3rd Cycle Lower Shannon (Brosna) Catchment Report (HA 25A)

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 Lower Shannon (Brosna) 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 Lower Shannon (Brosna) 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 Lower Shannon (Brosna) catchment covers an area of 1,248km² and is characterised by relatively flat topography with much of the low-lying areas in the catchment covered in thick deposits of peat (Figure 1). The majority of the catchment is underlain by impure limestones with some purer karstified limetones located from Tyrrellspass to Kilcormac. There are extensive sand and gravel deposits running through the catchment from Moate to Tyrrellspass and in isolated pockets in the south of the catchment that form productive groundwater aquifers. The southern tip of the catchment comprising part of the Slieve Bloom Mountains is underlain by old red sandstones.

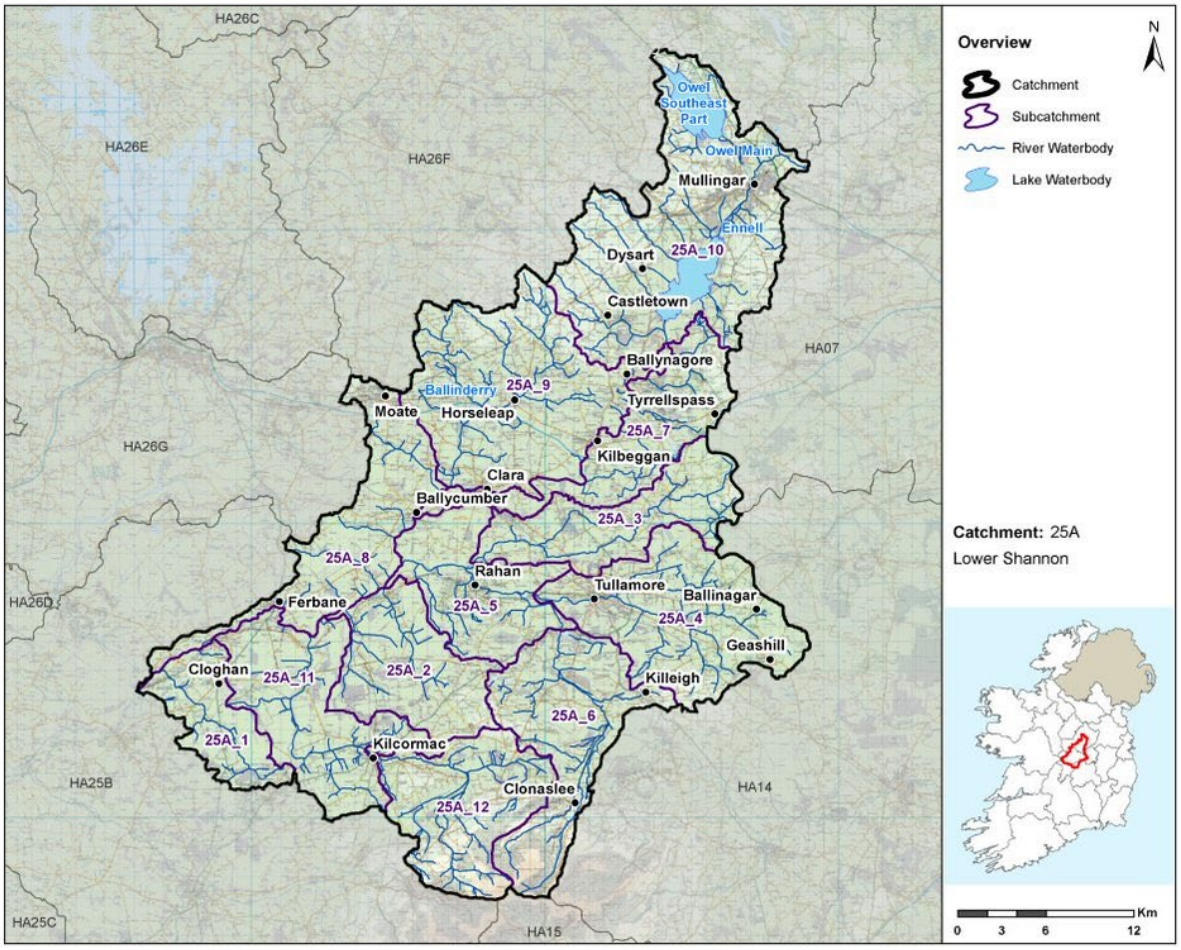


Figure 1: Overview of subcatchments in the Lower Shannon (Brosna) catchment

The Lower Shannon (Brosna) catchment is divided into 12 subcatchments (Figure 1) with 62 river waterbodies, four lake waterbodies and 32 groundwater bodies (Figure 2).

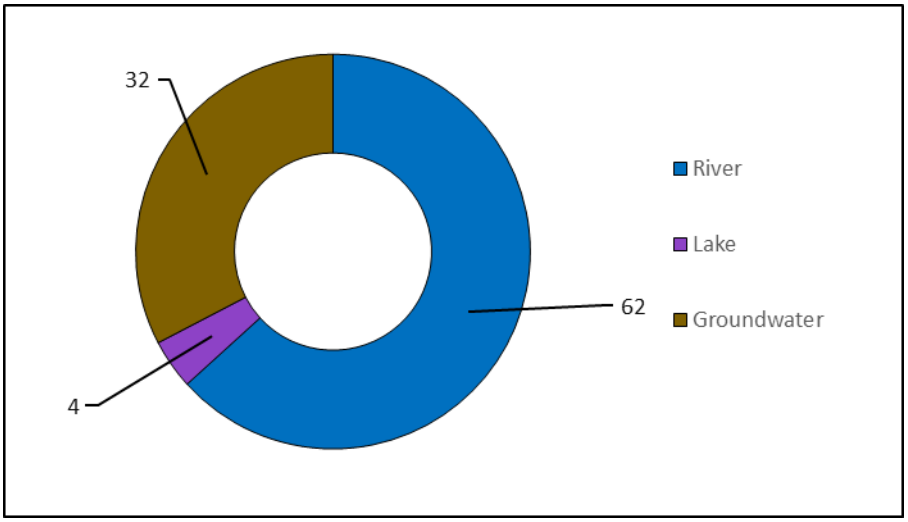


Figure 2: Waterbody types and numbers in the Lower Shannon (Brosna) Catchment.

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 55 achieving Good Status, 20 achieving Moderate Status and 7 achieving Poor Status. 16 waterbodies are currently unassigned. All waterbodies must achieve at least Good Ecological status.

- One river waterbody (Gorragh_010) that must achieve High Ecological Status (HES) in this catchment. These waterbodies are listed in Appendix 1. The HES Environmental Objective waterbody is achieving Good Status.

- There has been a reduction of two waterbodies (all river waterbodies) achieving High Status and two waterbodies (all river waterbodies) achieving Moderate Status between Cycle 2 and Cycle 3. There is also one less unassigned waterbody for Cycle 3. There has been an increase in four waterbodies (three river waterbodies and one groundwater body) achieving Good Status and one waterbody achieving Poor Status (Figure 3 & Table 1).

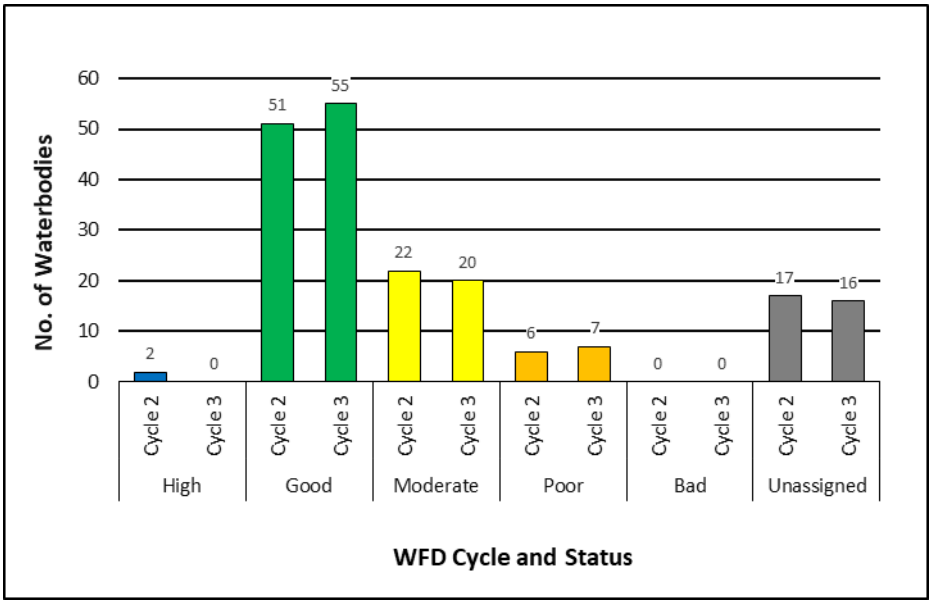


Figure 3: Waterbody Status Breakdown (All waterbodies)

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	2	0	0	0	0	0	0	0	0	0	**2**	**0**
Good	19	22	2	2	0	0	0	0	30	31	**51**	**55**
Moderate	22	20	0	0	0	0	0	0	0	0	**22**	**20**
Poor	4	6	0	0	0	0	0	0	2	1	**6**	**7**
Bad	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Un-assigned	15	14	2	2	0	0	0	0	0	0	**17**	**16**
Total	62	62	4	4	0	0	0	0	32	32	**98**	**98**

- 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 5 (6%) waterbodies have improved in status, 70 (86%) waterbodies have remained unchanged and 6 (7%) waterbodies have declined in status.[1]

- There is an overall decline in the status of one waterbody 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.

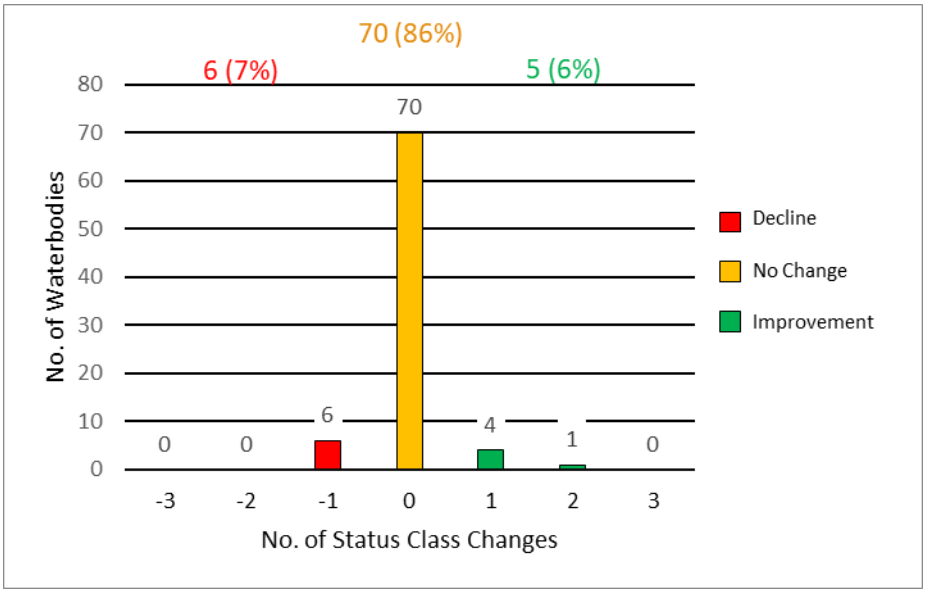


Figure 4: Status Class Changes between Cycle 2 and Cycle 3

2.2 Protected Areas

2.2.1 Drinking Water

- There are four surface waterbodies 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*.

- One river waterbody in the catchment did not meet the DWPA objective in 2019:
    - Brosna_080 (IE_SH_25B090600) river waterbody is the source for the Clara/ Ferbane Public Water Supply (2500PUB1003) public supply which had MCPA and 2,4-D pesticide exceedances.

- 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 two lake bathing waters in the catchment identified under the Bathing Water Regulations 2008.

- Portnashangan, Lough Owel bathing water had an Excellent classification for 2020 and Lilliput, Lough Ennell bathing water had a Poor classification.

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

[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

2.2.3 Shellfish Areas

- There are no designated shellfish areas in the catchment.

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

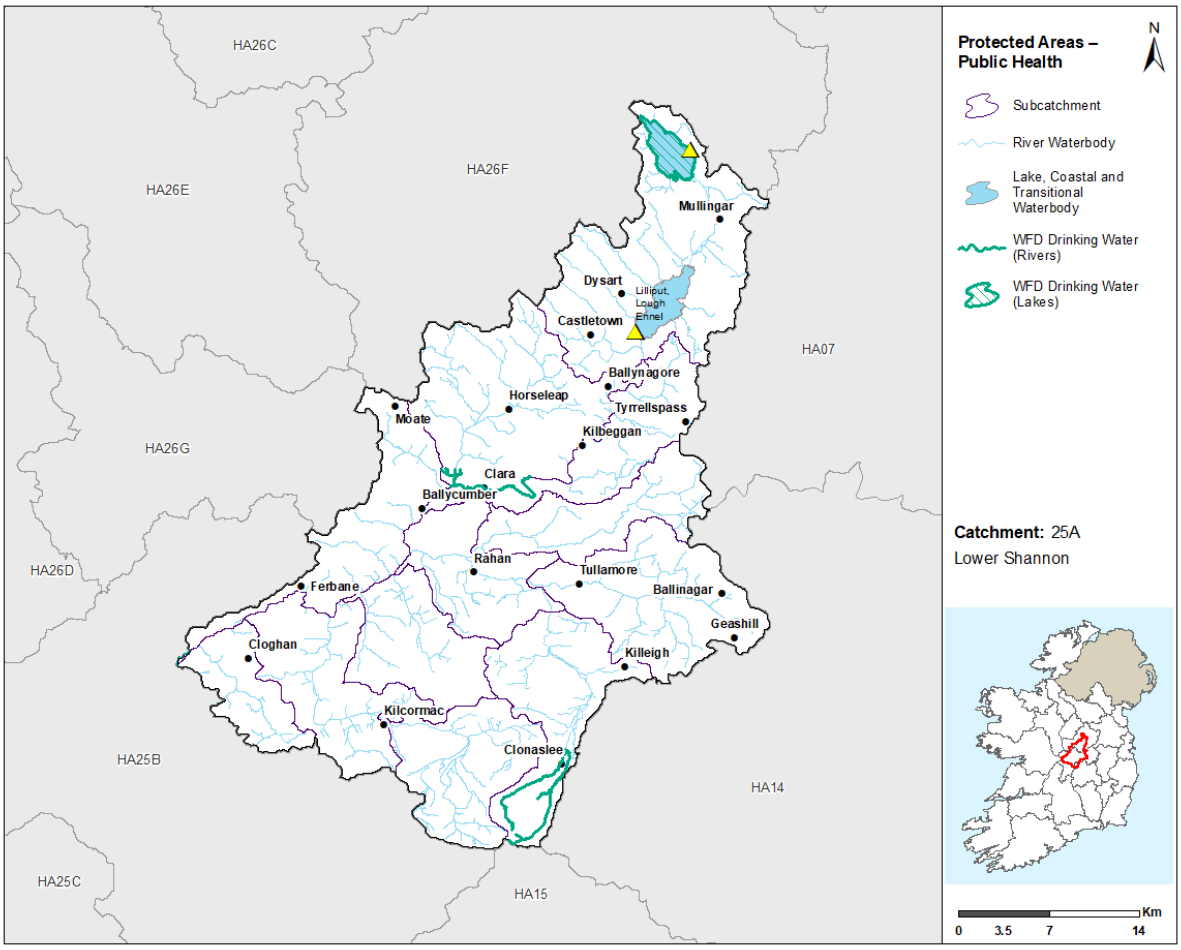


Figure 5: Protected Areas – Public Health

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 water dependent habitats or species in this catchment are presented in Figure 6, 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 10 SACs in this catchment, nine 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.[5]

Table 2: Natura 2000 Network Assessment Summary

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

**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. GWDTE-Raheenmore Bog (SAC000582) and GWDTE-Lough Owel Fens & Mires (SAC000688 & SAC000692) are at Good Status while GWDTE-Clara Bog (SAC000572) is at Poor Status (2013-2018).

