3rd Cycle Draft
Shannon Estuary North Catchment Report (HA 27)

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 Shannon Estuary North 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 Shannon Estuary North 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 Shannon Estuary North catchment includes the area drained by the River Fergus and all streams entering tidal water between Thomond Bridge and George's Head, Co. Clare, draining a total area of 1,658km² (Figure 1). The largest urban centre in the catchment is Ennis. The other main urban centres in this catchment are Shannon, Clarecastle, Kilrush, Kilkee and Sixmilebridge. The total population of the catchment is approximately 78,397 with a population density of 47 people per km². The catchment runs from the southern tip of the Clare Peninsula, eastwards to the Slieve Bearnagh Hills and northwards nearly to Ballyvaughan, including much of the central and southern parts of The Burren. The central part of the catchment is entirely underlain by highly karstified limestones and the surface water drainage network is either virtually absent (i.e. The Burren) or highly connected to the groundwater system in much of this area. West of Ennis to Loop Head and along the western edge of the catchment is underlain by sandstones and shales, while the uplands along the eastern edge of the catchment form Maghera to the Slieve Bearnagh Hills is underlain by impure limestone, old red sandstones and with some metamorphic rocks on the highest parts of the uplands.

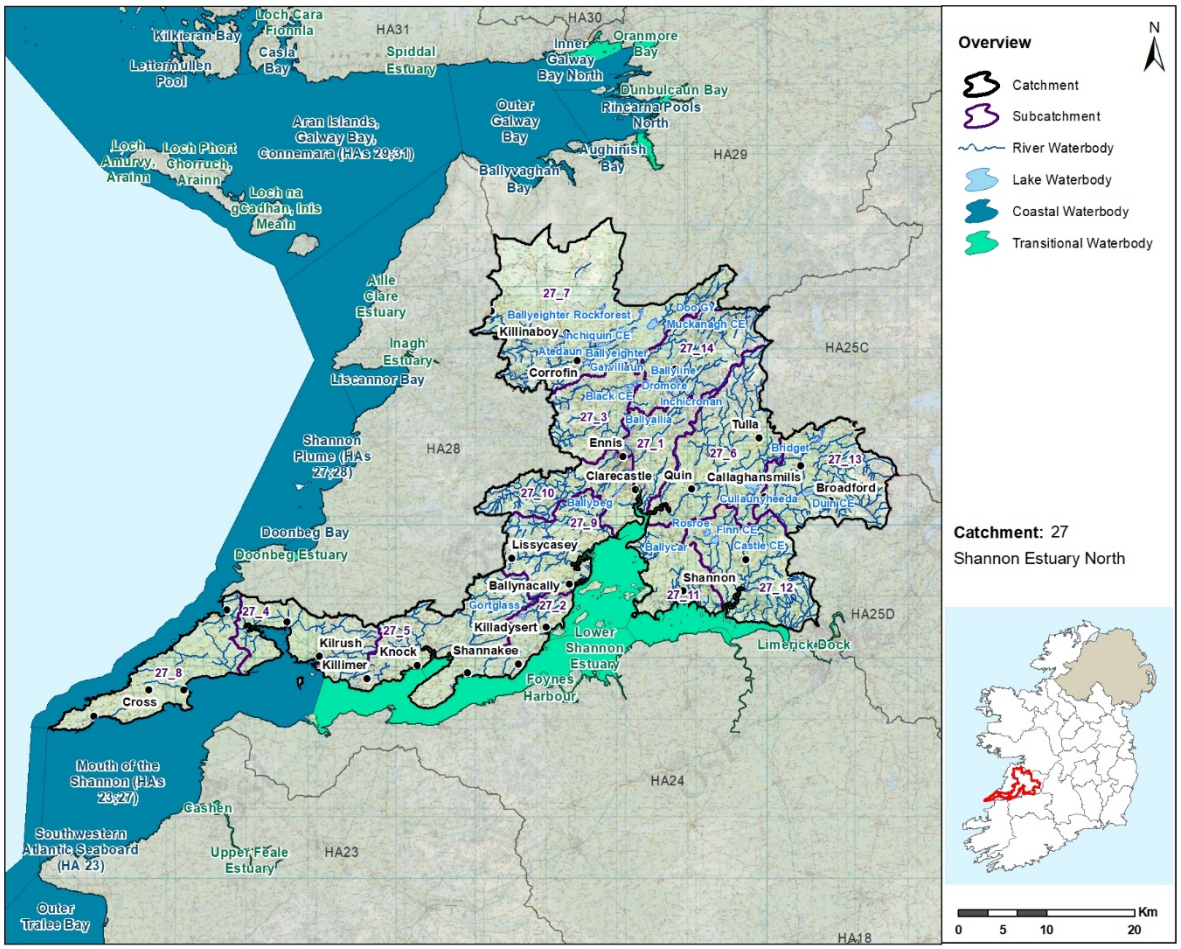


Figure 1: Overview of subcatchments in the Shannon Estuary North catchment

The Shannon Estuary North catchment is divided into 14 subcatchments (Figure 1) with 69 river waterbodies, 26 lake waterbodies, five transitional waterbodies, five coastal waterbodies and 23 groundwater bodies (Figure 2).

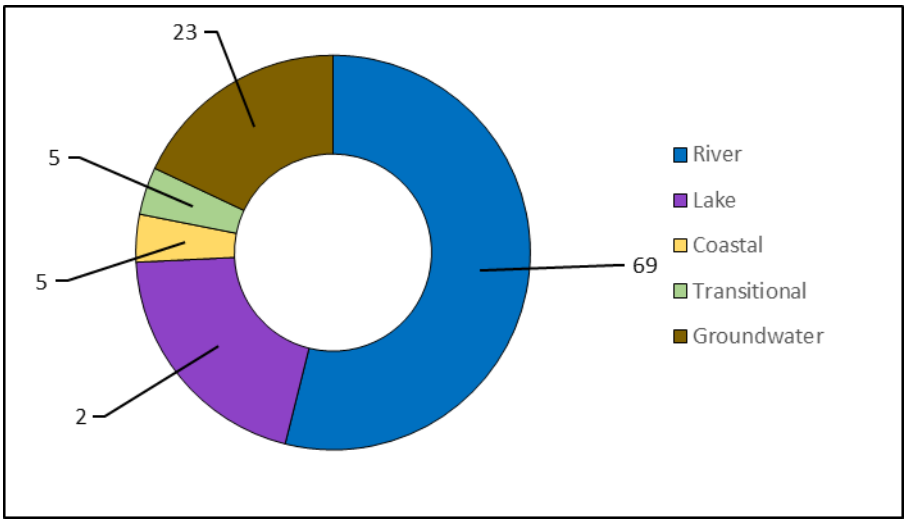


Figure 2: Waterbody types and numbers in the Shannon Estuary North Catchment.

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 54 waterbodies achieving Good Status, 17 achieving Moderate Status and 22 achieving Poor Status. There are 35 waterbodies where Status has not been assigned for Cycle 3. All waterbodies must achieve at least Good Ecological status.

- There is one lake waterbody and six river waterbodies that must achieve High Ecological Status (HES) in this catchment. These waterbodies are listed in Appendix 1. All of the seven HES Environmental Objective waterbodies are achieving Good Status.

- There have been reductions of six waterbodies (five river waterbodies and one lake waterbody) achieving High Status and one unassigned coastal waterbody (Scattery Island Lagoon which has now been assigned Good Status) between Cycle 2 and Cycle 3. There have been increases in four waterbodies achieving Good Status, one additional Moderate Status waterbody and two waterbodies achieving Poor Status (Figure 3 & Table 1).

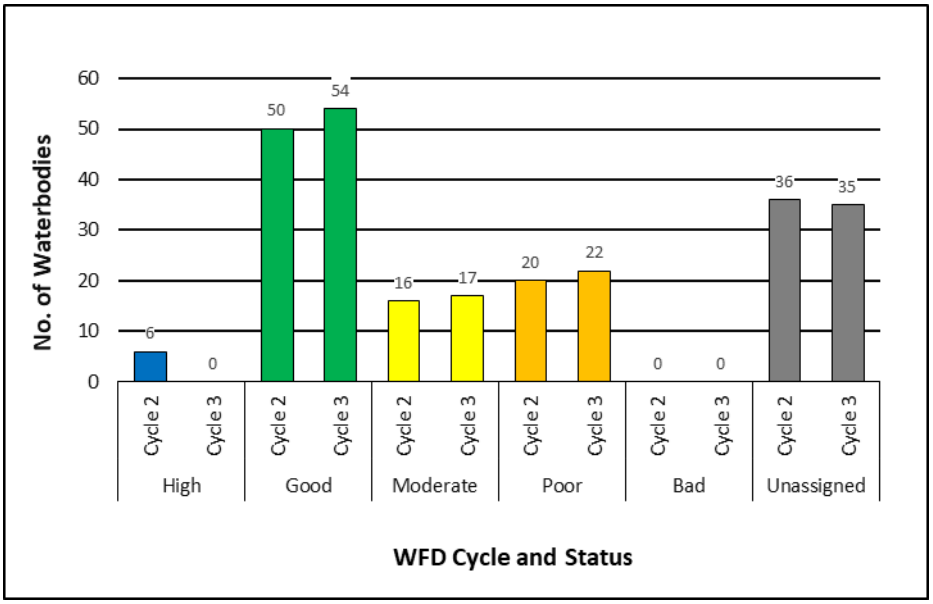


Figure 3: Waterbody Status Breakdown (All waterbodies)

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	5	0	1	0	0	0	0	0	0	0	**6**	**0**
Good	25	24	5	6	0	1	0	2	20	21	**50**	**54**
Moderate	7	12	5	4	3	1	1	0	0	0	**16**	**17**

Poor	16	17	0	1	1	2	0	0	3	2	**20**	**22**
Bad	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Un-assigned	16	16	15	15	1	1	4	3	0	0	**36**	**35**
Total	69	69	26	26	5	5	5	5	23	23	**128**	**128**

- 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, seven (8%) waterbodies have improved in status, 66 (72%) waterbodies have remained unchanged and 19 (21%) waterbodies have declined in status.[1]

- There is an overall decline in the status of 12 waterbodies across the catchment since the Cycle 2 assessment.

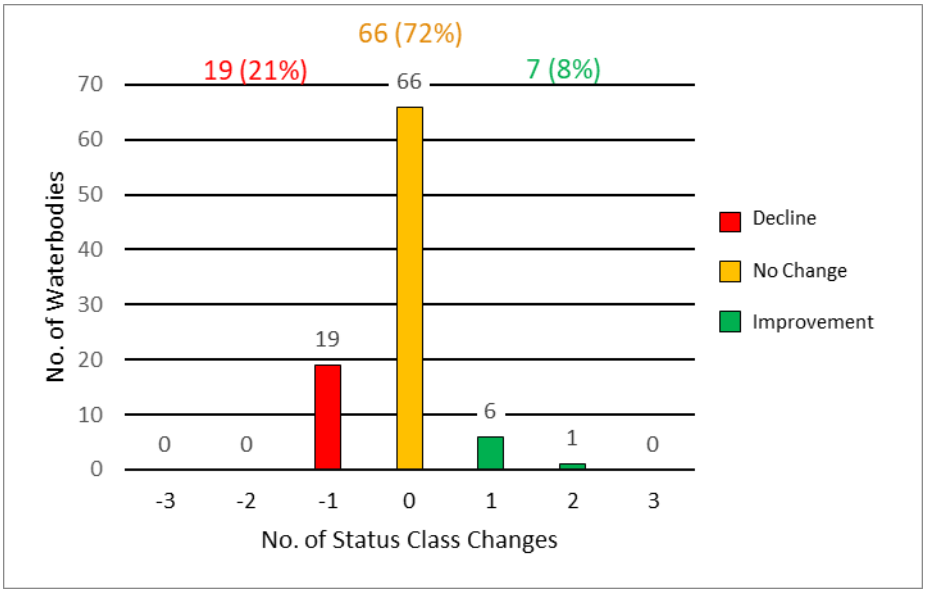


Figure 4: Status Class Changes between Cycle 2 and Cycle 3

2.2 Protected Areas

2.2.1 Drinking Water

- There are six 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 groundwater body in the catchment did not meet the DWPA objective in 2019:
  - Ennis (IE_SH_G_080) groundwater body is the source for Ennis Public Water Supply (0300PUB1009) which had MCPA pesticide exceedance.

[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.

- 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 four bathing waters in or directly adjacent to the catchment identified under the Bathing Water Regulations 2008.

- Cappagh Pier, Kilrush, Kilkee and Ballyallia Lake, Ennis all achieved an Excellent classification for 2020, Carrigaholt is a newly designated Bathing water and did not have a classification in 2020.

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

2.2.3 Shellfish Areas

- There are three designated shellfish areas in the catchment within the Mouth of the Shannon coastal water, the shellfish areas objectives are being met.

- The Marine Institute assessed the average dissolved concentrations for metals in shellfish waters for the period 2016-2019 and the microbial quality in shellfish flesh for 2018. This assessment was used to determine if the WFD protected area objective for shellfish areas was met.

- Details on the shellfish area and its associated waterbody is summarised in Table 2.

Table 2: Designated shellfish areas in the catchment

Shellfish area		Water body intersection		Objective met?	
Name	Code	Name	Code	Yes	No
West Shannon Poulnasherry Bay	IEPA2_0021	Mouth of the Shannon (HAs 23;27)	IE_SH_060_0000	✓	
West Shannon Carrigaholt	IEPA2_0022				
West Shannon Rinevella	IEPA2_0023				

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

[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

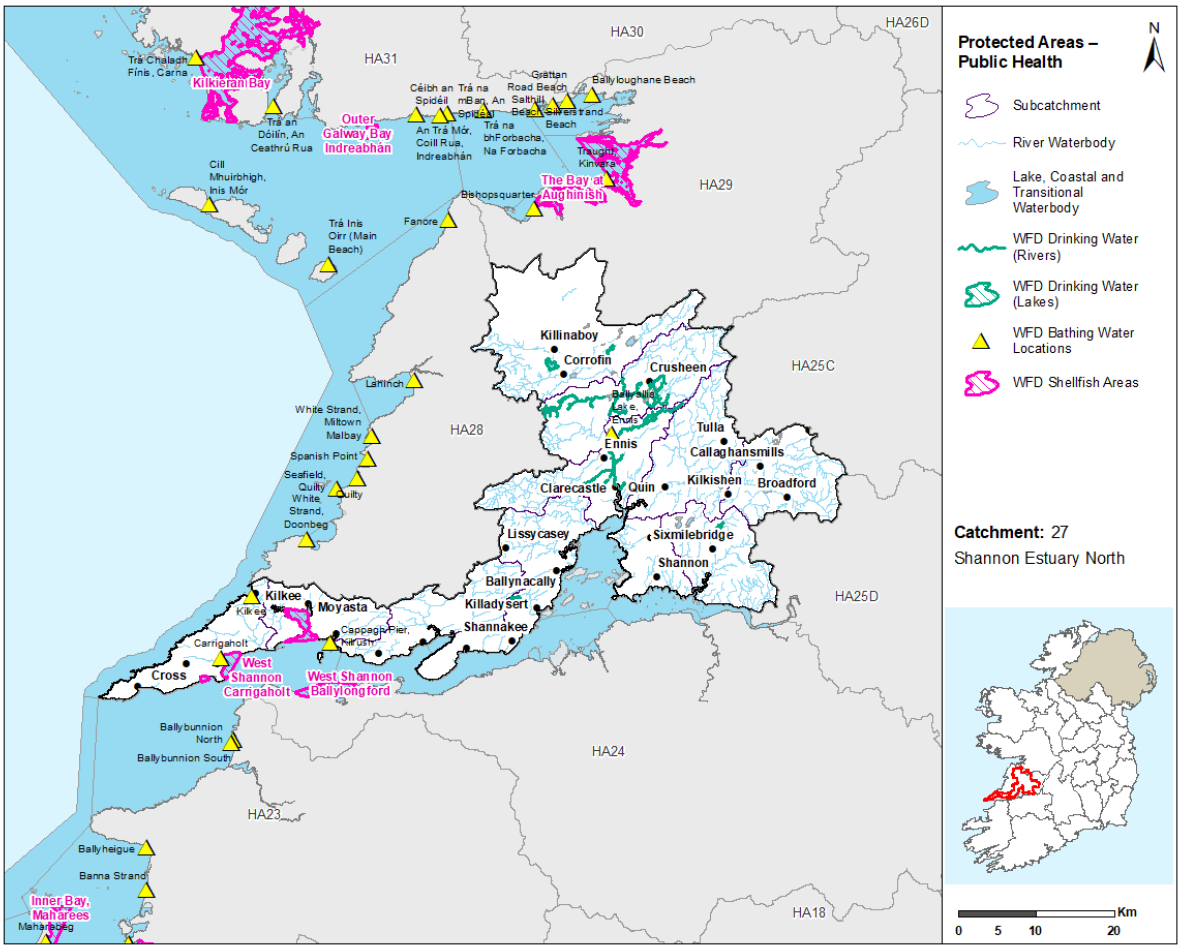


Figure 5: Protected Areas – Public Health

2.2.4 Natura 2000 Sites and Salmonid Waters

- 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 27 SACs in this catchment, 16 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 3 below, information at a waterbody level can be viewed at Catchments.ie.[5]

Table 3: Natura 2000 Network Assessment Summary

Water Body Type	Total No.	Meeting the Requirements	Did not meet the Requirements	Unknown*
Rivers	27	3	13	11
Lakes	5	1	1	3
Transitional & Coastal	10	4	6	0

**As the waterbody status was unassigned.*

- There are two river waterbodies with FWPM habitats, none of which had achieved the required macroinvertebrate standard as set out in the FWPM Regulations.

