

Northern Ireland

Water Framework Directive

Statistics Report

December 2014



An Agency within the Department of the
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Assessing the state of our water environment – Northern Ireland Statistics

Statistics on the state of the water environment are published annually in the Northern Ireland Environmental Statistics Report. The latest update was published in March 2014, using data sets up to the end of 2012. In order to inform the development of Second Cycle River Basin Management plans under the Water Framework Directive (WFD), these statistics have been updated using latest available data to the end of 2013. The figures in this document therefore represent an update to those published as Official Statistics in March 2014.

In addition, further data are presented for Northern Ireland on groundwater status, and indicative classifications using proposed new water body datasets and new standards. These will be further refined and updated before the final data sets are published in final River Basin Management Plans in 2015.

Our understanding of the state of Northern Ireland's water environment has developed as we have adapted to the requirements of the WFD. When assessing water quality, we consider both ecological and chemical quality, as well as the pressures that can affect them. The ecological and chemical classification results for surface waters are combined to give an overall status in one of five classes: bad; poor; moderate; good; and high. Groundwater bodies are assigned to either good or poor status, for chemical quality and water quantity.

Classification of water bodies helps us in planning what measures might be required for improvements; it will eventually show how our actions have benefitted our environment.

Proposed new Surface water body sets

Water bodies are the basic management units for reporting and assessing compliance with the Directive's environmental objectives. For the first river basin plan in 2009 size thresholds taken from the Directive were used to delineate 623 surface water bodies (rivers, lakes, transitional and coastal). During the first cycle we have been able to improve on our water body sets through better understanding of catchment characteristics and increased local knowledge. This has resulted in changes to the number of water bodies within the Northern Ireland. This is a refinement of the reporting and management units, but the total area covered by the Plan is not affected.

For the second cycle there will be 497 surface water bodies in Northern Ireland, including 450 rivers, 21 lakes, and 26 transitional and coastal waters.

Proposed new Groundwater body sets

For the first Plan hydrogeological characteristics were used to delineate 67 groundwater bodies. Improvements and advances in technology have produced more detailed geological digital mapping. This has been used to re-delineate some of the bedrock groundwater bodies and also to identify superficial deposits (for example sand and gravels) that can form superficial aquifers and are known to support human use or ecosystems. These superficial aquifers rest on top of bedrock that make up our bedrock groundwater bodies. For the second Plan we propose to re-delineate some bedrock groundwater bodies and delineate

new superficial groundwater bodies where they are known to support human use or ecosystems. The superficial groundwater bodies are delineated in addition to the bedrock water bodies for better management of our groundwater resource.

In the second cycle there will be 75 groundwater bodies (66 bedrock and 9 superficial) within Northern Ireland.

Proposed changes to classifying the state of our water bodies

The classification tools and standards that will be used for WFD classification from 2015 have changed during the first river basin cycle. 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. So 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.

The UK WFD Technical Advisory Group 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. 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. The changes and how they have been used is set out in table 1 at the end of this document. The final regulations will be published early in 2015. An overview of the main changes is listed below.

Ecological assessment methods

New and revised ecological assessment methods and associated standards will be adopted. 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. The new methods will provide the most comprehensive understanding yet of the ecological impact of nutrient pollution.

Water quality standards

New or revised water quality standards for a wide range of toxic pollutants in surface waters and groundwater, for phosphorus, for oxygen conditions and for acidity in rivers will be adopted. The standards incorporate the latest understanding of the ecological risk posed by the pollutants and include, for example, standards for a number of metals that, for the first time, take account of local environmental characteristics that affect how much of the metal is bound up and so unavailable to cause toxic effects.

River flow and lake level standards

Revised standards for river flows and water levels in freshwater lakes will be introduced. The research and work carried out by UKTAG identified that, in particular circumstances, the existing standards may overestimate ecological risk. The proposed standards are designed to remedy this.

