

# Bandon Ilen Catchment Assessment 2010-2015 (HA 20)



Catchment Science & Management Unit

Environmental Protection Agency

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## Preface

This document provides a summary of the characterisation outcomes for the water resources of the Bandon Ilen Catchment, which have been compiled and assessed by the EPA, with the assistance of local authorities and RPS consultants. The information presented includes status and risk categories of all water bodies, details on protected areas, significant issues, significant pressures, load reduction assessments, recommendations on future investigative assessments, areas for actions and environmental objectives. The characterisation assessments are based on information available to the end of 2015. Additional, more detailed characterisation information is available to public bodies on the EPA WFD Application via the EDEN portal, and more widely on the catchments.ie website. The purpose of this document is to provide an overview of the situation in the catchment and help inform further action and analysis of appropriate measures and management strategies.

This document is supported by, and can be read in conjunction with, a series of other documents which provide explanations of the elements it contains:

1. An explanatory document setting out the full characterisation process, including water body, subcatchment and catchment characterisation.
2. The Final River Basin Management Plan, which can be accessed on: [www.catchments.ie](http://www.catchments.ie).
3. A published paper on Source Load Apportionment Modelling, which can be accessed at: <http://www.jstor.org/stable/10.3318/bioe.2016.22>
4. A published paper on the role of pathways in transferring nutrients to streams and the relevance to water quality management strategies, which can be accessed at: <http://www.jstor.org/stable/pdf/10.3318/bioe.2016.19.pdf>
5. An article on Investigative Assessments which can be accessed at: <https://www.catchments.ie/download/catchments-newsletter-sharing-science-stories-june-2016/>

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## 1 Introduction

This catchment includes the area drained by the Rivers Bandon and Ilen, and all streams entering tidal water between Templebreedy Battery and Mizen Head, Co. Cork, draining a total area of 1,803 km<sup>2</sup>. The largest urban centre in the catchment is Bandon. The other main urban centres are Kinsale, Clonakilty, Skibbereen and Dunmanway. The total population of the catchment is approximately 71,210 with a population density of 39 people per km<sup>2</sup>.

The eastern part of this catchment is drained by the Minanae River, which flows to sea via Ringabella Creek, south of the mouth of Cork Harbour. West of this, the area around Belgooly is drained by the southerly flowing Stick and Farranamoy Rivers.

The Bandon River rises on the slopes of the Maughanaclea Hills and flows east where it is joined by the Shanacrane East, Shehy Beg and Caha Rivers. The Bandon then flows past Dunmanway, before turning east and flowing along a limestone-floored valley lying between ridges of sandstone uplands, typical of the south Munster landscape.

The Bealnascartane and Glan Rivers then join the Bandon, followed by the Blackwater River from the north. The river then flows through Bandon, where it is joined by the Bridewall and Knockbrogan Rivers. Downstream of Bandon, the river is joined by the River Brinny before turning southeast at Inishannon, where it becomes tidal. It then flows through the sinuous Bandon Estuary before entering the sea via Kinsale Harbour at Preghane Point.

The Argideen River rises north of Rosscarbery, flowing through Shannon Vale before being joined by the Owenkeagh River downstream of Kilmaloda Bridge. It then turns south at Timoleague, flowing out to sea at Courtmacsherry and Coolmain Bay.

The area around Clonakilty is drained by the Clonakilty River, which flows out to sea around the east side of Inchydoney Island. The area between Leap and Rosscarbery is drained by the Roury River flowing southeast and into the sea at Mill Cove.

The Ilen River rises on the southern flanks of Mullaghmesha and flows south, where it is joined by the Owennashingaun and the Dromdaleague rivers. It then continues south to Skibbereen, before which it becomes tidal, flowing through a long estuary past Ringarogy Island and out to sea via Baltimore Harbour at Sherkin Island.

The western part of the catchment is drained by several small rivers including the Roaring Water and Leamawaddra Rivers and the Bawnaknockane at Ballydehob Rivers, all of which flow south into Roaringwater Bay. The southern side of the Mizen Peninsula is drained by a series of southerly flowing rivers draining the area from Ballydehob to Schull and Mizen Head.

The Bandon Ilen catchment comprises 17 subcatchments (Table 1, Figure 1) with 87 river water bodies, six lakes, 25 transitional and coastal water bodies, and five groundwater bodies. There are no heavily modified or artificial water bodies in the Bandon Ilen Catchment.

Table 1. List of subcatchments in the Bandon Ilen catchment

Subcatchment ID	Subcatchment Name
20_1	EastCruary_SC_010
20_2	Bandon_SC_040
20_3	EntrepriseCentreSkull_SC_010
20_4	Kilbrittain_SC_010
20_5	Bandon_SC_050
20_6	Bandon_SC_010
20_7	Ilen_SC_010
20_8	Bandon_SC_020
20_9	Ilen_SC_020
20_10	Bandon_SC_030
20_11	Clonakilty[Stream]_SC_010
20_12	Argideen_SC_010
20_13	Bandon_SC_060
20_14	Stick_SC_010
20_15	Roury_SC_010
20_16	Ilen_SC_030
20_17	Bawnaknockane_SC_010

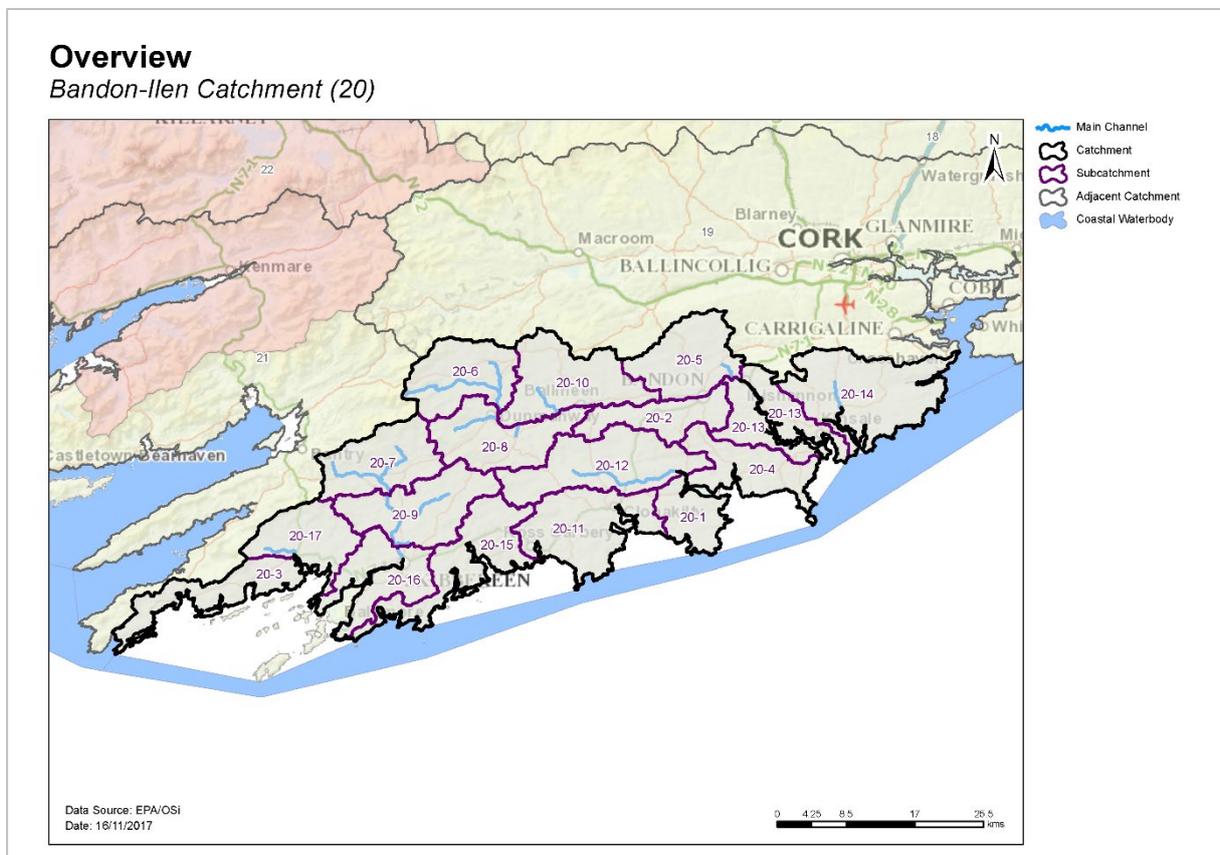


Figure 1. Subcatchments in the Bandon Ilen catchment

## 2 Water body status and risk of not meeting environmental objectives

### 2.1 Surface water ecological status

#### 2.1.1 Rivers and lakes

- ◆ There were 51 (55%) river and lake water bodies at Good or High status, and 9 (10%) at less than Good status in 2015 (Table 2, Figure 2). Thirty-three (35%) river water bodies are unassigned.
- ◆ Eleven river water bodies and sites have a high ecological status objective. In 2015, seven (64%) of these water bodies were at High status, and four were at Good (Figure 3, Appendix 1).
- ◆ The numbers of water bodies at each status class in 2007-09 and 2010-15 is shown in Figures 4 (rivers) and 5 (lakes).
- ◆ Since 2007-09 when WFD monitoring began, seven water bodies have an improved status whereas 11 have deteriorated (Figure7).
- ◆ The variation in nutrient concentrations and loads in the Bandon and Argideen main channels are illustrated in Appendix 2.

#### 2.1.2 Transitional and coastal (TraC)

- ◆ There are two TraC water bodies at Good status (Kinsale Bay and Roaring Water Bay), five at Moderate status (Upper and Lower Bandon estuaries, Illen Estuary and Clonakilty Bay and Harbour), three at Poor status (Argideen, Courtmacsheery Bay and Kilkeran Lake) and 14 unassigned (Figure 2 Table 3), and all have a Good ecological status objective. Outer Cork Harbour is also at Good status but as it is more closely associated with the Lee catchment, it is further discussed in that assessment.
- ◆ The numbers of water bodies at each status class in 2007-09 and 2010-15 are shown in Figure 6.
- ◆ Note the coastal water body South Western Atlantic Seaboard (HAs 21;22), is shared with other catchments.

Table 2. Summary of surface water bodies status and risk categories

	Number of Water Bodies	2010-2015						Risk		
		High	Good	Mod	Poor	Bad	Unassigned	<i>Not at Risk</i>	<i>Review</i>	<i>At Risk</i>
Rivers	87	8	41	5	0	0	33	59	19	9
Lakes	6	0	2	3	1	0	0	1	0	5
TRaC's	25	0	3	5	3	0	14	5	9	11