- Water dependent SACs/ SPAs in the catchment are illustrated in Figure 6.

[5] https://www.catchments.ie/download/catchments-assessments-protected-areas-supporting-documents/

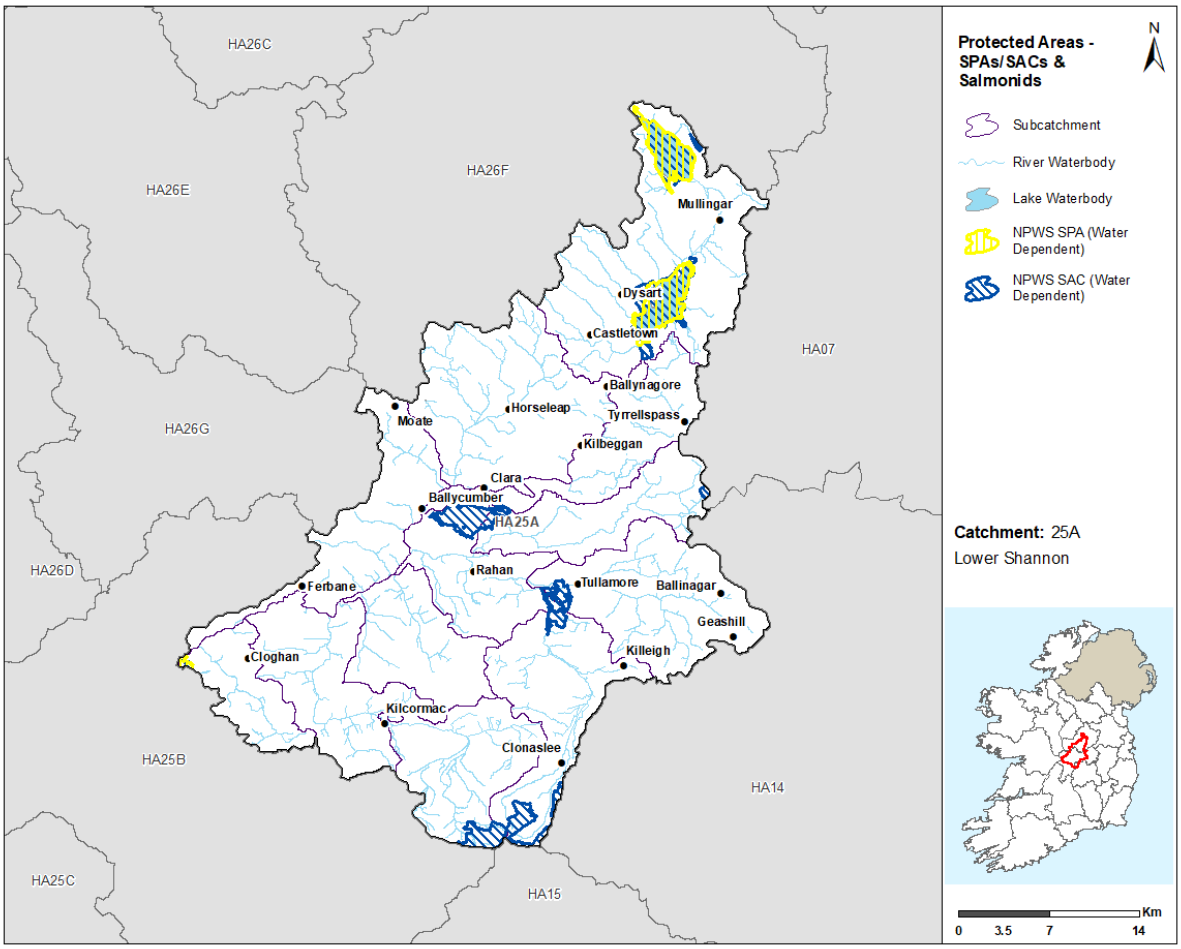


Figure 6: Water Dependent SPAs / SACs

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 are four NSAs in the catchment and these are downstream of two urban wastewater agglomerations. The list of NSAs, associated agglomerations and intersecting water bodies are provided in Table 3.

- NSA objectives are being met in all four of the NSAs in the catchment.

Table 3: Nutrient sensitive areas in the catchment

Nutrient Sensitive Area	Agglomeration		Water body		Objective met?		Comment
	Name	Code	Name	Code	Yes	No	
Brosna River (030)	Mullingar	D0008-01	Brosna_030	IE_SH_25B090100	✓		Tertiary Treatment in place
Lough Ennell	Mullingar	D0008-01	Ennell	IE_SH_25_188	✓		Tertiary Treatment in place
Brosna River (040-140)	Mullingar	D0008-01	Brosna_040	IE_SH_25B090200	✓		Tertiary Treatment in place
			Brosna_050	IE_SH_25B090250			
			Brosna_060	IE_SH_25B090400			
			Brosna_070	IE_SH_25B090450			
			Brosna_080	IE_SH_25B090600			
			Brosna_090	IE_SH_25B090710			
			Brosna_100	IE_SH_25B090761			
			Brosna_110	IE_SH_25B090800			
			Brosna_120	IE_SH_25B090950			
			Brosna_130	IE_SH_25B091000			
			Brosna_140	IE_SH_25B091200			
Tullamore River (040)	Tullamore	D0039-01	Tullamore_040	IE_SH_25T030400	✓		Tertiary Treatment in place

2.3 Heavily Modified Waterbodies

- Based on the 1st and 2nd RBMPs there are currently no designated heavily modified water bodies (HMWBs) in the catchment.

2.4 Artificial Waterbodies

- In total, there are two artificial waterbodies in the Lower Shannon (Brosna) Catchment, Grand Canal Main Line (Lower Shannon) and Royal Canal Main Line (Lower Shannon).

- Both of the artificial waterbodies are currently at Good Status. Prior to Cycle 3, both waterbodies were 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 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 98 waterbodies in the Lower Shannon Catchment and 32 (33%) are currently *At Risk*, 22 (22%) in *Review* and 44 (45%) are *Not At Risk*.

3.2 Surface Waters

- For the 62 rivers waterbodies, 28 (45%) are *At Risk,* 15 (24%) are in *Review* and 19 (31%) are *Not At Risk*.

- For the four lake waterbodies, three (75%) are in *Review* and one (25%) is *Not At Risk.*

- The largest proportion of *At Risk* waterbodies are found in river waterbodies, accounting for 28 (88%) of 32 *At Risk* waterbodies. Figure 7 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 and 9 *Not At Risk* waterbodies, and a decrease of 10 in *Review* waterbodies between Cycle 2 and Cycle 3.

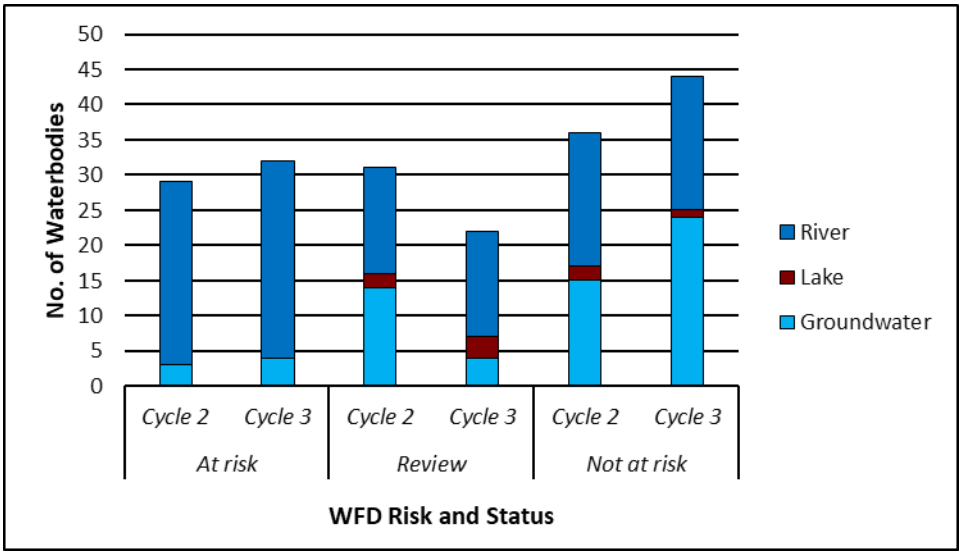


Figure 7: Number of waterbodies in each risk category

- The location of the *At Risk, Review and Not At Risk* surface waterbodies for Cycle 3 are shown in Figure 8 while the surface waterbodies that have experienced a change in risk between Cycle 2 and Cycle 3 are shown in Figure 9.

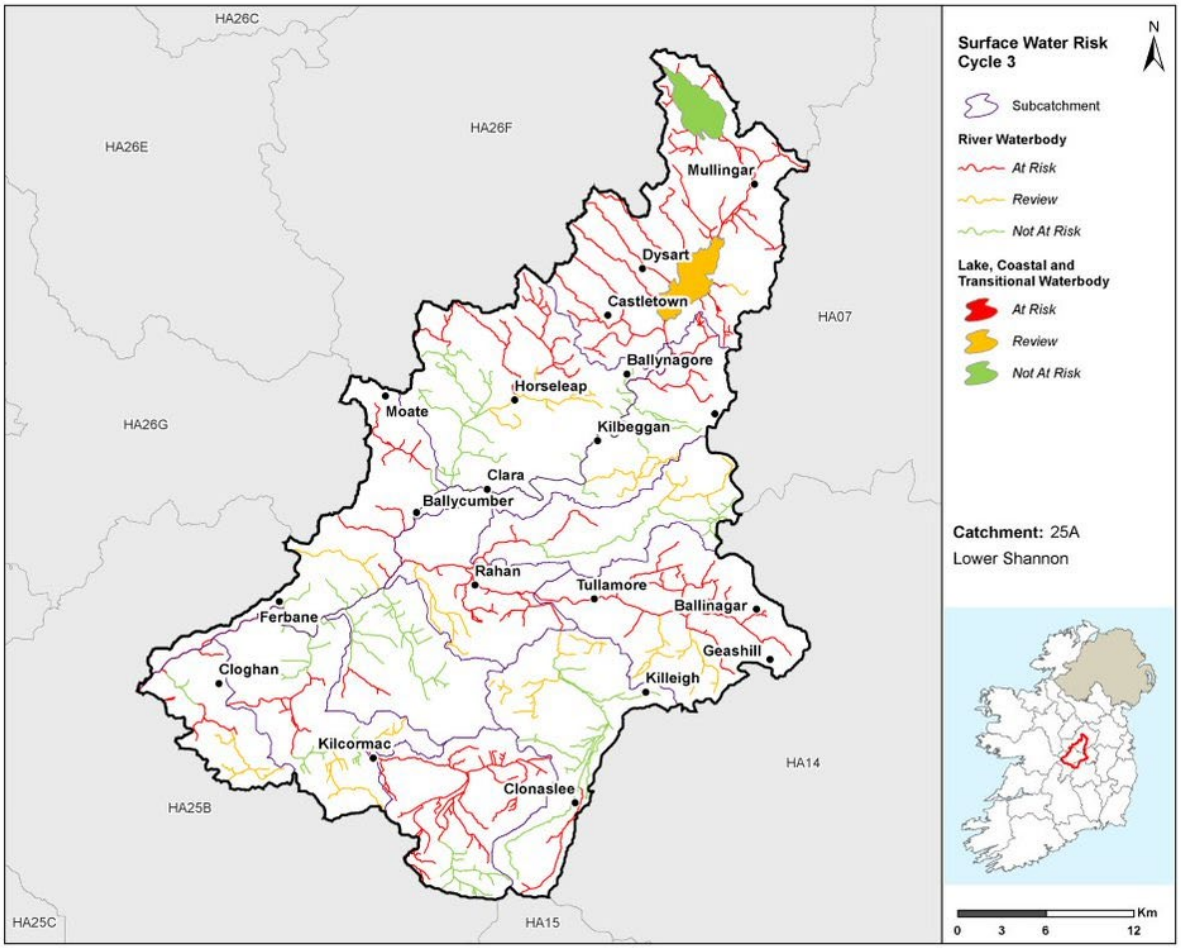


Figure 8: Surface Water Risk Cycle 3

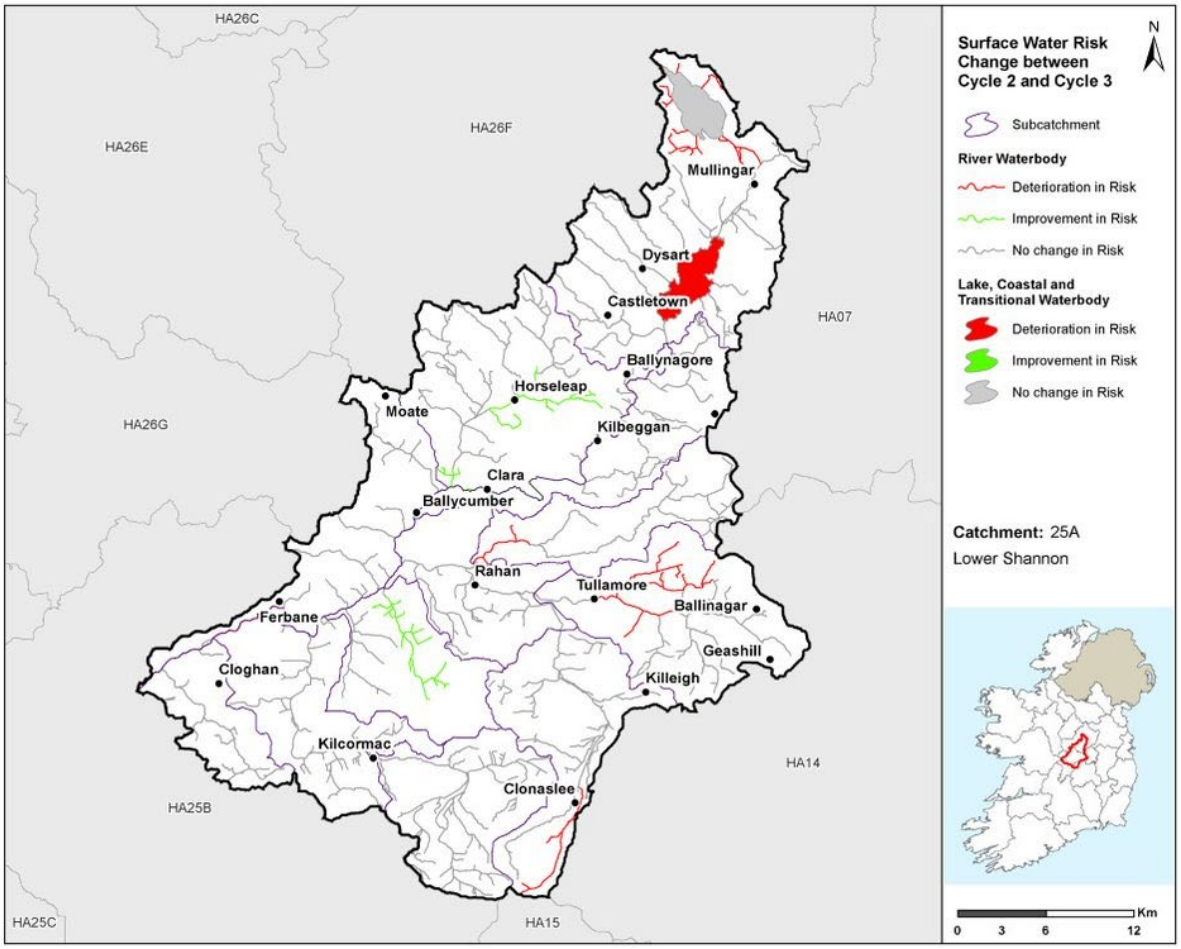


Figure 9: Surface Water Risk Change between Cycle 2 and Cycle 3

3.3 Groundwater

- For the 32 groundwater bodies, four (13%) are *At Risk* (Athboy, GWDTE-Clara Bog (SAC000572), Derravarragh and Tullamore), four (13%) are in *Review* and 24 (75%) are *Not At Risk*.