Current State of our water bodies: the 2014 classification process

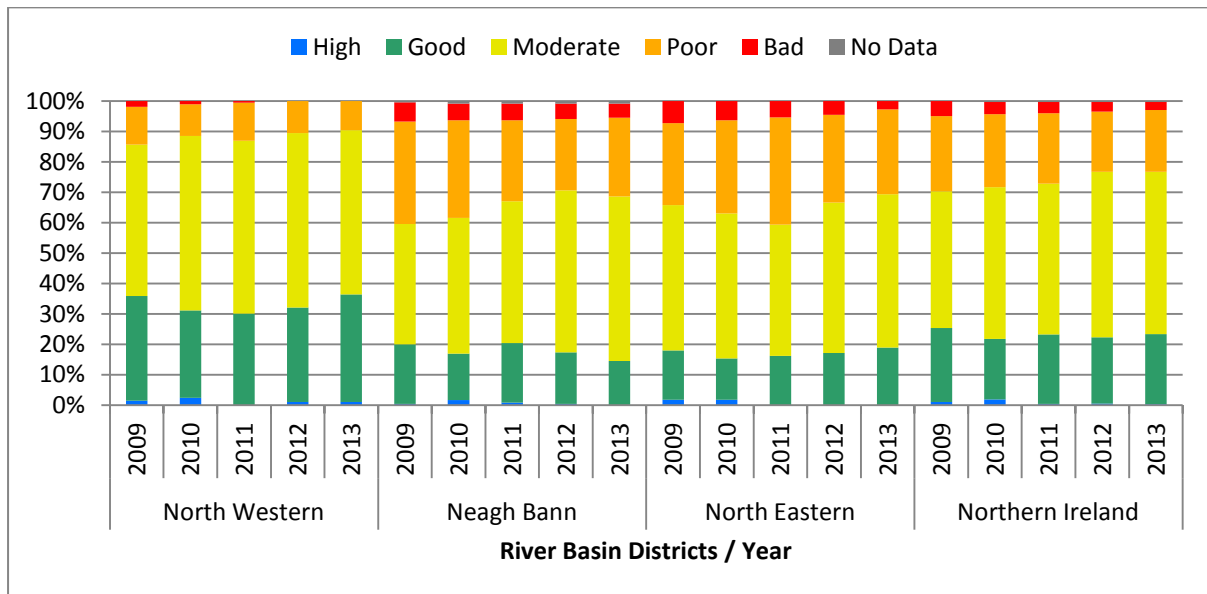
In 2014 and 2015 we will produce two sets of WFD classifications. One will be based upon the first river basin plan (2009) water body sets and methods. We will use this set to assess progress against objectives of the current plan and assess whether there is any potential deterioration against our 2009 baseline. This will be confirmed in 2015 when our final classification is available. Our second classification set is based upon the proposed new water body sets and new methods developed and outlined above. This set is indicative, and will be the new baseline classification for objective setting for the next cycle.

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 in the second cycle. The impact of these changes is illustrated below.

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Overall River Status

Figure 1 Water Framework Directive (WFD) overall classification 2009 – 2013 – First cycle river water body sets and standards. (% river water bodies)



