3rd Cycle Draft
Lough Neagh-Lower Bann Catchment Report (HA 03)

Catchment Science & Management Unit

Environmental Protection Agency

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Preface

This document provides a summary of the water quality assessment outcomes for the Lough Neagh-Lower Bann Catchment, which have been compiled and assessed by the EPA, with the assistance of the Local Authority Waters Programme (LAWPRO), local authorities and RPS consultants to inform the draft 3rd Cycle River Basin Management Plan. The information presented includes status and risk categories of all waterbodies, details on protected areas, significant issues, significant pressures, source load apportionment modelling and load reduction assessments for nutrients where applicable, an overview of the 2nd Cycle Areas for Action and a list of proposed 3rd Cycle Areas for Action. These characterisation assessments are largely based on information available to the end of 2018, including the WFD Status Assessment for 2013-2018. Protected Area assessments are based on water quality information up to 2018 for Natura 2000 and Salmonid Waters; 2019 for Drinking Water; and 2020 for Nutrient Sensitive Areas and Bathing Waters.

The purpose of this draft report is to provide an overview of the situation in the catchment, draw comparison between Cycle 2 and Cycle 3, and help support the draft River Basin Management Plan 2022-2027 consultation process. Once the consultation process is completed the report will be finalised to reflect any changes and comments made as a result of the consultation process.

Water Framework Directive – key dates and terminology	
Cycle 2 – EPA Characterisation and Assessment	Characterisation and assessment to inform the Cycle 2 RBMP was largely based on 2010-2015 WFD monitoring data.
Cycle 2 Catchment Assessments	Catchment Assessments based on the Cycle 2 characterisation and assessment were published in September 2018.
2nd Cycle River Basin Management Plan (RBMP) 2018-2021	This plan was for WFD Cycle 2 which runs from 2016-2021. This RBMP was published late, with this plan covering 2018-2021.
2nd Cycle Areas for Action	These 189 Areas for Action were selected under the RBMP 2018-2021
Cycle 3 -EPA Characterisation and Assessment	Cycle 3 runs from 2022-2027. Assessments to inform the Cycle 3 RBMP is largely based on 2013-2018 WFD monitoring data. This is the latest WFD monitoring assessment period for which all data are available.
Cycle 3 Catchment Assessments	Catchment Assessments based on the Cycle 3 characterisation and assessment were published in August 2021.
3rd Cycle River Basin Management Plan 2022-2027	This draft RBMP is for WFD Cycle 3 which runs from 2022-2027. Public consultation on this plan by the DHLGH and LAWPRO is taking place in late 2021 and early 2022.
3rd Cycle Recommended Areas for Action – Protection/ Restoration/Projects	These recommended Areas for Action have been identified in the draft RBMP 2022-2027 and feedback can be given in the public consultation on this plan. They fall into 3 categories – Areas for Protection, Areas for Restoration and Catchment Projects.

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1 Introduction

This report aims to provide an overview of the water quality status, risk, key issues and significant pressures for all waterbodies in the catchment based on the Characterisation Assessment undertaken for the 3rd Cycle River Basin Management Plan. In addition, a comparative overview of the water quality in the Lough Neagh-Lower Bann catchment between Cycle 2 and Cycle 3 characterisation is provided along with a summary of the progress made in the 2nd Cycle Areas for Action. The recommended list for the 3rd Cycle Areas for Action is also provided.

To provide context, the Lough Neagh-Lower Bann catchment includes the area drained by the River Bann and by all streams entering tidal water between the Barmouth and Ballyaghran Point, Co. Derry. This is a cross border catchment with a surface area of 5,787km², 374km² of which is located within the Republic of Ireland (RoI) (Figure 1). The largest urban centre in the catchment is Monaghan town. There are no other large towns in this catchment and the total population (in the RoI) is approximately 20,500 with a population density of 55 people per km². The part of this catchment located south of the border is dominated throughout by a drumlin topography characterised by numerous steep sided, lenticular hills, and the course of the rivers in the catchment is controlled by the location and orientation of these drumlins.

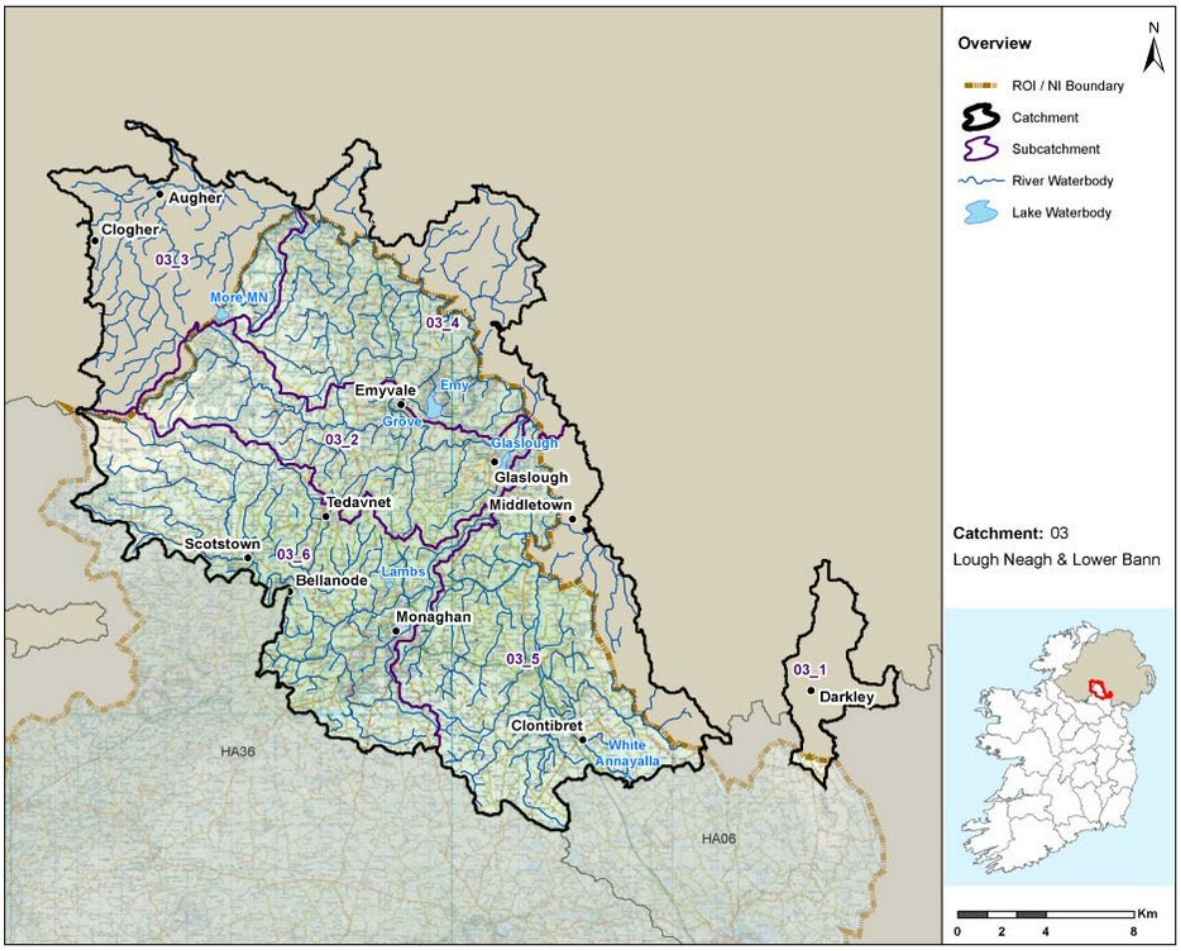


Figure 1: Overview of subcatchments in the Lough Neagh-Lower Bann catchment

The Lough Neagh-Lower Bann catchment is divided into six subcatchments (Figure 1) with 27 river waterbodies, six lakes and 11 groundwater bodies (Figure 2).

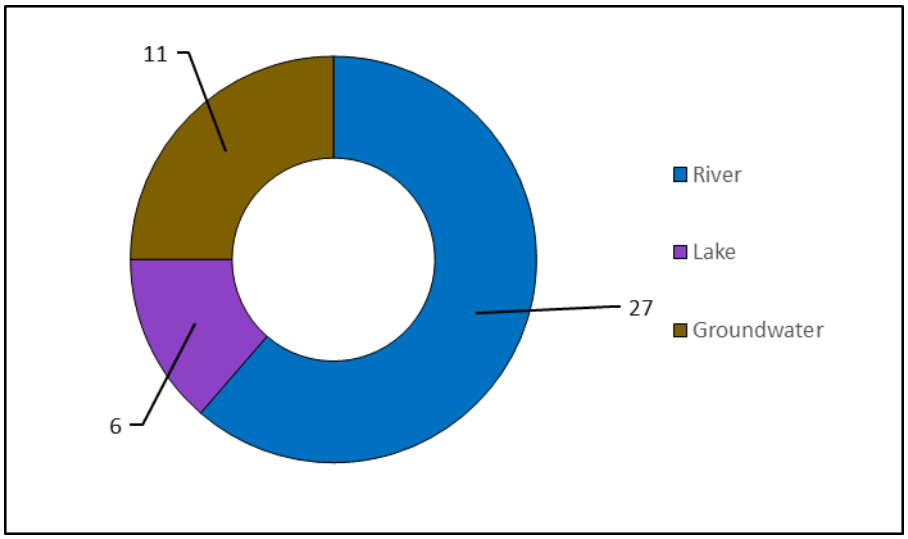


Figure 2: Waterbody types and numbers in the Lough Neagh-Lower Bann Catchment.

2 Waterbody Overview

2.1 Waterbody Status

- This assessment to inform the 3rd Cycle RBMP is largely based on WFD monitoring data for the period 2013-2018, which is the latest WFD monitoring assessment period for which all data are available.

- For this assessment to inform Cycle 3, there are three waterbodies achieving High Status, 16 achieving Good Status, three achieving Moderate Status and seven achieving Poor Status. There are 15 waterbodies that do not have status assigned for Cycle 3. All waterbodies must achieve at least Good Ecological Status.

- There is one river waterbody that must achieve High Ecological Status (HES) in this catchment (Mountain Water_010). This waterbody is achieving High Status.

The number of waterbodies at High Status and Poor Status have each decreased by one between Cycle 2 and Cycle 3. There has been an increase in one waterbody achieving Good Status and one waterbody achieving Moderate Status (

- Figure 3 & Table 1). These changes in waterbody status were all in river waterbodies.

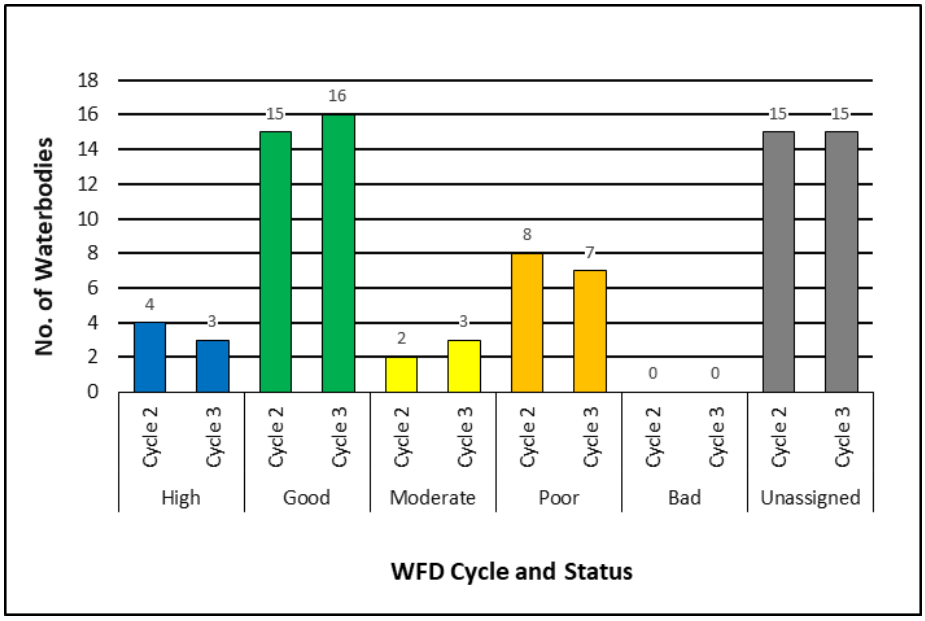


Figure 3: Waterbody Status Breakdown (All waterbodies)

Table 1: Waterbody Status Breakdown Table (All Waterbodies)

2013-2018 Status	River		Lake		Transitional		Coastal		Groundwater		Total	
	Cycle 2	Cycle 3	Cycle 2	Cycle 3	Cycle 2	Cycle 3	Cycle 2	Cycle 3	Cycle 2	Cycle 3	**Cycle 2**	**Cycle 3**
High	4	3	0	0	0	0	0	0	0	0	**4**	**3**
Good	4	5	1	1	0	0	0	0	10	10	**15**	**16**
Moderate	1	2	1	1	0	0	0	0	0	0	**2**	**3**
Poor	7	6	0	0	0	0	0	0	1	1	**8**	**7**
Bad	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Un-assigned	11	11	4	4	0	0	0	0	0	0	**15**	**15**
Total	27	27	6	6	0	0	0	0	11	11	**44**	**44**

- Figure 4 illustrates the change in status between Cycle 2 (assessment based largely on 2010-2015 WFD Monitoring data) and Cycle 3 (assessment largely based on 2013-2018 WFD monitoring data.

- Over this period one (3%) waterbody (Mountain Water_050) has improved in status, 27 (93%) waterbodies have remained unchanged and one (3%) waterbody (Mountain Water_020) has declined in status.[1]

- Overall there has been no change in status across the catchment since the Cycle 2 assessment.