- In Cycle 2, there were three groundwater bodies (Waste Facility (W0071-02), GWDTE-Clara Bog (SAC000572) and Derravarragh) *At Risk* in this catchment, 14 in *Review* and 15 *Not At Risk*.

- The location of the *At Risk, Review and Not At Risk* groundwater bodies for Cycle 3 are shown in Figure 10 while the groundwater bodies that have experienced a change in risk between Cycle 2 and 3 are shown in Figure 11.

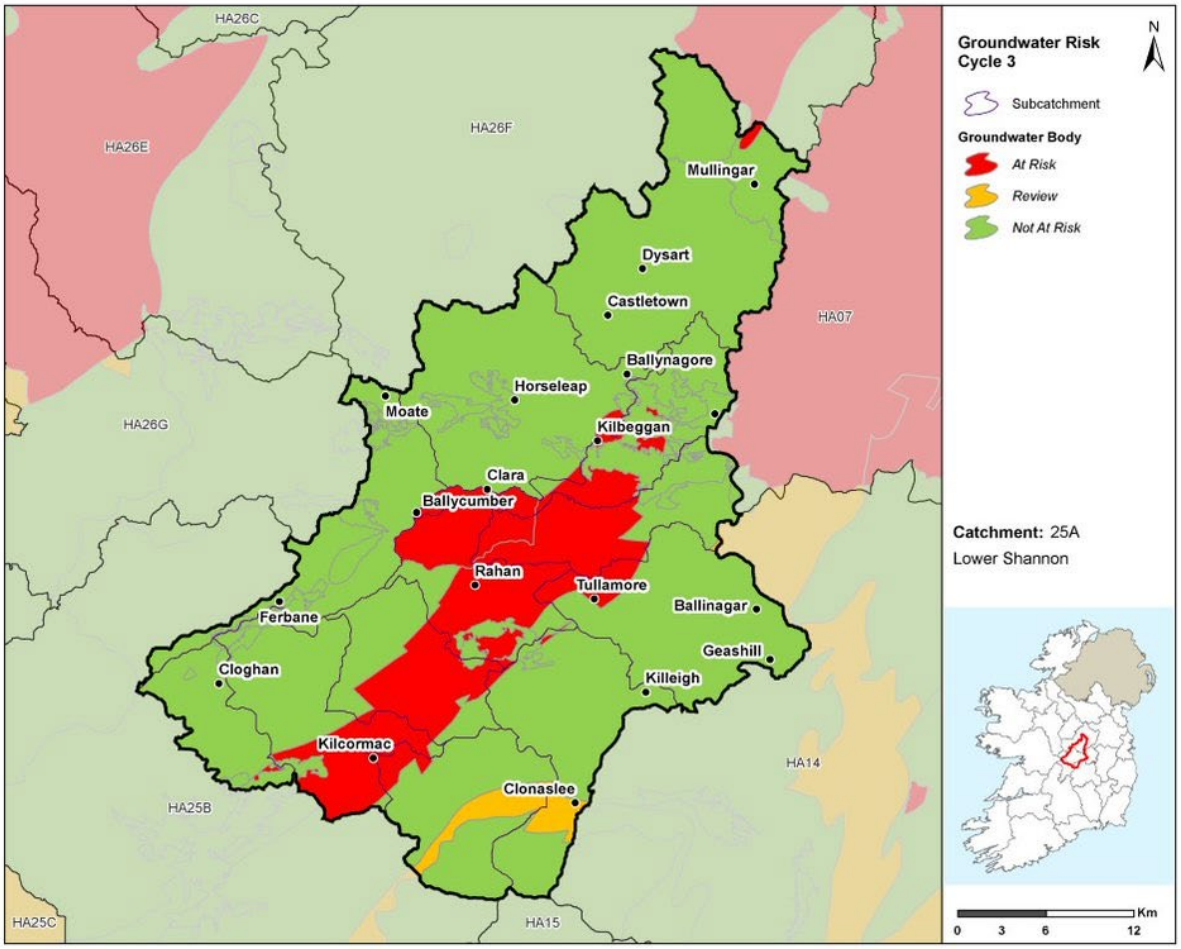


Figure 10: Cycle 3 Groundwater Body Risk

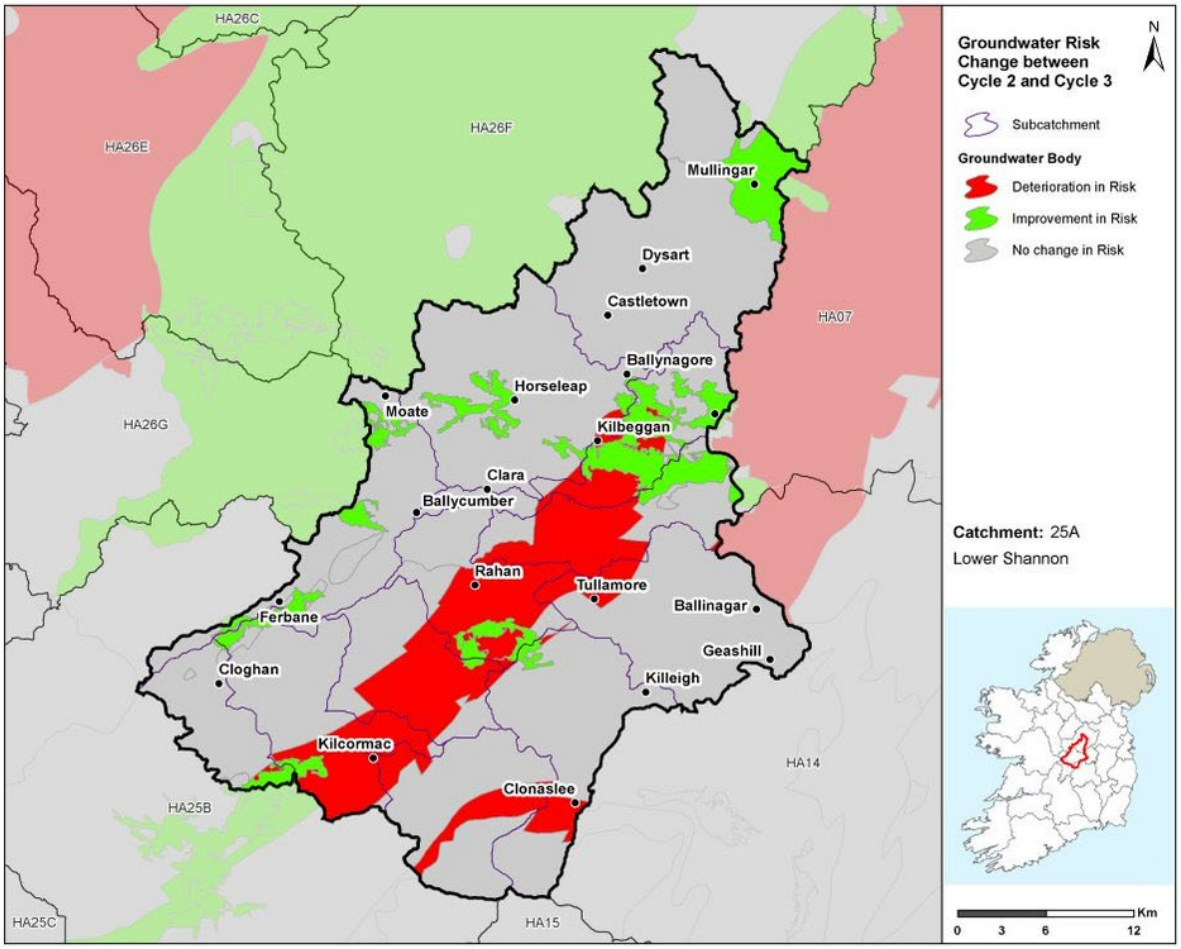


Figure 11: Groundwater Body Risk Change between Cycle 2 & Cycle 3

3.4 Heavily Modified Waterbodies

- There are no 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 3rd Cycle Final RBMP.

3.5 Artificial Waterbodies

- There are two artificial waterbodies in the Lower Shannon (Brosna) Catchment, Grand Canal Main Line (Lower Shannon) and Royal Canal Main Line (Lower Shannon).

- Both of these artificial waterbodies are *Not At Risk*.

4 Significant Issues in *At Risk* Waterbodies

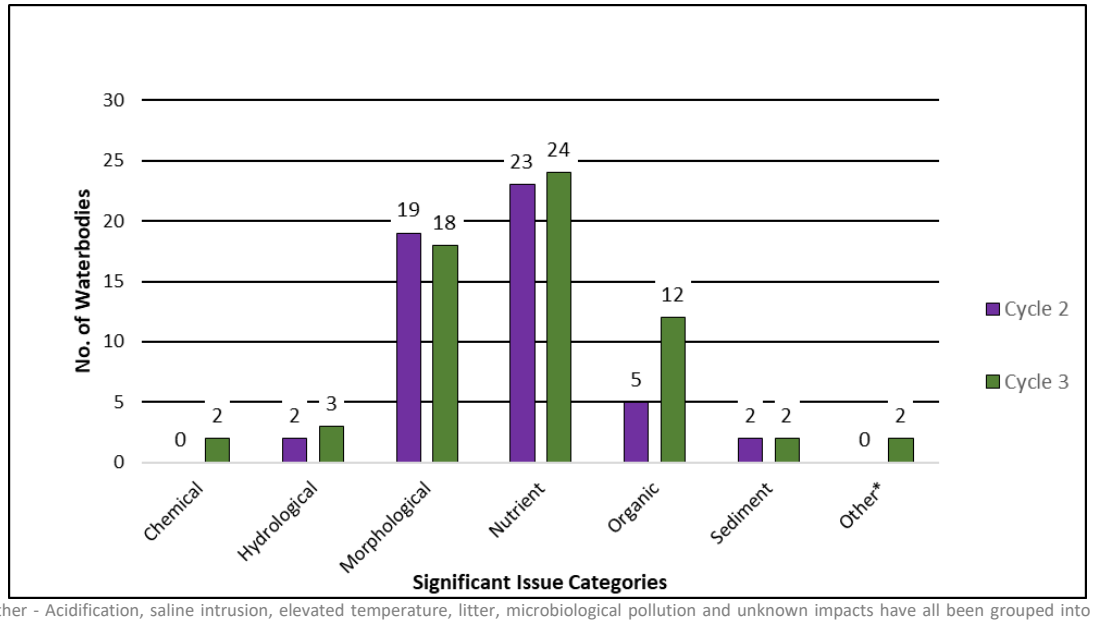
4.1 All Waterbodies

- Excess nutrients and morphological impacts remain the most prevalent issues in the Lower Shannon (Brosna) catchment (Figure 12), impacting 24 and 18 waterbodies in Cycle 3. Organic pollution is impacting 12 waterbodies, hydrological issues are impacting three waterbodies and chemical, sediment and other issues are each impacting two waterbodies.
    - For river waterbodies, the main significant issues are nutrient pollution (22), morphological impacts (18), organic pollution (12), hydrological (3), sediment pollution (1), other impacts (1) and chemical pollution (1).
    - For the *At Risk* groundwater bodies the significant issues are nutrient pollution (2), chemical pollution (1), sediment pollution (1) and diminution of quality of associated surface waters for chemical reasons (1).

- Between Cycle 2 and Cycle 3 the most notable change is a rise in the number of waterbodies impacted by organic pollution, increasing by 7 from 5 to 12 waterbodies.

- The numbers of waterbodies with morphological issues has reduced from 19 in Cycle 2 to 18 in Cycle 3.

- The number of waterbodies impacted by nutrient and hydrological impacts have each increased by one and chemical pollution has increased by two since Cycle 2.

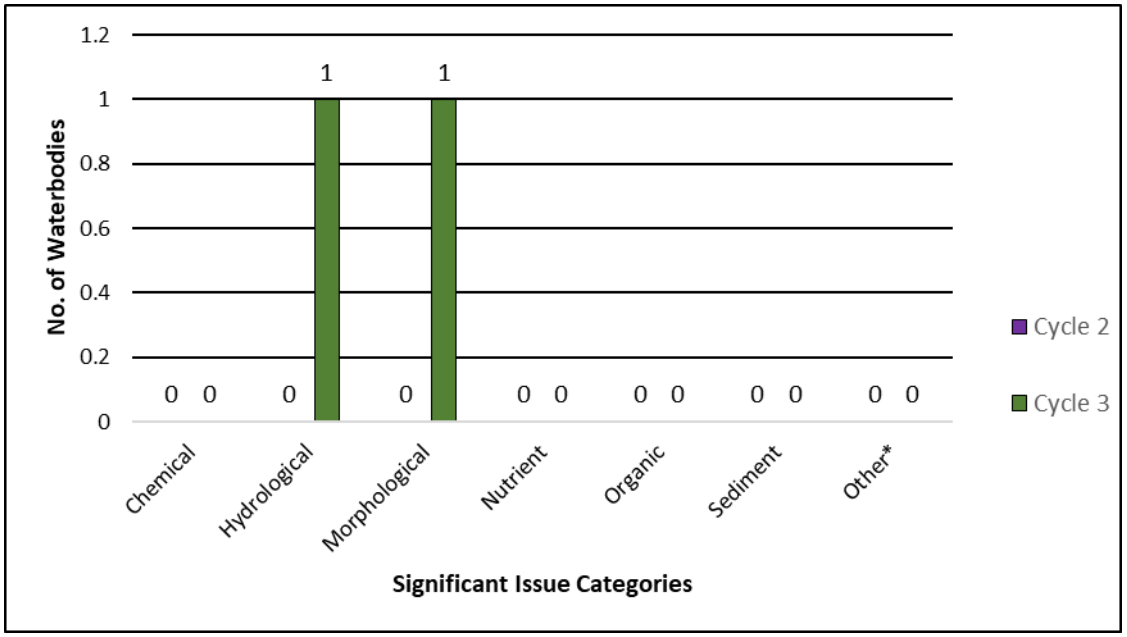


*Other - Acidification, saline intrusion, elevated temperature, litter, microbiological pollution and unknown impacts have all been grouped into the "Other" issues category for the purpose of this report

Figure 12: Significant Issues across all *At Risk* WBs between Cycle 2 and Cycle 3

4.2 High Status Objective Waterbodies

- In Cycle 3, for High Status Objective waterbodies hydrological and morphological issues are both impacting the one High Status Objective waterbody currently *At Risk* (Figure 13). Gorragh_010 is the only High Status Objective waterbody in the Lower Shannon Catchment.



