressure.

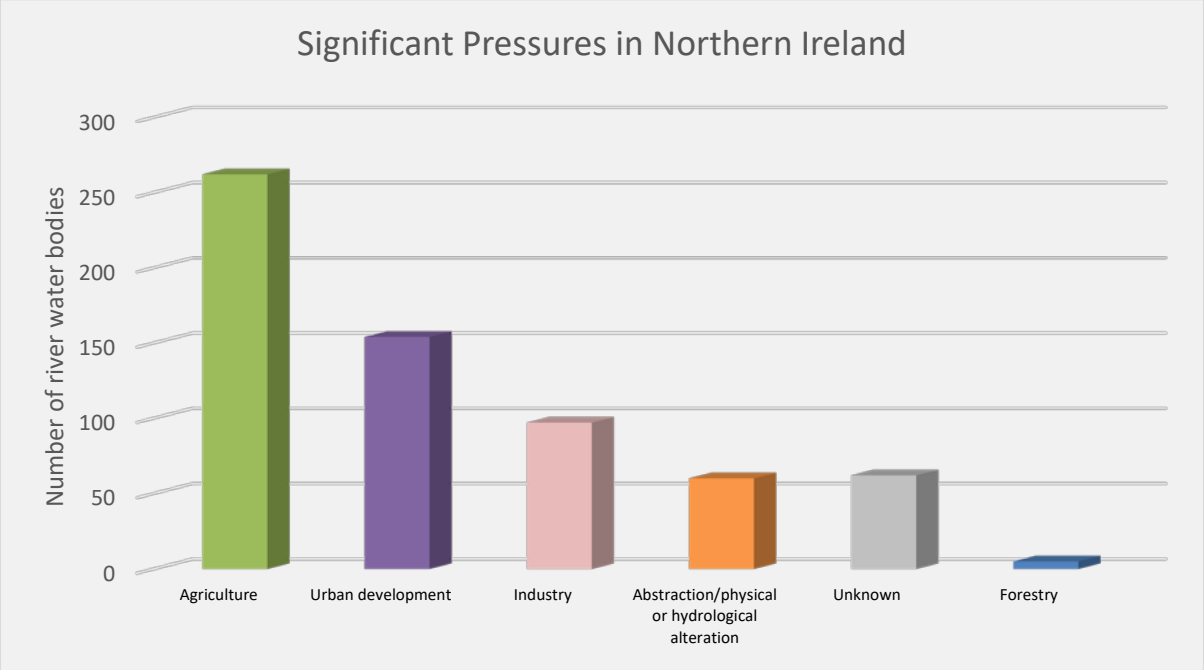


Figure 14: Number of river water bodies allocated to each pressure for Northern Ireland 2018

The 2018 pressure analysis shows Northern Ireland's river water bodies recorded as under pressure from agricultural, industrial and urban development pressures.

Agricultural pressures impacted on 262 river water bodies in 2018. This recorded agricultural pressures has two origins. The first being the inclusion of agricultural

Integrated Pollution Prevention & Control (IPPC) regulated sites being counted under agricultural pressure. Agricultural IPPC sites include intensive units for Pigs and Poultry[6]. The second cause is monitoring results indicating an agriculture impact on water quality in water bodies which have deteriorated below “good” status. Urban development has shown pressure in 154 water bodies due to Waste Water Treatment Works (WWTWs) failures, WWTWs being at or near capacity or the waste water network being at or near capacity within a water body area. Industry has also pressures in 2018 due to increased industrial consenting and recorded consent breaches. Physical or hydrological pressures have been identified in an additional 5 river water bodies and unknown pressures are impacting an additional 6 river water bodies.

Of particular note is for the 32 water bodies that have dropped to below good status between 2015 and 2018, the main pressure driving this change was agriculture which monitoring results indicated was associated with 78 % of new failures.

The results of the pressure analysis identified WWTWs, industry and agriculture as the leading pressures on river water quality. Financial constraints on Northern Ireland’s waste water treatment network for investment is well documented. Industrial sector growth and changes in data recording have contributed to the industrial pressure increase. Agricultural pressure increases are a mix of not only pressure recording but impact identification through monitoring results. Comprehensive information and analysis on agricultural practices or specific land use changes which have directly contributed to an impact is not complete for this report. Analysis remains ongoing and will be used as evidence to develop and target actions in Draft 3rd Cycle RBMPs.