[1] Unassigned waterbodies have not been considered in this Status class change assessment and therefore are not represented in Figure 4. Percentage displayed in the Figure 4 are in relation to the total number of waterbodies with status assigned in both cycles, as opposed to total number of all waterbodies.

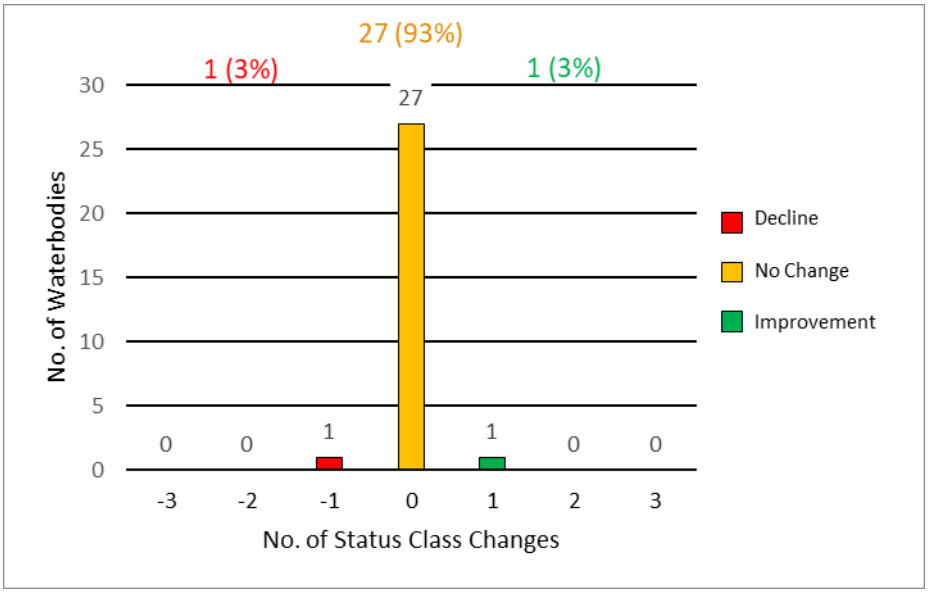


Figure 4: Status Class Changes between Cycle 2 and Cycle 3

2.2 Protected Areas

2.2.1 Drinking Water

- There are four surface waterbodies (Mullamurphy_010 & Scotstown_010 river waterbodies and Emy & More MN lake waterbodies) in the catchment identified as Drinking Water Protected Areas (DWPA) based on water abstraction data on the abstraction register and from other sources in 2018. All groundwater bodies nationally are identified as DWPA. DWPA layers can be viewed at https://gis.epa.ie/EPAMaps/Water - see *Protected Areas - Drinking Water*.

- All four waterbodies met the DWPA Objective in 2019.

- For more detailed information please see the EPA reports on drinking water quality in 2019 for Public Supplies[2] and Private Supplies[3].

2.2.2 Bathing Waters

- There are no bathing waters in the Lough Neagh – Lower Bann catchment identified under the Bathing Water Regulations 2008.

- For more detailed information please see the EPA report on bathing water quality in 2020[4].

2.2.3 Shellfish Areas

- There are no designated shellfish areas in the catchment.

[2] https://www.epa.ie/publications/compliance--enforcement/drinking-water/annual-drinking-water-reports/drinking-water-quality-in-public-supplies-2019.php

[3] https://www.epa.ie/publications/compliance--enforcement/drinking-water/annual-drinking-water-reports/focus-on-private-water-supplies-2019.php

[4] https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/bathing-water-quality-in-ireland-2020-.php

The locations of Protected Areas associated with Public Health (Drinking Water, Bathing Water and Shellfish Areas, where applicable) are illustrated in Figure 5 below.

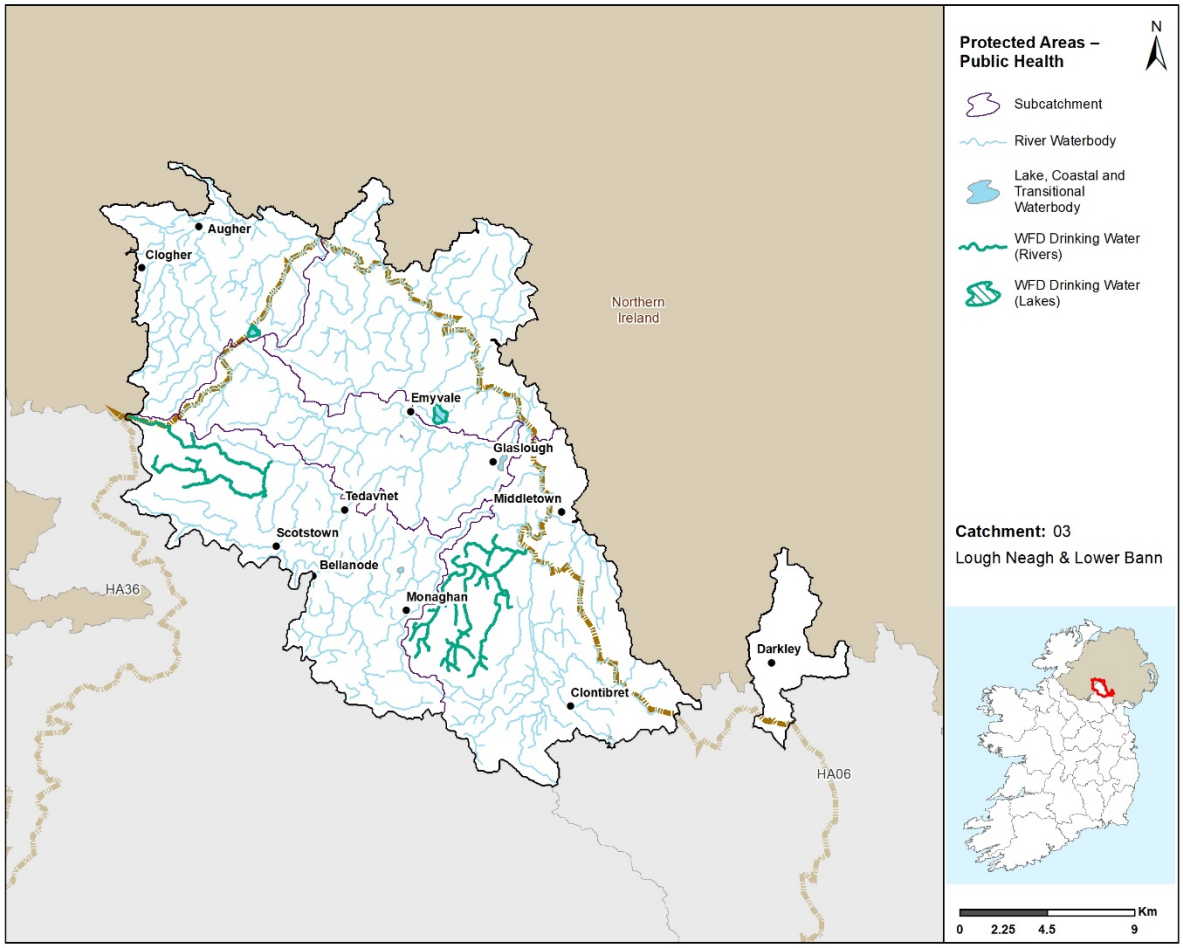


Figure 5: Surface Drinking Water, Bathing Water & Shellfish Protected Areas

2.2.4 Natura 2000 Sites

- There are no SACs, SPAs, Freshwater Pearl Mussel Habitats or designated salmonid waters in the Lough Neagh Lower Bann Catchment.

- There are no groundwater bodies delineated and assessed as Groundwater Dependent Terrestrial Ecosystems for this catchment.

2.2.5 Nutrient Sensitive Areas

- The EPA carried out a review of nutrient sensitive areas downstream of large urban waste water discharges in 2020 and this assessment will inform the regulations. Once the regulations are in place, and nutrient sensitive areas have been identified, additional nutrient removal must be applied (if not already applied) to waste water treatment plants discharging to the sensitive area. If this treatment was in place the objective was deemed to have been met.

- There are two NSAs in the catchment and these are downstream of one urban wastewater agglomeration. The list of NSAs, associated agglomerations and intersecting water bodies are provided in Table 2.
- NSA objectives are being met in both NSAs in the catchment.

Table 2: Nutrient sensitive areas in the catchment

Nutrient Sensitive Area	Agglomeration		Water body		Objective met?		Comment
	Name	Code	Name	Code	Yes	No	
Shambles River (010)	Monaghan	D0061-01	Shambles_010	IE_NB_03S010500	✓		Tertiary Treatment in place
Blackwater Monaghan (040)	Monaghan	D0061-01	Blackwater (Monaghan)_040	IE_NB_03B010800	✓		Tertiary Treatment in place

2.3 Heavily Modified Waterbodies

- Based on the 1st and 2nd Cycle RBMPs there are currently no heavily modified water bodies (HMWBs) in the Boyne catchment. There will be a consultation on identifying HMWBs for the 3rd Cycle RBMP and this will be completed for inclusion in the final 3rd Cycle RBMP.

2.4 Artificial Waterbodies

- There are no Artificial Waterbodies (AWBs) present in the Lough Neagh – Lower Bann catchment.

3 Waterbody Risk

3.1 Overview of Risk

- A waterbody that is *At Risk* means that either the waterbody is:
    - currently not achieving its Water Framework Directive (WFD) environmental objective of Good or High Ecological Status,
      or
    - that there is an upward trend in nutrients or ammonia and if this trend continues the waterbody Status will decline by the end of Cycle 3 and will fail to meet its environmental objective.

- A waterbody can be considered as *Review* for the following three reasons:
    - The waterbody does not have status assigned to it yet, it is referred to as an unassigned waterbody, and therefore there is not enough evidence to determine if it is *At Risk* or *Not At Risk*.
    - The waterbody has shown some slight evidence or improvement, but more evidence is needed before it can be considered as *Not At Risk.*
    - Measures are planned or have already been implemented for the waterbody and no further measures should be applied until there is enough time to assess if these measures are working.

- A waterbody is *Not At Risk* when it is achieving its environmental objective of either High or Good Status and that there is no evidence indicating that there is a trend towards status decline.

- In total there are 44 waterbodies in the Lough Neagh-Lower Bann Catchment and 16 (36%) are currently *At Risk*, 10 (23%) in *Review* and 18 (41%) are *Not At Risk*.

3.2 Surface Waters

- For the 27 river waterbodies, eight (30%) are *Not At Risk*, five (19%) are in *Review* and 14 (52%) are *At Risk*.

- For the six lake waterbodies, one (17%) is *Not At Risk*, four (67%) are in *Review* and one (17%) is *At Risk.* Emy is the lake waterbody *At Risk.*

- The largest proportion of *At Risk* waterbodies are found in river waterbodies, accounting for 14 (88%) of 16 *At Risk* waterbodies. Figure 6 gives an overview of the breakdown of risk across waterbody types for both Cycle 2 and Cycle 3.

- Overall, there is an increase in three *At Risk* waterbodies, a reduction of four waterbodies at *Review* and an increase of one *Not At Risk* waterbody between Cycle 2 and Cycle 3.

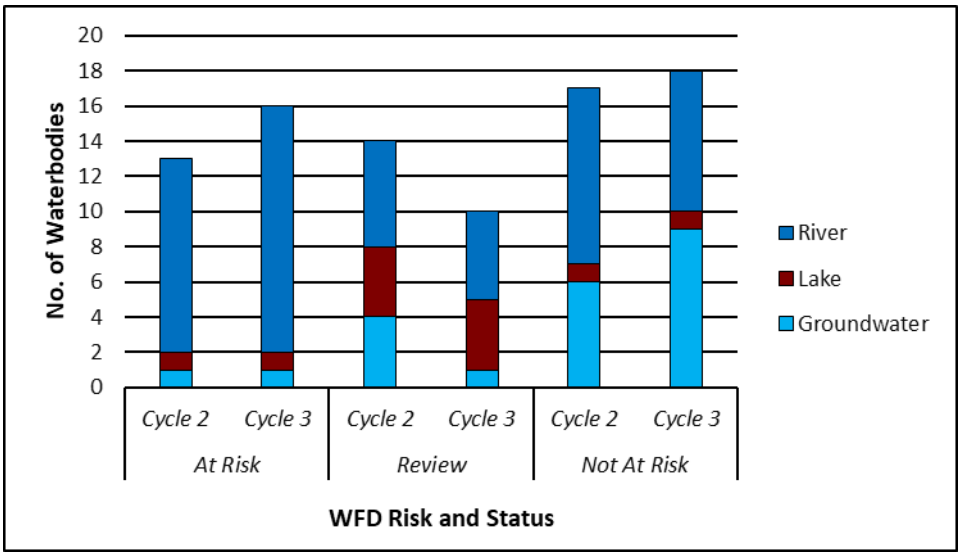


Figure 6: Number of waterbodies in each risk category

- The location of the *At Risk, Review and Not At Risk* surface waterbodies for Cycle 3 are shown in Figure 7 while the surface waterbodies that have experienced a change in risk between Cycle 2 and Cycle 3 are shown in Figure 8.