*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

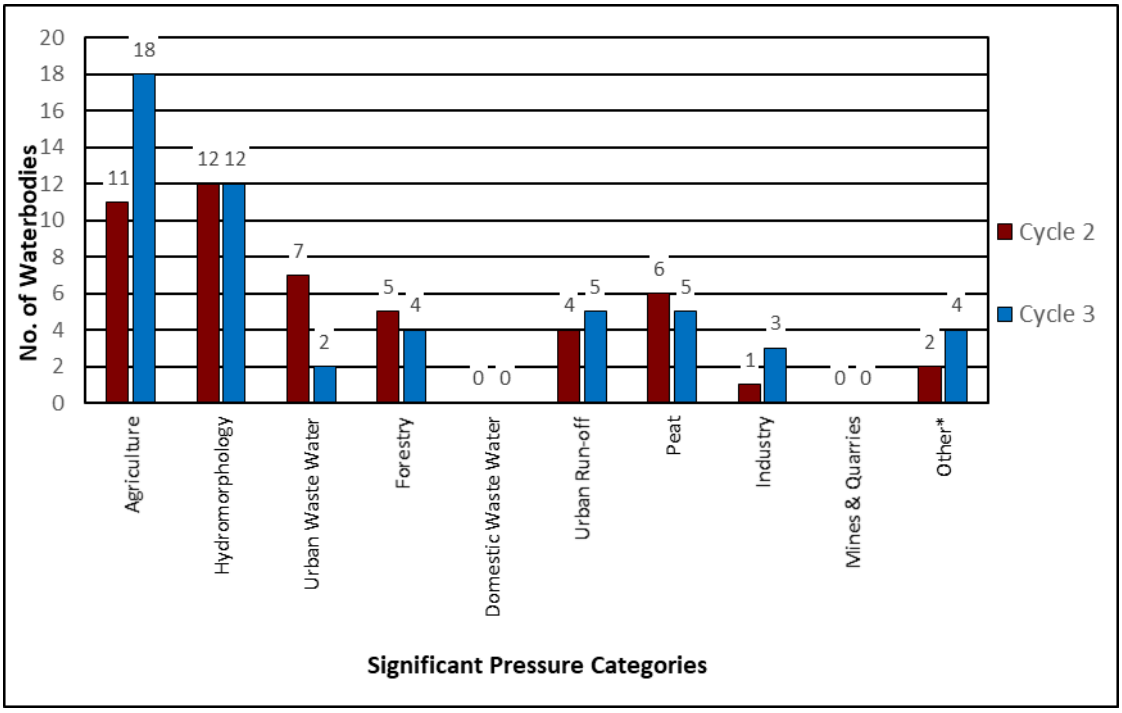
Figure 13: Significant Issues in *At Risk* High Status Objective Waterbodies

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 14 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 hydrological pressures, urban run-off, peat, forestry, other[6], industry and urban waste water.
- When comparing Cycle 2 and Cycle 3 the biggest changes are an increase of 7 waterbodies where agriculture and other impacts are a significant pressure and a decrease of 5 waterbodies were urban waste water is a significant pressure.

[6] 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



*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 14: Significant Pressure (All *At Risk* Waterbodies)

5.1.1 Pressure Type

5.1.1.1 Agriculture

- Agriculture is a significant pressure in the catchment areas of 15 river waterbodies and three groundwater bodies (Tullamore, Derravarragh & Athboy). The issues related to farming are primarily nutrients and morphological, with diffuse sources of phosphate in poorly draining areas along the channels (also confirmed by biological surveys) and pressures from a number of farmyards. Animal access also affects a large proportion of the waterbodies *At Risk* from agriculture which can result in morphological impacts and sediment issues.

5.1.1.2 Hydromorphology

- There are 12 waterbodies which are considered *At Risk* due to morphological issues. Typically, these types of pressures either have the effect of degrading the habitat or riparian zone of the river waterbody, obstructing flows, separating the river waterbody from its flood plain or instigating a secondary water quality issue such as siltation. 9 waterbodies within the Brosna subcatchment are subject to extensive modification mainly due to the presence of drainage schemes. Heavy siltation is noted at these waterbodies.

- Reaches within two river waterbodies (Gorragh_010 and Silver (Kilcormac)_050) were noted to include barriers to fish migration.

- One waterbody (Silver (Kilcormac)_020) which is subject to land drainage pressures, recorded extensive siltation and sedimentation due to landslides.

- A private hydroelectric plant was also noted within one river waterbody (Brosna_140).

5.1.1.3 Urban Run-off

- Diffuse urban pressures, caused by misconnections, leaking sewers and runoff from paved and unpaved areas has been identified as a significant pressure in five waterbodies – the Brosna_020 which passes through Mullingar, Brosna_030 which is downstream of Mullingar, the Moate Stream_010 which is downstream of Moate and Tullamore_030 and Tullamore_040 which both pass through Tullamore town. Elevated nutrients and organic pollution are the significant issue.

5.1.1.4 Peat

- Peat drainage and extraction have been identified as a significant pressure in four river waterbodies. Elevated ammonia concentrations and silt are the significant issues. Peat drainage is also identified as a significant pressure on GWDTE-Clara Bog (SAC000572) groundwater body.

5.1.1.5 Forestry

- Forestry has been identified as a significant pressure in the catchment areas of four waterbodies (Boora_010, Brosna_030, Ballynacarraig_010 and Durrow Abbey Stream_010). The significant issues are a combination of phosphorus loss to water and hydromorphological impacts from the release of sediment, primarily related to clearfelling and forestry activities on peaty soils. In addition, there have been noted spikes in total ammonia.

5.1.1.6 Other

- *Aquaculture*
  Fish farms have been identified as a significant pressure in the Brosna_010 river waterbody.

- *Unknown anthropogenic*
  The significant pressures impacting one river waterbody (Brosna_130) are unknown.

- *Abstraction*
  A reduction in water levels due to abstraction for Kilcormac public water supply is impacting Clodiagh (Tullamore_050) river waterbody. Abstraction for Tullamore public water supply is also a significant pressure in Gorragh_010.

5.1.1.7 Urban Waste Water

- Urban Waste Water Treatment Agglomerations have been identified as a significant pressure in two *At Risk* waterbodies (Silver (Kilcormac)_030 and Moate Stream_010). No planned works are scheduled for the agglomerations impacting the three waterbodies.

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[7]
Kilcormac D0225	Agglomeration PE of 1,001 to 2,000	Silver (Kilcormac)_030	Moderate	N/A
Moate D0097	Agglomeration PE of 2,001 to 10,000	Moate Stream_010	Poor	N/A

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

- Urban waste water significant pressures impacted 5 less waterbodies than in Cycle 2 (a reduction from 7 to two waterbodies impacted). The following agglomerations were listed as pressures in Cycle 2 but have been removed from the list of significant pressures in Cycle 3.
    - Tyrellspass (D0099)
    - Tullamore (D0039)
    - Mucklagh (D0364)
    - Clara (D0142)
    - Ballinagar (D0362)

5.1.1.8 Industry

- An industrial site has been identified as a significant pressure in Brosna_100, Syonan Castle Stream_010 and Tullamore_020. Nutrient, organic and chemical pollution are the issues of concern.

Table 5: Breakdown of Cycle 3 Industry Significant Pressures in the Lower Shannon (Brosna) Catchment

Waterbody Code	Waterbody Name	Waterbody Type	Emission Type	Name	Impact
IE_SH_25B090761	BROSNA_100	River	IPC	Bord na Mona Energy Limited Leabeg	Organic
IE_SH_25S040500	SYONAN CASTLE STREAM_010	River	Section 4	N/A*	Nutrient & chemical
IE_SH_25T030100	TULLAMORE_020	River	Section 4	N/A*	Nutrient & Organic

*Name of facility not provided during characterisation

Figure 15 – Figure 18 illustrates the locations of waterbodies for the four most common pressures in order of prevalence (agriculture, hydromorphology, peat and urban run-off) within the catchment in Cycle 3.

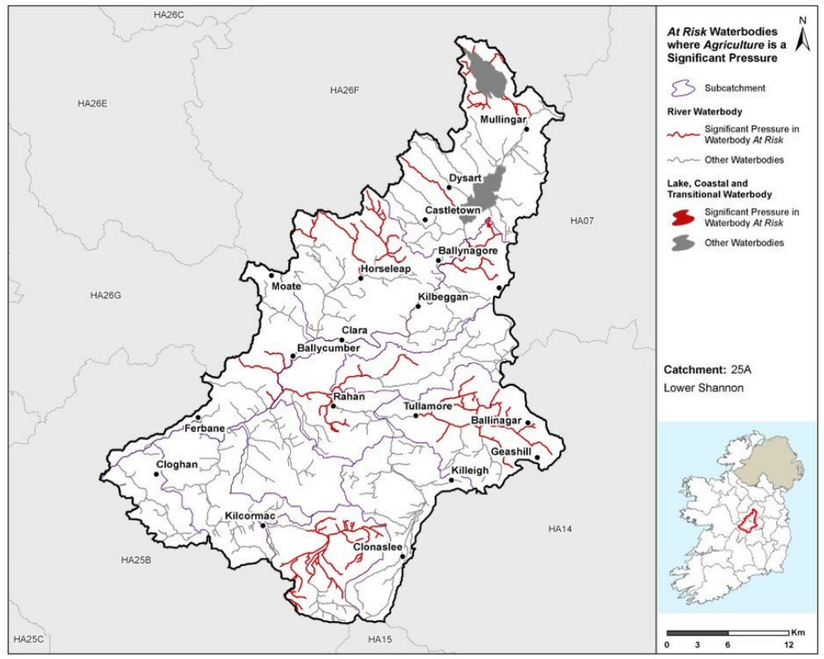


Figure 15: Locations of Waterbodies where Agriculture is a Significant Pressure

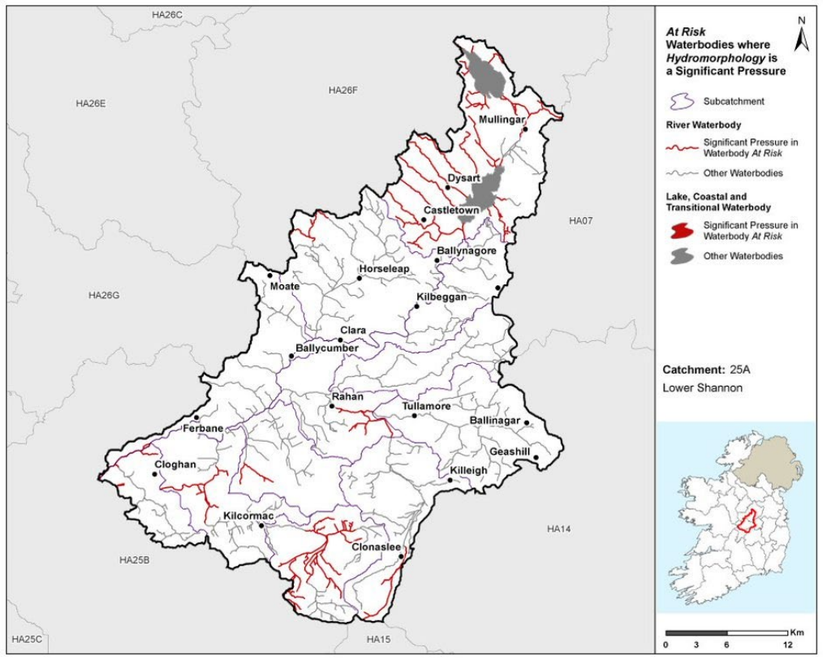


Figure 16: Locations of Waterbodies where Hydromorphology is a Significant Pressure

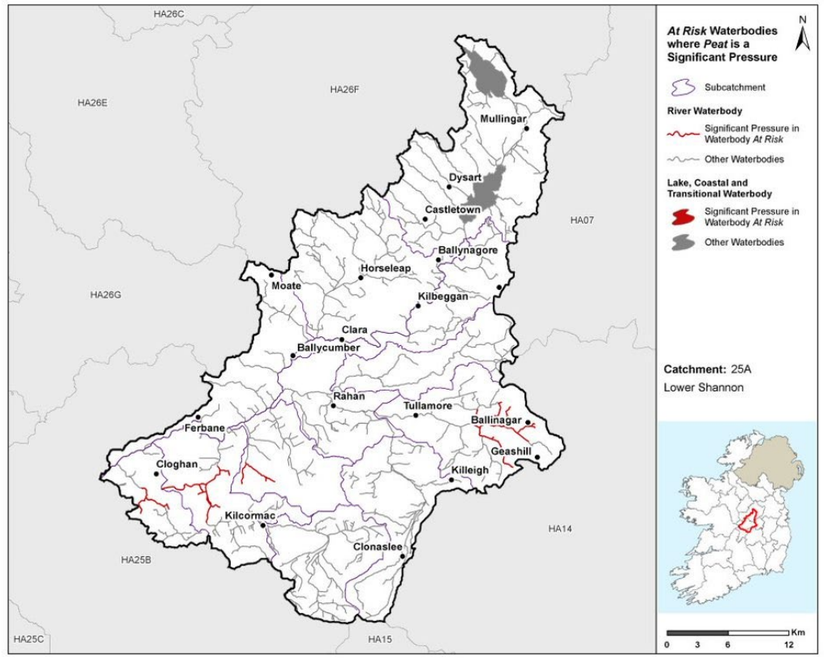


Figure 17: Locations of Waterbodies where Peat Pressures are a Significant Pressure