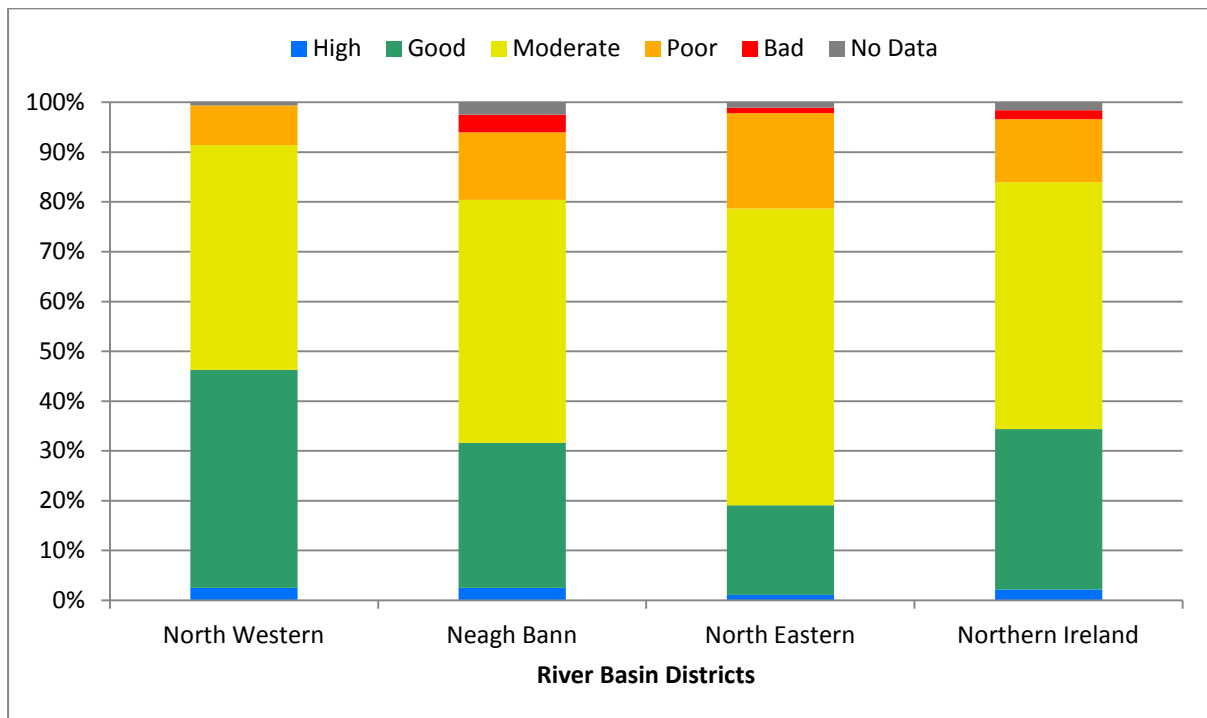
Source: NIEA

The river water body classification has been produced using the results from the Water Framework Directive quality elements. Overall classification utilises a combination of biological, chemical and hydromorphological quality elements including macroinvertebrates, pH (measure of acidity or alkalinity of a solution) and ammonia to assign status of river quality in one of five classes from 'high' through to 'bad'.

The Water Framework Directive requires NIEA to protect the status of waterbodies from deterioration and, where necessary and practicable, to restore waterbodies to good status. The environmental objectives established in the river basin plan set the water status to be achieved for surface waterbodies for each six year planning cycle starting from 2009. These data refer to **575** river water bodies.

In 2013, 23% of NI river water bodies were classified as 'high' or 'good' quality, similar to the proportions in 2012 (22%).

Figure 2 Water Framework Directive (WFD) indicative overall classification 2013 – Second cycle river water body sets and standards. (% river water bodies)