- There are four groundwater bodies delineated and assessed as Groundwater Dependent Terrestrial Ecosystems for this catchment. Three of the four associated groundwater bodies are at Good Status and *Not at Risk*, the remaining groundwater body (GWDTE-Caherglassaun Turlough (SAC000238)) is at Poor status (2013-2018).

- Water dependent SACs/ SPAs (including FWPM SAC sub-catchments) and salmonid waters in the catchment are illustrated in Figure 6.

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

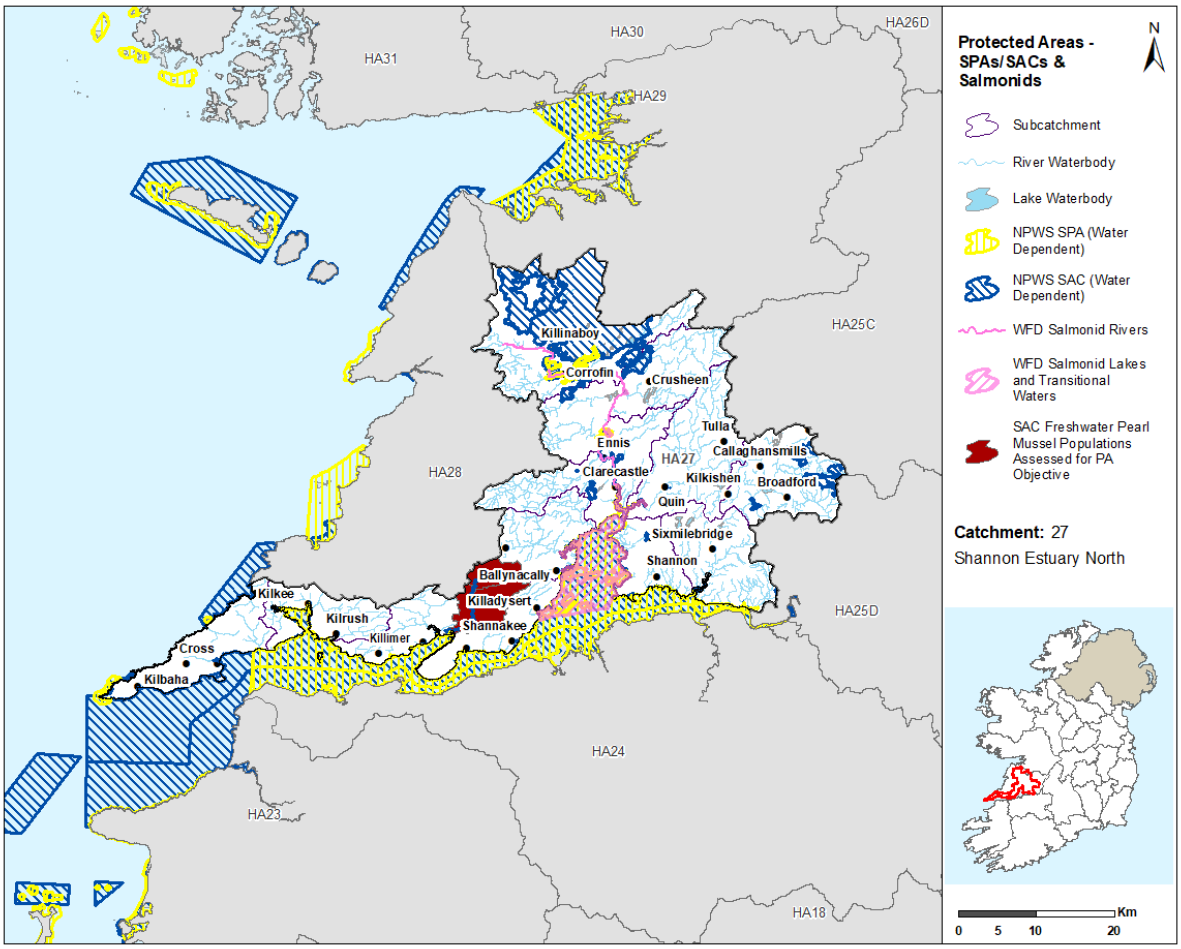


Figure 6: Water Dependent SPAs / SACs and Salmonid Waters

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 downstream of Ennis North urban wastewater agglomeration. The NSA objective is being met (Table 4).

Table 4: Nutrient sensitive areas in the catchment

Nutrient Sensitive Area	Agglomeration		Water body		Objective met?		Comment
	Name	Code	Name	Code	Yes	No	
Fergus River (070)	Ennis North	D0048-01	Fergus_070	IE_SH_27F010780	✓		Tertiary Treatment in place

2.3 Heavily Modified Waterbodies

- Based on the 1st and 2nd RBMPs there is currently one designated heavily modified water body (HMWB) in the catchment (Fergus_070) due to flood protection. It was classified as having Poor Ecological Potential in 2013-15 and remained poor for the 2016-2018 iteration. There will be a consultation period on HMWBs for the 3rd Cycle RBMP and this will be completed for inclusion in the 3rd Cycle Final RBMP.

2.4 Artificial Waterbodies

- There are no Artificial Waterbodies (AWBs) present in Shannon Estuary North Catchment.

3 Waterbody Risk

3.1 Overview of Risk

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

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

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

- In total, there are 128 waterbodies in the Shannon Estuary North Catchment and 44 (34%) are currently *At Risk*, 38 (30%) in *Review* and 46 (36%) are *Not At Risk*.

3.2 Surface Waters

- For the 69 rivers waterbodies, 33 (48%) are *At Risk*, 15 (22%) are in *Review* and 21 (30%) are *Not At Risk*.

- For the 26 lake waterbodies, six (23%) are *At Risk*, seven (27%) are in *Review* and 13 (50%) are *Not At Risk.*

- For the five transitional waterbodies, two (40%) are *At Risk* (Upper Shannon Estuary and the Fergus Estuary), two (40%) are in *Review* and one (20%) is *Not At Risk*.

- For the five coastal waterbodies, three (60%) are in *Review* and two (40%) are *Not At Risk*.

- The largest proportion of *At Risk* waterbodies are found in river waterbodies, accounting for 33 (75%) of 44 *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 seven *At Risk* waterbodies reflected by a decrease of seven *Not At Risk* waterbodies between Cycle 2 and Cycle 3.

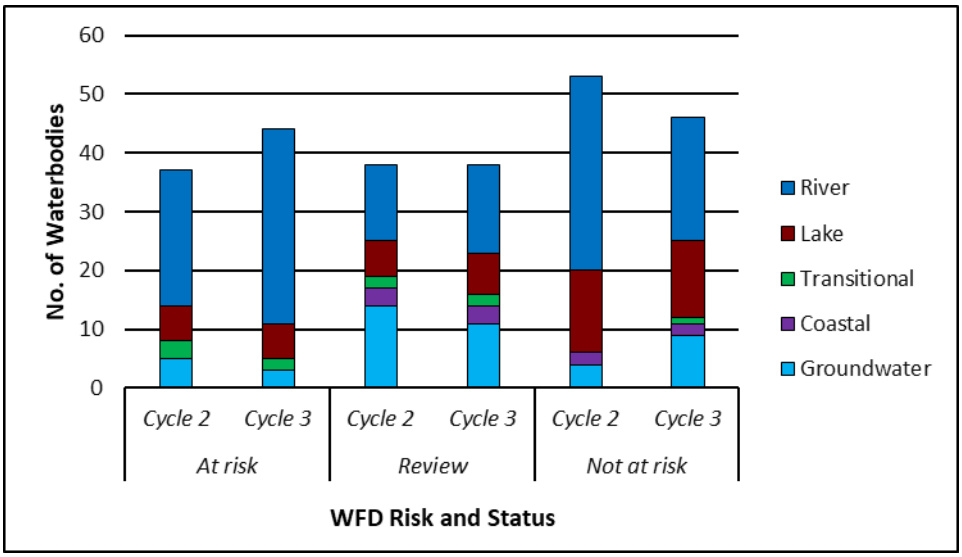


Figure 7: Number of waterbodies in each risk category

- 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.

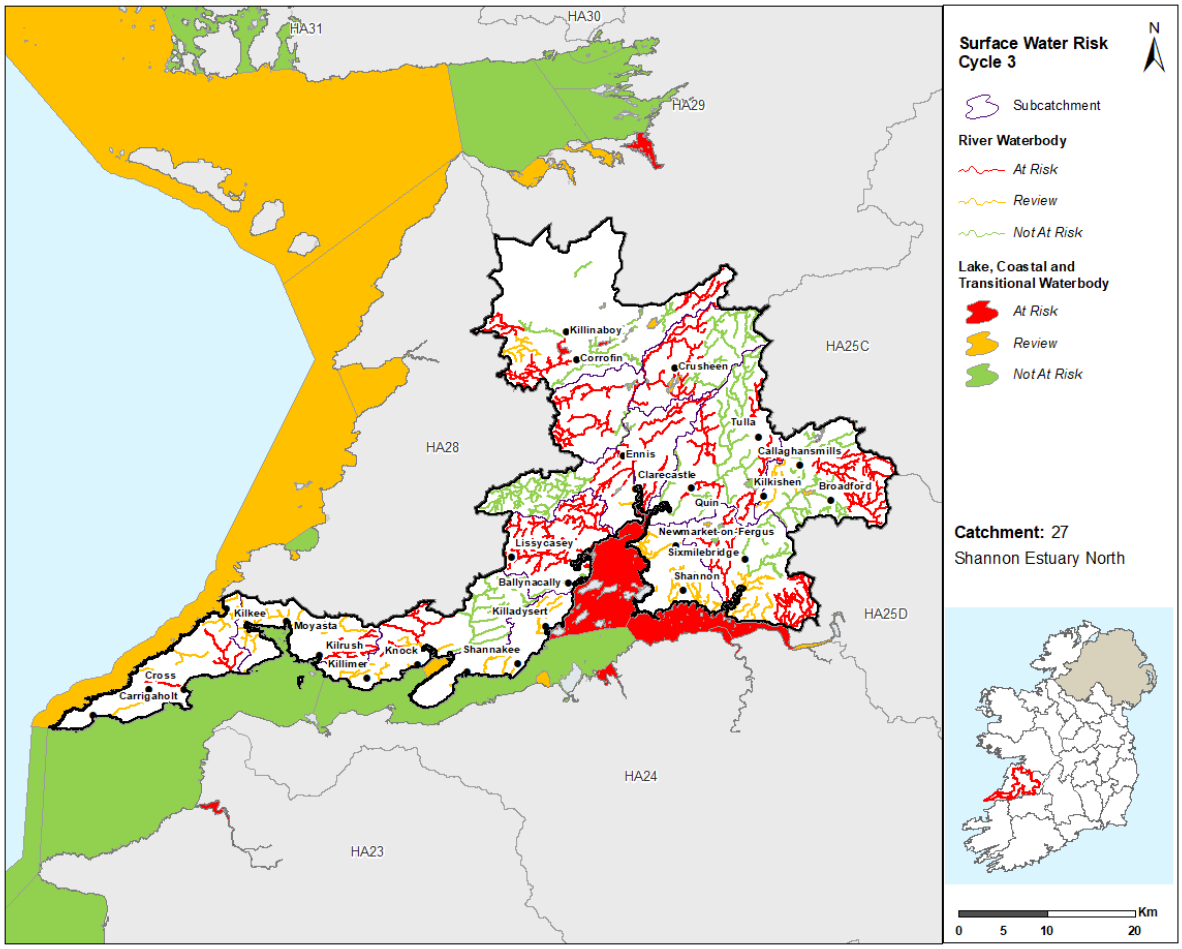


Figure 8: Surface Water Risk Cycle 3

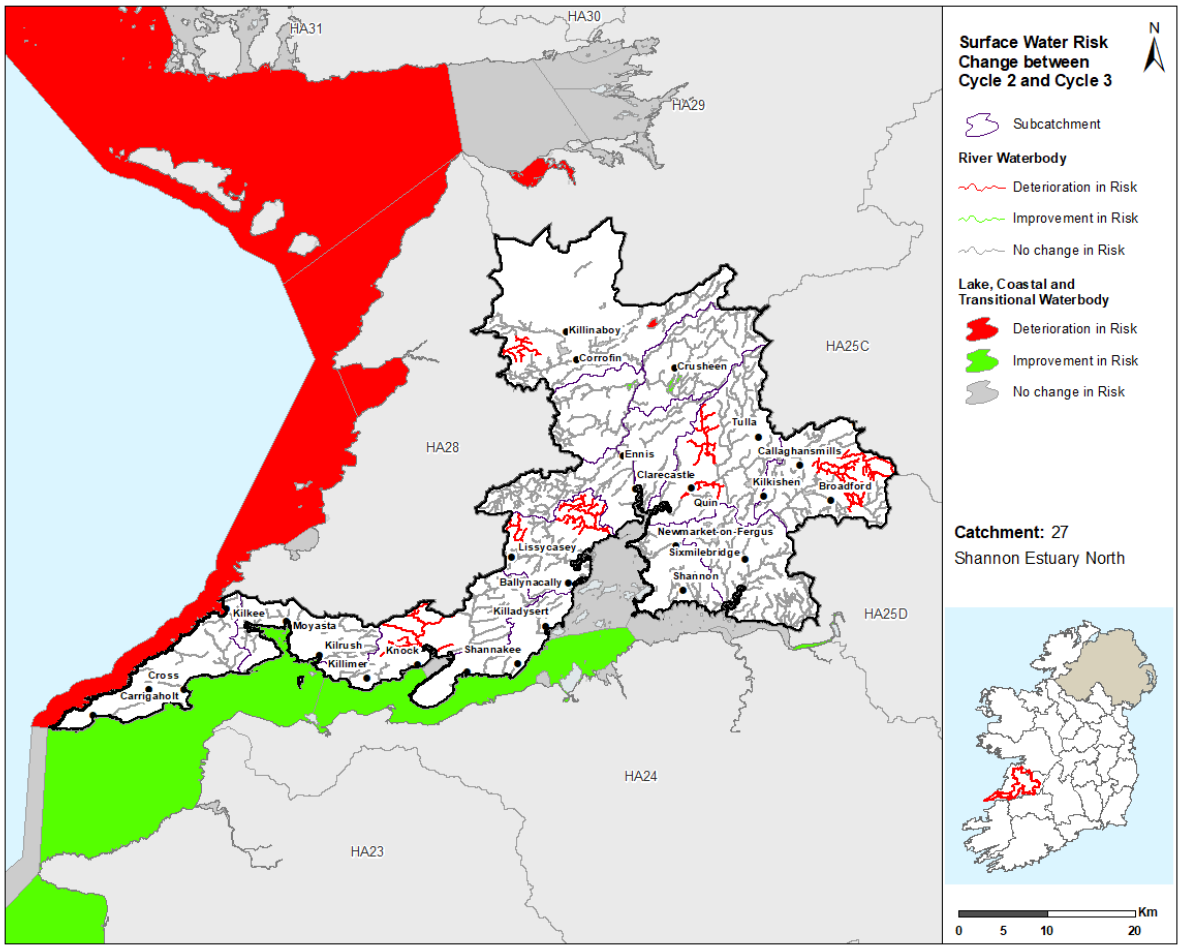


Figure 9: Surface Water Risk Change between Cycle 2 and Cycle 3

3.3 Groundwater

- For the 23 groundwater bodies, three (13%) are *At Risk* (Industrial Facility (P0012-04), Limerick City Northwest and GWDTE-Caherglassuan Turlough (SAC000238)), 11 (48%) are in *Review* and nine (39%) are *Not At Risk*.