3.2 Significant Pressures in the North Western River Basin District

The North Western River Basin District (NWRBD) covers an area of around 4900 km^2. It takes in large parts of Counties Fermanagh, Londonderry and Tyrone. There are 162 river water bodies in the NWRBD, 94 are currently failing to meet ‘good ecological status’.

[6] The livestock thresholds for PPC are capacity for: >40,000 poultry; or >2,000 production pigs above 30kg; or >750 sows.

The principle river systems are the Foyle (with its tributaries the Mourne, Derg, Strule and Finn Rivers) and the River Erne which drains the uplands of Cavan, Fermanagh and Monaghan. Lough Foyle is the main coastal water and Upper and Lower Lough Erne, Lough Melvin and Lough MacNean the main lakes.

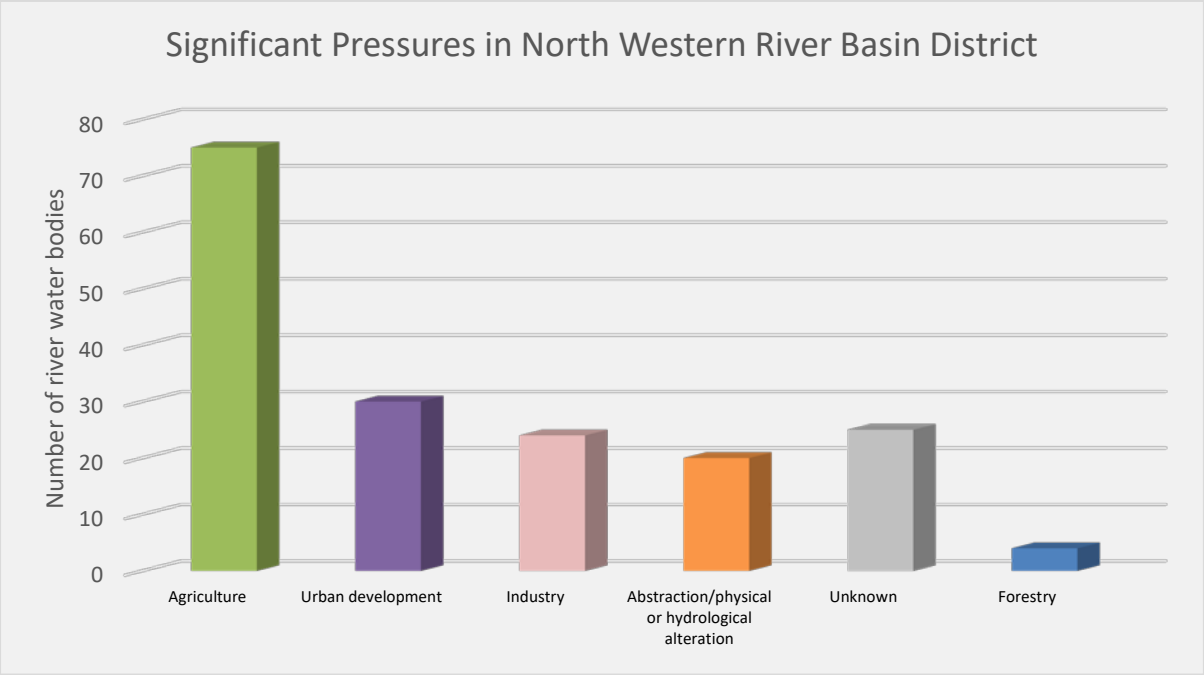


Figure 15: Number of river water bodies allocated to each pressure within the NWRBD 2018

The pressure analysis in the NWRBD has identified agriculture as the most significant pressure, followed by pressure from urban development and industry. The 'unknown' pressure will require further investigation in the next cycle RBMP.

3.3 Significant Pressures in the Neagh Bann River Basin District

The Neagh Bann River Basin District (NBRBD) covers an area of around 5740 km^2. It includes all of County Armagh, large parts of Counties Antrim, Londonderry, Down and Tyrone and a small area County Fermanagh. There are 199 river water bodies in the NBRBD, 141 are currently not meeting 'good ecological status'.

