3rd Cycle Draft Ballyteigue - Bannow Catchment Report (HA 13)

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 Ballyteigue - Bannow 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 Ballyteigue - Bannow 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 Ballyteigue - Bannow catchment includes the area drained by all streams entering tidal water between Greenore Point and Railway Bridge, Great Island, Co. Wexford, draining a total area of 654km² (Figure 1). There are no large urban centres in the catchment. The only urban centres in this catchment are Lady's Island, Kilmore Quay, Bridgetown, Wellingtonbridge, Duncannon, and Campile. The total population of the catchment is approximately 26,593 with a population density of 41 people per km². The catchment has an undulating topography and is underlain by a series of volcanic and metamorphic rocks.

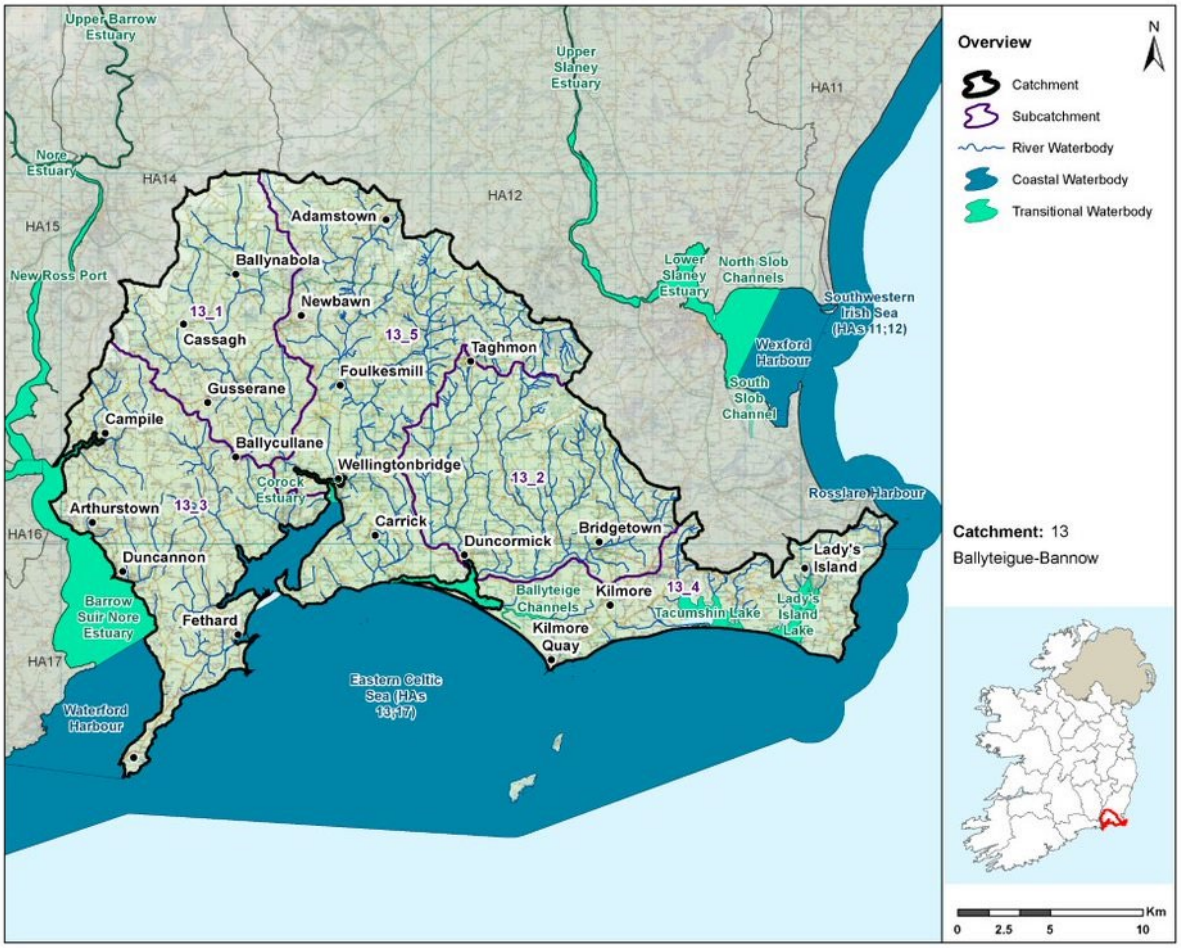


Figure 1: Overview of subcatchments in the Ballyteigue - Bannow catchment

The Ballyteigue - Bannow catchment is divided into five subcatchments (Figure 1) with 115 river waterbodies, 19 lakes, two transitional, four coastal waterbodies and 37 groundwater bodies (Figure 2).

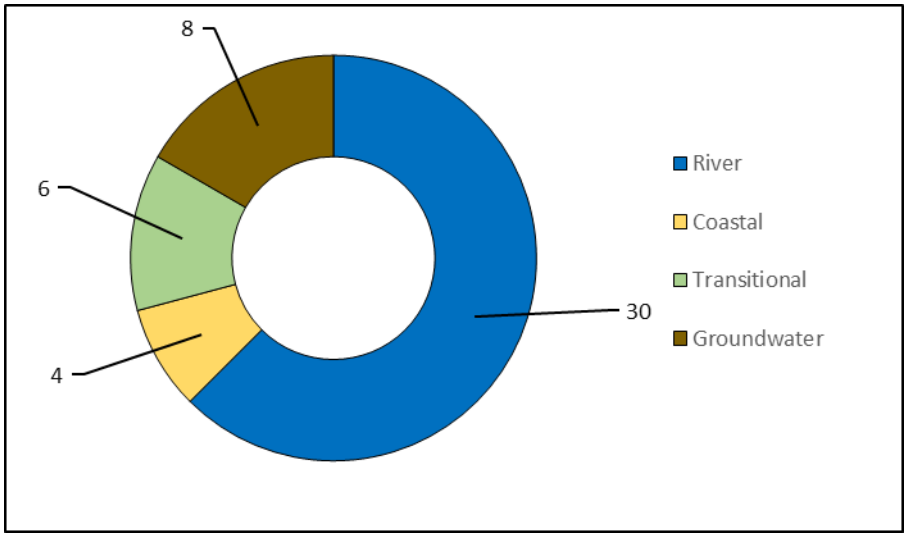


Figure 2: Waterbody types and numbers in the Ballyteigue - Bannow Catchment.

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 17 waterbodies (nine river waterbodies and eight groundwater bodies) achieving Good Status, 10 (four river, three coastal and three transitional waterbodies) achieving Moderate Status, four river waterbodies (Corock_010, Duncormick_010, Heathpark Stream_010 & Tintern Abbey Stream_010) are at Poor Status and there are two Bad Status transitional waterbodies (Lady's Island Lake and Ballyteigue Channels). There are 15 waterbodies in the catchment that do not have status assigned for Cycle 3. All waterbodies must achieve at least Good Ecological Status.

- There are no waterbodies that must achieve High Ecological Status (HES) in this catchment.

- There has been an overall reduction of two waterbodies achieving Good Status between Cycle 2 and Cycle 3. There are also three less waterbodies that are unassigned in Cycle 3. There are three waterbodies achieving Moderate Status, one river waterbody (Heathpark Stream_010) achieving Poor Status and one transitional (Ballyteige Channels) waterbody at Bad Status (Figure 3 & Table 1).

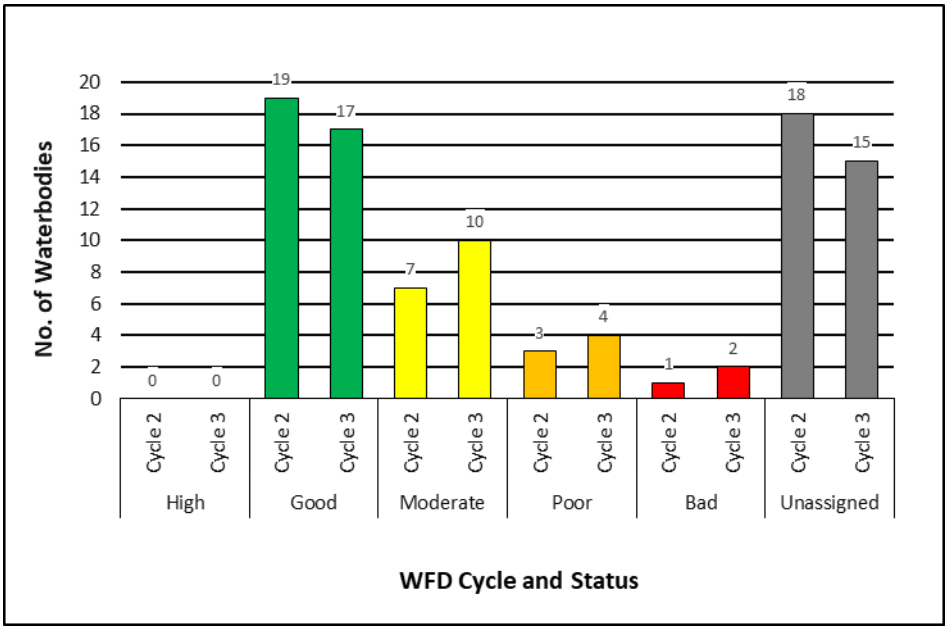


Figure 3: Waterbody Status Breakdown (All waterbodies)

Table 1: Waterbody Status Breakdown Table (All Waterbodies)

2013-2018 Status	River		Lake		Transitional		Coastal		Groundwater		Total	
	Cycle 2	Cycle 3	Cycle 2	Cycle 3	Cycle 2	Cycle 3	Cycle 2	Cycle 3	Cycle 2	Cycle 3	**Cycle 2**	**Cycle 3**
High	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Good	8	9	0	0	1	0	2	0	8	8	**19**	**17**
Moderate	6	4	0	0	1	3	0	3	0	0	**7**	**10**
Poor	3	4	0	0	0	0	0	0	0	0	**3**	**4**
Bad	0	0	0	0	1	2	0	0	0	0	**1**	**2**
Unassigned	13	13	0	0	3	1	2	1	0	0	**18**	**15**
Total	30	30	0	0	6	6	4	4	8	8	**48**	**48**

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

- Over this period two (7%) waterbodies (Battlestown Stream_010 & Cleristown Stream_010) have improved in status, 23 (77%) waterbodies have remained unchanged and five (17%) waterbodies (Corock_010, Heathpark Stream_010, Southwestern Irish Sea (HAs 11;12), Waterford Harbour & Barrow Suir Nore Estuary) have declined in status.[1]

- There is an overall decline in the status of three waterbodies 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 5. Percentage displayed in the Figure 5 are in relation to the total number of waterbodies with status assigned in both cycles, as opposed to total number of all waterbodies.

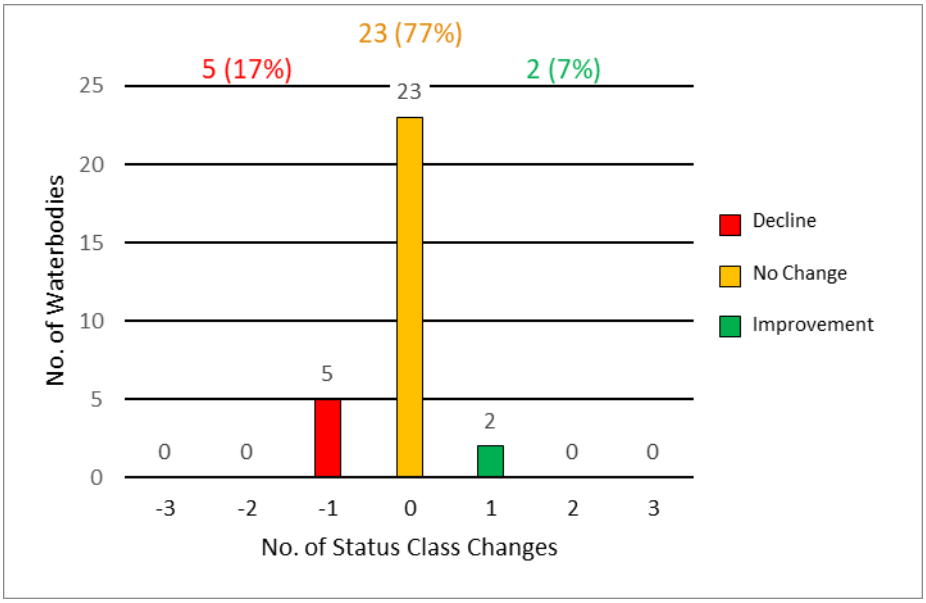


Figure 4: Status Class Changes between Cycle 2 and Cycle 3

2.2 Protected Areas

2.2.1 Drinking Water

- There is one surface waterbody in the catchment identified as a Drinking Water Protected Area (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 and one groundwater body in the catchment did not meet the DWPA objective in 2019:
    - Owenduff (Wexford)_030 (IE_SE_13O010240) river waterbody is the source for the South Regional (3300PUB1640) public supply which had Fluroxypyr, MCPA and 2,4-D pesticide exceedances.
    - Enniscorthy (IE_SE_G_061) groundwater body is the source for Clonroche (3300PUB1452) public water supply had Bentazone pesticide exceedance.