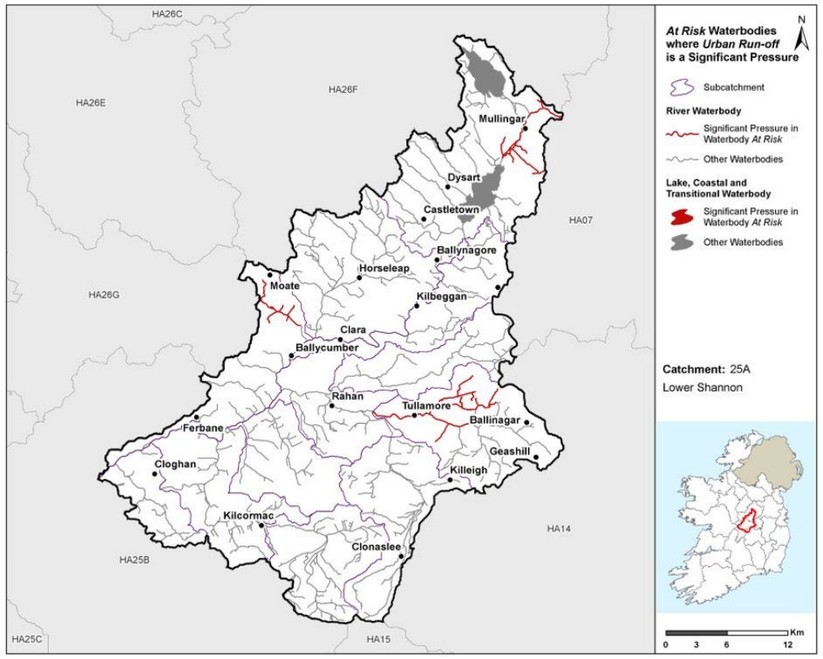
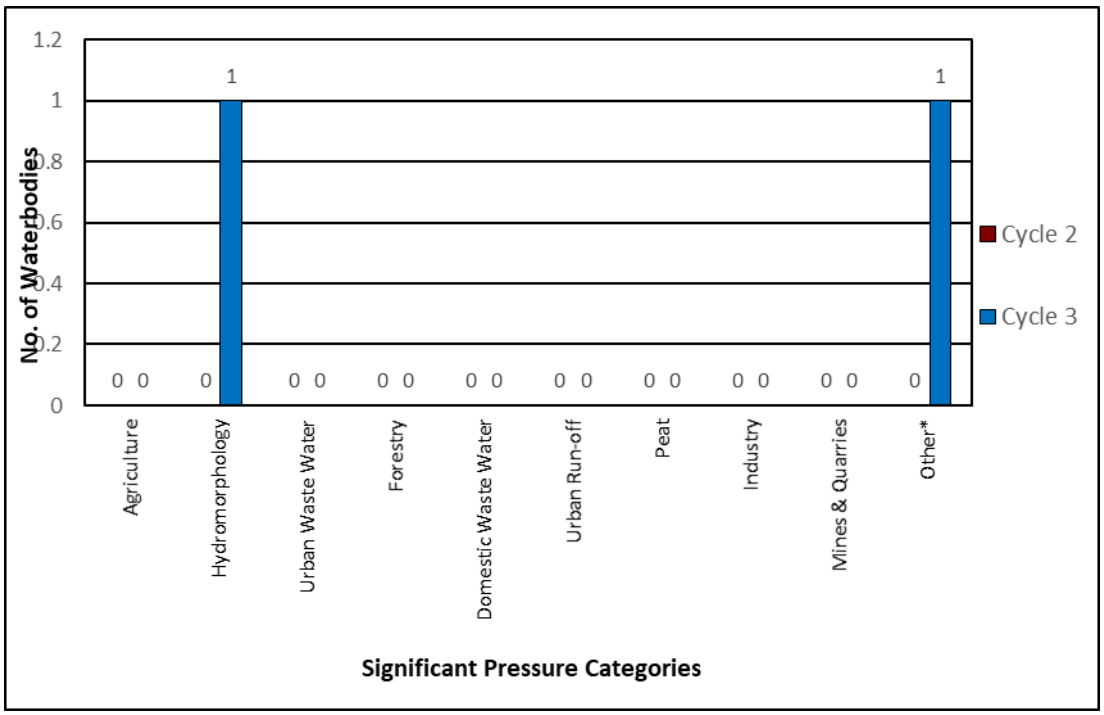


Figure 18: Locations of Waterbodies where Urban Run-off is a Significant Pressure

5.2 High Status Objective Waterbodies

- Hydromorphology and other pressures are the dominant significant pressures in the one High Status Objective waterbodies, both identified in the *At Risk* High Status Objective waterbodies.



*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 19: Significant Pressure in *At Risk* High Status Objective Waterbodies

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 arable land is responsible for 75% and 10% of the nitrogen load respectively while land in pasture, discharges from urban waste water and forestry contribute 35%, 17% and 14% of the phosphorus loadings for the catchment respectively (Figure 17).

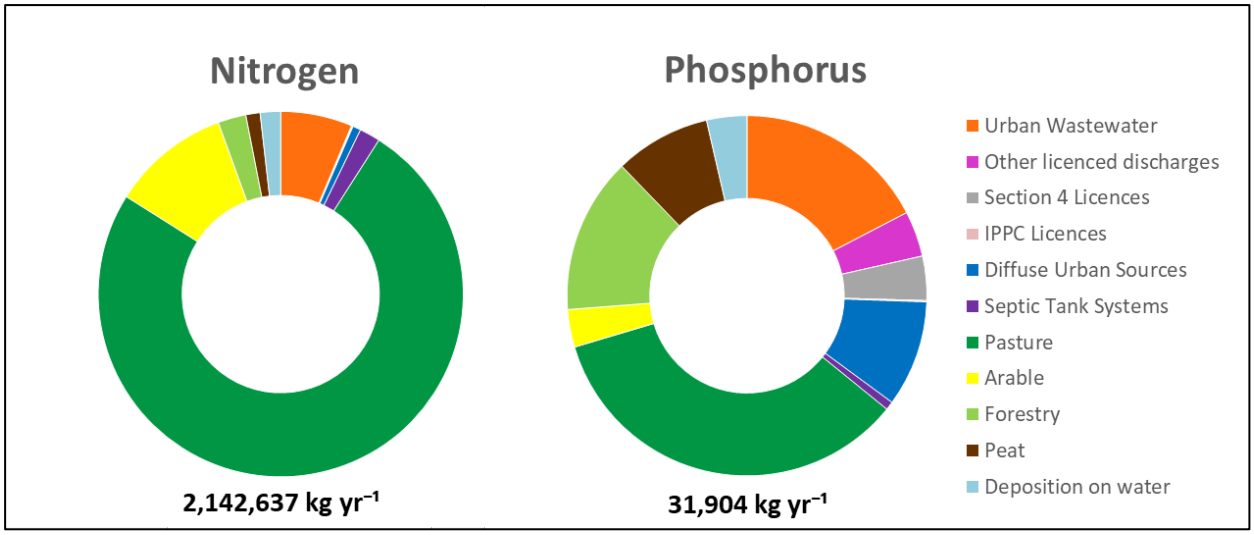


Figure 20: Estimated Proportions of N & P from Each Sector in the Lower Shannon (Brosna) Catchment

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 Lower Shannon Catchment.

7.2 Phosphorus / Sediment Load Reduction

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

Figure 21 highlights areas where agricultural measures for nitrogen, sediment and phosphorus 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.

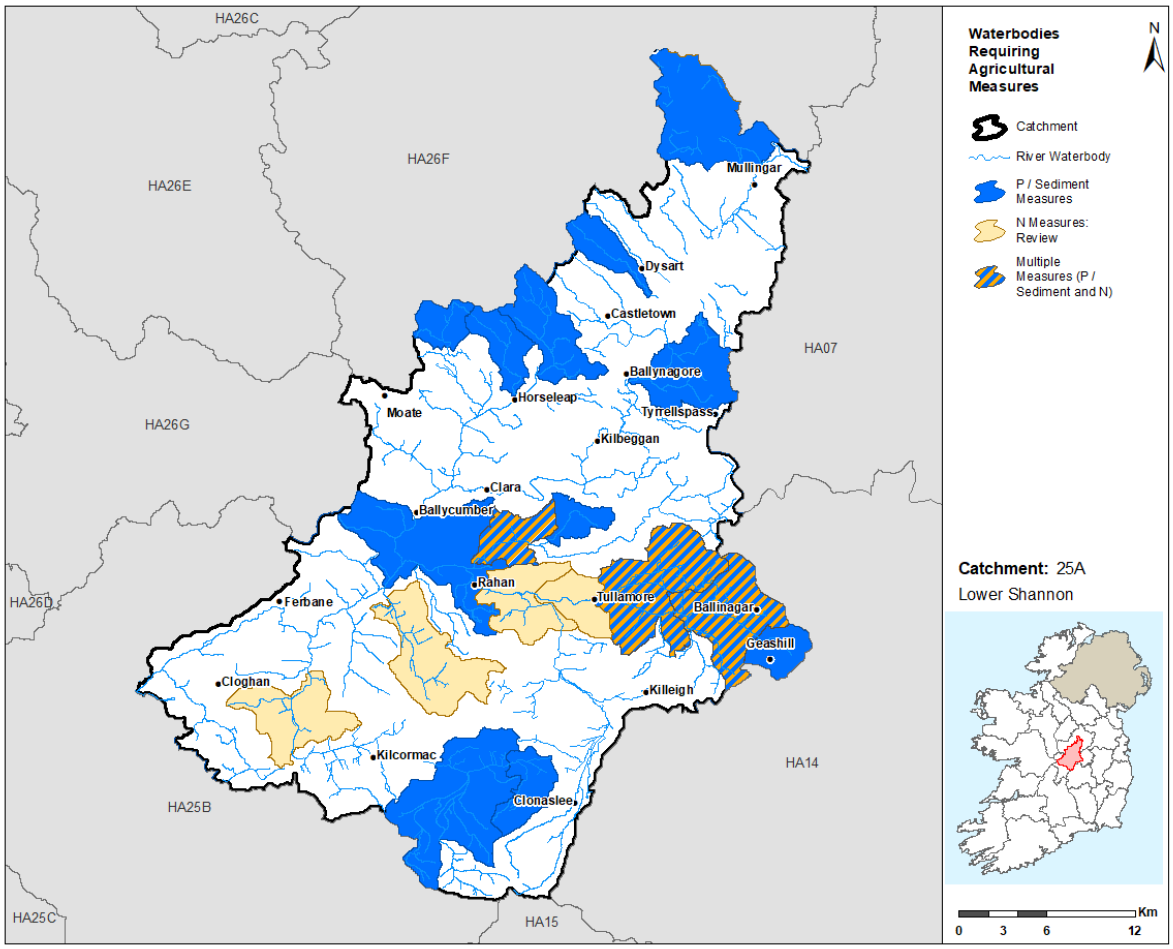


Figure 21: Waterbodies where Agricultural Measures should be Targeted

8 2nd Cycle Areas for Action

8.1 Area for Action Overview

- There were four Areas for Action, comprising of 10 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 6 and shown in Figure 22. LAWPRO, in conjunction with local authorities and stakeholders from the Midlands and East and South East Regional Operational Committee, have been working in these areas since 2018.

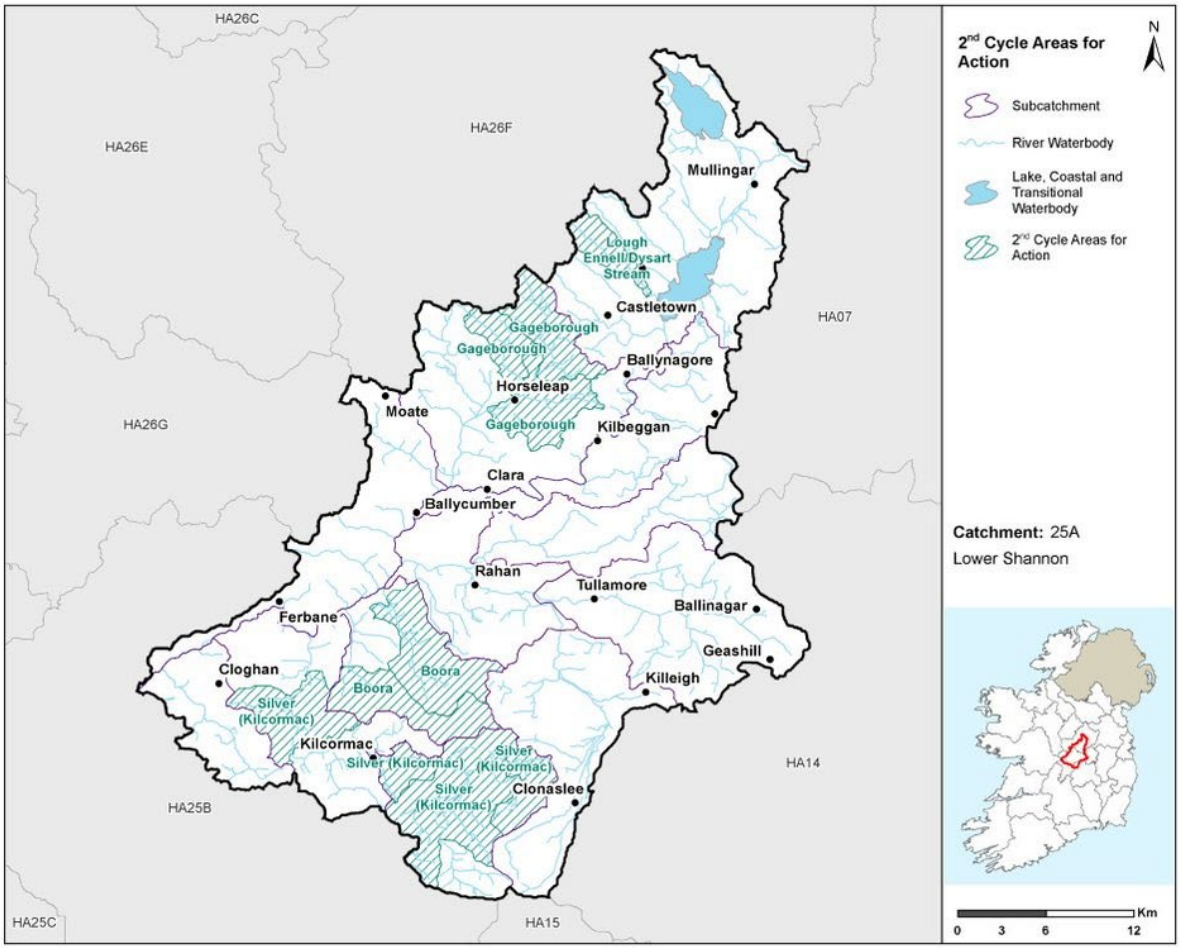


Figure 22: 2nd Cycle Areas for Action Locations

Table 6: 2nd Cycle Areas for Action

2nd Cycle Area for Action	Number of waterbodies	Sub-catchment	Local Authority	Reason for Selection
Lough Ennel	1	25A_10	Westmeath	• Important fishery - wild brown trout. • Building on restoration works completed by IFI. • Potential pilot hydromorphology project. • Important for angling tourism. • Feeder streams to Lough Ennell. • Socio economic benefit for town.
Gageborough	3	25A_9	Westmeath	• Joint County project. • Potential quick wins. • Headwaters to river Gageborough. • Group water scheme in area. • One deteriorated waterbody.
Boora	2	25A_2	Offaly	• Bog project to examine potential for improvement by rewetting, in collaboration with Bord na Mona. • Long term challenge. • Area important for tourism.
Silver (Kilcormac)	4	25A_12 25A_11	Offaly	• Building on existing work completed by Offaly County Council.

2nd Cycle Area for Action	Number of waterbodies	Sub-catchment	Local Authority	Reason for Selection
				• Build on works completed by IFI, in conjunction with Bord na Mona. • Headwaters to a High Ecological Status objective waterbody. • Three potential 'quick wins'. • Group water scheme in area. • One deteriorated waterbody.

8.2 Status Change in 2nd Cycle Areas for Action

- For Cycle 3, of the 10 waterbodies in the 2nd Cycle Areas for Action, there are two waterbodies at Good Status and 8 waterbodies at Moderate Status.

- There is an overall improvement in the status of two of the 2nd cycle Areas for Action waterbodies across the catchment.[8]

- Of the 10 waterbodies within the 2nd Cycle Areas for Action which had status assigned, 8 experienced no change in status between Cycle 2 and Cycle 3 and two waterbodies experienced an improvement (Figure 23). The two waterbody improvements were across Gageborough Area for Action and Boora Area for Action.