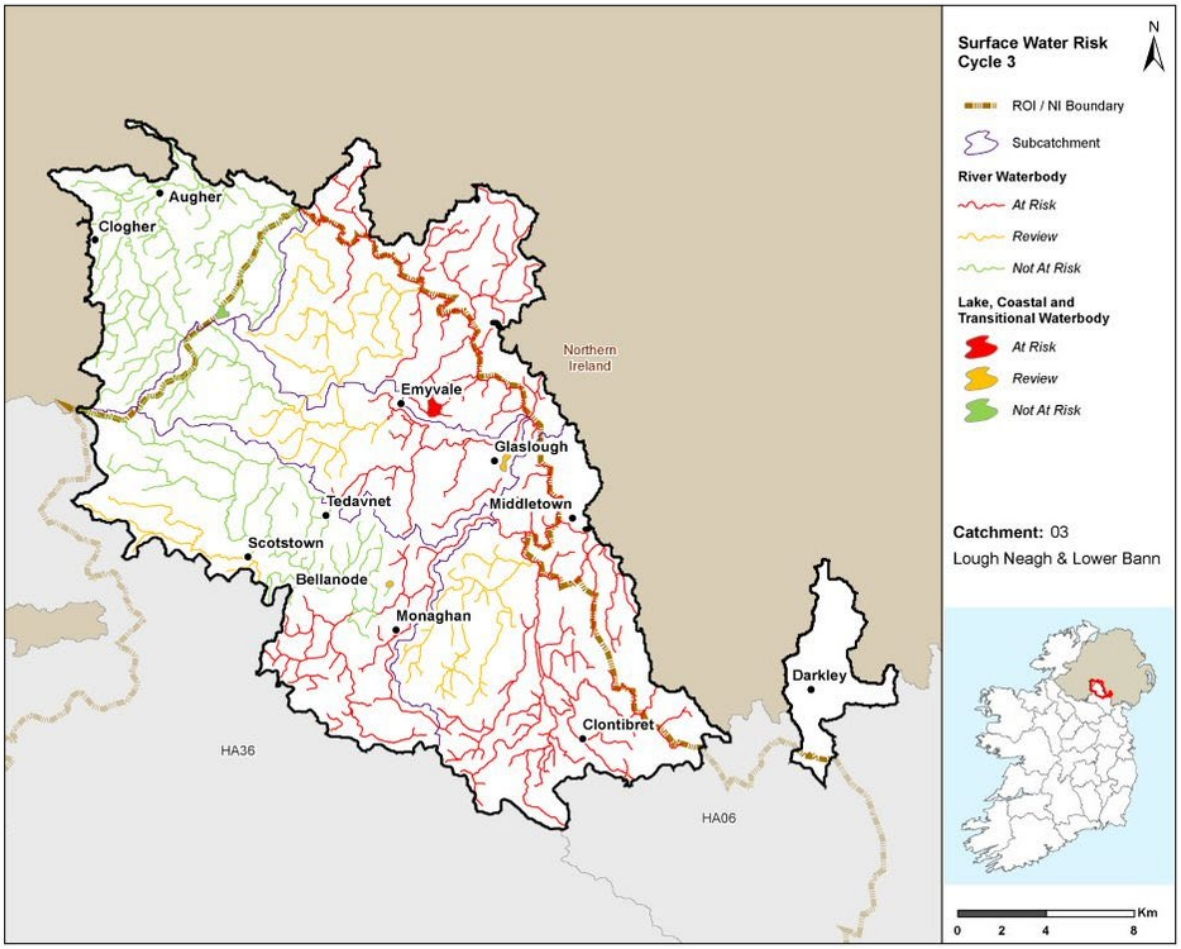


Figure 7: Surface Water Risk Cycle 3

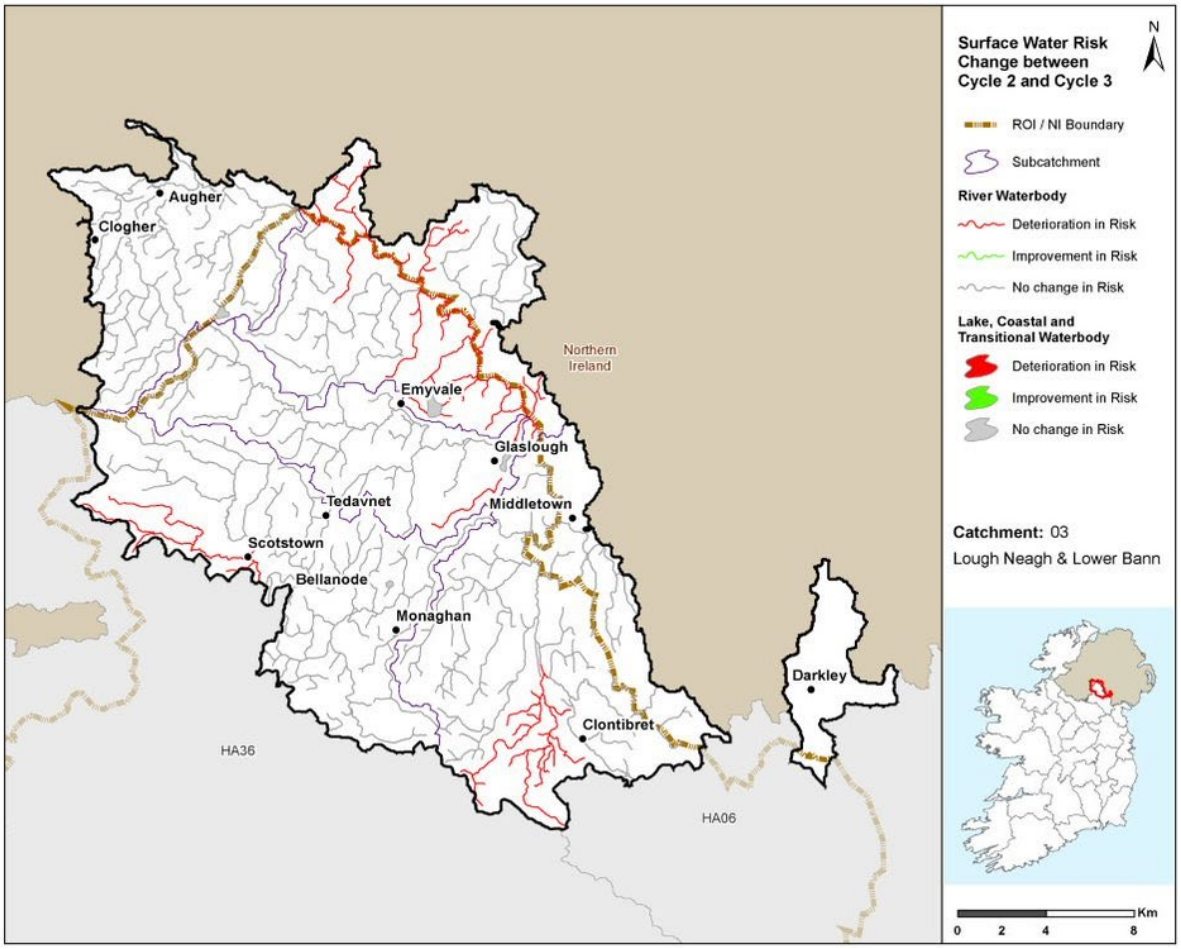


Figure 8: Surface Water Risk Change between Cycle 2 and Cycle 3

3.3 Groundwater

- For the 11 groundwater bodies, one (9%) is *At Risk*, one (9%) is in *Review* and nine (82%) are *Not At Risk*. Waste Facility (W0020-01) is the groundwater body *At Risk.*

- In Cycle 2, there was one groundwater body (Waste Facility (W0020-01)) *At Risk* in this catchment, four in *Review* and six *Not At Risk*.

- The location of the *At Risk, Review and Not At Risk* groundwater bodies for Cycle 3 are shown in Figure 9.

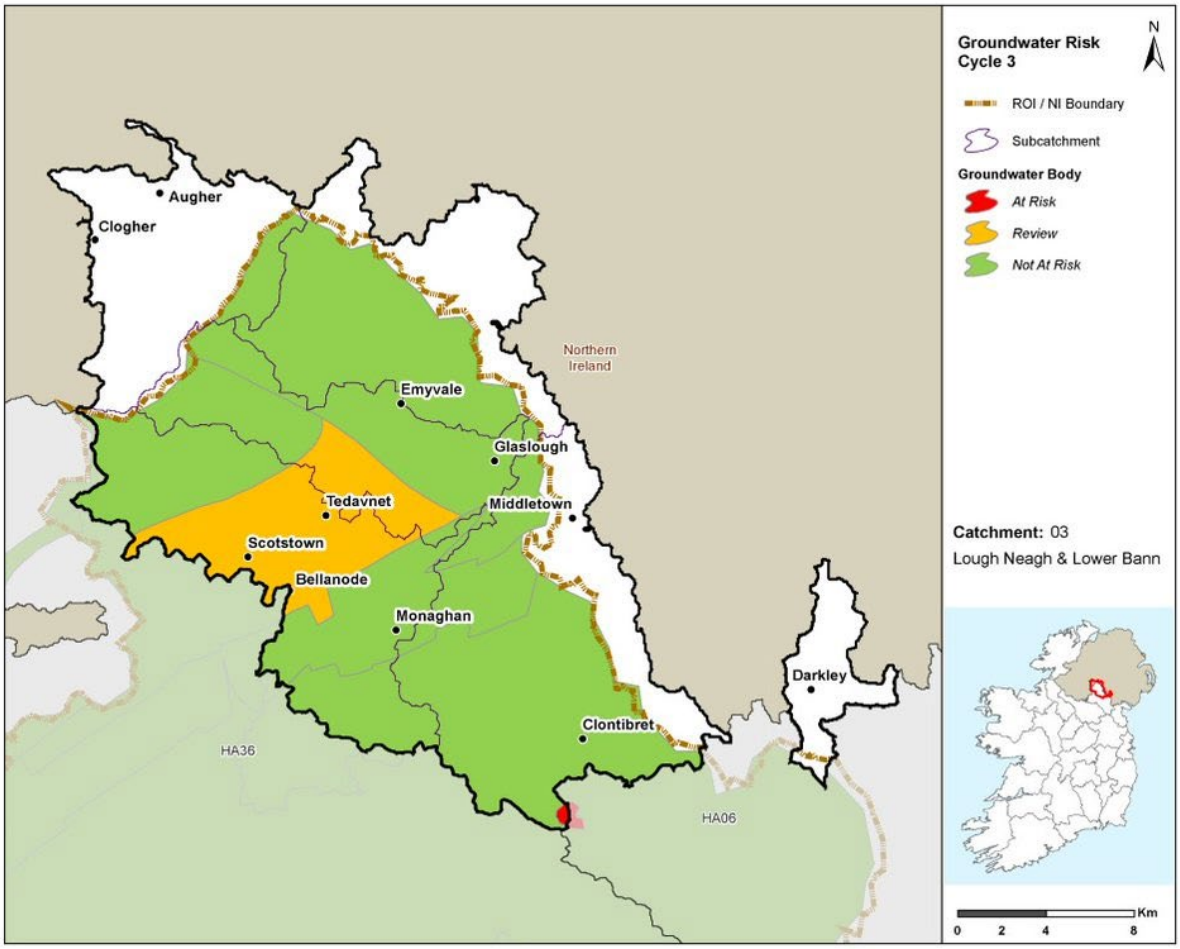


Figure 9: Cycle 3 Groundwater Body Risk

3.4 Heavily Modified Waterbodies

- There are currently no heavily modified water bodies (HMWBs) in the Boyne catchment. This may change once the Cycle 3 HMWB assessment has been completed and consulted on for the 3rd Cycle Final RBMP.

3.5 Artificial Waterbodies

- There are no Artificial Waterbodies (AWBs) present in the Lough Neagh – Lower Bann catchment.

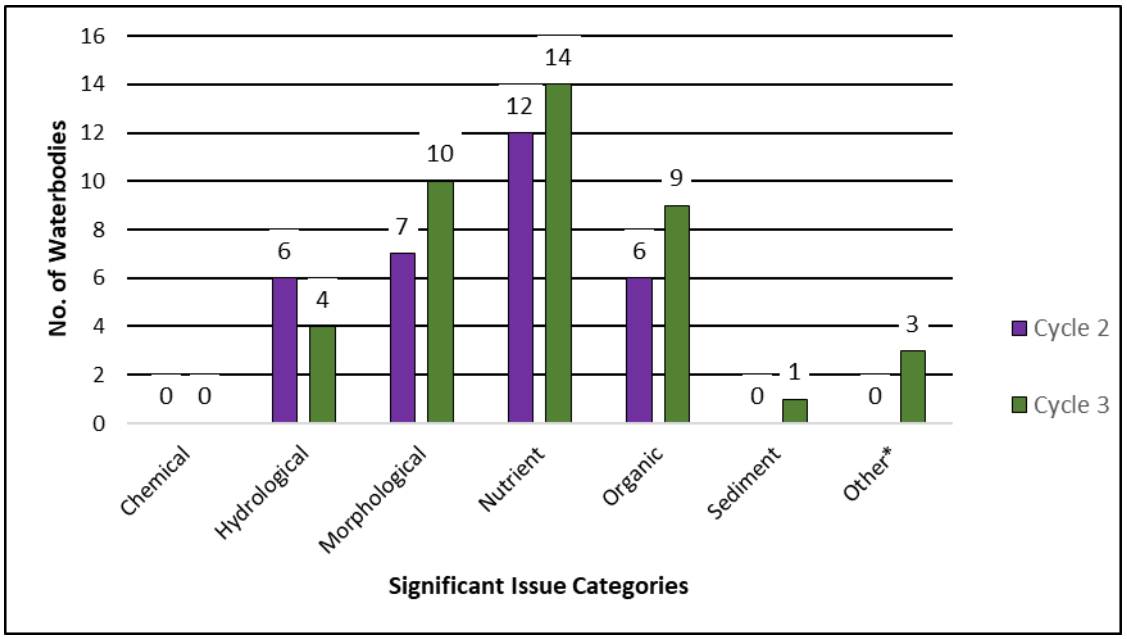
4 Significant Issues in *At Risk* Waterbodies

4.1 All Waterbodies

- Excess nutrients remain the most prevalent issue in the Lough Neagh-Lower Bann catchment (Figure 10) impacting 14 waterbodies in Cycle 3. Morphological and organic issues are impacting 10 and nine waterbodies, respectively.
    - For river waterbodies, the main significant issues are nutrient (12), morphological (10) and organic impacts (8).
    - For lakes waterbodies, the main significant issues are nutrient (1) and organic impacts (1).
    - For the one *At Risk* groundwater body (Clare-Corrib) the significant issue is nutrient pollution.