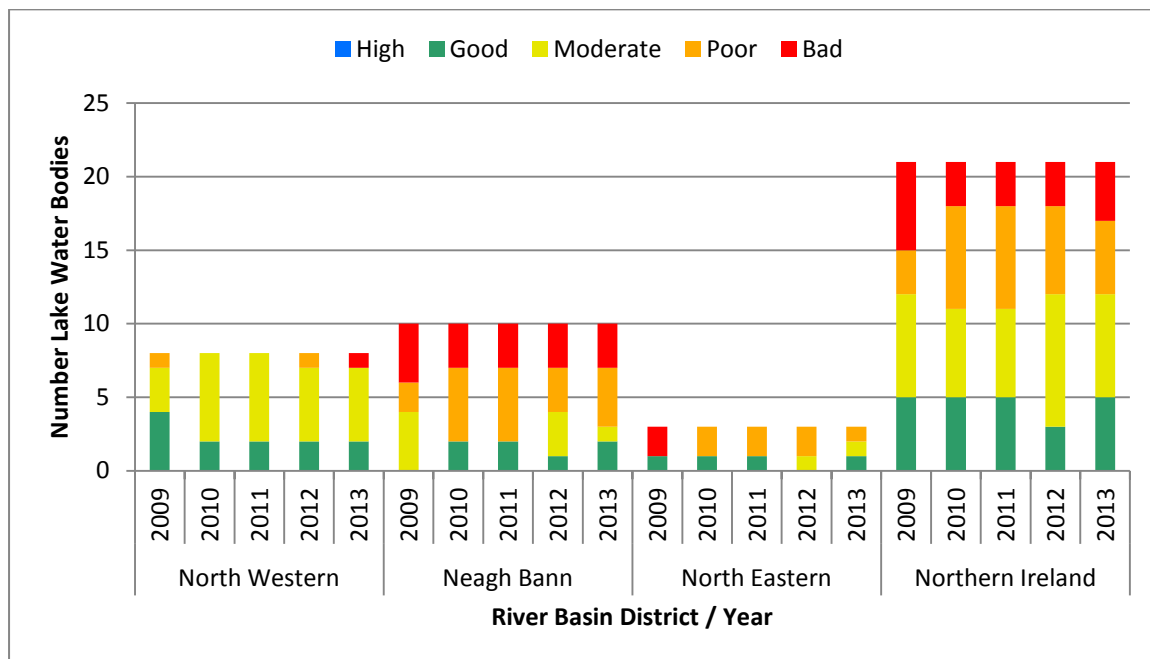
Source NIEA

These data refer to **450** river water bodies. In 2013, 34% of NI river water bodies were classified as 'high' or 'good' quality, using new water body sets and new standards

Therefore, the number of river water bodies at good status or better increases from 23% to 34% when new water bodies and standards are used.

Lake Quality

Figure 3 Lake Water Framework Directive (WFD) status 2009 – 2013 – First cycle lake water body sets and standards. (Nos of water bodies)



Source: NIEA

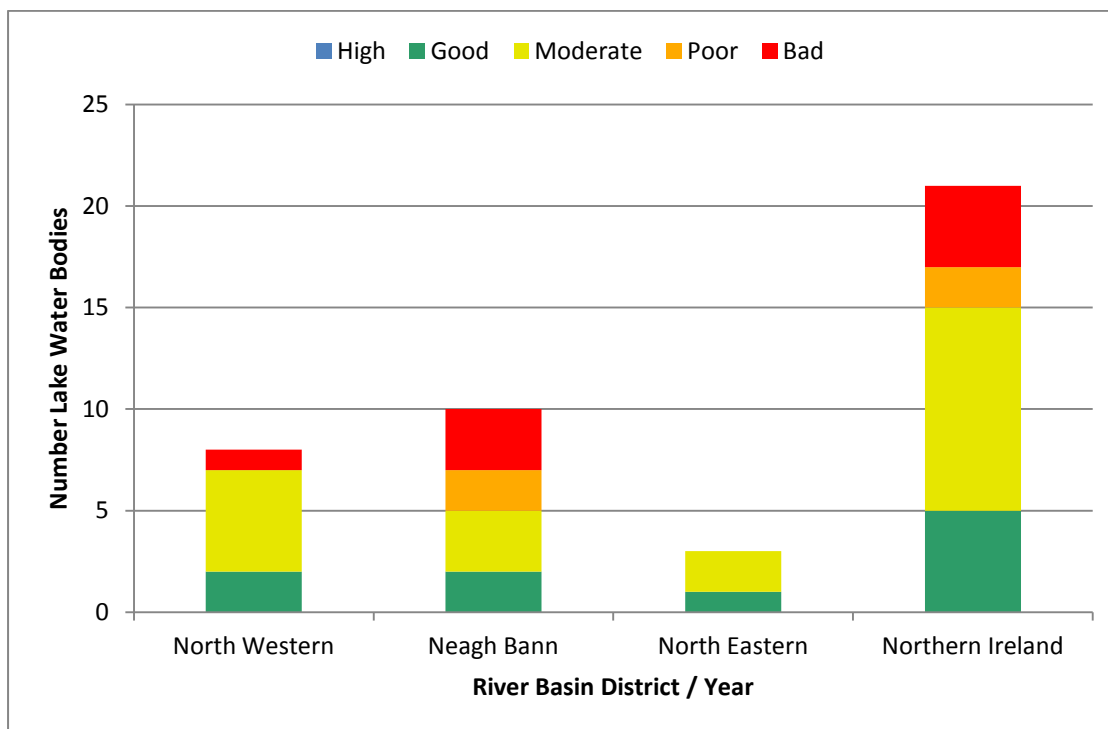
The Water Framework Directive requires NIEA to classify the surface water status of Northern Ireland's lake water bodies.