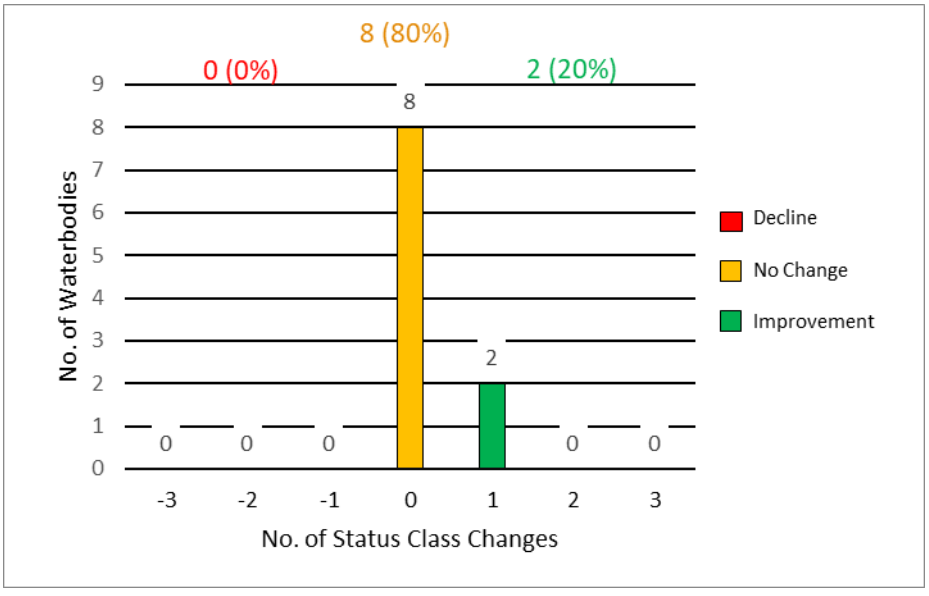


Figure 23: 2nd Cycle Area for Action Waterbody Status Class Changes between Cycle 2 and Cycle 3

[8] 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.

8.3 Waterbody Risk in 2nd Cycle Areas for Action

- For the 10 waterbodies in the 2nd Cycle Areas for Action, 8 (80%) of these are currently *At Risk,* one (10%) is in *Review* and one (10%) is *Not At Risk*.

- All 10 *At Risk* waterbodies are river waterbodies. Figure 24 gives an overview of the breakdown of risk across waterbody types for both Cycle 2 and Cycle 3 in 2nd Cycle Areas for Action.

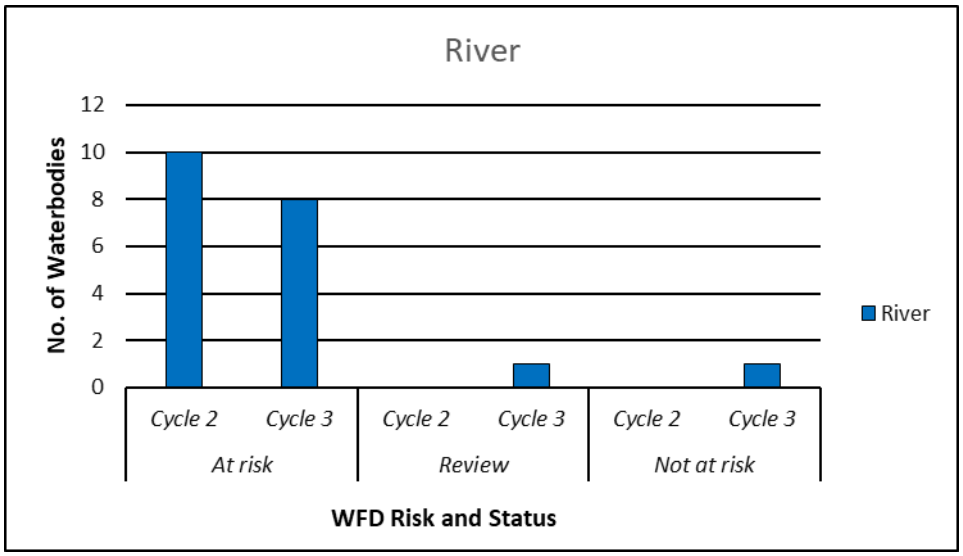
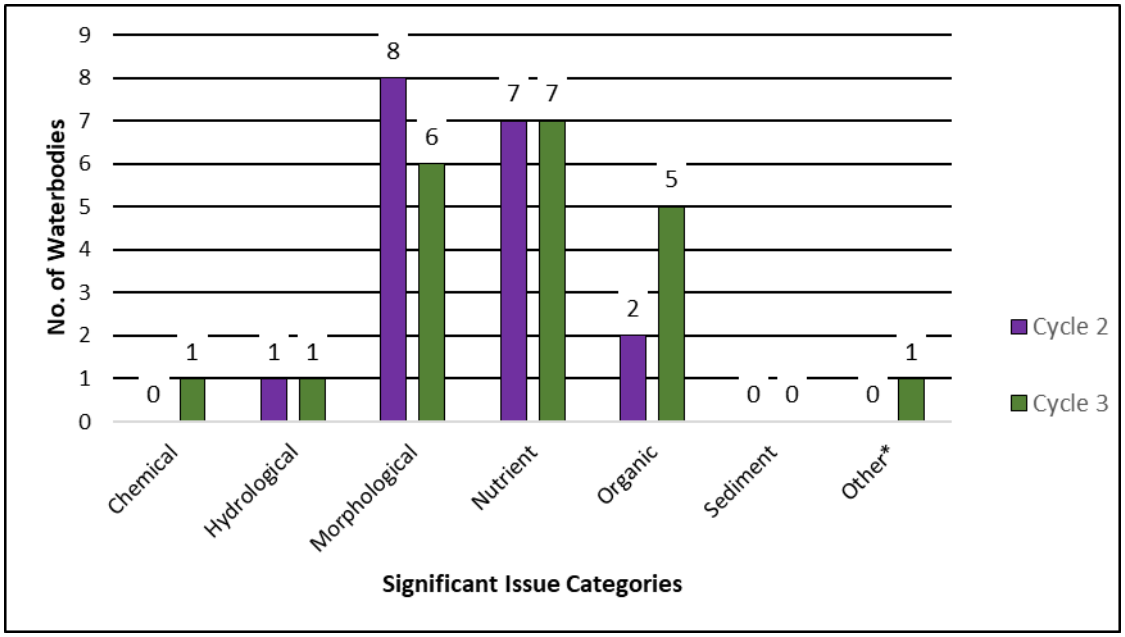


Figure 24: Number of waterbodies in each risk category in 2nd Cycle Areas for Action

8.4 Significant Issues in 2nd Cycle Areas for Action

- Based on the EPA assessment for Cycle 3, the significant issues in the 2nd Cycle Areas for Action are nutrient pollution and morphological impacts, impacting 7 and 6 waterbodies, respectively (Figure 25). This is followed by organic which is impacting 5 waterbodies while hydrological, chemical pollutions and other impacts are each impacting one waterbody.

- The number of 2nd Cycle Areas for Action waterbodies associated with each of the significant issues categories has increased between Cycle 2 and Cycle 3 except for morphological which has decreased from 8 to 6 waterbodies.



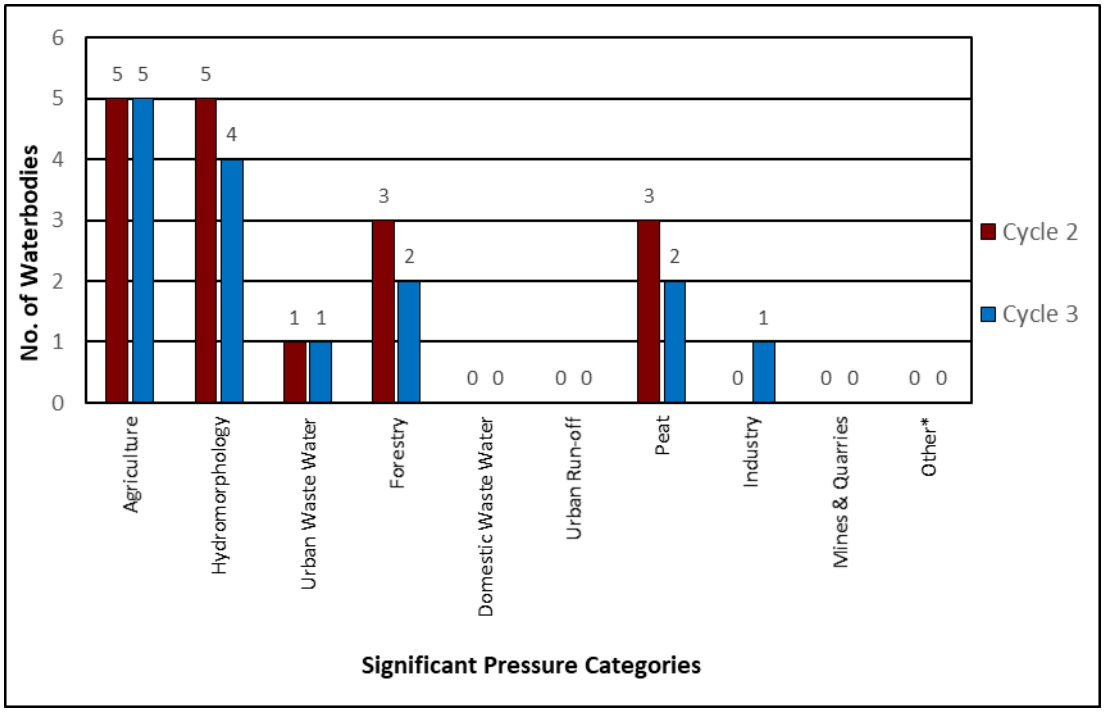
*Other - Acidification, saline intrusion, elevated temperature, litter, microbiological pollution and unknown impacts have all been grouped into the "Other" issues category for the purpose of this report

Figure 25: 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 - four waterbodies are impacted compared to 5 impacted in Cycle 2.
  - Agriculture – has remained unchanged between both cycles with 5 waterbodies impacted.
  - Forestry and peat pressures are both impacting two waterbodies each compared to 3impacted in Cycle 2.
  - Urban Waste Water Significant Pressures impacted the same number of waterbodies in Cycle 3 as Cycle 2.
  - Industry - one waterbody is impacted compared to no waterbodies impacted in Cycle 2.

- When comparing the significant pressures in the 2nd Cycle Areas for Action between Cycle 2 and 3 there has been a decrease or no change in all significant pressure categories in the catchment with the exception of industry which has increased by one waterbody.



*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 26: Significant Pressures in 2nd Cycle Area for Action Waterbodies

9 3rd Cycle Recommended Areas for Action

9.1 Recommended 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 14 Areas for Action, comprising of 48 waterbodies, recommended for further characterisation and action in the catchment for the 3rd Cycle River Basin Management Plan. 23 of the 48 waterbodies in the 3rd Cycle Recommended Areas for Action are *At Risk*, 12 are in *Review* and 13 are *Not At Risk.* The 14 Recommended Areas for Action consist of two Areas for Protection and 12 Areas for Restoration. LAWPRO are the proposed lead organisation in 8 Recommended Areas for Action, Offlay County Council are the proposed lead in four Recommended Areas for Action and NFGWS are the proposed lead on the remaining two Recommended Areas for Action. The Recommended Areas for Action in the catchment are listed in Table 7 and shown in Figure 27. The reason for selecting for each waterbody in a Recommended Area for Action is provided in Appendix 3.

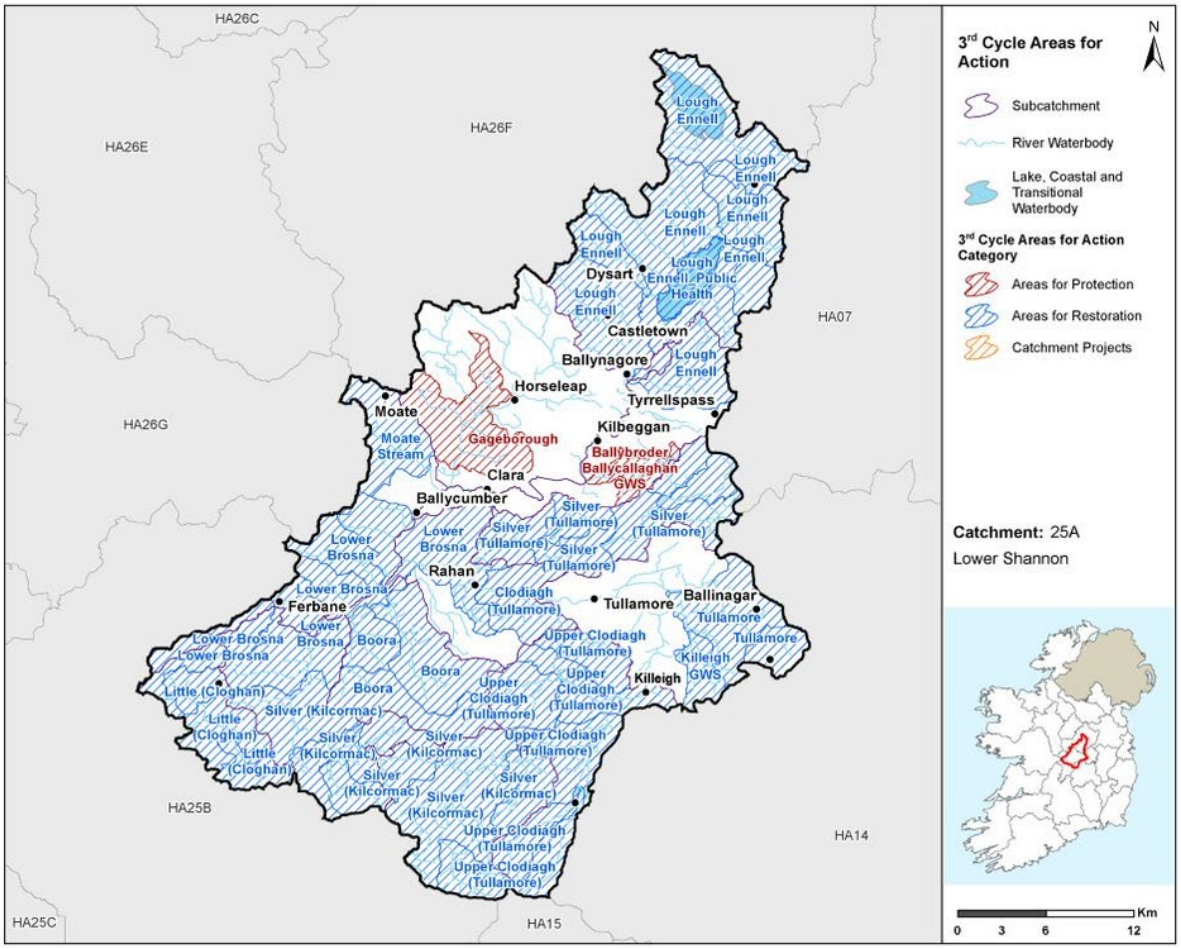


Figure 27: 3rd Cycle Recommended Areas for Action Locations

Table 7: 3rd 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
Boora	3	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Lough Ennell	8	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Lower Brosna	6	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Silver (Kilcormac)	8	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Upper Clodiagh (Tullamore)	6	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Clodiagh (Tullamore)	1	Restoration	LA Areas for Restoration Local Authorities	Offaly County Council
Silver (Tullamore)	6	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Gageborough	1	Protection	LA Areas for Protection Local Authorities	Offaly County Council