- Between Cycle 2 and Cycle 3 the number of waterbodies with nutrient issues have declined by seven from 21 to 14.

- The number of waterbodies impacted by morphological issues has declined by two from 12 to 10, while the number of waterbodies impacted by organic issues remained unchanged.



*Other - Acidification, saline intrusion, elevated temperature, litter, microbiological pollution and unknown impacts have all been grouped into the "Other" issues category for the purpose of this report

Figure 10: Significant Issues across all *At Risk* WBs between Cycle 2 and Cycle 3

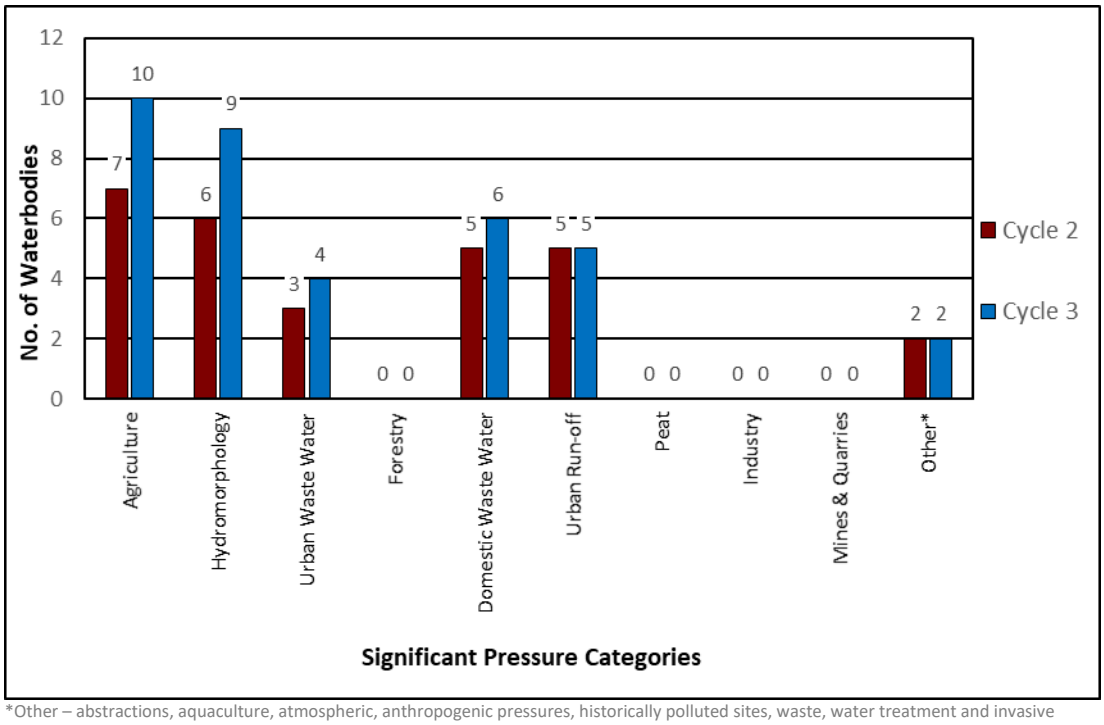
4.2 High Status Objective Waterbodies

- The catchment has only one High Status Objective waterbody in Cycle 3 and it is *Not At Risk,* therefore there are no recorded issues impacting waterbodies with a High Status Objective.

5 Significant pressures in *At Risk* Waterbodies

5.1 All Waterbodies

- Where waterbodies have been classed as *At Risk*, significant pressures have been identified.
- Figure 11 shows a breakdown of the number of *At Risk* waterbodies in each significant pressure category.
- The significant pressure affecting the greatest number of waterbodies is agriculture, followed by hydromorphology, domestic waste water and urban run-off.
- When comparing Cycle 2 and Cycle 3 the biggest changes are:
  - an increase of three waterbodies where agriculture is a significant pressure from seven to 10 waterbodies a
  - An increase of three waterbodies where hydromorphology is a significant pressure from six to nine waterbodies.
- The increase in hydromorphology significant pressures is likely to be associated with more detailed assessment by the EPA based on the recently developed Morphological Quality Index tool and associated increasing awareness of hydromorphology rather than new significant hydromorphology pressures since Cycle 2.



*Other – abstractions, aquaculture, atmospheric, anthropogenic pressures, historically polluted sites, waste, water treatment and invasive species have all been grouped into the "Other" pressure category for the purpose of this report

Figure 11: Significant Pressures (All *At Risk* Waterbodies)

5.1.1 Pressure Type

5.1.1.1 Agriculture

- Agriculture is a significant pressure in 10 river waterbodies. The impact of the pressure includes phosphorus loss to surface waters from, for example, direct discharges; or runoff from yards,

roadways or other compacted surfaces, or runoff from poorly draining soils. Sediment can also be a problem from land drainage works, bank erosion from animal access or stream crossings.

5.1.1.2 Hydromorphology

- River waterbodies within the Mountain Water, Clontibret Stream and Blackwater [Monaghan] subcatchments are subject to extensive modification, as a result nine waterbodies (all river waterbodies) significantly impacted by hydromorphology. Drainage schemes exist which have led to altered flow, high levels of siltation and habitat degradation. A weir was recorded on a river waterbody within the Mountain Water subcatchment which impacts on hydromorphological conditions downstream.

5.1.1.3 Domestic waste water

- Domestic waste water has been identified as a significant pressure in five river waterbodies and one lake waterbody. The impacts are associated with inadequate treatment systems, and unsuitable percolation areas and/or direct pipe discharges, usually in areas of poorly draining soils and subsoils, resulting in elevated nutrient concentrations.

5.1.1.4 Urban run-off

- Diffuse urban pressures (resulting from misconnections, leaky sewers and runoff from paved and unpaved areas) have been identified as significant for one (Emy) lake waterbody and four river waterbodies (Blackwater (Monaghan)_040, Mountain Water_040, Shambles_010 and Clontibret Stream_010).

5.1.1.5 Urban waste water

- Urban Waste Water Treatment Plants have been identified as a significant pressure in four *At Risk* waterbodies, Blackwater (Monaghan)_040, Shambles_010, Mountain Water_040 and Mountain Water_060; details are given in Table 3.
- The Monaghan agglomeration is impacting two of these waterbodies, Blackwater (Monaghan)_040 and Shambles-010. Emyvale agglomeration was identified as a significant pressure in Mountain Water_040 and Glaslough agglomeration was identified as a significant pressure in Mountain Water_060. There are currently no scheduled upgrades for the three agglomerations according to Irish Water's Capital Investment Programme (CIP) (2020-2024) data as of February 2021.

Table 3. Waste Water Treatment Plants identified as Significant Pressures in *At Risk* waterbodies.

Facility name	Facility Type	Waterbody	2013-18 Ecological Status	Irish Water's Expected CIP Completion Date[5]
Monaghan D0061	> 10,000 p.e.	Blackwater (Monaghan)_040	Moderate	N/A
Monaghan D0061	> 10,000 p.e.	Shambles_010	Poor	N/A
Emyvale D0346	1,001 to 2,000 p.e.	Mountain Water_040	Poor	N/A
Glaslough D0347	1,001 to 2,000 p.e.	MountainWater_060	Unassigned	N/A

[5] Based on Irish Water's Capital Investment Programme (2020-2024) as of February 2021 and may be subject to change.

5.1.1.6 Other

- *Waste*

*O*ne groundwater body IE_NB_G_026, is impacted by a waste facility, Scotch Corner Landfill (W0020).

- Anthropogenic pressures – Unknown

The Crilly Feeder river waterbody (cross border) is impacted by an unknown anthropogenic pressure.

Figure 12 – Figure 15 illustrates the locations of waterbodies for the four most common pressures in order of prevalence (agriculture, hydromorphology, domestic waste water and urban run-off) within the catchment in Cycle 3.

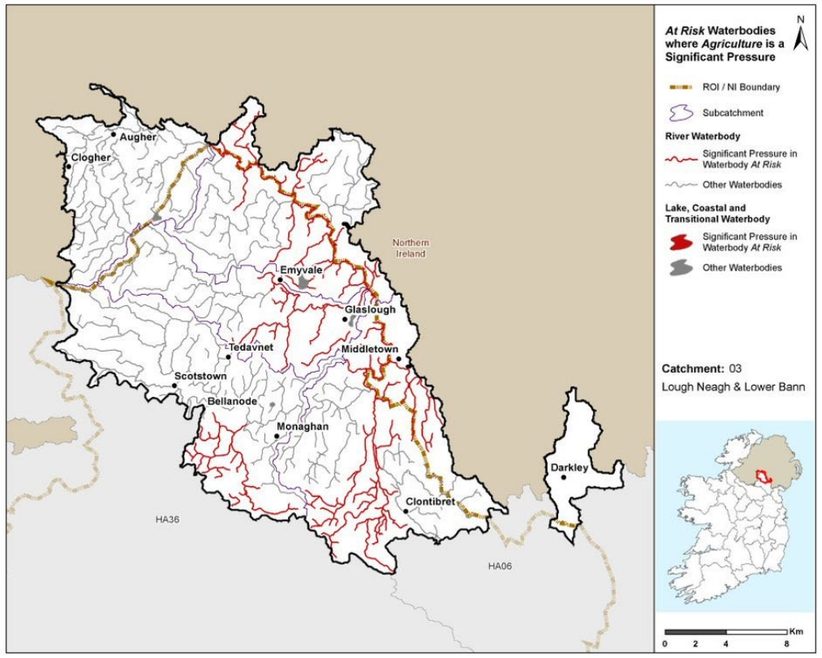


Figure 12: Locations of Waterbodies where Agriculture is a Significant Pressure

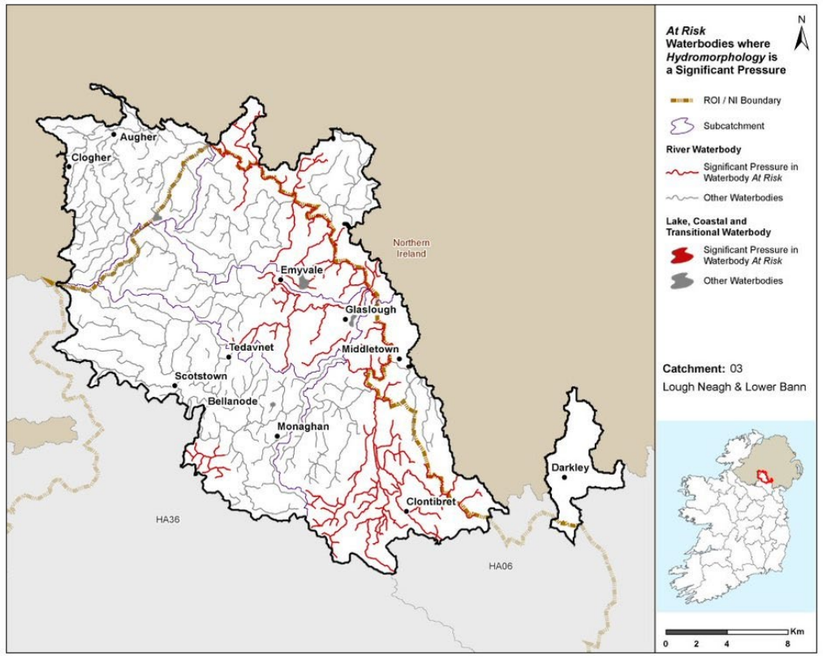


Figure 13: Locations of Waterbodies where Hydromorphology is a Significant Pressure

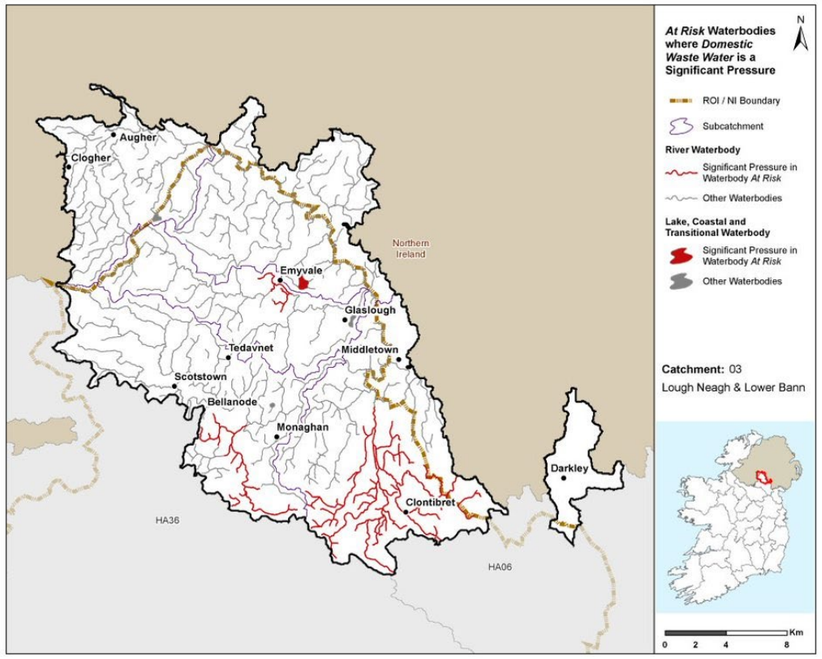


Figure 14: Locations of Waterbodies where Domestic Waste Water is a Significant Pressure