There are 21 lake waterbodies in Northern Ireland, that is lakes with an area of greater than 50 hectares.

There are five classes for ecological status; 'high', 'good', 'moderate', 'poor' and 'bad'. Overall ecological status of a waterbody is determined by the lower of a waterbody's 'ecological status' and its 'chemical status'. Status is based on a number of parameters including Macrophytes, Photoplankton, Phytobenthos, Total Phosphorus, Chlorophyll and Dissolved Oxygen.

In 2013, five of the 21 lake water bodies in Northern Ireland are classified as 'good' status and 16 lake water bodies are classified as less than 'good' status. In 2013, two more lake water bodies were classified as 'good' than in 2012.

Figure 4 Lake Water Framework Directive (WFD) indicative status 2013 – Second cycle lake water body sets and standards. (Nos of water bodies)



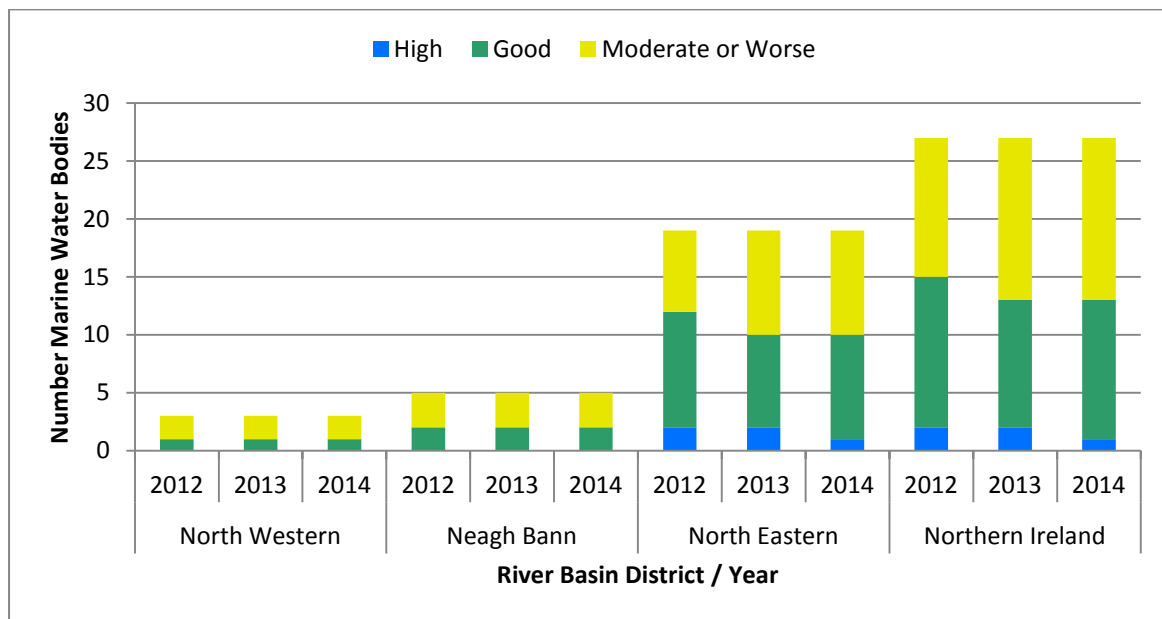
Source: NIEA

Lake water body sets have no proposed changes for the second cycle. In 2013, five of the 21 lake water bodies in Northern Ireland are classified as 'good' status and 16 lake water bodies are classified as less than 'good' status using new standards.