- In Cycle 2, there were five groundwater bodies (Ennis, Industrial Facility (P0012-04), Limerick City North, Limerick City Northwest and GWDTE-Caherglassaun Turlough (SAC000238)) *At Risk* in this catchment, 14 in *Review* and four *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.

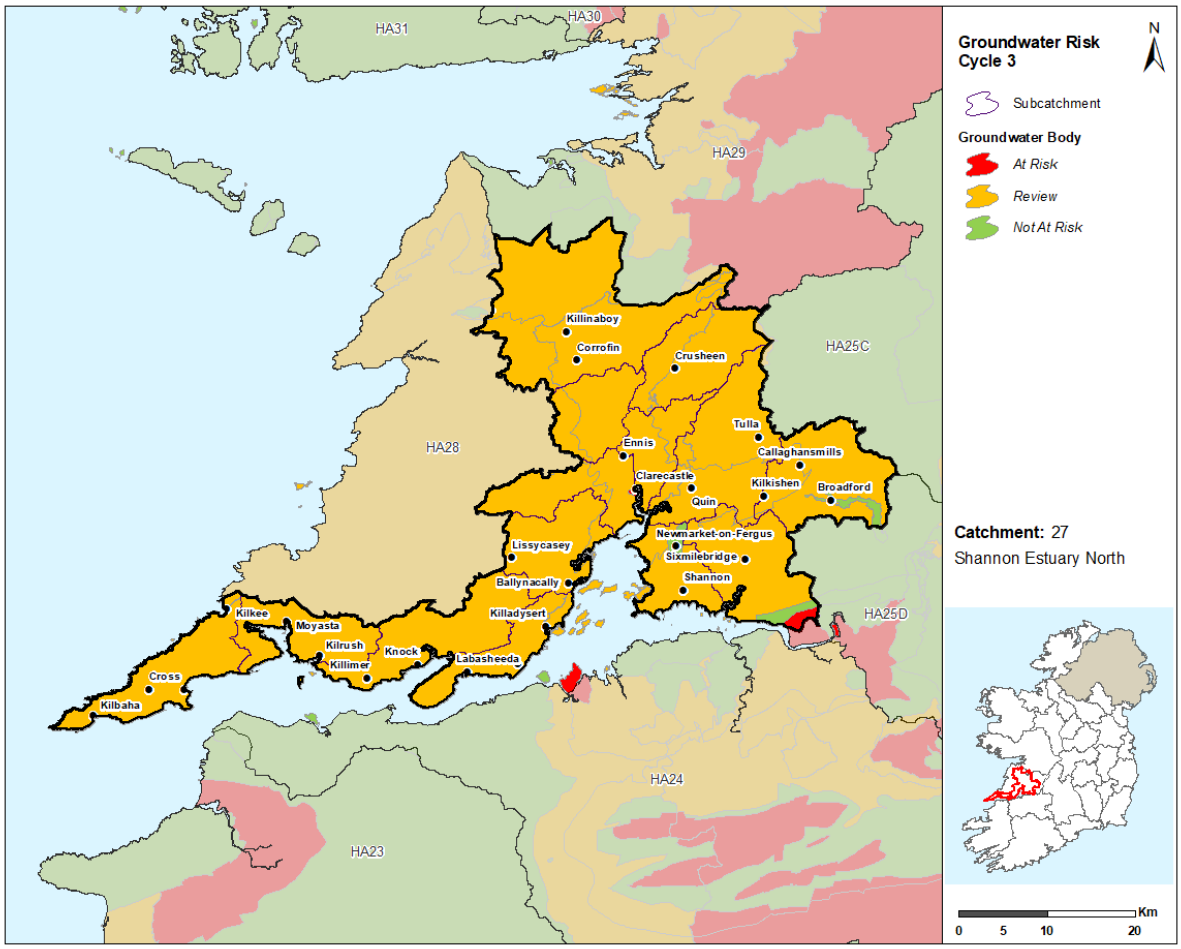


Figure 10: Cycle 3 Groundwater Body Risk

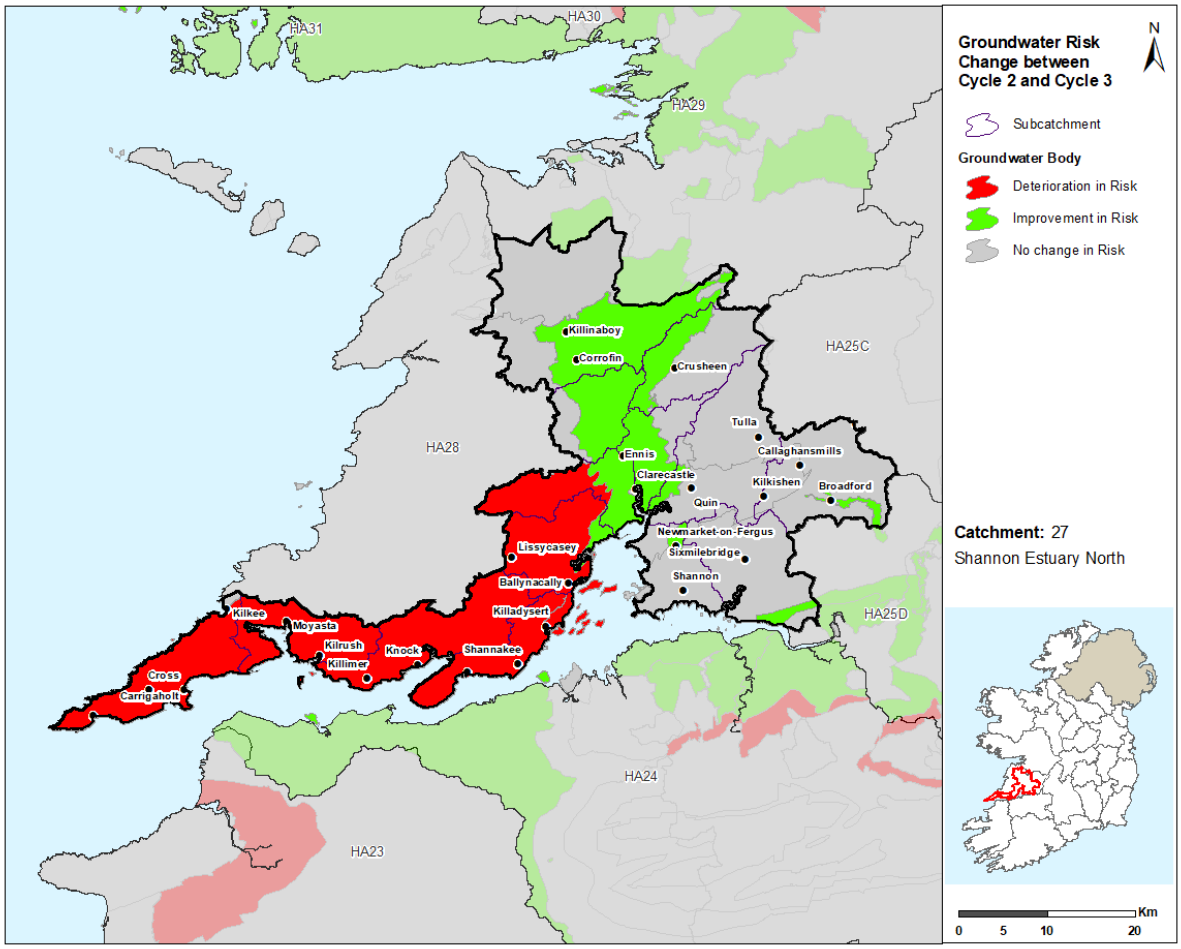


Figure 11: Groundwater Body Risk Change between Cycle 2 & Cycle 3

3.4 Heavily Modified Waterbodies

- The only designated heavily modified water body (HMWB) in the catchment (Fergus_070) remains *At Risk* of not achieving its Environmental Objective since Cycle 2. 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

- As stated in Section 3.5, there are no artificial waterbodies in the Shannon Estuary North Catchment.

4 Significant Issues in *At Risk* Waterbodies

4.1 All Waterbodies

- Excess nutrients and morphological impacts remain the most prevalent issues in the Shannon Estuary North catchment (Figure 12) impacting 32 and 21 waterbodies respectively in Cycle 3. Sediment is impacting 14 waterbodies, and organics and hydrological are impacting 10 and five waterbodies, respectively.

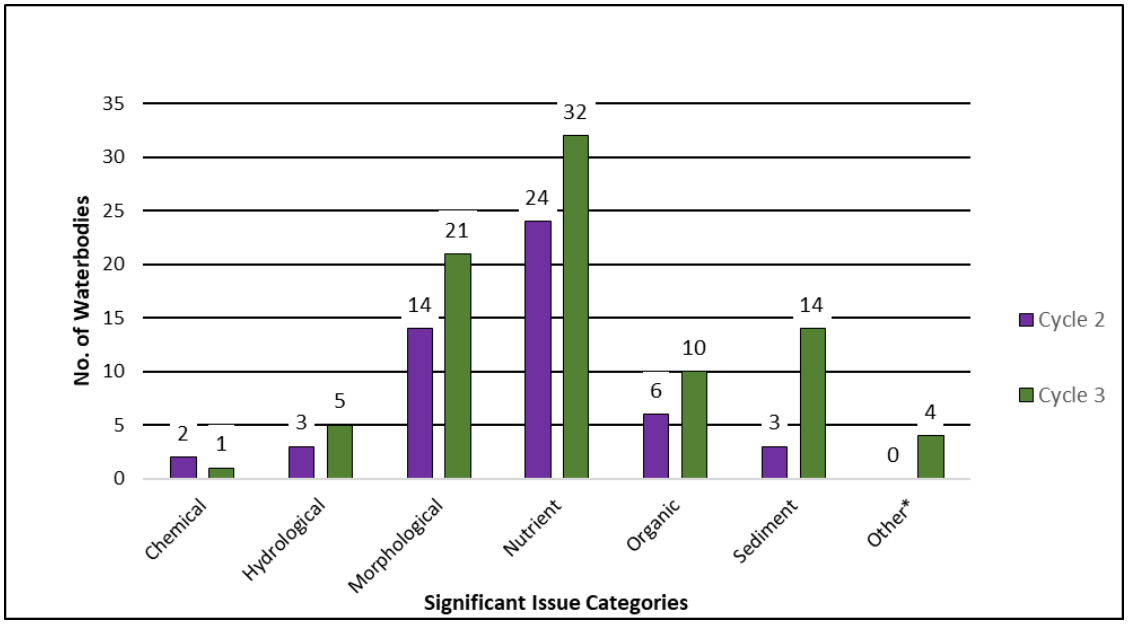
- For river waterbodies, the main significant issues are nutrient pollution (22), morphological impacts (21), sediment pollution (12), organic pollution (9), hydrological impacts (3) and other impacts (2).
- For lake waterbodies, the main significant issues are nutrient pollution (6), sediment (2) and hydrological impacts (2).
- For the *At Risk* transitional waterbodies (Upper Shannon Estuary and the Fergus Estuary) the significant issues are nutrient and organic pollution.
- For the *At Risk* groundwater bodies (Industrial Facility (P0012-04), Limerick City Northwest and GWDTE-Caherglassuan Turlough (SAC000238)) the significant issue is nutrient pollution, impacting all three waterbodies. In addition, Industrial Facility (P0012-04) is impacted by chemical pollution. Diminution of quality of associated surface waters for chemical reasons has also been attributed to Limerick City Northwest and Industrial Facility (P0012-04) groundwaters.

- Between Cycle 2 and Cycle 3, the number of waterbodies with nutrients issues have increased by eight from 24 to 32 and the number of waterbodies impacted by morphological issues has increased by eight from 14 to 21.

- The largest increase in the numbers of waterbodies impacted are those impacted by sediment issues which has increased from three waterbodies in Cycle 2 to 14 in Cycle 3.

- Increases in the number of impacted waterbodies by hydrological, other and organic issues have also been noted between Cycle 2 and Cycle 3.

- The number of waterbodies impacted by chemical impacts has reduced from two in Cycle 2 to one in Cycle 3.



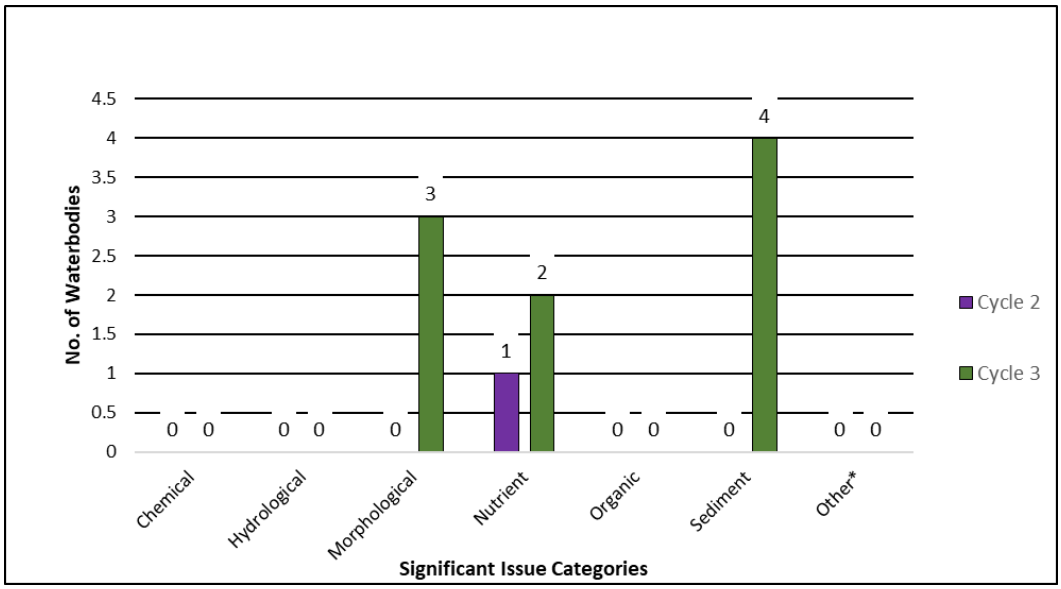
*Other - Acidification, saline intrusion, elevated temperature, litter, microbiological pollution and unknown impacts have all been grouped into the "Other" issues category for the purpose of this report

Figure 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 sediment issues are impacting four of the five High Status Objective waterbodies currently *At Risk* (Figure 13). Nutrients and morphological issues are impacting two and three waterbodies respectively.
    - For the one High Status Objective lake waterbody (Cullaun), the significant issue is nutrient pollution. The remainder of High Status Objective waterbodies are rivers.

- Between Cycle 2 and Cycle 3, the number of waterbodies with morphological issues, nutrients and sediment have increased (from zero to three, one to two, and zero to four respectively).