3rd Cycle Recommended Areas for Action	Number of Waterbodies	Recommended Areas for Action Category	Recommended Areas for Action Sub-category	Lead Organisation
Little (Cloghan)	3	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Moate Stream	1	Restoration	LA Areas for Restoration Local Authorities	Offaly County Council
Killeigh GWS	1	Restoration	Public Health Areas for Restoration NFGWS, IW, HSE, LAs, SFPA	NFGWS
Tullamore	2	Restoration	LA Areas for Restoration Local Authorities	Offaly County Council
Ballybroder Ballycallaghan GWS	1	Protection	Public Health Areas for Protection NFGWS, IW, HSE, LAs, SFPA	NFGWS
Lough Ennell_Public Health	1	Restoration	Public Health Areas for Restoration NFGWS, IW, HSE, LAs, SFPA	LAWPRO

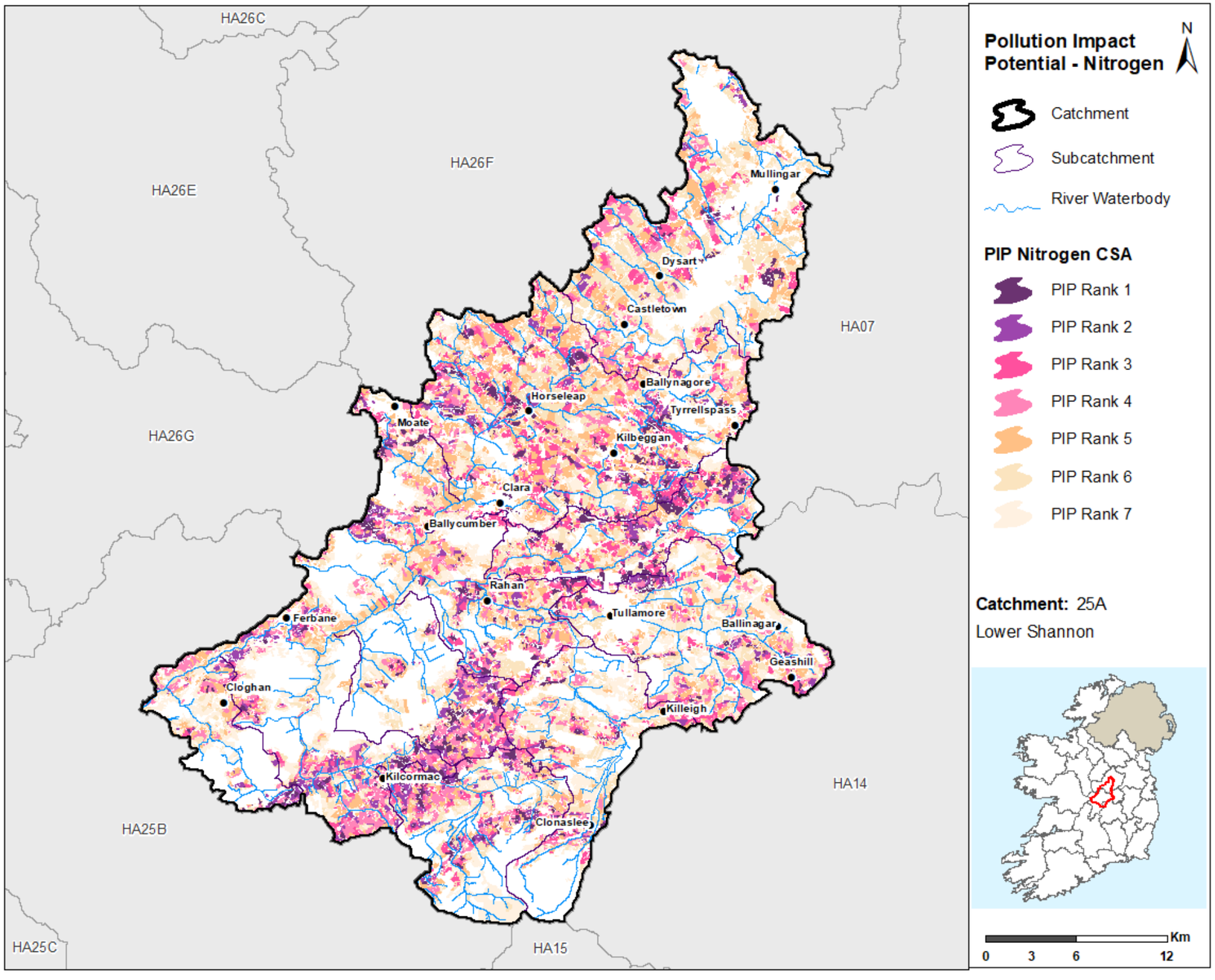
10 Catchment Summary

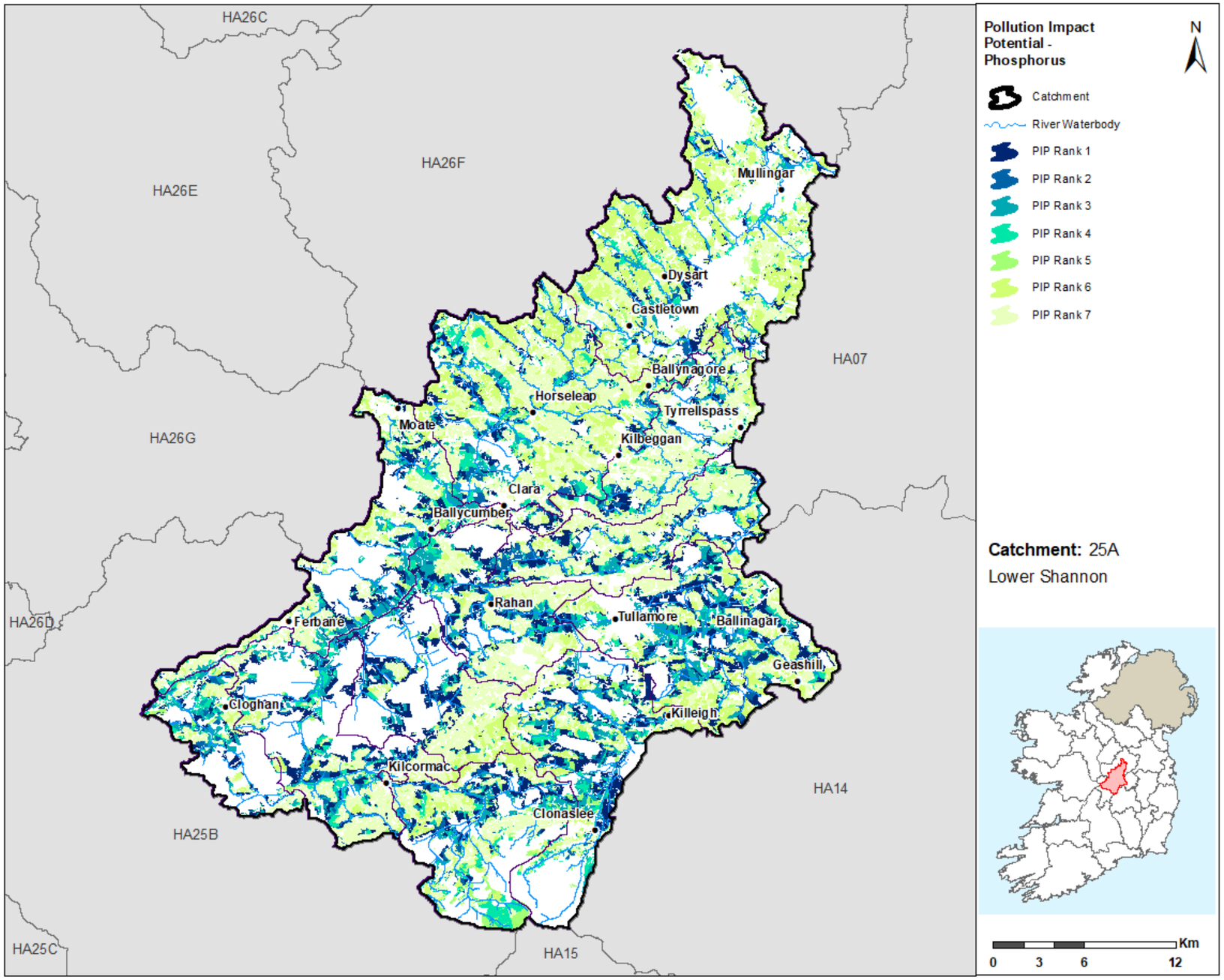
- Of the 62 river waterbodies, 28 are *At Risk* of not meeting their WFD objectives.
- Four out of 32 groundwater bodies are *At Risk.* .
- There has been an overall deterioration across the catchment with 32 waterbodies *At Risk* in Cycle 3 compared to 29 waterbodies *At Risk* in Cycle 2.
- The main significant issues are from nutrients pollution and morphological impacts, followed by organic pollution, hydrological impacts, other impacts, sediment and chemical.
- The main significant pressures are agricultural pressures followed by hydromorphological, urban run-off, peat, forestry, other, urban waste water and industry.
- The main impacts and pressures driving the change between Cycle 2 and Cycle 3 are increases in waterbodies impacted by nutrient and morphological issues.
- In the 2nd Cycle Areas for Action, 10 waterbodies were *At Risk* in Cycle 2 and eight waterbodies are *At Risk* in Cycle 3.
- There are 14 3rd Cycle Recommended Areas for Action for Cycle 3. They comprise of 48 waterbodies with 23 waterbodies *At Risk*, 12 in *Review* and 13 *Not At Risk*.

Appendix 1
High ecological status objective waterbodies

Waterbody Name	Waterbody Type	Waterbody Code	Status 2013-2018
GORRAGH_010	**River**	IE_SH_25G090300	Good

Appendix 2
Pollution Impact Potential Mapping




HA26C
HA26F
HA26E
HA07
HA26G
HA26D
HA14
HA25B
HA25C
HA15
Mullingar
Dysart
Castletown
Ballynagore
Horseleap
Tyrrellspass
Moate
Kilbeggan
Clara
Ballycumber
Rahan
Tullamore
Ballinagar
Ferbane
Geashill
Cloghan
Killeigh
Kilcormac
Clonaslee
Pollution Impact Potential - Phosphorus
N
Catchment
River Waterbody
PIP Rank 1
PIP Rank 2
PIP Rank 3
PIP Rank 4
PIP Rank 5
PIP Rank 6
PIP Rank 7
Catchment: 25A
Lower Shannon
Km
0 3 6 12

Appendix 3
Summary information on all waterbodies in the Lower Shannon (Brosna) 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_25A_AWB_GCMLW	Grand Canal Main Line (Lower Shannon)	River		Not at risk	Good	Good	No			
	IE_25A_AWB_RCMLW	Royal Canal Main Line (Lower Shannon)	River		Review	Good	Good	No			
25A_2	IE_SH_25B080100	BOORA_010	River	At risk	At risk	Moderate	Moderate	No	For, Hymo, Peat	Boora	Existing PAA Forestry, Hymo and Pea significnat pressures 2027 EO
25A_2	IE_SH_25B080200	BOORA_020	River	Not at risk	Not at risk	Good	Good	No		Boora	EPA Between waterbodies that require restoration Expand existing PAA Feeds Brosna_110
25A_10	IE_SH_25B090006	BROSNA_020	River	At risk	At risk	Poor	Poor	No	Hymo, UR	Lough Ennell	Hymo, URO significant pressures 2027 EO Proposed by WH for LAWPRO Important for Human Health (Main inputting waterbody to Lough Ennell (Lilliput bathing water)
25A_10	IE_SH_25B090100	BROSNA_030	River	At risk	At risk	Poor	Poor	No	For, UR	Lough Ennell	Forestry, URO significant pressures 2027 EO Proposed by WH for LAWPRO Important for Human Health (Main inputting waterbody to Lough Ennell (Lilliput bathing water)
25A_10	IE_SH_25B090200	BROSNA_040	River	At risk	At risk	Moderate	Moderate	No	Hymo	Lough Ennell	Hymo significant pressure 2027 EO Proposed by WH for LAWPRO Important for Human Health (Main inputting waterbody to Lough Ennell (Lilliput bathing water)
25A_7, 25A_9	IE_SH_25B090250	BROSNA_050	River	At risk	At risk	Moderate	Moderate	No	Ag	Lough Ennell	At risk waterbodies not included
25A_7, 25A_9	IE_SH_25B090400	BROSNA_060	River	Not at risk	Not at risk	Good	Good	No			
25A_7, 25A_9	IE_SH_25B090450	BROSNA_070	River	Not at risk	Not at risk	Good	Good	No			
25A_7, 25A_9	IE_SH_25B090600	BROSNA_080	River	At risk	Not at risk	Moderate	Good	No			
25A_7, 25A_8	IE_SH_25B090710	BROSNA_090	River	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)
25A_5, 25A_8	IE_SH_25B090761	BROSNA_100	River	At risk	At risk	Moderate	Moderate	No	Ag, Ind	Lower Brosna	"At risk" waterbodies not included NGWS - Boher Leamonaghan GWS
25A_2, 25A_8	IE_SH_25B090800	BROSNA_110	River	Not at risk	Not at risk	Good	Good	No		Lower Brosna	EPA Between waterbodies that require restoration
25A_11, 25A_8	IE_SH_25B090950	BROSNA_120	River	Not at risk	Not at risk	High	Good	No		Lower Brosna	EPA Between waterbodies that require restoration
25A_11, 25A_8	IE_SH_25B091000	BROSNA_130	River	Not at risk	At risk	Good	Moderate	No	Other	Lower Brosna	OY propose for LAWPRO 1. Reverse recent decline, 2.Links with Brosna 140 Silver Kilcormac _050 feeds into Brosna _130
25A_1, 25A_8	IE_SH_25B091200	BROSNA_140	River	At risk	At risk	Moderate	Moderate	No	Hymo	Lower Brosna	SAC ONM Hymo significant pressure 2027 EO OY proposed for LAWPRO 1. Reverse recent decline, 2. Ferbane WWTP CWO proposal
25A_9	IE_SH_25B160400	BALLYNAGRENIA STREAM_010	River	At risk	At risk	Moderate	Moderate	No	Ag, Hymo		
25A_9	IE_SH_25B160600	BALLYNAGRENIA STREAM_020	River	Not at risk	Not at risk	Good	Good	No			
25A_12	IE_SH_25B180100	BALLYNACARRIG_010	River	At risk	At risk	Moderate	Moderate	No	Ag, For	Silver (Kilcormac)	Existing PAA - expand to Subcatchment Ag, forestry significant pressures 2027 EO
25A_10	IE_SH_25B280390	BROSNA_010	River	Review	At risk	Unassigned	Poor	No	Ag, Hymo, Other	Lough Ennell	Ag, hymo, other significant pressures Ag poor drainage - beyond 2027 Proposed by WH for LAWPRO Important for Human Health (Main inputting waterbody to Lough Ennell (Lilliput bathing water) NPWS IE0000688 - Lough Owel SAC. Austropotamobius pallipes Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.
25A_6	IE_SH_25B640900	BALLYNACANTY_010	River	Review	Review	Unassigned	Unassigned	No		Upper Clodiagh (Tullamore)	NFGWS - Killeigh GWS