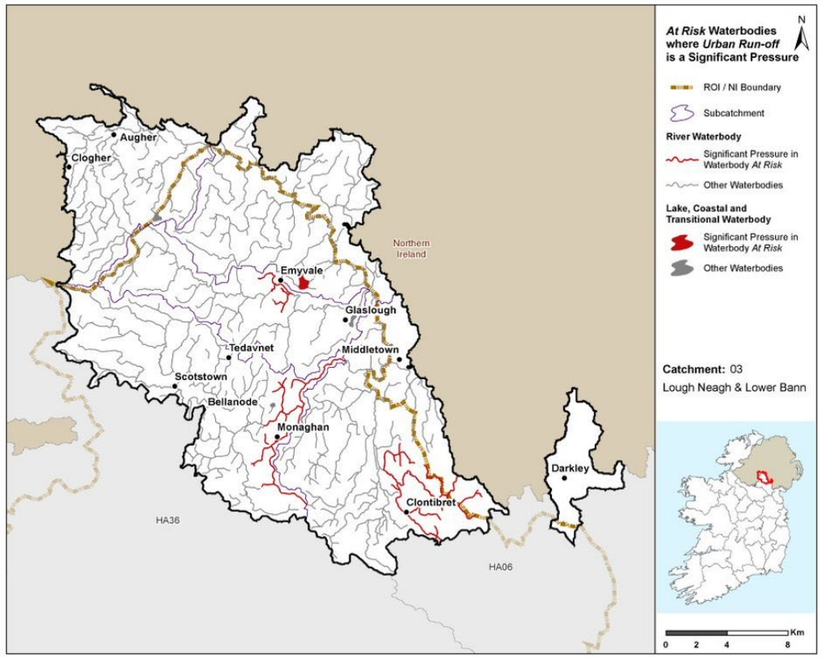


Figure 15: Locations of Waterbodies where Urban Run-off is a Significant Pressure

6 Source Load Apportionment Modelling (SLAM)

- The EPA has developed Source Load Apportionment Models (SLAM) for both P and N which estimate the proportion of the phosphorus and nitrogen inputs, respectively, to waters in each catchment that comes from each sector as illustrated in Figure 16.

- The main data inputs for the model for agriculture are the 2018 land parcel (LPIS) and animal (AIMs) data from the Department of Agriculture Food and the Marine. The Urban Waste Water (UWW) data comes from Irish Water's discharge monitoring data. The model also calculates the inputs from a range of other sectors, including for example, forestry, septic tanks, peat, urban runoff and atmospheric deposition.

- In the catchment pastoral land and discharges from urban wastewater agglomerations are responsible for 80% and 12% of the nitrogen load respectively while land in pasture, discharges from urban waste water and forestry contribute 56%, 17% and 11% of the phosphorus loadings for the catchment respectively (Figure 17).

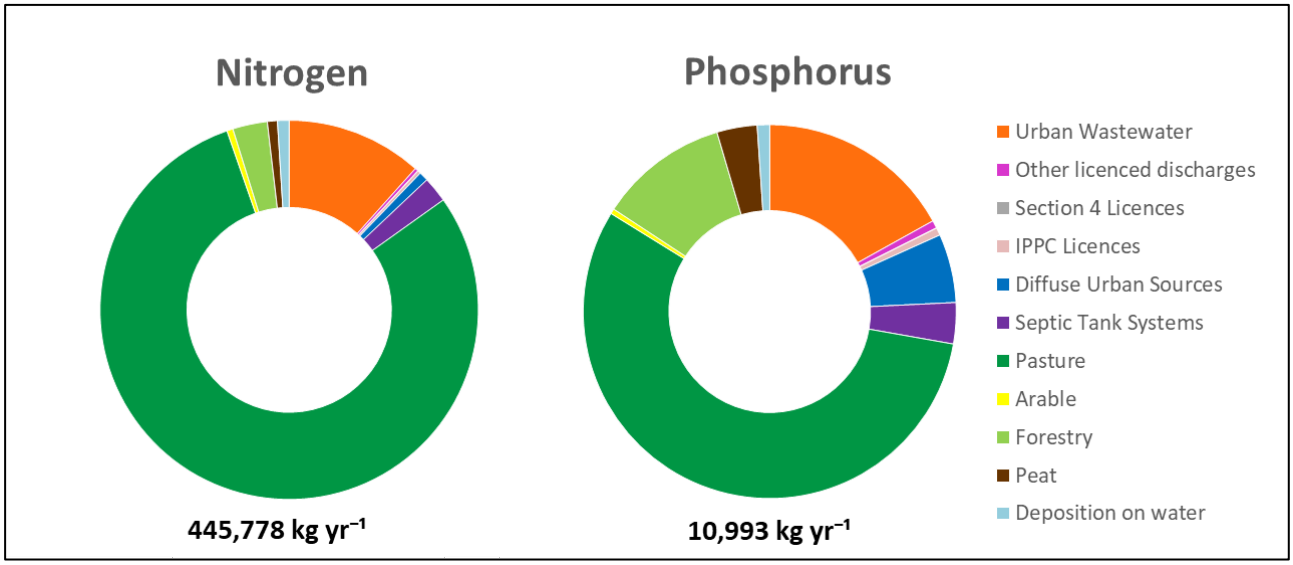


Figure 16: Estimated Proportions of N & P from Each Sector in the Lough Neagh – Lower Bann Catchment

7 Load Reduction Assessment

7.1 Nitrogen Load Reduction

- An assessment was undertaken to determine if nitrogen reductions in rivers, streams and lakes are required for Transitional and Coastal (TRACs) waterbodies to achieve their WFD environmental objective. The outcome of the assessment indicated that 10 of the 46 catchments require N reductions in our inland waters to restore some TRAC waterbodies. Nitrogen load reduction to meet TRAC WFD objectives are not required in the Lough Neagh – Lower Bann Catchment.

7.2 Phosphorus / Sediment Load Reduction

- Further modelling work is required to determine precisely what load reductions are required.

Figure 17 highlights areas where agricultural measures for nitrogen, sediment and phosphorus should be targeted. Waterbodies with orange fill are areas where nitrogen measures should be targeted, waterbodies with blue fill are areas where sediment or phosphorus should be targeted and waterbodies with orange and blue hatching highlight areas where multiple measures (phosphorus /sediment and nitrogen) are required. Pollution Impact Potential mapping for both phosphorus and nitrogen in the catchment are provided in Appendix 2.

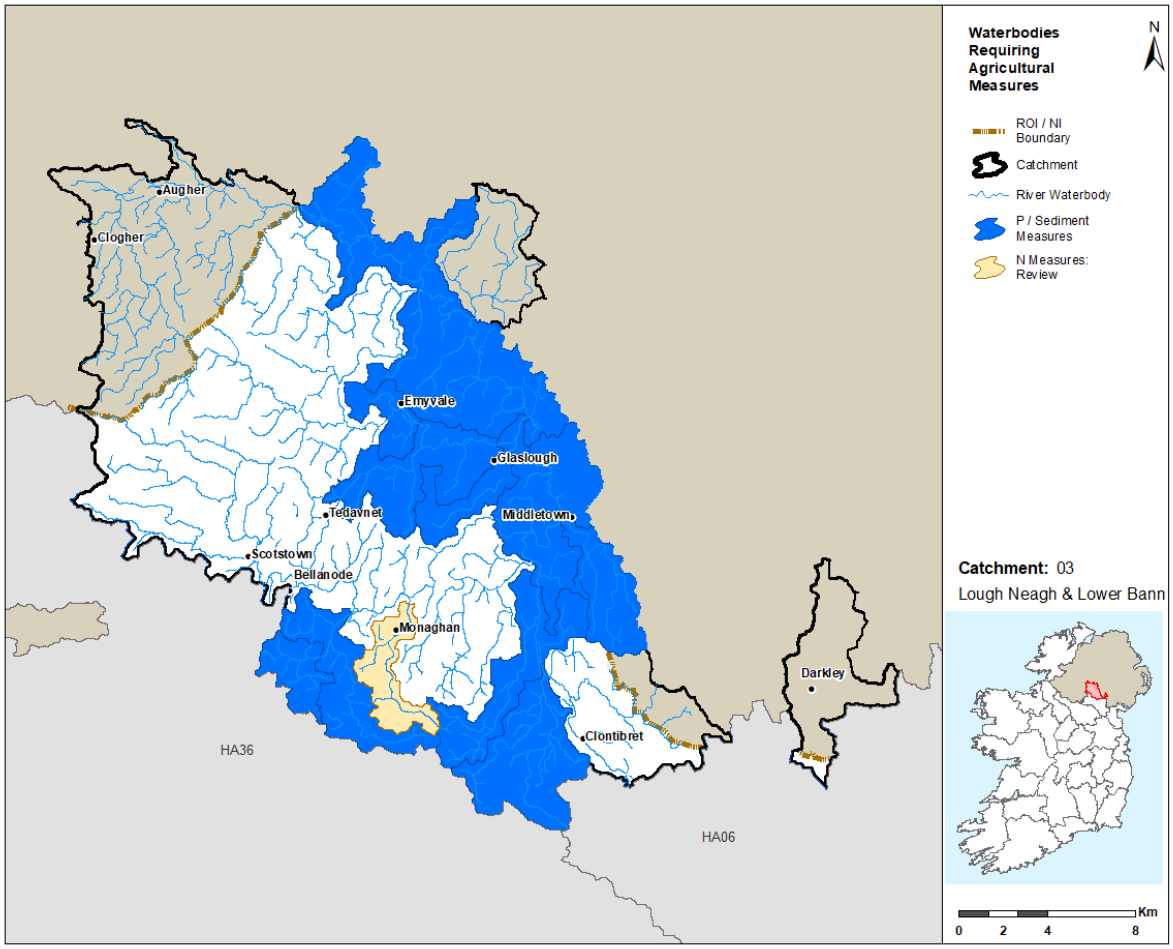


Figure 17: Waterbodies where Agricultural Measures should be Targeted

8 2nd Cycle Areas for Action

8.1 Area for Action Overview

- There was one Area for Action, comprising of seven waterbodies, selected for further characterisation and action in the catchment for the 2nd Cycle River Basin Management Plan. The Areas for Action in the catchment are listed in Table 4 and shown in Figure 18. LAWPRO, in conjunction with local authorities and stakeholders from the Borders Regional Operational Committee, have been working in these areas since 2018.

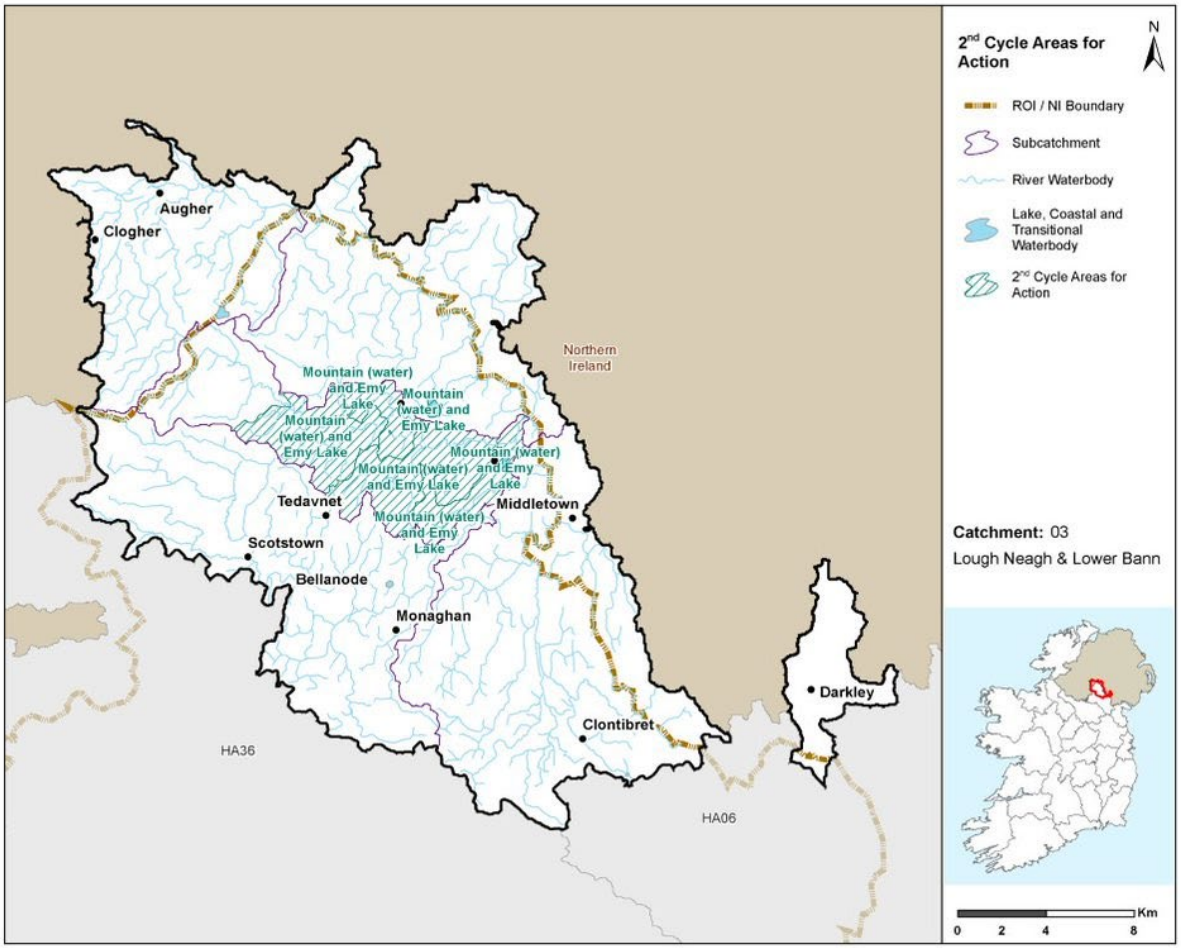


Figure 18: 2nd Cycle Areas for Action Locations

Table 4: 2nd Cycle Areas for Action

2nd Cycle Area for Action	Number of waterbodies	Sub-catchment	Local Authority	Reason for Selection
Mountain (water) & Emy Lake	7	3_2 3_4	Monaghan	• Build on improvements in two waterbodies. • Rivers Trust in operation. • Group water scheme present. • Communities project in Mountain Water _040 which is looking at the hydromorphology issue.