The principle river system is the Bann, with its tributaries the Moyola, Ballinderry, Blackwater, Six Mile Water and Main. The Newry river system drains into Carlingford Lough. Lough Neagh, located in the centre of the district is the main lake, with other smaller ones include Lough Fea, Portmore, Ross and Beg. This district has a limited coastline to the north where the River Bann enters the Atlantic and to the south where the Newry system enters Carlingford Lough.

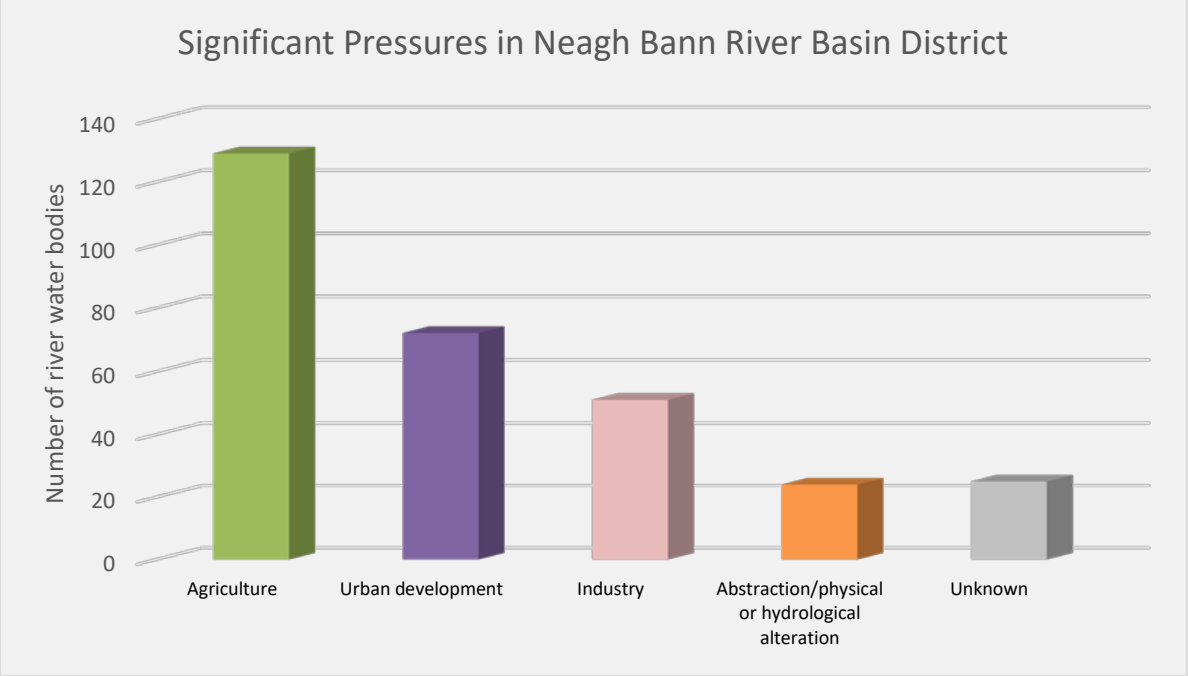


Figure 16: Number of river water bodies allocated to each pressure with the NBRBD in 2018

The pressure analysis in the NBRBD has identified agriculture as the most significant pressure, followed by pressure from urban development, abstraction or physical alteration and also 'unknown', which will require further investigation.

3.4 Significant Pressures in the North Eastern River Basin District

The North Eastern River Basin District (NERBD) covers an area of around 4000 km^2, including 1000 km^2 of marine waters. It takes in large parts of Counties Antrim and Down and a smaller portion of Londonderry. There are 89 river water bodies in the NERBD, 71 are currently not meeting 'good ecological status'.

The principle river systems are the Lagan, Bush and Quoile as well as the smaller systems draining from the Glens of Antrim, and the County Down Coastline. The NERBD has an extensive coastline including Larne, Belfast and Strangford Loughs, with Lough Mourne, Clea Lakes and Silent Valley the main lakes.