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

- Four bathing waters had an excellent classification for 2020, Bunmahon Beach had a Good Classification and Duncannon had a Sufficient classification.

[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

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

2.2.3 Shellfish Areas

- There are two designated shellfish areas in the catchment that intersect three waterbodies.

- 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
Bannow Bay	IEPA2_0002	Bannow Bay	IE_SE_090_0000		✓
Waterford Harbour (Cheekpoint/Arthurstown/Creadan)	IEPA2_0056	Barrow Suir Nore Estuary	IE_SE_100_0100	✓	
		Waterford Harbour	IE_SE_100_0000		

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

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

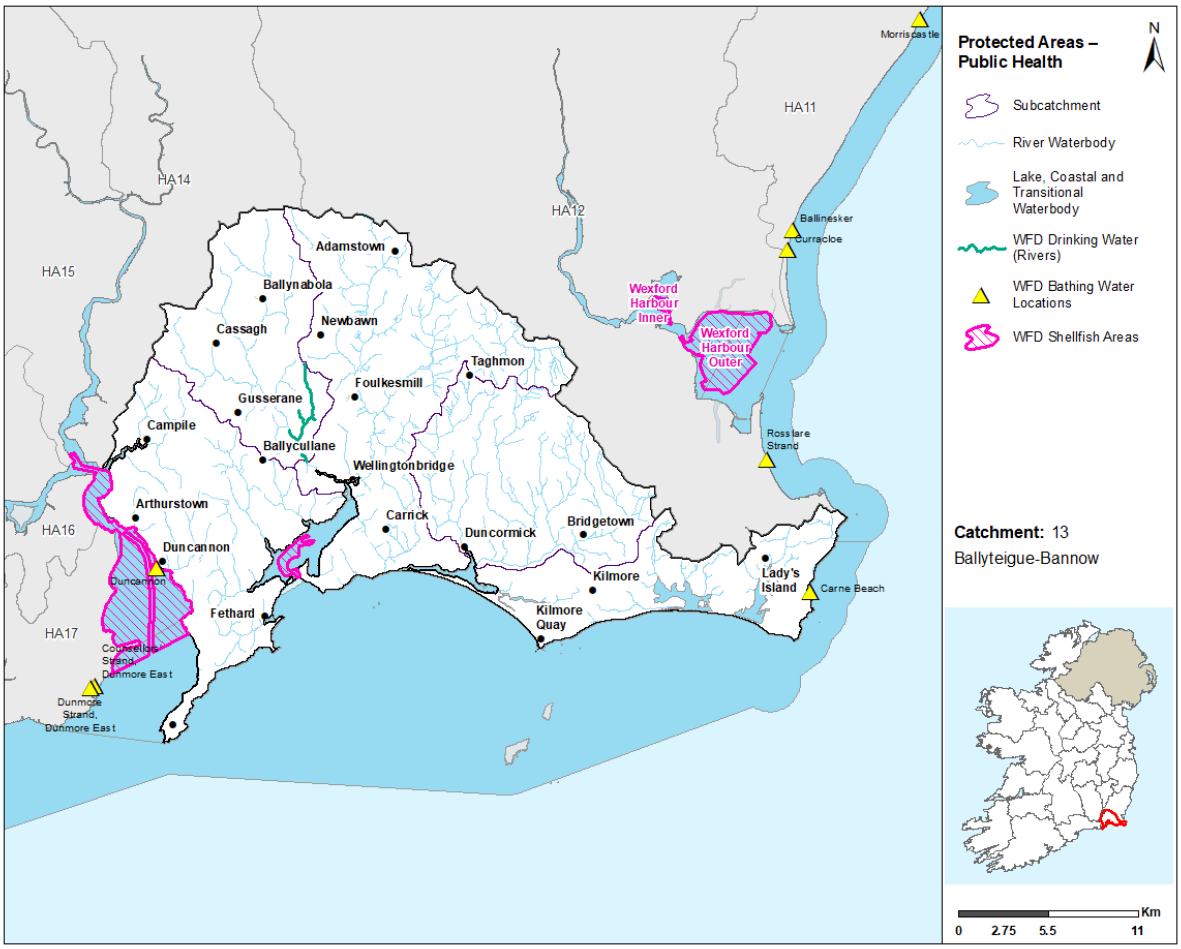


Figure 5: Protected Areas – Public Health

2.2.4 Natura 2000 Sites

- 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 eight SACs in this catchment, all of which have water dependent habitats or species. The waterbodies within these SACs were assessed for associated water dependent habitats and species and if they met the supporting requirements for habitats and species using their 2013-2018 WFD status. For the purposes of the assessment, it was assumed that Good ecological status is adequate to meet the supporting conditions of all habitats and species with the exception of the Freshwater Pearl Mussel, which has additional requirements for supporting conditions set out in the Freshwater Pearl Mussel Regulations (S.I. No 296 of 2009) for macroinvertebrates, filamentous algae, phytobenthos, macrophytes and siltation.

- Specific water supporting conditions have not been identified for the dependent bird species in the SPAs and so waterbodies associated with SPAs are not included in this assessment.

Results of the overall assessment for this catchment are outlined in Table 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	2	0	0	2
Transitional & Coastal	6	1	5	0

**As the waterbody status was unassigned.*

- There are no river waterbodies with FWPM habitats in the Ballyteigue - Bannow catchment.
- There are no groundwater bodies delineated and assessed as Groundwater Dependent Terrestrial Ecosystems for this catchment.
- Water dependent SACs/ SPAs in the catchment are illustrated in Figure 6.

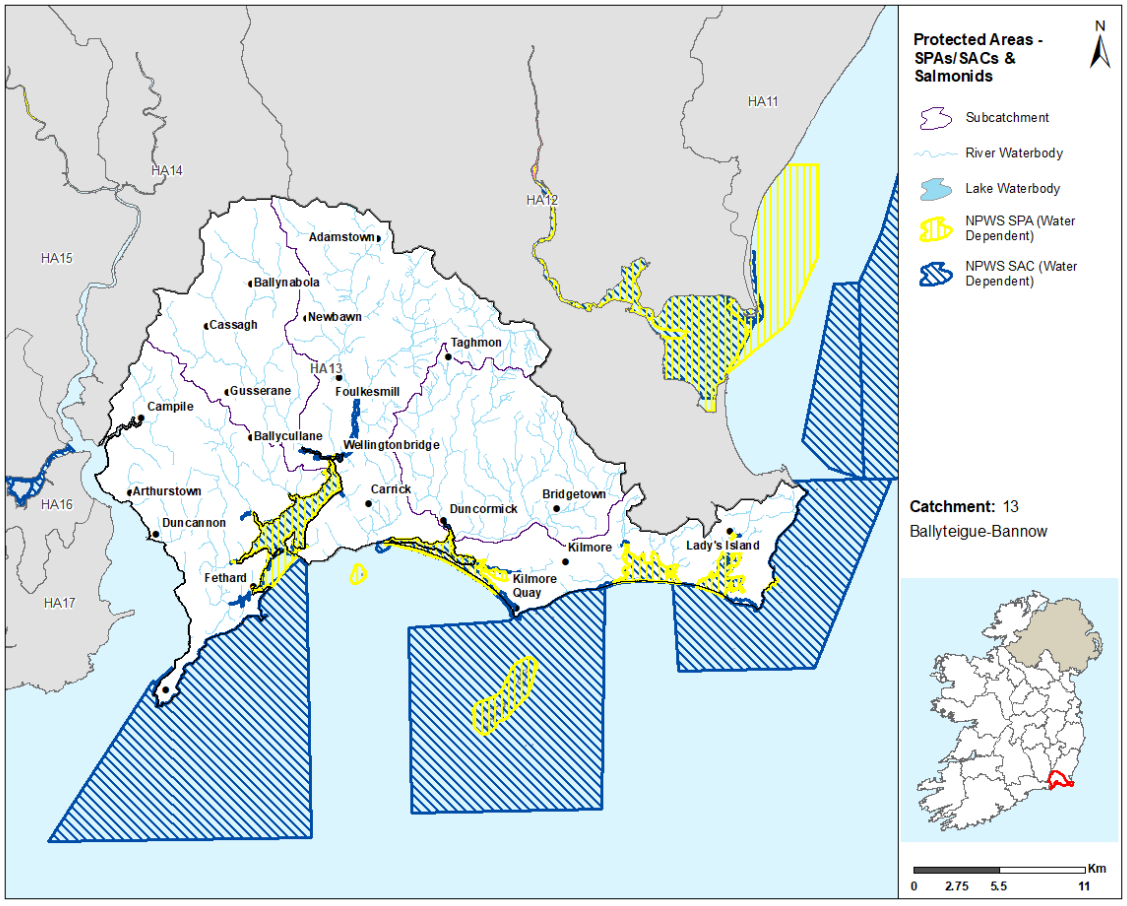


Figure 6: Water Dependent SPAs / SACs

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

2.2.5 Nutrient Sensitive Areas

- There are no Nutrient Sensitive Area in the catchment.

2.3 Heavily Modified Waterbodies

- Based on the 1st and 2nd RBMPs there are currently no designated heavily modified water bodies (HMWB) in the Ballyteigue - Bannow catchment. 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 the Ballyteigue - Bannow 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 48 waterbodies in the Ballyteigue-Bannow Catchment and 21(44%) are *At Risk*, 15 (31%) in *Review* and 12 (25%) are *Not At Risk*.

3.2 Surface Waters

- For the 30 rivers waterbodies, 12 (40%) are *At Risk*, nine (30%) are in *Review* and nine (30%) are *Not At Risk*.

- For the six transitional waterbodies, four (67%) are *At Risk* and two (33%) are in *Review*. Lady's Island Lake, Tacumshin Lake, Corock Estuary & Barrow Suir Nore Estuary are the *At Risk* transitional waterbodies.

- For the four coastal waterbodies, three (25%) are in *At Risk* and one (25%) is *Not At Risk*. Southwestern Irish Sea (HAs 11;12), Bannow Bay & Waterford Harbour are the *At Risk* coastal waterbodies.

- The largest proportion of *At Risk* waterbodies are found in rivers, accounting for 12 (57%) of 21 *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 of *eight At Risk* waterbodies and a decrease of six *Review* waterbodies and two *Not At Risk* waterbodies between Cycle 2 and Cycle 3.

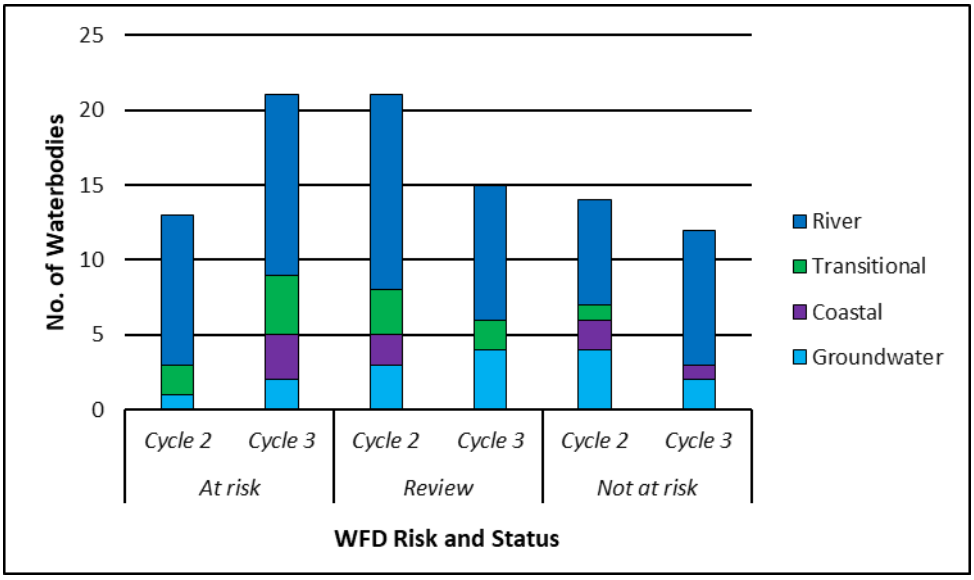


Figure 7: Number of waterbodies in each risk category

- 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.