8.2 Status Change in 2nd Cycle Areas for Action

- For Cycle 3, of the seven waterbodies in the 2nd Cycle Areas for Action, there is one waterbody at Good Status, two waterbodies at Moderate Status, one waterbody at Poor Status and three waterbodies where status has not been assigned.

- There is an overall improvement in status of one of the 2nd cycle Areas for Action waterbodies across the catchment.[6]

- Of the four waterbodies within the Cycle 2 Areas for Action which had status assigned, three experienced no change in status between Cycle 2 and Cycle 3 and one waterbody experienced an improvement in status (Figure 19). The waterbody improvement was Mountain Water_050, within the Mountain (Water) and Emy Lake AFA.

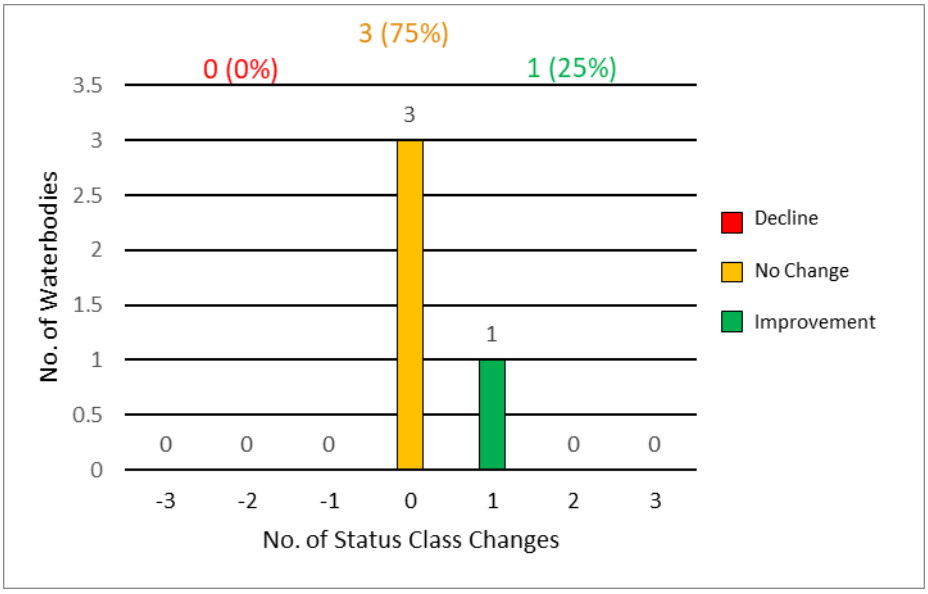


Figure 19: 2nd Cycle Area for Action Waterbody Status Class Changes between Cycle 2 and Cycle 3

8.3 Waterbody Risk in 2nd Cycle Areas for Action

- For the seven waterbodies in the 2nd Cycle Areas for Action, four (57%) of these are currently *At Risk* and three (43%) in *Review*.
    - For the four river waterbodies, three (75%) are *At Risk* and one (25%) is in *Review.*
    - Of the three lake waterbodies (Emy, Grove and Glaslough) one (33%) is *At Risk* and two (67%) are in *Review*.

- The largest proportion of *At Risk* waterbodies are found in river waterbodies, accounting for three (75%) of the four *At Risk* waterbodies. Figure 20 gives an overview of the breakdown of risk across waterbody types for both Cycle 2 and Cycle 3 in 2nd Cycle Areas for Action.

- Overall there is an increase from three to four *At Risk* waterbodies in 2nd Cycle Areas for Action between Cycle 2 and Cycle 3.

[6] Note - status class change cannot be calculated for waterbodies where status has not been assigned in either Cycle 2 or 3 and therefore these waterbodies are not represented in Figure 16. Percentage displayed in the chart below are in relation to the total number of waterbodies with status assigned in both cycles, as opposed to total number of all waterbodies.

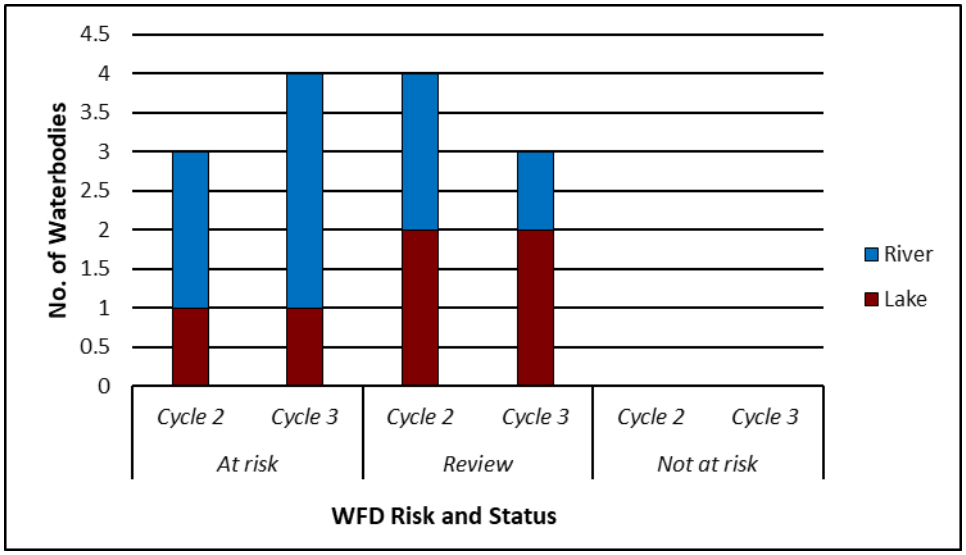
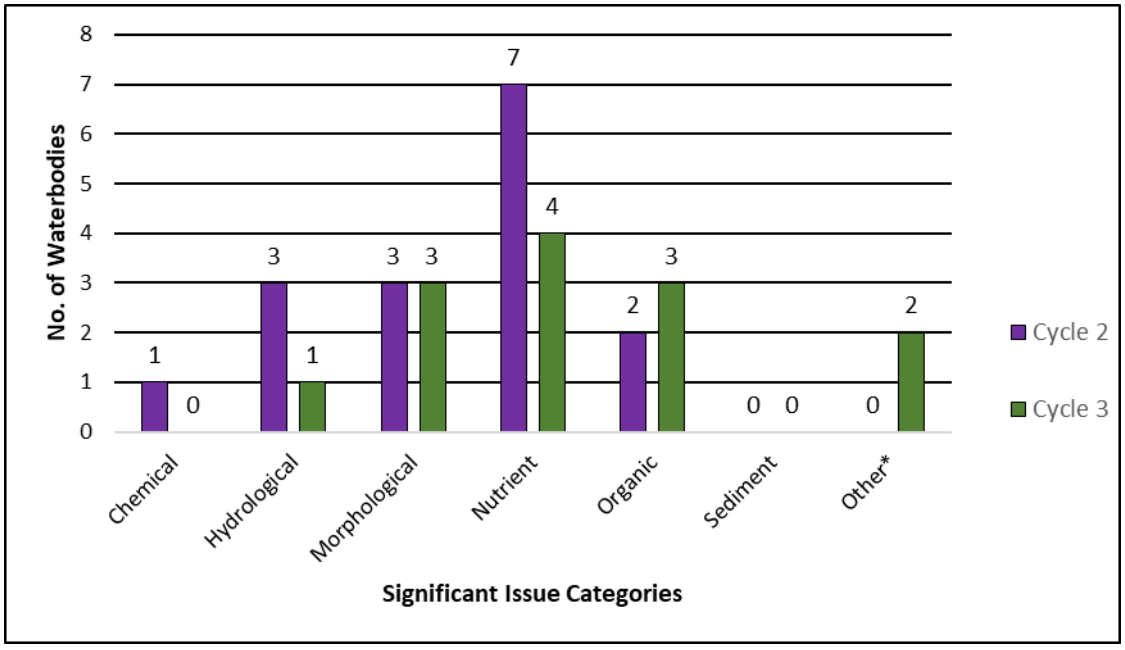


Figure 20: Number of waterbodies in each risk category in 2nd Cycle Areas for Action

8.4 Significant Issues in 2nd Cycle Areas for Action

- Based on the EPA assessment for Cycle 3, the significant issue in the 2nd Cycle Areas for Action is nutrient pollution, impacting four waterbodies (Figure 21). This is followed by hydrological and morphology issues, which are each impacting three waterbodies, and organic issues impacting two waterbodies.

- The number of 2nd Cycle Areas for Action waterbodies associated with each of the significant issues categories has reduced between Cycle 2 and Cycle 3 except for sediment which has increased from eight to nine waterbodies.



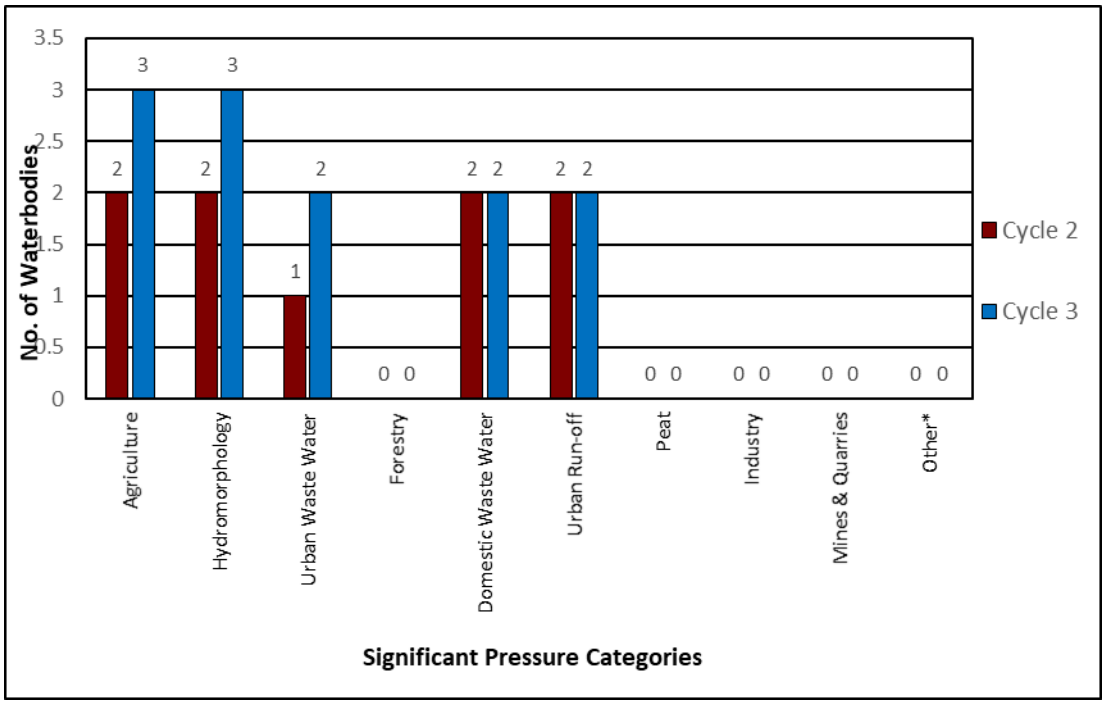
*Other - Acidification, saline intrusion, elevated temperature, litter, microbiological pollution and unknown impacts have all been grouped into the "Other" issues category for the purpose of this report

Figure 21: Significant Issues across all 2nd Cycle Areas for Action Waterbodies

8.5 Significant Pressure in 2nd Cycle Areas for Action

- For Cycle 3, in 2nd Cycle Areas for Action waterbodies in the catchment the dominant significant pressures are:
  - Hydromorphology – increased by one waterbody to three waterbodies impacted in Cycle 3 (two impacted in Cycle 2)
  - Agriculture – three waterbodies are impacted (two impacted in Cycle 2).
  - Domestic waste water – the number of waterbodies impacted remained the same as the previous cycle with two waterbodies impacted (two impacted in Cycle 2).
  - Urban wastewater pressures increased by one waterbody between the Cycle 2 and Cycle 3.
  - Urban run-off - two waterbodies remain impacted in Cycle 3.

- When comparing the significant pressures in the 2nd Cycle Areas for Action between Cycle 2 and 3 there has been an increase in all but two significant pressure categories in the catchment. The pressures which did not record an increase from Cycle 2 to Cycle 3, remained unchanged.



