Laune-Maine-Dingle Bay Catchment Assessment 2010-2015
(HA 22)

Catchment Science & Management Unit

Environmental Protection Agency

December 2018

Version no. 3

epaCatchments
Healthy • Resilient • Productive
Valued water resources supporting vibrant communities

Preface

This document provides a summary of the characterisation outcomes for the water resources of the Laune-Maine-Dingle Bay 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.
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/

Table of contents

1 Introduction

This catchment includes the area drained by the Rivers Laune and Maine and all streams entering tidal water between Glanearagh Head and Clogher Head, Co. Kerry, draining a total area of 2,036 km². The largest urban centre in the catchment is Killarney. The other main urban centres are Cahersiveen, Killorglin, Castleisland and Dingle. The total population of the catchment is approximately 62,000 with a population density of 30 people per km².

The north-western corner of the Iveragh Peninsula is drained by several small rivers flowing north and west into Portmagee Channel and to the sea around Valencia Island. The Glenbeigh Horseshoe is drained by the Behy River, flowing into Dingle Bay at Rossbehy Creek.

The Caragh River flows north where it is joined by the Coomnacarrig, Mealagh and Owbeg Rivers from the west and the Lyranes Lower river from the east, flowing though Lough Caragh before entering Dingle Bay via Rossbehy Creek.

The Laune River system drains the south-eastern part of the catchment. The Gearhameen River flows east through the Black Valley before entering the Upper Lake. To the south, the Owenreagh River drains the north slopes of the Dunkerron Mountains before entering the Upper Lake, with the Galway's River flowing into the lake from the south. The area upstream of the Upper Lake is a designated freshwater pearl mussel sub-catchment.

The Long Range River flows from the Upper Lake and into Muckross Lake to the north with the Owengarriff River. Leaving Muckross Lake and flowing into Lough Leane the river enters the flat karstified limestone. The River Flesk flows into Lough Leane flowing from the northern slopes of the Derrynasaggart Mountains. It then flows north, being joined by the River Loo. The Flesk is also joined by the Owneykeagh, which, drains much of the eastern edge of the catchment. The Woodford River then flows into the Flesk from the east before the river flows through Killarney and into Lough Leane.

The Deenagh River also flows into the lake, having drained the area north of Killarney. The Laune River flows out of Lough Leane towards Beaufort, where it is joined by the Loe, Gaddagh and Gweestin Rivers. It then continues north west, joined by the Finglas and Cottoner's Rivers before flowing into Castlemaine Harbour and out to sea at Dingle Bay.

The Maine River system drains the north-eastern part of the catchment. The Shanowen River flows from the southern slopes of the Stack's Mountains and through Castleisland, after which it is joined by the Little Maine. The river is then joined by the Brown Flesk. It continues west, being joined by several small rivers which drain the southern slopes of the Slieve Mish Mountains, before flowing into the head of Dingle Bay north of Kilorglin.

The southern side of the Dingle Peninsula is drained by a series of small rivers that drain into Dingle Bay from the south facing slopes of the mountain ridge running the length of the peninsula, including the Emalghmore, Owenascaul, Owenalondrig, Milltown and Ballinleague rivers.

The Laune-Maine-Dingle Bay catchment comprises 19 subcatchments (Table 1, Figure 1) with 93 river water bodies, 44 lakes, two transitional and six coastal water bodies, and eight groundwater bodies. There are no heavily modified or artificial water bodies in the Laune-Maine-Dingle Bay Catchment.

Table 1. List of subcatchments in the Laune-Maine-Dingle Bay catchment

Subcatchment ID	Subcatchment Name
22_1	Deenagh_SC_010
22_2	Maine_SC_040
22_3	Gaddagh_SC_010
22_4	Emlaghmore_SC_010
22_5	Maine_SC_010
22_6	Flesk[Kerry]_SC_020
22_7	Crinnagh_SC_010
22_8	Flesk[Kerry]_SC_010
22_9	Maine_SC_020
22_10	BOOLA_SC_010
22_11	Ferta_SC_010
22_12	Laune_SC_030
22_13	Caragh_SC_010
22_14	Laune_SC_010
22_15	Laune_SC_020
22_16	Quagmire_SC_010
22_17	Maine_SC_030
22_18	Owenascaul_SC_010
22_19	BALLYNAHOW_COMMONS_SC_010

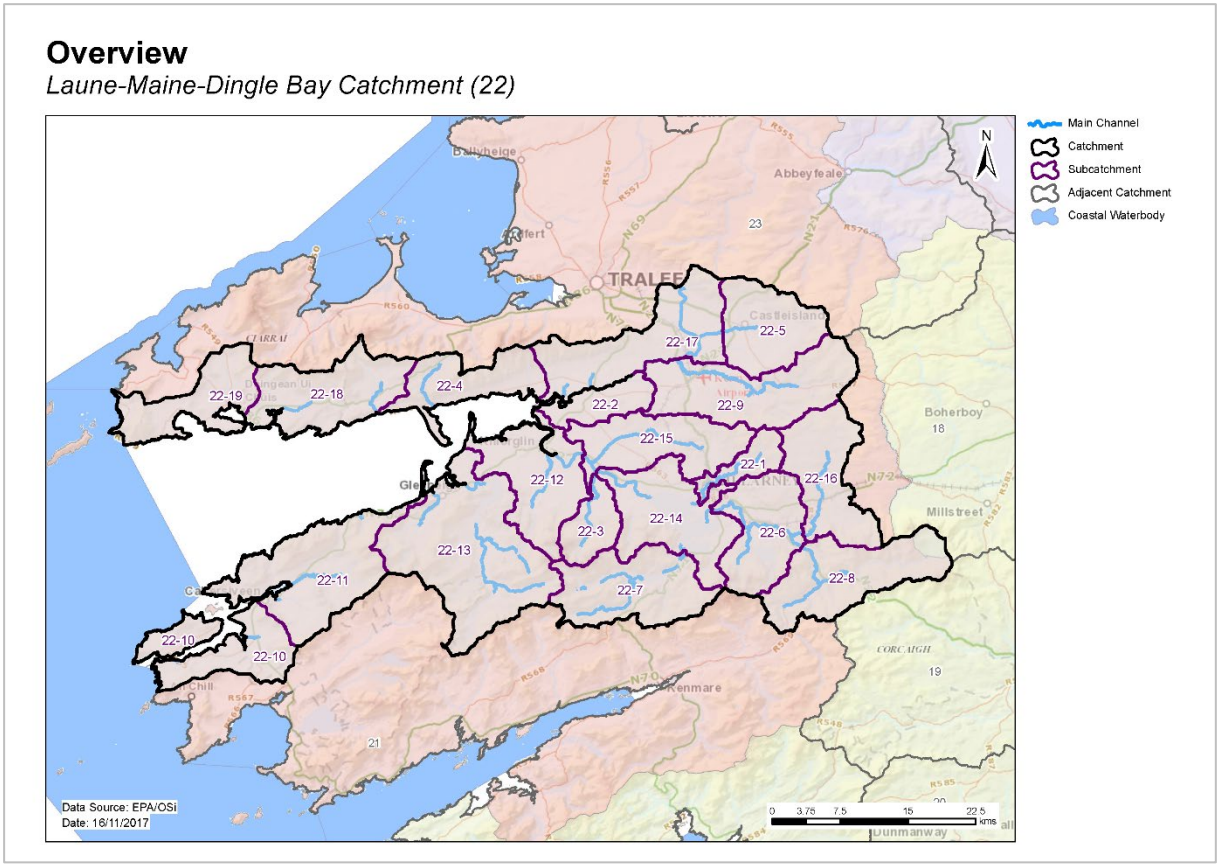


Figure 1. Subcatchments in the Laune-Maine-Dingle Bay catchment

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 60 (44%) river and lake water bodies at Good or High status, and 15 (11%) at less than Good status in 2015 (Table 2, Figure 2). Sixty-two (45%) river and lake water bodies are unassigned.
- Twenty-nine river water bodies and sites and two lakes have a high ecological status objective. In 2015, 21 (68%) of these water bodies were at High status, seven were at Good, two were at Moderate and one was at Poor (Figure 3, Appendix 1).
- The numbers of water bodies at each status class in 2007-09 and 2010-15 are shown in Figures 4 (rivers) and 5 (lakes).
- Since 2007-09 when WFD monitoring began, 12 water bodies have an improved status whereas 12 have deteriorated (Figure 7).
- The variation in nutrient concentrations and loads in the Laune-Maine-Dingle Bay main channels are illustrated in Appendix 2.

2.1.2 Transitional and coastal (TraC)

- There are two transitional water bodies and two coastal water bodies at Good status in 2015 (Table 2, Figure 2), three of which (Portmagee, Valencia Harbour, Ferta) have a high ecological status objective. The remaining four coastal water bodies are unassigned.
- The numbers of water bodies at each status class in 2007-09 and 2010-15 are shown in Figure 6.

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

	Number of water bodies	2010-15 Status						Risk Categories		
		High	Good	Mod	Poor	Bad	Unassigned	*Not at Risk*	*Review*	*At Risk*
Rivers	93	21	34	6	7	0	25	57	15	21
Lakes	44	2	3	2	0	0	37	36	6	2
TraCs	8	0	4	0	0	0	4	5	0	3