*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

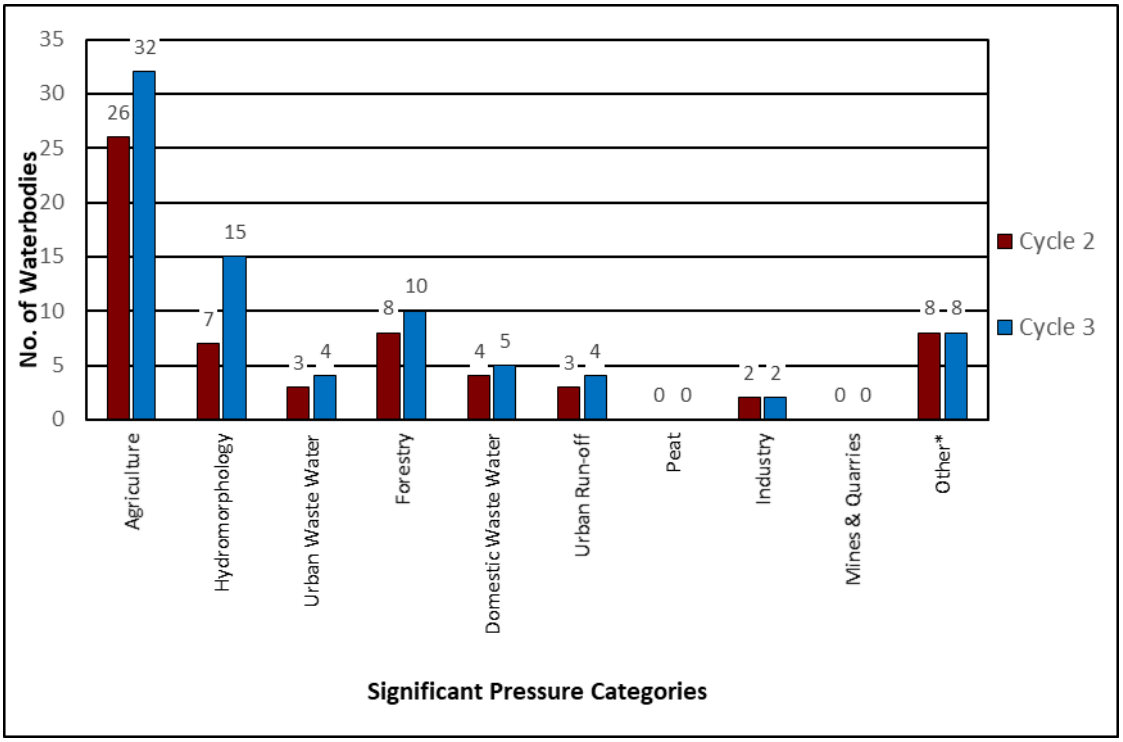
5 Significant pressures in *At Risk* Waterbodies

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 hydromorphology, forestry, other[6], domestic waste water, urban waste water, urban run-off and industry.
- When comparing Cycle 2 and Cycle 3, the biggest change is an increase of eight waterbodies where hydromorphology is a significant pressure from seven waterbodies in Cycle 2 to 15 waterbodies in Cycle 3.

[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

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

5.1.1 Pressure Type

5.1.1.1 Agriculture

- Agriculture is a significant pressure in 23 river waterbodies, six lake waterbodies, two transitional waterbodies (Fergus Estuary & Upper Shannon Estuary) as well as Limerick City Northwest groundwater body. The issues related to farming in this catchment are diffuse phosphate loss to surface waters mainly in areas of poorly draining soils and direct discharges resulting in excess nutrients (elevated phosphate and ammonia) in surface waters. Sedimentation is also an issue in some rivers, due to animal access or extensive poaching. Land drainage for agricultural purposes has been noted by both IFI and Clare County Council as a significant pressure in several rivers.

- Lake water bodies are also affected by agricultural pressures with contributing elements include areas of poorly draining soils combined with large dairy farms which results in elevated nutrients and enrichment. In some areas, the karst landscape facilitates groundwater contribution of nutrients and the transport of nutrients from pressures that are some distance from the lakes.

- The agricultural pressures on the groundwater body are linked to the contribution of phosphate to associated surface water such as North Ballycannan_010 and Crompaun (East)_010.

5.1.1.2 Hydromorphology

- 12 river waterbodies within the catchment are subject to extensive modification due to the presence of drainage schemes, which has led to high levels of siltation. Furthermore, four river waterbodies are also subject to bank modification due to the presence of embankment schemes. Barriers to fish migration are present within five river waterbodies.

5.1.1.3 Forestry

- Forestry has been identified as a significant pressure in 10 river waterbodies. The significant issues are a combination of general forestry practices, clear felling, road construction (Wood_020, Cullaun_010) and afforestation (Clooneen (Clare)_010), which have resulted in heavy siltation and excess nutrients in surface waterbodies.

5.1.1.4 Other significant pressures

- *Invasive Species*
  Two of the lake waterbodies (Castle CE and Bridget) and one river waterbody (Cullaun_010) have zebra mussels present, which have been identified as a significant pressure. Furthermore, the Owenogarney_020 river waterbody is impacted by Himalayan balsam.

- *Unknown Anthropogenic*
  There is one river waterbody (Spancelhill_010) and one groundwater body (GWDTE-Caherglassaun Turlough (SAC000238)) where the significant pressure is unknown and further characterisation is required.

- *Abstractions*
  Abstractions for public water supply for Shannon/Sixmilebridge RWSS and Killadysert are noted in two lake waterbodies (Castle CE and Gortglass respectively) and have been identified as a significant pressure.

- *Other anthropogenic pressures – Golf courses*
  Wood_020 is being impacted by a golf course which is causing nutrient pollution and has been identified as a significant pressure.

- *Waste*
  Illegal dumping is a significant pressure in Wood_020 and is causing nutrient and sediment pollution.

5.1.1.5 Domestic Waste Water

- Domestic waste water has been identified as a significant pressure in five river waterbodies, Cratloe_010, Crompaun (East)_010, Cloverhill Stream_010, Bally Macooda Lough Stream_010, Cloon (Clare)_020 and Moyana_010. This are due to several septic tank systems in close proximity to the waterbodies, which are on poorly draining soils. The significant impacts are due to excess nutrients entering surface waters. In some areas, there are a large numbers of septic tank systems mapped on areas of high susceptibility to phosphate transport via near surface pathways.

5.1.1.6 Urban Waste Water

- Urban Waste Water Treatment Agglomerations have been identified as a significant pressure in four *At Risk* river waterbodies (Fergus_060, Fergus_070, Liskenny_010 and Rine_030) and increase from three in Cycle 2. See Table 5. Apart from the Quin agglomeration, none of the agglomerations identified as significant pressures are scheduled to be upgraded under Irish Water's Capital Investment Programme (2020-2024). Ennis North WWTP was upgraded in 2017, however the agglomeration network has been identified as causing the impact in Fergus_060 and Fergus_070.

Table 5: 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]
Ennis North D0048	Combined Sewer Overflows	Fergus_060	Poor	N/A
Ennis North D0048	Combined Sewer Overflows	Fergus_070	Poor	N/A
Tulla D0320	Agglomeration PE of 1,001 to 2,000	Liskenny_010	Poor	N/A
Quin D0318	Agglomeration PE of 1,001 to 2,000	Rine_030	Moderate	2021

- Quin (D0318) has been added to the list of significant pressures in Cycle 3.

5.1.1.7 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, Carrownanelly_010 (Ennis), Fergus_020 (Corofin), Fergus_070 (Ennis) and Wood_020 (Kilrush). Nutrient and organic pollution are the significant impacts.

5.1.1.8 Industry

- Discharges from an industrial site have been identified as a significant pressure in Moyana_010 river waterbody (Figure 20), with nutrients being the significant issue. The groundwater body, Industrial Facility (P0012-04), is significantly impacted by an EPA licenced facility, Roche Ireland Limited

Table 6: Breakdown of Cycle 3 Industry Significant Pressures in the Shannon Estuary North Catchment

Waterbody Code	Waterbody Name	Waterbody Type	Emission Type	Name	Impact
IE_SH_27M010150	MOYANA_010	River	Section 4	N/A*	Nutrient & Organic
IE_SH_G_082	Industrial Facility (P0012-04)	Groundwater	IPC	Roche Ireland Limited	Nutrient, chemical and diminution of quality of associated surface waters for chemical reasons

*Name of facility not provided during characterisation

Figure 15 – Figure 18 illustrate the locations of waterbodies for the four most common pressures in order of prevalence (agriculture, hydromorphology, forestry and other within the catchment in Cycle 3.

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

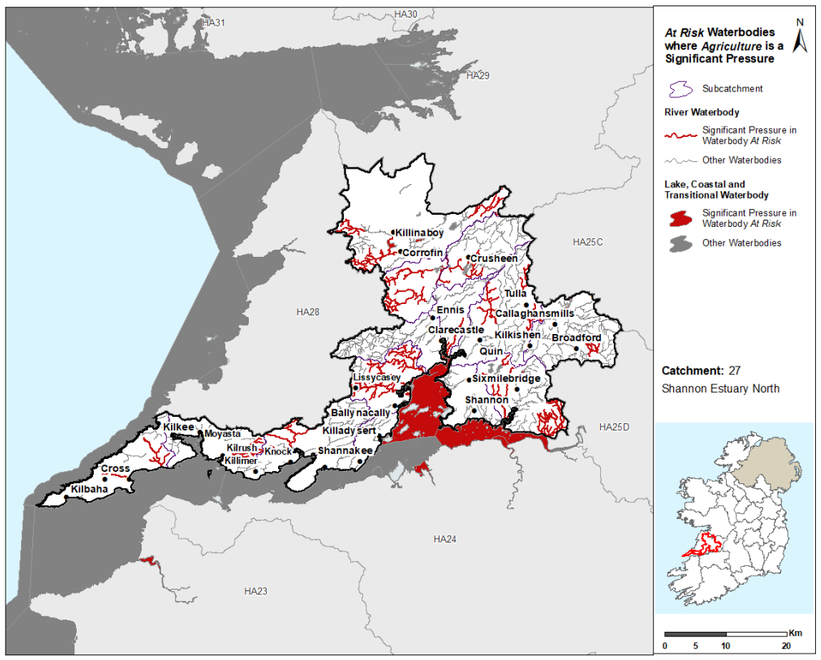


Figure 15: Locations of Waterbodies where Agriculture is a Significant Pressure

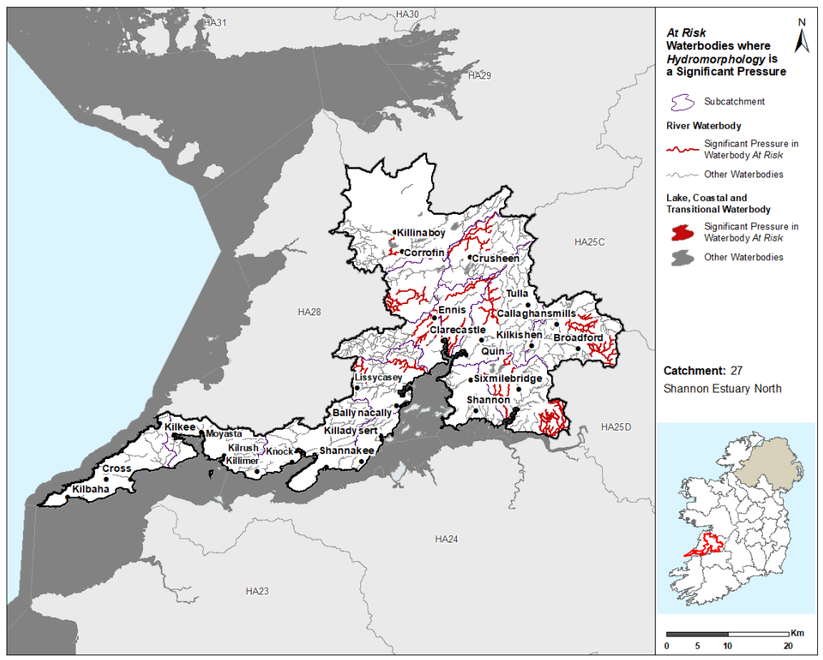


Figure 16: Locations of Waterbodies where Hydromorphology is a Significant Pressure

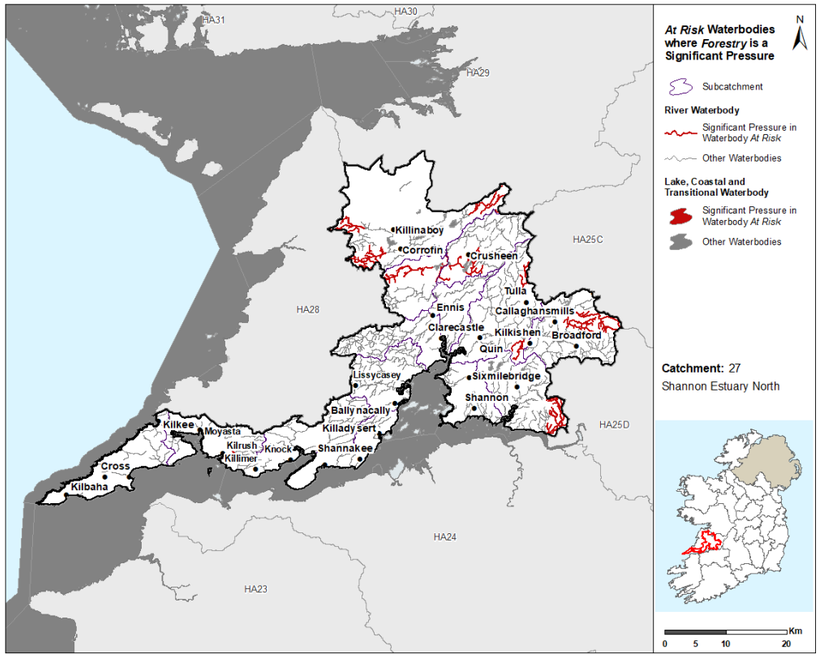


Figure 17: Locations of Waterbodies where Forestry is a Significant Pressure

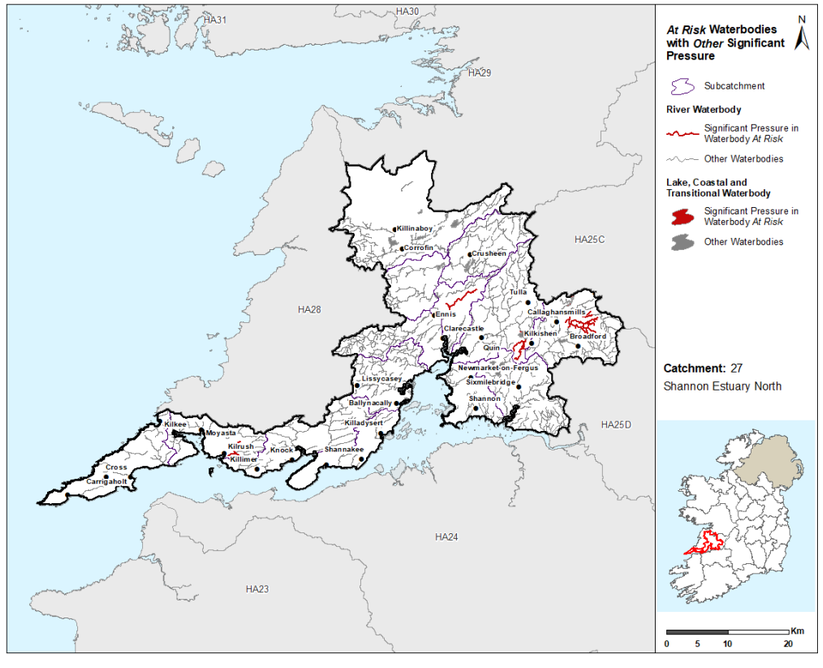
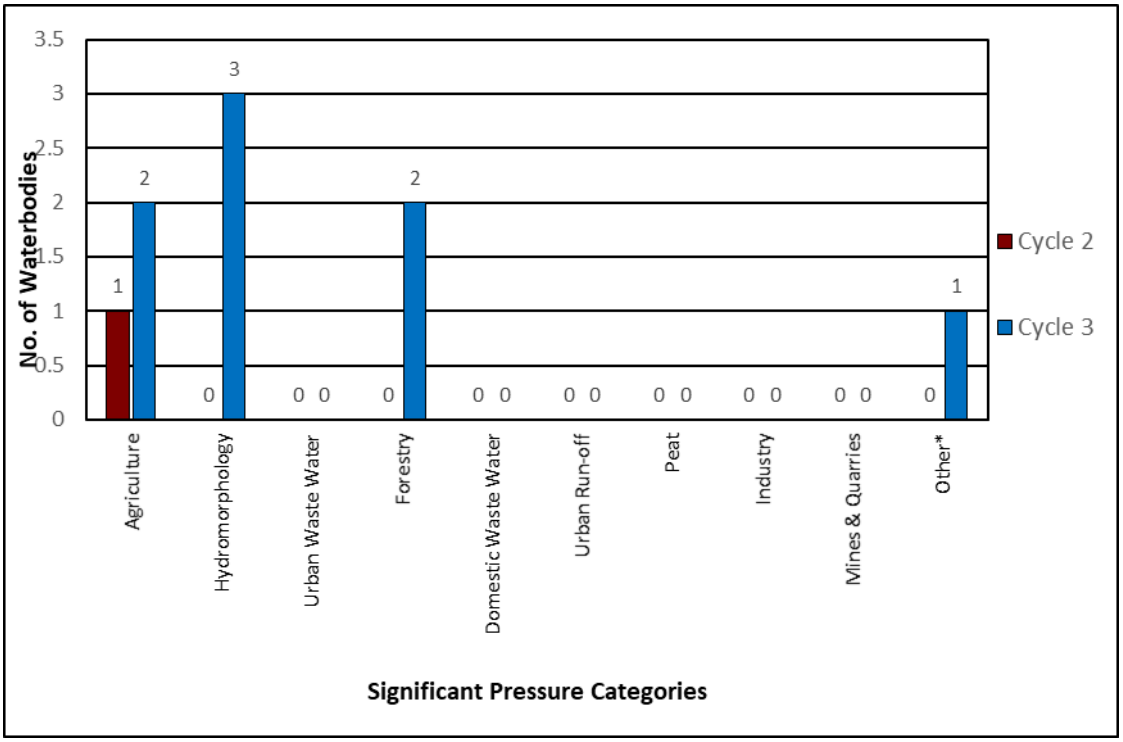


Figure 18: Locations of Waterbodies where Other is a Significant Pressure

5.2 High Status Objective Waterbodies

- Hydromorphological pressures are also the dominant significant pressures in High Status Objective waterbodies, with hydromorphological pressures identified in three out of the seven *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 is responsible for 84% of the nitrogen load while discharges from urban waste water, land in pasture and forestry contribute 42%, 29% and 14% of the phosphorus loadings for the catchment respectively (Figure 17).