## WFD Surface Water Body Status 2010 - 2015

*Bandon-Ilen Catchment (20)*

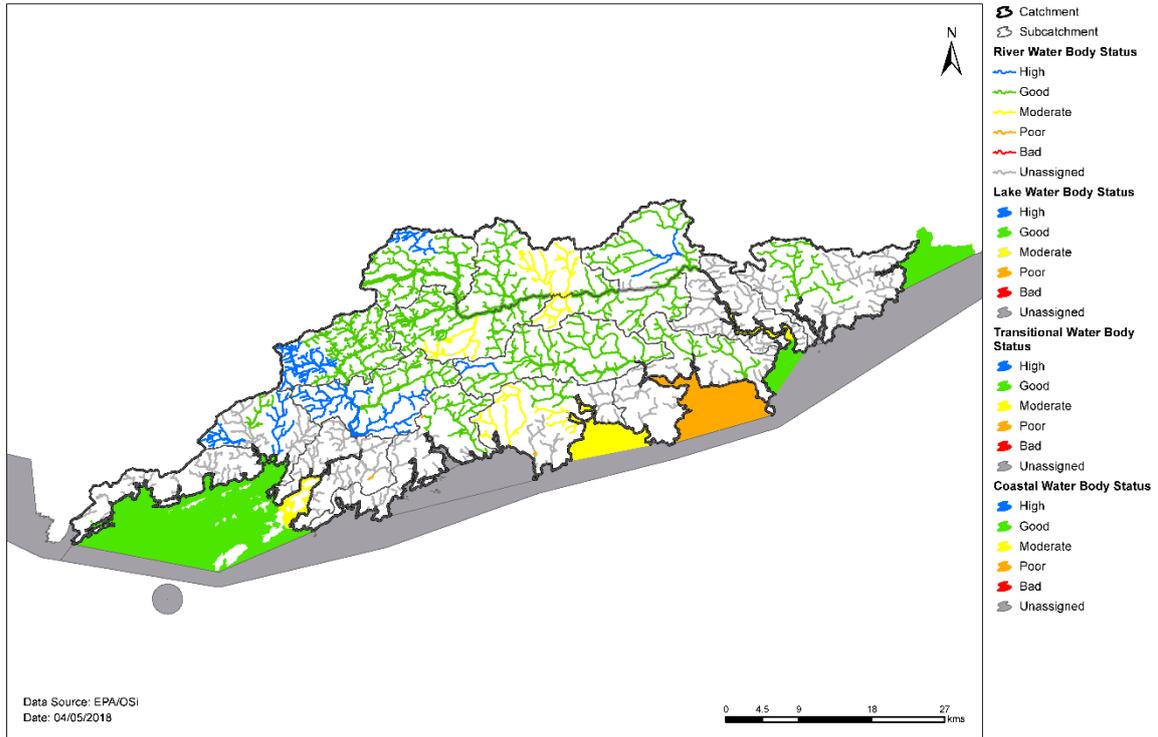


Figure 2. Surface water ecological status

## High Status Objective Water Bodies and Sites

*Bandon-Ilen Catchment (20)*

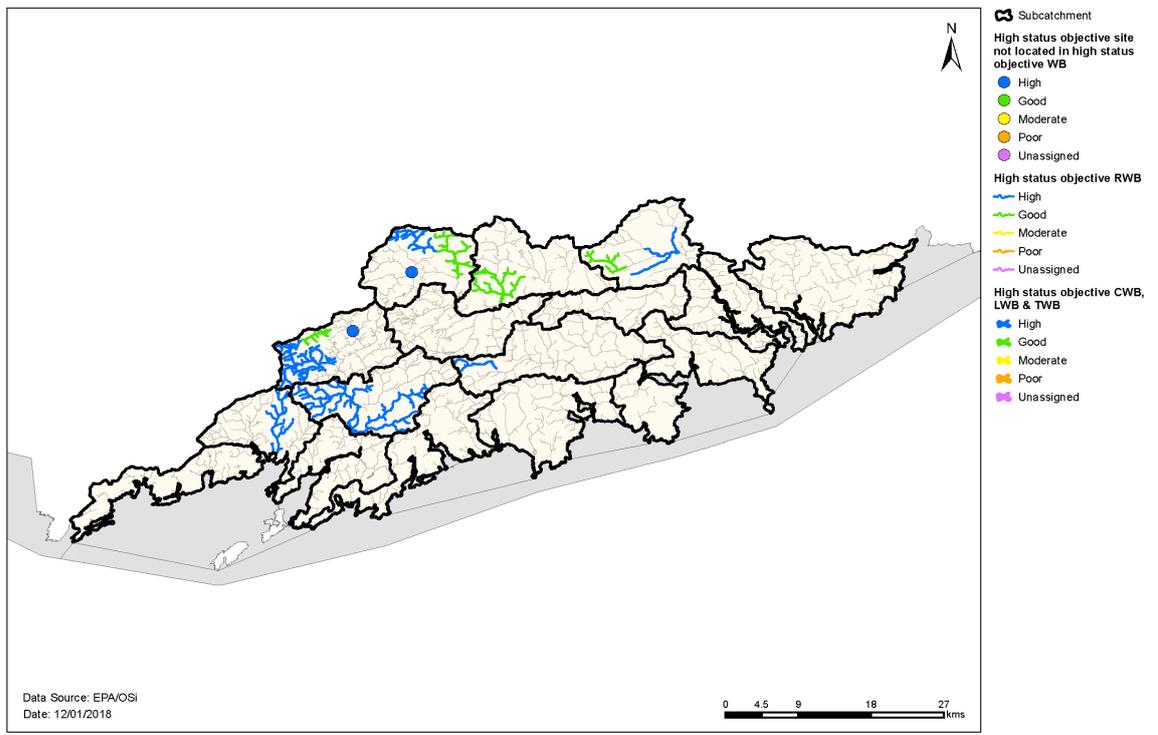


Figure 3. High ecological status objective water bodies and sites

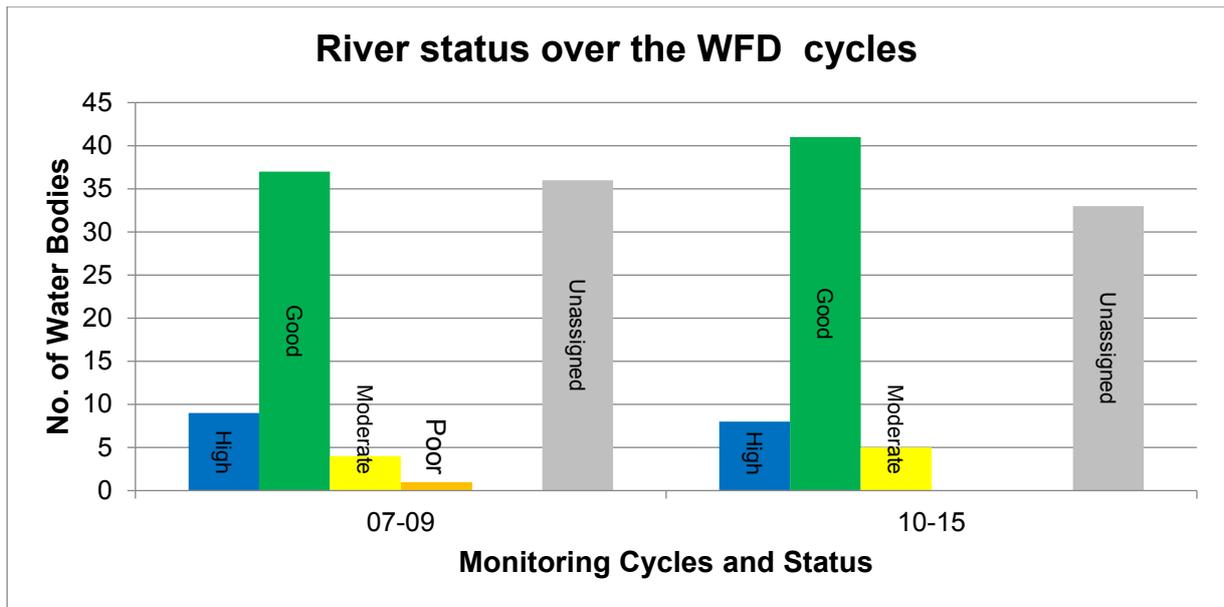


Figure 4. Number of rivers at each status class in 2007-09 and 2010-15

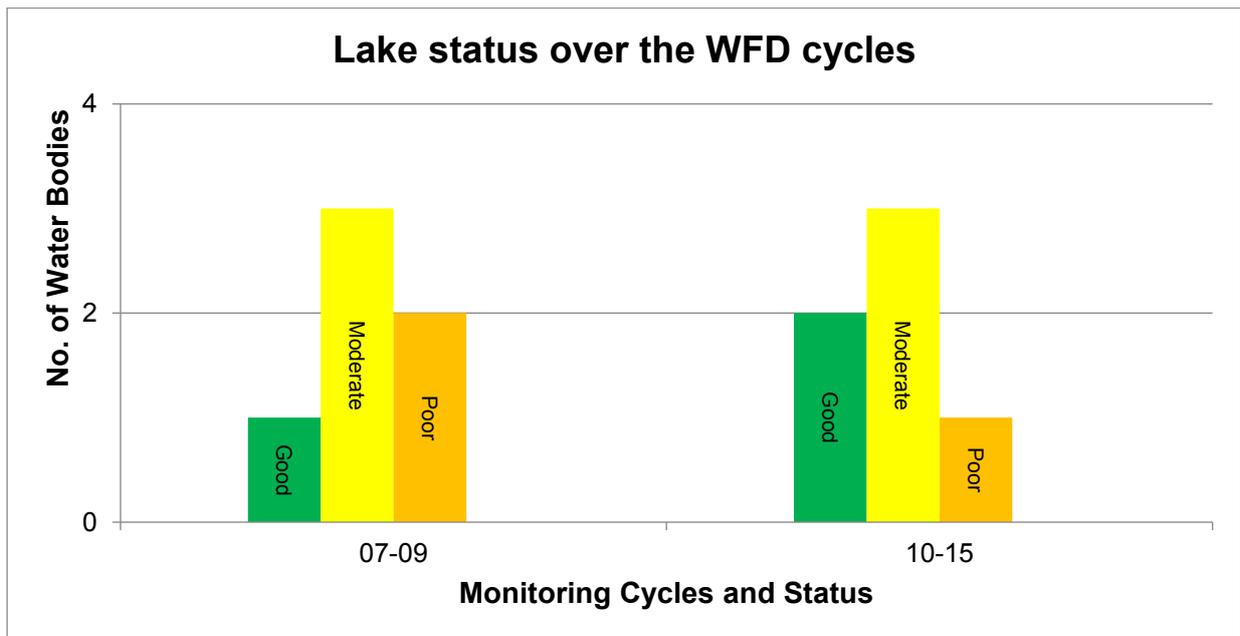


Figure 5. Number of lakes at each status class in 2007-09 and 2010-15

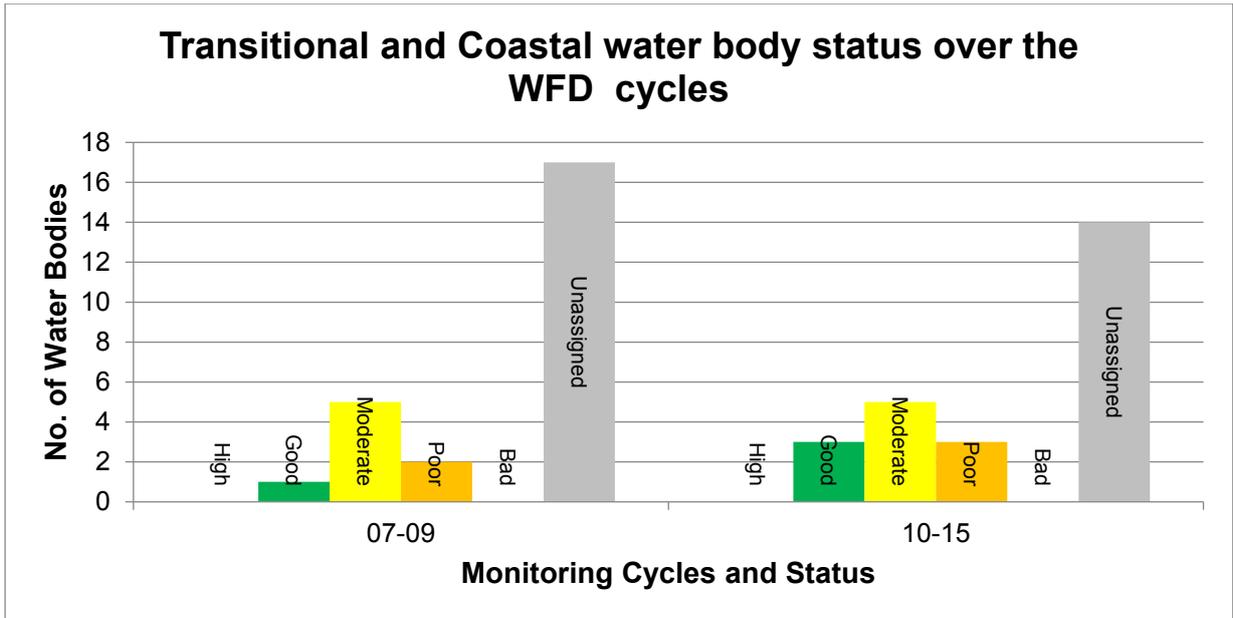


Figure 6. Number of transitional and coastal water bodies at each status class in 2007-09 and 2010-15

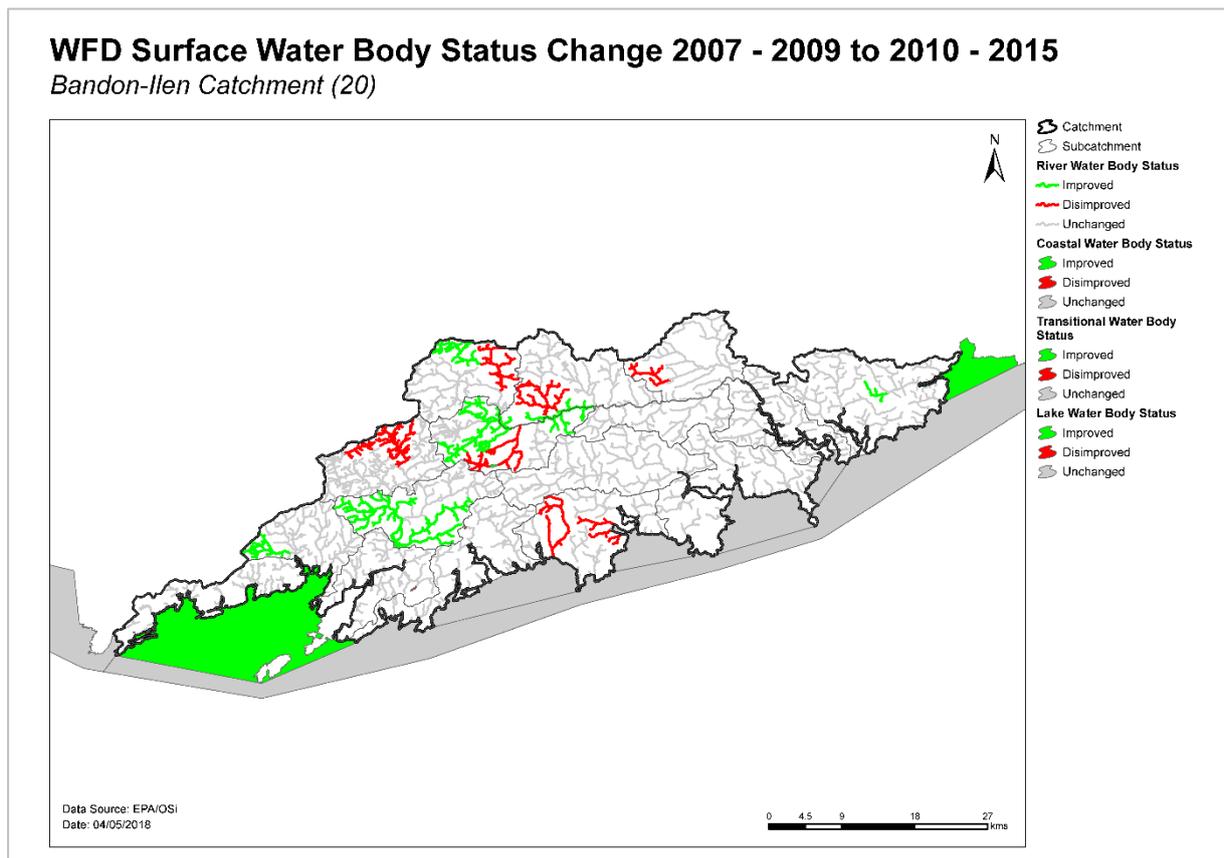


Figure 7. Surface water body status changes from 2007-09 to 2010-15.

## 2.2 Groundwater status

- ◆ There were four groundwater bodies at Good status and one at Poor status in 2015 (Table 3, Figure 8). The latter water body – IE\_SW\_G\_016 – is due to ammonia issues.(Figure 10).
- ◆ This classification of the Poor status water body was due to improved information being available and the development of technical assessment approaches, rather than there being deterioration in water quality in this groundwater body between 2007-12 and 2010-15.

Table 3. Summary of groundwater bodies status and risk categories

	Number of water bodies	2010-2015		Risk		
		Good	Poor	Not at Risk	Review	At Risk
Groundwater	5	4	1	0	4	1

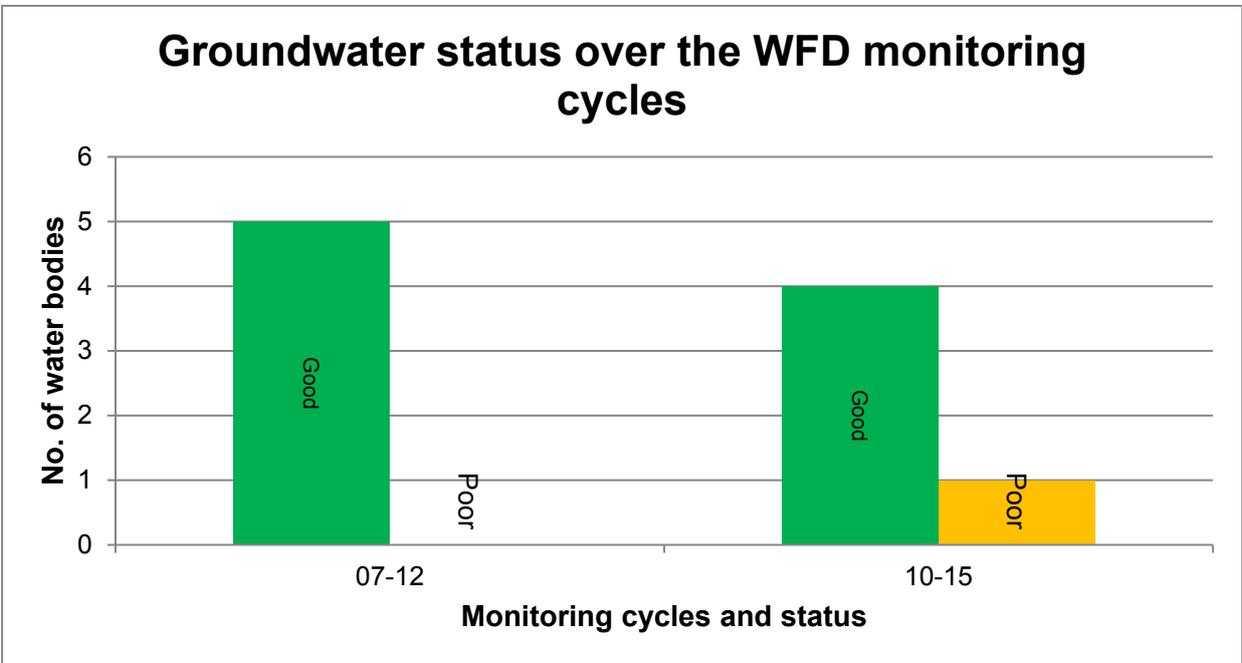
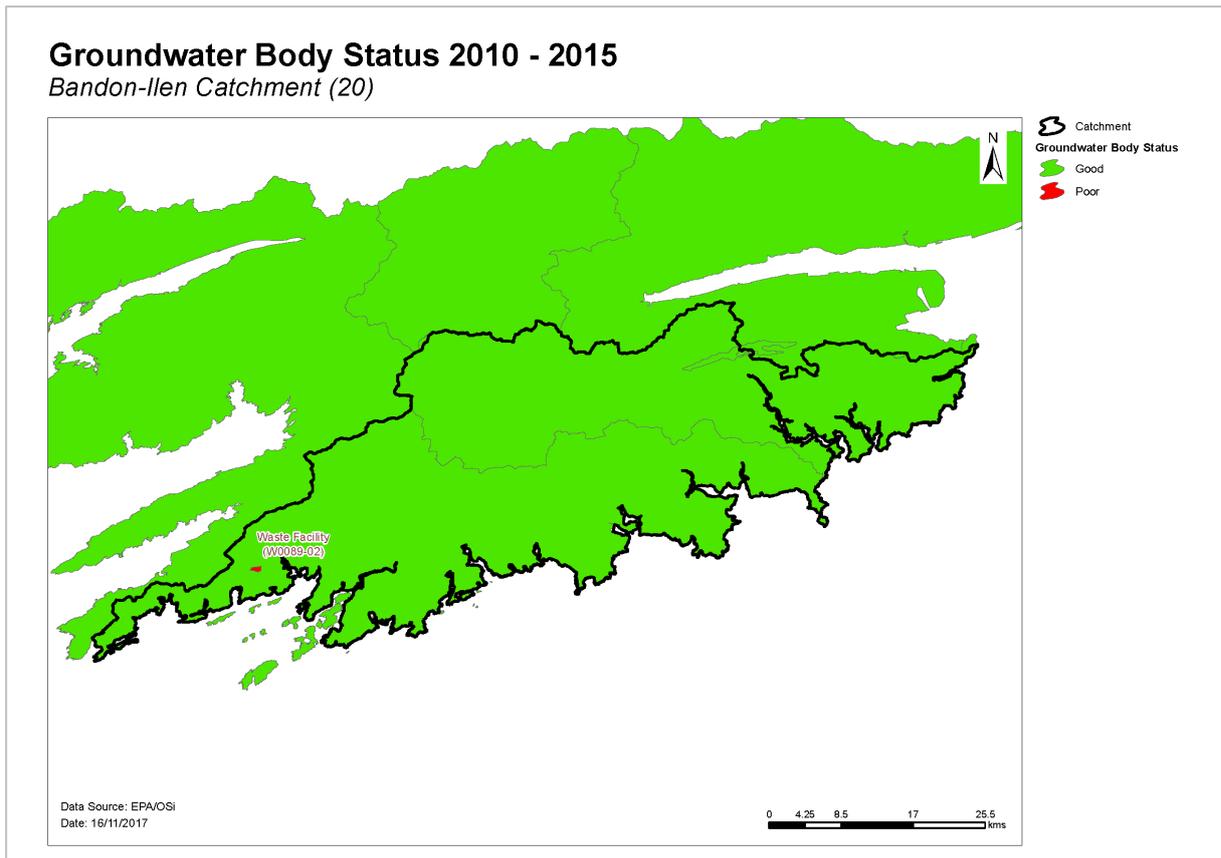


Figure 8. Number of groundwater bodies at each status class in 2007-12 and 2010-15

## 2.3 Risk of not meeting surface water environmental objectives

### 2.3.1 Rivers and lakes

- ◆ There are 60 *Not at Risk* river and lake water bodies (Figure 10, Table 2) and these require no additional assessment or measures to be applied, other than those measures that are already in place.
- ◆ There are 19 river and lake water bodies in *Review*. This includes 15 water bodies where more information is required and four water bodies where ecological status is Good but nutrients are elevated.
- ◆ Fourteen river and lake water bodies in the catchment are *At Risk* of not meeting their water quality objectives. Measures will be needed in these water bodies to improve the water quality outcomes. Summary information for the *At Risk* water bodies is given in Appendix 3.