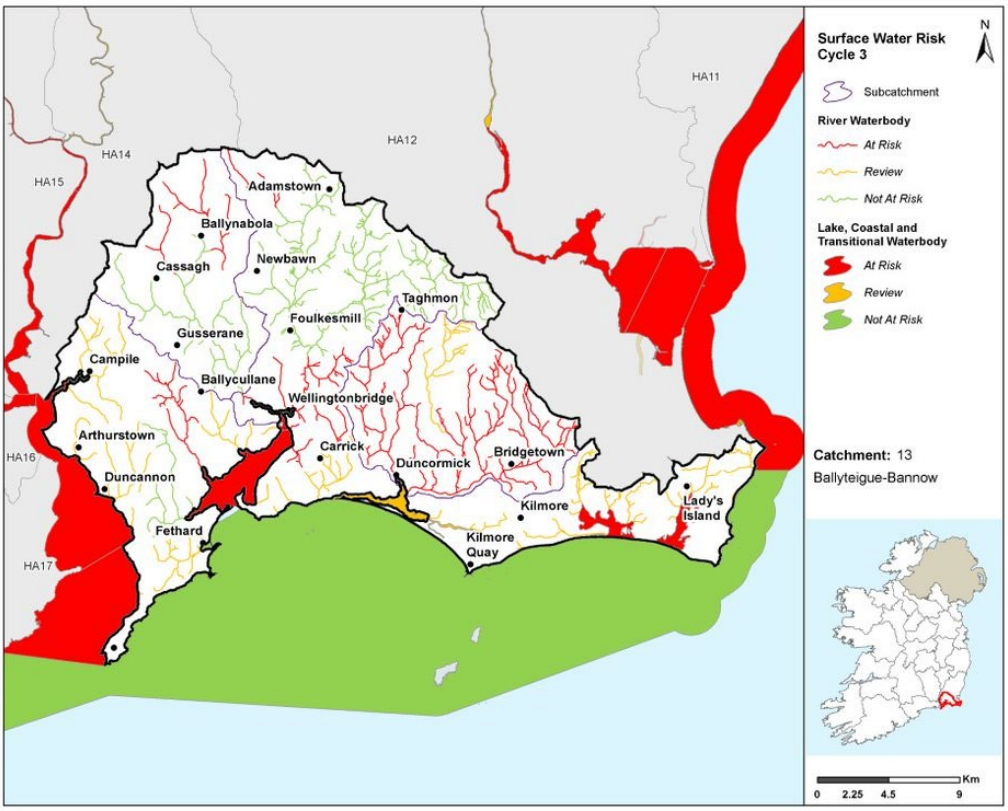


Figure 8: Surface Water Risk Cycle 3

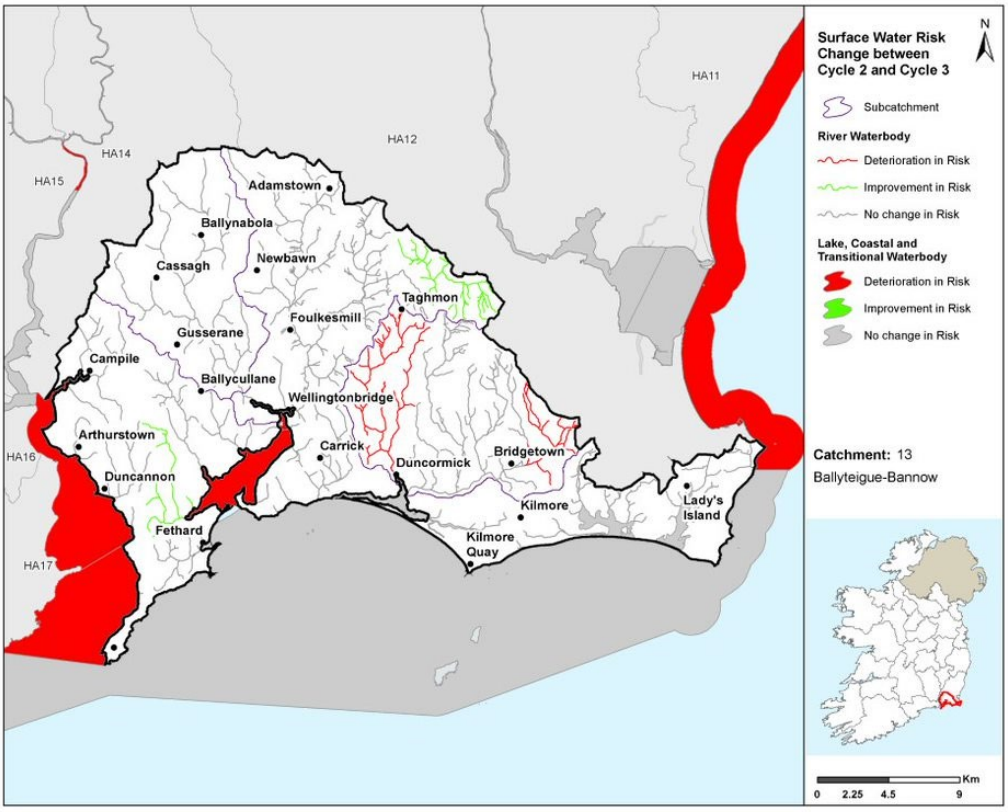


Figure 9: Surface Water Risk Change between Cycle 2 and Cycle 3

3.3 Groundwater

- For the eight groundwater bodies in the catchment, two (25%) are *At Risk*, four (50%) are in *Review* and two (25%) are *Not At Risk*. Ballyglass & Enniscorthy are the *At Risk* groundwater bodies.

- In Cycle 2 there was one groundwater body (Enniscorthy) *At Risk* in this catchment, three 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.

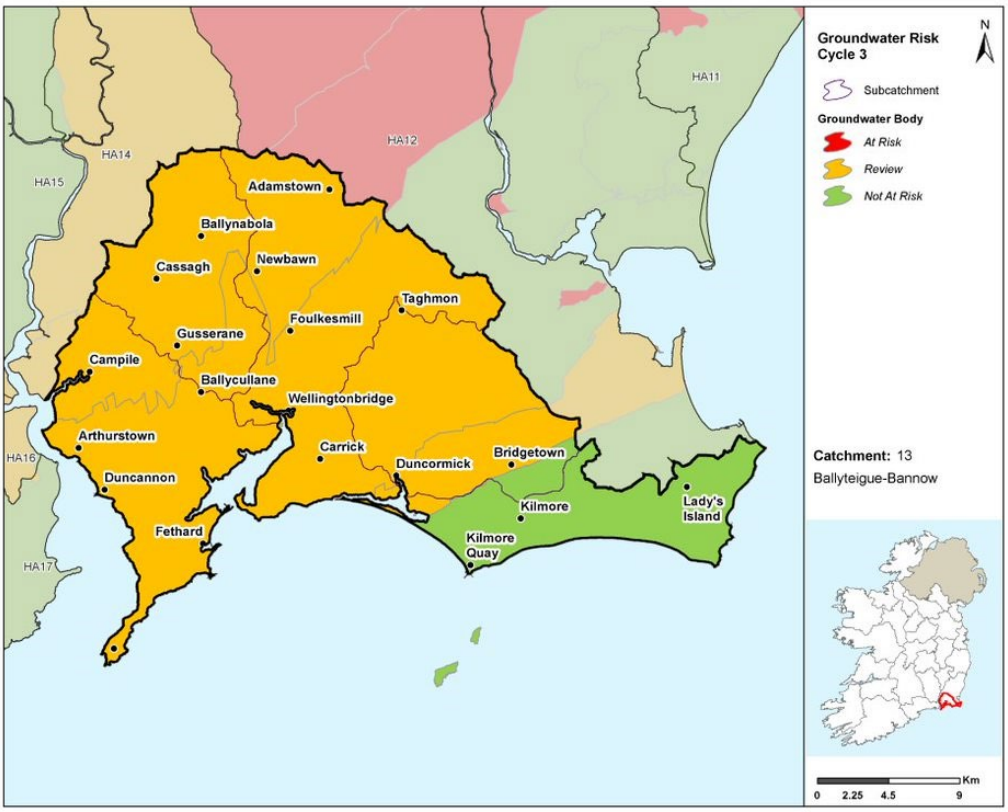


Figure 10: Cycle 3 Groundwater Body Risk

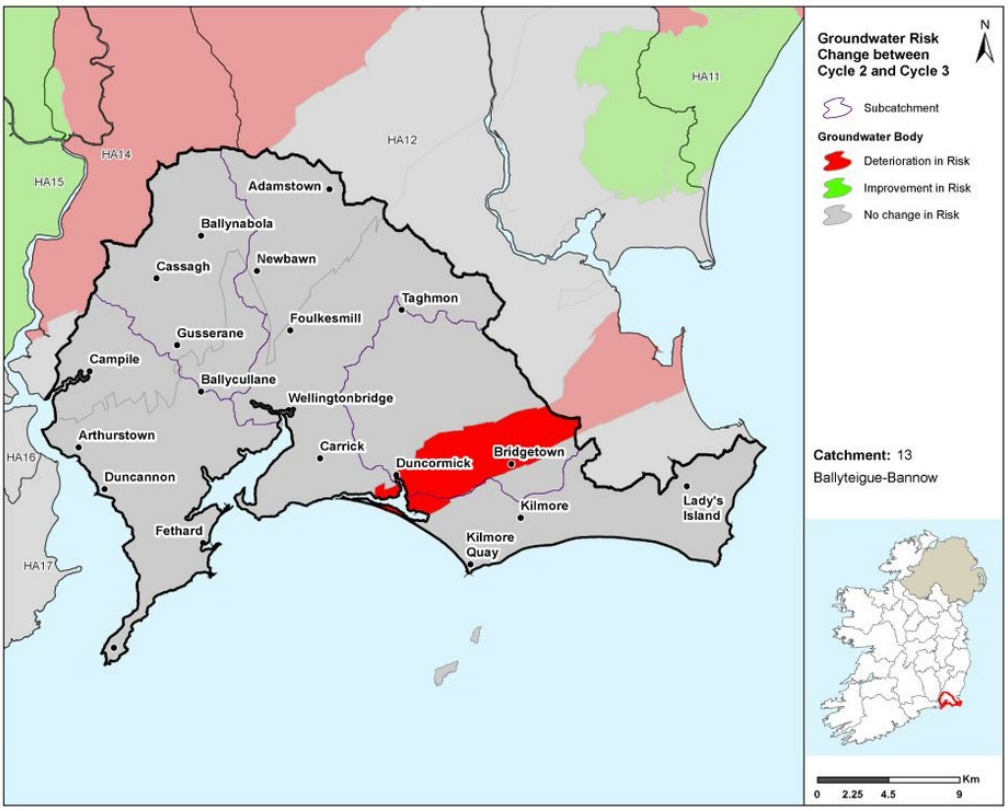


Figure 11: Groundwater Body Risk Change between Cycle 2 & Cycle 3

3.4 Heavily Modified Waterbodies

- 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 no Artificial Waterbodies (AWBs) present in the Ballyteigue – Bannow Catchment.

4 Significant Issues in *At Risk* Waterbodies

4.1 All Waterbodies

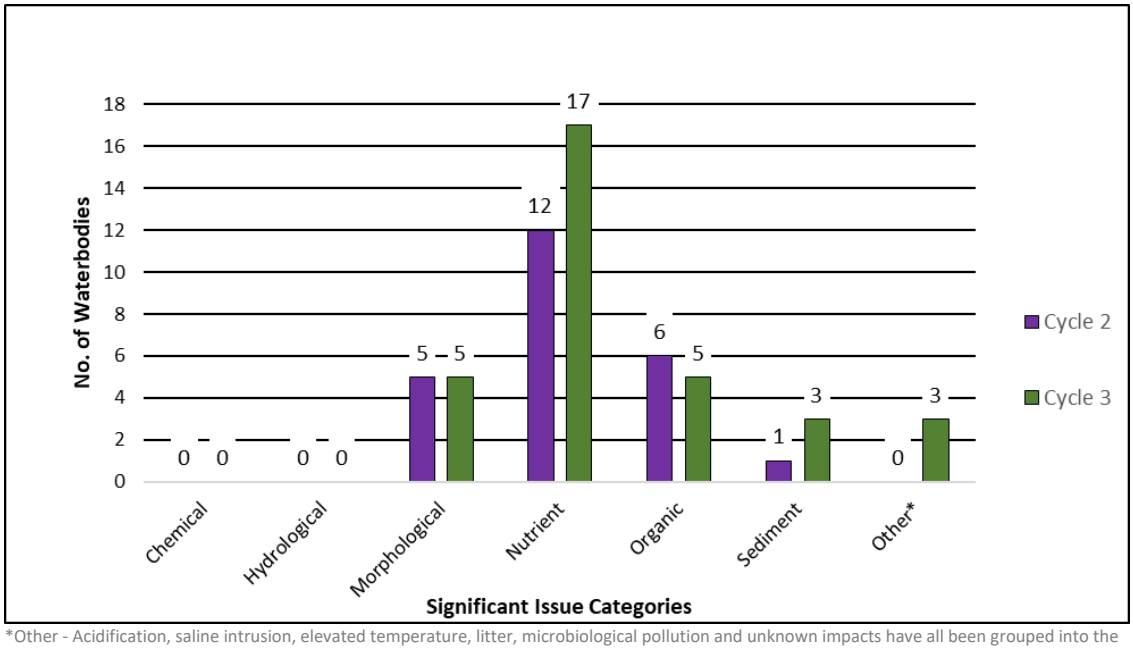
- Excess nutrients remain the most prevalent issue in the Ballyteigue - Bannow catchment (Figure 12) impacting 17 waterbodies in Cycle 3. Organic pollution is impacting five waterbodies, while morphological issues and sediment are impacting five and three waterbodies, respectively.
    - For rivers, the main significant issues are nutrient pollution (11), organic pollution (5), morphological issues (3) and sediment (3).
    - Nutrient pollution is an issue in two *At Risk* transitional waterbodies, with morphological issues also impacting on Lady's Island Lake & Tacumshin Lake transitional waterbodies.