Therefore, the overall number of lake water bodies at 'good' status or better is not affected by the new standards.

Marine Water Quality

Figure 5 Marine Water Framework Directive (WFD) status 2012 – 2014 – First cycle Transitional and Coastal water body sets and standards. (Nos of waterbodies)



Source: MED

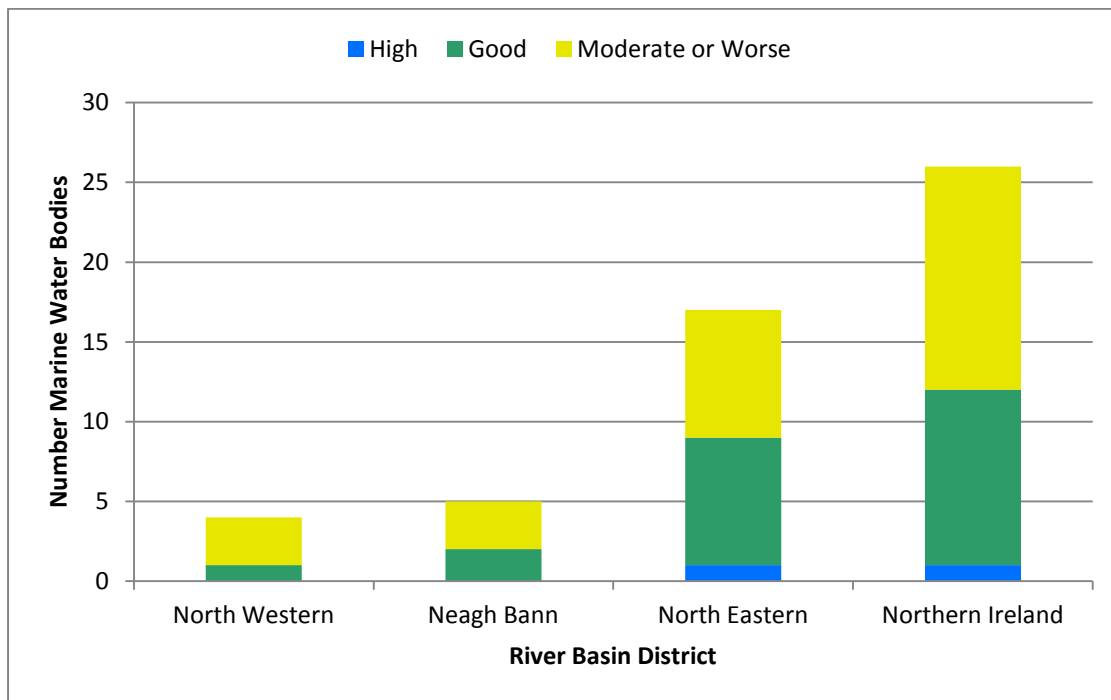
The Water Framework Directive requires NIEA to classify the 'surface water status' of Northern Ireland's transitional (estuary) and coastal water bodies.

There are 27 transitional and coastal water bodies in the current water body data set.

There are three classes for ecological status; 'high', 'good', and 'moderate or worse'. Overall ecological status of a waterbody is determined by the lower of a waterbody's 'ecological status' and its 'chemical status'. Status is based on a number of parameters including water chemistry, plant life and sediment dwelling animals. Fish are also considered in transitional waters.