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)
25A_6	IE_SH_25C060220	CLODIAGH (TULLAMORE)_010	River	Not at risk	Not at risk	Good	Good	No		Upper Clodiagh (Tullamore)	to complete sub catchment
25A_6	IE_SH_25C060300	CLODIAGH (TULLAMORE)_020	River	Not at risk	Not at risk	Good	Good	No		Upper Clodiagh (Tullamore)	to complete sub catchment
25A_6	IE_SH_25C060340	CLODIAGH (TULLAMORE)_030	River	Not at risk	Not at risk	Good	Good	No		Upper Clodiagh (Tullamore)	to complete sub catchment
25A_6	IE_SH_25C060360	CLODIAGH (TULLAMORE)_040	River	Review	Review	Unassigned	Unassigned	No		Upper Clodiagh (Tullamore)	to complete sub catchment
25A_5	IE_SH_25C060500	CLODIAGH (TULLAMORE)_050	River	At risk	At risk	Poor	Poor	No	Hymo, Other	Clodiagh (Tullamore)	1. Build on previous work, 2. Fish issue
25A_10	IE_SH_25D050400	DYSART STREAM (LOUGH ENNELL)_010	River	At risk	At risk	Moderate	Moderate	No	Ag, Hymo	Lough Ennell	existing PAA - expand to include other WBs inputing ot Lough Ennell. Ag, Hymo significan tpressures 2027 EO
25A_3	IE_SH_25D120200	DURROW ABBEY STREAM_010	River	At risk	At risk	Moderate	Moderate	No	Ag, For	Silver (Tullamore)	Ag, forestry significant pressures 2027 EO 1. Headwaters,
25A_5	IE_SH_25D130400	DERRYCOOLY STREAM_010	River	Review	Review	Unassigned	Unassigned	No			
25A_10	IE_SH_25D160150	DUNBODEN PARK STREAM_010	River	Review	Review	Unassigned	Unassigned	No		Lough Ennell	Include to complete subcatchment
25A_9	IE_SH_25G010100	GAGEBOROUGH_010	River	At risk	At risk	Moderate	Moderate	No	Ag		
25A_9	IE_SH_25G010300	GAGEBOROUGH_020	River	At risk	Review	Moderate	Good	No			
25A_9	IE_SH_25G010500	GAGEBOROUGH_030	River	Not at risk	Not at risk	Good	Good	No		Gageborough	NFGWS - Tubber GWS
25A_6	IE_SH_25G090300	GORRAGH_010	River	Not at risk	At risk	High	Good	Yes	Hymo, Other	Upper Clodiagh (Tullamore)	High Status Objective Site at Risk
25A_11	IE_SH_25J270990	Kyleboher_010	River	Review	Review	Unassigned	Unassigned	No		Silver (Kilcormac)	Feeds into Silver Kilcormac_050 - existing PAA. Unassigned
25A_1	IE_SH_25L010090	LITTLE (CLOGHAN)_010	River	Review	Review	Unassigned	Unassigned	No		Little (Cloghan)	Unassigned WB Headwaters of At risk WB
25A_1	IE_SH_25L010200	LITTLE (CLOGHAN)_020	River	At risk	At risk	Moderate	Moderate	No	Peat	Little (Cloghan)	At risk waterbody Peat significant pressure 2027 EO
25A_1	IE_SH_25L010400	LITTLE (CLOGHAN)_030	River	Not at risk	Not at risk	Good	Good	No		Little (Cloghan)	EPA Between waterbodies that require restoration Feeds into Brosna_140
25A_8	IE_SH_25L040890	LEMANAGHAN STREAM_010	River	Review	Review	Unassigned	Unassigned	No		Lower Brosna	Feeds into Brosna_110 Unassigned WB Include to complete sub catchment
25A_10	IE_SH_25M010500	MONAGHANSTOWN_010	River	At risk	At risk	Moderate	Moderate	No	Hymo	Lough Ennell	Hymo significant pressure 2027 EO Include to complete subcatchment

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)
25A_8	IE_SH_25M050400	MOATE STREAM_010	River	At risk	At risk	Moderate	Poor	No	Ag, UR, UWW	Moate Stream	OY propose for OY 1. Cross county WB, assess impacts
25A_4	IE_SH_25M520760	MEELAGHANS_010	River	Review	Review	Unassigned	Unassigned	No		Killeigh GWS	NFGWS - Killeigh GWS LAWPRO - Building on Works by Offaly County Council (Glenisk Section 4)
25A_2	IE_SH_25P050300	POLLAGH STREAM (BROSNA)_010	River	At risk	Not at risk	Moderate	Good	No		Boora	Existing PAA Met EO
25A_11	IE_SH_25Q150990	Kilnagall_010	River	Review	Review	Unassigned	Unassigned	No		Silver (Kilcormac)	Feeds into Silver Kilcormac_040 - existing PAA. Unassigned
25A_4	IE_SH_25Q440920	KILLEENMORE_010	River	Review	Review	Unassigned	Unassigned	No			
25A_12	IE_SH_25S020100	SILVER (KILCORMAC)_010	River	Not at risk	Not at risk	Good	Good	No		Silver (Kilcormac)	existing PAA - expand to Subcatchment Protect
25A_12	IE_SH_25S020200	SILVER (KILCORMAC)_020	River	At risk	At risk	Moderate	Moderate	No	Ag, Hymo	Silver (Kilcormac)	Existing PAA - expand to Subcatchment Ag, hymo significant pressures 2027 EO
25A_12	IE_SH_25S020400	SILVER (KILCORMAC)_030	River	At risk	At risk	Moderate	Moderate	No	UWW	Silver (Kilcormac)	existing PAA - expand to Subcatchment UWW significant pressures 2027 EO
25A_11	IE_SH_25S020500	SILVER (KILCORMAC)_040	River	Not at risk	Not at risk	Good	Good	No		Silver (Kilcormac)	Expand into subcatchment Protect
25A_11	IE_SH_25S020700	SILVER (KILCORMAC)_050	River	At risk	At risk	Moderate	Moderate	No	Hymo, Peat	Silver (Kilcormac)	Existing PAA - expand into subcatchment hymo, peat significant pressures 2027 EO IFI Watching Brief Check for improvement in fish status since improvement measures to channel were carried out. Is Fish status still Moderate? in 2016 Feeds into Brosna_120
25A_3	IE_SH_25S030010	SILVER (TULLAMORE)_010	River	Review	Review	Unassigned	Unassigned	No		Silver (Tullamore)	To complete sub catchment
25A_3	IE_SH_25S030100	SILVER (TULLAMORE)_020	River	Not at risk	Not at risk	Good	Good	No		Silver (Tullamore)	To complete sub catchment
25A_3	IE_SH_25S030300	SILVER (TULLAMORE)_030	River	Not at risk	Not at risk	Good	Good	No		Silver (Tullamore)	To complete sub catchment
25A_3	IE_SH_25S030500	SILVER (TULLAMORE)_040	River	Not at risk	At risk	Good	Moderate	No	Ag	Silver (Tullamore)	Ag significant pressure 2027 EO

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)
											OY propose for LAWPRO 1. Reverse recent decline,
25A_9	IE_SH_25S040500	SYONAN CASTLE STREAM_010	River	At risk	At risk	Moderate	Moderate	No	Ag, Ind		
25A_4	IE_SH_25T030030	TULLAMORE_010	River	At risk	At risk	Moderate	Moderate	No	Ag	Tullamore	1. Headwaters,2. Ballinagar WWTP NFGWS Public Health Area for Restoration / Protection. Ballinagar GWS
25A_4	IE_SH_25T030100	TULLAMORE_020	River	At risk	At risk	Moderate	Poor	No	Ag, Ind, Peat	Tullamore	1. Build on previous work, 2 Section 4 discharge
25A_4	IE_SH_25T030300	TULLAMORE_030	River	Review	At risk	Unassigned	Unassigned	No	Ag, UR		
25A_4	IE_SH_25T030400	TULLAMORE_040	River	At risk	At risk	Poor	Moderate	No	UR		
25A_7	IE_SH_25T450930	TONAPHORT_010	River	Review	Review	Unassigned	Unassigned	No		Ballybroder Ballycallaghan GWS	NFGWS - Ballybroder / Ballycallaghan GWS Feeds into Brosna_070
25A_3	IE_SH_25Y080860	Cornaher_010	River	Review	Review	Unassigned	Unassigned	No		Silver (Tullamore)	To complete sub catchment
25A_10	IE_SH_25_188	Ennell	Lake	Not at risk	Review	Good	Good	No		Lough Ennell_Public Health	Bathing Water NMO Focus group to be established to co-ordinate all parties work on the lake LAWPRO work to focus on feeder streams WH to focus on monitoring on bathing water. HSE, IFI and NPWS also interested parties in the lake. IFI This is an important lake from an IFI perspective and its one of the designated brown trout lakes. IFI have no plans to lead a project on this, but there may be river restoration works carried out in the future.
25A_9	IE_SH_25_92	Ballinderry	Lake	Review	Review	Unassigned	Unassigned	No			
25A_10	IE_SH_26_608	Owel Southeast Part	Lake	Review	Review	Unassigned	Unassigned	No			
25A_10	IE_SH_26_703	Owel Main	Lake	Not at risk	Not at risk	Good	Good	No			
07_11, 07_12, 07_13, 07_14, 07_18, 07_2, 07_3, 07_4, 07_7, 07_8, 07_9, 14_14, 25A_10, 25A_3, 25A_7, 26F_6, 26F_7, 26F_9	IE_EA_G_001	Athboy	Groundwater	Review	At risk	Good	Good	No	Ag		

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)
07_11, 14_14, 25A_3	IE_EA_G_074	GWDTE-Raheenmore Bog (SAC000582)	Groundwater	Review	Not at risk	Good	Good	No			
07_9, 25A_10	IE_EA_G_083	Waste Facility (W0071-02)	Groundwater	At risk	Not at risk	Poor	Good	No			
14_15, 15_1, 15_13, 15_9, 25A_12, 25A_6, 25B_3, 25B_6	IE_SE_G_027	Camross	Groundwater	Not at risk	Not at risk	Good	Good	No			
14_15, 15_1, 15_10, 25A_6	IE_SE_G_039	Clonaslee	Groundwater	Not at risk	Not at risk	Good	Good	No			
07_11, 14_14, 25A_3, 25A_4	IE_SE_G_049	Daingean	Groundwater	Not at risk	Review	Good	Good	No			
14_1, 14_11, 14_15, 14_20, 15_10, 25A_4, 25A_6	IE_SE_G_107	Portlaoise	Groundwater	Not at risk	Not at risk	Good	Good	No			
07_11, 07_4, 14_14, 14_20, 14_3, 25A_4	IE_SE_G_116	Rhode	Groundwater	Not at risk	Not at risk	Good	Good	No			
14_15, 15_1, 15_9, 25A_6	IE_SE_G_118	Rosenallis	Groundwater	Not at risk	Not at risk	Good	Good	No			
07_4, 14_1, 14_11, 14_12, 14_14, 14_16, 14_17, 14_18, 14_2, 14_20, 14_3, 15_10, 15_7, 25A_4	IE_SE_G_153	Bagenalstown Upper	Groundwater	Review	Review	Good	Good	No			
25A_3, 25A_5, 25A_7, 25A_8, 25A_9	IE_SH_G_039	GWDTE-Clara Bog (SAC000572)	Groundwater	At risk	At risk	Poor	Poor	No	Peat		
25A_1, 25A_8, 25B_1, 25B_2, 25B_4, 25B_5, 25B_7, 25C_10, 25C_2	IE_SH_G_040	Banagher	Groundwater	Not at risk	Not at risk	Good	Good	No			
25A_1, 25A_11, 25B_1, 25B_3, 25B_5, 25B_7, 25C_2	IE_SH_G_041	Birr	Groundwater	Review	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)
15_13, 25A_12, 25B_3, 25B_6	IE_SH_G_045	Bredagh	Groundwater	Review	Review	Good	Good	No			
14_15, 25A_12, 25A_6, 25B_3	IE_SH_G_066	Clonaslee West	Groundwater	Not at risk	Review	Good	Good	No			
07_12, 07_7, 25A_10, 26F_6, 26F_7, 26F_9	IE_SH_G_077	Derravarragh	Groundwater	At risk	At risk	Good	Good	No	Ag		
25A_1, 25A_11, 25A_8	IE_SH_G_089	Ferbane	Groundwater	Not at risk	Not at risk	Good	Good	No			
07_11, 14_14, 14_15, 14_20, 25A_11, 25A_12, 25A_2, 25A_3, 25A_4, 25A_5, 25A_6, 25B_1, 25B_3	IE_SH_G_103	Geashill	Groundwater	Not at risk	Not at risk	Good	Good	No			
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			
25A_10, 26F_4, 26F_9	IE_SH_G_166	GWDTE-Lough Owel Fens & Mires (SAC000688 & SAC000692)	Groundwater	Not at risk	Not at risk	Good	Good	No			
15_13, 16_22, 25A_11, 25A_12, 25B_1, 25B_3, 25B_6, 25B_7,	IE_SH_G_205	Shinrone	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)
25C_2, 25C_4, 25C_9											
14_15, 15_9, 25A_12, 25A_6, 25B_3	IE_SH_G_210	Slieve Bloom North	Groundwater	Not at risk	Not at risk	Good	Good	No			
15_13, 15_9, 25A_12, 25B_3, 25B_6	IE_SH_G_211	Slieve Bloom South	Groundwater	Not at risk	Not at risk	Good	Good	No			
25A_1, 25A_11, 25A_12, 25A_2, 25A_3, 25A_4, 25A_5, 25A_6, 25A_7, 25A_9, 25B_1	IE_SH_G_232	Tullamore	Groundwater	Review	At risk	Good	Good	No	Ag		
07_11, 07_2, 07_9, 25A_1, 25A_10, 25A_11, 25A_2, 25A_3, 25A_5, 25A_7, 25A_8, 25A_9, 25B_1, 25B_2, 25B_4, 26F_1, 26F_2, 26F_4, 26F_5, 26G_1, 26G_3	IE_SH_G_240	Clara	Groundwater	Not at risk	Not at risk	Good	Good	No			
07_11, 25A_3, 25A_7, 25A_9	IE_SH_G_242	Kilbeggan Gravels	Groundwater	Review	Not at risk	Good	Good	No			
25A_1, 25A_11, 25B_1, 25B_3, 25B_5, 25B_7	IE_SH_G_244	Birr Gravels	Groundwater	Review	Not at risk	Good	Good	No			
25A_9	IE_SH_G_253	Gageborogh-Brosna Gravels Group 1	Groundwater	Review	Not at risk	Good	Good	No			
25A_2, 25A_5, 25A_6	IE_SH_G_254	Holimshill-Killeigh Gravels	Groundwater	Review	Not at risk	Good	Good	No			
25A_8, 25A_9, 26G_3	IE_SH_G_255	Gageborogh-Brosna Gravels Group 2	Groundwater	Review	Not at risk	Good	Good	No			
25A_1, 25A_11, 25A_8, 25B_2	IE_SH_G_256	Gageborogh-Brosna Gravels Group 3	Groundwater	Review	Not at risk	Good	Good	No			

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25A_8, 26G_3	IE_SH_G_258	Boor Gravels	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.