

# **3<sup>rd</sup> Cycle Draft Upper Shannon (Lough Ree) Catchment Report (HA 26E)**



**Catchment Science & Management Unit**

**Environmental Protection Agency**

August 2021

Version no. 1

## Preface

This document provides a summary of the water quality assessment outcomes for the Upper Shannon (Lough Ree) 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 3<sup>rd</sup> 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 2<sup>nd</sup> Cycle Areas for Action and a list of proposed 3<sup>rd</sup> 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.

<b>Water Framework Directive – key dates and terminology</b>	
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.
2 <sup>nd</sup> 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.
2 <sup>nd</sup> 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.
3 <sup>rd</sup> 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.
3 <sup>rd</sup> 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.

# Table of Contents

1	Introduction.....	5
2	Waterbody Overview.....	7
2.1	Waterbody Status .....	7
2.2	Protected Areas .....	9
2.3	Heavily Modified Waterbodies.....	12
2.4	Artificial Waterbodies .....	12
3	Waterbody Risk .....	12
3.1	Overview of Risk .....	12
3.2	Surface Waters.....	12
3.3	Groundwater.....	15
3.4	Heavily Modified Waterbodies.....	17
3.5	Artificial Waterbodies .....	17
4	Significant Issues in <i>At Risk</i> Waterbodies .....	17
4.1	All Waterbodies .....	17
4.2	High Status Objective Waterbodies .....	18
5	Significant pressures in <i>At Risk</i> Waterbodies.....	18
5.1	All Waterbodies .....	18
5.2	High Status Objective Waterbodies .....	23
6	Source Load Apportionment Modelling (SLAM) .....	23
7	Load Reduction Assessment .....	23
7.1	Nitrogen Load Reduction .....	23
7.2	Phosphorus / Sediment Load Reduction .....	24
8	2 <sup>nd</sup> Cycle Areas for Action .....	24
8.1	Area for Action Overview .....	24
8.2	Status Change in 2 <sup>nd</sup> Cycle Areas for Action .....	26
8.3	Waterbody Risk in 2 <sup>nd</sup> Cycle Areas for Action .....	26
8.4	Significant Issues in 2 <sup>nd</sup> Cycle Areas for Action.....	27
8.5	Significant Pressure in 2 <sup>nd</sup> Cycle Areas for Action .....	28
9	3 <sup>rd</sup> Cycle Recommended Areas for Action .....	28
9.1	Recommended Areas for Action Overview .....	28
10	Catchment Summary .....	30

## List of Figures

Figure 1: Overview of subcatchments in the Upper Shannon (Lough Ree) catchment .....	6
Figure 2: Waterbody types and numbers in the Upper Shannon (Lough Ree) Catchment. ....	7
Figure 3: Waterbody Status Breakdown (All waterbodies).....	8
Figure 4: Status Class Changes between Cycle 2 and Cycle 3 .....	9
Figure 5: Water Dependent SPAs / SACs.....	11
Figure 6: Number of waterbodies in each risk category .....	13
Figure 7: Surface Water Risk Cycle 3 .....	14
Figure 8: Surface Water Risk Change between Cycle 2 and Cycle 3 .....	15
Figure 9: Cycle 3 Groundwater Body Risk .....	16
Figure 10: Groundwater Body Risk Change between Cycle 2 & Cycle 3 .....	17
Figure 11: Significant Issues across all <i>At Risk</i> WBs between Cycle 2 and Cycle 3.....	18
Figure 12: Significant Pressure (All <i>At Risk</i> Waterbodies) .....	19
Figure 13: Locations of Waterbodies where Hydromorphology is a Significant Pressure .....	22
Figure 14: Locations of Waterbodies where Agriculture is a Significant Pressure.....	22
Figure 15: Locations of Waterbodies where Urban Run-off is a Significant Pressure .....	22
Figure 16: Locations of Waterbodies where Other is a Significant Pressure .....	22
Figure 17: Estimated Proportions of N & P from Each Sector in the Upper Shannon (Lough Ree) Catchment .....	23
Figure 18: Waterbodies where Agricultural Measures should be Targeted .....	24
Figure 19: 2 <sup>nd</sup> Cycle Areas for Action Locations .....	25
Figure 20: 2 <sup>nd</sup> Cycle Area for Action Waterbody Status Class Changes between Cycle 2 and Cycle 3 ..	26
Figure 21: Number of waterbodies in each risk category in 2 <sup>nd</sup> Cycle Areas for Action .....	27
Figure 22: Significant Issues across all 2 <sup>nd</sup> Cycle Areas for Action Waterbodies.....	28
Figure 23: Significant Pressures in 2 <sup>nd</sup> Cycle Area for Action Waterbodies .....	28
Figure 24: 3 <sup>rd</sup> Cycle Recommended Areas for Action Locations .....	29

## List of Tables

Table 1: Waterbody Status Breakdown Table (All Waterbodies).....	8
Table 2: Natura 2000 Network Assessment Summary.....	10
Table 3: Nutrient sensitive areas in the catchment .....	11
Table 4: Urban Waste Water Treatment Agglomerations identified as significant pressures in <i>At Risk</i> waterbodies in Cycle 3 .....	20
Table 5: 2 <sup>nd</sup> Cycle Areas for Action .....	25
Table 6: 3 <sup>rd</sup> Cycle Recommended Areas for Action Breakdown.....	30

## 1 Introduction

The Upper Shannon (Lough Ree) covers an area of 581km<sup>2</sup> and is characterised by a flat landscape underlain by impure limestones to the east and purer, karstified limestones under and to the west of Lough Ree (Figure 1). There are extensive sand and gravel deposits to the east and northeast of Athlone that form a productive groundwater aquifer. The western part of the catchment is drained by the Hind River which flows south through Roscommon Town before turning east and making its way to Lough Ree. There are numerous karst depressions and springs in the western part of the catchment. The River

Inny flows into Lough Ree from the east about halfway between the northern and southern ends of the Lough. The southeastern corner of the catchment is drained by the Breensford River which flows west from Mount Temple and into Lough Ree via Killinure Lough. The Shannon outflows from the southern end of Lough Ree making its way towards Athlone.

To provide context, 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 3<sup>rd</sup> Cycle River Basin Management Plan. In addition, a comparative overview of the water quality in the Upper Shannon (Lough Ree) catchment between Cycle 2 and Cycle 3 characterisation is provided along with a summary of the progress made in the 2<sup>nd</sup> Cycle Areas for Action. The recommended list for the 3<sup>rd</sup> Cycle Areas for Action is also provided.

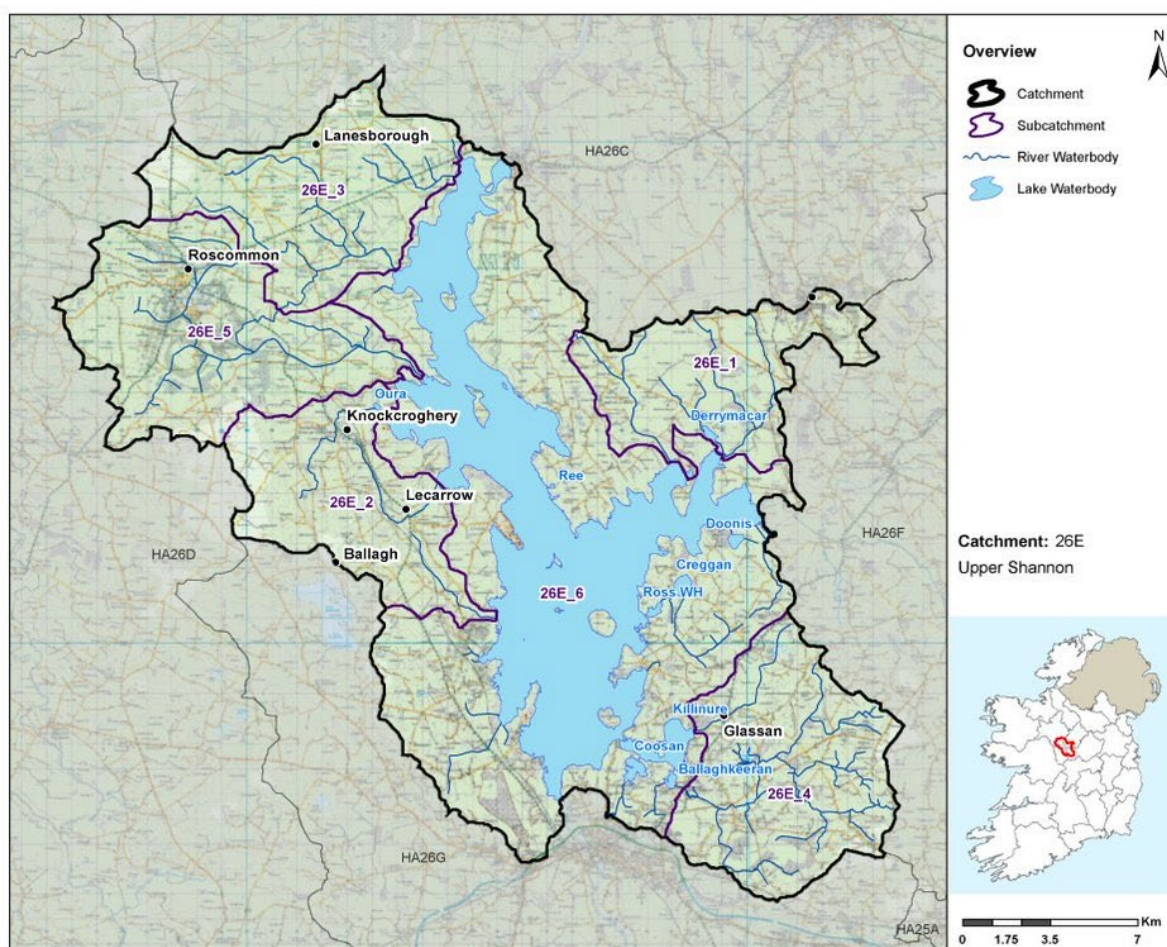


Figure 1: Overview of subcatchments in the Upper Shannon (Lough Ree) catchment

The Upper Shannon (Lough Ree) catchment is divided into six subcatchments (Figure 1) with 19 river<sup>1</sup> waterbodies, nine lake waterbodies and 15 groundwater bodies (Figure 2).

<sup>1</sup> One of the river waterbodies within this catchment is the artificial waterbody, Royal Canal Main Line (Upper Shannon E).

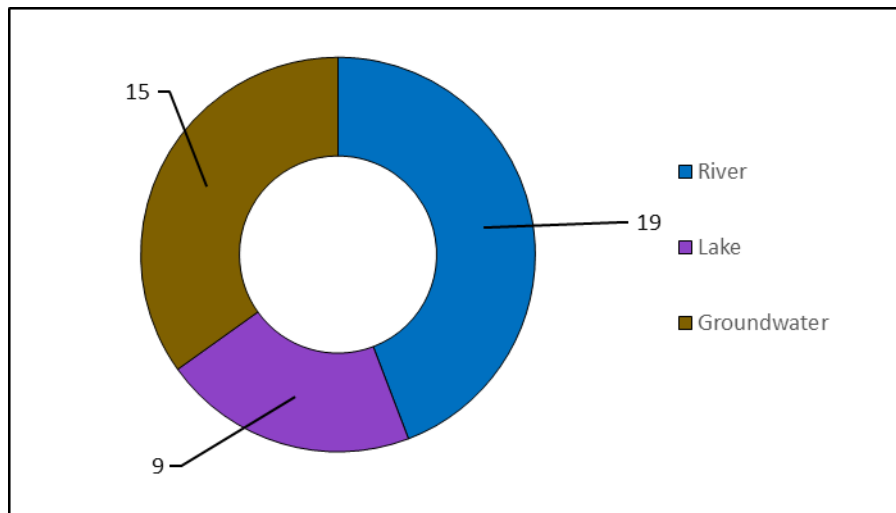


Figure 2: Waterbody types and numbers in the Upper Shannon (Lough Ree) Catchment.

## 2 Waterbody Overview

### 2.1 Waterbody Status

- ◆ This assessment to inform the 3<sup>rd</sup> 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 is one waterbody achieving High Status, 20 achieving Good Status, four achieving Moderate Status and five achieving Poor Status. There are 13 waterbodies in the catchment that do not have status classification assigned. All waterbodies must achieve at least Good Ecological status.
- ◆ There is one lake waterbody, Coosan lake that must achieve High Ecological Status (HES) in this catchment. This waterbody is listed in Appendix 1. Coosen lake is currently achieving High Status.
- ◆ There have been reductions of one lake waterbody achieving Moderate Status and one unassigned river waterbody between Cycle 2 and Cycle 3. There have been increases in one lake waterbody achieving Good Status and one river waterbody achieving Poor Status (Figure 3 & Table 1).