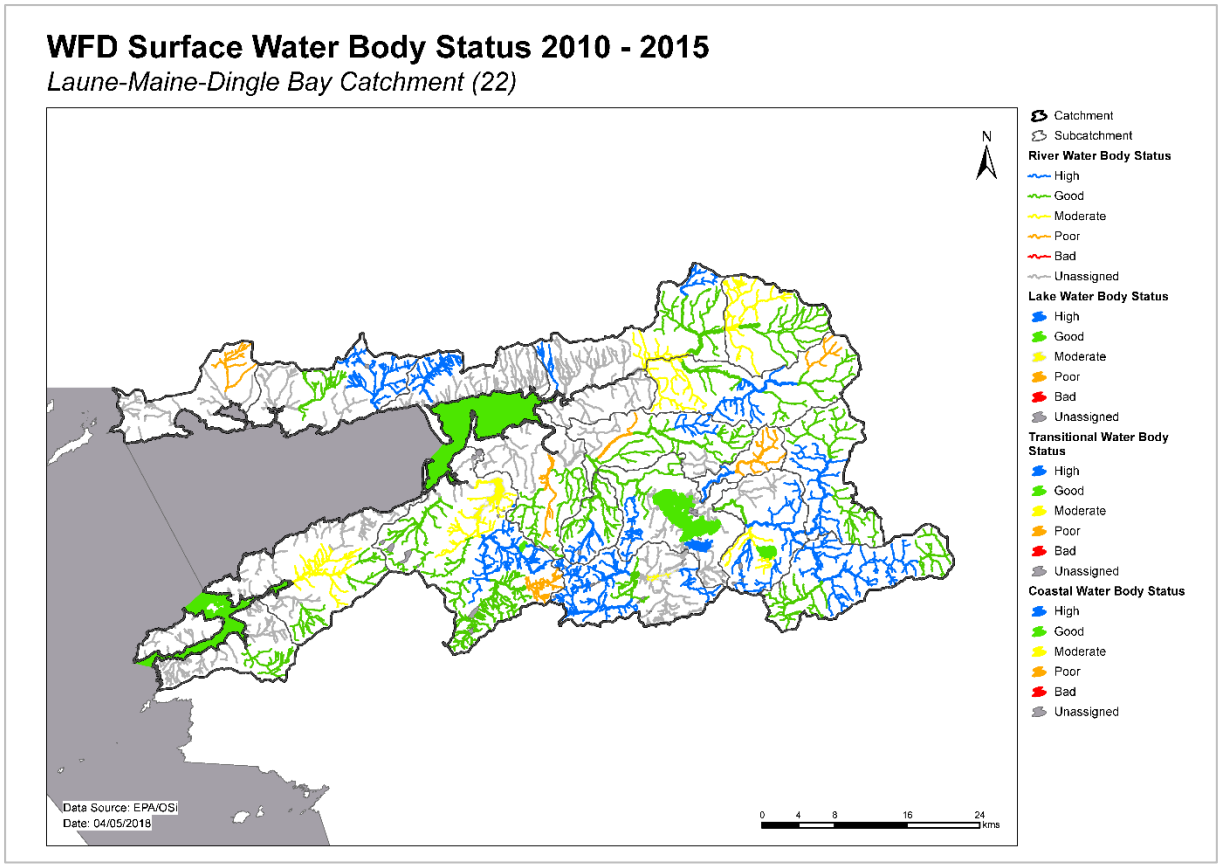


Figure 2. Surface water body ecological status

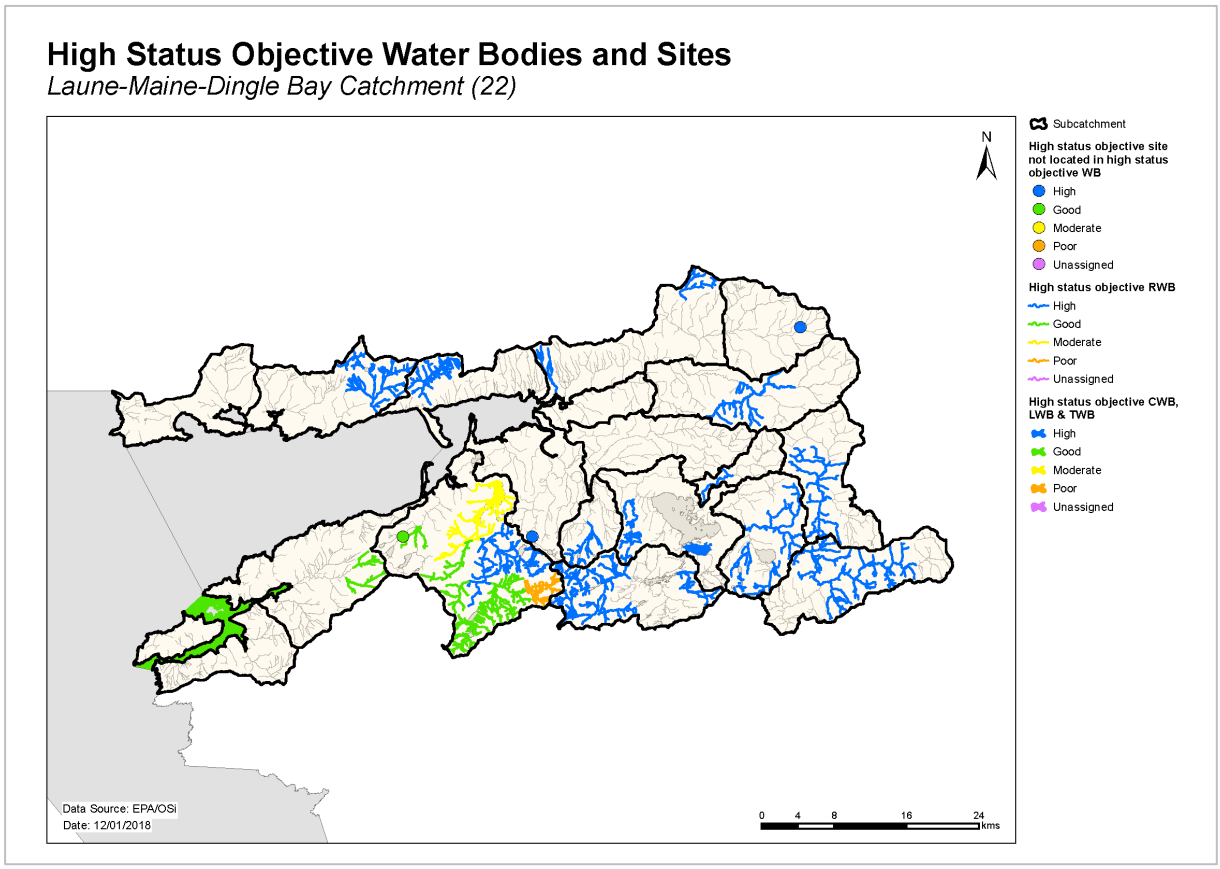


Figure 3. High ecological status objective water bodies and sites

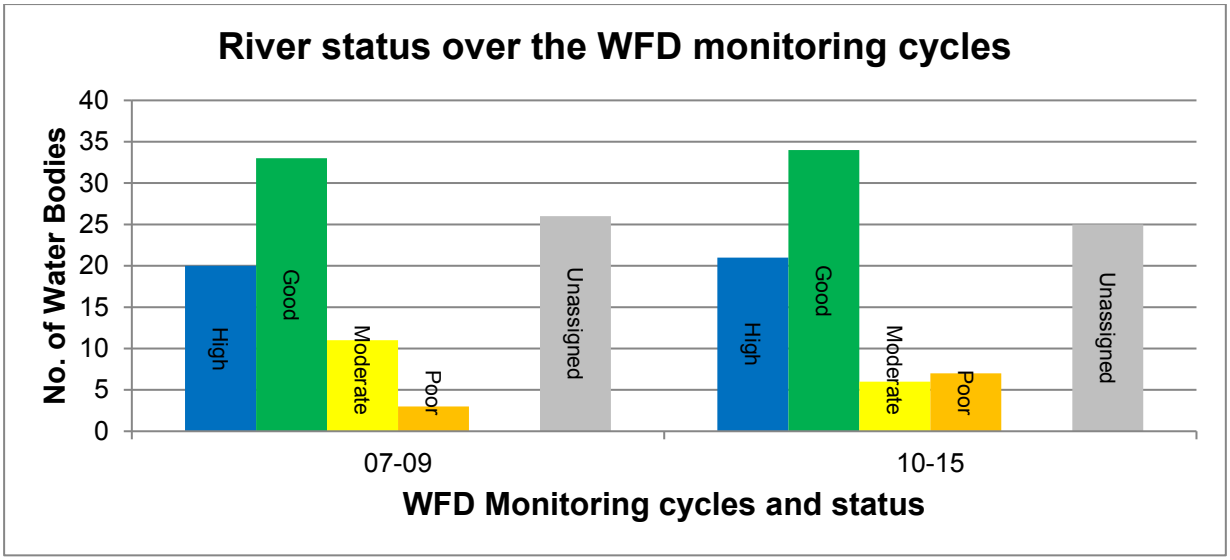


Figure 4. Number of rivers at each status class in 2007-09 and 2010-15

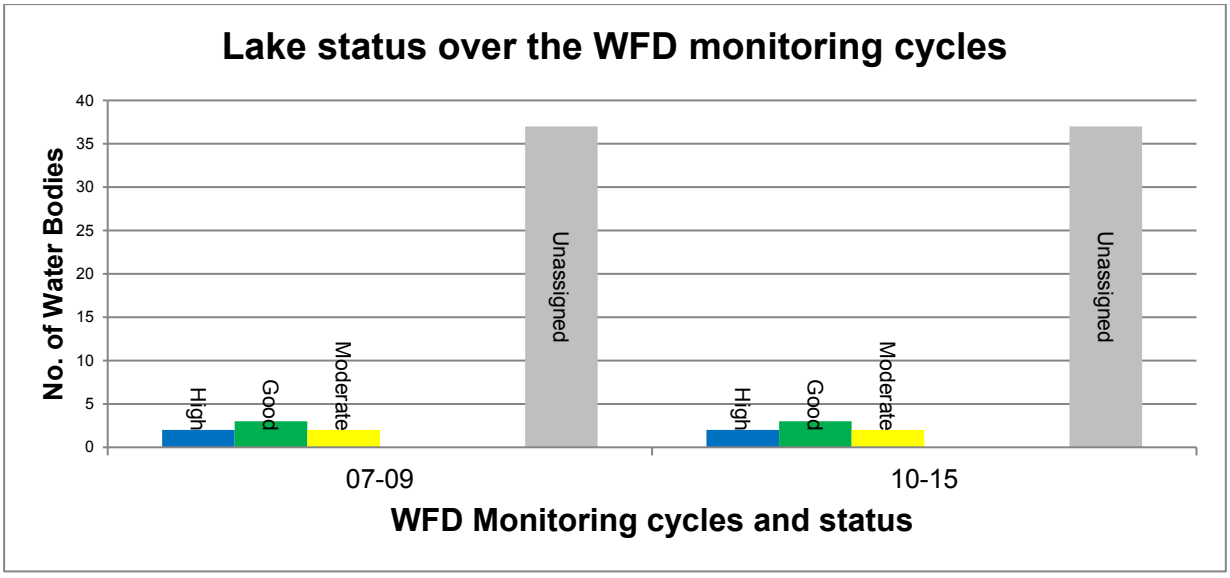


Figure 5. Number of lakes at each status class in 2007-09 and 2010-15

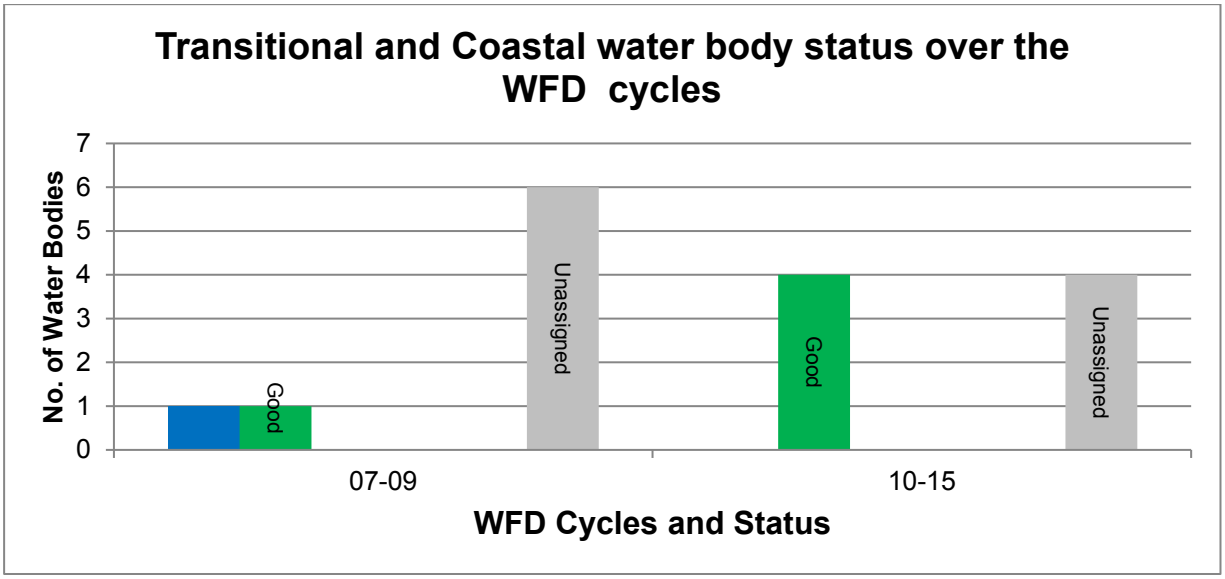


Figure 6. Number of TraCs at each status class in 2007-09 and 2010-15

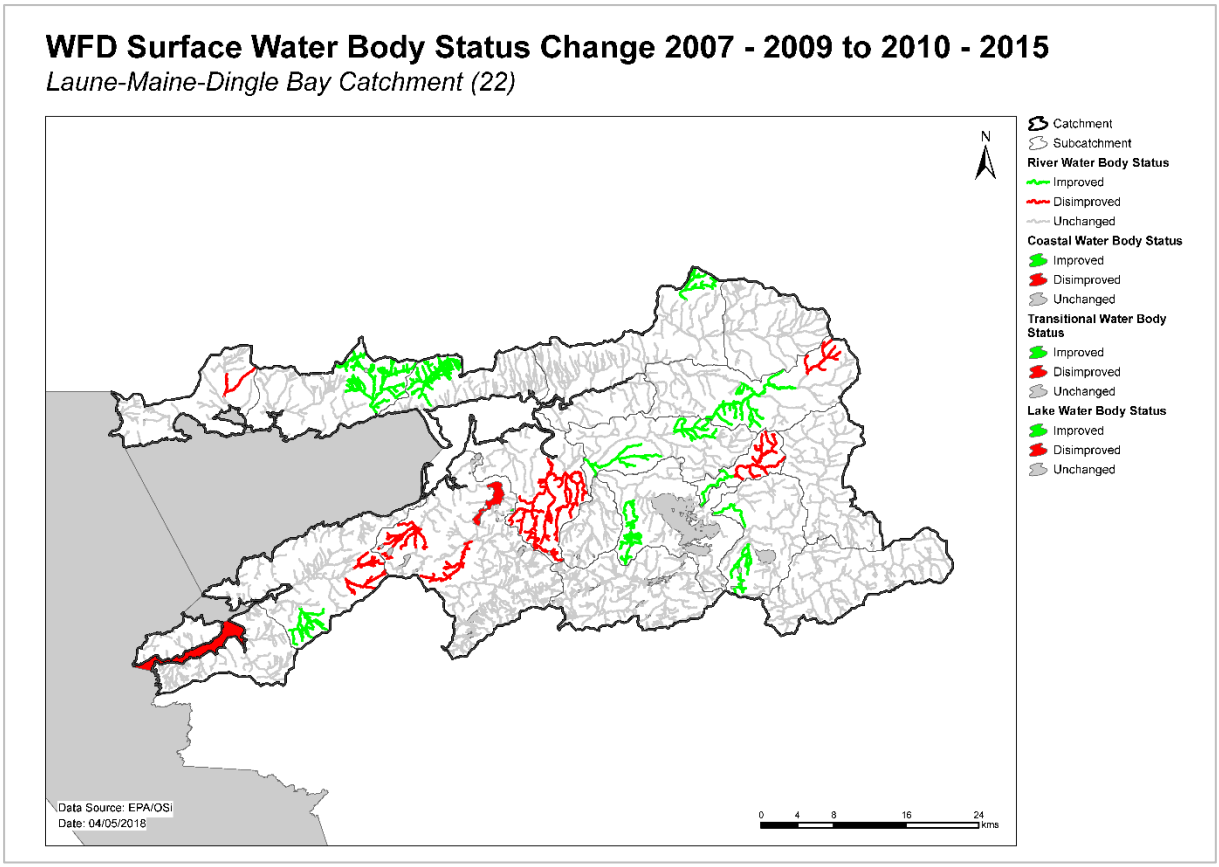


Figure 7. Surface water body status change from 2007-09 to 2010-15

2.2 Groundwater status

- There were seven groundwater bodies at Good status and one at Poor status for 2010-2015 (Table 3, Figure 9). This follows from eight groundwater bodies at Good status for 2007-2012.

- IE_SW_G_049 Industrial Facility (P0018-01) was classified at Poor status due to THF (Figure 8). This classification was due to improved information being available and the development of technical assessment approaches, rather than there being deterioration in water quality in this water body between 2007-12 and 2010-15.

Table 3. Summary of groundwater body status and risk categories

	Number of water bodies	2010-15 Status		Risk Categories		
		Good	Poor	*Not at Risk*	*Review*	*At Risk*
Groundwater	8	7	1	5	2	1

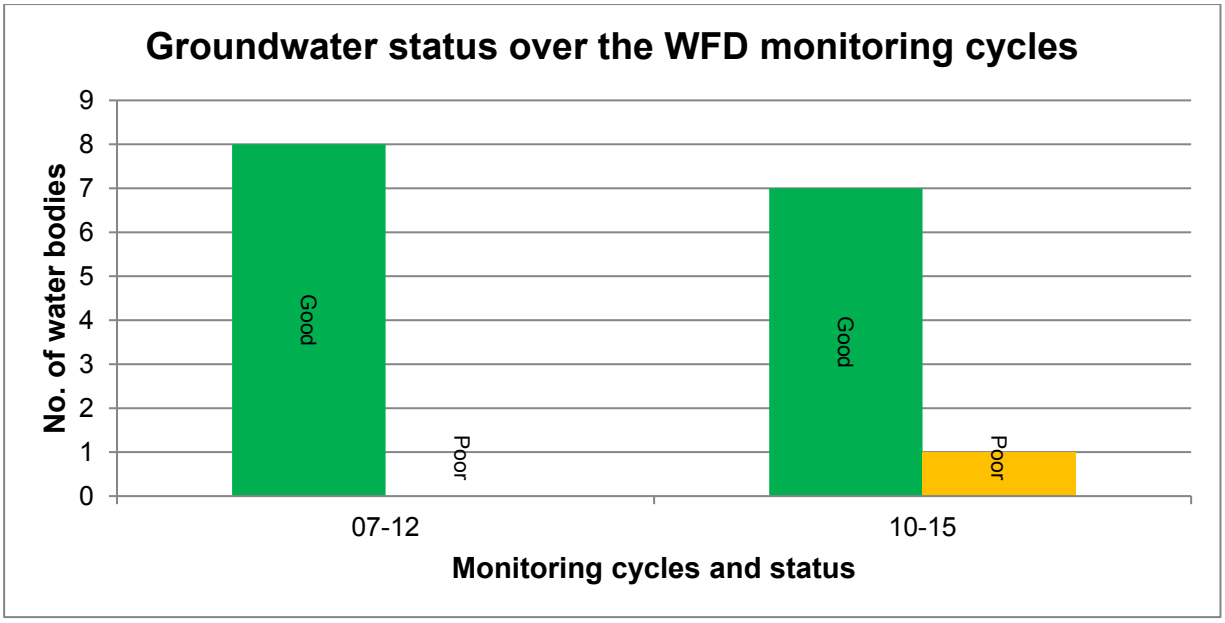