- Nutrient pollution is impacting two (Bannow Bay & Waterford Harbour) of the three *At Risk* coastal waterbodies. In the remaining *At Risk* coastal (Southwestern Irish Sea (HAs 11;12)) waterbody the impact type is unknown.
- Nutrient pollution is impacting both of the *At Risk* groundwater bodies (Ballyglass & Enniscorthy). Both waterbodies are impacted by additional unknown impact type.

- Between Cycle 2 and Cycle 3 the number of waterbodies with nutrients issues have increased by five from 12 to 17. The number of waterbodies impacted by organic pollution has decreased by one from six to five and sediment issues have increased by two, from one to three respectively.

- The numbers of waterbodies with morphological issues remain at five between Cycle 2 and Cycle 3.

- The increase in number of waterbodies impacted by other issues reflects three additional unknown impacts in Ballyglass and Enniscorthy groundwaters and Southwestern Irish Sea (HAs 11;12) coastal waterbody 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

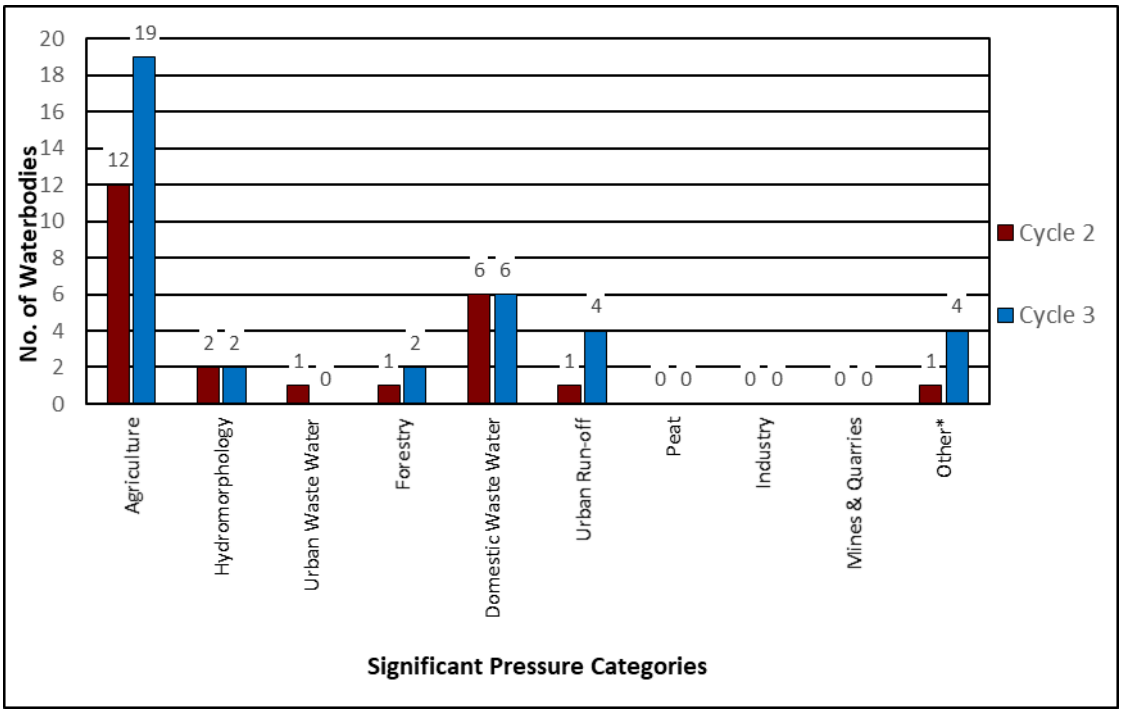
5 Significant pressures in *At Risk* Waterbodies

5.1 All Waterbodies

- Where waterbodies have been classed as *At Risk*, significant pressures have been identified.
- Figure 13 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 domestic waste water, urban run-off, unknown impacts, hydromorphology and forestry.

- When comparing Cycle 2 and Cycle 3 the biggest change is an increase of seven waterbodies where agriculture is a significant pressure from 12 waterbodies in Cycle 2 to 19 waterbodies in Cycle 3. Agriculture is now deemed a pressure in 19 of the 21 *At Risk* waterbodies in the catchment.

- The number of waterbodies impacted by urban run-off pressures also increased significantly from one to five between Cycle 2 and Cycle 3.



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

5.1.1 Pressure Type

5.1.1.1 Agriculture

- Agriculture is a significant pressure in 11 river waterbodies, two coastal waterbodies (Bannow & Waterford Harbour), five transitional waterbodies and one groundwater body (Enniscorthy) in Cycle 3. The issues related to agriculture in this catchment remain predominantly due to phosphorus loss from pastures to surface waters from, for example, direct discharges; or runoff from yards, roadways or other compacted surfaces, or runoff from poorly draining soils. Nitrates and sediment have also been identified in Duncormick_020 and Heathpark Stream_010 river waterbodies.

5.1.1.2 Domestic waste water

- Domestic waste water has been identified as a significant pressure in six river waterbodies. The significant issues arise from inadequate domestic waste water systems, many of which are sited on areas of high pollution impact potential/poorly draining soils, that result in enrichment and potential for microbial/organic contamination. Exceedances of EQS for baseline concentrations of phosphate and ammonia have been noted.

5.1.1.3 Urban Run-off

- Diffuse urban pressures, caused by misconnections, leaking sewers and runoff from paved and unpaved areas, have been identified as a significant pressure in two river waterbodies (Cleristown

Stream_010 & Duncormick_010), one coastal waterbody (Waterford Harbour) and one transitional waterbody (Corock Estuary). Nutrient and organic pollution are the significant issues.

5.1.1.4 Other significant pressures

- *Unknown anthropogenic*
  The significant pressures impacting one river waterbody (Begerin Stream_010), one coastal (Southwestern Irish Sea (HAs 11;12)) and two groundwater bodies (Ballyglass & Enniscorthy) are unknown.

5.1.1.5 Hydromorphology

- Hydromorphology is a significant pressure in two transitional waterbodies (Lady's Island Lake & Tacumshin Lake). Dams/ barriers/ locks/ weirs is the hydromorphological pressure subcategory attributed to both waterbodies.

5.1.1.6 Forestry

- The number of waterbodies impacted by forestry pressures has increased from one to two waterbodies (Heathpark Stream_010 & Tintern Abbey Stream_010. between Cycle 2 and Cycle 3. Forestry was deemed a significant pressure in Heathpark Stream_010 in Cycle 2. The significant issues are arising primarily as a result of clearfelling and associated operations, which result in increased sediment in the case of Heathpark Stream_010 and increased nutrient loads and altered habitats due to morphological changes in Tintern Abbey Stream_010.

Figure 14 - Figure 16 illustrates the locations of waterbodies for the three most common pressures in order of prevalence (agriculture, domestic waste water and urban run-off) within the catchment in Cycle 3.

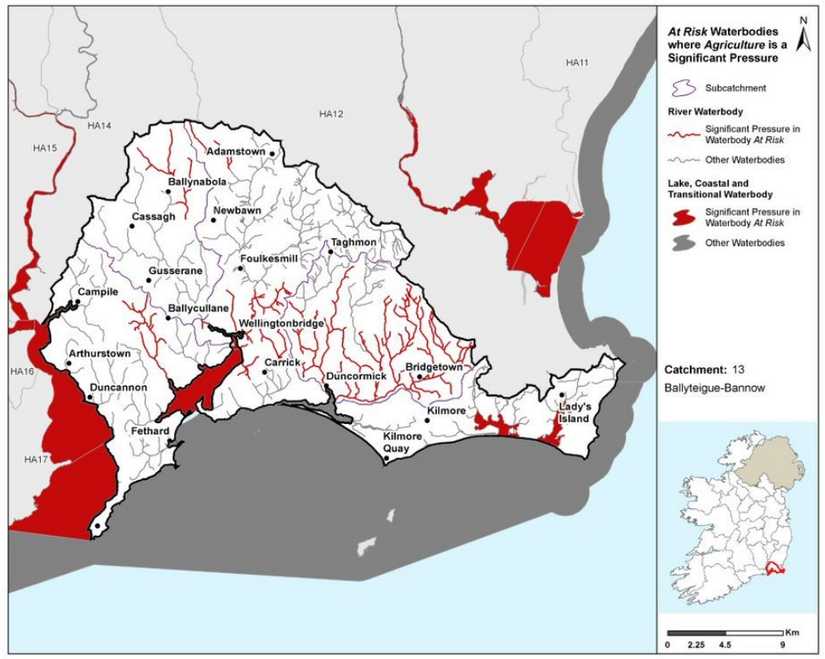


Figure 14: Locations of Waterbodies where Agriculture is a Significant Pressure

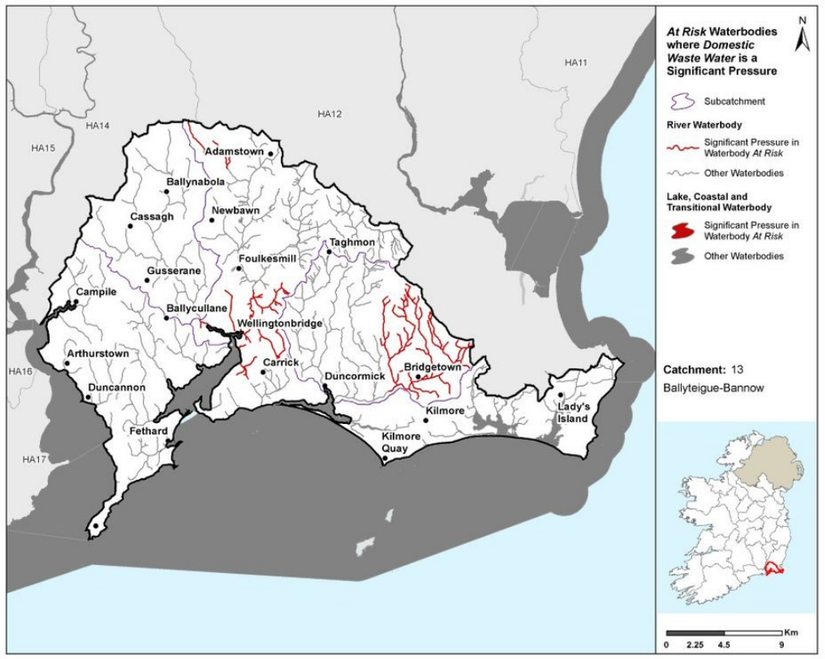


Figure 15: Locations of Waterbodies where Domestic Waste Water is a Significant Pressure

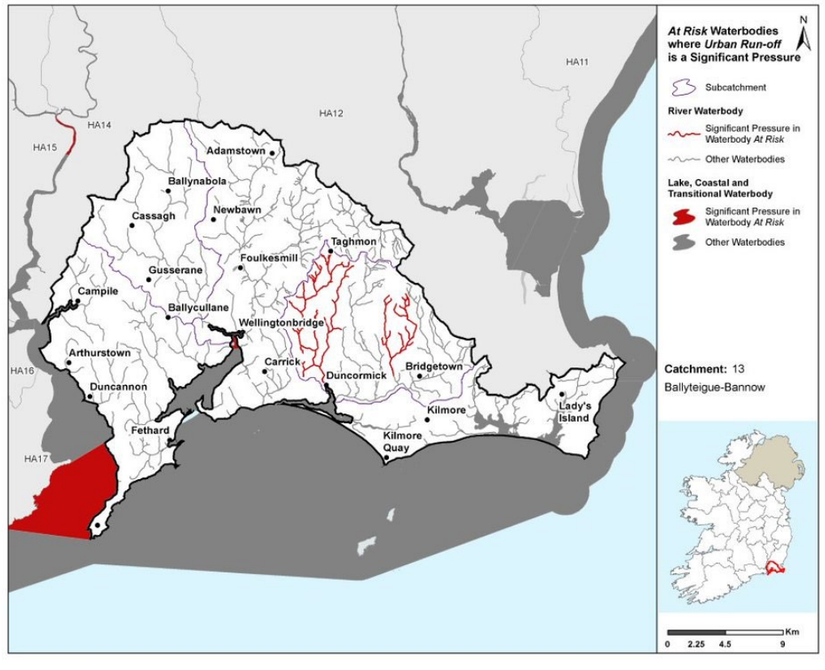


Figure 16: Locations of Waterbodies where Urban Run-off is a Significant Pressure

6 Source Load Apportionment Modelling (SLAM)

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

- 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 66% and 27% of the nitrogen load respectively while land in pasture, discharges from urban waste water and arable land contribute 33%, 30% and 19% of the phosphorus loadings for the catchment respectively (Figure 17).