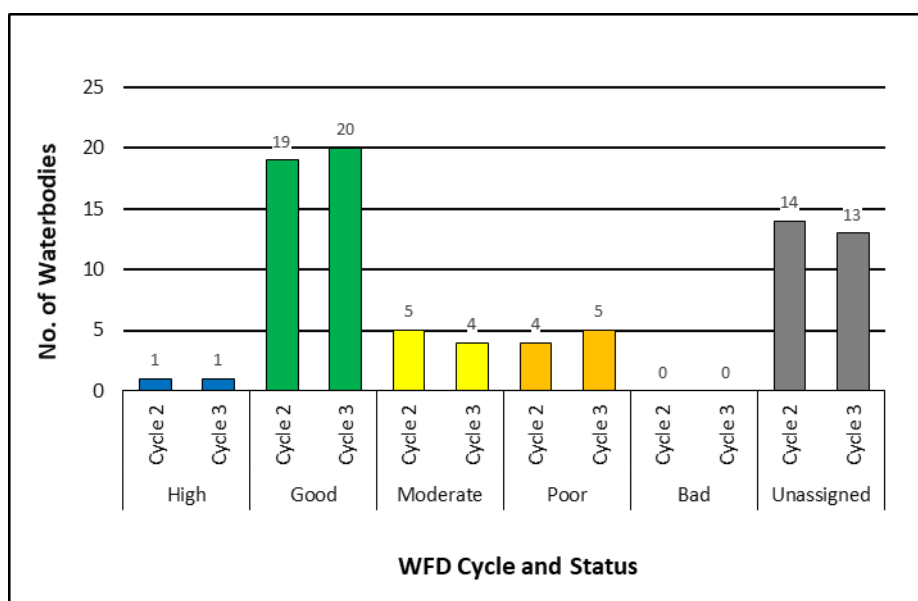


Figure 3: Waterbody Status Breakdown (All waterbodies)

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	0	0	1	1	0	0	0	0	0	0	1	1
Good	2	2	2	3	0	0	0	0	15	15	19	20
Moderate	4	4	1	0	0	0	0	0	0	0	5	4
Poor	4	5	0	0	0	0	0	0	0	0	4	5
Bad	0	0	0	0	0	0	0	0	0	0	0	0
Un-assigned	9	8	5	5	0	0	0	0	0	0	14	13
<b>Total</b>	<b>19</b>	<b>19</b>	<b>9</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>15</b>	<b>43</b>	<b>43</b>

- ◆ 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, two (7%) waterbodies have improved in status, 26 (90%) waterbodies have remained unchanged and one (3%) waterbodies have declined in status.<sup>2</sup>
- ◆ There is an overall improvement in the status of one waterbody across the catchment since the Cycle 2 assessment.

<sup>2</sup> 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.



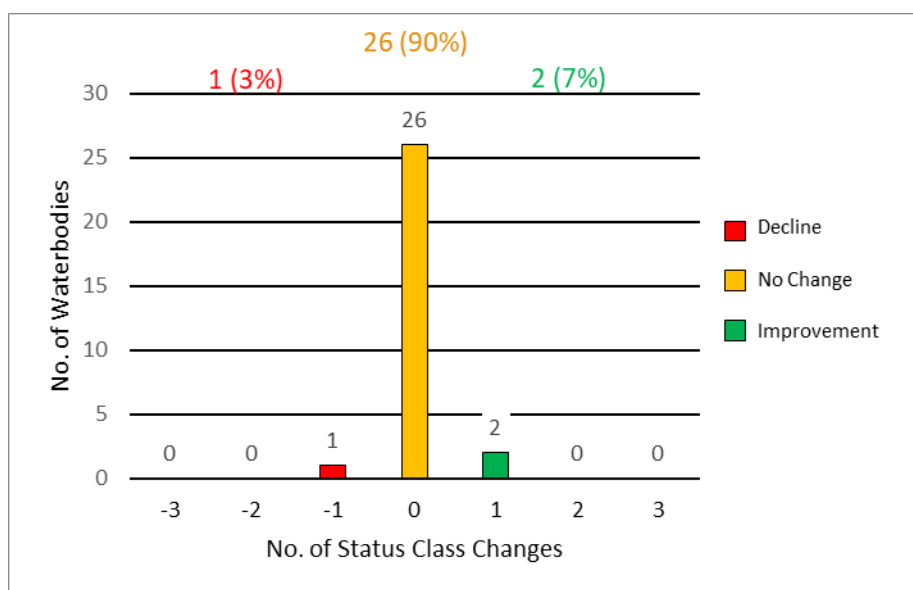


Figure 4: Status Class Changes between Cycle 2 and Cycle 3

## 2.2 Protected Areas

### 2.2.1 Drinking Water

- ◆ There are no surface 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*.
- ◆ For more detailed information please see the EPA reports on drinking water quality in 2019 for *Public Supplies*<sup>3</sup> and *Private Supplies*<sup>4</sup>.

### 2.2.2 Bathing Waters

- ◆ There are no bathing waters in or directly adjacent to the catchment identified under the Bathing Water Regulations 2008.
- ◆ For more detailed information please see the EPA report on *bathing water quality in 2020*<sup>5</sup>.

### 2.2.3 Shellfish Areas

- ◆ There are no designated shellfish areas in the catchment.

### 2.2.4 Natura 2000 Sites

- ◆ Many of the habitats and species listed for protection in the Birds and Habitats Directives are water dependent. The Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) with

<sup>3</sup><https://www.epa.ie/publications/compliance--enforcement/drinking-water/annual-drinking-water-reports/drinking-water-quality-in-public-supplies-2019.php>

<sup>4</sup><https://www.epa.ie/publications/compliance--enforcement/drinking-water/annual-drinking-water-reports/focus-on-private-water-supplies-2019.php>

<sup>5</sup><https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/bathing-water-quality-in-ireland-2020-.php>

water dependent habitats or species in this catchment are presented in Figure 5, along with waterbodies designated as salmonid waters (S.I. No. 293 of 1988) and waterbodies with Fresh Water Pearl Mussel habitat, where identified.

- ◆ There are five SACs in this catchment, all of which have water dependent habitats or species. The waterbodies within these SACs were assessed for associated water dependent habitats and species and if they met the supporting requirements for habitats and species using their 2013-2018 WFD status. For the purposes of the assessment, it was assumed that Good ecological status is adequate to meet the supporting conditions of all habitats and species with the exception of the Freshwater Pearl Mussel, which has additional requirements for supporting conditions set out in the Freshwater Pearl Mussel Regulations (S.I. No 296 of 2009) for macroinvertebrates, filamentous algae, phytobenthos, macrophytes and siltation.
- ◆ Specific water supporting conditions have not been identified for the dependent bird species in the SPAs and so waterbodies associated with SPAs are not included in this assessment.

Results of the overall assessment for this catchment are outlined in Table 2 below, information at a waterbody level can be viewed at [Catchments.ie](https://www.catchments.ie).<sup>6</sup>

Table 2: Natura 2000 Network Assessment Summary

Water Body Type	Total No.	Meeting the Requirements	Did not meet the Requirements	Unknown*
Rivers	12	0	4	8
Lakes	9	8	0	1

\*As the waterbody status was unassigned.

- ◆ There are no river waterbodies with FWPM habitats in the catchment.
- ◆ There are three groundwater bodies delineated and assessed as Groundwater Dependent Terrestrial Ecosystems for this catchment. All associated groundwater bodies (GWDTE-Lough Ree Fen nine (SAC000440), GWDTE-Lough Ree Fen 10 (SAC000440) & GWDTE-Lough Ree Fen 12 (SAC000440) are at Good Status (2013-2018).
- ◆ Water dependent SACs/ SPAs in the catchment are illustrated in Figure 5.

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<sup>6</sup><https://www.catchments.ie/download/catchments-assessments-protected-areas-supporting-documents/>

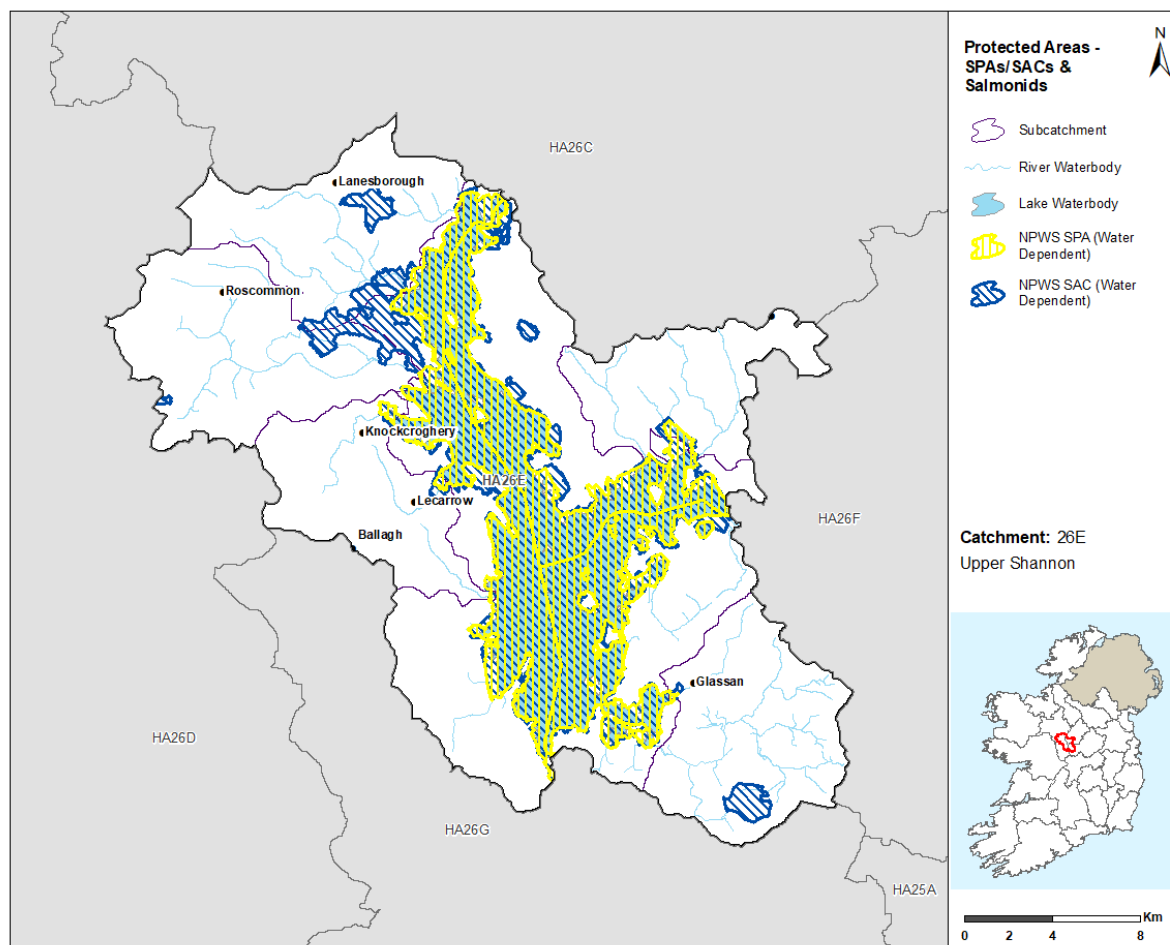


Figure 5: Water Dependent SPAs / SACs

## 2.2.5 Nutrient Sensitive Areas

- ◆ The EPA carried out a review of Nutrient Sensitive Areas (NSAs) downstream of large urban waste water discharges in 2020. 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 is one NSA in the catchment and it is downstream of Roscommon urban wastewater agglomerations. NSA objectives are being met in the intersecting water bodies (Table 3).

Table 3: Nutrient sensitive areas in the catchment

Nutrient Sensitive Area	Agglomeration		Water body		Objective met?		Comment
	Name	Code	Name	Code	Yes	No	
Hind River (010 to 030)	Roscommon	D0116-01	Hind_010	IE_SH_26H010300	✓		Tertiary Treatment in place
			Hind_020				
			Hind_030				

## 2.3 Heavily Modified Waterbodies

- ◆ Based on the 1<sup>st</sup> and 2<sup>nd</sup> RBMPs there are currently no heavily modified water bodies (HMWBs) in the catchment. There will be a consultation period on HMWBs for the 3<sup>rd</sup> Cycle RBMP and this will be completed for inclusion in the 3<sup>rd</sup> Cycle Final RBMP.

## 2.4 Artificial Waterbodies

- ◆ In total, there is one artificial waterbody in the Upper Shannon (Lough Ree) Catchment, Royal Canal Main Line (Upper Shannon E).
- ◆ The artificial waterbody is currently at Good Status. Prior to Cycle 3, the waterbody was at Good Status in Cycle 2, therefore, no change in status has been observed over the two cycles.

# 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 of 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 43 waterbodies in the Upper Shannon (Lough Ree) Catchment and 10 (23%) are currently *At Risk*, 16 (37%) in *Review* and 17 (40%) are *Not At Risk*.

## 3.2 Surface Waters

- ◆ For the 19 river waterbodies, nine (47%) are *At Risk*, eight (42%) are in *Review* and two (11%) are *Not At Risk*.
- ◆ For the nine lake waterbodies, four (44%) are in *Review* and five (56%) are *Not At Risk*.
- ◆ The largest proportion of *At Risk* waterbodies are found in river waterbodies, accounting for nine (90%) of 10 *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 of four *Not At Risk* waterbodies, a decrease of three *Review* waterbodies between Cycle 2 and Cycle 3. Royal Canal Main Line (Upper Shannon E) artificial waterbody which did not have risk assigned for Cycle 2 but is now in *Review*.

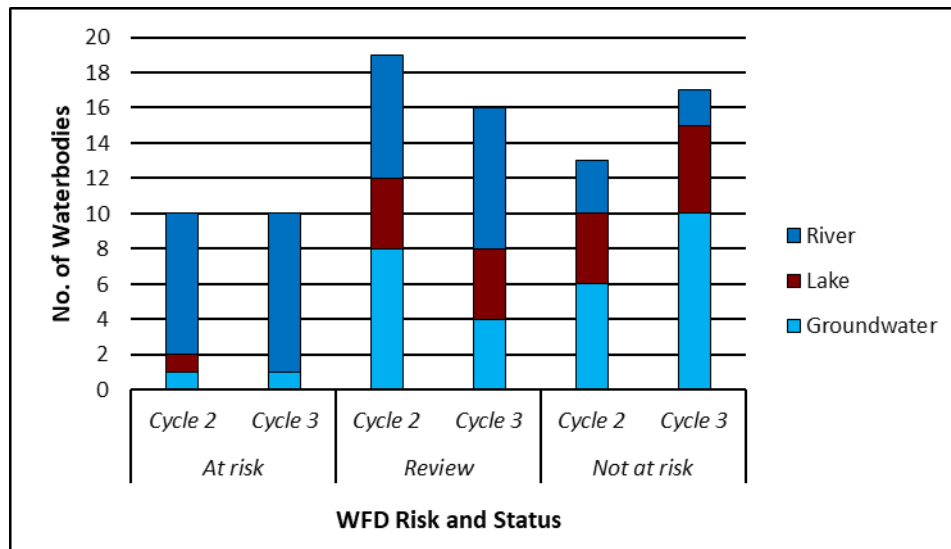


Figure 6: Number of waterbodies in each risk category

- ◆ 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.