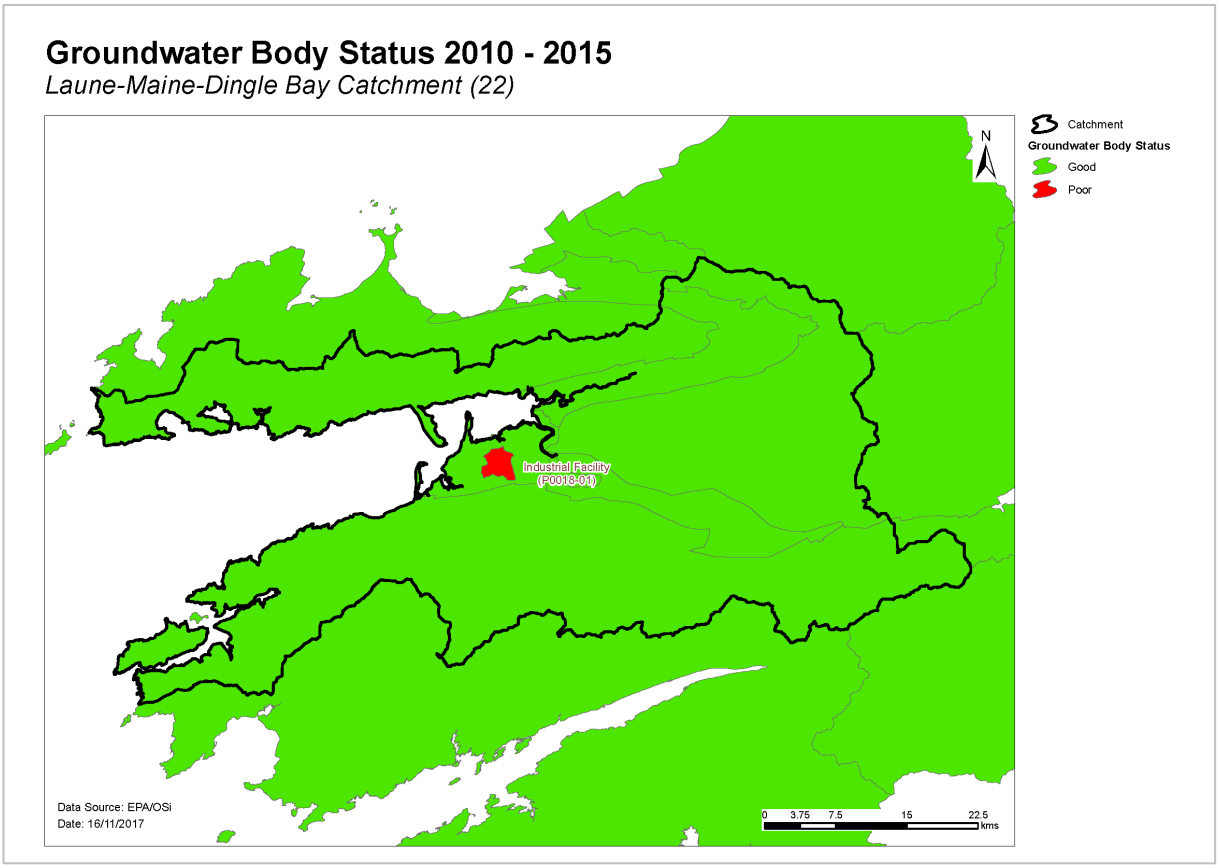


Figure 8. Number of groundwater bodies at each status class in 2007-12 and 2010-15

Figure 9. Groundwater status



2.3 Risk of not meeting surface water environmental objectives

2.3.1 Rivers and lakes

- There are 57 river water bodies and 36 lake water bodies *Not at Risk* (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 15 river water bodies and six lake water bodies in *Review*. This includes 16 water bodies where more information is required and five water bodies where measures have recently been implemented and improvements have not yet been realised.
- Twenty-one river water bodies and two 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 four coastal water bodies and one transitional water body are *Not at Risk* (Figure 10) which require no additional assessment or measures to be applied, other than those measures that are already in place.
- There are no TraC water bodies in *Review.*
- One transitional water body (Ferta) is *At Risk* of not meeting its water quality objectives. There are two coastal water bodies (Portmagee Channel and Valencia Harbour) are *At Risk* of not meeting their water quality objectives. Measures will be needed in these water bodies to improve the water quality outcomes. All three of these water bodies are at Good status and have a High status objective and therefore *At Risk*