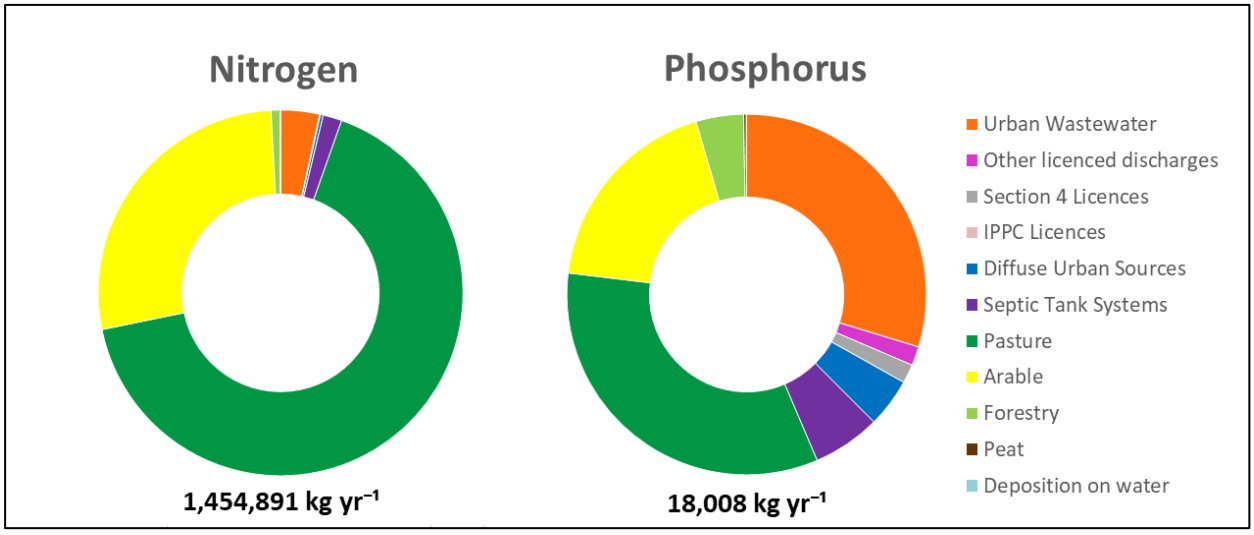


Figure 17: Estimated Proportions of N & P from Each Sector in the Ballyteigue - Bannow Catchment

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 Ballyteigue - Bannow Catchment.

7.2 Phosphorus / Sediment Load Reduction

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

Figure 18 highlights areas where agricultural measures for nitrogen, sediment and phosphorus should be targeted. Waterbodies with orange fill are areas where nitrogen measures should be targeted, 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 1.

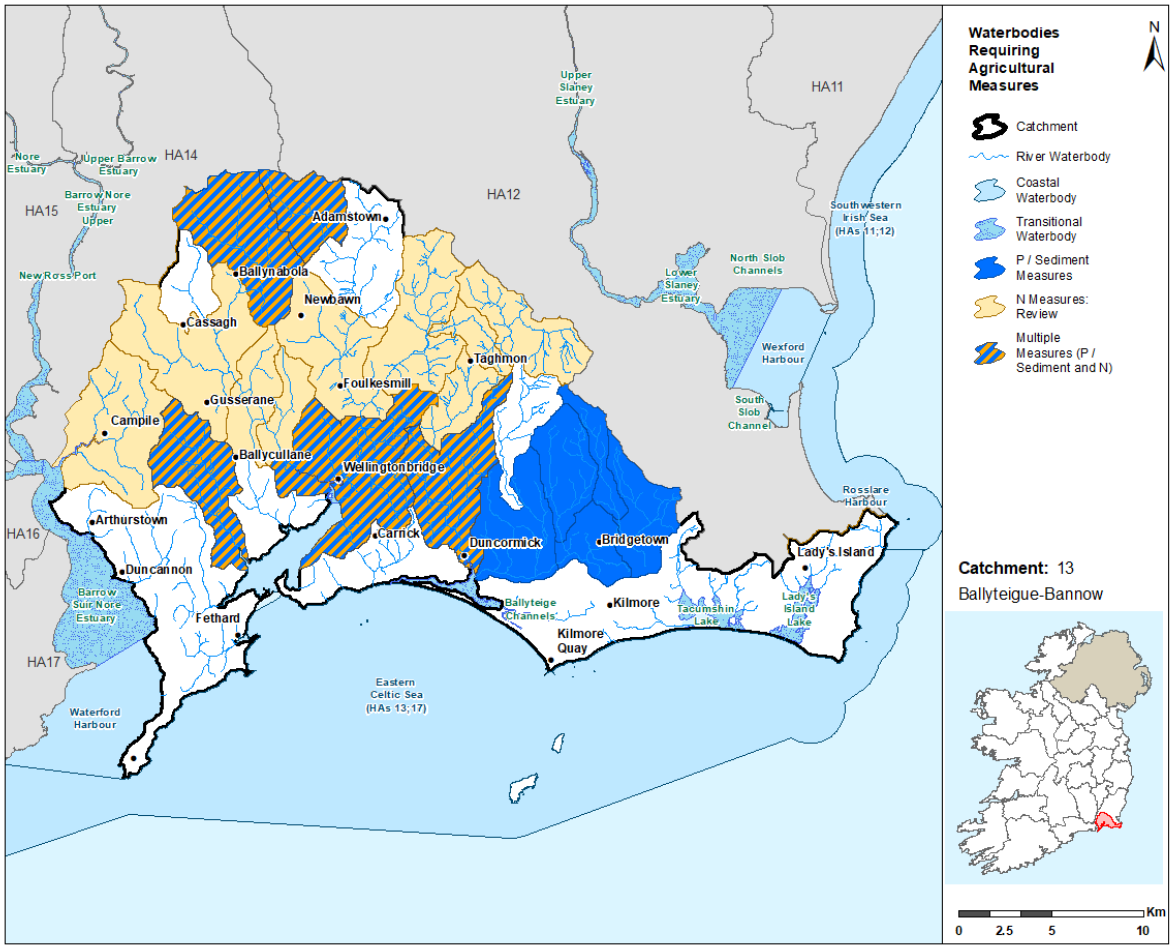


Figure 18: Waterbodies where Agricultural Measures should be Targeted

8 2nd Cycle Areas for Action

8.1 Area for Action Overview

- There were three Areas for Action, comprising of 18 waterbodies, selected for further characterisation and action in the catchment for the 2nd Cycle River Basin Management Plan. The Areas for Action in the catchment are listed in Table 4 and shown in Figure 19. LAWPRO, in conjunction with local authorities and stakeholders from the South-eastern Regional Operational Committee, have been working in these areas since 2018.

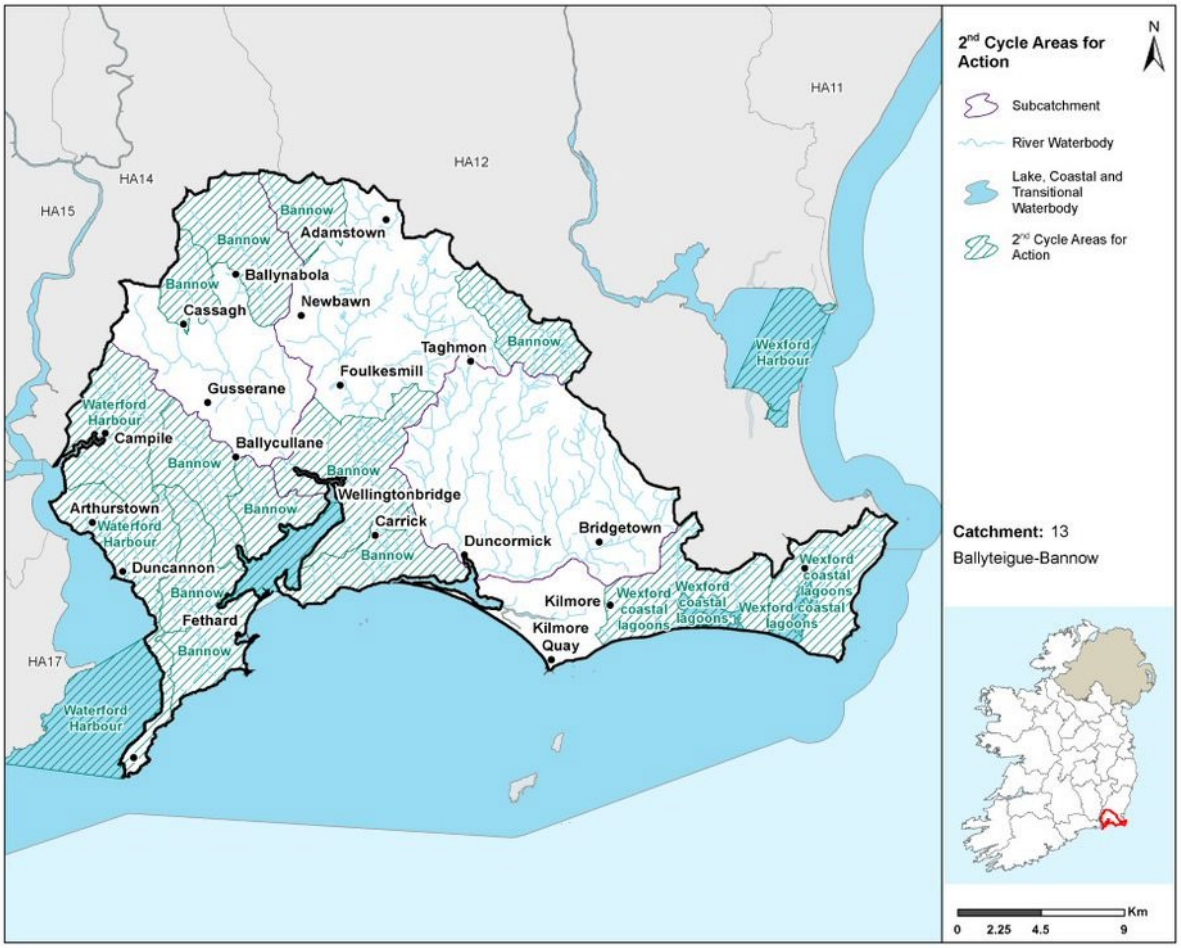


Figure 19: 2nd Cycle Areas for Action Locations

Table 4: 2nd Cycle Areas for Action

2nd Cycle Area for Action	Number of waterbodies	Sub-catchment	Local Authority	Reason for Selection
Wexford coastal lagoons	4	13_4	Wexford	• Bad Status (Lady's island lake). • Building on ongoing research and work with Wexford CoCo. • Lady's island lake is an important heritage site and is the start of the Norman way on the ancient east trail. • Tacumshan Lake recently transferred to state ownership (NPWS). • Nature reserves, SAC, SPA, RAMSAR.
Bannow	11	13_5 13_1 13_3	Wexford	• Bannow bay is failing to meet its Protected Area objective for shellfish. • Three deteriorated water bodies. • Building on ongoing work by Wexford County Council. • Active community groups. • Strong coast watch group. • Potential to work with local CLAM (coordinated local aquaculture

2nd Cycle Area for Action	Number of waterbodies	Sub-catchment	Local Authority	Reason for Selection
				management) scheme. • Most important sea trout fishery in the south of the county. • Important sea angling. • Important wild fowl in the bay. Preserving zoster grass, which geese feed on, and preventing it from being swamped by algae. • Two potential 'quick wins'.
Waterford Harbour	3	13_3	Wexford	• Waterford Harbour Shellfish area has recently downgraded. Locals have commented on die off of the local mussel population. • Building on planned Irish Water works at Duncannon, Arthurstown, Ballyhack). • Building on completed and ongoing work by Wexford County Council. • Discharges into designated bathing area (Duncannon). • Important habitats, including the second largest Honeycomb coral habitat in Europe and wild shellfish fisheries.