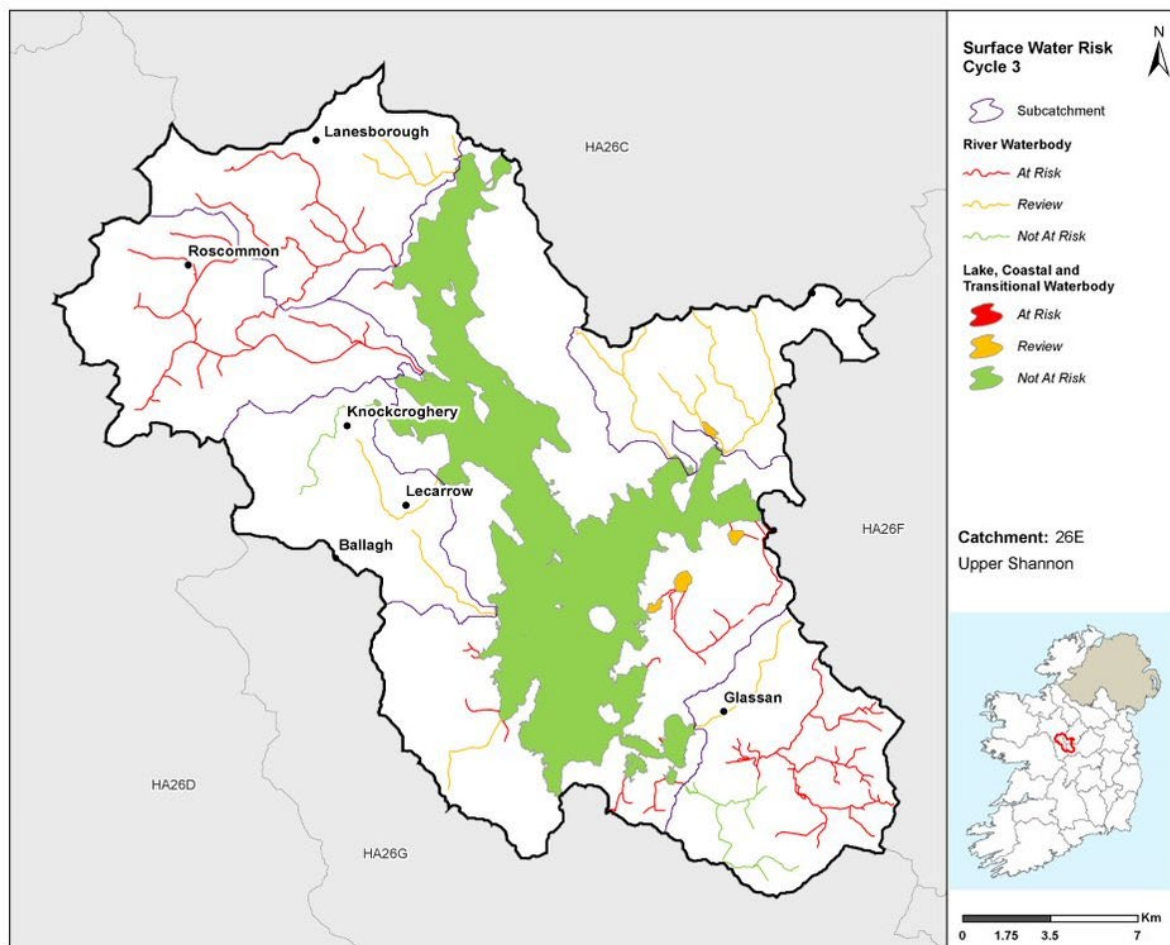


Figure 7: Surface Water Risk Cycle 3

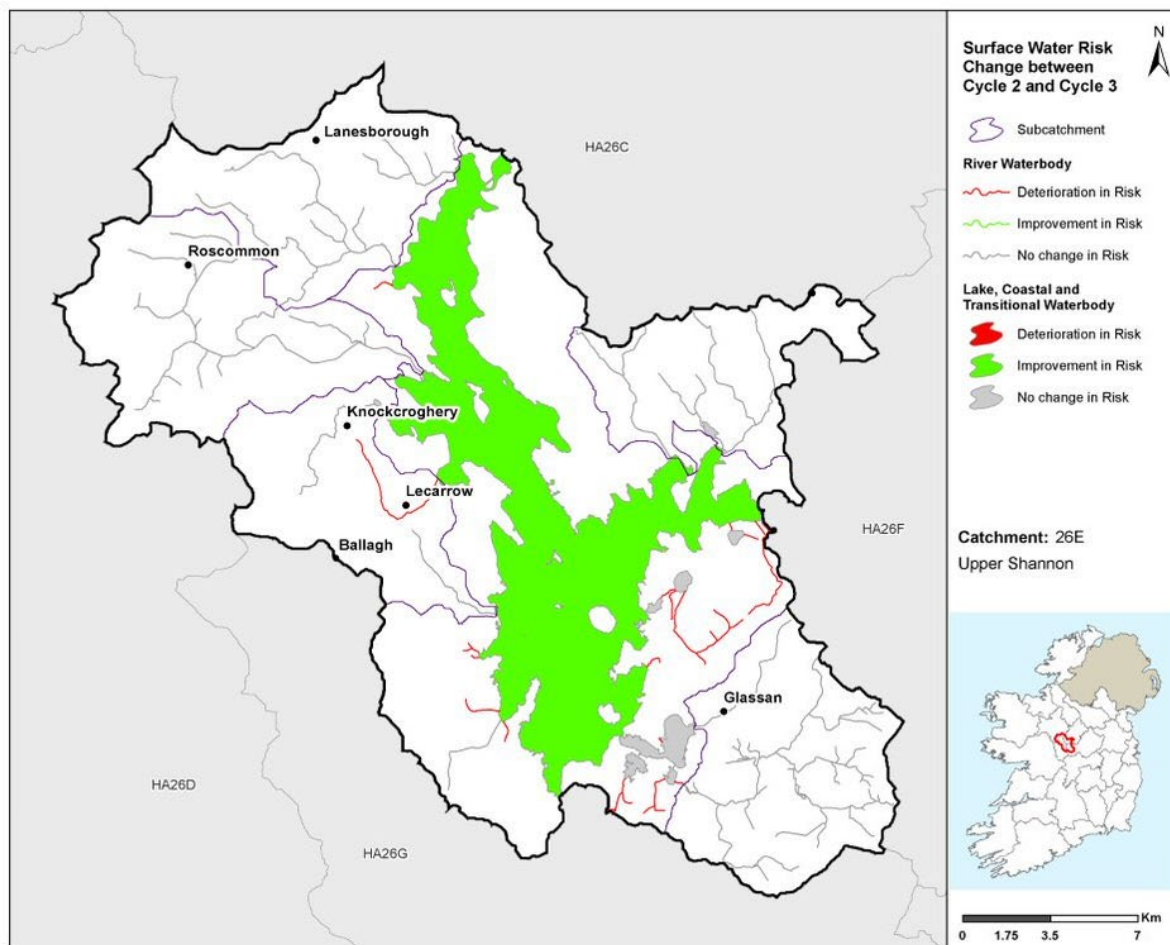


Figure 8: Surface Water Risk Change between Cycle 2 and Cycle 3

### 3.3 Groundwater

- ◆ For the 15 groundwater bodies, one (7%) is *At Risk* (Funshinagh), four (27%) are in *Review* and 10 (67%) are *Not At Risk*.
- ◆ In Cycle 2 there was one groundwater body (Carrick on Shannon) *At Risk* in this catchment in Cycle 2, eight 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 while the groundwater bodies that have experienced a change in risk between Cycle 2 and 3 are shown in Figure 10.



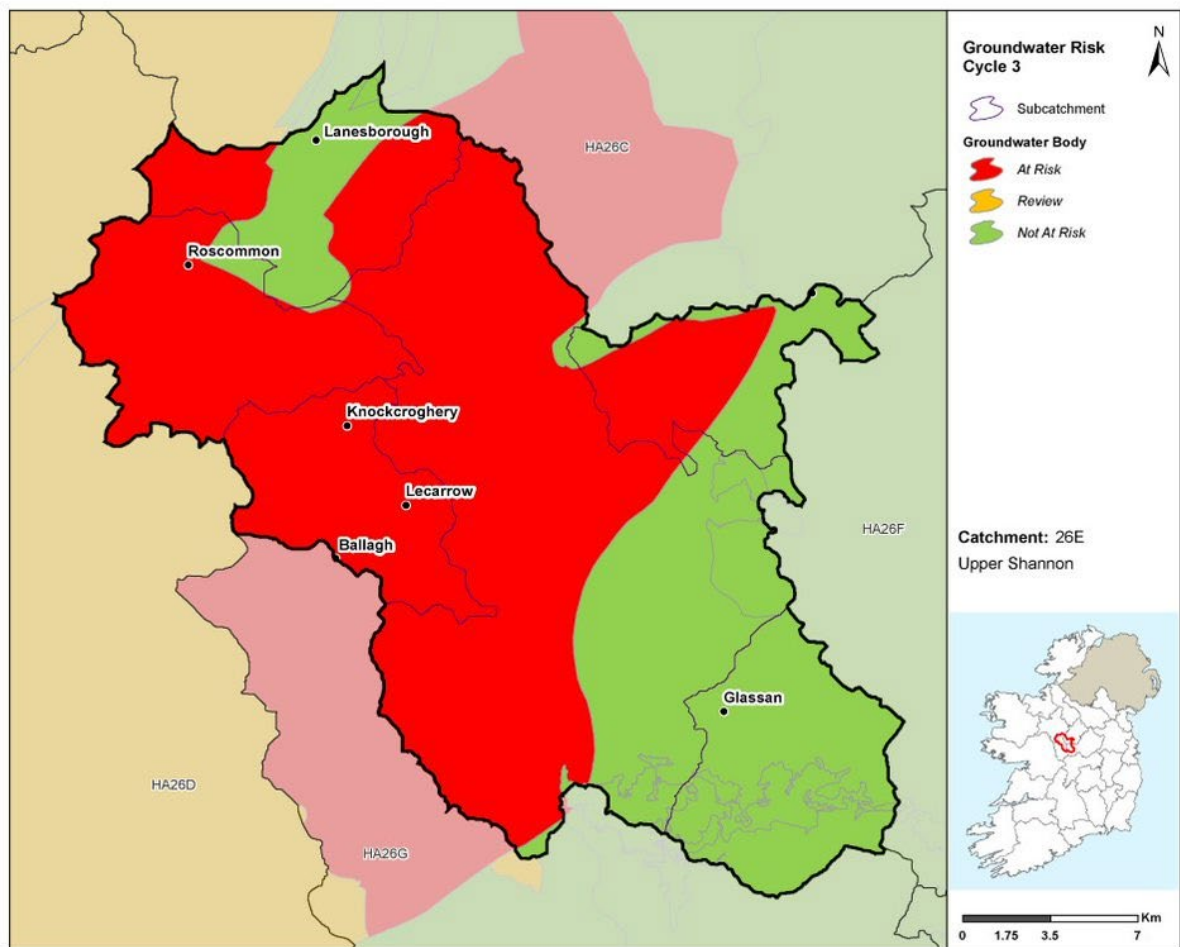


Figure 9: Cycle 3 Groundwater Body Risk

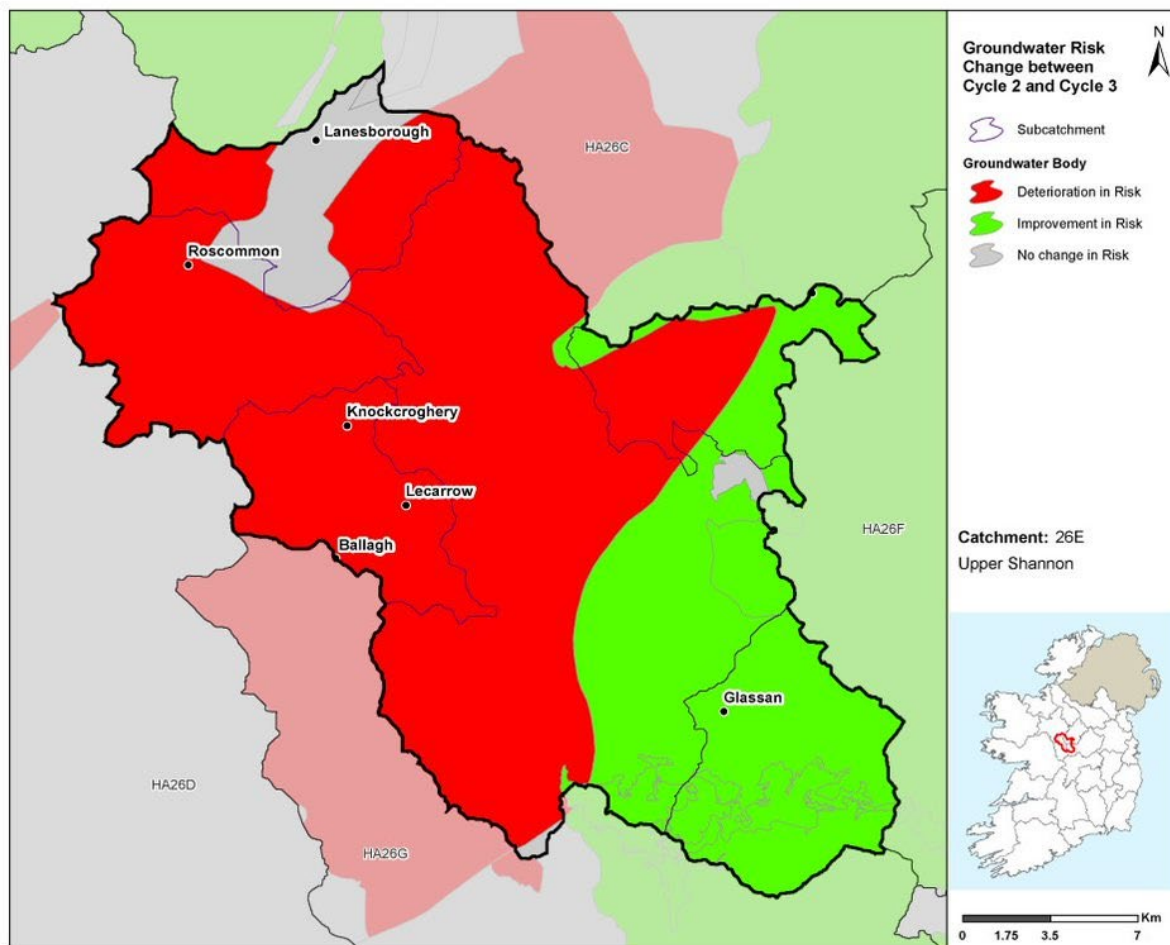


Figure 10: Groundwater Body Risk Change between Cycle 2 & Cycle 3

### 3.4 Heavily Modified Waterbodies

- ◆ There are currently no heavily modified water bodies (HMWBs) in the catchment. There may be changes to HMWB designation once the Cycle 3 HMWB assessment has been completed and consulted on for the 3<sup>rd</sup> Cycle Final RBMP.