### 2.3.2 Transitional and coastal (TraC)

- ◆ There are five *Not at Risk* TraCs water bodies (Figure 10, Table 2) which require no additional measures to be applied, other than those measures that are already in place.
- ◆ Nine TraC water bodies are in *Review*. More information is required in water bodies where measures have recently been implemented and improvements have not yet been realised.
- ◆ There are 11 *At Risk* TraC water bodies that are not meeting their water quality objectives. These include three TraCs water bodies that are unassigned (Oysterhaven, Rosscarbery Bay and Rosscarbery Harbour) but which have some evidence that there are water quality issues. Measures will be needed in these water bodies to improve the water quality outcomes.

## 2.4 Risk of not meeting groundwater environmental objectives

- ◆ Four groundwater bodies (Bandon, Skibbereen-Clonakilty, Brinny Gravels East and Brinny Gravels West) are in *Review* (Figure 11, Table 3). Two of the groundwater bodies (*Bandon* and Skibbereen-Clonakilty) have elevated nitrate concentrations. The remaining two groundwater bodies (Brinny Gravels East and Brinny Gravels West) are likely to be contributing phosphate to associated surface water bodies.
- ◆ There is one *At Risk* groundwater body IE\_SW\_G\_016 – due to ammonia from a waste site that has the potential to contribute to associated surface water bodies. Measures will be needed in this water body to improve water quality outcomes.

## Water Body Risk

Bandon-Ilen Catchment (20)



Figure 10. Surface water body risk

## Groundwater Body Risk

Bandon-Ilen Catchment (20)

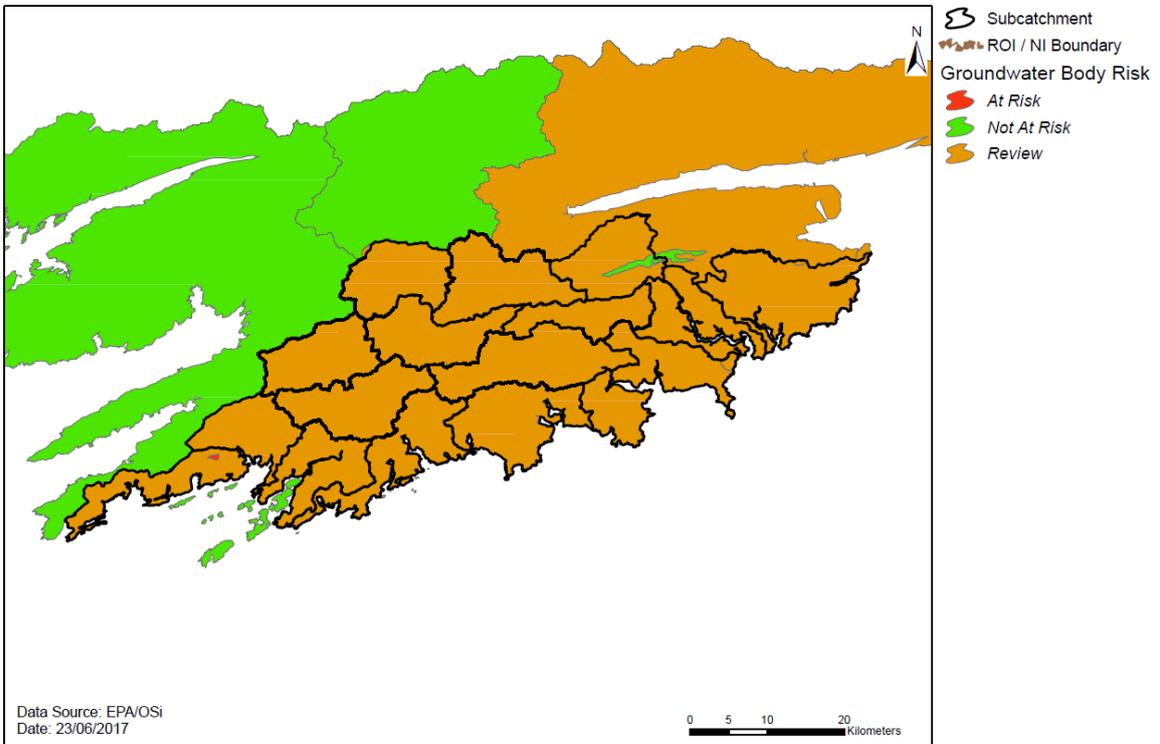


Figure 11. Groundwater body risk

## 2.5 Protected areas

### 2.5.1 Drinking water protected areas

- ◆ There are 46 abstractions in the Bandon Ilen Catchment comprising three group water schemes and 31 public supply schemes (Appendix 4).
- ◆ Thirty of the abstractions are from two groundwater bodies (Bandon and Skibbereen-Clonakilty); five are from five lakes (Coolkellure, Curraghlicky lake, Skeagh Lough/ Schull Reservoir, Ballin CK and Abisdealy Lake), and ten are from seven river water bodies. The list of the public supplies and the associated water bodies is provided in Appendix 4.
- ◆ All drinking water sources were compliant with the standards for nitrate in 2015.
- ◆ Clonakilty (0500PUB4301) source (Argideen\_030) was non-compliant with respect to the standards for pesticides in 2015, due to exceedances of MCPA, Triclopyr and Total pesticides. All remaining drinking water sources were compliant with the standards for pesticide in 2015.

### 2.5.2 Bathing waters

- ◆ There are nine designated bathing water areas in the catchment.
- ◆ Seven of the bathing waters are in satisfactory condition.
- ◆ The remaining two water bodies – Coolmaine and Fountainstown – failed to meet their environmental objectives, due to bacteriological water quality.
- ◆ The list of the bathing waters and the associated water bodies is provided in Table 4.

### 2.5.3 Shellfish areas

- ◆ There are four designated shellfish areas in the catchment (Roaring Water Bay, Oyster Haven, Baltimore Harbour/ Sherkin and Kinsale).
- ◆ Three are compliant with the relevant standards with no water quality issues of concern.
- ◆ Kinsale shellfish area in the Lower Bandon Estuary did not meet its microbiological standards.
- ◆ Details on the shellfish areas and their associated water bodies are summarised in Table 5.

Table 5. Designated shellfish areas in the catchment

Shellfish area		Water body intersection		Objective met?	
Name	Code	Name	Code	Yes	No
Roaring Water Bay	IEPA2_0014	Roaring Water Bay	IE_SW_140_000	✓	
Oyster Haven	IEPA2_0050	Oysterhaven	IE_SW_070_0100	✓	
Baltimore Harbour/Sherkin	IEPA2_0051	Ilen Estuary	IE_SW_130_0100	✓	
		Roaring Water Bay	IE_SW_140_000		
Kinsale	IEPA2_0062	Lower Bandon Estuary	IE_SW_080_0100		✓

### 2.5.4 Nutrient sensitive areas

- ◆ There are three designated Nutrient Sensitive Areas (NSAs) (Bandon Estuary Upper, Bandon Estuary Lower and Clonakilty Harbour) associated with two waste water treatment plants (Bandon and Clonakilty).
- ◆ One of the urban waste water treatment plants (Clonakilty) has tertiary treatment and, therefore, was compliant with the environmental objective for NSAs.

- ◆ Bandon urban waste water treatment was not compliant with the environmental objective for NSAs, but is due to be upgraded to tertiary treatment in 2021.
- ◆ The list of NSAs, associated agglomerations and intersecting water bodies are provided in Table 6.

Table 6. Nutrient sensitive areas in the catchment

Nutrient Sensitive Area		Agglomeration		Intersecting water bodies		Objective met?		Comment
Name	Code	Name	Code	Name	Code	Yes	No	
Clonakilty Harbour	IETW_SW_2010_0002	Clonakilty	D0051	Clonakilty Harbour	IE_SW_100_0100	✓		
Bandon Estuary Upper	IETW_SW_2001_0032	Bandon	D0136	Upper Bandon Estuary	IE_SW_080_0300		✓	Tertiary treatment not in place. Due to be included in 2021 upgrade
Bandon Estuary Lower	IETW_SW_2001_0033			Lower Bandon Estuary	IE_SW_080_0100			

### 2.5.5 Natura 2000 sites

- ◆ There are nine Special Areas of Conservation (SACs) in the catchment (Appendix 5), not all of which have water quality and/or quantity conservation objectives for their qualifying interests.
- ◆ One transitional water body (Kilkeran Lake) has been prioritised for action as the water conservation objectives for its species and/or habitats is not being supported by ecological status (Appendix 5).
- ◆ There are seven Special Protected Areas (SPAs) in the catchment:
  - Clonakilty Bay SPA
  - Cork Harbour SPA
  - Courtmacsherry Bay SPA
  - Galley Head to Duneen Point SPA
  - Old Head of Kinsale SPA
  - Seven Heads SPA 0
  - Sheep's Head to Toe Head SPA

As there are no specific water quality and quantity supporting conditions identified in the site-specific conservation objectives for these SPAs, the intersecting water bodies are not assigned priority action for WFD protected area purposes in the second cycle.

- ◆ There are four river water bodies that are designated as salmonid rivers (under Salmonid Regulations (S.I. 293 / 1988)) but are not located within SACs. These water bodies have met their WFD Protected area objectives (Appendix 5).
- ◆ There are three river water bodies that are designated as Freshwater Pearl Mussel rivers (under Freshwater pearl mussel regulations (S.I. 296 2009)) but are not located within SACs. These water bodies have met their WFD Protected area objectives (Appendix 5)

Table 4. Designated bathing waters in the catchment

Bathing Water Name	Water Body Intersection Code	Objective met? Name	Comment Code	Objective met?		Comment
				Yes	No	
Garrylucas, White Strand	IESWBWC090_0000_0300	Courtmacsherry Bay	IE_SW_090_0000	✓		
Garretstown	IESWBWC090_0000_0200	Courtmacsherry Bay	IE_SW_090_0000	✓		
Coolmaine	IESWBWC090_0000_0100	Clonakilty Bay	IE_SW_100_0000		✓	Sufficient quality: 2012–2015. Less than Good Quality E. coli, 95th percentile: 502 and 90th percentile: 297. Good quality IE results. Comparable performance in 2016 should remain at Sufficient. The Kilbrittain river drains the catchment and Kilbrittain WWTP to the Coolmaine estuary. Impacts considered mainly agricultural and from WWTP influences.
		Courtmacsherry Bay	IE_SW_090_0000			
Owenahincha, Little Island Strand	IESWBWC110_0000_0200	Rosscarbery Bay	IE_SW_110_0000	✓		
Warren, Cregane Strand	IESWBWC110_0000_0100	Rosscarbery Bay	IE_SW_110_0000	✓		
Tragumna	IESWBWC010_0000_0100	Western Celtic Sea (HAs 18;19;20)	IE_SW_010_0000	✓		
Fountainstown	IESWBWC050_0000_0100	Outer Cork Harbour	IE_SW_050_0000		✓	Sufficient quality: 2012–2015. Less than Good E. coli, 95th percentile: 633 and 90th percentile: 356. A poor 2012 season biased results. Good quality IE results. If the 2015 performance is repeated in 2016, water quality should achieve Good quality. Fountainstown remains vulnerable to surface water impacts particularly after heavy rainfall. The Fountainstown Stream drains to north side of the beach. Main control measures likely to be STP notifications as agricultural / point source inputs difficult to identify.
Barley Cove	IESWBWC150_0000_0200	South Western Atlantic Seaboard (HAs 21;22)	IE_SW_150_0000	✓		

Inchydoney	IESWBWC100_0000_0100	Clonakilty Bay	IE_SW_100_0000	✓		
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## 2.6 Heavily modified water bodies

- ◆ There are no designated heavily modified water bodies (HMWB) in the Bandon Illen catchment.
- ◆ There are no designated artificial water bodies (AWB) in the catchment.

## 3 Significant issues in *At Risk* water bodies

- ◆ Excess phosphates are a concern for several water bodies, and can lead to eutrophication. Excess ammonia is also a concern; however, it is for only a limited number of water bodies.
- ◆ Alteration of hydromorphological (or physical) conditions is a significant issue in rivers in the Bandon/Illan Catchment. This includes inputs of excess fine sediment and alteration of the morphology of the river channel, which in turn alter habitat conditions. This can occur as a result of, for example, implementing river and field drainage schemes, forestry activities, animal access, and discharge from quarries.
- ◆ For TraC water bodies, the dominant issue is elevated nutrients, originating from a variety of sources.
- ◆ Of the five groundwater bodies, one is *At Risk* due to ammonia concentrations. This may in turn affect associated surface water bodies.

## 4 Significant pressures

### 4.1 Water bodies

- ◆ Where surface water bodies have been classed as *At Risk* by water quality or survey data, significant pressures have been identified.
- ◆ Figure 12 shows a breakdown of the number of *At Risk* surface water bodies in each significant pressure category.

#### 4.1.1 Rivers, lakes, transitional and coastal

- ◆ Significant pressures have been identified in 25 water bodies, three of which have multiple pressures. Additional significant pressures will be identified as further Catchment Assessments are carried out.
- ◆ The significant pressure affecting the greatest number of surface water bodies is agriculture, followed by other, hydromorphological pressures, forestry, urban waste water, diffuse urban, and mines and quarries.

#### 4.1.2 Groundwater

- ◆ The significant pressure affecting the IE\_SW\_G\_016 groundwater body is the waste facility W0089-02. The key parameter of concern is ammonia. Figure 12 shows the breakdown of the number of *At Risk* groundwater bodies in each significant pressure category.