8.2 Status Change in 2nd Cycle Areas for Action

- For Cycle 3, of the 18 waterbodies in the 2nd Cycle Areas for Action, there are two waterbodies (Battlestown Stream_010 & Mulmontry_010) at Good Status, four waterbodies (BEGERIN STREAM_010, Bannow Bay, Waterford Harbour, Tacumshin Lake) at Moderate Status, three waterbodies (Corock_010, Heathpark Stream_010 & Tintern Abbey Stream_010) at Poor Status, one waterbody (Lady's Island Lake) at Bad Status and eight waterbodies where status has not been assigned.

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

- Of the nine waterbodies within the 2nd Cycle Areas for Action which had status assigned (in both Cycle 2 and Cycle 3), five experienced no change in status between Cycle 2 and Cycle 3, one waterbody experienced an improvement and three were subject to deterioration in status (Figure 20). The waterbody improvement (Battlestown Stream_010) was within the Bannow Area for Action. Two of the three declines (Corock_010 & Heathpark Stream_010) were also

[6] 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.

in the Bannow Area for Action. The remaining declining waterbody (Waterford Harbour) was within the Waterford Harbour Area for Action.

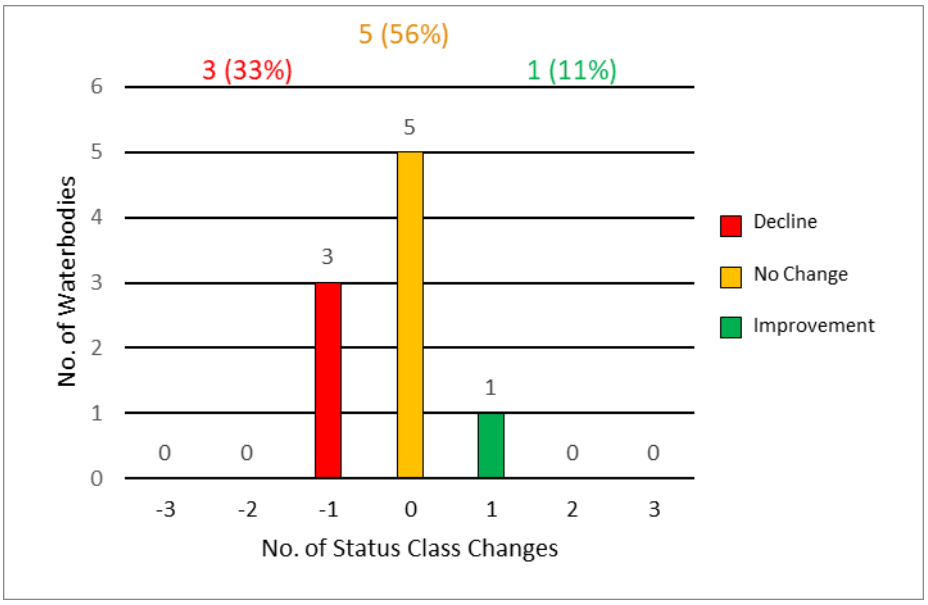


Figure 20: 2nd Cycle Area for Action Waterbody Status Class Changes between Cycle 2 and Cycle 3

8.3 Waterbody Risk in 2nd Cycle Areas for Action

- For the 18 waterbodies in the 2nd Cycle Areas for Action, nine (50%) of these are *At Risk*, seven (39%) in *Review* and two (11%) are *Not At Risk*.
- For the 14 river waterbodies in 2nd Cycle Areas for Action, five (36%) are *At Risk*, seven (50%) are in *Review* and two (14%) are *Not At Risk*.
- For the two transitional waterbodies in 2nd Cycle Areas for Action, both (100%) are *At Risk*.
- For the two coastal waterbodies in 2nd Cycle Areas for Action, both (100%) are *At Risk*.
- The largest proportion of *At Risk* waterbodies are found in river waterbodies, accounting for five (56%) of nine *At Risk* waterbodies.
- Overall there is an increase from eight to nine *At Risk* waterbodies in 2nd Cycle Areas for Action between Cycle 2 and Cycle 3. The overall increase in *At Risk* waterbodies is attributable to two waterbody deteriorations in risk (Bannow Bay and Waterford Harbour) from *Review* to *At Risk* and one improvement (Battlestown Stream_010) from *At Risk* to *Not At Risk*.

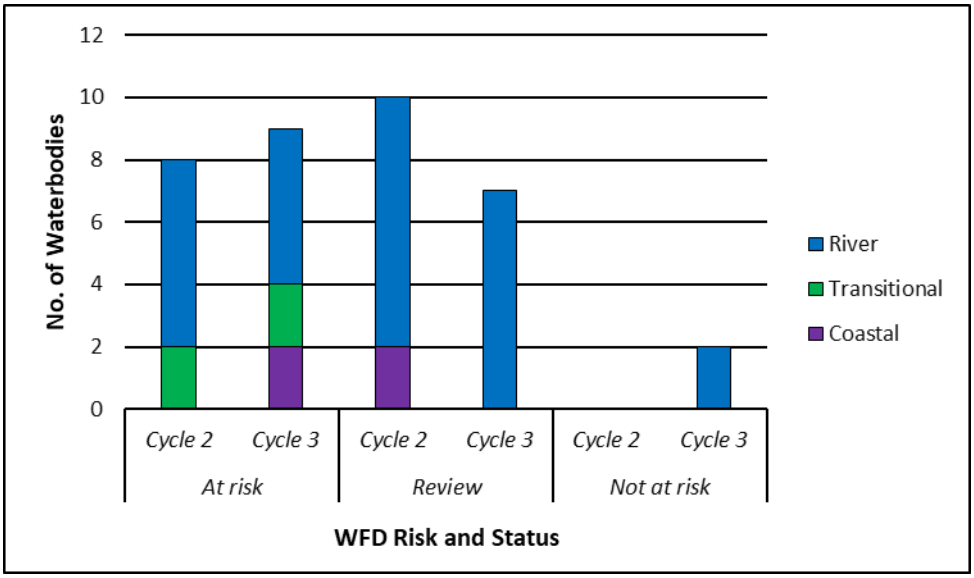
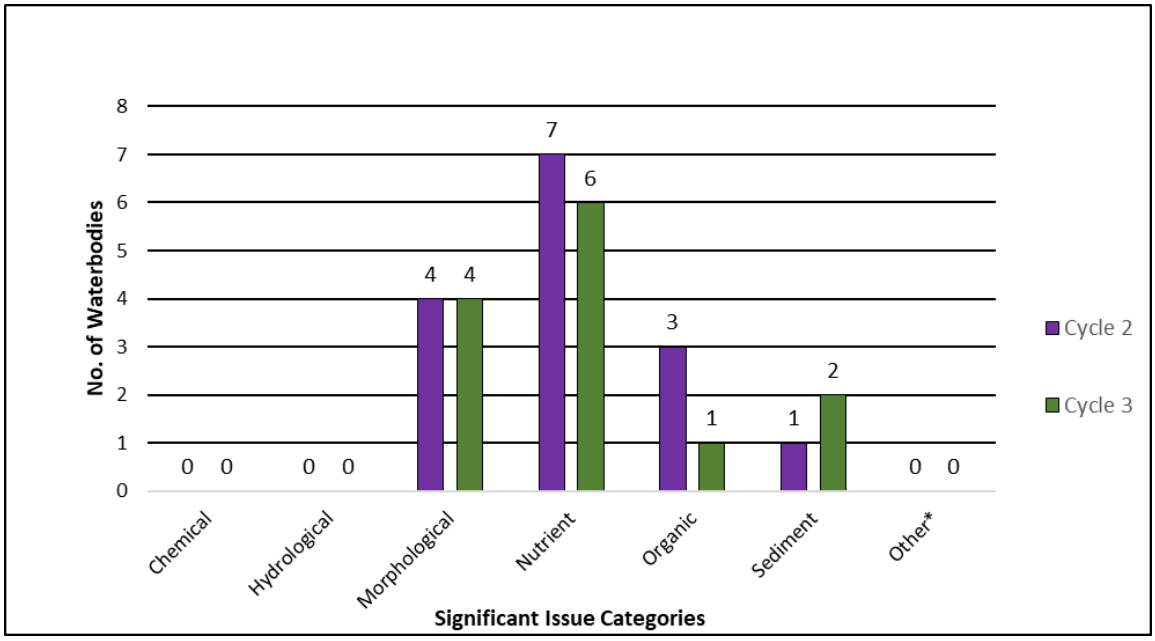


Figure 21: Number of waterbodies in each risk category in 2nd Cycle Areas for Action

8.4 Significant Issues in 2nd Cycle Areas for Action

- Based on the EPA assessment for Cycle 3, the significant issue in the 2nd Cycle Areas for Action is nutrient pollution, impacting six waterbodies (Figure 22). This is followed by morphological issues which are impacting four waterbodies then sediment issues and organic impacts, impacting three and one waterbodies respectively.

- The number of 2nd Cycle Areas for Action waterbodies associated with sediment significant issues have increased by one (from one to two). The number of waterbodies impacted by morphological issues remain at four, between Cycle 2 and Cycle 3. Nutrient and organic issues have reduced from seven to six and from three to one respectively.



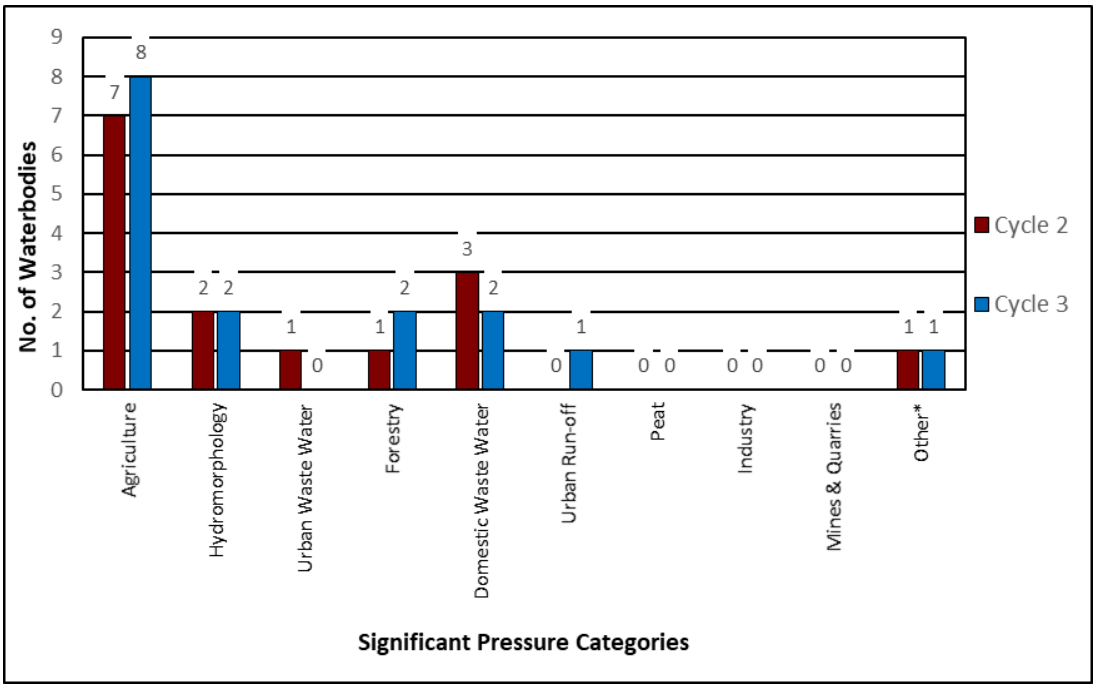
*Other - Acidification, saline intrusion, elevated temperature, litter, microbiological pollution and unknown impacts have all been grouped into the "Other" issues category for the purpose of this report

Figure 22: 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 – eight waterbodies are impacted compared to sevenimpacted in Cycle 2.
  - Hydromorphology - two waterbodies (Lady's Island Lake & Tacumshin Lake) remain impacted since Cycle 2.
  - Forestry - two waterbodies (Heathpark Stream_010 & Tintern Abbey Stream_010) are impacted compared to one (Tintern Abbey Stream_010) impacted in Cycle 2.
  - Domestic Waste Water – two waterbodies (Corock_010 & Corock_040) impacted compared to three in Cycle 2.
  - Urban Waste Water – one (Corock_040) waterbody was impacted by Ellingtonbridge and environs agglomeration in Cycle 2 but is no longer deemed to be impacting significantly.
  - Urban run-off - one waterbody (Waterford Harbour) now deemed to be impacted in Cycle 3 which was not impacted in Cycle 2.
  - Anthropogenic Pressures (Unknown) – the number of waterbodies impacted by unknown pressures remains at one (Begerin Stream_010) since 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 the number of waterbodies affected by agriculture, forestry and urban run-off, each increased by one. There was no change in the number of waterbodies affected by hydromorphological pressures, urban waste water or unknown impacts. The number of waterbodies impacted by domestic waste water which decreased by one was the only reduction noted.