### 3.5 Artificial Waterbodies

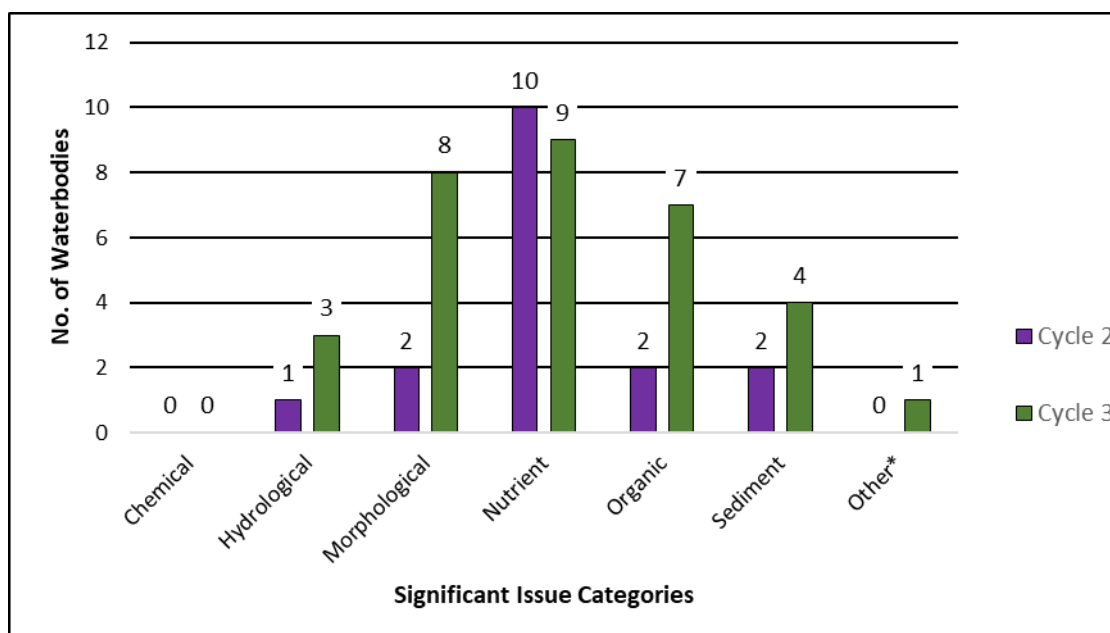
- ◆ There is one artificial waterbody in the Upper Shannon (Lough Ree) Catchment, Royal Canal Main Line (Upper Shannon E) and it is currently in *Review*.

## 4 Significant Issues in *At Risk* Waterbodies

### 4.1 All Waterbodies

- ◆ Excess nutrients and morphological impacts remain the most prevalent issues in the Upper Shannon (Lough Ree) catchment (Figure 11) with each impacting nine and eight waterbodies respectively in Cycle 3. Organic pollution is impacting seven waterbodies, while sediment and hydrological issues are impacting four and three waterbodies, respectively. Chemical pollution is impacting one waterbody.

- For river waterbodies, the main significant issues are nutrient issues (9), morphological impacts (8), organic pollution (7), sediment (4) and hydrological impacts (3).
  - For the only *At Risk* groundwater body (Carrick on Shannon) the significant issue is chemical pollution.
- ◆ Between Cycle 2 and Cycle 3 the number of waterbodies with morphological and organic issues have increased from two each to eight and seven waterbodies respectively.
  - ◆ The number of waterbodies impacted by hydrological and sediment issues have both increased by two waterbodies each to three and four waterbodies respectively.
  - ◆ The numbers of waterbodies with nutrient issues have reduced from 10 in Cycle 2 to nine in Cycle 3.
  - ◆ The number of waterbodies impacted by chemical pollution has increased from no waterbodies in Cycle 2 to one in Cycle 3.



\*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 11: Significant Issues across all *At Risk* WBs between Cycle 2 and Cycle 3

## 4.2 High Status Objective Waterbodies

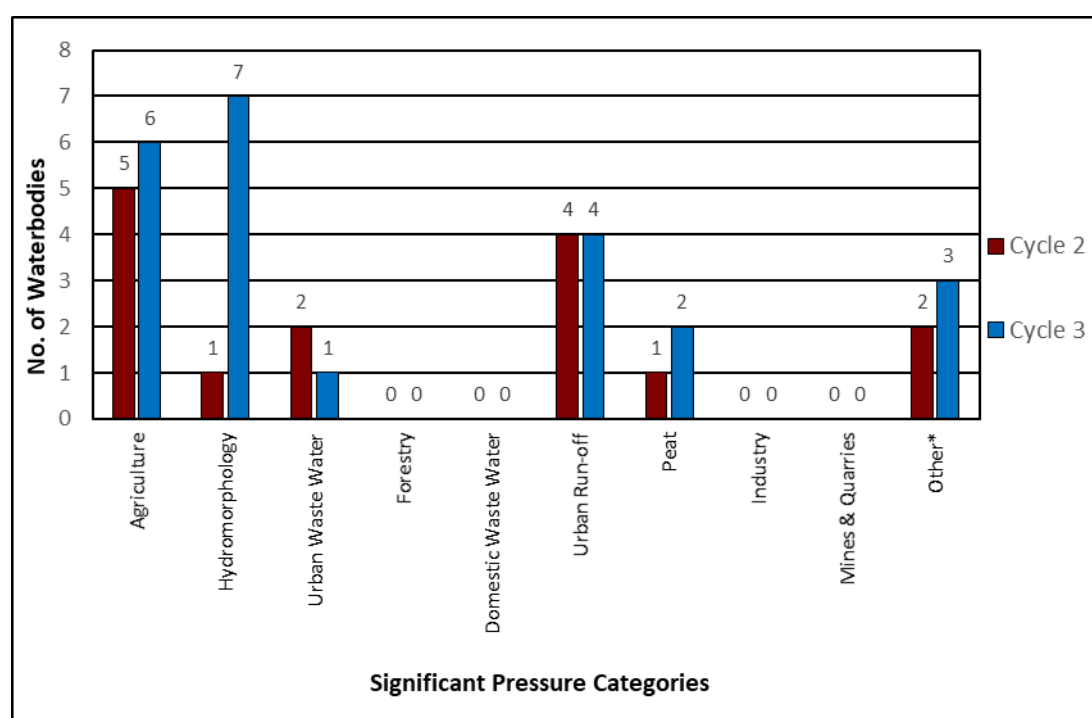
- ◆ In Cycle 3, the Upper Shannon (Lough Ree) Catchment has one High Status Objective waterbody (Coosan lake waterbody), it is currently *Not At Risk*.

## 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 12 shows a breakdown of the number of *At Risk* waterbodies in each significant pressure category.
- ◆ The significant pressures affecting the greatest number of waterbodies are hydromorphology and agriculture followed by urban run-off, other<sup>7</sup>, peat and urban waste water.
- ◆ When comparing Cycle 2 and Cycle 3, the biggest change is an increase of six waterbodies where hydromorphology is a significant pressure from one waterbody in Cycle 2 to seven waterbodies in Cycle 3.
- ◆ 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 12: Significant Pressure (All *At Risk* Waterbodies)

### 5.1.1 Pressure Type

#### 5.1.1.1 Hydromorphology

- ◆ Hydromorphology is a significant pressure in seven river waterbodies. Of the seven waterbodies, seven are impacted by channelisation pressures, one by land drainage (Clooneigh\_020) and one (Shannon (Upper)\_110) by barriers to fish migration.

<sup>7</sup> 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

#### 5.1.1.2 Agriculture

- ◆ Agriculture is a significant pressure in six river waterbodies and Funshinagh groundwater body. The issues related to farming in this catchment are diffuse phosphorus loss to surface waters and direct discharges; 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. The use of pesticides is having a negative impact on chemical conditions in the Funshinagh groundwater body.

#### 5.1.1.3 Urban Run-off

- ◆ Diffuse urban pressures, caused by misconnections, leaking sewers and runoff from paved and unpaved areas, have been identified as a significant pressure in four river waterbodies (Hind\_010, Hind\_020, Hind\_030 and Jiggy (Hind)\_010) from Roscommon town.

#### 5.1.1.4 Other

- ◆ *Atmospheric*  
The Shannon (Upper)\_110, river waterbody, is currently impacted by nutrient pollution.
- ◆ *Waste*  
One river waterbody has been identified as impacted by waste facilities. The Jiggy (Hind)\_010 is *At Risk* due to several pressures including leachate from Roscommon Landfill Facility (W0073).

#### 5.1.1.5 Peat

Peat drainage and extraction has been identified as a significant pressure in two river waterbodies, Breensford\_010 and Hind\_030, with peat cutting resulting in elevated sediment. This has resulted in increased sediment loads, which alters habitats, morphology and hydrology.

#### 5.1.1.6 Urban Waste Water

- ◆ The Roscommon agglomeration has been identified as a significant pressure in one *At Risk* waterbody, Jiggy (Hind)\_010; details are given in Table 4. Upgrade works on the Roscommon agglomeration network are due to be completed by 2024.

Table 4: Urban Waste Water Treatment Agglomerations identified as significant pressures in *At Risk* waterbodies in Cycle 3

Facility name	Facility Type	Waterbody	2013-18 Ecological Status	Irish Water's Expected CIP Completion Date <sup>8</sup>
Roscommon D0116	Combined Sewer Overflows	Jiggy (Hind)_010	Poor	2024

- ◆ Urban waste water significant pressures impacted one less waterbody than in Cycle 2 (a reduction from two to one waterbody impacted). The following agglomerations were listed as pressures in Cycle 2 but are not significant pressures in Cycle 3.
  - Ballyleague (D0229)
  - Hodson Bay (D0377)

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<sup>8</sup> Based on Irish Water's Capital Investment Programme (2020-2024) as of February 2021 and may be subject to change.

Figure 13 – Figure 16 illustrates the locations of waterbodies for the four most common pressures in order of prevalence (hydromorphology, agriculture, urban run-off and other) within the catchment in Cycle 3.



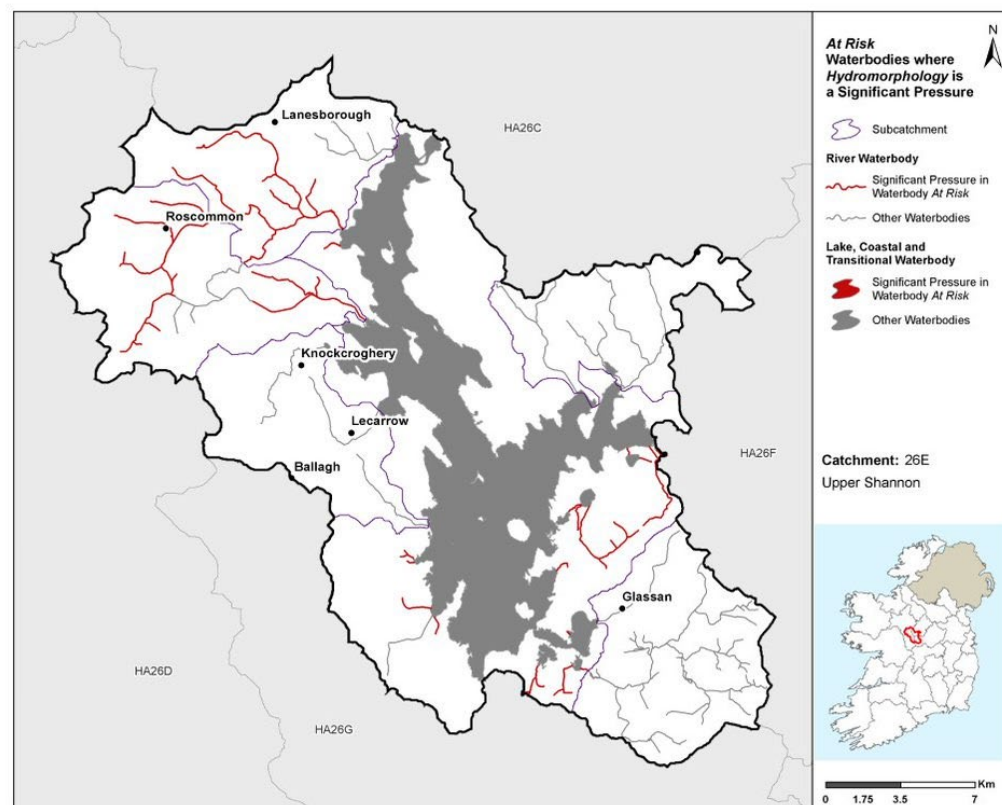


Figure 13: Locations of Waterbodies where Hydromorphology is a Significant Pressure