In 2014, 13 of transitional and coastal water bodies were classified at 'high' or 'good' status and the remaining 14 at 'moderate or worse' status. This has not changed from 2013.

Figure 6 Marine Water Framework Directive (WFD) indicative status 2014 – Second cycle Transitional and Coastal water body sets and standards. (Nos of water bodies)



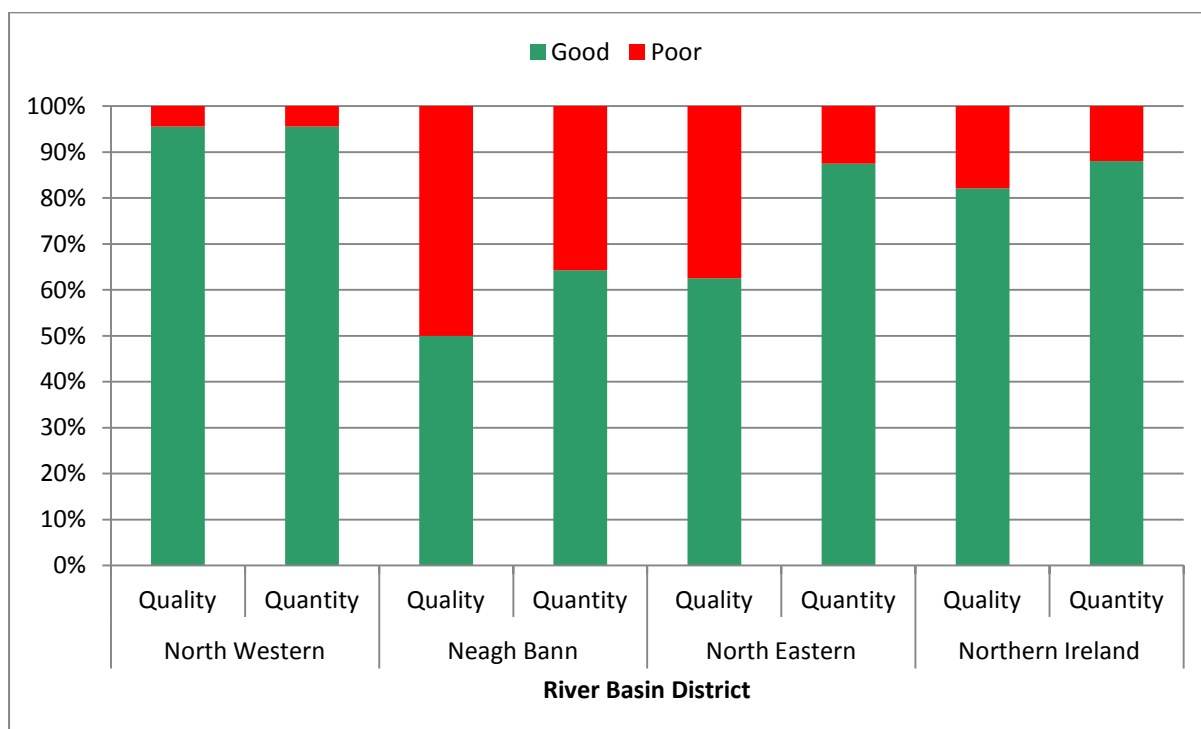
Source: MED

There are 26 transitional and coastal water bodies in the new water body data set.

In 2014, 12 of transitional and coastal water bodies were classified at 'high' or 'good' status and the remaining 14 at 'moderate or worse' status.

Groundwater Quality

Figure 7 Groundwater Water Framework Directive (WFD) Quality and Quantity status 2013 – First cycle Groundwater body sets and standards. (% groundwater bodies)



Source: NIEA

The Water Framework Directive requires NIEA to classify the status of Northern Ireland's groundwater bodies for quality and quantity. These classifications are not carried out on an annual basis, and are not therefore published as Official Statistics.