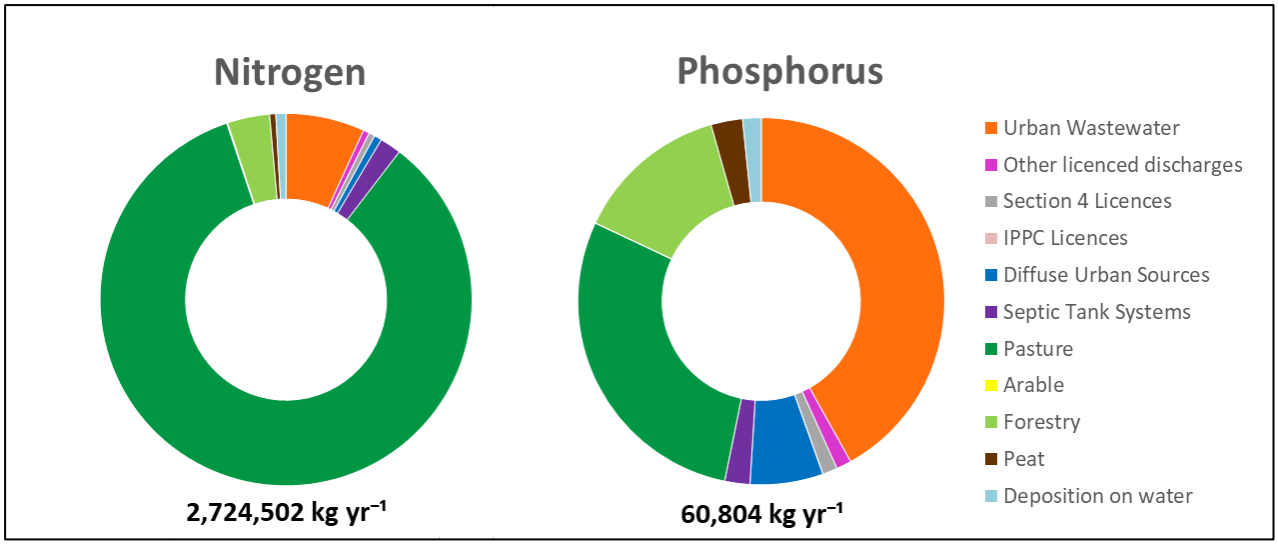


Figure 20: Estimated Proportions of N & P from Each Sector in the Shannon Estuary North Catchment

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 Shannon Estuary North.

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

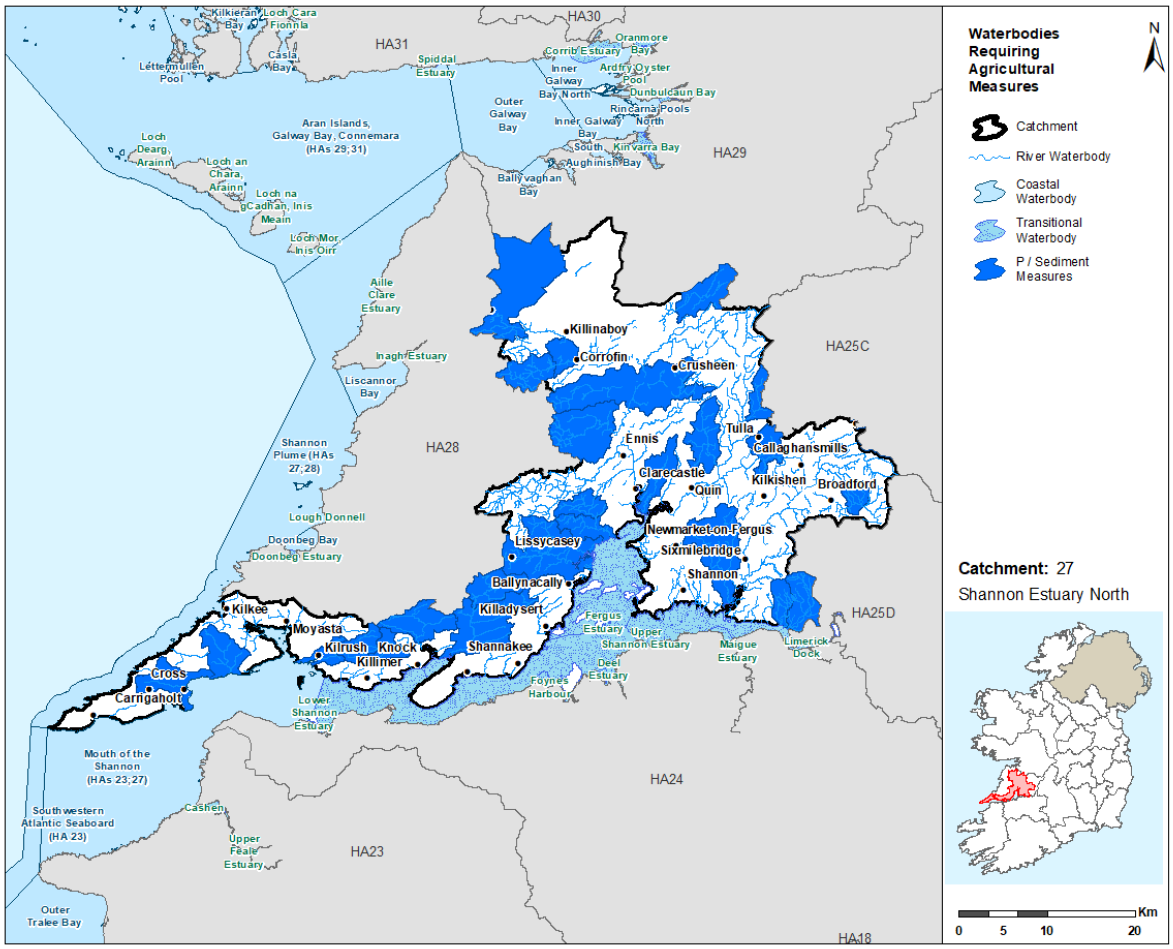


Figure 21: Waterbodies where Agricultural Measures should be Targeted

8 2nd Cycle Areas for Action

8.1 Area for Action Overview

- There were four Areas for Action, comprising of five 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 7 and shown in Figure 22. LAWPRO, in conjunction with local authorities and stakeholders from the Western and South Western Regional Operational Committee, have been working in these areas since 2018.

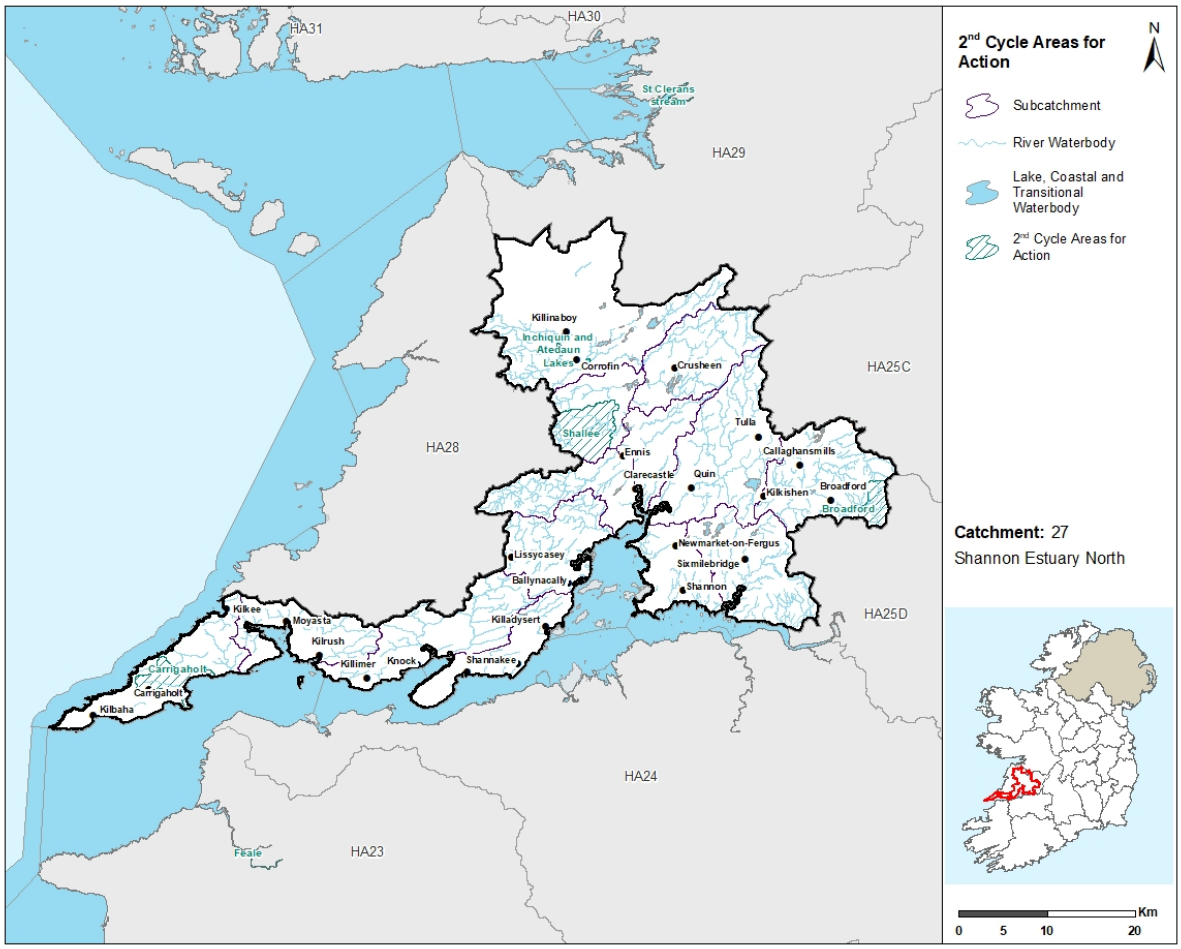


Figure 22: 2nd Cycle Areas for Action Locations

Table 7: 2nd Cycle Areas for Action

2nd Cycle Area for Action	Number of waterbodies	Sub-catchment	Local Authority	Reason for Selection
Inchiquin & Atedaun Lakes	2	27_7	Clare	• Potential pilot project to examine nutrient impact in groundwater fed lakes in karst areas. • Building on existing work completed by Inland Fisheries Ireland. • Building on existing knowledge from research completed by Trinity College Dublin (David Drew) • Opportunity to work with farmers including in the expanded BurrenLIFE scheme. • Inchiquin is an important drinking water abstraction. • Important fishery (trout) - top 8 in the country. • Amenity value. • Inchiquin is one of the 5 arctic char lakes in Clare, deep lake so good

2nd Cycle Area for Action	Number of waterbodies	Sub-catchment	Local Authority	Reason for Selection
				candidate for reintroduction due to depth.
Shallee	1	27_3	Clare	• Part of Drumcliff Source protection zone. • Building on existing knowledge from works completed by Clare County Council. • Building on water quality improvements.
Carrigaholt	1	27_8	Clare	• Discharges into important shellfish area. • Active community groups with an interest in beach improvement. • Potential test case for agricultural measures and farm advisory measures. • Important area for sea angling.
Broadford	1	27_13	Clare	• Building on existing work completed by Clare County Council. • Manageable area: biological data previously collected by Clare County Council on inputting tributaries will narrow the scope of work. • One deteriorated waterbody.

8.2 Status Change in 2nd Cycle Areas for Action

- For Cycle 3, of the five waterbodies in the 2nd Cycle Areas for Action, there are two waterbodies at Moderate Status and three waterbodies at Poor Status.

- There is an overall decline in the status of one of the 2nd Cycle Areas for Action waterbody across the catchment.[8]

- Of the five waterbodies within the 2nd Cycle Areas for Action which had status assigned, four experienced no change in status between Cycle 2 and Cycle 3 and one was subject to a deterioration in status (Figure 23). The waterbody which experienced a decline was in Shallee Area for Action.

[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.

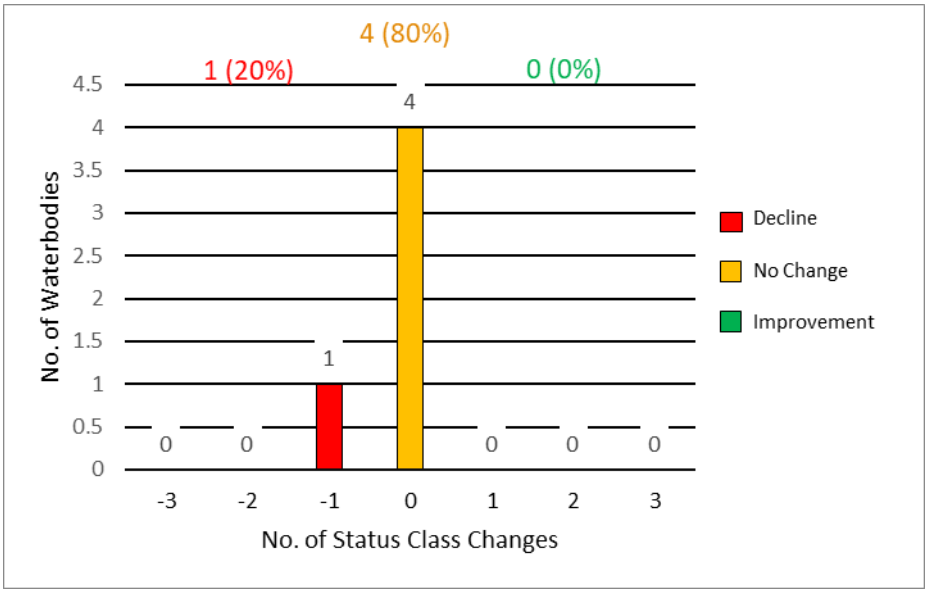


Figure 23: 2nd Cycle Area for Action Waterbody Status Class Changes between Cycle 2 and Cycle 3

8.3 Waterbody Risk in 2nd Cycle Areas for Action

- For the five waterbodies in the 2nd Cycle Areas for Action, all are currently *At Risk*.
- All of the three river waterbodies (Broadford_010, Moyana_010 and Shallee_010) are *At Risk*.
- Both lake waterbodies (Atedaun and Inchiquin CE) are in *At Risk*.
- The largest proportion of *At Risk* waterbodies are found in river waterbodies, accounting for three (60%) of five *At Risk* 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.
- Overall, there is no change in the number of *At Risk* waterbodies in 2nd Cycle Areas for Action between Cycle 2 and Cycle 3.