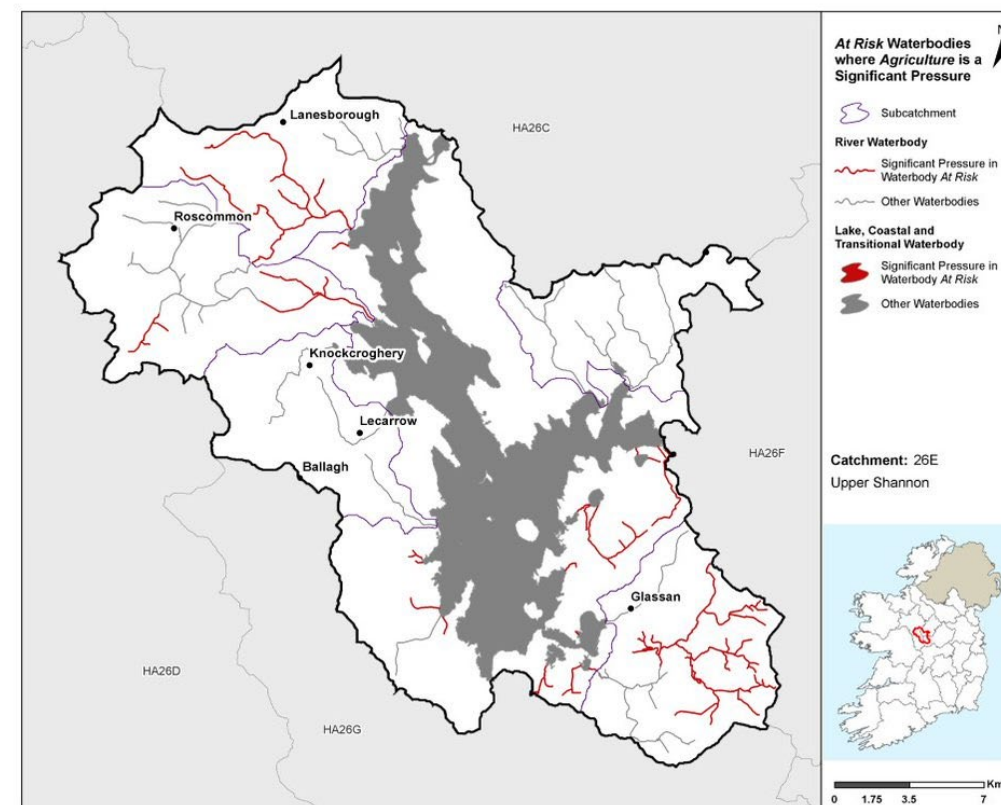


Figure 14: Locations of Waterbodies where Agriculture is a Significant Pressure

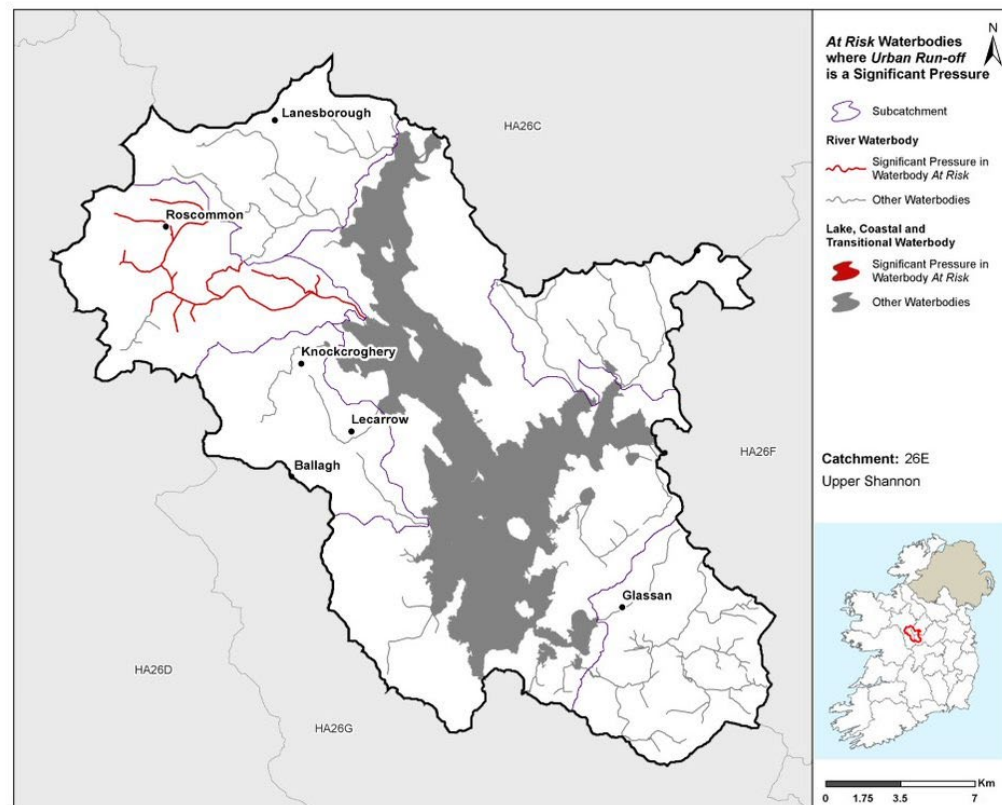


Figure 15: Locations of Waterbodies where Urban Run-off is a Significant Pressure

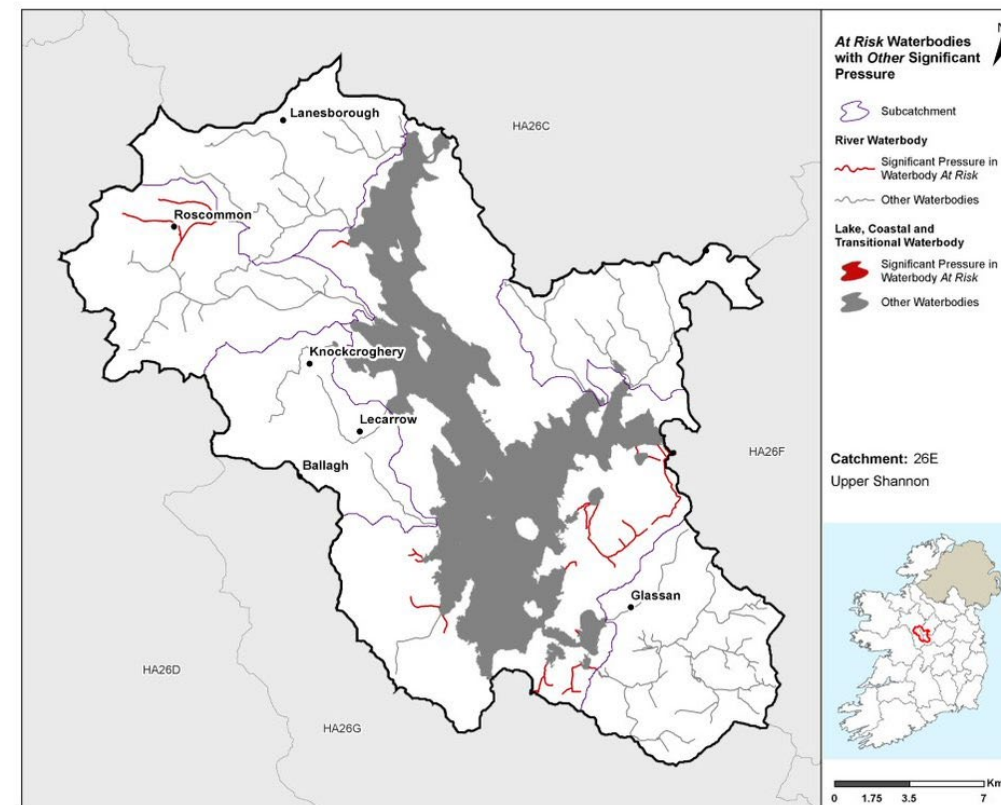


Figure 16: Locations of Waterbodies where Other is a Significant Pressure



## 5.2 High Status Objective Waterbodies

- ◆ As stated in Section 4.2, the Upper Shannon (Lough Ree) Catchment has one High Status Objective waterbody (Coosan lake waterbody) and it is currently *Not At Risk*.

## 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.
- ◆ 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 pasture and deposition on water is responsible for 74% and 17% of the nitrogen load respectively while deposition on water and pastures contribute 37% and 29% of the phosphorus loadings for the catchment respectively (Figure 17).

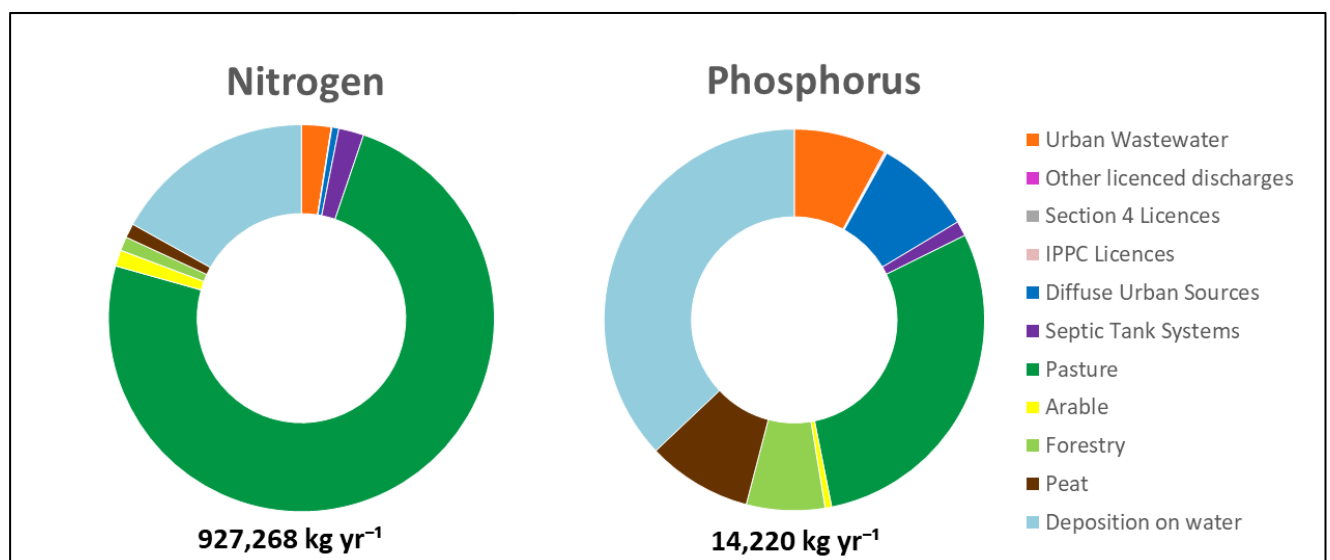


Figure 17: Estimated Proportions of N & P from Each Sector in the Upper Shannon (Lough Ree) Catchment

## 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 Upper Shannon (Lough Ree) Catchment.

## 7.2 Phosphorus / Sediment Load Reduction

- ◆ Further modelling work is required to determine if and what P load reductions are required.

Figure 18 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 and waterbodies with blue fill are areas where sediment or phosphorus should be targeted. Pollution Impact Potential mapping for both phosphorus and nitrogen in the catchment are provided in Appendix 2.

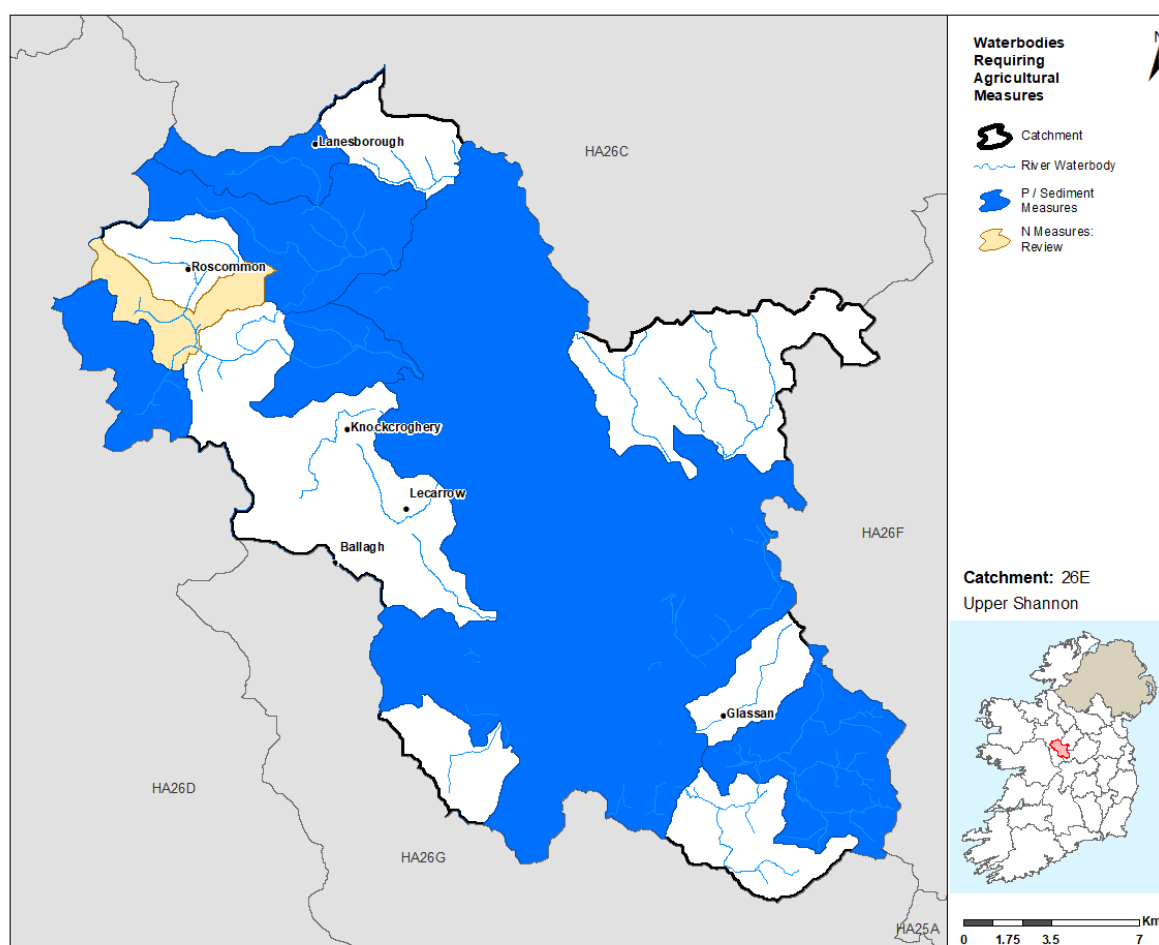


Figure 18: Waterbodies where Agricultural Measures should be Targeted

## 8 2<sup>nd</sup> Cycle Areas for Action

### 8.1 Area for Action Overview

- ◆ There were two Areas for Action, comprising of eight waterbodies, selected for further characterisation and action in the catchment for the 2<sup>nd</sup> Cycle River Basin Management Plan. The Areas for Action in the catchment are listed in Table 5 and shown in Figure 19. LAWPRO,

in conjunction with local authorities and stakeholders from the Western and Midlands and Eastern Regional Operational Committees, have been working in these areas since 2018.