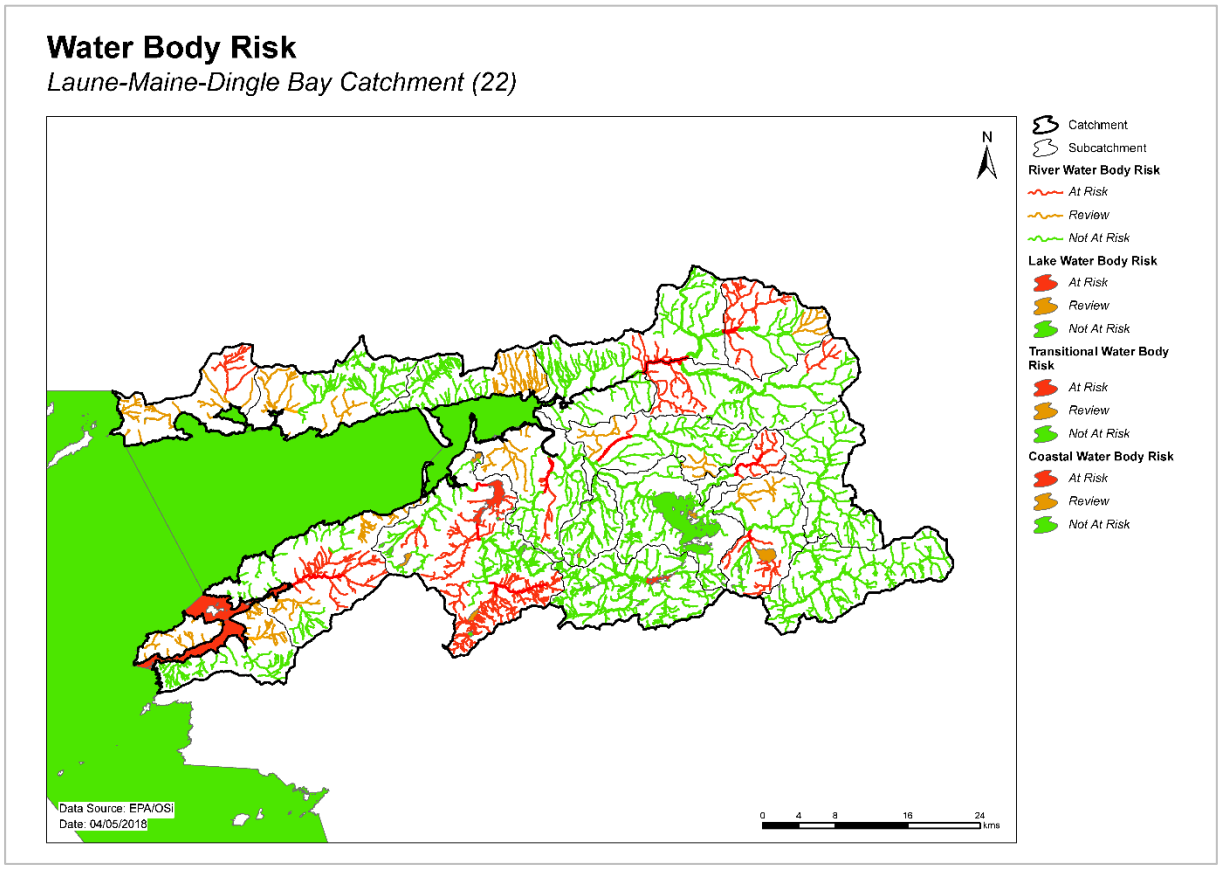


Figure10. Surface water body risk

2.4 Risk of not meeting groundwater environmental objectives

- Five groundwater bodies are *Not at Risk* (Figure 11, Table 3) and require no additional assessment or measures to be applied, other than those measures that are already in place.

- Two groundwater bodies are in *Review* (Castlemaine and Laune Muckross), which have elevated nitrate concentrations.
- There is one *At Risk* groundwater body, due to chemical contamination from an industrial site. Measures will be needed in this water body to improve water quality outcomes.

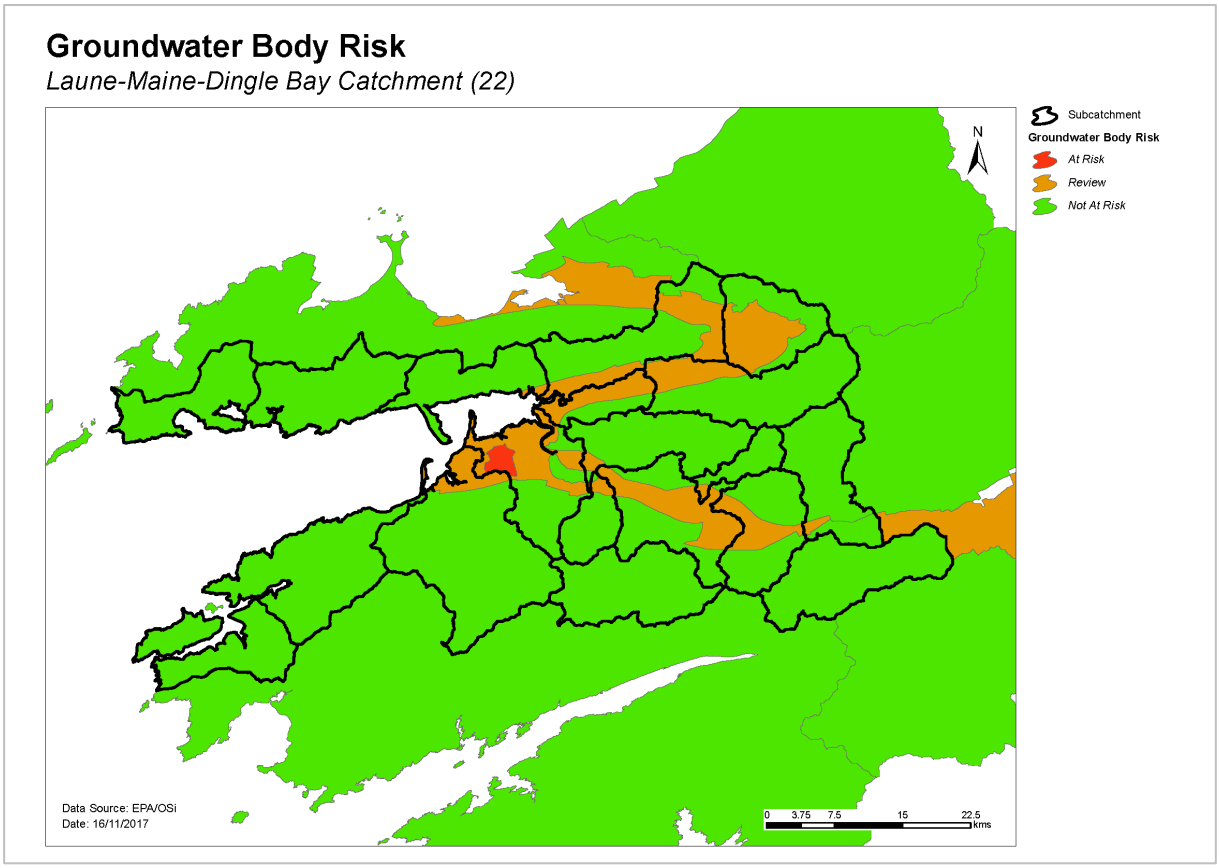


Figure 11. Groundwater body risk

2.5 Protected areas

2.5.1 Drinking water protected areas

- There are 40 abstractions in the Laune-Maine-Dingle Catchment comprising one group water scheme, 22 public supply schemes and four other private schemes (Lyranes, Lougher, Inch/ Foildaun and Kells) (Appendix 4).
- Sixteen of the abstractions are from three groundwater bodies (Cahersiveen, Dingle and Castlemaine); six are from six lakes; and 18 are from 14 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 and pesticides in 2015.
- There were three drinking water sources that did not have compliance data available (Emlagh_010, Flesk (Kerry)_040 and Reacashlagh_010).

2.5.2 Bathing waters

- There are five designated bathing waters in the catchment – White Strand Caherciveen, Kells, Rossbeigh White Strand, Inch and Fionntrá (Ventry).
- All the bathing waters are in satisfactory condition.
- The list of bathing waters and the associated water bodies is provided in Table 4.

Table 4. Designated bathing waters in the catchment

Bathing Water	Water Body Intersection	Objective met?	Comment	Objective met?		Comment
Name	Code	Name	Code	Yes	No	
White Strand, Caherciveen	IESWBWC220_0000_0100	Valencia Harbour	IE_SW_220_0000	✓		
Kells	IESWBWC230_0000_0400	Outer Dingle Bay	IE_SW_230_0000	✓		
Rossbeigh, White Strand	IESWBWC230_0000_0300	Outer Dingle Bay	IE_SW_230_0000	✓		
Inch	IESWBWC230_0000_0200	Outer Dingle Bay	IE_SW_230_0000	✓		
Fionntrá (Ventry)	IESWBWC230_0000_0100	Outer Dingle Bay	IE_SW_230_0000	✓		

2.5.3 Shellfish areas

- There are two designated shellfish areas in the catchment – Cromane and Valentia Harbour.
- They are compliant with the relevant standards and there are no water quality issues of concern.
- 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
Cromane	IEPA2_0007	Castlemaine Harbour	IE_SW_230_0200	✓	
		Outer Dingle Bay	IE_SW_230_0000		
Valentia Harbour	IEPA2_0019	Ferta	IE_SW_220_0100	✓	
		Valencia Harbour	IE_SW_220_0000		
		Portmagee Channel	IE_SW_210_0000		

2.5.4 Nutrient sensitive areas

- There is one designated Nutrient Sensitive Area (NSA) (Lough Leane, County Kerry) associated with one waste water treatment plants (Killarney) in the catchment.
- Killarney urban waste water treatment plants has tertiary treatment and, therefore, was compliant with the environmental objective for NSAs.
- The NSA, associated agglomeration and intersecting water body are provided in Table 6.

Table 6. Nutrient sensitive area in the catchment

Nutrient Sensitive Area		Agglomeration		Intersecting water bodies		Objective met?	
Name	Code	Name	Code	Name	Code	Yes	No
Lough Leane, County Kerry	IELK_SW_1994_0009	Killarney	D0037	Leane	IE_SW_22_210	✓	

2.5.5 Natura 2000 sites

- There are 10 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.

- Thirteen water bodies (2 lakes, 11 rivers) have been prioritised for action as the water conservation objectives for their habitats and/or species are not being supported by ecological status (Appendix 5).
- There are six Special Protected Areas (SPAs) in the catchment:

    - Castlemaine Harbour SPA
    - Dingle Peninsula SPA
    - Eirk Bog SPA
    - Iveragh Peninsula SPA
    - Killarney National Park SPA
    - Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle 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 five river water bodies that are designated as salmonid rivers (under Salmonid Regulations (S.I. 293 / 1988)) but are not located within SACs. One of these water bodies (Maine_040) has been prioritised for action as the water conservation objectives for this species is not being supported by ecological status (Appendix 5).

2.6 Heavily modified water bodies

- There are no designated heavily modified water bodies (HMWB) in the catchment.
- There are no artificially modified water bodies (AWB) in the catchment.

3 Significant issues in *At Risk* water bodies

- Excess phosphate leading to eutrophication is a significant issue for a number of water bodies in the Laune-Maine-Dingle Bay catchment.
- Alteration of hydromorphological (or physical) conditions is a significant issue in several sub-catchments. 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 because of, for example, implementing river and field drainage schemes, forestry activities, animal access, and discharge from quarries. Hydrological impacts from activities such as abstractions is of concern, however it is only for one river water body.
- A series of cold winters appear to have affected the Ammonia concentrations in the Portmagee Channel, possibly due to the temperatures stopping the natural denitrification cycle.
- Of the eight groundwater bodies one is *At Risk*. Tetrahydrofuran (THF) from the licenced industrial site is the significant issue.

4 Significant pressures

4.1 Water bodies

- Where 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* water bodies in each significant pressure category.
- The significant pressure affecting the greatest number of water bodies is agriculture, followed by hydromorphological pressures, forestry, other, domestic waste water, mines and quarries, peat workings, industry and urban waste water.

4.1.1 Rivers, lakes transitional and coastal (TraC)

- Significant pressures have been identified through the initial characterisation process, in 26 water bodies, 13 of which have multiple pressures. The significant pressures will be additionally refined as further characterisation is carried out.
- The significant pressures affecting Portmagee Channel and Valencia Harbour and transitional water body Ferta are agriculture and domestic waste water.

4.1.2 Groundwater

- The significant pressure affecting the Industrial Facility (P0018-01) IE_SW_G_049 groundwater body is the licenced industrial facility P0018-01. The key parameter of concern is THF.