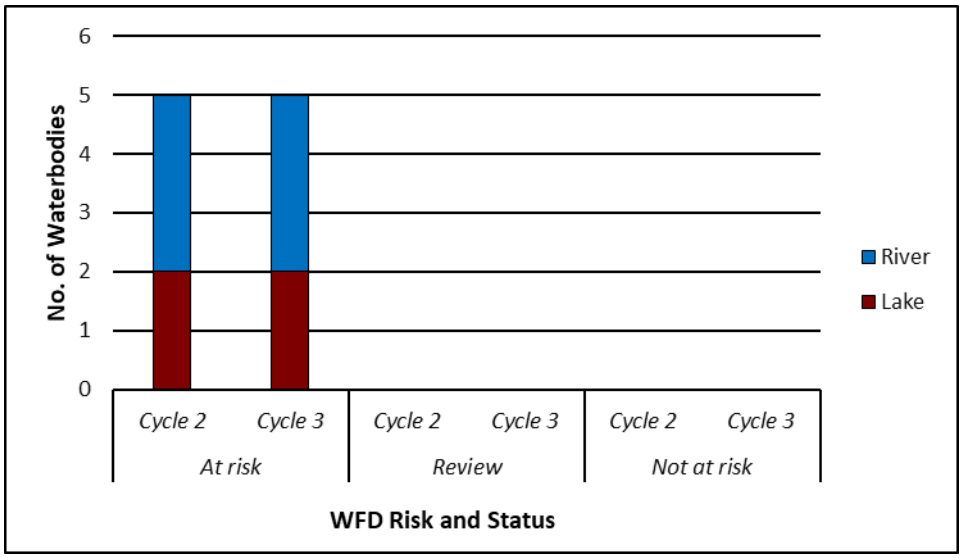
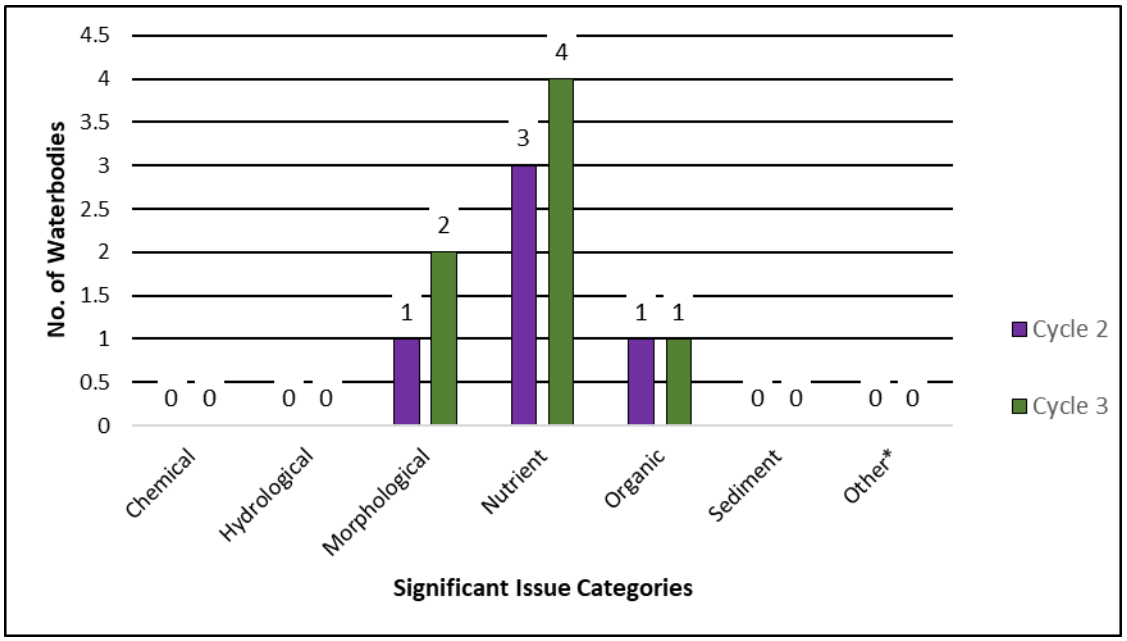


Figure 24: Number of waterbodies in each risk category in 2nd Cycle Areas for Action

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 and morphological impacts, impacting four and two waterbodies respectively (Figure 25). This is followed by organic pollution which is 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 organic which has remained unchanged.

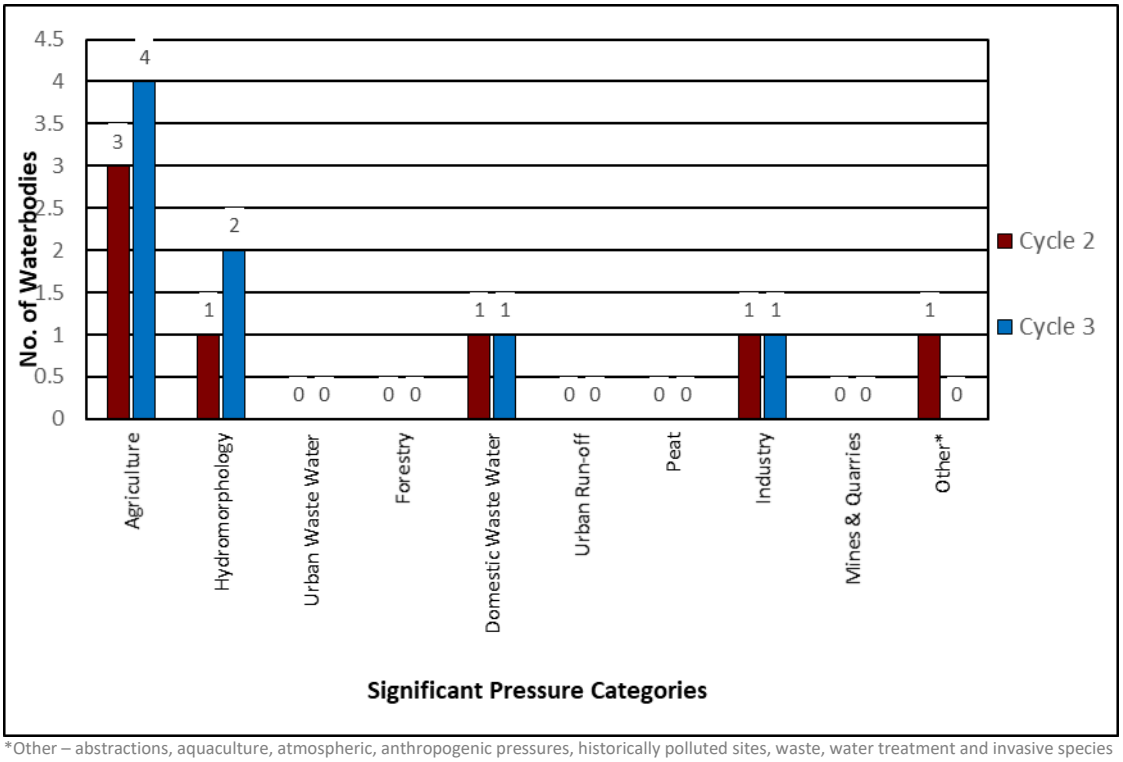


*Other - Acidification, saline intrusion, elevated temperature, litter, microbiological pollution and unknown impacts have all been grouped into the "Other" issues category for the purpose of this report

Figure 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:
  - Agriculture – four waterbodies are impacted compared to three impacted in Cycle 2.
  - Hydromorphology - two waterbodies are impacted compared to one waterbody impacted in Cycle 2.
  - Domestic waste water and industry pressures are both impacting one waterbody, experiencing no change from Cycle 2.
- When comparing the significant pressures in the 2nd Cycle Areas for Action between Cycle 2 and 3 there has been an increase in all applicable 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 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 128 waterbodies, recommended for further characterisation and action in the catchment for the 3rd Cycle River Basin Management Plan. 46 of the 128 waterbodies in the 3rd Cycle Recommended Areas for Action are *At risk*, 38 are in *Review* and 44 are *Not At Risk.* The 14 Recommended Areas for Action consist of one Area for Protection, 12 Areas for Restoration and one Catchment Project. LAWPRO are the proposed lead organisation in 11 Recommended Areas for Action, GSI are the proposed lead in one Recommended Area for Action and Clare County Council are the proposed lead on the remaining two Recommended Areas for Action. The Recommended Areas for Action in the

catchment are listed in Table 8 and shown in Figure 27. The reason for selecting for each waterbody in a Recommended Area for Action is provided in Appendix 3.

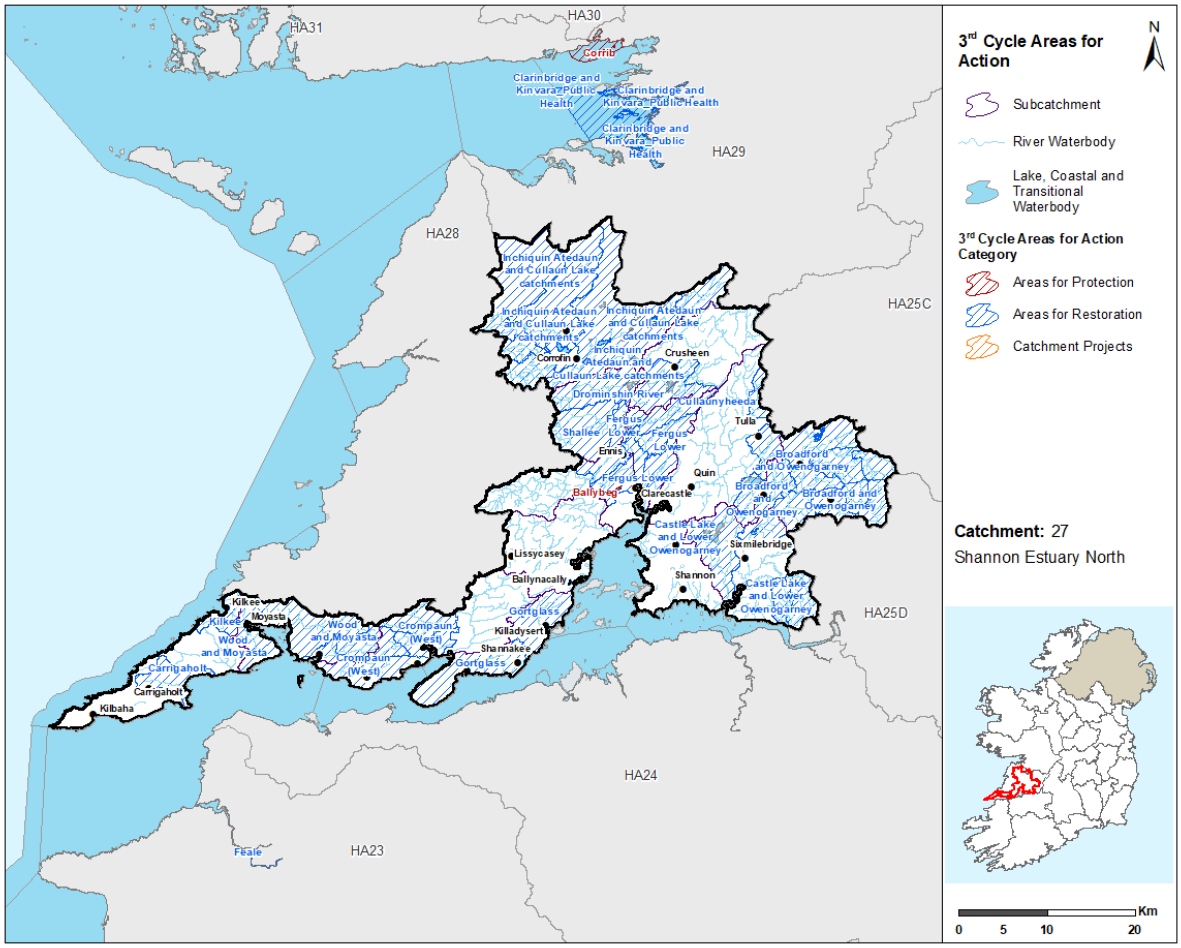


Figure 27: 3rd Cycle Recommended Areas for Action Locations

Table 8: 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
Broadford and Owenogarney	9	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Inchiquin Atedaun and Cullaun Lake catchments	11	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Crompaun (West)	4	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Fergus Lower	5	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Castle Lake and Lower Owenogarney	5	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO

3rd Cycle Recommended Areas for Action	Number of Waterbodies	Recommended Areas for Action Category	Recommended Areas for Action Sub-category	Lead Organisation
Cullaunyheeda	3	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Gortglass	3	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Drominshin River	1	Restoration	LA Areas for Restoration Local Authorities	Clare County Council
Kilkee	1	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Carrigaholt	1	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Wood and Moyasta	4	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Shallee	1	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Ballybeg	1	Protection	LA Areas for Protection Local Authorities	Clare County Council
GWDTE-Caherglassaun Turlough	1	Catchment Projects	Public Body Research	GSI

10 Catchment Summary

- Of the 69 river waterbodies, 35 are *At Risk* of not meeting their WFD objectives.
- Six out of 26 lake waterbodies are *At Risk* of not meeting their WFD objectives.
- Two out of five transitional waterbodies are *At Risk* of not meeting their WFD objectives. The Upper Shannon Estuary and the Fergus Estuary are the two *At Risk* transitional waterbodies.
- There are three *At Risk* groundwater bodies out of 23 groundwater bodies. These are Industrial Facility (P0012-04), Limerick City Northwest and GWDTE-Caherglassaun Turlough (SAC000238).
- There has been an overall deterioration across the catchment with 46 waterbodies *At Risk* in Cycle 3 compared to 37 waterbodies *At Risk* in Cycle 2.
- The main significant issues are from nutrients pollution and morphological impacts, followed by sediment, organic, hydrological impacts, other and chemical pollution.
- The main significant pressures are agricultural pressures followed by hydromorphological pressures forestry, other[9], domestic waste water, urban waste water, urban run-off, peat and industry.
- The main impacts and pressures driving the change between Cycle 2 and Cycle 3 are increases in waterbodies impacted by nutrient, morphological and sediment. The increase in

[9] 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

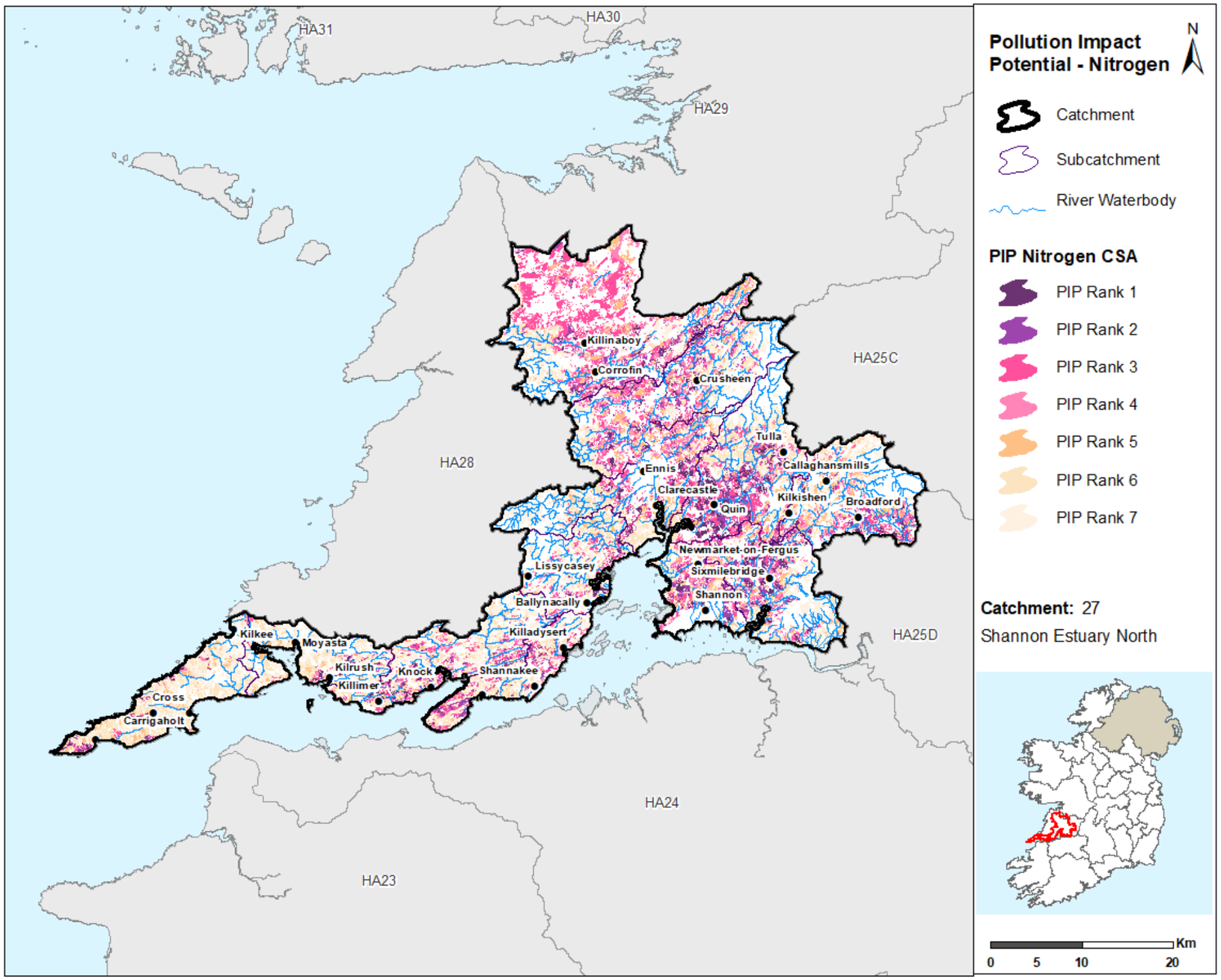
hydromorphological impacts is likely to be associated with a stronger evidence base and increasing awareness of hydromorphology rather than new significant hydromorphology pressures since Cycle 2.