*Other – abstractions, aquaculture, atmospheric, anthropogenic pressures, historically polluted sites, waste, water treatment and invasive species have all been grouped into the "Other" pressure category for the purpose of this report

Figure 22: Significant Pressures in 2nd Cycle Area for Action Waterbodies

9 3rd Cycle Recommended Areas for Action

9.1 Areas for Action Overview

- For the 3rd Cycle Draft River Basin Management Plan Areas for Action have been extended out to not only include Prioritised Areas for Action undertaken by LAWPRO which focussed on restoring waterbodies, but to also include restoration work undertaken by all agencies under Areas for Restoration. In addition, protection work is included under Areas for Protection and research, pilot schemes and community initiatives are included under Catchment Projects. The

aim of the 3rd Cycle Plan is to capture all activity that is working to restore, improve and/or protect waterbodies.

- The Recommended 3rd Cycle Areas for Action list will be included in the Draft River Basin Management Plan and will be finalised after the consultation period.

- There are five Areas for Action, comprising of 27 waterbodies, recommended for further characterisation and action in the catchment for the 3rd Cycle River Basin Management Plan. 14 of the 27 waterbodies in the 3rd Cycle Recommended Areas for Action are *At Risk*, six are in *Review* and seven are *Not At Risk.* The five Recommended Areas for Action consist of two Areas for Protection and three Areas for Restoration. LAWPRO are the proposed lead organisation in three Recommended Areas for Action, Monaghan County Council are the proposed lead on one Recommended Area for Action and NFGWS are the proposed lead on the remaining one Recommended Area for Action. The Recommended Areas for Action in the catchment are listed in Table 5 and shown in Figure 23. The reason for selecting each waterbody in a Recommended Area for Action is provided in Appendix 3.

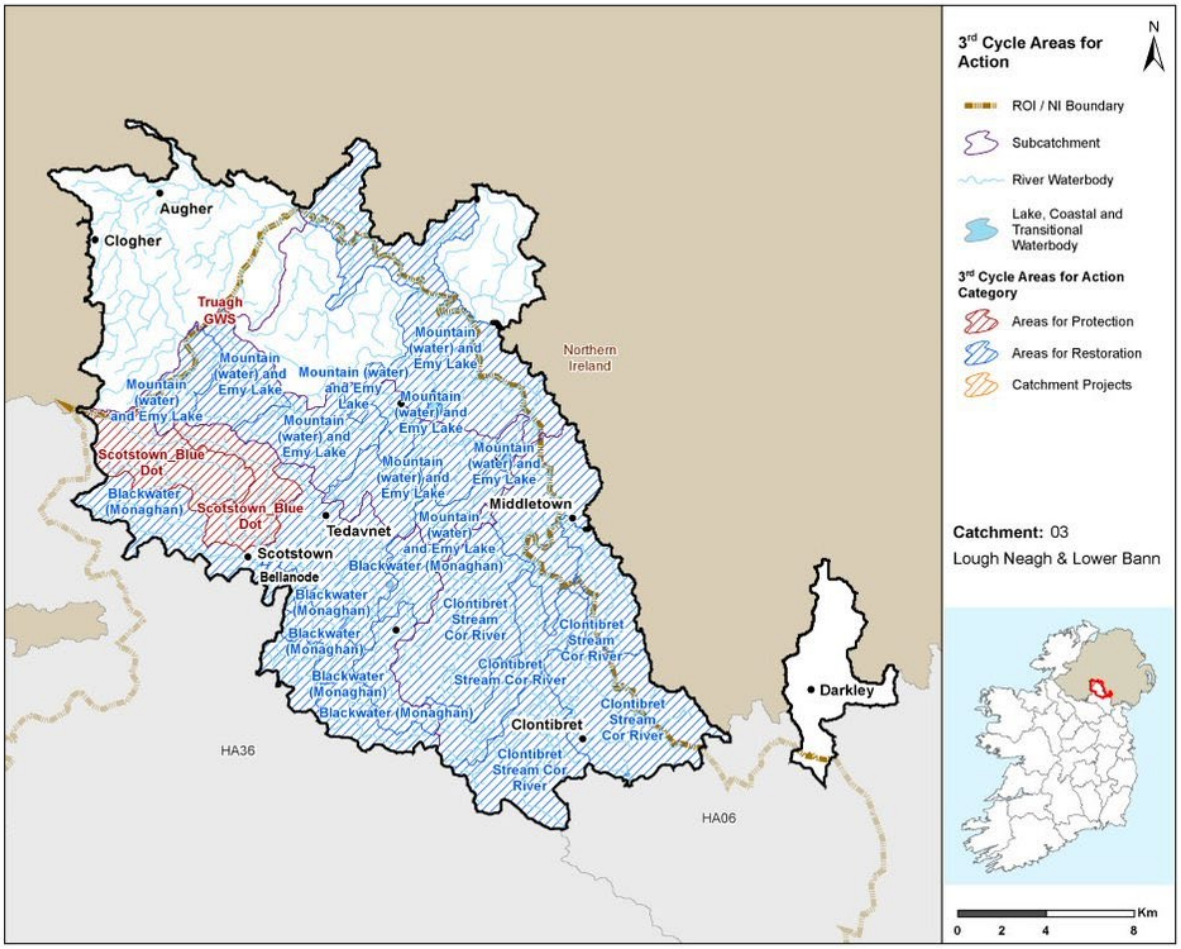


Figure 23: 3rd Cycle Recommended Areas for Action Locations

Table 5: 3rd Cycle Recommended Areas for Action Breakdown

3rd Cycle Recommended Area for Action	Number of Waterbodies	Recommended Area for Action Category	Recommended Area for Action Sub-category	Lead Organisation
Blackwater (Monaghan)	7	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Clontibret Stream Cor River	7	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Mountain (water) and Emy Lake	10	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Scotstown_Blue Dot	2	Protection	Blue Dot Areas for Action LAWPRO and Others	Monaghan County Council
Truagh GWS	1	Protection	Public Health Areas for Protection NFGWS, IW, HSE, LAs, SFPA	NFGWS

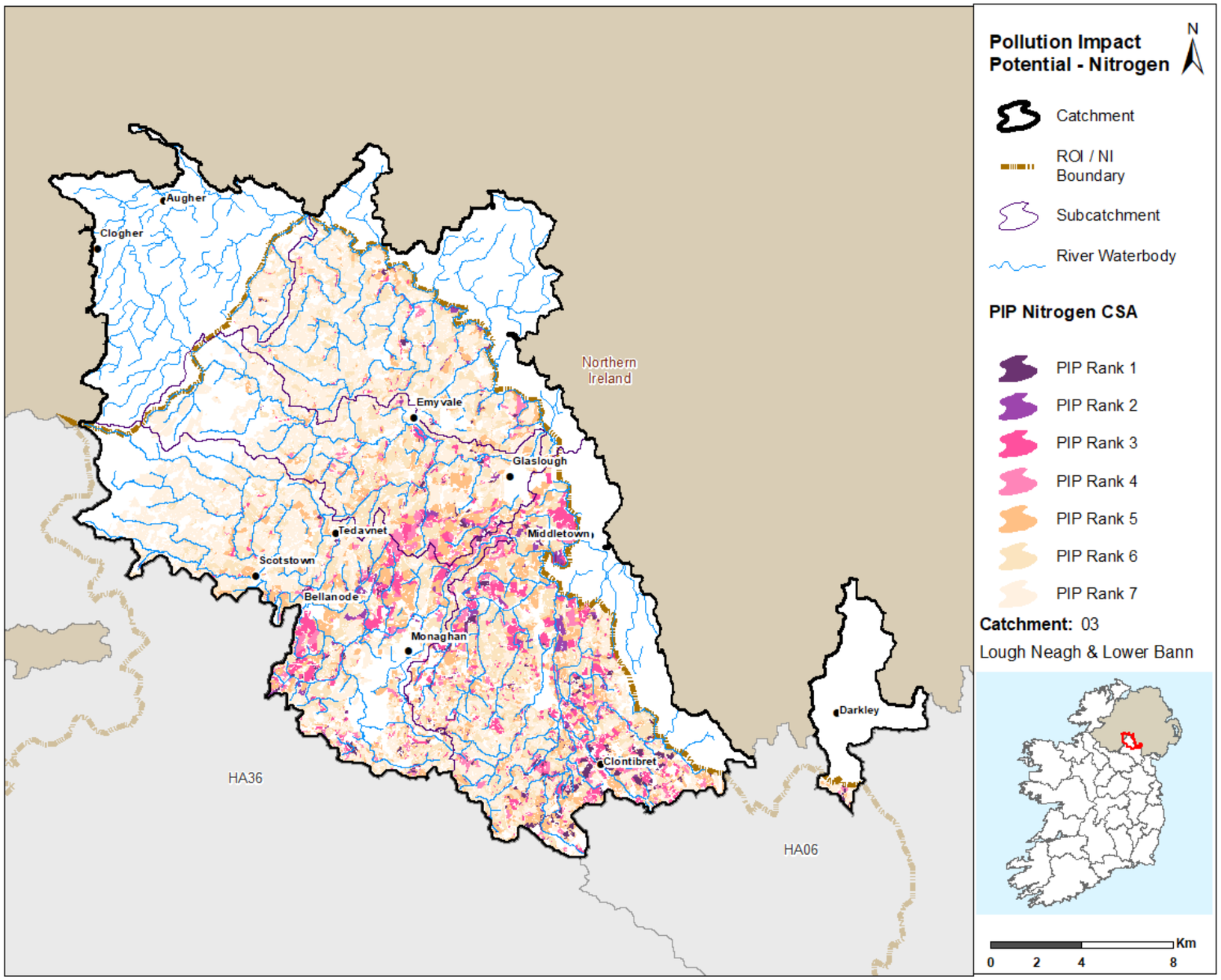
10 Catchment Summary

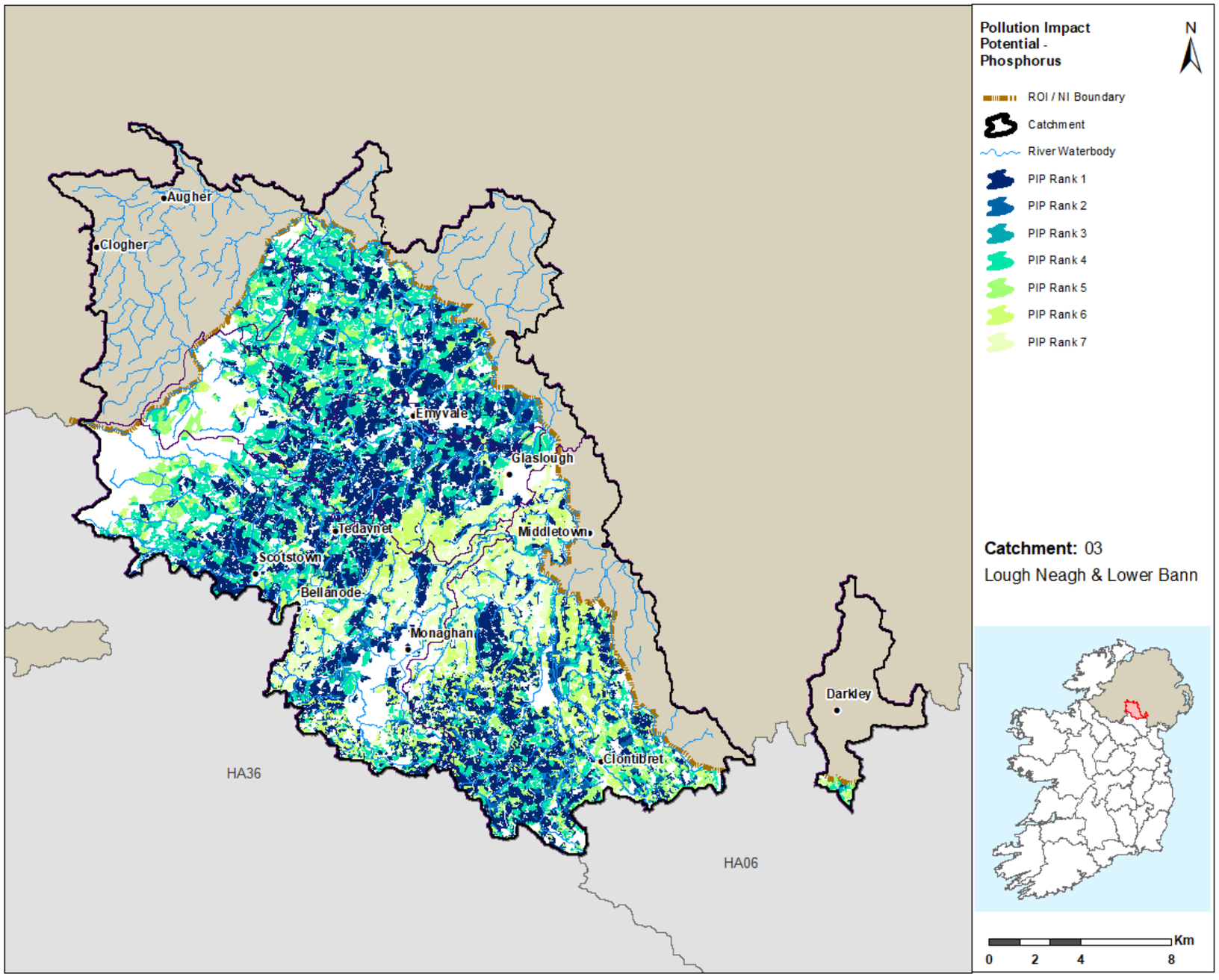
- Of the 27 river waterbodies, 14 are *At Risk* of not meeting their WFD objectives.
- One out of six lake waterbodies are *At Risk* of not meeting their WFD objectives.
- One out of 11 groundwater bodies is a *At Risk*.
- There has been an overall deterioration across the catchment with 16 waterbodies *At Risk* in Cycle 3 compared to 13 waterbodies *At Risk* in Cycle 2.
- The main significant issues are from nutrients pollution and morphological impacts, followed by organic, hydrological impacts, other and sediment pollution.
- The main significant pressures are agriculture and hydromorphological pressures followed by domestic waste water, urban run-off, urban waste water and other (waste and anthropogenic issues).
- The main impacts and pressures driving the change between Cycle 2 and Cycle 3 are increases in waterbodies impacted by nutrient and sediment. The increase in hydromorphological impacts is likely to be associated with a stronger evidence base and increasing awareness of hydromorphology rather than new significant hydromorphology pressures since Cycle 2.
- In the 2nd Cycle Areas for Action, three waterbodies were *At Risk* in Cycle 2 and four waterbodies are *At Risk* in Cycle 3.
- There are five 3rd Cycle Recommended Areas for Action recommended for Cycle 3. They comprise of 27 waterbodies with 14 waterbodies *At Risk*, six in *Review* and seven *Not At Risk*.