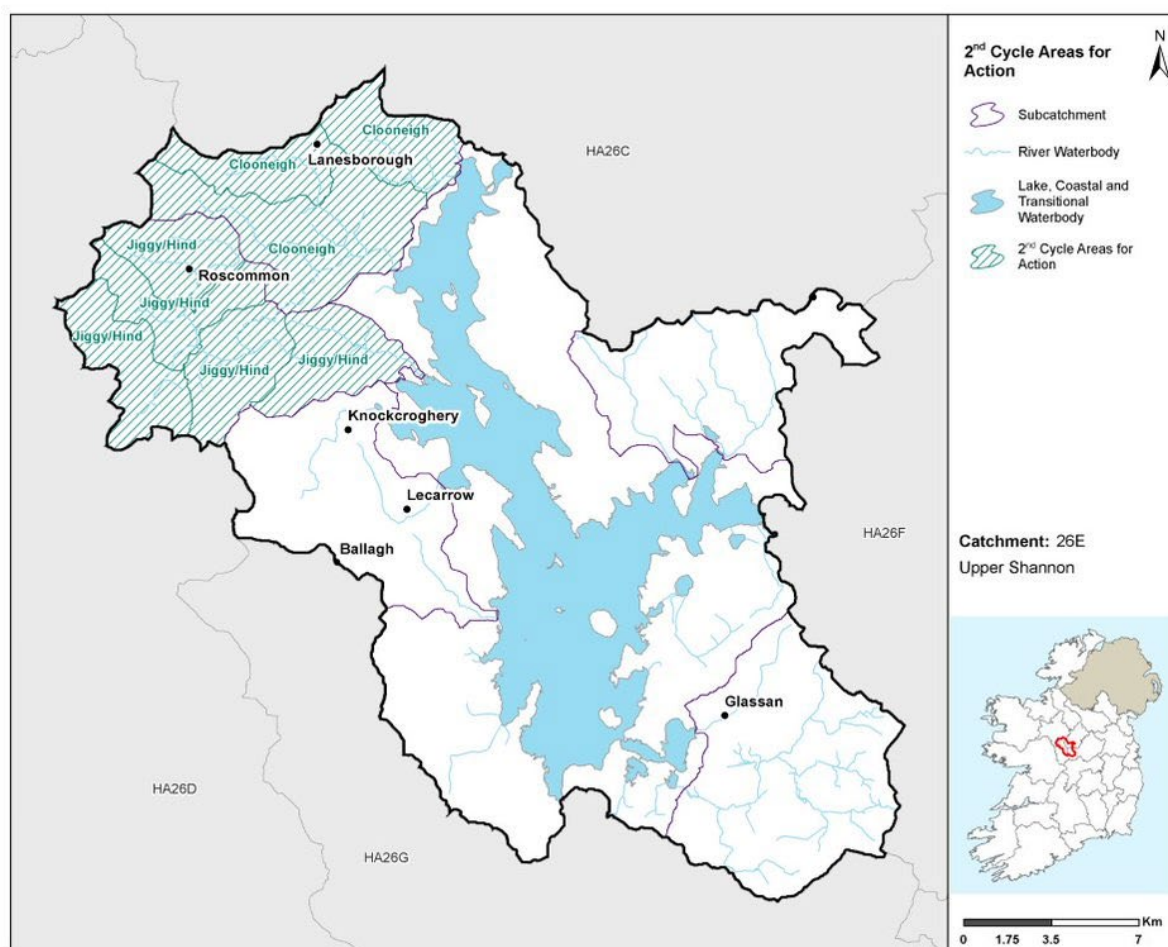


Figure 19: 2<sup>nd</sup> Cycle Areas for Action Locations

Table 5: 2<sup>nd</sup> Cycle Areas for Action

2 <sup>nd</sup> Cycle Area for Action	Number of waterbodies	Sub-catchment	Local Authority	Reason for Selection
Jiggy/Hind	5	26E_5	Roscommon	<ul style="list-style-type: none"> <li>• Building work completed by Roscommon County Council to address diffuse urban pollution.</li> <li>• Potential 'quick win' in the upper reaches of the subcatchment.</li> <li>• One deteriorated water body.</li> <li>• Headwaters flowing into Lough Rinn.</li> </ul>
Clooneigh	3	26E_3	Roscommon	<ul style="list-style-type: none"> <li>• Manageable area to focus measures.</li> <li>• Two potential 'quick wins'.</li> <li>• Two deteriorated water bodies.</li> <li>• Headwaters flowing into Lough Rinn.</li> </ul>

## 8.2 Status Change in 2<sup>nd</sup> Cycle Areas for Action

- ◆ For Cycle 3, of the eight waterbodies in the 2<sup>nd</sup> Cycle Areas for Action, there are three waterbodies at Moderate Status, four waterbodies at Poor Status and one waterbody where status has not been assigned.
- ◆ Overall there is no change in status of the 2<sup>nd</sup> cycle Area for Action waterbodies across the catchment.<sup>9</sup>
- ◆ Of the seven waterbodies within the 2<sup>nd</sup> Cycle Areas for Action which had status assigned, five experienced no change in status between Cycle 2 and Cycle 3, one waterbody experienced an improvement and one was subject to deterioration in status (Figure 20). The only waterbody improvement was in the Jiggy/Hind Area for Action while the waterbody which experienced decline was in the Clooneigh Area for Action.

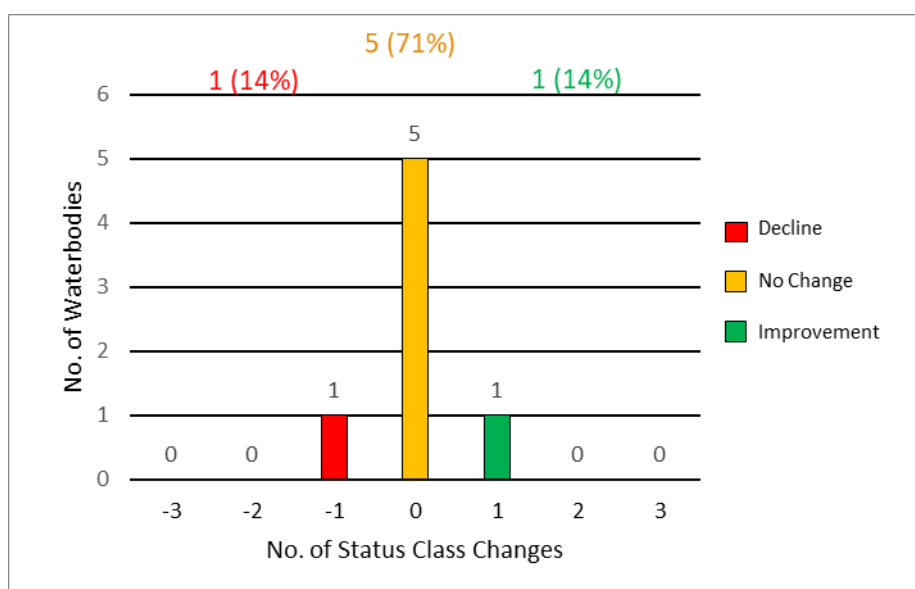


Figure 20: 2<sup>nd</sup> Cycle Area for Action Waterbody Status Class Changes between Cycle 2 and Cycle 3

## 8.3 Waterbody Risk in 2<sup>nd</sup> Cycle Areas for Action

- ◆ For the eight waterbodies in the 2<sup>nd</sup> Cycle Areas for Action, seven (88%) of these are currently *At Risk* and one (13%) in *Review* (Keelcurragh\_010).
- ◆ All of the waterbodies in 2<sup>nd</sup> Cycle Areas for Action are river waterbodies.
- ◆ Figure 21 gives an overview of the breakdown of risk across waterbody types for both Cycle 2 and Cycle 3 in 2<sup>nd</sup> Cycle Areas for Action.

<sup>9</sup> 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 18. 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.

- ◆ Overall, there is no change in the number of *At Risk* waterbodies in 2<sup>nd</sup> Cycle Areas for Action between Cycle 2 and Cycle 3.

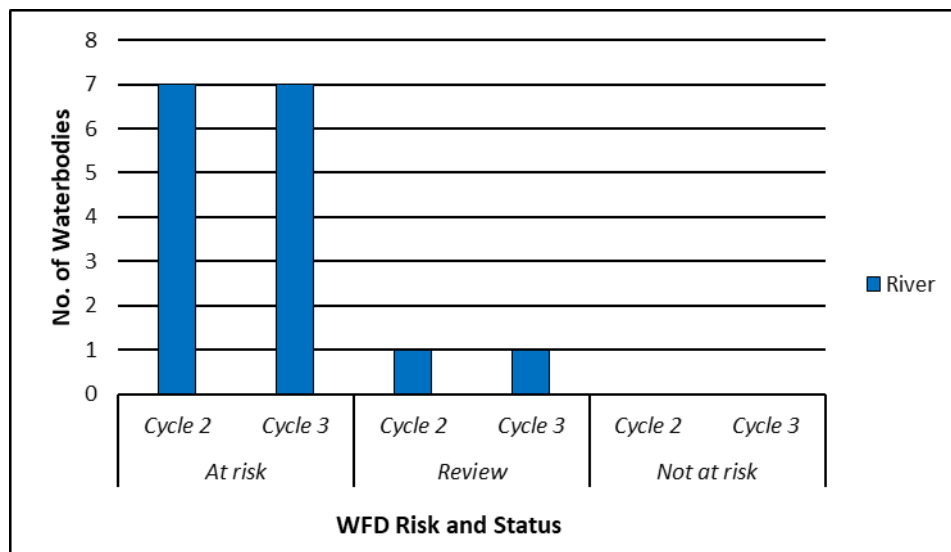
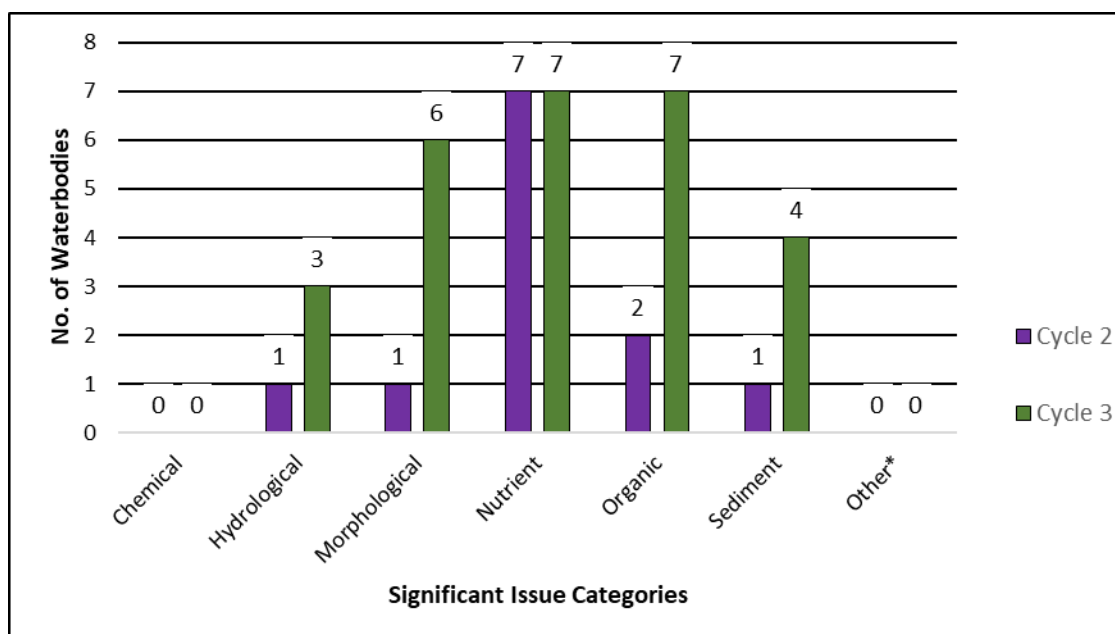


Figure 21: Number of waterbodies in each risk category in 2<sup>nd</sup> Cycle Areas for Action

#### 8.4 Significant Issues in 2<sup>nd</sup> Cycle Areas for Action

- ◆ Based on the EPA assessment for Cycle 3, the significant issues in the 2<sup>nd</sup> Cycle Areas for Action are nutrient and organic impacts, each impacting seven waterbodies each (Figure 22). This is followed by morphological which is impacting six waterbodies, while sediment and hydrological issues are impacting four and three waterbodies respectively.
- ◆ The number of 2<sup>nd</sup> Cycle Areas for Action waterbodies associated with each of the significant issues categories has increased between Cycle 2 and Cycle 3 except for nutrient pollution which has remained unchanged.