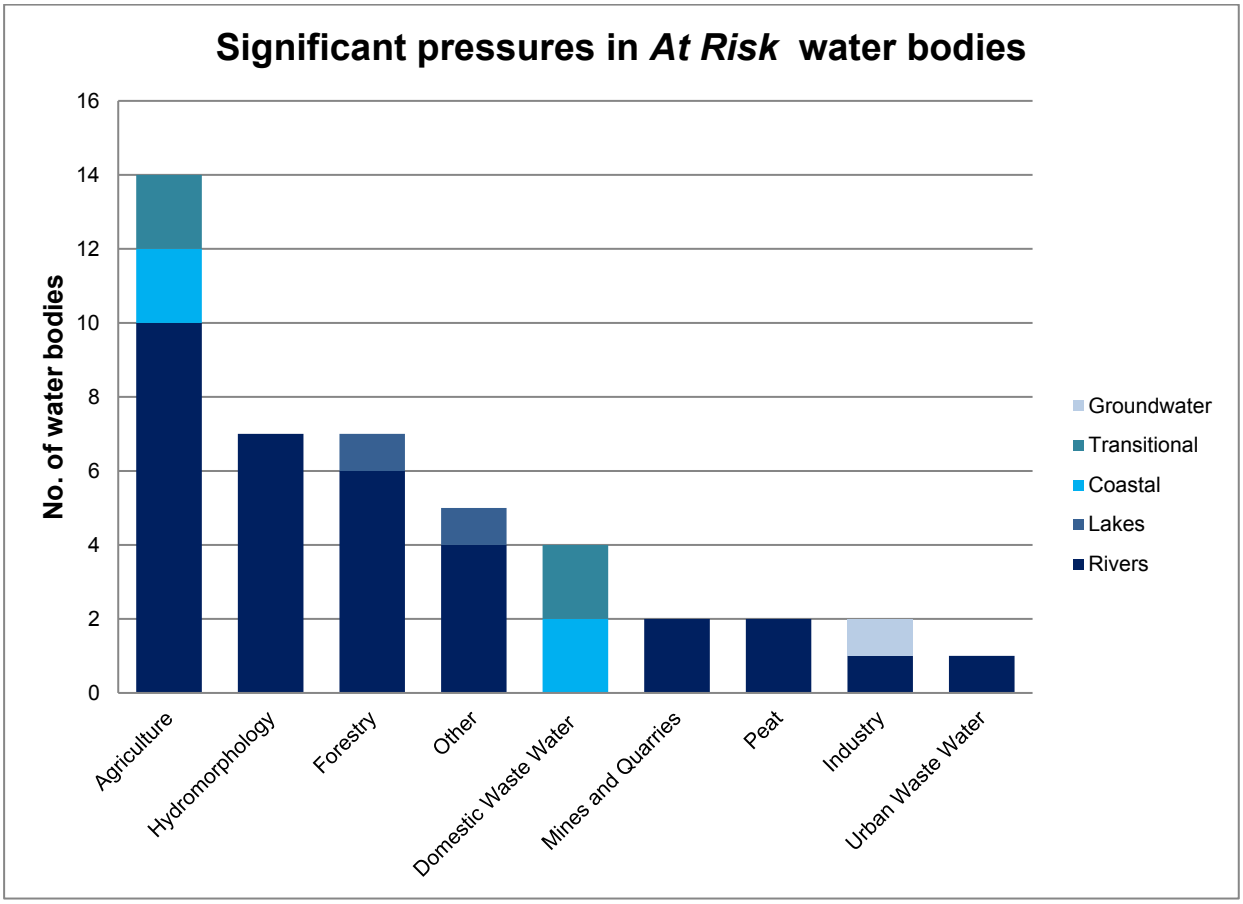


Figure 12. Significant pressures impacting on *At Risk* water bodies

4.2 Pressure type

4.2.1 Agriculture

- Agriculture is a significant pressure in 10 river water bodies, two transitional and two coastal across several subcatchments; the water bodies affected by farming are shown in Figure 13. The issues

related to farming in this catchment are diffuse 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.

- Sheep dipping was also identified as a potential significant pressure within the catchment for one water body (Finow_010). 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 Hydromorphology

- One river water body, (Maine_040) is subject to accelerated levels of erosion. Land drainage is an issue for six river water bodies within the Caragh and Ballynahow_Commons subcatchments (Owenroe_010, Carragh_010, 020 and 040, Milltown_ 010 and 020) and therefore, siltation is an issue within these water bodies (Figure 14). See Appendix 3 for information on these water bodies.

4.2.3 Forestry

- Forestry has been identified as a significant pressure in one lake (Upper KY) and six river water bodies (Figure 15). The significant issues are siltation and excess nutrients in surface water bodies, which have resulted from forestry activities such as clearfelling, fertilisation and road construction.

4.2.4 Other significant pressures

- *Water treatment and Abstractions*
  Two river water bodies are *At Risk* (Finow_020 and Caherlehillan Stream_010), with a significant pressure identified as a drinking water treatment and abstraction plant (Figures 16 and 17).

- *Unknown Anthropogenic*
  Two *At Risk* water bodies (Behy (Kerry)_020 and Caragh lake) have unknown anthropogenic pressures (Figure 18), which are impacting substrate and alkalinity in the respective water bodies.

- *Golf courses*
  Fahaduff_010 river water body is *At Risk* and a golf course is a significant pressure, as the water body appears to be impacted by a pesticide/ herbicide (Figure18).

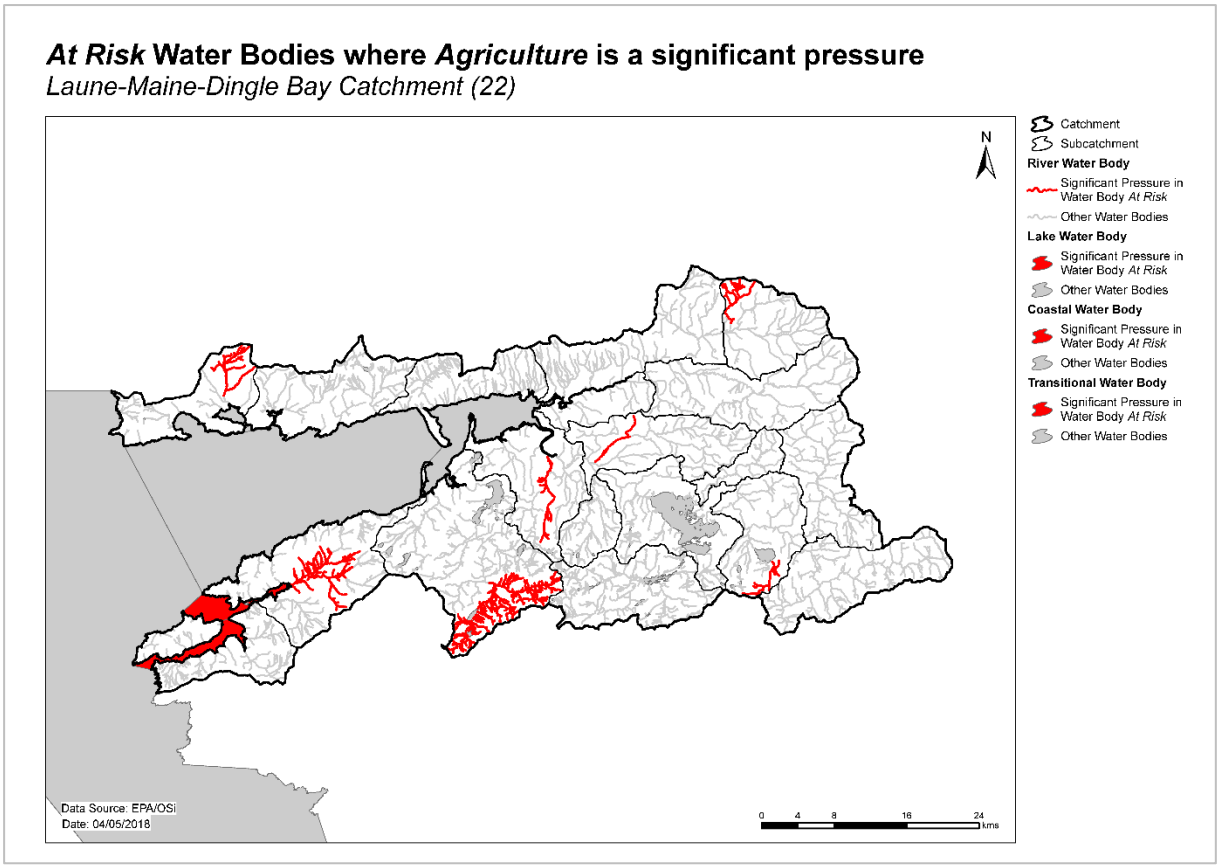


Figure 13. Water bodies that are *At Risk* and are impacted by agricultural activities

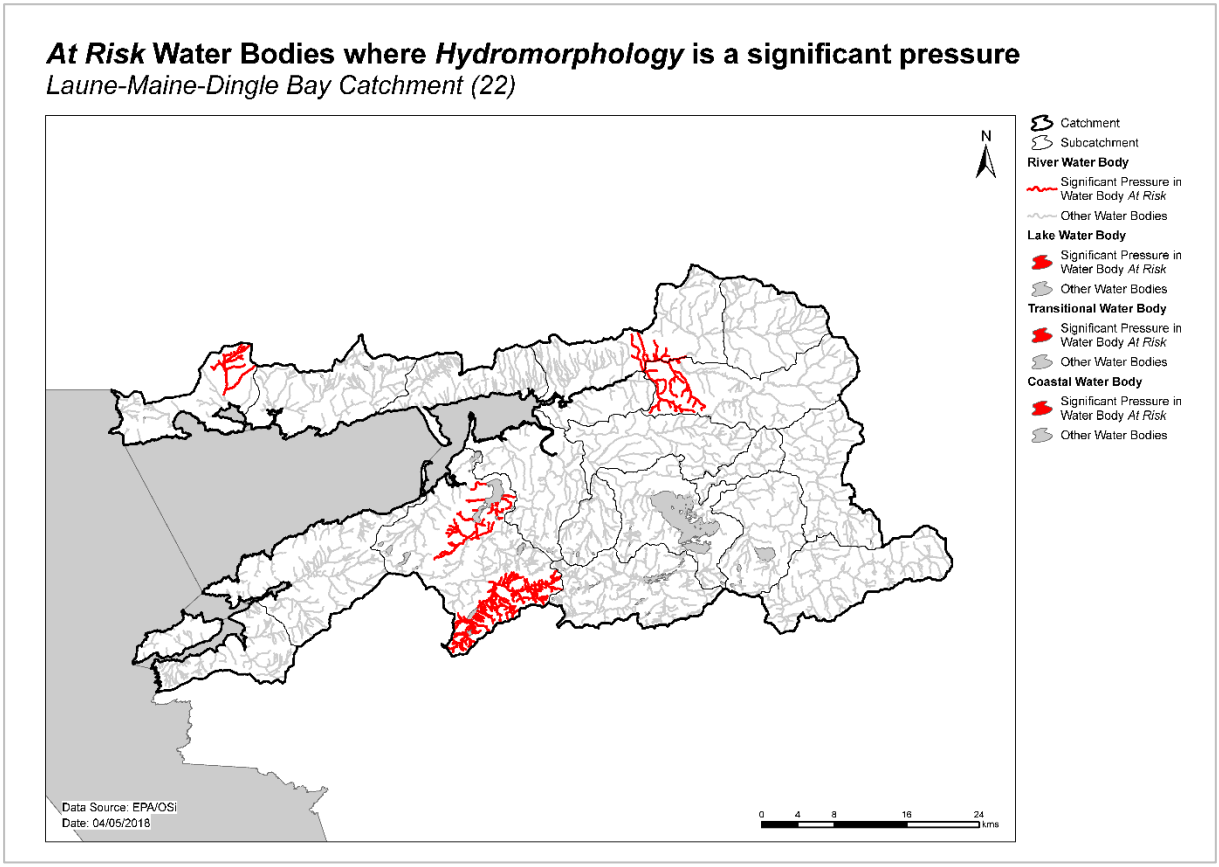


Figure 14. Water bodies that are *At Risk* and are impacted by hydromorphological pressures