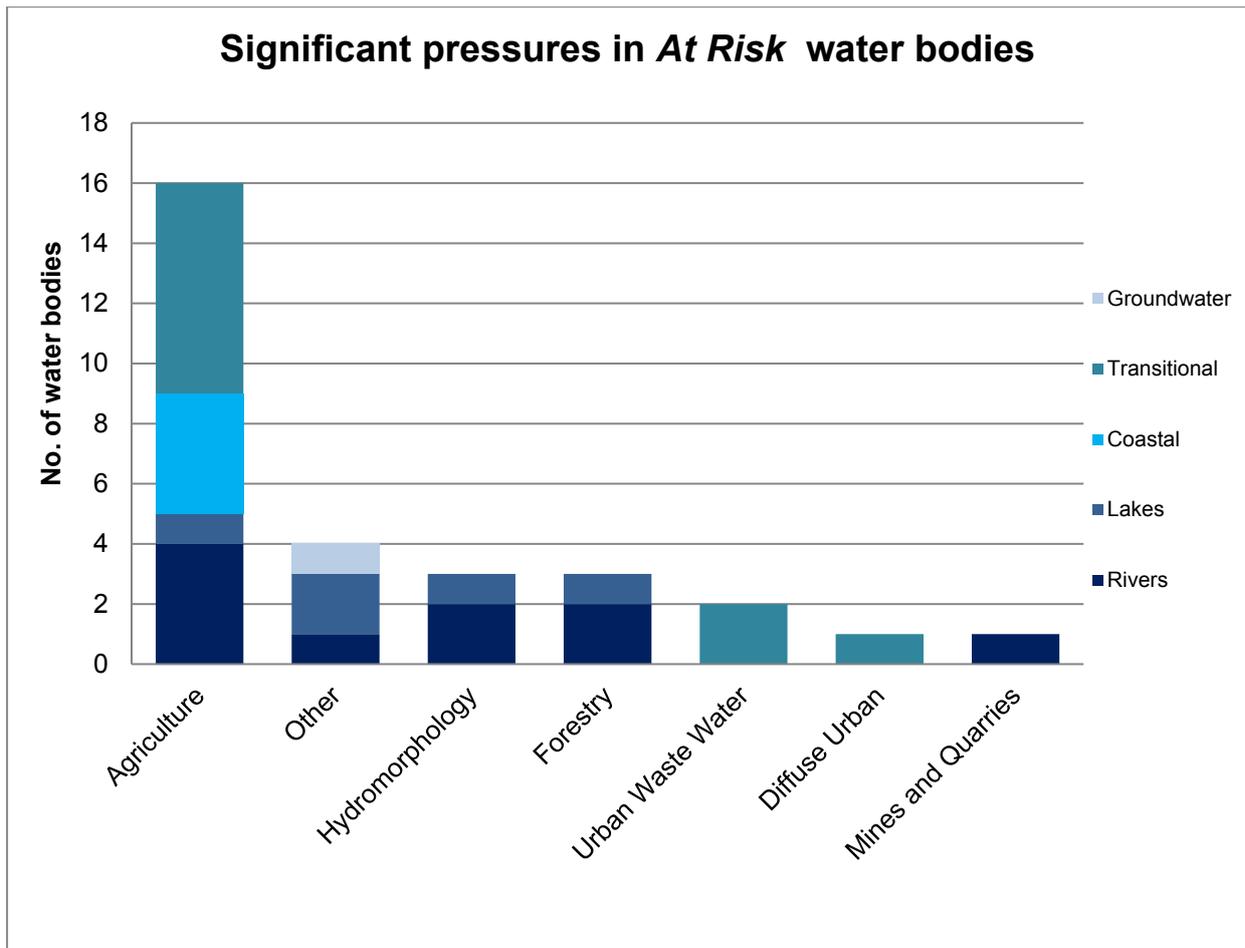


Figure 12 Significant pressures impacting on *At Risk* water bodies

## 4.2 Pressure type

### 4.2.1 Agriculture

- ◆ Agriculture is a significant pressure in four river water bodies in the Bandon Ilen catchment (wnahinchy\_010, Blackwater (Bandon)\_030, Tinneel Stream\_010 and Bealanascartane\_010), one lake water body (Abisdealy lake), seven transitional water bodies (Argideen Estuary, Clonakilty Harbour, Rosscarbery Harbour, Lower Bandon Estuary, Upper Bandon Estuary, Oysterhaven and Ilen Estuary), and four coastal water bodies (Courtbacsherry Bay, Clonakilty Bay, Rosscarbery Bay and Kinsale Harbour), shown in Figure 13. The issues related to farming in this catchment are generally related to loss of phosphorus and ammonia loss to surface waters from, for example, direct discharges; or runoff from yards, roadways or other compacted surfaces, or runoff from poorly draining soils. Sediment can also be a problem from land drainage works, bank erosion from animal access or stream crossings. The pollution impact potential map showing areas of relative risk for phosphorus loss from agriculture to surface water is given in Appendix 6.

### 4.2.2 Other significant pressures

- ◆ *Unknown Anthropogenic*  
One river water body (Bandon\_060) and two lake water bodies (Skeagh and Curraghlicky) have unknown anthropogenic pressures (Figure 14). One groundwater body (IE\_SW\_G\_016) has a waste facility as a significant pressure.

### 4.2.3 Hydromorphology

- ◆ Two river water bodies, Ballymahane 010 and Carhoo 010 are subject to extensive modification, both within and along the channel. A weir has impacted the hydrological conditions of a lake water body (Ballin CK) within the Roury subcatchment. (Figure 15).
- ◆ See Appendix 3 for information on these water bodies.

### 4.2.4 Forestry

- ◆ Forestry has been identified as a significant pressure in one lake water body (Coolkellure Lake) and two river water bodies (Caha\_020 and Owennashingaun\_010), as shown in Figure 16. Significant issues from forestry are typically input of sediment from road construction, planting and harvesting operations, and nutrient input from fertilisation of young trees.

### 4.2.5 Urban Waste Water Treatment Plants

- ◆ Urban Waste Water Treatment Plants (WWTPs) and agglomeration networks have been highlighted as a significant pressure in two *At Risk* water bodies, Argideen Estuary and Ilen Estuary; details are given in Table 7 and Figure 17. The Courtmacsherry and Timoleague WWTP, which impacts the Argideen Estuary, is scheduled to be upgraded by 2020.

### 4.2.6 Diffuse urban

- ◆ Diffuse urban has been identified as a significant pressure in the Ilen Estuary transitional water body (Figure 18).

### 4.2.7 Extractive industry

- ◆ *Quarry*  
A quarry has been identified as a significant pressure in Caha\_020. Quarries can often be associated with suspended solid discharges following wet weather, or from vehicle washes. (Figure 19).

Table 7. Waste Water Treatment Plants and agglomerations identified as Significant Pressures in *At Risk* water bodies and expected completion dates for associated upgrade works, where applicable.

Facility name	Facility Type	Water Body	2010-15 Status	Expected Completion Date
Courtmacsherry and Timoleague D0294	500 to 1,000 p.e.	Argideen Estuary	Poor	2020
Skibbereen D0166	2,0001 to 10,000 p.e.	<i>Ilen Estuary</i> <sup>1</sup>	Moderate	<i>NA</i> <sup>2</sup>

<sup>1</sup> The agglomeration network, rather than the WWTP, has been identified as a significant pressure impacting the Ilen Estuary.

<sup>2</sup> Currently not specified in improvement plans

**At Risk Water Bodies where Agriculture is a significant pressure**  
*Bandon-Ilen Catchment (20)*

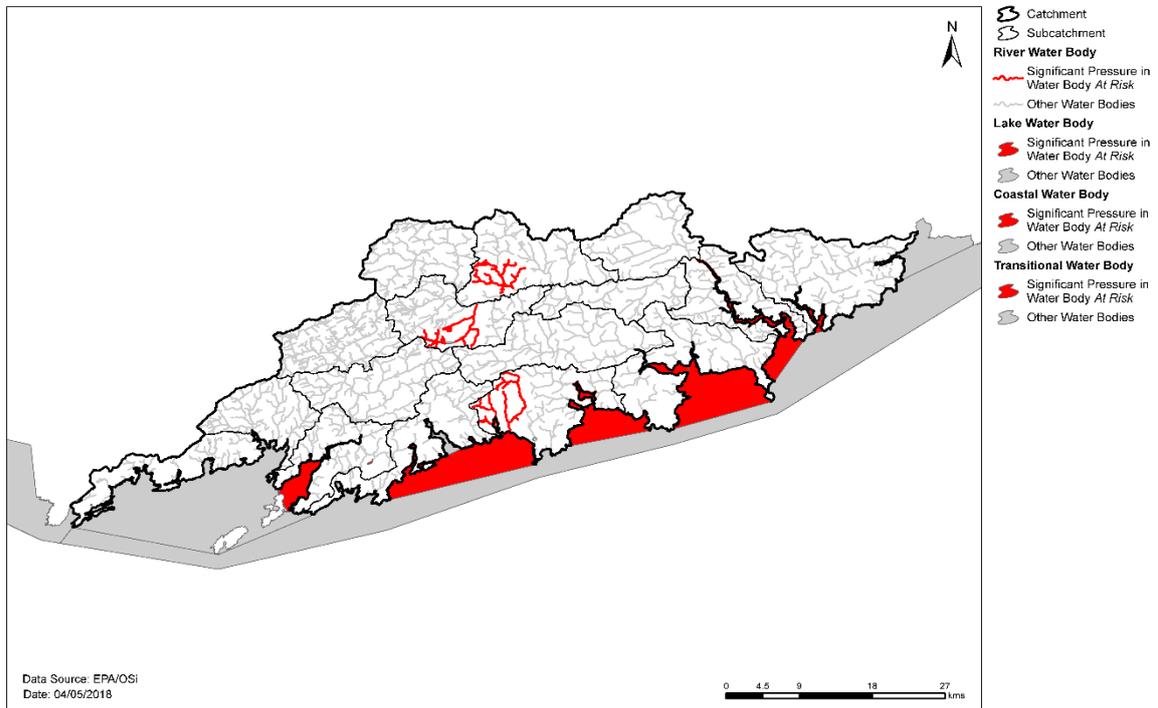


Figure 13. Water bodies that are *At Risk* and are impacted by agricultural activities

**At Risk Water Bodies where Other Anthropogenic Pressures is a significant pressure**  
*Bandon-Ilen Catchment (20)*

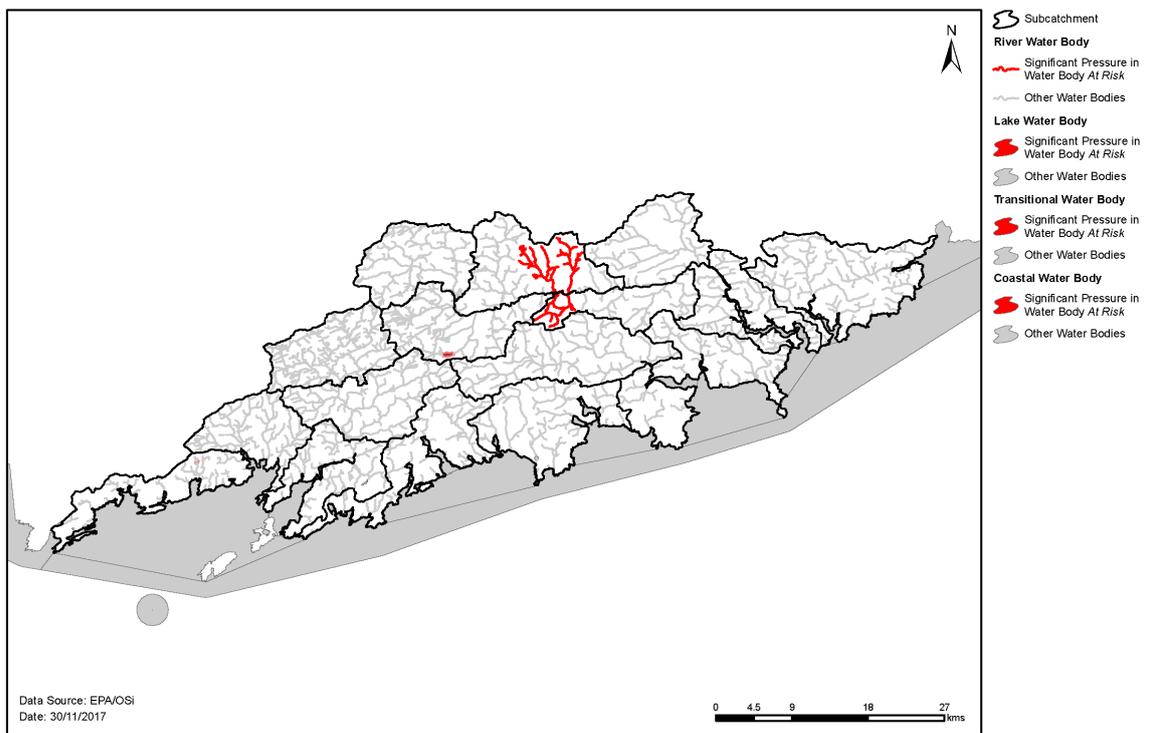


Figure 14. Water bodies that are *At Risk* and are impacted by other anthropogenic pressures

**At Risk Water Bodies where Hydromorphology is a significant pressure**  
*Bandon-Ilen Catchment (20)*

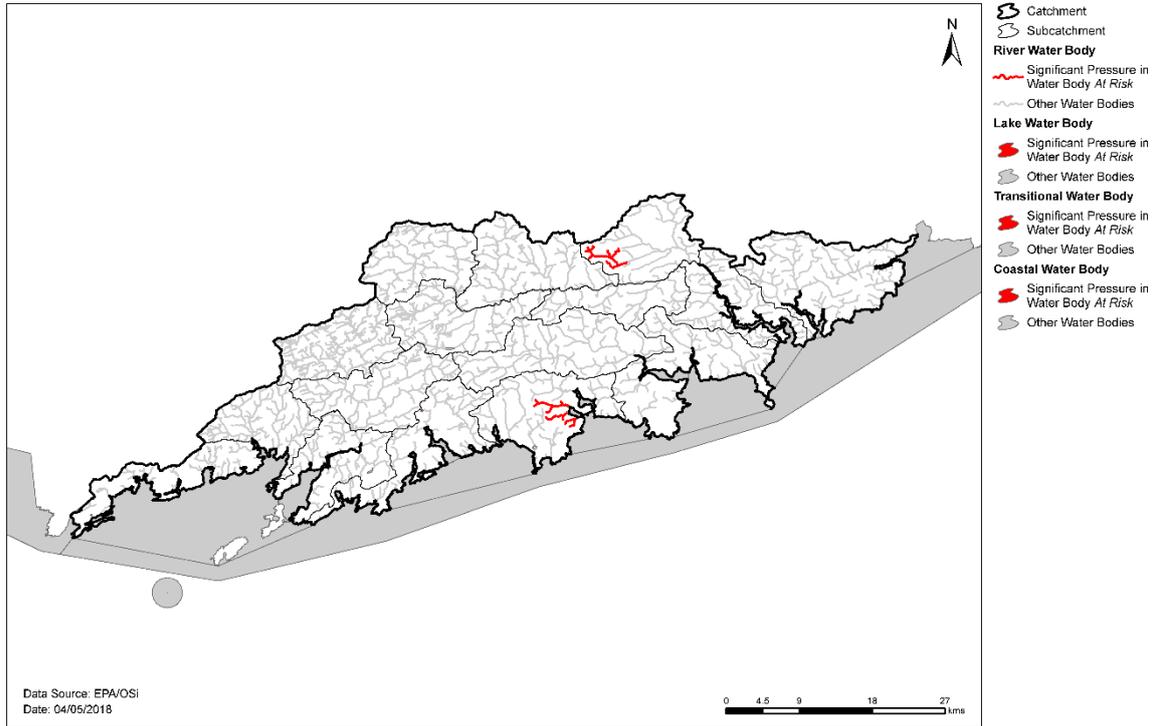


Figure 15. Water bodies that are *At Risk* and are impacted by hydromorphological pressures

**At Risk Water Bodies where Hydromorphology is a significant pressure**  
*Bandon-Ilen Catchment (20)*

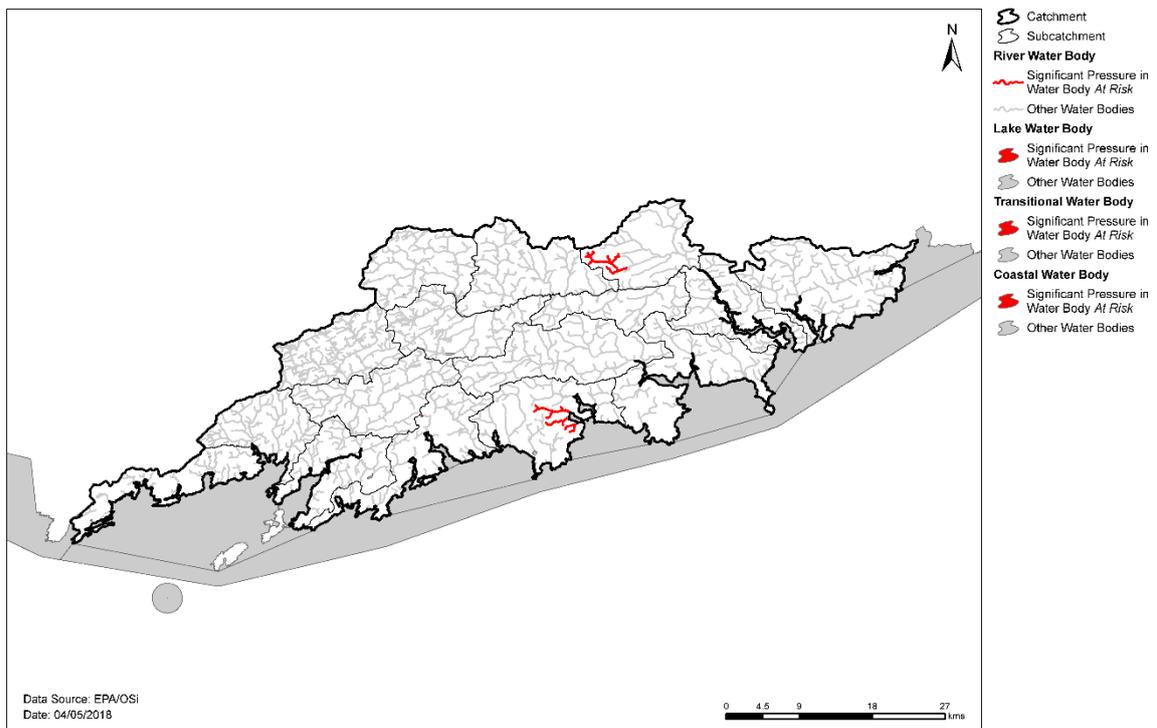


Figure 16. Water bodies that are *At Risk* and are impacted by forestry activities