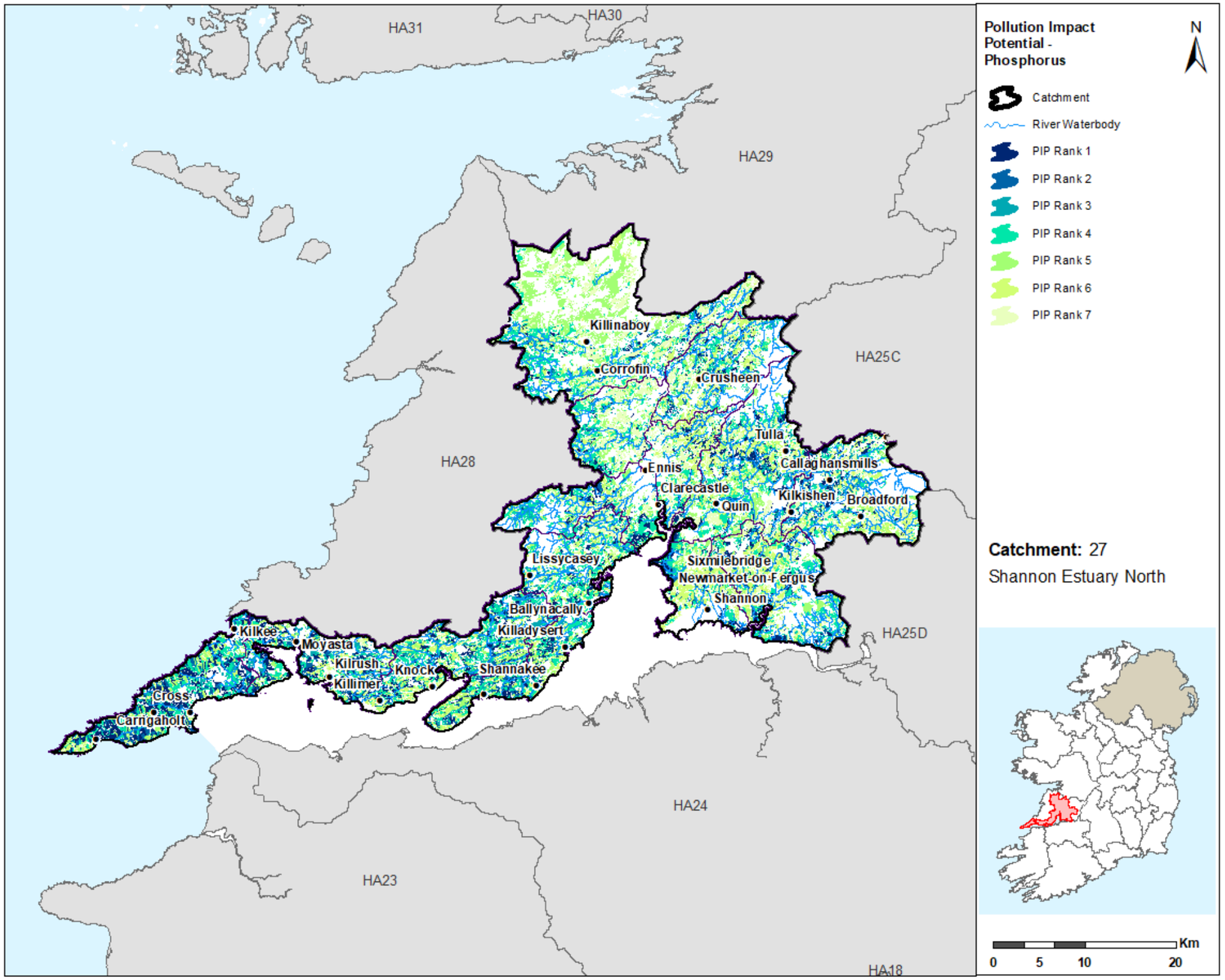
- There was an overall no change in the 2nd Cycle Areas for Action since Cycle 2. Five waterbodies were *At Risk* in Cycle 2 and these five waterbodies remain *At Risk* in Cycle 3.
- There are 14 3rd Cycle Recommended Areas for Action for Cycle 3. They comprise of 128 waterbodies with 46 waterbodies *At Risk*, 38 in *Review* and 44 *Not At Risk*.

Appendix 1
High ecological status objective waterbodies

Waterbody Name	Waterbody Type	Waterbody Code	Status 2013-2018
BROADFORD_020	**River**	IE_SH_27B020600	Good
CLOON (CLARE)_010	**River**	IE_SH_27C020200	Good
CLOON (CLARE)_020	**River**	IE_SH_27C020400	Good
Cullaun	**Lake**	IE_SH_27_115	Good
OWENOGARNEY_010	**River**	IE_SH_27O010100	Good
OWENOGARNEY_020	**River**	IE_SH_27O010300	Good
OWENSLIEVE_010	**River**	IE_SH_27O020600	Good

Appendix 2
Pollution Impact Potential Mapping





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: 27
Shannon Estuary North

Km
0 5 10 20

Appendix 3
Summary information on all waterbodies in the Shannon Estuary North 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)
27_9	IE_SH_27B010500	BALLY MACOODA LOUGH STREAM_010	River	Not at risk	At risk	Good	Moderate	No	Ag, DWW		
27_13	IE_SH_27B020300	BROADFORD_010	River	At risk	At risk	Poor	Poor	No	Hymo	Broadford and Owenogarney	Existing PAA waterbody. Transition strategy
27_13	IE_SH_27B020600	BROADFORD_020	River	Not at risk	At risk	High	Good	Yes	Ag, Hymo	Broadford and Owenogarney	Deteriorated HES objective waterbody PAA upstream with improvement in 2018/2019. Expand PAA to include downstream waterbodies
27_13	IE_SH_27B020800	BROADFORD_030	River	Not at risk	Not at risk	Good	Good	No		Broadford and Owenogarney	Connects waterbodies identified for restoration/ protection Expand PAA
27_9	IE_SH_27B040200	BALLYNACALLY_010	River	Not at risk	Not at risk	Good	Good	No			
27_6	IE_SH_27B490830	BALLYHANNAN_SOUTH_010	River	Not at risk	Not at risk	Unassigned	Unassigned	No			
27_11	IE_SH_27B670560	BOHERAROAN_010	River	Review	Review	Unassigned	Unassigned	No			
27_7	IE_SH_27C010900	CASTLELODGE_010	River	At risk	At risk	Poor	Poor	No	Ag, For	Inchiquin Atedaun and Cullaun Lake catchments	Tubber Monreagh GWS Include under SC approach 27_7
27_5	IE_SH_27C020200	CLOON (CLARE)_010	River	Not at risk	Not at risk	Good	Good	No			
27_5	IE_SH_27C020400	CLOON (CLARE)_020	River	Not at risk	Not at risk	Good	Good	No			
27_7	IE_SH_27C030300	CLOONEEN (CLARE)_010	River	At risk	At risk	Poor	Poor	No	Ag, For	Inchiquin Atedaun and Cullaun Lake catchments	Continuing poor quality at the upper monitoring station 0200. Builds on existing work of CCC. Feeds into the upper River Fergus system. Expand Inchiquin/Atedaun PAA
27_7	IE_SH_27C040600	CRAGGAUNBOY_010	River	At risk	At risk	Poor	Poor	No	Ag, For	Inchiquin Atedaun and Cullaun Lake catchments	Continuing less than good quality and currently Poor status. Feeds into the River Fergus system upstream of PAA Lough Atedaun Expand PAA
27_5	IE_SH_27C051200	CROMPAUN (WEST)_010	River	Not at risk	At risk	Good	Moderate	No	Ag	Crompaun (West)	Upper monitoring point showing continuous impact, at Moderate status currently. Lower station is Moderate. Measures would benefit this WB and

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)
											downstream WB Crompaun_020 (currently unassigned)
27_5	IE_SH_27C051300	CROMPAUN (WEST)_020	River	Not at risk	Review	Unassigned	Unassigned	No		Crompaun (West)	Crompaun West 10 proposed by CCC Review WB 'Include under SC approach 27_5
27_9	IE_SH_27C060600	CLAREEN (FERGUS)_010	River	Not at risk	At risk	Good	Moderate	No	Ag, Hymo		
27_1	IE_SH_27C070400	CARROWNANELLY_010	River	At risk	At risk	Poor	Moderate	No	Ag, Hymo, UR	Fergus Lower	Nutrient issues here. Waterbody would benefit from ASSAP involvement. Including as a PAA builds on the improvement in status seen in 2018.
27_12	IE_SH_27C080300	CRATLOE_010	River	At risk	At risk	Moderate	Moderate	No	Ag, DWW, Hymo	Castle Lake and Lower Owenogarney	Include in SC approach for 27_12 NPWs priority habitat/species Moderate status, high DWWTS
27_12	IE_SH_27C090600	CROMPAUN (EAST)_010	River	At risk	At risk	Moderate	Poor	No	Ag, DWW, For, Hymo	Castle Lake and Lower Owenogarney	Multiple pressures including DWWTS. Possible GW pathways for P to SW here. Cratloe_010, Owengarney_060 also have high DWWTS pressures similar to here. Measures here could be transferable to those adjacent ctchments. All discharge to upper Shannon Estuary. NPWs priority habitat/species Include in SC approach for 27_12
27_12	IE_SH_27C100600	CLOVERHILL STREAM_010	River	At risk	At risk	Poor	Poor	No	Ag, DWW, Hymo	Castle Lake and Lower Owenogarney	Building on works already undertaken in this WB by CCC. Ag and DWWTS issues. FC and LCA findings will assist oin informing planning decisions here NPWS priority habitat/species
27_6	IE_SH_27C130300	CLOONDANAGH LOUGH STREAM_010	River	At risk	At risk	Poor	Poor	No	Ag, For	Cullaunyheeda	Continuously less than good, Poor since 2010
27_6	IE_SH_27C140100	CULLAUN_010	River	At risk	At risk	Moderate	Poor	No	For, Other	Cullaunyheeda	Include in AFA. Liskenny 10 flows into Cullaun 10
27_2	IE_SH_27C810990	CLOONKERRY_EAST_010	River	Review	Review	Unassigned	Unassigned	No		Gortglass	NPWs priority habitat/species Include under SC approach 27_2?
27_8	IE_SH_27C840930	CARROWNAWEELAUN_010	River	Review	Review	Unassigned	Unassigned	No			
27_8	IE_SH_27D010100	DOONAHA_010	River	At risk	At risk	Poor	Poor	No	Ag		
27_13	IE_SH_27D070840	DERRYMORE EAST_010	River	Review	Review	Unassigned	Unassigned	No		Broadford and Owenogarney	Include under SC approach 27_13
27_7	IE_SH_27F010100	FERGUS_010	River	Not at risk	Not at risk	Good	Good	No		Inchiquin Atedaun and Cullaun Lake catchments	NPWs priority habitat/species groundwater abstraction sources proposed for inclusion as an Area for Action inputting to Inchiquin lough, existing PAA

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)
											lake Catchment project underway here
27_7	IE_SH_27F010300	FERGUS_020	River	At risk	At risk	Moderate	Good	No	Ag, Hymo, UR	Inchiquin Atedaun and Cullaun Lake catchments	Inputting to Atedaun Lough, existing PAA lake. Expand PAA Catchment project underway here
27_7	IE_SH_27F010400	FERGUS_030	River	Not at risk	Not at risk	Good	Good	No		Inchiquin Atedaun and Cullaun Lake catchments	NPWs priority habitat/species Inputting to Atedaun Lake, existing PAA Catchment project underway here
27_14, 27_3	IE_SH_27F010500	FERGUS_040	River	At risk	At risk	Poor	Poor	No	Ag, For	Drominshin River	Druminshin River catchment is the main driver for the less than good status of the entire Ferus_040. CCC Env engaged in on-going work LCA, would like to continue here. LCA in progress but limited time and staff resource available. This WB was also proposed as PAA via public consultation in 2nd cycle by NFGWS as Ballycullinan is an abstraction source for Toonagh-Dysert GWS. Ballycullinan Lough (not WFD). The NFGWS would like to propose that the Ballycullinan Lough catchment is included within a PAA on the basis of Public Health. The lake is used for water abstraction by Dysart GWS. The lake is not currently assigned a WFD classification, while the downstream waterbody (Fergus_040) is classified as being of 'Poor' status and worthy of restoration. The restoration of these headwaters would serve to protect the 'Good' status of the downstream Fergus_050 and Dromore Lough. In addition, Ballycullinan Lough is designated as an SAC. NPWs priority habitat/species
27_1, 27_3	IE_SH_27F010600	FERGUS_050	River	Not at risk	Not at risk	Good	Good	No		Fergus Lower	Upstream waterbody to Fergus 60 and 70. Include under SC approach for Fergus Lower AFA NPWS priority habitat/species