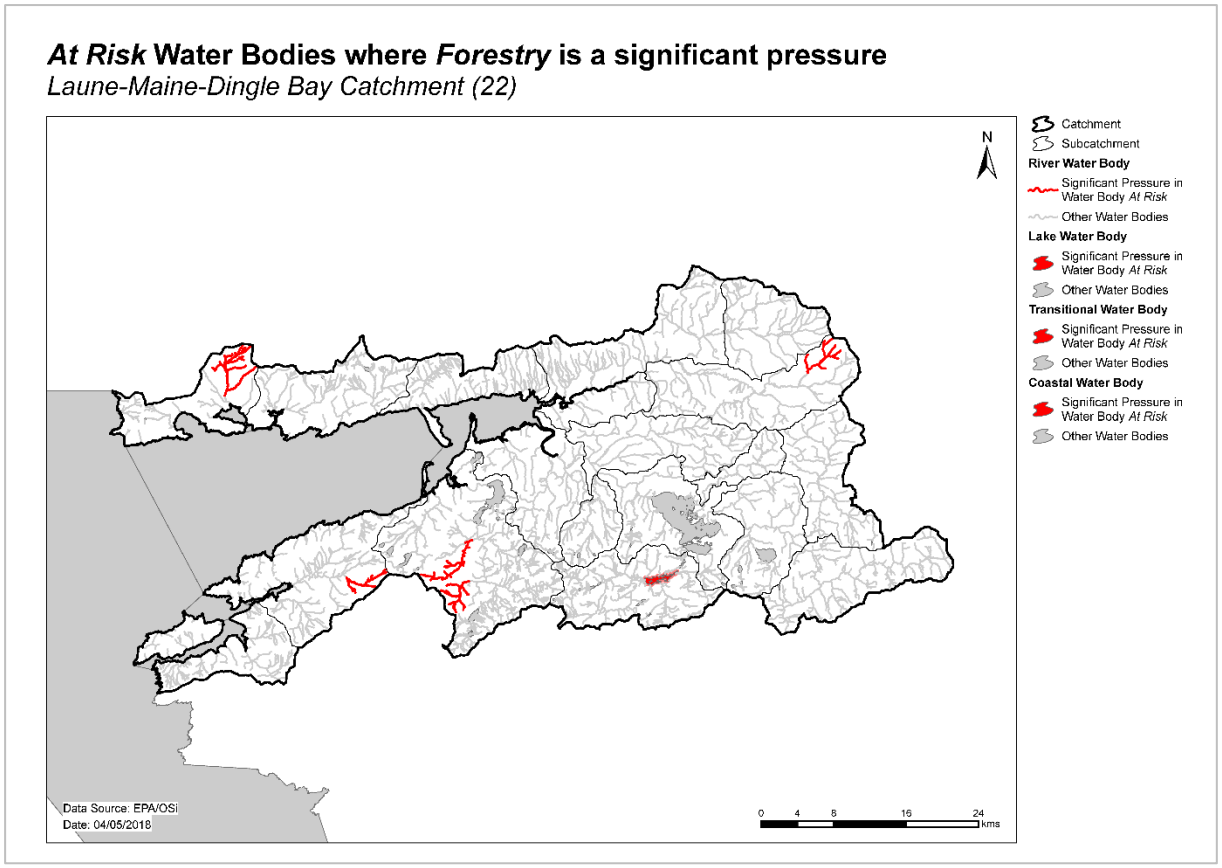


Figure 15. Water bodies that are At *Risk* and are impacted by forestry activities

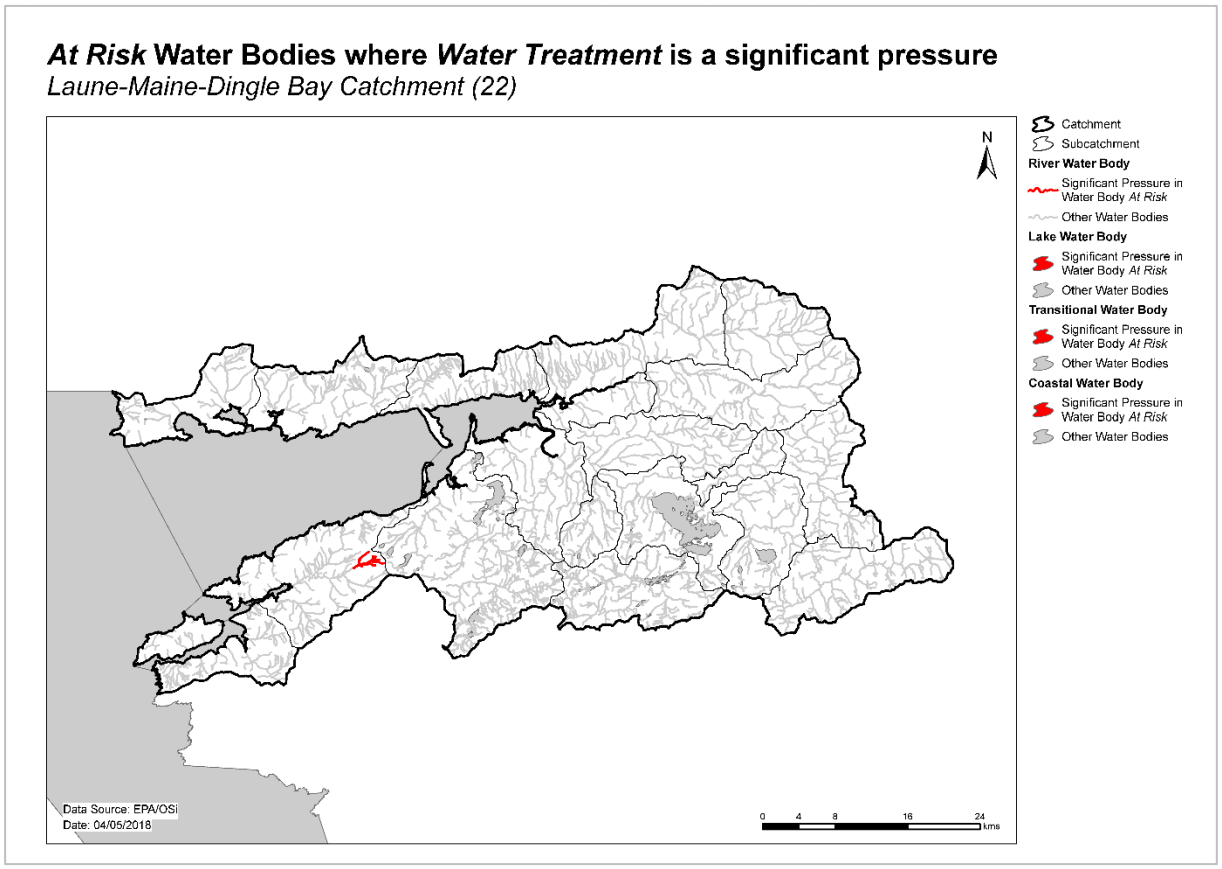


Figure 16. Water bodies that are *At Risk* and are impacted by water treatment pressures

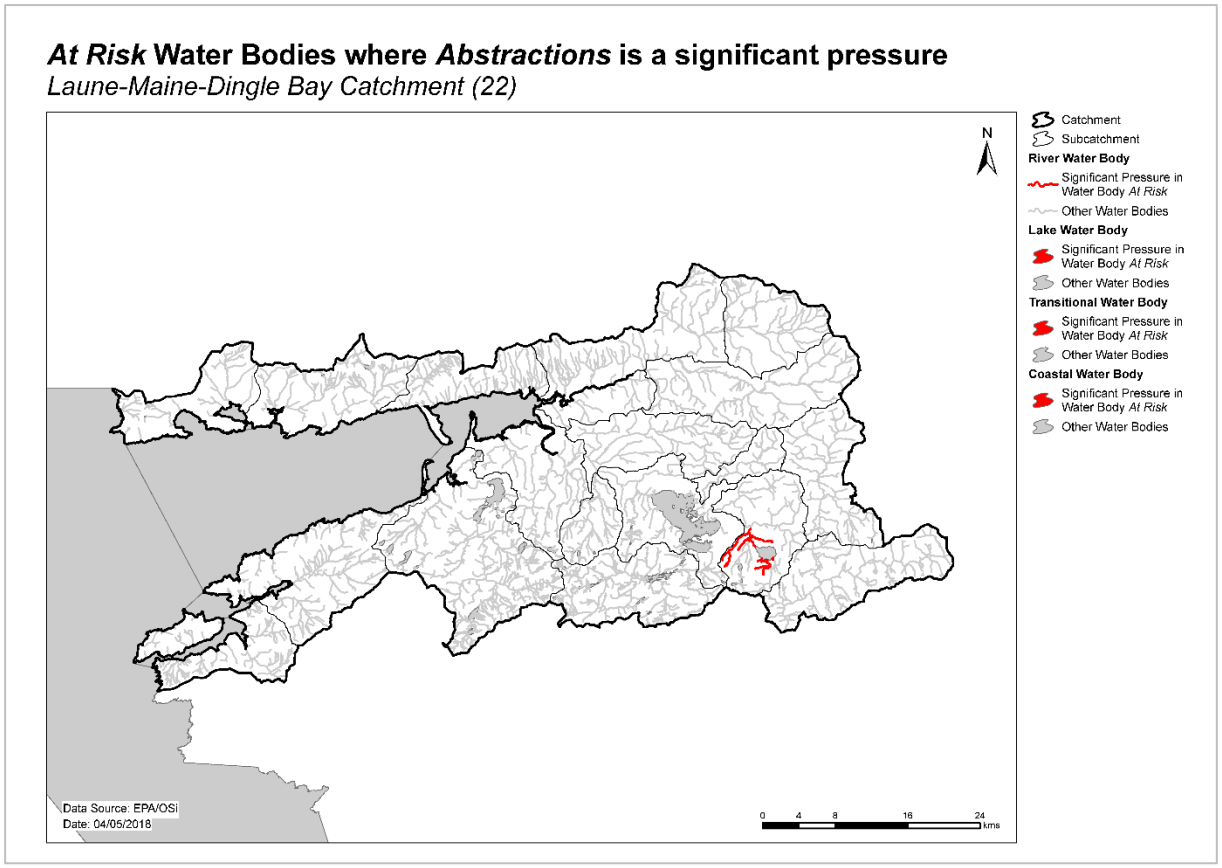


Figure 17. Water bodies that are *At Risk* and are impacted by abstraction pressures