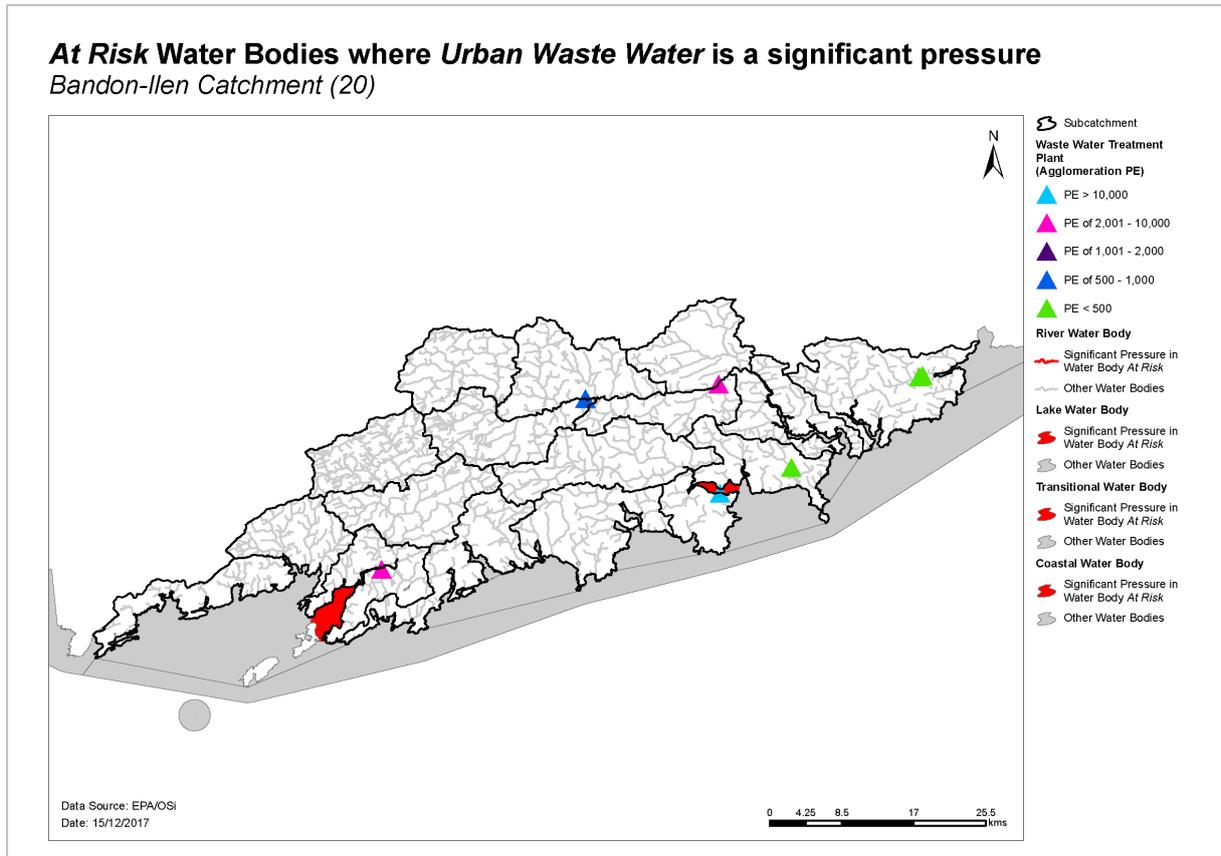


Figure 17. Water bodies that are *At Risk* and are impacted by urban waste water

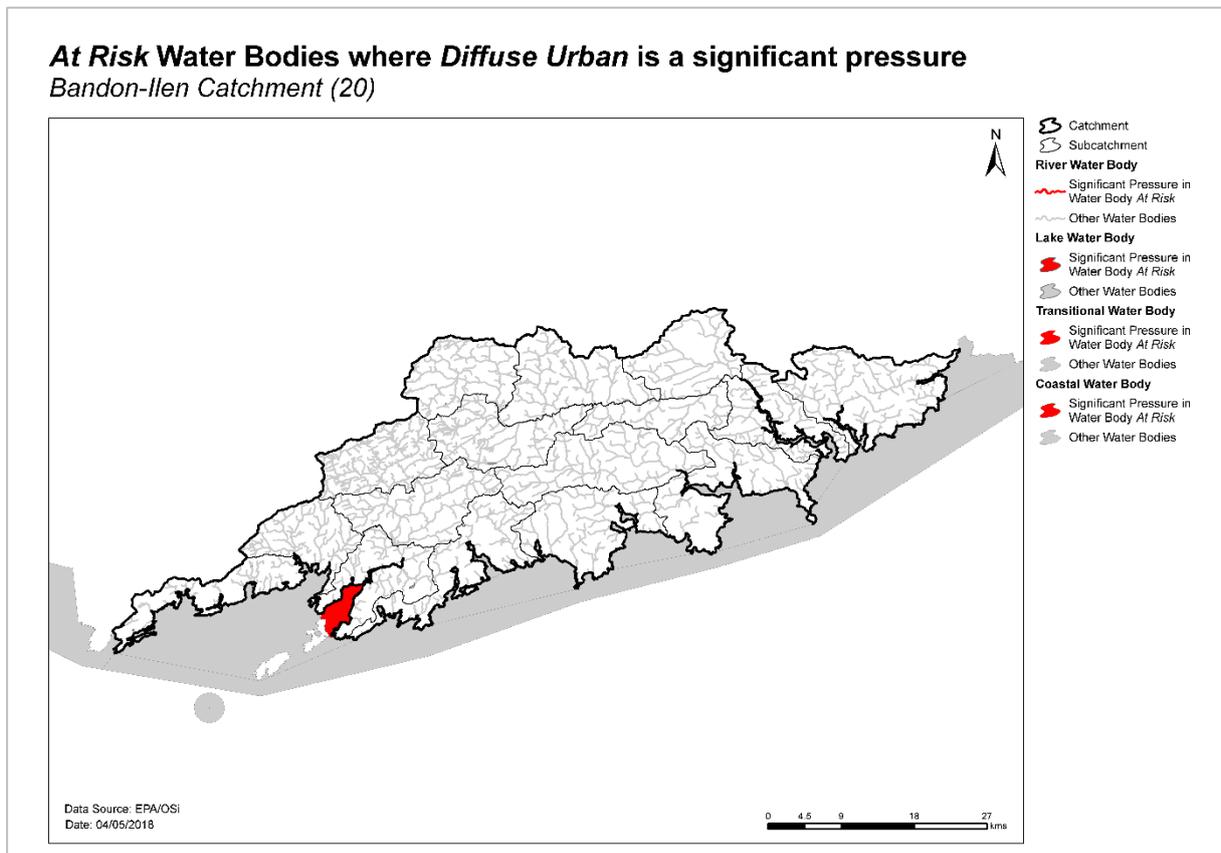


Figure 18. Water bodies that are *At Risk* and are impacted by diffuse urban impacts

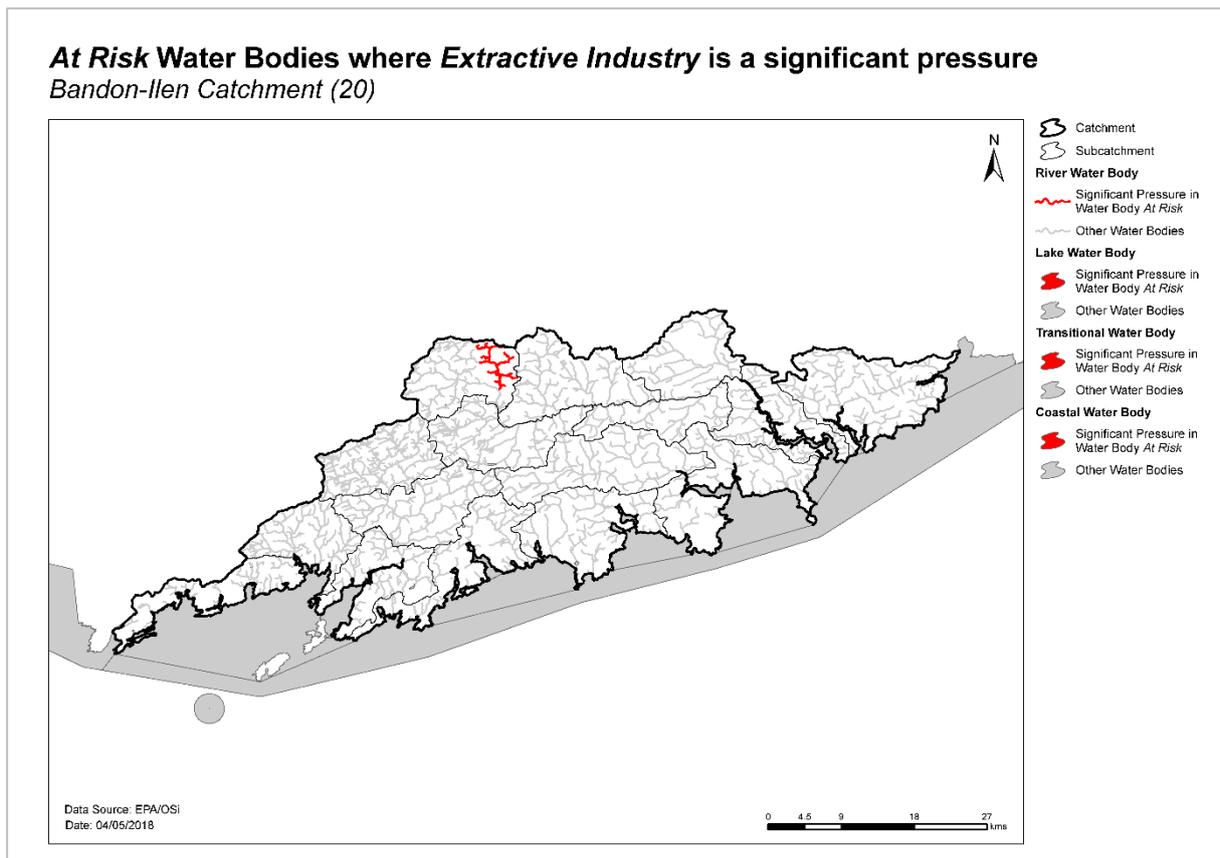


Figure 19. Water bodies that are *At Risk* and are impacted by Extractive industry (quarries)

## 5 Load reduction assessment

### 5.1 River water body load reductions

- ◆ The results of the main channel assessment for both the Bandon and Argideen rivers indicate that orthophosphate and ammonia concentrations are consistently low (Appendix 2).
- ◆ For water bodies where phosphorus monitoring data are available, the reduction in P load that would be required to bring the mean concentration back to the EQS of 0.035 mg/l as P, can be estimated using a simple method based on the average 2013 to 2015 concentration and the average flow, or the estimated 30<sup>th</sup> percentile flow (Q30) where flow data are not available. The relative load reductions are ranked on a national scale from Very High (>1 kg/Ha/y), to High (0.5-1 kg/Ha/y), to Medium (0.25-0.5 kg/Ha/y) to Low (<0.25 kg/Ha/y). Note that P load reductions may also be required in other water bodies, but without chemistry monitoring data a quantitative estimate cannot be calculated.
- ◆ In the Bandon Ilen catchment, water chemistry data are available for 16 of the 87 water bodies monitoring stations. The available data indicate that phosphorus load reduction is required in one river water body (Table 9).

Table 9. Relative load reductions required in monitored water bodies that are *At Risk*

Water body	P Load Reduction Required
Blackwater (Bandon)_030	Med

## 5.2 TraC load reductions

Some 18 estuaries in Ireland have been monitored on a continual basis since 1990 as part of Ireland's commitment under the Convention for the Protection of the Marine Environment of the North-East Atlantic (the Oskar Convention). This has shown that generally over the long term, nutrients have decreased but further reduction will be required in many cases to support Good Ecological Status. However, many estuaries have not been monitored to the same degree, and where monitoring data is insufficient, an ongoing programme of modelling has been undertaken to estimate potential nutrient load removal from contributing sub-catchments.

Different estuaries may require reductions in different nutrients. Further modelling work is required to determine precisely what load reductions are required, but in the interim, further monitoring will be carried out to assess the improvements resulting from various planned measures, and to confirm the nature of the issues.

- ◆ The upper part of the Ilen Estuary is impacted by excess phytoplankton and can be P or N limited depending on the season. Nutrient load reductions will be required but at this stage the extent of reductions needed is not known. However, there are no works planned at present for the Skibbereen network. There are 11 river water bodies draining to the estuary, many of which are unassigned. Further assessment is required to determine the loads in the inflowing rivers and whether the planned upgrades will be sufficient to improve status.
- ◆ Rosscarbery Harbour and Rosscarberry Bay are unmonitored but are considered to be similar to the Clonakilty system in terms of water quality and are likely to require nutrient reductions. The planned improvements at Castletownsend WWTP would be expected to improve water quality. A programme of baseline monitoring should be carried out to gauge the extent of the nutrient loads entering the estuarine system.
- ◆ Kilkeran Lake is a coastal lagoon which is part of a coastal lagoons project which is currently underway. This lake will be further considered when the current project is complete.
- ◆ Clonakilty Harbour and Bay are N limited and are impacted by opportunistic macroalgae. N reductions are therefore required. Clonakilty and Environs WWTP (D0051) was upgraded in 2015 to increase design load from 5,333 p.e. to 20,500 p.e., including incorporation of nitrogen and phosphorous removal and a storm water holding tank. The loads from the two WWTPs (Clonakilty and Ring) are estimated to contribute <5% of the annual TN loads to the estuary, however improved functionality of Clonakilty WWTP and SWOs, is expected to lead to an improvement. Most TN loads are from pasture in this small catchment and additional N reductions may be needed from agricultural areas. A specialised Local Catchment assessment (IA1) is required to determine where specifically from within the catchment the N reductions might come from if the improvements from the WWTP are not sufficient.
- ◆ Argideen and Courtmacsherry estuaries are N limited and are impacted by large opportunistic macroalgal blooms yearly. Modelling shows that a 60% reduction in N load (or 300 t yr<sup>-1</sup>) is required to bring Argideen back to moderate status. The reductions will be required from agricultural sources as point discharges contribute only 10 t yr<sup>-1</sup>, of which Courtmacsherry (D0294) and Timoleague (D0466) WWTPs are estimated to contribute 2 and 5 t yr<sup>-1</sup> of N, respectively. The licences for these plants have been withdrawn and a new combined licence application has been submitted. A Local Catchment Assessment (IA1) is required to determine

where specifically within the catchment the N reductions might come from if the improvements from the WWTP are not sufficient.

- ◆ The Upper and Lower Bandon Estuaries are especially reactive to nutrients and have issues with phytoplankton. The upper reaches are P limited but the lower sections may be N limited in the summer. There will be an ~8% reduction ( $1.5 \text{ t yr}^{-1}$ ) in TP emissions from planned upgrades to two WWTPs (Bandon and Innishannon). In addition, there will be <1% reduction ( $6 \text{ t yr}^{-1}$ ) in N from the Innishannon WWTP upgrade. Reductions in N from agricultural sources will also likely be needed as these contribute the majority of the remainder of the N loads. A Local Catchment Assessment (IA1) is required to determine where specifically within the catchment the N reductions might come from if the improvements from the WWTP are not sufficient.
- ◆ Oysterhaven estuary is unmonitored but has been identified as eutrophic using available data. The estuary will require nutrient reductions but it is unclear whether it is N or P limited. Nutrient load reductions would need to target agricultural sources which are estimated to contribute the vast majority of the annual loads. As a first step, monitoring should be carried out to gauge the extent of the nutrient loads entering the estuary.

As part of the Ireland's commitment to the Ospar Convention, nutrient flux or load monitoring has been carried out on the Bandon Estuary since 1990 (Figure 19a and 19b). Further analysis of these nutrient load trends is available at <http://dx.doi.org/10.3318/BIOE.2016.23>.

- ◆ Note; All urban wastewater agglomerations reference in 5.2 have been identified as significant pressures and/or have been scheduled for upgrade by Irish Water.