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

Figure 23: Significant Pressures in 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 four Areas for Action, comprising of 25 waterbodies, recommended for further characterisation and action in the catchment for the 3rd Cycle River Basin Management Plan. 21 of the 48 waterbodies in the 3rd Cycle Recommended Areas for Action are *At Risk*, 15 are in *Review* and 12 are *Not At Risk.* The four Recommended Areas for Action consist of three Areas for Restoration and one Catchment Project. LAWPRO are the proposed lead organisation in three Recommended Areas for Action (Bannow, Waterford Harbour & Wexford Coastal Lagoons) and EPA CLEAR (Wexford Coastal Lagoons Project) are the proposed lead on the remaining Recommended Area for Action. The Recommended Areas for Action in the catchment are listed in Table 5 and shown in Figure 24. The reason for selecting each waterbody in a Recommended Area for Action is provided in Appendix 2.

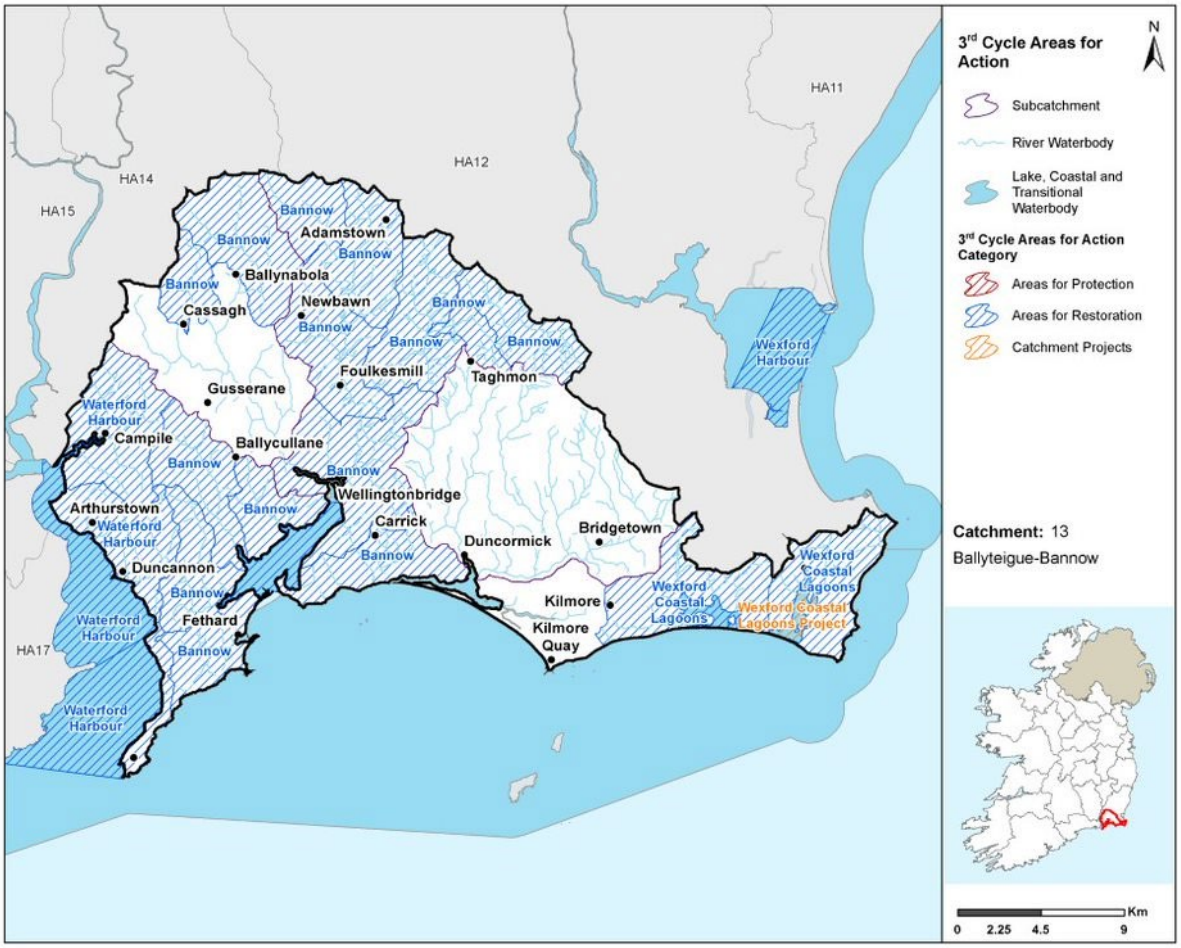


Figure 24: 2nd & 3rd Cycle Recommended Areas for Action Locations

Table 5: 3rd Cycle Recommended Areas for Action Breakdown

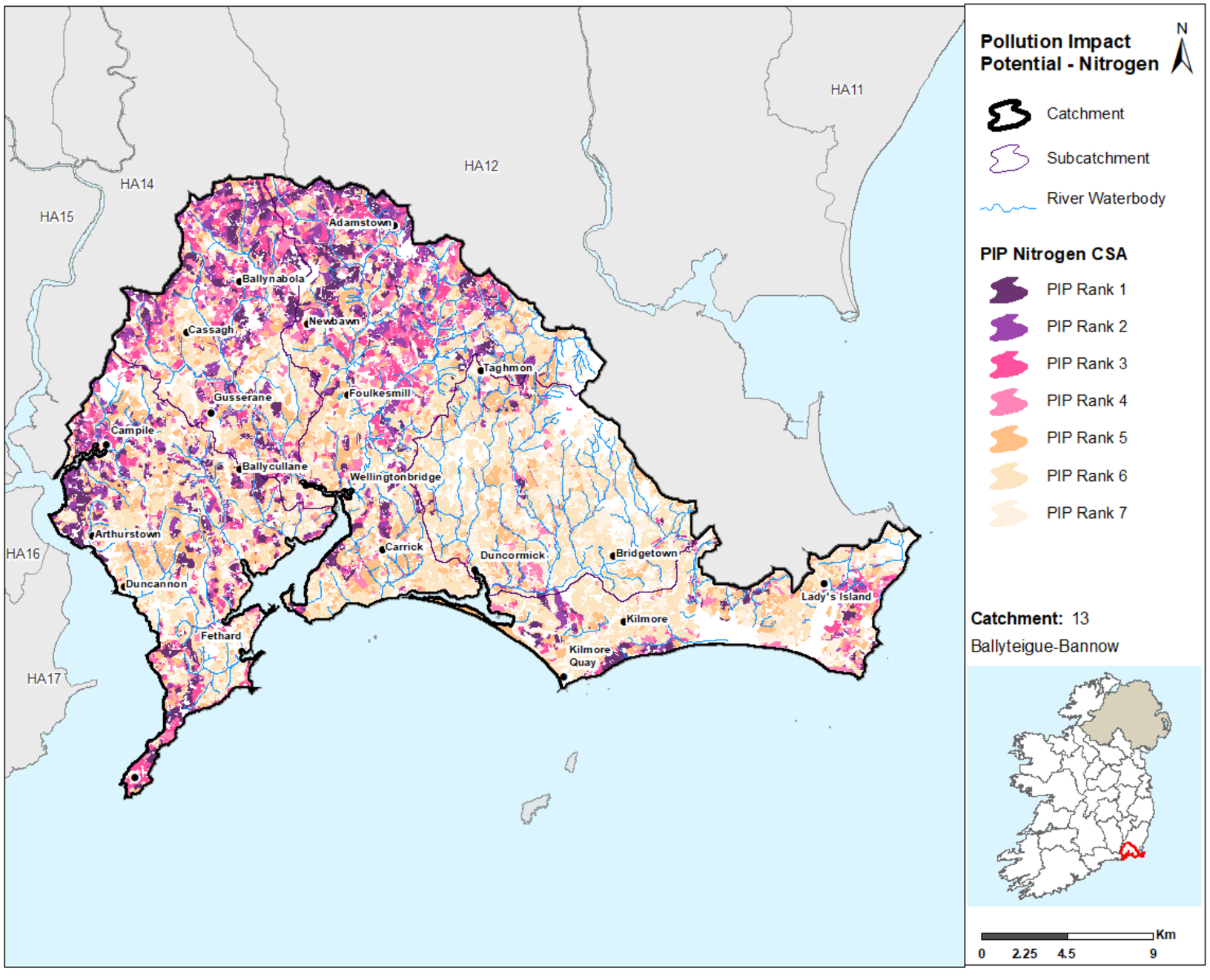
3rd Cycle Recommended Areas for Action	Number of Waterbodies	Recommended Areas for Action Category	Recommended Areas for Action Sub-category	Lead Organisation
Bannow	15	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Waterford Harbour	4	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Wexford Coastal Lagoons	3	Restoration	Prioritised Areas for Action LAWPRO	LAWPRO
Wexford Coastal Lagoons Project	1	Catchment Projects	Public Body Research	EPA CLEAR

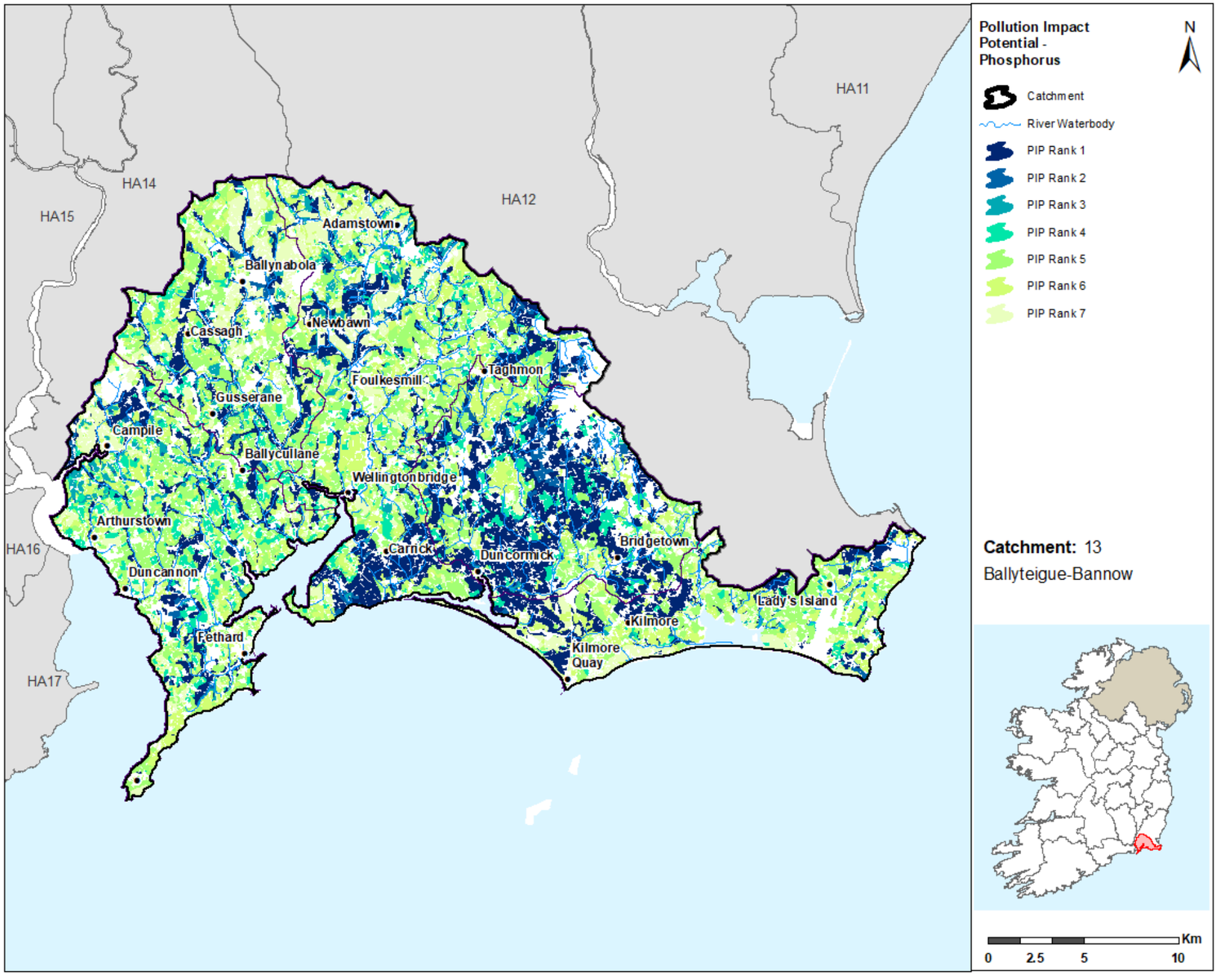
10 Catchment Summary

- Of the 30 river waterbodies, 12 are *At Risk* of not meeting their WFD objectives.
- Four out of six transitional waterbodies are *At Risk* of not meeting their WFD objectives.
- Three out of four coastal waterbodies are *At Risk* of not meeting their WFD objectives.