Appendix 1
High ecological status objective waterbodies

Waterbody Name	Waterbody Type	Waterbody Code	Status 2013-2018
MOUNTAIN WATER_010	River	UKGBNI1NB030308254	High

Appendix 2
Pollution Impact Potential Mapping




Pollution Impact Potential - Phosphorus
N
ROI / NI Boundary
Catchment
River Waterbody
PIP Rank 1
PIP Rank 2
PIP Rank 3
PIP Rank 4
PIP Rank 5
PIP Rank 6
PIP Rank 7
Augher
Clogher
Emyvale
Glaslough
Tedavnet
Middletown
Scotstown
Bellanode
Monaghan
Darkley
Clontibret
HA36
HA06
Catchment: 03
Lough Neagh & Lower Bann
Km
0
2
4
8

Appendix 3
Summary information on all waterbodies in the Lough Neagh-Lower Bann Catchment

Sub-catchment code	Waterbody Code	Waterbody name	Waterbody type	Risk 10-15	Risk 13-18	Status 10-15	Status 13-18	High Ecological Status Objective Waterbody	Significant Pressures	Recommended Area for Action Name	Recommended Area for Action (reasons for selection)
03_6	IE_NB_03B010130	BLACKWATER (MONAGHAN)_010	River	*Not At Risk*	*Review*	Good	Good	No		Blackwater (Monaghan)	Suggested by IFI - could benefit from input from LAWPRO and ASSAP team. It's a valuable local amenity and would benefit from some focussed attention.
03_6	IE_NB_03B010300	BLACKWATER (MONAGHAN)_020	River	*Not At Risk*	*Not At Risk*	Good	Good	No		Blackwater (Monaghan)	Included under sub-catchment approach
03_6	IE_NB_03B010510	BLACKWATER (MONAGHAN)_030	River	*Not At Risk*	*Not At Risk*	Good	Good	No		Blackwater (Monaghan)	Included under sub-catchment approach
03_6	IE_NB_03B010800	BLACKWATER (MONAGHAN)_040	River	*At Risk*	*At Risk*	Moderate	Moderate	No	UR, UWW	Blackwater (Monaghan)	Included under sub-catchment approach
03_5	IE_NB_03C011200	CLONTIBRET STREAM_020	River	*Review*	*At Risk*	Unassigned	Unassigned	No	Ag, DWW, Hymo	Clontibret Stream Cor River	Submissions from both MN CoCo and IFI - data available from Tellus, mix of pressures, geology issues also suspected
03_5	IE_NB_03C011400	CLONTIBRET STREAM_030	River	*At Risk*	*At Risk*	Poor	Poor	No	Ag, DWW, Hymo	Clontibret Stream Cor River	Submissions from both MN CoCo and IFI - data available from Tellus, mix of pressures, geology issues also suspected
03_6	IE_NB_03C021100	CONAWARY (LOWER)_010	River	*At Risk*	*At Risk*	Poor	Poor	No	Ag, Hymo	Blackwater (Monaghan)	Suggested by IFI - could benefit from input from LAWPRO and ASSAP team. It's a valuable local amenity and would benefit from some focussed attention.
03_6	IE_NB_03C021300	CONAWARY (LOWER)_020	River	*At Risk*	*At Risk*	Poor	Poor	No	Ag, DWW	Blackwater (Monaghan)	Suggested by IFI - could benefit from input from LAWPRO and ASSAP team. It's a valuable local amenity and would benefit from some focussed attention.
03_4	IE_NB_03L100990	LISAVARGY_010	River	*Review*	*Review*	Unassigned	Unassigned	No			
03_2	IE_NB_03M010200	MOUNTAIN WATER_020	River	*Not At Risk*	*Not At Risk*	High	Good	No		Mountain (water) and Emy Lake	Expansion of existing PAA IW - EPA Pesticide Act and Watch list - Watch
03_2	IE_NB_03M010400	MOUNTAIN WATER_030	River	*Review*	*Review*	Good	Good	No		Mountain (water) and Emy Lake	Existing PAA
03_2	IE_NB_03M010500	MOUNTAIN WATER_040	River	*At Risk*	*At Risk*	Poor	Poor	No	Ag, DWW, Hymo, UR, UWW	Mountain (water) and Emy Lake	Existing PAA

Sub-catchment code	Waterbody Code	Waterbody name	Waterbody type	Risk 10-15	Risk 13-18	Status 10-15	Status 13-18	High Ecological Status Objective Waterbody	Significant Pressures	Recommended Area for Action Name	Recommended Area for Action (reasons for selection)
03_2	IE_NB_03M010650	MOUNTAIN WATER_050	River	*At Risk*	*At Risk*	Poor	Moderate	No	Ag, Hymo	Mountain (water) and Emy Lake	Existing PAA
03_2	IE_NB_03M010700	MOUNTAIN WATER_060	River	*Review*	*At Risk*	Unassigned	Unassigned	No	Ag, Hymo, UWW	Mountain (water) and Emy Lake	Existing PAA
03_5	IE_NB_03M050960	MULLAMURPHY_010	River	*Review*	*Review*	Unassigned	Unassigned	No		Clontibret Stream Cor River	Included under sub-catchment approach
03_6	IE_NB_03S010500	SHAMBLES_010	River	*At Risk*	*At Risk*	Poor	Poor	No	UR, UWW	Blackwater (Monaghan)	Included under sub-catchment approach
03_6	IE_NB_03S020500	SCOTSTOWN_020	River	*Not At Risk*	*Not At Risk*	High	High	No		Scotstown_Blue Dot	Currently achieving High Status - important to Protect and include with Blue Dot site u/s
03_4	IE_NB_03T170930	TIRERAN_010	River	*Review*	*Review*	Unassigned	Unassigned	No			
03_4	UKGBNI1NB030307042	Crilly Feeder	River	*At Risk*	*At Risk*	Unassigned	Unassigned	No	Other		
03_5	UKGBNI1NB030307096	Cor River Tributary	River	*At Risk*	*At Risk*	Unassigned	Unassigned	No	Ag	Clontibret Stream Cor River	Included under sub-catchment approach
03_3	UKGBNI1NB030307238	Fury River	River	*Not At Risk*	*Not At Risk*	Unassigned	Unassigned	No			
03_4	UKGBNI1NB030308201	River Blackwater (Annaghroe)	River	*Not At Risk*	*At Risk*	Unassigned	Unassigned	No	Ag, Hymo	Mountain (water) and Emy Lake	Expansion of existing PAA - inputs to Emy Lough and requires further characterisation
03_5	UKGBNI1NB030308202	CLONTIBRET STREAM_010	River	*At Risk*	*At Risk*	Poor	Poor	No	DWW, Hymo, UR	Clontibret Stream Cor River	Submissions from both MN CoCo and IFI - data available from Tellus, mix of pressures, geology issues also suspected
03_3	UKGBNI1NB030308223	River Blackwater (Augher)	River	*Not At Risk*	*Not At Risk*	Unassigned	Unassigned	No			
03_5	UKGBNI1NB030308245	Cor River	River	*At Risk*	*At Risk*	Unassigned	Unassigned	No	Ag, Hymo	Clontibret Stream Cor River	Included under sub-catchment approach
03_2	UKGBNI1NB030308254	MOUNTAIN WATER_010	River	*Not At Risk*	*Not At Risk*	High	High	Yes		Mountain (water) and Emy Lake	Expansion of existing PAA - Blue Dot waterbody for Protection
03_6	UKGBNI1NB030308255	SCOTSTOWN_010	River	*Not At Risk*	*Not At Risk*	High	High	No		Scotstown_Blue Dot	Blue Dot site
03_4	IE_NB_03_102	Emy	Lake	*At Risk*	*At Risk*	Moderate	Moderate	No	DWW, UR	Mountain (water) and Emy Lake	Existing PAA - needs further LCA IW - EPA Pesticide Act and Watch list - Watch. Water imported from private GWS. May have a source protection project in the furture.
03_2	IE_NB_03_3	Grove	Lake	*Review*	*Review*	Unassigned	Unassigned	No		Mountain (water) and Emy Lake	Existing PAA - unassigned lake, needs further charcterisation
03_2	IE_NB_03_79	Glaslough	Lake	*Review*	*Review*	Unassigned	Unassigned	No		Mountain (water) and Emy Lake	Existing PAA - unassigned lake, needs further charcterisation

Sub-catchment code	Waterbody Code	Waterbody name	Waterbody type	Risk 10-15	Risk 13-18	Status 10-15	Status 13-18	High Ecological Status Objective Waterbody	Significant Pressures	Recommended Area for Action Name	Recommended Area for Action (reasons for selection)
03_5	IE_NB_03_86	White Annayalla	Lake	*Review*	*Review*	Unassigned	Unassigned	No		Clontibret Stream Cor River	Included under sub-catchment approach and lies within Clontibret Stream_010
03_3	IE_NB_03_87	More MN	Lake	*Not At Risk*	*Not At Risk*	Good	Good	No		Truagh GWS	The NFGWS would like to propose that Lough More is included within a PAA as it is the water abstraction source for the Truagh GWS and is currently classified as being of 'Good' status and worthy of protection.
03_6	IE_NB_03_90	Lambs	Lake	*Review*	*Review*	Unassigned	Unassigned	No			
03_2, 03_6, 36_17	IE_NB_G_013	Tydavnet	Groundwater	*Not At Risk*	*Review*	Good	Good	No			
03_5, 06_8	IE_NB_G_026	Waste Facility (W0020-01)	Groundwater	*At Risk*	*At Risk*	Poor	Poor	No	Other		
03_5, 03_6, 06_5, 06_7, 06_8, 07_10, 07_5, 26C_2, 26C_4, 26C_6, 26F_3, 26F_6, 26F_7, 36_10, 36_11, 36_12, 36_14, 36_16, 36_17, 36_18, 36_19, 36_21, 36_3, 36_4, 36_5, 36_8, 36_9	IE_NW_G_061	Cavan	Groundwater	*Review*	*Not At Risk*	Good	Good	No			
03_2, 03_3, 03_4, 03_5, 03_6, 36_2	IEGBNI_NB_G_007	Aughnacloy	Groundwater	*Not At Risk*	*Not At Risk*	Good	Good	No			
03_1, 03_5, 03_6, 06_2, 06_8, 36_10, 36_12, 36_17, 36_3	IEGBNI_NB_G_011	Keady	Groundwater	*Review*	*Not At Risk*	Good	Good	No			
03_2, 03_5, 03_6, 36_17	IEGBNI_NB_G_012	Monaghan Town	Groundwater	*Not At Risk*	*Not At Risk*	Good	Good	No			
03_2, 03_3, 03_6, 36_17, 36_2	IEGBNI_NB_G_014	Knockatallon	Groundwater	*Not At Risk*	*Not At Risk*	Good	Good	No			
03_1, 03_5, 06_1, 06_10, 06_11, 06_12, 06_13, 06_14, 06_15, 06_2, 06_3, 06_4, 06_5, 06_6, 06_7, 06_8, 06_9, 07_14, 07_15, 07_17, 07_18, 07_5, 36_12, 36_16	IEGBNI_NB_G_019	Louth	Groundwater	*Review*	*Not At Risk*	Good	Good	No			
03_3, 03_6, 36_17, 36_2	IEGBNI_NW_G_025	Cooneen Water	Groundwater	*Not At Risk*	*Not At Risk*	Good	Good	No			

Sub-catchment code	Waterbody Code	Waterbody name	Waterbody type	Risk 10-15	Risk 13-18	Status 10-15	Status 13-18	High Ecological Status Objective Waterbody	Significant Pressures	Recommended Area for Action Name	Recommended Area for Action (reasons for selection)
03_6, 36_14, 36_17, 36_22	IEGBNI_NW_G_028	Magheraveely	Groundwater	*Not At Risk*	*Not At Risk*	Good	Good	No			
03_6, 36_13, 36_14, 36_17, 36_21, 36_22	IEGBNI_NW_G_063	Clones	Groundwater	*Review*	*Not At Risk*	Good	Good	No			

Ag: Agriculture

DWW: Domestic Waste Water

For: Forestry

Hymo: Hydromorphology

Ind: Industry

M+Q: Mines and Quarries

Peat: Peat Drainage and Extraction

UR: Urban Run-off

UWW: Urban Waste Water

Note: Significant Pressures for *Review* waterbodies have not been included as they will need to be confirmed as part of an Investigative Assessment.