Figure 19a – Total Nitrogen Load (tonnes/year) 1990 to 2015

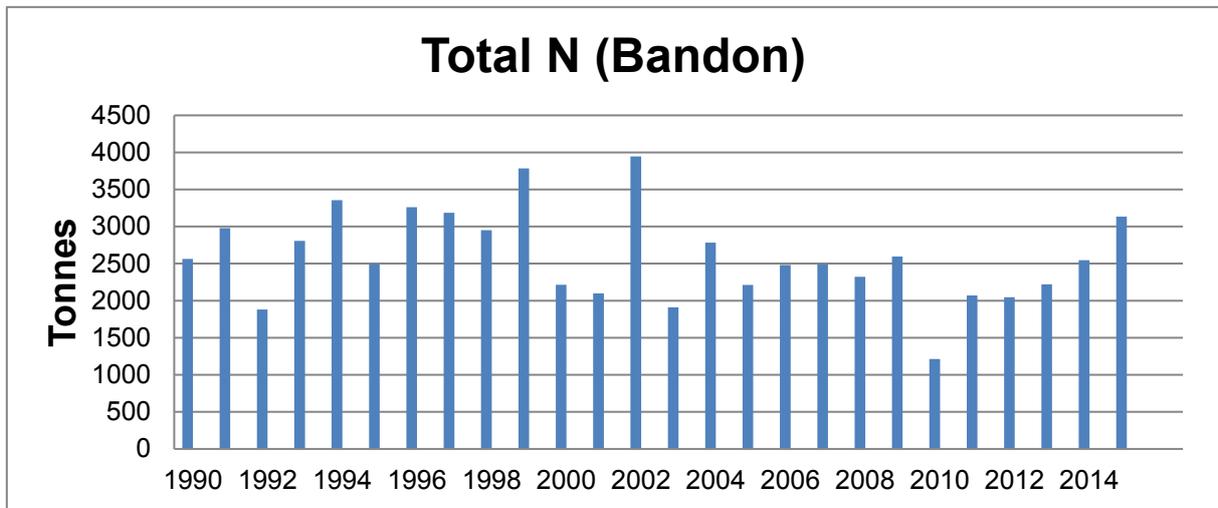
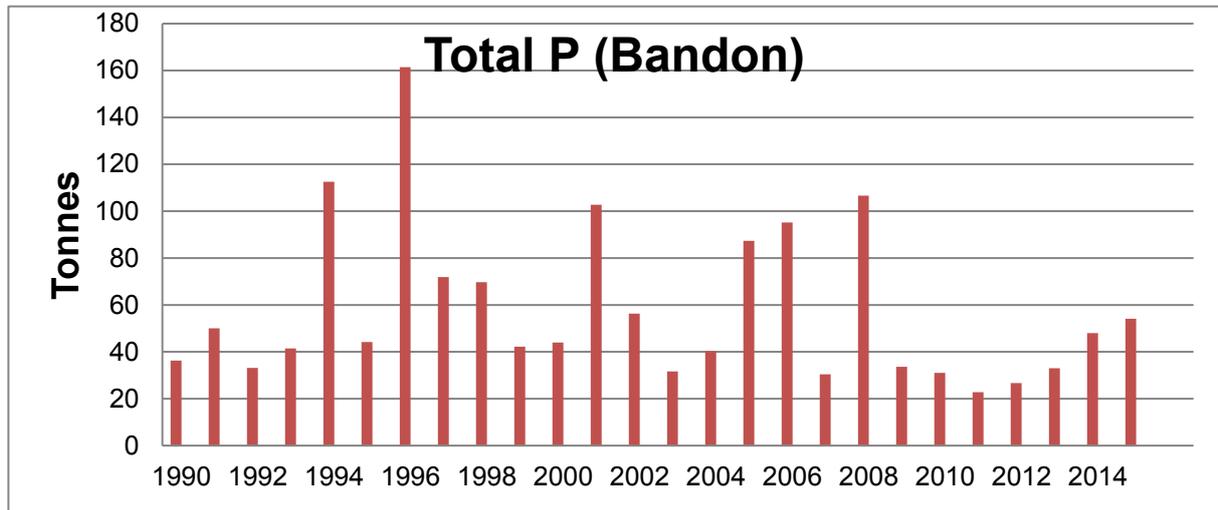


Figure 19b - Total Phosphorus Load (Tonnes/year) 1990-2015



## 6 Further characterisation and local catchment assessments

- ◆ Further characterisation through Local Catchment Assessments is required in the 14 *At Risk* river and lake water bodies to refine the understanding of the significant pressures at the site/field scale so that specific and targeted measures can be identified.
- ◆ Further characterisation through Local Catchment Assessments is needed in the 19 *Review* water bodies to refine the understanding of the significant pressures at the site/field scale so that specific and targeted measures can be identified.
- ◆ Brief definitions on the 10 IA assessment scenarios are given in Appendix 7.

Table 10. Number and Type of Local Catchment Assessments required in *At Risk* and *Review* River and Lake Water Bodies

Risk	IA 1	IA 2	IA 3	IA4	IA 5	IA6	IA 7	IA 8	IA 9	IA10	Total
<i>At Risk</i>	6	0	1	0	2	0	1	3	2	0	15
<i>Review</i>	8	0	15	0	0	3	0	0	0	0	26

Note water bodies may have multiple categories of Local Catchment Assessments

## 7 Catchment summary

- ◆ Of the 87 river water bodies, nine are *At Risk* of not meeting their WFD objectives.
- ◆ Five out of the six lake water bodies, *At Risk* of not meeting their WFD objectives.
- ◆ Excess phosphates are a concern for several water bodies, and can lead to eutrophication. Excess ammonia is also a concern for a limited number of water bodies.
- ◆ The main pressures are agriculture, forestry and other.
- ◆ Hydromorphological (or physical) conditions (including the input of excessive fine sediment) and poor habitat quality are also a significant pressure for three surface water bodies.
- ◆ There are eleven TraCs water bodies in the estuary *At Risk* of not meeting their WFD objectives, all of which have excess nutrients from a combination of agriculture, urban waste water and diffuse urban sources.
- ◆ There is one groundwater body which is *At Risk* due to ammonia from a waste facility which has the potential to impact on associated *At Risk* surface water bodies.

## 8 Areas for Action

The characterisation outcomes described above have highlighted that there is significant work to do in the catchment to protect and restore water quality, and meet the objectives of the WFD. During the development of the draft river basin management plan it became apparent that there would be a need to prioritise areas for collective action so that the best return on investment

could be achieved. 190 Areas for action have been selected nationally in a process as described below. There are 5 areas for action in the Bandon/Ilven catchment.

### Process of Selection

Following the publication of the draft river basin management plan in early 2017, the EPA and the Local Authority Waters and Communities Office (LAWCO) jointly led a collaborative regional workshop process to determine where, from a technical and scientific perspective, actions should be prioritised in the second cycle. The prioritisation process was based on the priorities in the draft river basin management plan, the evidence from the characterisation process, and the expertise, data and knowledge of public body staff with responsibilities for water and the different pressure types. The recommended areas for action selected during the workshops were then agreed by the Water and Environmental Regional Committees. Since this selection, the Local Authorities Water and Communities Office (LAWCO) have undertaken public engagement and feedback sessions in each local authority.

The recommended areas for action are an initial list of areas where action will be carried out in the second cycle. All water bodies that are *At Risk* still however, need to be addressed. As issues are resolved, or when feedback from the public engagement process is assessed, areas for action may be removed from the list and new areas will be added. If additional monitoring shows that new issues have arisen, new areas may become a priority and may need to be added to the work programme.

The initial list of areas for action is not therefore considered as a closed or finite list; it simply represents the initial areas where work will be carried out during the second WFD planning cycle from 2018 to 2021.

### 8.1 Outcomes of process

The outcomes for the Bandon Ilven catchment are summarised below.

- ◆ Five recommended areas for actions (Table 11, Figure 20) were selected.
- ◆ These are the Kilkeran Lagoon, Clonakilty, Bandon estuary, Caha and Rosscarbery.
- ◆ These include:
  - nine river and lake water bodies - four *At Risk* and five *Review*, and
  - seven transitional and coastal water bodies - six *At Risk* and one *Review*.
- ◆ Two groundwater bodies, that are in *Review* due to groundwater contribution of nutrients to surface water bodies, intersect with five of the recommended areas for action, see Table 12. Actions taken to improve surface water will need to take account of the groundwater contribution to surface water.

Table 11 Recommended Areas for Action in the Bandon Ilven Catchment

Recommended area for action	Number of water bodies	SCs	Local authority	Reason's for Selection
-----------------------------	------------------------	-----	-----------------	------------------------

Kilkeran Lagoon	2	20_11	Cork	<ul style="list-style-type: none"> <li>• Failing to meet protected area objectives for a Natura habitat (1150 coastal lagoon).</li> <li>• Active community group linked to heritage issues</li> <li>• Manageable area</li> <li>• High amenity area.</li> </ul>
Clonakilty	4	20_11	Cork	<ul style="list-style-type: none"> <li>• Potential estuary project</li> <li>• Building on proposed improvements for WWTP.</li> <li>• Small catchment discharging into estuary.</li> <li>• Headwaters flowing into Clonakilty harbour.</li> <li>• The coastal water body is failing to meet protected area objectives for bathing water.</li> <li>• One deteriorated water body.</li> </ul>
Bandon estuary	5	20_13	Cork	<ul style="list-style-type: none"> <li>• Potential estuary project.</li> <li>• Lower Bandon estuary is failing to meet protected area objectives for Shellfish (Kinsale).</li> <li>• Building on proposed improvements at Bandon and Innishannon WWTP.</li> <li>• Headwater streams to Bandon estuary.</li> </ul>
Caha	2	20_6	Cork	<ul style="list-style-type: none"> <li>• Failing to meet protected area objectives for Freshwater Pearl Mussel (19 of 27 catchments of S.I. 296 2009).</li> <li>• Bandon rivers trust in the area.</li> <li>• Deteriorated HES objective water body.</li> </ul>
Rosscarbery	3	20_11	Cork	<ul style="list-style-type: none"> <li>• Rosscarbery harbour is unassigned but algal blooms have increased in size and frequency.</li> <li>• Building on proposed improvements at Cortmascherry and Timoleague WWTP</li> <li>• Headwater streams flowing directly into Rosscarbery Harbour and Bay.</li> </ul>

A remaining thirty-seven *At Risk* and *Review surface* water bodies were not included in the recommended areas for action for the second cycle. The distribution of these is presented in Figure 21. These include:

- ◆ Twenty-four river and lake water bodies – 10 *At Risk* and 14 *Review*.
- ◆ Thirteen transitional and coastal water bodies – five *At Risk* and eight *Review*.

Table 12 Groundwater bodies intersecting with surface water bodies in recommended areas for action

Groundwater bodies			Intersecting surface water bodies		Recommended Area for Action
Code	Name	Risk	Code	Name	
IE_SW_G_085	Skibbereen-Clonakilty	Review	IE_SW_20C060300	CARHOO_010	Clonakilty
			IE_SW_20N100620	North Ring Curraghgrane_010	
			IE_SW_20H070690	Hayes' Cross Roads_010	Kilkeran Lagoon
			IE_SW_20T020050	TINNEEL STREAM_010	Rosscarbery
IE_SW_G_086	Bandon	Review	IE_SW_20C010700	CAHA_020	Caha
			IE_SW_20_153	Coolkellure	Bandon estuary
			IE_SW_20D600820	DERRYNAGASHA_010	
			IE_SW_20K190980	KNOCKNABOHILLY_010	
			IE_SW_20L510960	LAHERFINEEN_010	

## 9 Environmental Objectives

### 9.1 Surface Water Bodies

The environmental objectives are the target status for each *At Risk or Review* water body and the date by which that status is expected to be achieved (Appendix 3). Where a water body is *Not at Risk* and is already at its target status, the environmental objective is deemed to have been met.

- ◆ Assuming resources are available and actions are taken in the recommended areas for action, of the 10 *At Risk* surface water bodies, it is predicted all 10 will achieve their objective by 2027, see Table 13. For the six *Review* surface water body, the absence of information on these surface water bodies means that there is no scientific basis to quantify this and therefore a 2027 date is set for this water body, see Table 13.

Table 13 Environmental objective dates for surface water bodies in the Recommended Areas for Action

Risk Category	No. of Water Bodies	No. of WBs for 2021 Improvement	No. of WBs for 2027 Status Improvement
<b>Rivers</b>			
<i>At Risk</i>	3	0	3
<i>Review</i>	5	0	5
<b>Lakes</b>			
<i>At Risk</i>	1	0	1
<i>Review</i>	0	0	0
<b>TraC's</b>			
<i>At Risk</i>	6	0	6
<i>Review</i>	1	0	1
<b>Total</b>	16	0	16

- ◆ Sixty-five surface water bodies have met their 2015 environmental objective for ecological status. One of these 65 *Not at Risk* surface water bodies met its 2015 environmental objectives for ecological status but failed to meet its protected areas objectives.
- ◆ As action is not yet planned to be taken in the remaining 15 *At Risk* surface water bodies, a 2027 date is applied to all 15 water bodies. For the 22 *Review* water bodies, the absence of information on these water bodies means that there is no scientific basis to quantify an environmental objective date and therefore a 2027 date is set for these water bodies, see Table 14.

Table 14. Environmental objectives dates in the *At Risk* and *Review* surface water bodies not included in Recommended Areas for Action

Risk Category	No. of Water Bodies	No. of WBs for 2021 Improvement	No. of WBs for 2027 Status Improvement
<b>Rivers</b>			
<i>At Risk</i>	6	0	6
<i>Review</i>	14	0	14

<b>Lakes</b>			
<i>At Risk</i>	4	0	4
<i>Review</i>	0	0	0
<b>TRaC's</b>			
<i>At Risk</i>	5	0	5
<i>Review</i>	8	0	8
<b>Total</b>	37	0	37

## 9.2 Groundwater Bodies

Four of the five groundwater bodies are currently Good status and, therefore, have met their environmental objectives. The one groundwater body, Waste Facility (W0089-02), in the Bandon Ilen catchment that is less than Good status has an environmental objective date of 2027.

## 10 Acknowledgements

This Bandon Ilen Catchment (Version 3) has been produced by the Catchment Science & Management Unit, EPA, with the assistance of the following:

- Cork County Council
- Inland Fisheries Ireland.
- Local Authorities Waters & Communities Office.
- Irish Water.
- RPS Group.
- Ecological Monitoring & Assessment Unit, EPA.
- Hydrometric & Groundwater Section, EPA.
- Informatics Section, EPA.
- Laboratories, EPA.
- Office of Environmental Enforcement, EPA.
- Department of Housing, Planning and Local Government.
- DAFM Agriculture.
- DAFM Forest Service.
- Coillte.
- Teagasc.
- National Federation of Group Water Schemes.
- National Parks and Wildlife Service.
- Waterways Ireland.
- Board Iascaigh Mhara.
- Marine Institute.
- Sea Fisheries Protection Authority.
- Raptor LIFE IRD Duhallow.