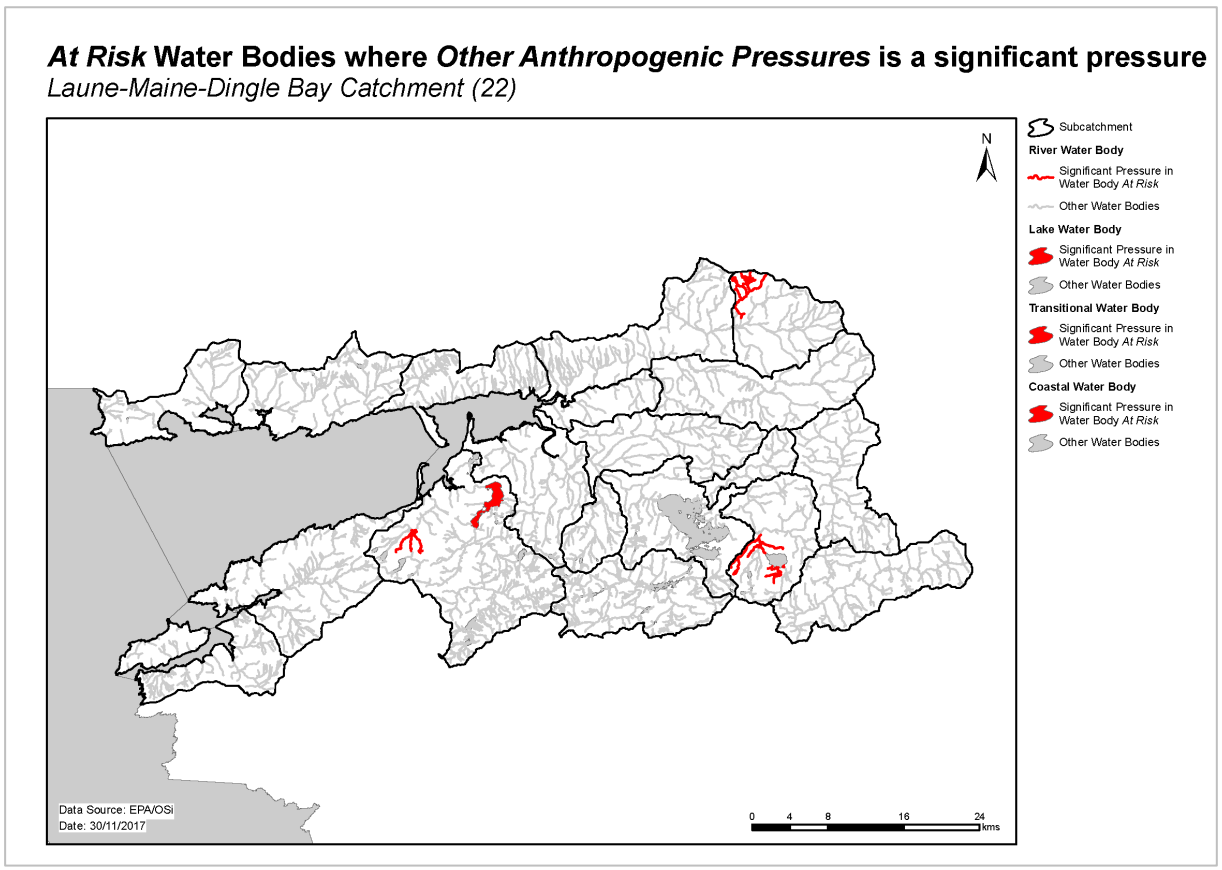


Figure 18. Water bodies that are *At Risk* and are impacted by Other Anthropogenic pressures

4.2.5 Domestic waste water

- Domestic waste water has been highlighted as a significant pressure in one *At Risk* transitional water body (Ferta) and two coastal water bodies Portmagee Channel and Valencia Harbour (Figure 19).

4.2.6 Extractive industry

- *Quarries*
  Quarries have been identified as significant pressures in Ferta_010 and Cottoner's (Laune)_020, which are impacting on habitat morphology (Figure 20).

- *Peat*
  Peat extraction has been identified as a significant pressure in Teermoyle Stream_010. Increased sedimentation is the significant issue (Figure 20).

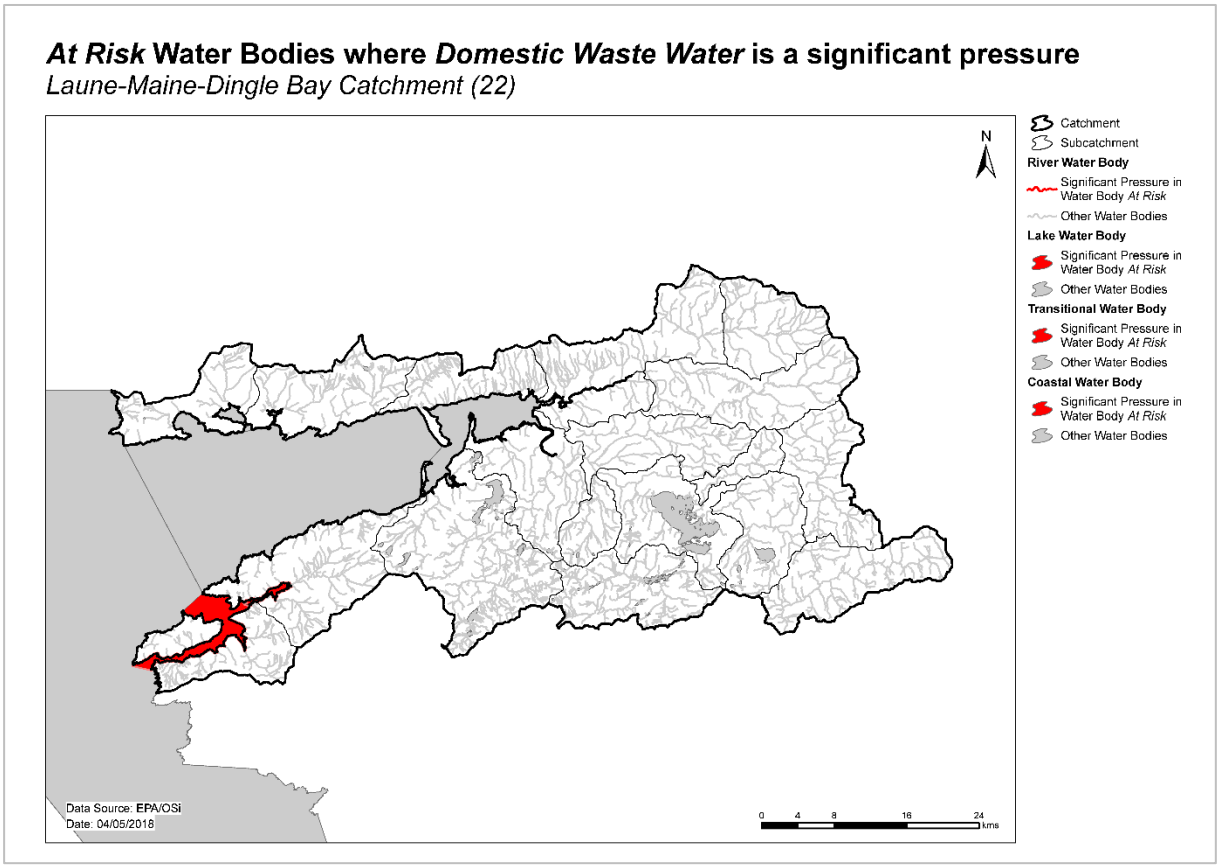


Figure 19. Water bodies that are At *Risk* and are impacted by the domestic waste water

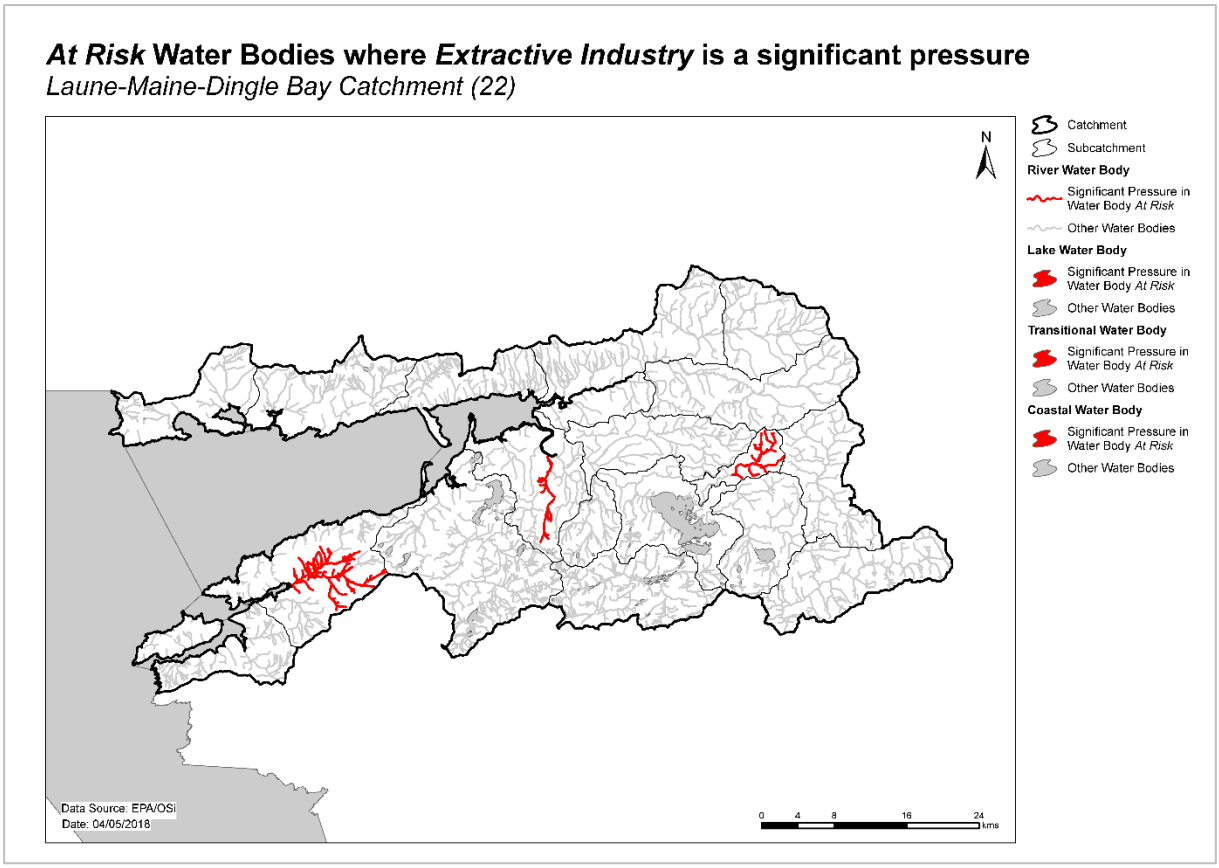


Figure 20. Water bodies that are At *Risk* and are impacted by the Extractive industry

4.2.7 Urban waste water treatment plants

- Urban Waste Water Treatment Plants (WWTPs) have been highlighted as a significant pressure in one *At Risk* water body, Maine_020; details are given in Table 7 and Figure 21. Castleisland WWTP, which impacts Maine_020, is scheduled to be upgraded in 2023.

Table 7. Waste Water Treatment Plants 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 Ecological Status	Expected Completion Date
Castleisland D0180	2,001 to 10,000 p.e.	Maine_020	Moderate	2023

4.2.8 Industry

- Industry has been identified as a significant pressure in Gweestin_040 (Figure 22). This is a point pressure arising from an industrial discharge that has a potential legacy impact, resulting in nutrient issues.