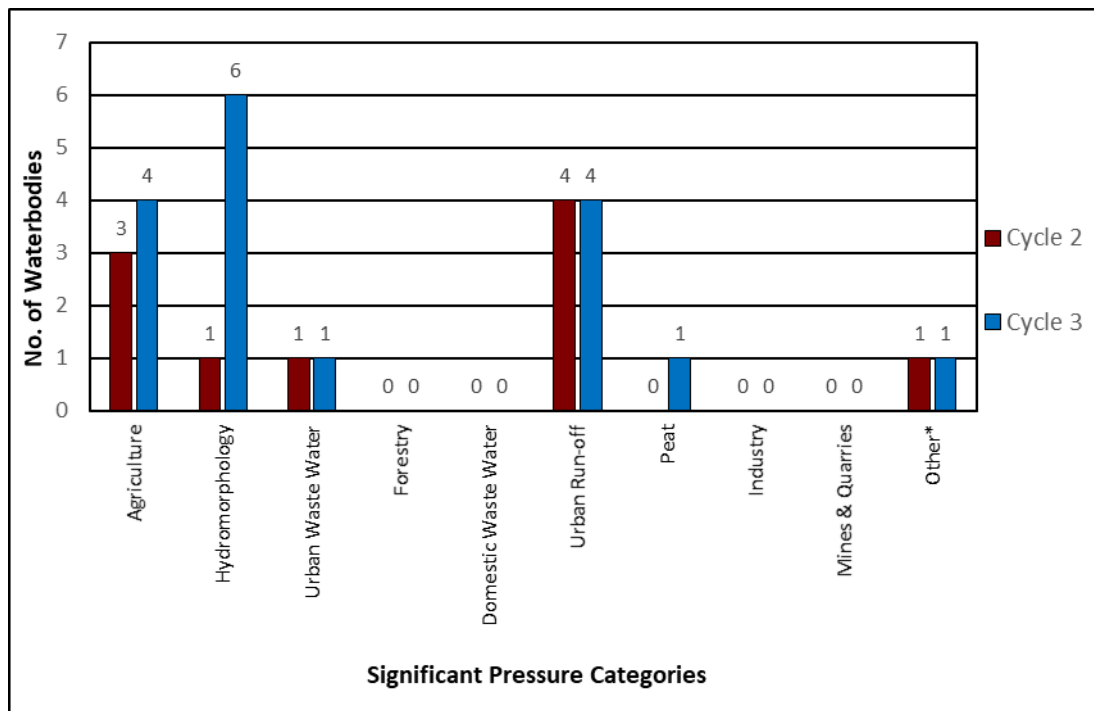


\*Other - Acidification, saline intrusion, elevated temperature, litter, microbiological pollution and unknown impacts have all been grouped into the "Other" issues category for the purpose of this report

Figure 22: Significant Issues across all 2<sup>nd</sup> Cycle Areas for Action Waterbodies

## 8.5 Significant Pressure in 2<sup>nd</sup> Cycle Areas for Action

- ◆ For Cycle 3, in 2<sup>nd</sup> Cycle Areas for Action waterbodies in the catchment the dominant significant pressures are:
  - Hydromorphology - six waterbodies are impacted compared to one impacted in Cycle 2.
  - Agriculture – four waterbodies are impacted compared to three impacted in Cycle 2.
  - Urban waste water, urban run-off and other pressures are impacting the same number of waterbodies in both cycles.
  - Peat pressures are now impacting one waterbody compared to no waterbodies in Cycle 2.
- ◆ When comparing the significant pressures in the 2<sup>nd</sup> Cycle Areas for Action between Cycle 2 and 3 there has been an increase or no change in all significant pressure categories in the catchment.



\*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 23: Significant Pressures in 2<sup>nd</sup> Cycle Area for Action Waterbodies

## 9 3<sup>rd</sup> Cycle Recommended Areas for Action

### 9.1 Recommended Areas for Action Overview

- ◆ For the 3<sup>rd</sup> 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 3<sup>rd</sup> Cycle Plan is to capture all activity that is working to restore, improve and/or protect waterbodies.

- ◆ The Recommended 3<sup>rd</sup> 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 three Areas for Action, comprising of nine waterbodies, recommended for further characterisation and action in the catchment for the 3<sup>rd</sup> Cycle River Basin Management Plan. Seven of the nine waterbodies in the 3<sup>rd</sup> Cycle Recommended Areas for Action are *At Risk*, and two are in *Review*. The three Recommended Areas for Action consist of two Areas for Restoration and one Catchment Project. LAWPRO are the proposed lead organisation in two Recommended Areas for Action and GSI are the proposed lead on the remaining Recommended Area for Action. The Recommended Areas for Action in the catchment are listed in Table 6 and shown in Figure 24. The reason for selecting for each waterbody in a Recommended Area for Action is provided in Appendix 3.

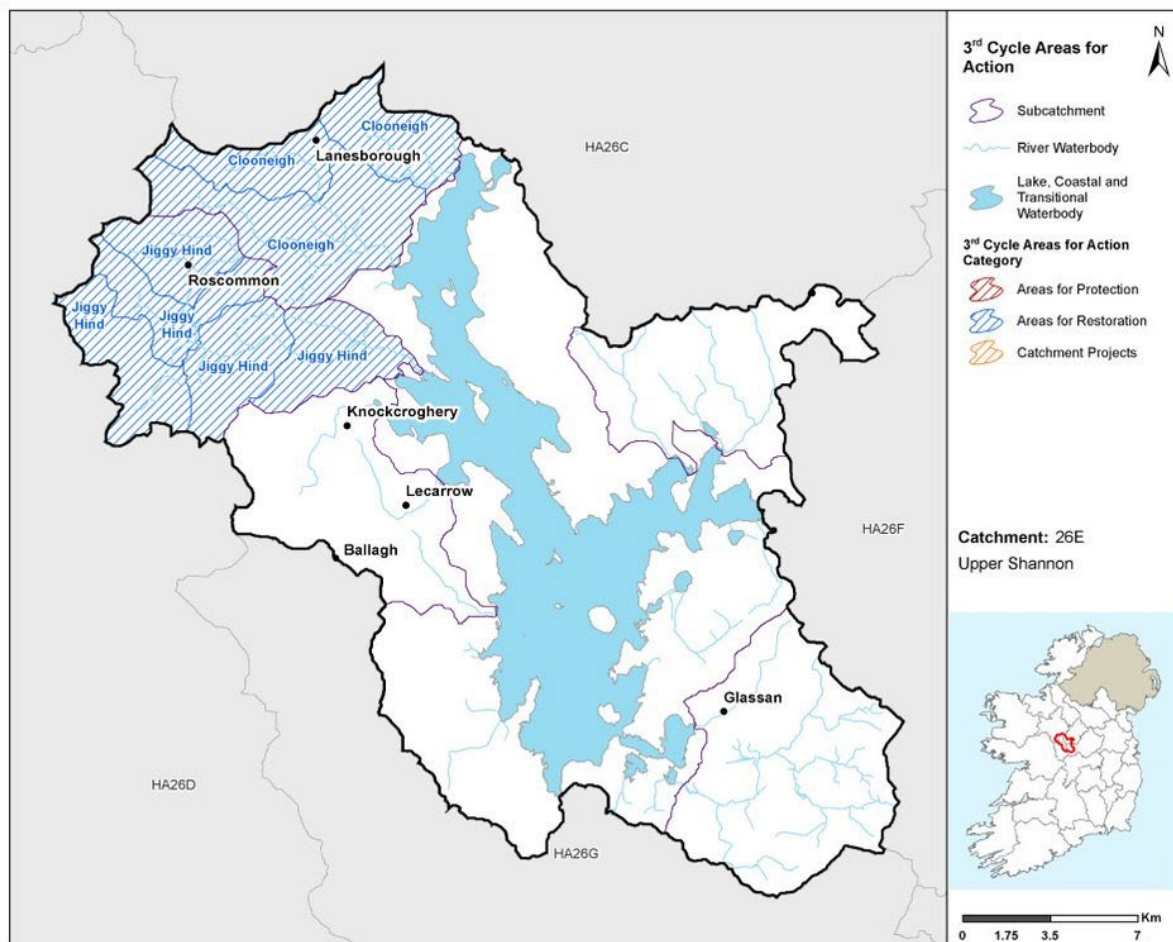


Figure 24: 3<sup>rd</sup> Cycle Recommended Areas for Action Locations



Table 6: 3<sup>rd</sup> Cycle Recommended Areas for Action Breakdown

3rd Cycle Recommended Areas for Action	Number of Waterbodies	Recommended Areas for Action Category	Recommended Areas for Action Sub-category	Lead Organisation
Clooneigh	3	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Jiggy Hind	5	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Suck South GWB	1	Catchment Projects	Public Body Research	GSI

## 10 Catchment Summary

- Of the 19 river waterbodies, nine are *At Risk* of not meeting their WFD objectives.
- One out of 15 groundwater bodies (Funshinagh) is *At Risk*.
- There were 10 waterbodies *At Risk* in Cycle 2 and 10 waterbodies remain *At Risk* in Cycle 3.
- The main significant issues are from nutrients pollution and morphological impacts, followed by organic, sediment, hydrological impacts and chemical issues.
- The main significant pressures are hydromorphological pressures followed by agriculture, urban run-off, other, peat and urban waste water.
- Overall, there no change in the 2<sup>nd</sup> Cycle Areas for Action since Cycle 2. The seven waterbodies that were *At Risk* in Cycle 2 remain *At Risk* in Cycle 3.
- There are three 3<sup>rd</sup> Cycle Recommended Areas for Action for Cycle 3. They comprise of nine waterbodies with seven waterbodies *At Risk* and two in *Review*.