## Recommended Areas for Action Bandon-Ilen Catchment (20)

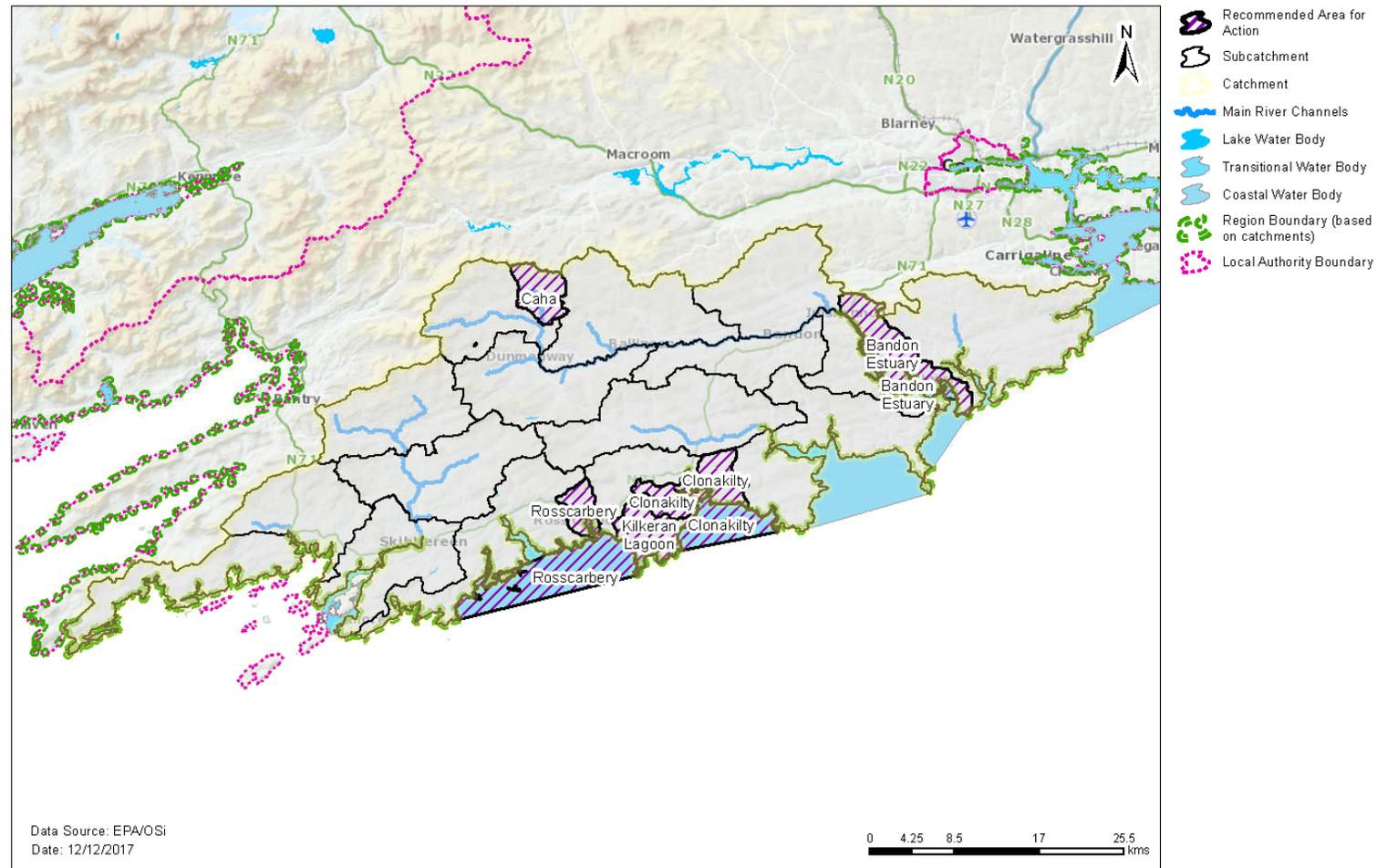


Figure 20 Location of Recommended Areas for Action in the Bandon Ilen Catchment

## Remaining *At Risk* and *Review* Water Bodies

### *Bandon-Ilen Catchment (20)*

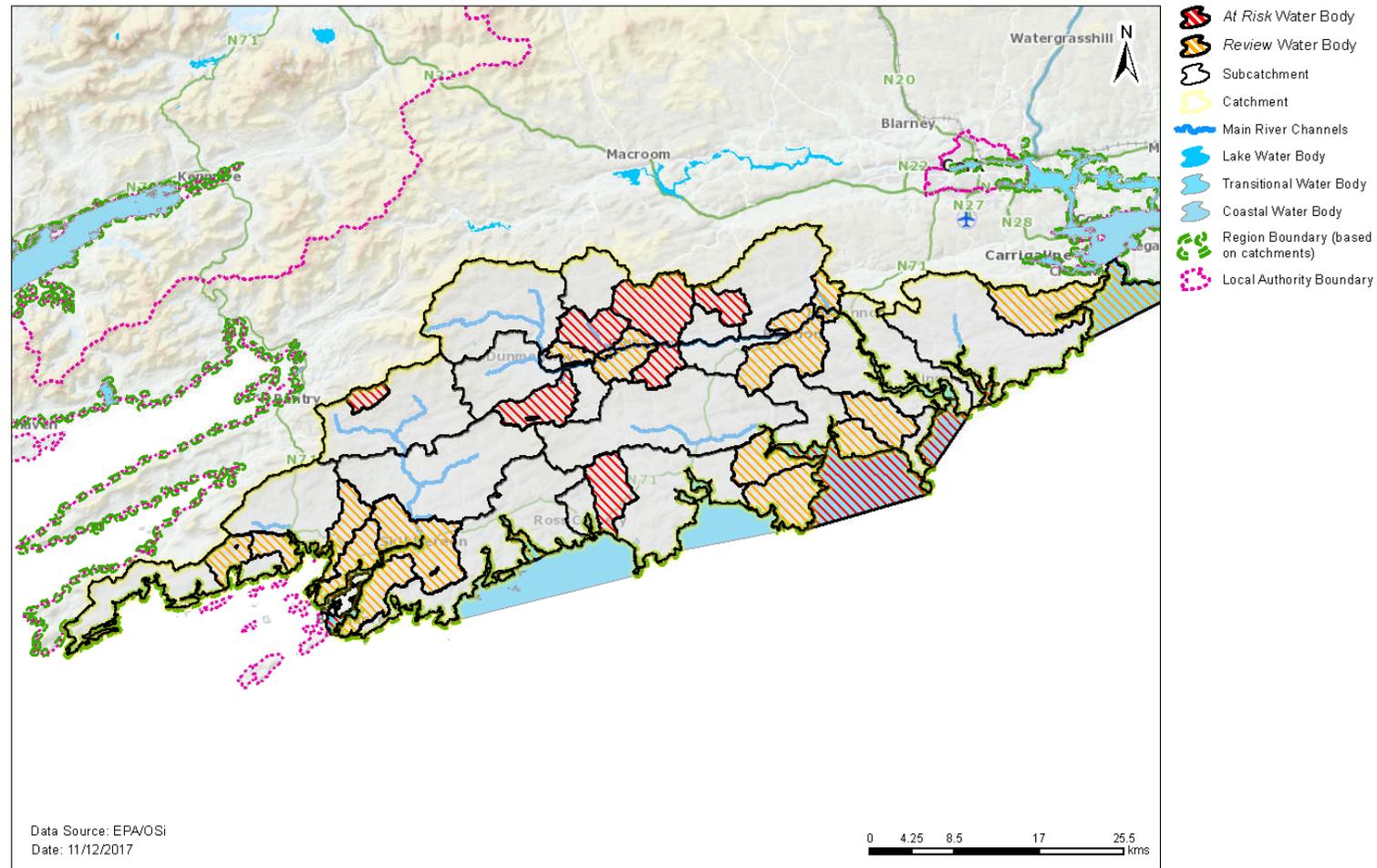


Figure 21 Location of *At Risk* and *Review* water bodies located outside Recommended Areas for Action in the Bandon Ilen Catchment

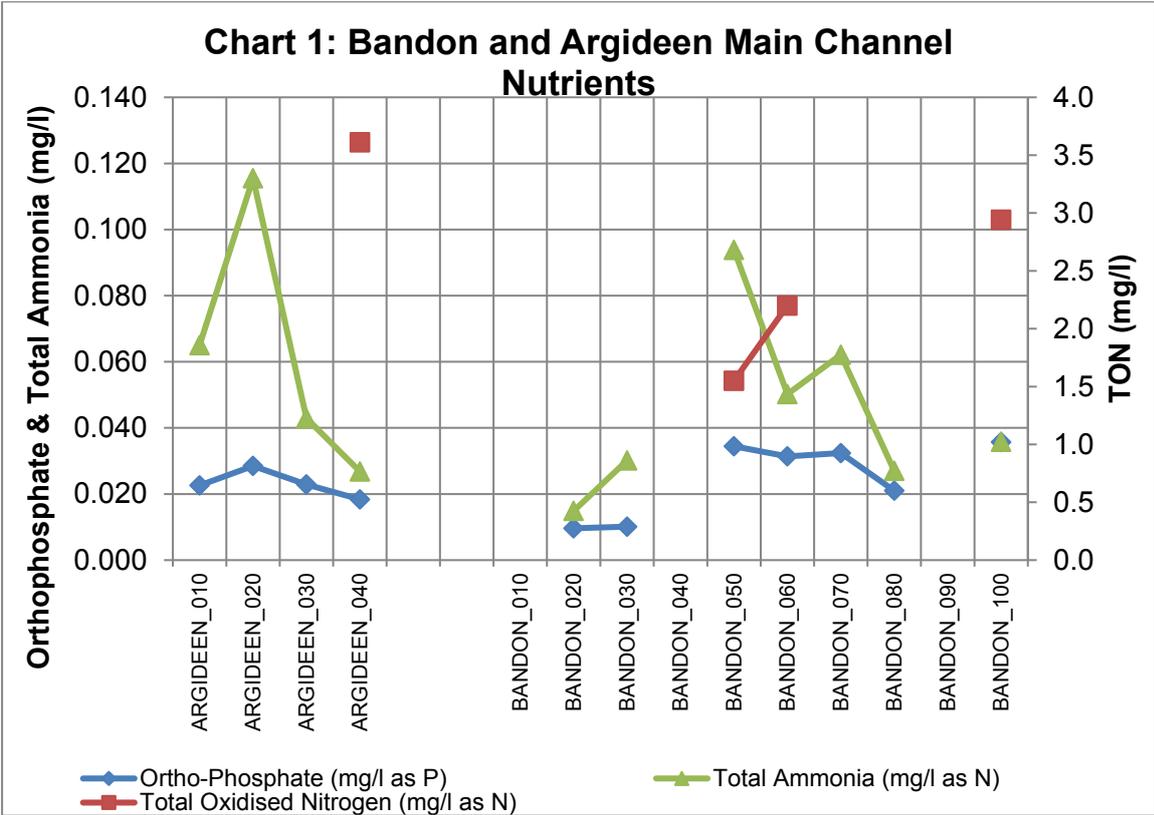
## Appendix 1 High ecological status objective water bodies

Water body/ Site	Type	Codes	2015 Status
BLACKWATER (BANDON)_030	River	IE_SW_20B040800	Good
GLASHAGLORAGH (CORK)_010	River	IE_SW_20G020400	High
LEAMAWADDRA_010	River	IE_SW_20L010200	High
LEAMAWADDRA_020	River	IE_SW_20L010400	High
BALLYMAHANE_010	River	IE_SW_20B010700	Good
BRINNY_020	River	IE_SW_20B070100	High
CAHA_010	River	IE_SW_20C010400	High
CAHA_020	River	IE_SW_20C010700	Good
OWENNASHINGAUN_010	River	IE_SW_20O020200	Good
OWENNASHINGAUN_020	River	IE_SW_20O020700	High
ILEN_030	River	IE_SW_20I010300	High

## Appendix 2 Catchment scale nutrient concentrations and in-stream loads

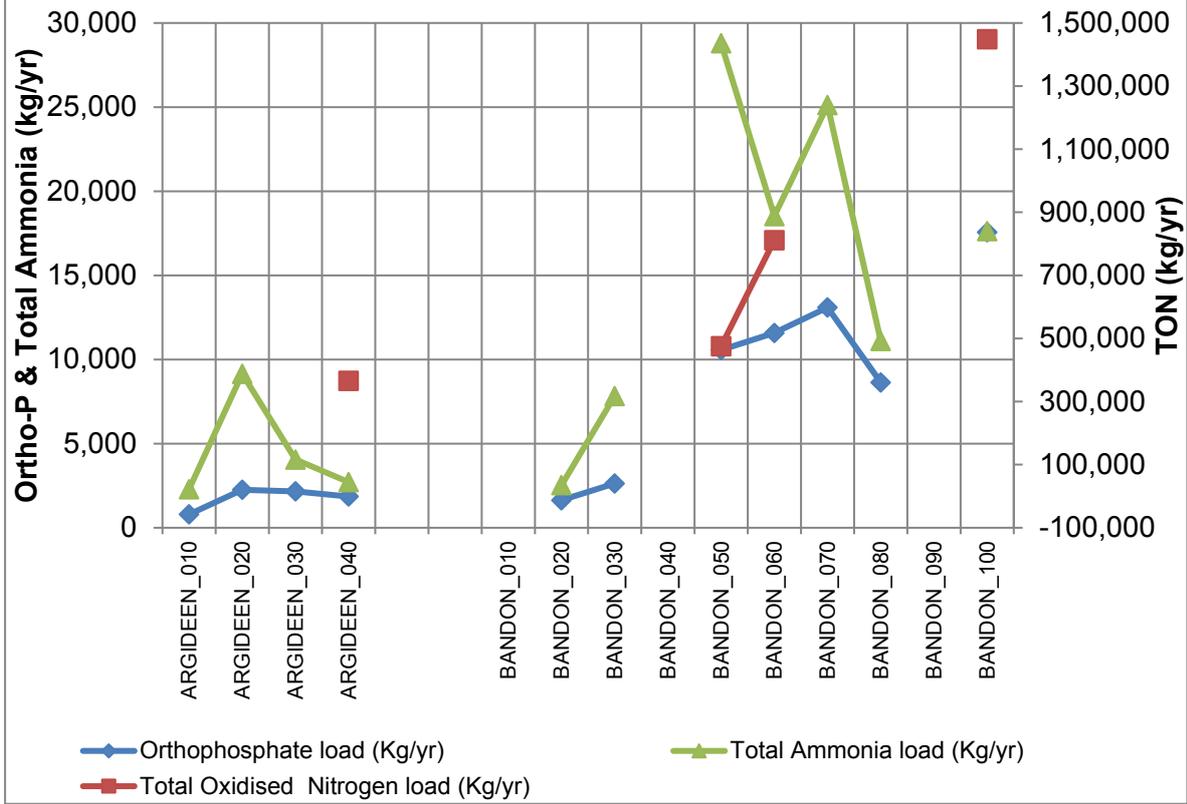
The results of the water quality assessment for the Bandon and Argideen main channels are illustrated in Chart 1. The assessment is based on the mean concentrations between 2013 and 2015 at each site from the headwaters down to the estuary. Orthophosphate concentrations in the Argideen River are below the EQS at all sampling points where monitoring data is available, ranging from 0.018 to 0.023mg/l. Total ammonia concentrations are either at or below the EQS (0.065mg/l) along the channel, apart from ARGIDEEN\_020, where a significant concentration peak (0.12mg/l) occurs. TON data is only available for ARGIDEEN\_040 (3.61mg/l), which exceeds the TON threshold (2.6mg/l).

Along the Bandon main channel orthophosphate concentrations are relatively low in upstream reaches. BANDON\_050, 060 and 070 have concentrations which approach the EQS (0.035mg/l), however the EQS is only exceeded at BANDON\_100. Total ammonia concentrations are below the EQS at all sampling points along the main channel, with the exception of BANDON\_050 with exceeds the threshold. TON data is available for three of the 10 main channel sampling points, showing a trend of increasing downstream concentrations and exceeding the threshold (2.6mg/l) at BANDON\_100.



The nutrient loadings, as shown in Chart 2, show similar trends to the concentrations trends in Chart 1, with highest loads corresponding to concentration peaks.

**Chart 2: Bandon Main Channel Nutrient Loading**



### Appendix 3 Summary information on *At Risk* and *Review* surface water bodies

Subcatchment code	Water body code	Water body name	Water body type	Risk	Ecological Status 07-09	Ecological Status 10-15	High Ecological Status Objective Water Body Y/N	Significant Pressures	Date to Meet Environmental Objective	Recommended Area for Action Name
20_1	IE_SW_20B940880	Barreragh_010	River	Review	Unassigned	Unassigned	N		2027	
20_1	IE_SW_20E050970	East Cruary_010	River	Review	Unassigned	Unassigned	N		2027	
20_1	IE_SW_090_0000	Courtmacsherry Bay	Coastal	At risk	Unassigned	Poor	N	Ag	2027	
20_1	IE_SW_090_0200	Argideen Estuary	Transitional	At risk	Poor	Poor	N	Ag,UWW	2027	
20_1	IE_SW_100_0000	Clonakilty Bay	Coastal	At risk	Unassigned	Moderate	N	Ag	2027	Clonakilty
20_2	IE_SW_20B020800	Bandon_090	River	Review	Good	Good	N		2027	
20_3	IE_SW_20E070850	Enterprise Centre Skull_010	River	Review	Unassigned	Unassigned	N		2027	
20_3	IE_SW_20_53	Skeagh	Lake	At risk	Good	Moderate	N	Other	2027	
20_3	IE_SW_20S360700	Shanavagh_010	River	Review	Unassigned	Unassigned	N		2027	
20_3	IE_SW_140_0100	Ballyrisode Bridge Lagoon	Coastal	Review	Unassigned	Unassigned	N		2027	
20_4	IE_SW_20A300900	Artiteige 20_010	River	Review	Unassigned	Unassigned	N		2027	
20_4	IE_SW_20B090100	Ballinspittle_010	River	Review	Good	Good	N		2027	
20_5	IE_SW_20B010700	Ballymahane_010	River	At risk	High	Good	Y	Hymo	2027	
20_6	IE_SW_20_153	Coolkellure	Lake	At risk	Moderate	Moderate	N	For	2027	Caha
20_6	IE_SW_20C010700	Caha_020	River	At risk	High	Good	Y	For,M+Q	2027	Caha
20_7	IE_SW_20O020200	Owennashingaun_010	River	At risk	High	Good	Y	For	2027	
20_8	IE_SW_20_158	Curragallicky	Lake	At risk	Poor	Moderate	N	Other	2027	
20_8	IE_SW_20B080800	Bealanascartane_010	River	At risk	Good	Moderate	N	Ag	2027	
20_10	IE_SW_20B020550	Bandon_050	River	Review	Moderate	Good	N		2027	
20_10	IE_SW_20B020600	Bandon_060	River	At risk	Moderate	Moderate	N	Other	2027	
20_10	IE_SW_20B040800	Blackwater (Bandon)_030	River	At risk	High	Good	Y	Ag	2027	
20_11	IE_SW_20H070690	Hayes' Cross Roads_010	River	Review	Unassigned	Unassigned	N		2027	Kilkeran Lagoon
20_11	IE_SW_20N100620	North Ring Curraghgrane_010	River	Review	Unassigned	Unassigned	N		2027	Clonakilty
20_11	IE_SW_20C060300	Carhoo_010	River	At risk	Good	Moderate	N	Hymo	2027	Clonakilty
20_11	IE_SW_20O030400	Ownahinchy_010	River	At risk	Good	Moderate	N	Ag	2027	
20_11	IE_SW_20T020050	Tinneel Stream_010	River	At risk	Moderate	Moderate	N	Ag	2027	Rosscarbery
20_11	IE_SW_100_0100	Clonakilty Harbour	Transitional	At risk	Unassigned	Moderate	N	Ag	2027	Clonakilty
20_11	IE_SW_100_0200	Inchydoney	Coastal	Review	Unassigned	Unassigned	N		2027	
20_11	IE_SW_100_0300	White's Marsh	Coastal	Review	Unassigned	Unassigned	N		2027	
20_11	IE_SW_100_0400	Clogheen Strand	Coastal	Review	Unassigned	Unassigned	N		2027	