- Two out of eight groundwater bodies are *At Risk* of not meeting their WFD objectives.
- There has been an overall deterioration across the catchment with 21 waterbodies *At Risk* in Cycle 3 compared to 13 waterbodies *At Risk* in Cycle 2.
- The main significant issues are from nutrients pollution, followed by organic pollution, morphological impacts and sediment.
- The main significant pressures are agriculture, domestic waste water, urban run-off and urban waste water.
- The main impacts and pressures driving the change between Cycle 2 and Cycle 3 are increases in waterbodies impacted by nutrient pollution and organic pollution to a lesser extent. These issues arise mainly from agricultural pressures followed by urban run-off pressures.
- In the 2nd Cycle Areas for Action, eight waterbodies were *At Risk* in Cycle 2 and nine waterbodies are *At Risk* in Cycle 3.
- There are four 3rd Cycle Recommended Areas for Action for Cycle 3. They comprise of 48 waterbodies with 21 waterbodies *At Risk*, 15 in *Review* and 12 *Not At Risk*.

Appendix 1
Pollution Impact Potential Mapping




HA11
HA14
HA15
HA12
HA16
HA17
Adamstown
Ballynabola
Newbawn
Cassagh
Taghmon
Foulkesmill
Gusserane
Campile
Ballycullane
Wellingtonbridge
Arthurstown
Carrick
Duncormick
Bridgetown
Duncannon
Lady's Island
Kilmore
Fethard
Kilmore Quay
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: 13
Ballyteigue-Bannow
Km
0
2.5
5
10

Appendix 2
Summary information on all waterbodies in the Ballyteigue - Bannow 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)
13_2	IE_SE_13B010080	BRIDGETOWN (WEXFORD)_010	River	At risk	At risk	Moderate	Moderate	No	Ag, DWW		
13_2	IE_SE_13B010090	BRIDGETOWN (WEXFORD)_020	River	Review	At risk	Unassigned	Unassigned	No	Ag, DWW		
13_2	IE_SE_13B010200	BRIDGETOWN (WEXFORD)_030	River	At risk	At risk	Unassigned	Unassigned	No	Ag, DWW		
13_2	IE_SE_13B010400	BRIDGETOWN (WEXFORD)_040	River	At risk	At risk	Unassigned	Unassigned	No	Ag		
13_3	IE_SE_13B040500	BATTLESTOWN STREAM_010	River	At risk	Not at risk	Moderate	Good	No		Bannow	Existing PAA Wx: Issues with poor percolation & DWWTS fails here
13_1	IE_SE_13B050050	BEGERIN STREAM_010	River	At risk	At risk	Moderate	Moderate	No	Other	Bannow	LAWPRO: Existing PAA
13_4	IE_SE_13B330460	BALLYTEIGE_BURROW_010	River	Review	Review	Unassigned	Unassigned	No			
13_5	IE_SE_13B350700	BALLYMADDER_010	River	Review	Review	Unassigned	Unassigned	No		Bannow	LAWPRO: Existing PAA NPWS: Bannow Bay SAC Estuaries
13_3	IE_SE_13B390600	BALLYCULLANE (Wexford)_010	River	Review	Review	Unassigned	Unassigned	No		Bannow	LAWPRO: Existing PAA NPWS: Bannow Bay SAC
13_5	IE_SE_13C010020	COROCK_010	River	At risk	At risk	Moderate	Poor	No	Ag, DWW	Bannow	LAWPRO: Existing PAA EPA: Headwater
13_5	IE_SE_13C010080	COROCK_020	River	Not at risk	Not at risk	Good	Good	No		Bannow	LAWPRO: Subcatchment of existing PAA Bannow bay: shellfish water concerns
13_5	IE_SE_13C010150	COROCK_030	River	Not at risk	Not at risk	Good	Good	No		Bannow	LAWPRO: Subcatchment of existing PAA Bannow bay: shellfish water concerns NPWS: Bannow Bay SAC Estuaries
13_5	IE_SE_13C010300	COROCK_040	River	At risk	At risk	Unassigned	Unassigned	No	Ag, DWW	Bannow	LAWPRO Existing PAA NPWS: Bannow Bay SAC Estuaries
13_2	IE_SE_13C040400	CLERISTOWN STREAM_010	River	At risk	At risk	Poor	Moderate	No	Ag, DWW, UR		
13_3	IE_SE_13C220990	CARROWANREE_010	River	Review	Review	Unassigned	Unassigned	No		Waterford Harbour	LAWPRO Existing PAA
13_3	IE_SE_13C230990	CURRAGHMORE_010	River	Review	Review	Unassigned	Unassigned	No		Waterford Harbour	LAWPRO: Existing PAA also an EIP, EIP due to finish in 2021 Wx: need focus here to ensure WWTP pressures are addressed
13_2	IE_SE_13D010260	DUNCORMICK_010	River	Review	At risk	Poor	Poor	No	Ag, UR		
13_2	IE_SE_13D010350	DUNCORMICK_020	River	Review	At risk	Moderate	Moderate	No	Ag		
13_4	IE_SE_13G050890	GROGAN_BURROW_010	River	Review	Review	Unassigned	Unassigned	No		Wexford Coastal Lagoons	LAWPRO: Existing PAA NPWS: Lady's Island Lake SAC

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)
13_3	IE_SE_13G060990	GRAIGUE_GREAT_010	River	Review	Review	Unassigned	Unassigned	No		Bannow	LAWPRO: Existing PAA NPWS: Bannow Bay SAC Wx: Issues with poor percolation & DWWTS fails here
13_1	IE_SE_13H010020	HEATHPARK STREAM_010	River	At risk	At risk	Moderate	Poor	No	Ag, For	Bannow	LAWPRO: Existing PAA Wx: DWWTS NIP planned here
13_4	IE_SE_13K140950	KISHA_010	River	Review	Review	Unassigned	Unassigned	No		Wexford Coastal Lagoons	LAWPRO: Existing PAA NPWS: Lady's Island Lake SAC
13_2	IE_SE_13L110540	LONGBRIDGE_010	River	Review	Review	Unassigned	Unassigned	No			
13_5	IE_SE_13M010200	MULMONTRY_010	River	Review	Not at risk	Good	Good	No		Bannow	LAWPRO Existing PAA
13_5	IE_SE_13M010400	MULMONTRY_020	River	Not at risk	Not at risk	Good	Good	No		Bannow	LAWPRO: Subcatchment of existing PAA Bannow bay: shellfish water concerns
13_5	IE_SE_13M010700	MULMONTRY_030	River	Not at risk	Not at risk	Good	Good	No		Bannow	LAWPRO: Subcatchment of existing PAA Bannow bay: shellfish water concerns
13_1	IE_SE_13O010100	OWENDUFF (WEXFORD)_010	River	Not at risk	Not at risk	Good	Good	No			
13_1	IE_SE_13O010180	OWENDUFF (WEXFORD)_020	River	Not at risk	Not at risk	Good	Good	No			
13_1	IE_SE_13O010240	OWENDUFF (WEXFORD)_030	River	Not at risk	Not at risk	Good	Good	No			
13_3	IE_SE_13T010900	TINTERN ABBEY STREAM_010	River	At risk	At risk	Poor	Poor	No	Ag, For	Bannow	LAWPRO: Existing PAA NPWS: Bannow Bay SAC
10_9, 11_1, 11_2, 11_3, 12_15, 12_5, 13_4	IE_SE_010_0000	Southwestern Irish Sea (HAs 11;12)	Coastal	Not at risk	At risk	Good	Moderate	No	Other		
13_3, 13_4, 13_5, 17_1, 17_2, 17_3, 17_4, 17_5, 17_6	IE_SE_050_0000	Eastern Celtic Sea (HAs 13;17)	Coastal	Not at risk	Not at risk	Unassigned	Unassigned	No			
13_3, 13_5	IE_SE_090_0000	Bannow Bay	Coastal	Review	At risk	Unassigned	Moderate	No	Ag	Bannow	LAWPRO: Existing PAA BIM: Shellfish PA, WB does not reflect shellfish production area, Ecoli spikes observed in oyster production area, phytoplankton levels v high summer, Risk to production from norovirus. CLAMS grouping NPWS: Bannow Bay SAC Estuaries
13_3, 17_2	IE_SE_100_0000	Waterford Harbour	Coastal	Review	At risk	Good	Moderate	No	Ag, UR	Waterford Harbour	LAWPRO: Existing PAA TraC
13_4	IE_SE_060_0100	Lady's Island Lake	Transitional	At risk	At risk	Bad	Bad	No	Ag, Hymo	Wexford Coastal Lagoons Project	LAWPRO: Existing PAA & Research Project (CLEAR) NPWS: Lady's Island Lake SAC TraC
13_4	IE_SE_070_0100	Tacumshin Lake	Transitional	At risk	At risk	Moderate	Moderate	No	Ag, Hymo	Wexford Coastal Lagoons	LAWPRO: Existing PAA (CLEAR) NPWS: Tacumshin Lake SAC

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)
13_2, 13_4, 13_5	IE_SE_080_0100	Bridgetown Estuary	Transitional	Review	Review	Unassigned	Unassigned	No			
13_2, 13_4	IE_SE_080_0200	Ballyteige Channels	Transitional	Review	Review	Unassigned	Bad	No			
13_3, 13_5	IE_SE_090_0100	Corock Estuary	Transitional	Review	At risk	Unassigned	Moderate	No	Ag, UR		
13_3, 14_19, 16_19, 17_2	IE_SE_100_0100	Barrow Suir Nore Estuary	Transitional	Not at risk	At risk	Good	Moderate	No	Ag	Waterford Harbour	Waterford CC: Multiple pressures, Major high profile local interest and complaints of mass die off of mussels, Backing of EPA licensing section Wexford CC proposed for prioritisation IFI: Research IFI Index catchment BIM: Shellfish PA, Norovirus impacts, concern re sodium hypochlorite use (point source), important inshore fisheries
12_14, 12_2, 13_1, 13_3, 13_5, 14_19	IE_SE_G_001	Adamstown	Groundwater	Review	Review	Good	Good	No			
09_11, 09_8, 10_10, 10_2, 10_3, 11_2, 11_3, 12_1, 12_10, 12_11, 12_12, 12_13, 12_14, 12_16, 12_3, 12_6, 12_7, 12_8, 12_9, 13_5, 14_10, 14_13, 14_19, 14_6, 14_9	IE_SE_G_011	Ballyglass	Groundwater	Review	At risk	Good	Good	No	Ag, Other		
12_5, 13_2, 13_4	IE_SE_G_022	Bridgetown	Groundwater	Not at risk	Not at risk	Good	Good	No			
11_1, 11_2, 12_15, 12_2, 12_4, 12_5, 13_2, 13_5	IE_SE_G_031	Castlebridge North	Groundwater	Not at risk	Not at risk	Good	Good	No			
11_2, 12_1, 12_13, 12_14, 12_15, 12_2, 12_3, 12_4, 12_7, 13_5	IE_SE_G_061	Enniscorthy	Groundwater	At risk	At risk	Good	Good	No	Ag, Other		
12_5, 13_2, 13_4, 13_5	IE_SE_G_064	Fardystown	Groundwater	Not at risk	Review	Good	Good	No			
12_2, 12_5, 13_1, 13_2,	IE_SE_G_065	Fethard	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)
13_3, 13_4, 13_5											
09_11, 12_12, 12_14, 12_16, 12_7, 12_8, 13_1, 13_3, 13_5, 14_10, 14_13, 14_18, 14_19, 14_2, 14_4, 14_6, 14_7, 14_9, 15_17	IE_SE_G_152	New Ross	Groundwater	Not at risk	Review	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* water bodies have not been included as they will need to be confirmed as part of an Investigative Assessment.