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)
27_1, 27_10	IE_SH_27F010700	FERGUS_060	River	At risk	At risk	Poor	Poor	No	Hymo, UWW	Fergus Lower	Urban pressures lower Inch/Claureen River NPWS priority habitat/species New catchment management association in the process of being formed
27_1, 27_10	IE_SH_27F010780	FERGUS_070	River	At risk	At risk	Poor	Poor	No	Hymo, UR, UWW	Fergus Lower	Killone Lough sites in Fergus 70. This is the water supply lake for Killone GWS. NPWS priority habitat/species New catchment management association in the process of being formed. Unclude under SC approach, Fergus Lower AFA?
27_12	IE_SH_27G020600	GOURNA_010	River	Not at risk	Not at risk	Good	Good	No			
27_6	IE_SH_27H010400	HELL_010	River	Not at risk	At risk	Good	Moderate	No	Ag, Hymo		
27_10	IE_SH_27I010200	INCH (CLARE)_010	River	Not at risk	Not at risk	Good	Good	No			
27_10	IE_SH_27I010600	INCH (CLARE)_020	River	Not at risk	Not at risk	Good	Good	No			
27_2	IE_SH_27K030900	KILLADYSERT STREAM_010	River	Review	Review	Unassigned	Unassigned	No		Gortglass	Include under SC approach? 27_2
27_7	IE_SH_27K040400	KILMORE NORTH STREAM_010	River	Not at risk	Review	Good	Moderate	No		Inchiquin Atedaun and Cullaun Lake catchments	Include under SC approach 27_7
27_8	IE_SH_27K600990	KILTRELLIG_010	River	Review	Review	Unassigned	Unassigned	No			
27_8	IE_SH_27K650930	KILKEE_LOWER_010	River	Review	Review	Unassigned	Unassigned	No		Kilkee	Kilkee bathing waters. High priority. Issues associated with Victoria Stream
27_6	IE_SH_27L010200	LISKENNY_010	River	At risk	At risk	Poor	Poor	No	Ag, UWW	Cullaunyheeda	UWWTP Tulla, Ag pressure, ASSAP input would benefit WB
27_10	IE_SH_27L380630	LISSAN_WEST_010	River	Review	Review	Unassigned	Unassigned	No			
27_8	IE_SH_27M010150	MOYANA_010	River	At risk	At risk	Poor	Poor	No	Ag, DWW, Ind	Carrigaholt	Existing PAA waterbody. ASSAP work programme may not be complete
27_14	IE_SH_27M020300	MOYREE_010	River	Not at risk	Not at risk	Good	Good	No			
27_14	IE_SH_27M020500	MOYREE_020	River	Not at risk	Not at risk	Good	Good	No			
27_14	IE_SH_27M020700	MOYREE_030	River	At risk	At risk	Moderate	Moderate	No	Hymo		
27_14	IE_SH_27M030900	MILL BROOK_010	River	Not at risk	Not at risk	Good	Good	No			
27_4	IE_SH_27M040900	MOYASTA_010	River	Review	Review	Unassigned	Unassigned	No		Wood and Moyasta	Include under SC approach for 27_4?
27_6	IE_SH_27M120740	MANUSMORE_010	River	Not at risk	Not at risk	Unassigned	Unassigned	No			
27_13	IE_SH_27O010100	OWENOGARNEY_010	River	Not at risk	At risk	High	Good	Yes	For	Broadford and Owenogarney	Deteriorated HES objective waterbody Include under SC approach 27_13
27_13	IE_SH_27O010300	OWENOGARNEY_020	River	Not at risk	At risk	High	Good	Yes	For, Hymo, Other	Broadford and Owenogarney	Deteriorated HES objective waterbody Include under SC approach 27_13
27_13	IE_SH_27O010600	OWENOGARNEY_030	River	Not at risk	Not at risk	Good	Good	No		Broadford and Owenogarney	groundwater abstraction sources proposed for inclusion as an Area for Action Include under SC appraoch for 27_13

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)
27_12	IE_SH_27O010900	OWENOGARNEY_040	River	Not at risk	Not at risk	Good	Good	No		Castle Lake and Lower Owenogarney	Large drinking water supply. ASSAP input may produce quick improvement. Owengarney River upstream is continuously Good status. Include under SC approach for 27_12
27_12	IE_SH_27O011100	OWENOGARNEY_050	River	Not at risk	Not at risk	Good	Good	No			
27_12	IE_SH_27O011200	OWENOGARNEY_060	River	Review	Review	Unassigned	Unassigned	No			
27_9	IE_SH_27O020600	OWENSLIEVE_010	River	Not at risk	At risk	High	Good	Yes	Hymo		
27_9	IE_SH_27O020900	OWENSLIEVE_020	River	At risk	At risk	Moderate	Moderate	No	Ag		
27_6	IE_SH_27R010700	RINE_010	River	Not at risk	Not at risk	Good	Good	No			
27_6	IE_SH_27R011100	RINE_020	River	Not at risk	Not at risk	High	Good	No			
27_6	IE_SH_27R011300	RINE_030	River	Not at risk	At risk	Good	Moderate	No	UWW		
27_6	IE_SH_27R011500	RINE_040	River	Not at risk	Not at risk	Good	Good	No			
27_3	IE_SH_27S010500	SHALLEE_010	River	At risk	At risk	Moderate	Poor	No	Ag, Hymo	Shallee	Existing PAA waterbody. ASSAP work programme may not be complete
27_1	IE_SH_27S030400	SPANCELHILL_010	River	At risk	At risk	Poor	Poor	No	Other	Fergus Lower	Had been proposed as PAA via public consultation in 2nd cycle. Urban point discharge pressure and Ag pressure. Went from Good to Poor. Continuously poor at 27S030400 in all recent years. The outlet goes to Fergus_070 which is poor and needs to be restored to Good.
27_5	IE_SH_27T020300	TARMON LOUGH STREAM_010	River	Not at risk	At risk	Good	Moderate	No	Ag	Crompaun (West)	At Risk waterbody Include under SC approach 27_5
27_5	IE_SH_27T230880	TONAVOHER_010	River	Review	Review	Unassigned	Unassigned	No		Crompaun (West)	NPWs priority habitat/species Review waterbody. Include under SC approach 27_5
27_4	IE_SH_27T250960	TERMON EAST_010	River	Review	Review	Unassigned	Unassigned	No		Wood and Moyasta	NPWS priority habitat/species Include under SC approach for 27_4
27_11	IE_SH_27U010950	URLAN BEG_010	River	Review	Review	Unassigned	Unassigned	No			
27_4	IE_SH_27W010100	WOOD_010	River	At risk	At risk	Poor	Poor	No	Ag	Wood and Moyasta	Continuously Poor but improvements seen in downstream Wood_020, therefore if improvements could be made in Wood_010 it builds on the improvements downstream. Would benefit from ASSAP input. Active community group here Kilrush Marina now has a Blue Flag 2020.
27_4	IE_SH_27W010200	WOOD_020	River	At risk	At risk	Poor	Moderate	No	Ag, For, Other, UR	Wood and Moyasta	At risk WB. Include under SC approach for 27_4? Active community group
27_7	IE_SH_27_102	Gortlecka	Lake	Not at risk	Not at risk	Unassigned	Unassigned	No			
27_7	IE_SH_27_106	Ballyeighter Rockforest	Lake	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)
27_7	IE_SH_27_108	Atedaun	Lake	At risk	At risk	Moderate	Moderate	No	Ag	Inchiquin Atedaun and Cullaun Lake catchments	Existing PAA waterbody. Further characterisation won't be complete. Inputting waterbodies are not in the cycle 2 PAA
27_7	IE_SH_27_115	Cullaun	Lake	At risk	At risk	Good	Good	Yes	Ag	Inchiquin Atedaun and Cullaun Lake catchments	NPWS priority habitat/species HSO waterbody not meeting its objective Include under SC approach 27_7
27_13	IE_SH_27_117	Bridget	Lake	At risk	At risk	Moderate	Moderate	No	Ag, Other	Broadford and Owenogarney	At risk waterbody. Include under SC approach 27_13
27_7	IE_SH_27_119	Ballyeighter Garvillaun	Lake	Not at risk	Not at risk	Unassigned	Unassigned	No			
27_12	IE_SH_27_120	Rosroe	Lake	Not at risk	Not at risk	Good	Good	No			
27_13	IE_SH_27_121	Duin CE	Lake	Review	Review	Unassigned	Unassigned	No		Broadford and Owenogarney	Included on the basis that there will be a mechanism in place for unassigned lakes in Cycle 3
27_2	IE_SH_27_122	Gortglass	Lake	Not at risk	At risk	Good	Moderate	No	Ag, Other	Gortglass	Public Health Areas for Protection by CCC, ASSAP input would be beneficial here, relatively small catchment to Gortglass Lake. Conservation services carried out Q at the outlet of Kildysert stream (d/s Kildysert village) Kildysert Stream_010 27K030900 in 2019, Q4-5
27_10	IE_SH_27_123	Ballybeg	Lake	Review	Review	Unassigned	Unassigned	No		Ballybeg	CCC working on assessment here to determine risk
27_14	IE_SH_27_126	Inchicronan	Lake	At risk	Review	Moderate	Good	No			
27_12	IE_SH_27_127	Finn CE	Lake	Review	Review	Unassigned	Unassigned	No			
27_6	IE_SH_27_128	Cullaunyheeda	Lake	Not at risk	Not at risk	Good	Good	No			
27_7	IE_SH_27_130	Inchiquin CE	Lake	At risk	At risk	Moderate	Moderate	No	Ag	Inchiquin Atedaun and Cullaun Lake catchments	Existing PAA waterbody. Further characterisation won't be complete. Inputting waterbodies not included in the cycle 2 PAA this is one of 15 designated brown trout lakes, it has already lost its acrtic char population due to enrichment and other pressures and therefore warrants protection and restoration
27_7	IE_SH_27_177	Fiddaun	Lake	Review	Review	Unassigned	Unassigned	No			
27_12	IE_SH_27_193	Ballycar	Lake	Not at risk	Not at risk	Unassigned	Unassigned	No			
27_3	IE_SH_27_246	Black CE	Lake	Not at risk	Not at risk	Unassigned	Unassigned	No			
27_7	IE_SH_27_303	Aglish	Lake	Not at risk	Not at risk	Unassigned	Unassigned	No			
27_7	IE_SH_27_33	Shandangan	Lake	Not at risk	Not at risk	Unassigned	Unassigned	No			
27_7	IE_SH_27_56	Ballyteige	Lake	Not at risk	Not at risk	Unassigned	Unassigned	No			
27_14, 27_3	IE_SH_27_63	Ballyline	Lake	Not at risk	Not at risk	Unassigned	Unassigned	No			
27_7	IE_SH_27_70	Doo GY	Lake	Review	Review	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)
27_1, 27_3	IE_SH_27_72	Ballyallia	Lake	Not at risk	Not at risk	Unassigned	Unassigned	No			
27_12	IE_SH_27_74	Castle CE	Lake	At risk	At risk	Moderate	Poor	No	Ag, Other	Castle Lake and Lower Owenogarney	Include in SC approach for 27_12 Large drinking water supply lake ASSAP input useful here No. of other waterbodies also proposed for 27_12
27_3	IE_SH_27_82	Dromore	Lake	Review	Not at risk	Good	Good	No			
27_7	IE_SH_27_94	Muckanagh CE	Lake	Not at risk	Review	High	Good	No		Inchiquin Atedaun and Cullaun Lake catchments	NPWS priority habitat/species Include under SC approach 27_7
22_19, 23_11, 23_7, 23_9, 27_8	IE_SH_010_0000	Southwestern Atlantic Seaboard (HA 23)	Coastal	Not at risk	Not at risk	Unassigned	Unassigned	No			
23_12, 23_14, 23_7, 24_9, 27_4, 27_5, 27_8	IE_SH_060_0000	Mouth of the Shannon (HAs 23;27)	Coastal	Review	Not at risk	Moderate	Good	No			
27_4	IE_SH_060_1300	Scattery Island Lagoon	Coastal	Review	Review	Unassigned	Good	No			
27_8	IE_SH_060_1400	Cloonconeen Pool	Coastal	Review	Review	Unassigned	Unassigned	No			
27_8, 28_2, 28_3, 28_4, 28_5, 28_6, 28_7, 29_3	IE_SH_070_0000	Shannon Plume (HAs 27;28)	Coastal	Not at risk	Review	Unassigned	Unassigned	No			
24_18, 24_5, 24_7, 24_9, 27_2, 27_5	IE_SH_060_0300	Lower Shannon Estuary	Transitional	At risk	Not at risk	Moderate	Good	No			
24_10, 24_16, 24_18, 25D_3, 27_11, 27_12	IE_SH_060_0800	Upper Shannon Estuary	Transitional	At risk	At risk	Poor	Poor	No	Ag		
27_11	IE_SH_060_1000	Shannon Airport Lagoon	Transitional	Review	Review	Moderate	Poor	No			
27_1, 27_10, 27_11, 27_2, 27_6, 27_9	IE_SH_060_1100	Fergus Estuary	Transitional	At risk	At risk	Moderate	Moderate	No	Ag		
27_2, 27_5	IE_SH_060_1200	Clonderalaw Bay	Transitional	Review	Review	Unassigned	Unassigned	No			
25D_3, 25D_6, 25D_9, 27_12	IE_SH_G_009	Ardnacrusha	Groundwater	Review	Not at risk	Good	Good	No			
27_7, 28_2, 28_6, 29_3, 29_8	IE_SH_G_047	Burren	Groundwater	Review	Review	Good	Good	No			
27_10, 27_3, 27_7, 28_1, 28_6	IE_SH_G_069	Craggaunboy	Groundwater	Review	Review	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)
25D_3, 27_12	IE_SH_G_070	Cratloe	Groundwater	Review	Not at risk	Good	Good	No			
25C_8, 27_1, 27_14, 27_6, 27_7, 29_7	IE_SH_G_071	Crusheen	Groundwater	Review	Review	Good	Good	No			
27_1, 27_10, 27_14, 27_3, 27_6, 27_7, 27_9, 29_7, 29_8	IE_SH_G_080	Ennis	Groundwater	At risk	Review	Good	Good	No			
27_1, 27_10	IE_SH_G_082	Industrial Facility (P0012-04)	Groundwater	At risk	At risk	Poor	Poor	No	Ind		
25D_6, 27_13	IE_SH_G_095	Broadford Gravels	Groundwater	Review	Not at risk	Good	Good	No			
27_11, 27_12, 27_13, 27_6	IE_SH_G_121	Kilkishen	Groundwater	Review	Review	Good	Good	No			
27_2, 27_4, 27_5, 27_8, 27_9, 28_3	IE_SH_G_123	Kilrush	Groundwater	Not at risk	Review	Good	Good	No			
25D_3, 25D_9, 27_12	IE_SH_G_139	Limerick City North	Groundwater	At risk	Not at risk	Good	Good	No			
25D_3, 27_12	IE_SH_G_140	Limerick City Northwest	Groundwater	At risk	At risk	Poor	Good	No	Ag		
27_10, 27_2, 27_5, 27_9, 28_1, 28_3, 28_7	IE_SH_G_148	Lissycasey	Groundwater	Not at risk	Review	Good	Good	No			
25C_10, 25C_3, 25C_6, 25C_7, 25C_8, 25D_3, 25D_6, 27_12, 27_13, 27_14, 27_6, 29_7	IE_SH_G_157	Lough Graney	Groundwater	Not at risk	Not at risk	Good	Good	No			
27_10, 27_3, 27_4, 27_5, 27_7, 27_8, 27_9, 28_1, 28_2, 28_3, 28_4, 28_5, 28_6, 28_7	IE_SH_G_167	Milltown Malbay	Groundwater	Review	Review	Good	Good	No			
27_7, 28_2, 29_3	IE_SH_G_212	Slieve Elva	Groundwater	Review	Review	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_10, 25C_3, 25C_8, 25D_3, 25D_6, 27_1, 27_11, 27_12, 27_13, 27_14, 27_6	IE_SH_G_229	Tulla-Newmarket on Fergus	Groundwater	Review	Review	Good	Good	No			
27_11, 27_12, 27_6	IE_SH_G_259	GWDTE-Lough Gash Turlough (SAC000051)	Groundwater	Review	Not at risk	Good	Good	No			
27_7, 28_2, 29_3, 29_8	IE_WE_G_0001	Ballyvaughan Uplands	Groundwater	Not at risk	Not at risk	Good	Good	No			
27_7, 29_7, 29_8	IE_WE_G_0002	Kinvara-Gort	Groundwater	Review	Review	Good	Good	No			
25C_6, 25C_8, 27_14, 27_7, 29_1, 29_2, 29_7, 29_8	IE_WE_G_0091	GWDTE-Caherglassaun Turlough (SAC000238)	Groundwater	At risk	At risk	Poor	Poor	No	Other	GWDTE-Caherglassaun Turlough	The GWB has deteriorated in status due to forestry pressures, and the local community blame forestry within for causing flooding within the GWB. The GWB is currently the subject of a flood relief scheme study which could permanently alter its hydrogeological behaviour . GSI are involved in research (together with TCD and IT Carlow) into the flooding within this GWB A PAA status would allow this already existing work to be highlighted via the WFD process. Deteriorated waterbody; GWB has deteriorated in status due to forestry pressures; Waterbody includes several SAC, SPA protected areas. Builds on existing programmes and community group initiatives.
27_7, 29_3, 29_8	IE_WE_G_0095	GWDTE-Gortboyheen Turlough (SAC000054)	Groundwater	Review	Not at risk	Good	Good	No			
27_7, 29_8	IE_WE_G_0098	GWDTE-Lough Mannagh Turlough (SAC001926)	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.