Subcatchment code	Water body code	Water body name	Water body type	Risk	Ecological Status 07-09	Ecological Status 10-15	High Ecological Status Objective Water Body Y/N	Significant Pressures	Date to Meet Environmental Objective	Recommended Area for Action Name
20_11	IE_SW_110_0000	Rosscarbery Bay	Coastal	At risk	Unassigned	Unassigned	N	Ag	2027	Rosscarbery
20_11	IE_SW_110_0100	Kilkeran Lake	Transitional	Review	Poor	Poor	N		2027	Kilkeran Lagoon
20_11	IE_SW_110_0200	Rosscarbery Harbour	Transitional	At risk	Unassigned	Unassigned	N	Ag	2027	Rosscarbery
20_13	IE_SW_20D600820	Derrynaqasha_010	River	Review	Unassigned	Unassigned	N		2027	Bandon estuary
20_13	IE_SW_20K190980	Knocknabohilly_010	River	Review	Unassigned	Unassigned	N		2027	Bandon estuary
20_13	IE_SW_20B020900	Bandon_100	River	Review	Good	Good	N		2027	
20_13	IE_SW_20L510960	Laherfineen_010	River	Review	Unassigned	Unassigned	N		2027	Bandon estuary
20_13	IE_SW_080_0000	Kinsale Harbour	Coastal	At risk	Good	Good	N	Ag	2027	
20_13	IE_SW_080_0100	Lower Bandon Estuary	Transitional	At risk	Moderate	Moderate	N	Ag	2027	Bandon estuary
20_13	IE_SW_080_0200	Kinsale Marsh, Commoge	Coastal	Review	Unassigned	Unassigned	N		2027	
20_13	IE_SW_080_0300	Upper Bandon Estuary	Transitional	At risk	Moderate	Moderate	N	Ag	2027	Bandon estuary
20_14	IE_SW_20M010200	Minane 20_010	River	Review	Unassigned	Unassigned	N		2027	
20_14	IE_SW_050_0000	Outer Cork Harbour	Coastal	Review	Moderate	Good	N		2027	
20_14	IE_SW_070_0100	Oysterhaven	Transitional	At risk	Unassigned	Unassigned	N	Ag	2027	
20_14	IE_SW_070_0200	Oysterhaven Lake, Clashroe	Transitional	Review	Unassigned	Unassigned	N		2027	
20_15	IE_SW_20_150	Ballin CK	Lake	At risk	Moderate	Poor	N	Hymo	2027	
20_15	IE_SW_110_0300	Glandore Harbour	Transitional	Review	Unassigned	Unassigned	N		2027	
20_16	IE_SW_20I010350	Ilen_050	River	Review	Unassigned	Unassigned	N		2027	
20_16	IE_SW_20L450850	Lettershaw_010	River	Review	Unassigned	Unassigned	N		2027	
20_16	IE_SW_20M580810	Mallavonea_010	River	Review	Unassigned	Unassigned	N		2027	

Subcatchment code	Water body code	Water body name	Water body type	Risk	Ecological Status 07-09	Ecological Status 10-15	High Ecological Status Objective Water Body Y/N	Significant Pressures	Date to Meet Environmental Objective	Recommended Area for Action Name
20_16	IE_SW_20_148	Abisdealy	Lake	At risk	Moderate	Poor	N	Ag	2027	
20_16	IE_SW_130_0100	Ilen Estuary	Transitional	At risk	Moderate	Moderate	N	Ag,DU,UWW	2027	
20_17	IE_SW_20R030900	Roaring Water River_010	River	Review	Unassigned	Unassigned	N		2027	

**Ag:** Agriculture

**M+Q:** Mines and Quarries

**DWW:** Domestic Waste Water

**Peat:** Peat Drainage and Extraction

**For:** Forestry

**DU:** Diffuse Urban

**Hymo:** Hydromorphology

**UWW:** Urban Waste Water

**Ind:** Industry

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

**Protected Area:** If a water body is one or more of the following: Drinking Water Protected Area; Bathing Water; Shellfish Area; Nutrient Sensitive Area or; a Natura 2000 site with a water dependent qualifying interest with a water quality and/or quantity conservation objective, then it has been highlighted as a protected area in this table.

## Appendix 4 Drinking water supplies in the catchment

Scheme Code	Scheme Name	Water Body	Water Body Code	Objective met? Yes /No	Reason why not met
0500PRI2706	Castlepark GWS	Bandon	IE_SW_G_086	N/A	No data
0500PRI2710	Desert Serges GWSS	Bandon	IE_SW_G_086	N/A	No data
0500PRI4707	Rossemore GWSS	Skibbereen-Clonakilty	IE_SW_G_085	N/A	No data
0500PUB4401	Ballineen	Bandon	IE_SW_G_086	Yes	N/A
0500PUB4402	Castletownkinnagh	Bandon	IE_SW_G_086	N/A	No data
0500PUB4403	Coppeen	Bandon	IE_SW_G_086	N/A	No data
0500PUB4504	Tooremore	Skibbereen-Clonakilty	IE_SW_G_085	N/A	No data
0500PRI2710	Desert Serges GWSS	Bandon	IE_SW_G_086	N/A	No data
0500PUB3501	Innishannon	Skibbereen-Clonakilty	IE_SW_G_085	Yes	N/A
	Innishannon	Skibbereen-Clonakilty	IE_SW_G_085	Yes	N/A
	Innishannon	Skibbereen-Clonakilty	IE_SW_G_085	Yes	N/A
	Innishannon	Bandon	IE_SW_G_086	Yes	N/A
0500PUB4302	Lyre PH	Skibbereen-Clonakilty	IE_SW_G_085	N/A	No data
0500PUB2101	Bandon Regional	Bandon	IE_SW_G_086	Yes	N/A
0500PUB3104	Templemartin	Bandon	IE_SW_G_086	N/A	No data
0500PUB3105	Garranes	Bandon	IE_SW_G_086	N/A	No data
0500PUB2102	Clashanamid	Bandon	IE_SW_G_086	N/A	No data
0500PUB2201	Ard Na Killy Ridge	Bandon	IE_SW_G_086	N/A	No data
	Ard Na Killy Ridge	Bandon	IE_SW_G_086	N/A	No data
0500PUB2202	Ballinadee Water Supply Scheme	Bandon	IE_SW_G_086	N/A	No data
0500PUB2203	Belgooly	Bandon	IE_SW_G_086	Yes	N/A
0500PUB2205	Ballinspittle Water Supply Sch	Skibbereen-Clonakilty	IE_SW_G_085	Yes	N/A
0500PUB2206	Cullen	Bandon	IE_SW_G_086	N/A	No data
0500PUB2207	Nohoval	Bandon	IE_SW_G_086	N/A	No data
0500PUB2208	Roberts Cove	Bandon	IE_SW_G_086	Yes	N/A
	Roberts Cove	Bandon	IE_SW_G_086	Yes	N/A
	Roberts Cove	Bandon	IE_SW_G_086	Yes	N/A
0500PUB2209	Minane Bridge	Bandon	IE_SW_G_086	N/A	No data
	Minane Bridge	Bandon	IE_SW_G_086	N/A	No data
0500PUB4109	Dromore Bantry	Skibbereen-Clonakilty	IE_SW_G_085	N/A	No data
0500PUB4607	Caheragh WTP	Skibbereen-Clonakilty	IE_SW_G_085	N/A	No data
0500PUB4605	Skibbereen Ballyhilty	River Ilen (Ilen_030)	IE_SW_20I010300	Yes	N/A
0500PUB4404	Dunmanway	Coolkellure	IE_SW_20_153	Yes	N/A

Scheme Code	Scheme Name	Water Body	Water Body Code	Objective met? Yes /No	Reason why not met
0500PUB4603	Drinagh	Curraghlicky Lake	IE_SW_20_158	Yes	N/A
0500PUB4503	Schull	Schull Lake (Skeagh Lough)	IE_SW_20_53	Yes	N/A
0500PUB4604	Leap	Ballin CK	IE_SW_20_150	Yes	N/A
0500PUB4601	Baltimore Lakecross	Abisdealy Lake	IE_SW_20_148	Yes	N/A
0500PUB2204	Innishannon Water Supply Scheme	Ballinspittle_010	IE_SW_20B090100	Yes	N/A
0500PUB4301	Clonakilty	Argideen_030	IE_SW_20A020100	No	MCPA, Triclopyr, Total pesticides
0500PUB4501	Crookhaven	Arduaslough_010	IE_SW_20A360930	Yes	N/A
0500PUB4502	Goleen	Arduaslough_010	IE_SW_20A360930	Yes	N/A
0500PUB2101	Bandon Regional	Bandon_070	IE_SW_20B020700	Yes	N/A
0500PUB3501	Innishannon	Bandon_100	IE_SW_20B020900	Yes	N/A
0500PUB4103	Drimoleague	llen_010	IE_SW_20I010100	Yes	N/A
	Drimoleague	llen_010	IE_SW_20I010100	Yes	N/A
	Drimoleague	llen_010	IE_SW_20I010100	Yes	N/A

## Appendix 5 Prioritisation of water bodies with Natura 2000 site qualifying interests

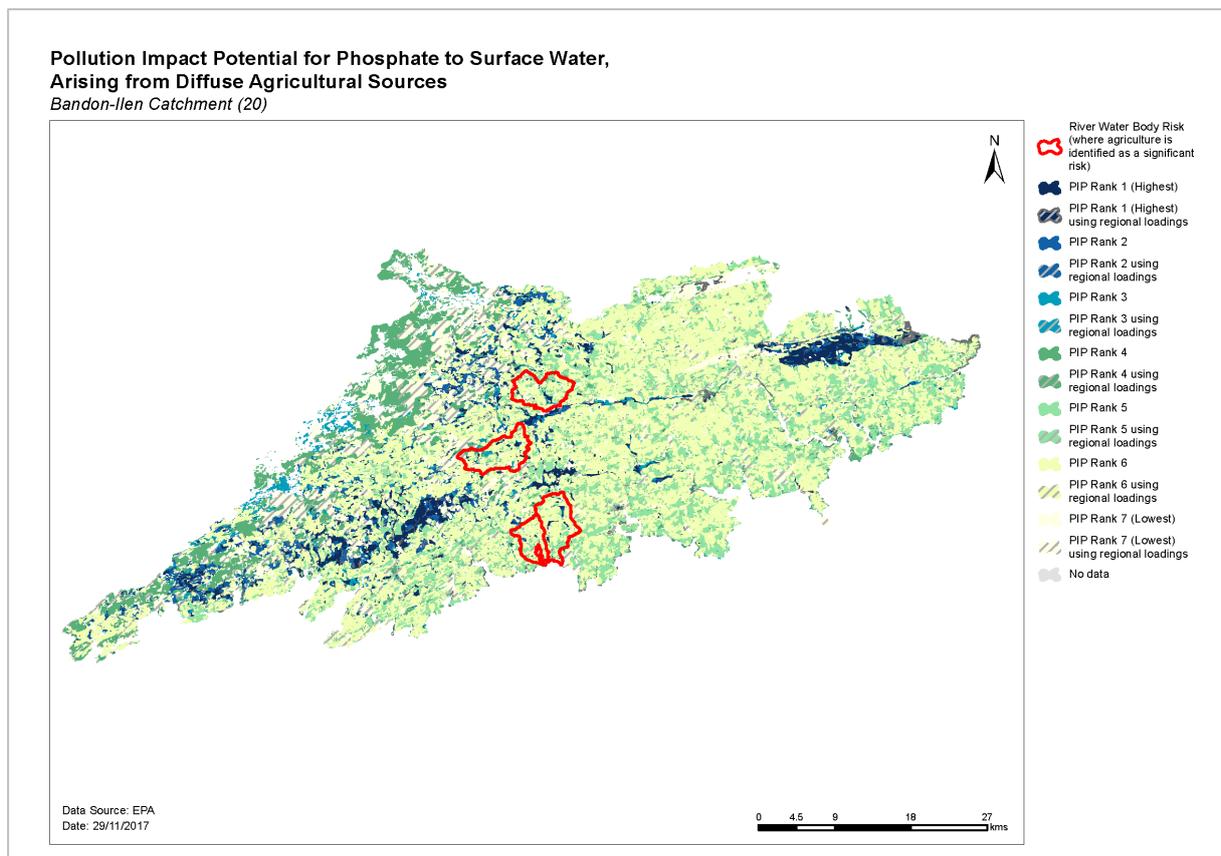
*River water bodies that are designated as salmonid rivers (under Salmonid Regulations (S.I. 293 / 1988)) and as Freshwater Pearl Mussel rivers (under Freshwater pearl mussel regulations (S.I. 296 2009)) but that are not located within SACs have also been listed.*

SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
Bandon River SAC 002171	1029 (19 of 27 catchments of S.I. 296 2009)	Good	River	Caha_020	Good (AT RISK - HES obj)	No	IE_SW_20C010700	Yes
			River	Bandon_020	Good (NAR)	No	IE_SW_20B020200	Yes
			River	Bandon_030	Good (NAR)	No	IE_SW_20B020300	Yes
Barley Cove to Ballyrisode Point SAC 001040	none							
Castletownshend SAC 001547	none							
Clonakilty Bay SAC 000091	none							
Courtmacsherry Estuary SAC 001230	none							
Kilkeran Lake and Castlefreke Dunes SAC 001061	1150	Good	Transitional	Kilkeran Lake	Poor (R)	Yes	IE_SW_110_0100	Yes
Lough Hyne Nature Reserve and Environs SAC 000097	none							
Myross Wood SAC 001070	none							
Roaringwater Bay and Islands SAC 000101	none							
Freshwater pearl mussel (outside SACs)	1029 (19 catchments of S.I. 296 2009)	Good	River	Diny_010	Good (NAR)	No	IE_SW_20D010050	Yes
			River	Caha_010	High (NAR - HES Obj)	No	IE_SW_20C010400	Yes
			River	Bandon_010	Good (NAR)	No	IE_SW_20B020050	Yes
Salmonids (outside SACs)	1106	Good	River	Argideen_010	Good (NAR)	No	IE_SW_20A020045	Yes
			River	Argideen_020	Good (NAR)	No	IE_SW_20A020060	Yes
			River	Argideen_030	Good (NAR)	No	IE_SW_20A020100	Yes
			River	Argideen_040	Good (NAR)	No	IE_SW_20A020200	Yes



## Appendix 6 Pollution Impact Potential (PIP) Map for Phosphorus

For areas where agriculture is deemed as the significant pressure, areas of high risk to surface water can be targeted. The map below shows relative risk of loss of phosphorus to surface water. The risk of phosphorus losses is strongly correlated on whether the land is poorly draining or free draining and the loadings applied i.e. significant loadings applied on poorly draining areas result in a high potential risk to surface water. However, this figure does not imply that actual losses from these areas are occurring but is a useful tool for informing where resources should be focused (i.e. by allowing high risk areas to be identified and prioritised for further investigation). PIP maps are available online at a scale of 1:20,000 and can be accessed by public bodies via the EDEN process.



## Appendix 7 Local Catchment Assessment Categories

Category	Assessment & Measures Evaluation Details
IA1	Further information provision (e.g. from IFI, LAs, EPA)
IA2	Point source desk-based assessment
IA3	Assessment of unassigned status water bodies, requiring field visit(s)
IA4	Regulated point sources, requiring field visit/s
IA5	Stream (catchment) walk to evaluate multiple sources in a defined (1 km) river stretch (used as the basis for estimating resource requirements)
IA6	Stream (catchment) walk in urban areas
IA7	Stream (catchment) walk along >1 km river stretches
IA8	Stream (catchment) walk along high ecological status (HES) objective rivers
IA9	Lakes assessment, requiring field visits
IA10	Groundwater assessments, requiring field visits