There are 67 groundwater bodies in Northern Ireland. There are two classes for status; 'good' and 'poor'.

In 2013, using current water bodies and standards, 82% of groundwater bodies in Northern Ireland are classified as 'good' status for quality and 88% as 'good' for quantity.

Figure 8 Groundwater Water Framework Directive (WFD) indicative Quality and Quantity status 2013 – Second cycle Groundwater body sets and standards. (% groundwater bodies)



Source: NIEA

There are 75 groundwater bodies in the new water body set for Northern Ireland.

In 2013, using new water bodies and new standards, 72% of groundwater bodies in Northern Ireland are classified as 'good' status for quality and 84% as 'good' for quantity.

Table 1: Summary of changes to environmental standards and classification methods for second river basin cycle

Summary of changes to environmental standards and classification methods			
What has changed	Have we used this in our baseline classification?	Will we adopt for second RBP cycle?	Further Information
RIVERS			
Phytobenthos classification method	Yes	Yes	http://www.wfduk.org/resources/rivers-phytobenthos
Invertebrates (general degradation) classification method	Yes	Yes	http://www.wfduk.org/resources/rivers-invertebrates-general-degradation
River flow standards	Yes	Yes	http://www.wfduk.org/resources/phase-3-review-environmental-standards-201213
Phosphorus	Yes	Yes	http://www.wfduk.org/sites/default/files/Media/Environmental%20standards/River%20Phosphorus%20UKTAG%20Method%20Statement.pdf
pH	No ¹	Not initially but during RBP2 ²	http://www.wfduk.org/sites/default/files/Media/Environmental%20standards/UKTAG%20Environmental%20Standards%20Phase%203%20Final%20Report%2004112013.pdf pages 71-73
Specific Pollutants	Yes	Yes	http://www.wfduk.org/sites/default/files/Media/Environmental%20standards/UKTAG%20Environmental%20Standards%20Phase%203%20Final%20Report%2004112013.pdf pages 10-33
Priority Substances	Where possible ²	Yes	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:226:0001:0017:EN:PDF
LAKES			
Water levels in lakes	No	Not initially but during RBP2 ³	http://www.wfduk.org/resources/phase-3-review-environmental-standards-201213
Phytoplankton	Yes	Yes	http://www.wfduk.org/resources/lakes-

¹ The new rivers pH standards are dependent on Dissolved Organic Carbon (DOC) concentrations. We do not have sufficient DOC data to adopt the new standards at the start of RBP2 but plan to at some stage during the cycle

² It has not been possible to assess for substances for which the new standard is to be assessed in biota

³ We do not have sufficient bathymetry data to adopt new level standards at present but plan to during the second cycle

Summary of changes to environmental standards and classification methods			
What has changed	Have we used this in our baseline classification?	Will we adopt for second RBP cycle?	Further Information
			phytoplankton
Phytobenthos	Yes	Yes	http://www.wfduk.org/resources/lakes-phytobenthos
Specific Pollutants	Yes	Yes	http://www.wfduk.org/sites/default/files/Media/Environmental%20standards/UKTAG%20Environmental%20Standards%20Phase%203%20Final%20Report%2004112013.pdf pages 10-33
Priority Substances	Where possible ³	Yes	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:226:0001:0017:EN:PDF
TRANSITIONAL			
Transitional Fish Classification Index (TFCI)	Yes	No ⁴	http://www.wfduk.org/sites/default/files/Media/Characterisation%20of%20the%20water%20environment/Biological%20Method%20Statements/TW%20Fish%20UKTAG%20Method%20Statement.pdf
COASTAL			
No changes applicable.			

⁴ A new method (Estuarine Multi-method Fish Index) has been submitted to UKTAG and, pending approval, will be adopted in the 2nd cycle. Until this has been fully ratified by UKTAG and the appropriate EC Commission authorities, the TFCI will be maintained.