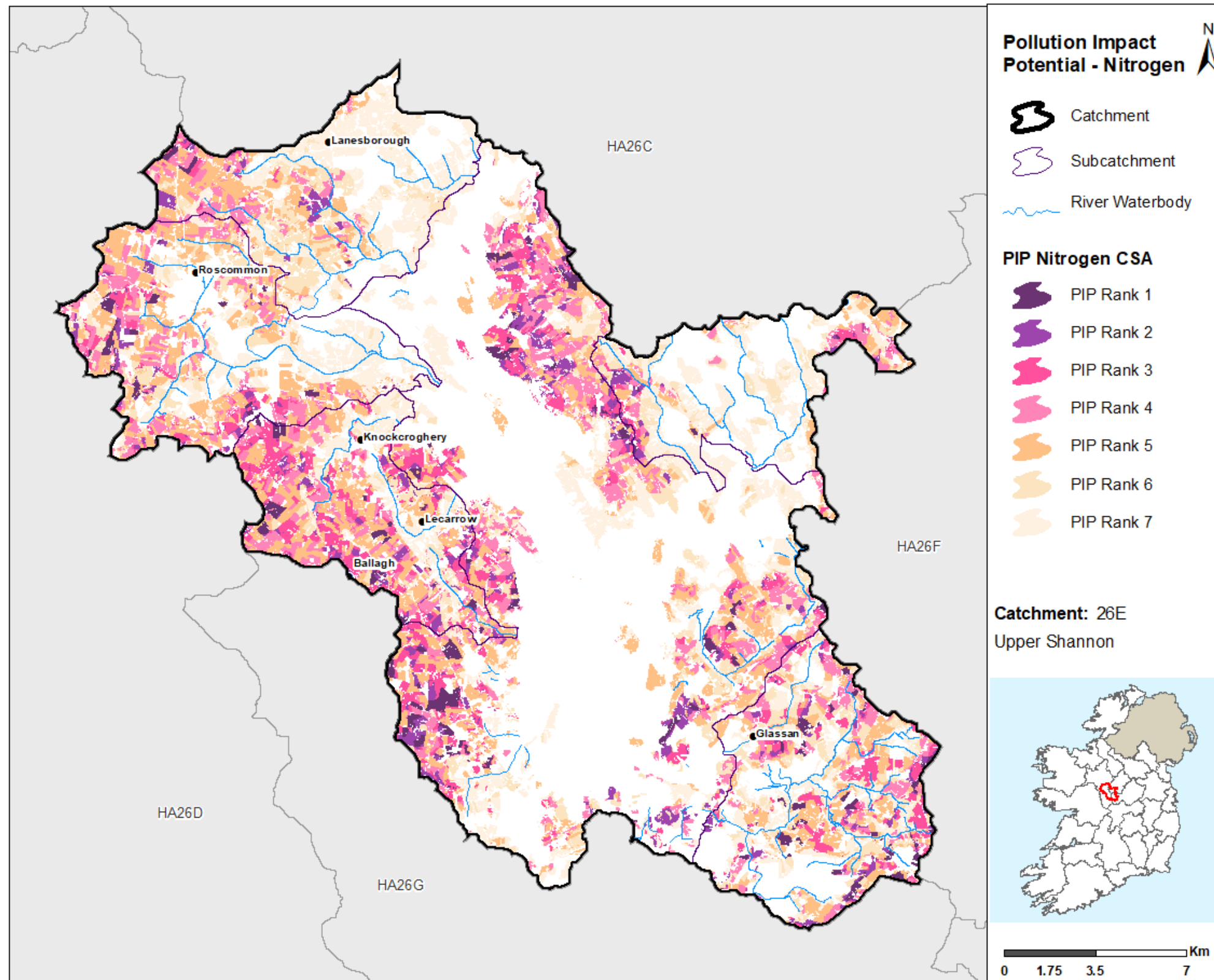
## Appendix 1

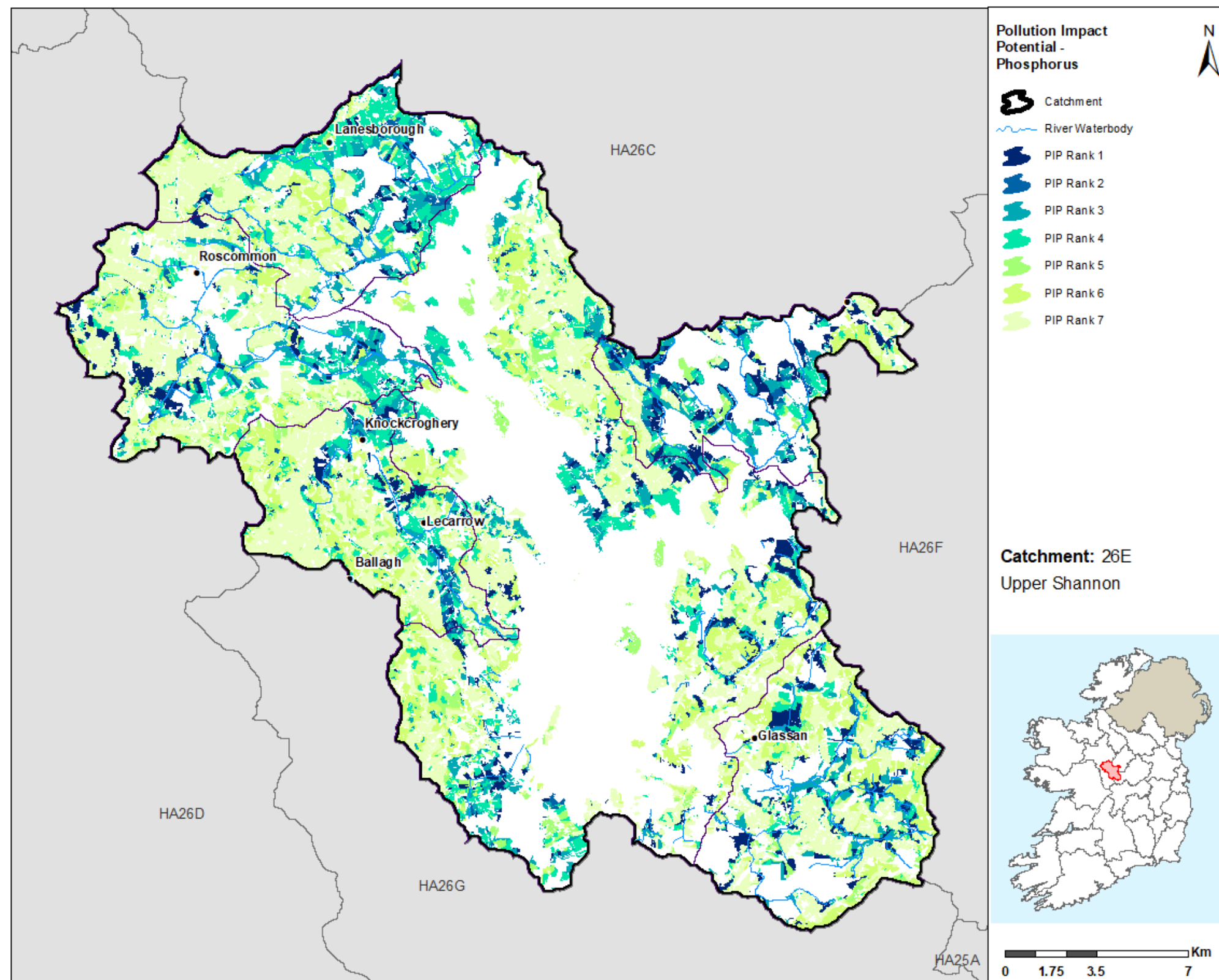
### High ecological status objective waterbodies

Waterbody Name	Waterbody Type	Waterbody Code	Status 2013-2018
Coosan	Lake	IE_SH_26_750c	High

## Appendix 2

### Pollution Impact Potential Mapping





Appendix 3
Summary information on all waterbodies in the Upper Shannon (Lough Ree) Catchment

Subcatchment 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 Areas for Action Name	Recommended Areas for Action (reasons for selection)
	IE_26E_AWB_RCMLW	Royal Canal Main Line (Upper Shannon E)	River		Review	Good	Good	No			
26E_4	IE_SH_26B100100	BREENSFORD_010	River	At risk	At risk	Moderate	Moderate	No	Ag, Peat		
26E_4	IE_SH_26B100400	BREENSFORD_020	River	Not at risk	Not at risk	Good	Good	No			
26E_6	IE_SH_26B210730	BALLYBAY_010	River	Review	Review	Unassigned	Unassigned	No			
26E_3	IE_SH_26C060030	CLOONEIGH_010	River	At risk	At risk	Moderate	Moderate	No	Ag, Hymo	Clooneigh	At Risk. Issues confirmed. Needs time for measures to be implemented.
26E_3	IE_SH_26C060200	CLOONEIGH_020	River	At risk	At risk	Moderate	Poor	No	Ag, Hymo	Clooneigh	At Risk. Issues confirmed. Needs time for measures to be implemented.
26E_2	IE_SH_26C230700	CARROWPHADEEN_010	River	Review	Review	Unassigned	Unassigned	No			
26E_1	IE_SH_26D080850	DRUMNEE_010	River	Review	Review	Unassigned	Unassigned	No			
26E_4	IE_SH_26G060300	GLASSAN STREAM_010	River	Review	Review	Unassigned	Unassigned	No			
26E_5	IE_SH_26H010300	HIND_010	River	At risk	At risk	Poor	Poor	No	Hymo, UR	Jiggy Hind	Error in original list - should have been included. LCA underway and additional time required. Requires better understanding of urban pressures & IW drainage plan works in delivery of WFD outcomes.
26E_5	IE_SH_26H010400	HIND_020	River	At risk	At risk	Poor	Poor	No	UR	Jiggy Hind	Error in original list - should have been included. LCA underway and additional time required. Requires better understanding of urban pressures & IW drainage plan works in delivery of WFD outcomes.
26E_5	IE_SH_26H010500	HIND_030	River	At risk	At risk	Poor	Moderate	No	Ag, Hymo, Peat, UR	Jiggy Hind	Error in original list - should have been included. LCA underway and additional time required. Requires better understanding of urban pressures & IW drainage plan works in delivery of WFD outcomes.
26E_5	IE_SH_26J010090	JIGGY (HIND)_010	River	At risk	At risk	Poor	Poor	No	Hymo, Other, UR, UWW	Jiggy Hind	Error in original list - should have been included. LCA underway and additional time required. Requires better understanding of urban pressures & IW drainage plan works in delivery of WFD outcomes.
26E_2	IE_SH_26K150860	Knockcroghery_010	River	Not at risk	Not at risk	Unassigned	Unassigned	No			

Subcatchment 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 Areas for Action Name	Recommended Areas for Action (reasons for selection)
26E_3	IE_SH_26K670950	KEELCURRAGH_010	River	Review	Review	Unassigned	Unassigned	No		Clooneigh	Within Clooneigh PAA. Unassigned WB which has been confirmed as impacted. Sign. issues identified. Requires plan to be agreed for IA3 water bodies for 3rd cycle.
26E_2	IE_SH_26L010780	LECARROW (LOUGH REE)_010	River	Not at risk	Review	Unassigned	Unassigned	No			
26E_1	IE_SH_26L840850	LEDWITHSTOWN_010	River	Review	Review	Unassigned	Unassigned	No			
26E_5	IE_SH_26R070250	ROCKSAVAGE_010	River	At risk	At risk	Moderate	Moderate	No	Ag, Hymo	Jiggy Hind	Error in original list - should have been included. LCA underway and additional time required.
26E_6	IE_SH_26S021660	SHANNON (Upper)_110	River	Review	At risk	Unassigned	Poor	No	Ag, Hymo, Other		
26E_2	IE_SH_26_159	Oura	Lake	Not at risk	Not at risk	Unassigned	Unassigned	No			
26E_6	IE_SH_26_498	Ross WH	Lake	Review	Review	Unassigned	Unassigned	No			
26E_6	IE_SH_26_511	Creggan	Lake	Review	Review	Unassigned	Unassigned	No			
26E_6	IE_SH_26_623	Doonis	Lake	Review	Review	Unassigned	Unassigned	No			
26E_1, 26E_6	IE_SH_26_638	Derrymacar	Lake	Review	Review	Unassigned	Unassigned	No			
26C_1, 26C_8, 26E_1, 26E_2, 26E_3, 26E_5, 26E_6, 26G_3	IE_SH_26_750a	Ree	Lake	At risk	Not at risk	Moderate	Good	No			
26E_4, 26E_6	IE_SH_26_750b	Killinure	Lake	Not at risk	Not at risk	Good	Good	No			
26E_6	IE_SH_26_750c	Coosan	Lake	Not at risk	Not at risk	High	High	Yes			
26E_6	IE_SH_26_750d	Ballaghkeeran	Lake	Not at risk	Not at risk	Good	Good	No			
26D_5, 26E_6, 26G_1, 26G_2, 26G_3	IE_SH_G_014	Athlone West	Groundwater	Not at risk	Not at risk	Good	Good	No			
26E_6, 26G_2	IE_SH_G_018	Industrial Facility (P0110-01)	Groundwater	Not at risk	Review	Good	Good	No			
26A_3, 26B_1, 26B_2, 26B_3, 26B_4, 26B_5, 26B_6, 26C_10, 26C_11, 26C_12, 26C_3, 26C_4, 26C_5, 26D_7, 26D_9, 26E_3, 34_4, 36_15	IE_SH_G_048	Carrick on Shannon	Groundwater	At risk	Review	Good	Good	No			
26C_12, 26C_5, 26C_8, 26C_9, 26E_3, 26E_5, 26E_6	IE_SH_G_075	Curraghroe	Groundwater	Not at risk	Not at risk	Good	Good	No			



Subcatchment 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 Areas for Action Name	Recommended Areas for Action (reasons for selection)
26C_1, 26C_12, 26C_7, 26C_8, 26C_9, 26D_5, 26D_6, 26D_7, 26E_1, 26E_2, 26E_3, 26E_5, 26E_6, 26G_2, 26G_3	IE_SH_G_091	Funshinagh	Groundwater	Review	At risk	Good	Good	No	Ag		
07_10, 07_12, 07_13, 07_7, 07_9, 25A_10, 25A_8, 25A_9, 25B_2, 26C_1, 26C_6, 26C_7, 26E_1, 26E_4, 26E_6, 26F_1, 26F_10, 26F_2, 26F_3, 26F_4, 26F_5, 26F_6, 26F_7, 26F_8, 26F_9, 26G_1, 26G_2, 26G_3, 36_18, 36_8, 36_9	IE_SH_G_110	Inny	Groundwater	Review	Not at risk	Good	Good	No			
26C_1, 26C_2, 26C_4, 26C_6, 26C_7, 26C_9, 26E_1, 26F_10, 26F_7, 26F_8, 36_18, 36_19	IE_SH_G_149	Longford Ballinalee	Groundwater	Review	Not at risk	Good	Good	No			
26E_4, 26E_6, 26F_5	IE_SH_G_162	GWDTE-Lough Ree Fen 9 (SAC000440)	Groundwater	Review	Not at risk	Good	Good	No			
26E_6, 26F_10, 26F_5	IE_SH_G_163	GWDTE-Lough Ree Fen 10 (SAC000440)	Groundwater	Review	Not at risk	Good	Good	No			
26E_1, 26E_6, 26F_10	IE_SH_G_165	GWDTE-Lough Ree Fen 12 (SAC000440)	Groundwater	Not at risk	Not at risk	Good	Good	No			
26D_10, 26D_4, 26D_6, 26D_7, 26E_5	IE_SH_G_173	Mount Mary	Groundwater	Not at risk	Review	Good	Good	No			
26C_12, 26C_5, 26C_8, 26E_3	IE_SH_G_202	Scramoge South	Groundwater	Not at risk	Not at risk	Good	Good	No			



Subcatchment 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 Areas for Action Name	Recommended Areas for Action (reasons for selection)
26C_12, 26C_8, 26E_3	IE_SH_G_208	Slieve Bawn Telton	Groundwater	Review	Not at risk	Good	Good	No			
26B_1, 26C_12, 26D_1, 26D_10, 26D_11, 26D_2, 26D_3, 26D_4, 26D_5, 26D_6, 26D_7, 26D_8, 26D_9, 26E_2, 26E_3, 26E_5, 26G_1, 26G_2, 29_5, 30_10, 30_12, 30_19, 30_8	IE_SH_G_225	Suck South	Groundwater	Review	Review	Good	Good	No		Suck South GWB	<p>This GWB is in Review as it is hydrologically linked to surface waters that are not meeting water quality objectives where it is considered likely that groundwater is a contributing source of phosphorus. So this type of deterioration may be observed in the future.</p> <p>Also there are numerous groundwater fed drinking water sources with water quality issues in the area.</p> <p>GSI are involved in karst mapping and flood monitoring within this GWB. A PAA status would allow this already existing work to be highlighted via the WFD process.</p> <p>Risk of GWB deteriorating; Public health areas for restoration. Build on existing programmes and community group initiatives.</p>
26E_4, 26E_6, 26F_5, 26G_3	IE_SH_G_246	Athlone Gravels	Groundwater	Review	Not at risk	Good	Good	No			

**Ag:** Agriculture

**M+Q:** Mines and Quarries

**DWW:** Domestic Waste Water

**Peat:** Peat Drainage and Extraction

**For:** Forestry

**UR:** Urban Run-off

**Hymo:** Hydromorphology

**UWW:** Urban Waste Water

**Ind:** Industry

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