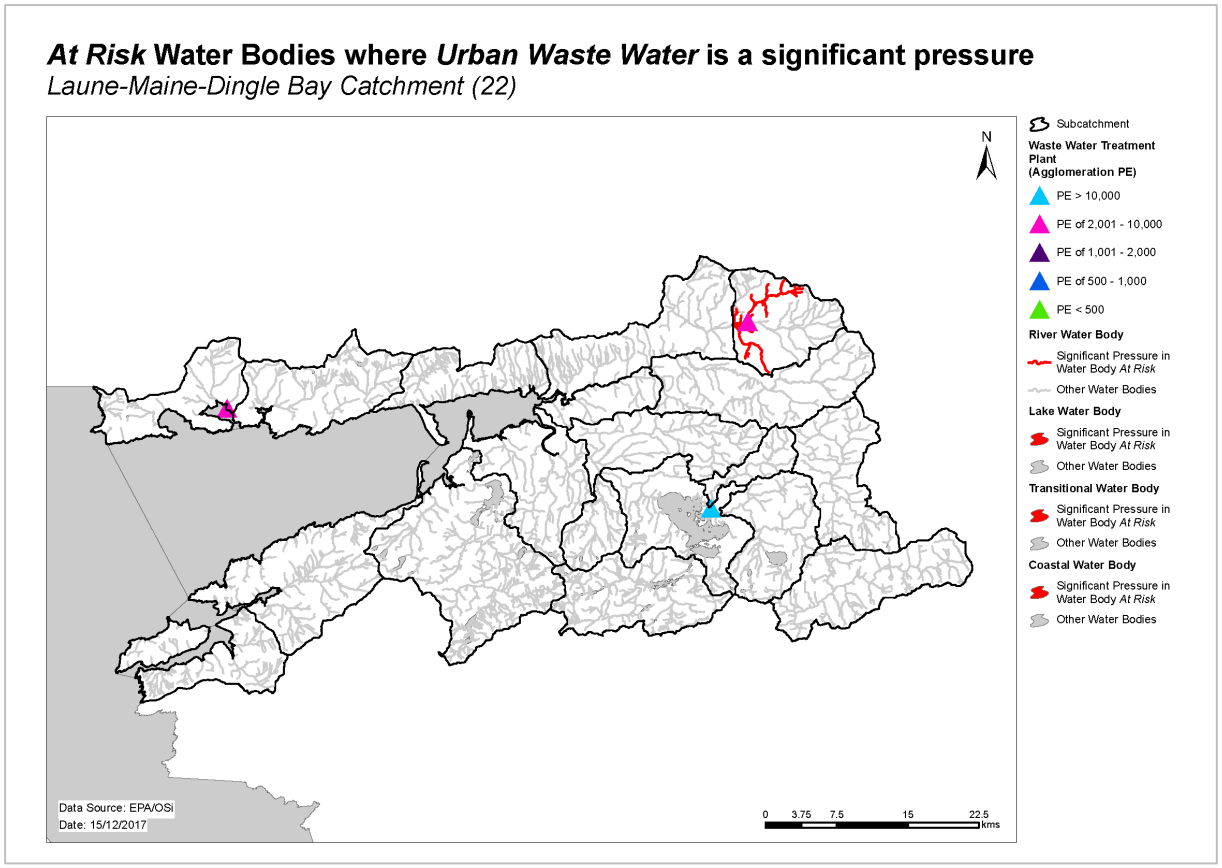


Figure 21. Water bodies that are *At Risk* and are impacted by urban waste water

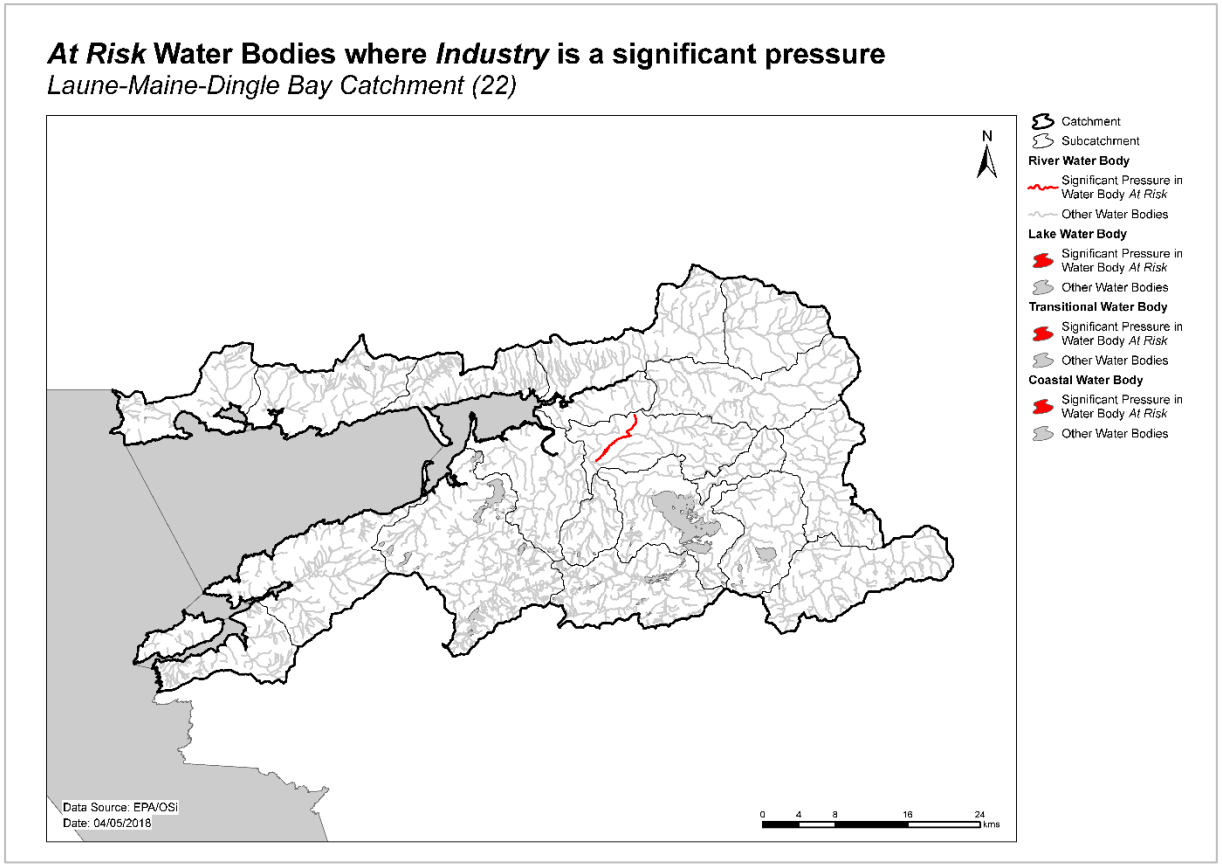


Figure 22. Water bodies that are *At Risk* and are impacted by industry

5 Load reduction assessment

5.1 River water body load reductions

- The results of the main channel assessment for the Laune river indicates that orthophosphate, ammonia and TON concentrations are consistently low (Appendix 2), while the assessment for the Maine river indicates concentrations of orthophosphate and ammonia to be higher.
- 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 30th 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 Laune-Maine-Dingle Bay catchment, water chemistry data are available for 26 of the 94 water bodies. The available data indicate that 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
Maine_020	Low

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 Ospar 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 in 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.

- Elevated ammonium is the issue in Portmagee Channel, the cause of which is unknown but may be related to natural climatic factors. Further monitoring and assessment is required to improve understanding before specific actions can be recommended.
- Ferta coastal water body and downstream Valencia Harbour have High status objectives and are both at Good Status. Further characterisation is required for the provision of information.

6 Further characterisation and investigative assessments

- Further characterisation through Local Catchment Assessments is needed in 23 of the *At Risk* 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 21 of the *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. Local Catchment Assessment Allocation for *At Risk* and *Review* River and Lake Water Bodies in the Catchment

Risk	IA 1	IA 2	IA 3	IA 4	IA 5	IA 6	IA 7	IA 8	IA 9	IA 10	Total
At Risk	10	0	2	0	2	2	7	8	1	0	32
Review	7	0	15	0	0	0	0	0	0	0	22
Note water bodies may have multiple categories of Local Catchment Assessments											

7 Catchment summary

- Of the 93 river water bodies, 21 are *At Risk* of not meeting their WFD objectives.
- Two of the lake water bodies out of 44 are *At Risk* of not meeting their WFD objectives.
- One transitional water body (Ferta) and two coastal water bodies (Portmagee Channel and Valencia Harbour) are *At Risk* of not meeting its water quality objectives, out of eight TRaC water bodies.
- There is one groundwater body which is *At Risk* – IE_S,W_G_049, Industrial Facility (P018-01) – due to THF being present.
- Excess phosphate leading to eutrophication is a significant issue for a number of water bodies in the Laune-Maine-Dingle Bay catchment.
- Hydromorphological (or physical) conditions are impacted (including the input of excessive fine sediment) due to land drainage and forestry activities. Such impacts have altered the morphology of water bodies and in turn, altered habitat conditions. Hydrological impacts from activities such as abstractions is of concern, however it is only for one river water body.

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 recommended areas for action in the Laune-Main-Dingle Bay sub-catchment.

8.1 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.

8.2 Outcomes of process

The outcomes for the Laune-Maine-Dingle Bay catchment are summarised below.

- Five recommended areas for actions (Table 11, Figure 23) were selected.
- These are the Upper Caragh, Milltown (Kerry), Fahaduff and Upper Maine, Deenagh, and Finow.
- These include ten *At Risk* river water bodies.
- None of the groundwater bodies, that intersect with surface water bodies in recommended areas for action, are *At Risk* or *Review* due to groundwater contribution of nutrients to surface water bodies.

A remaining thirty-seven *At Risk* and *Review* water bodies were not included in the recommended areas for action for the second cycle. The distribution of these is presented in Figure 24. These include:

- Thirty-four river and lake water bodies – 13 *At Risk* and 21 *Review*.
- Three *At Risk* transitional and coastal water bodies.

Table 11. Recommended Areas for Action in the Laune-Maine-Dingle Bay Catchment

Recommended Area for Action	Number of water bodies	SCs	Local authority	Reason for Selection
Upper Caragh	3	22_13	Kerry	Failing to meet protected area objectives for Priority 8 Freshwater Pearl Mussels. • Opportunity to work with KerryLIFE. • Important fishery - Arctic char are unusual genetically here. • High scenic value. • Headwaters to river Caragh. • Three *At Risk* High Ecological Status objective water bodies. • One potential 'quick win'.
Milltown (Kerry)	2	22_19	Kerry	• Headwaters discharging into Dingle Harbour. • Important for tourism. • Small area - easy to manage. • Two potential 'quick wins'. • One deteriorated water body.
Fahaduff and Upper Maine	2	22_5	Kerry	• Build on proposed improvements at Castleisland WWTP. • Inland Fisheries Ireland reported two fish kills between 2013 - 2015. • Active community group • Ultimately discharges into Tralee shellfish area. • Maine is an important salmonid river.
Deenagh	1	22_1	Kerry	• Of Interest from a planning perspective. • Build on work completed for the Lough Leane project. • Headwaters to Lough Leane. • One deteriorated water body. • One water body (Deenagh_010) is failing to meet its protected area objectives for salmon.
Finow	2	22_6	Kerry	• Project to examine impact from abstraction. • One deteriorated High Ecological Status objective water body. • Two water bodies failing to meet protected area objectives for salmon. • One potential 'quick win'. • Headwaters to Lough Leane. • High interest from Kerry County Council.

9 Environmental Objectives

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.

9.1 Surface Water

- Assuming resources are available and actions are taken in the recommended areas for action, of the 10 *At Risk* river water bodies, it is predicted that four (40%) will improve by 2021 and six (60%) will achieve their objective by 2027, see Table 12.

Table 12. Environmental objective dates for river 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
At Risk	10	4	6
Review	0	0	0
Not at Risk	0	0	0
Total	10	4	6

- Ninety-eight water bodies have met their 2015 environmental objective.
- As action is not yet planned to be taken in the remaining 16 *At Risk* surface water bodies, a 2027 date is applied to all 16 water bodies. For the 21 *Review* water bodies, the absence of information on these water bodies mean 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 13.

Table 13. Environmental objectives dates in the *At Risk* and *Review* 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
Rivers			
At Risk	11	0	11
Review	15	0	15
Lakes			
At Risk	2	0	2
Review	6	0	6
TRaC's			
At Risk	3	0	3
Review	0	0	0
Total	37	0	37

9.2 Groundwater

Seven of the eight groundwater bodies are currently Good status and, therefore, have met their environmental objectives. The one groundwater body, Industrial Facility (P0018-01), in the Laune Maine Dingle Bay catchment that is less than Good status has an environmental objective date of 2027.

10 Acknowledgements

This Laune-Maine-Dingle Bay Catchment (Version 3) has been produced by the Catchment Science & Management Unit, EPA, with the assistance of the following:

- Kerry 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.
- Kerry LIFE.

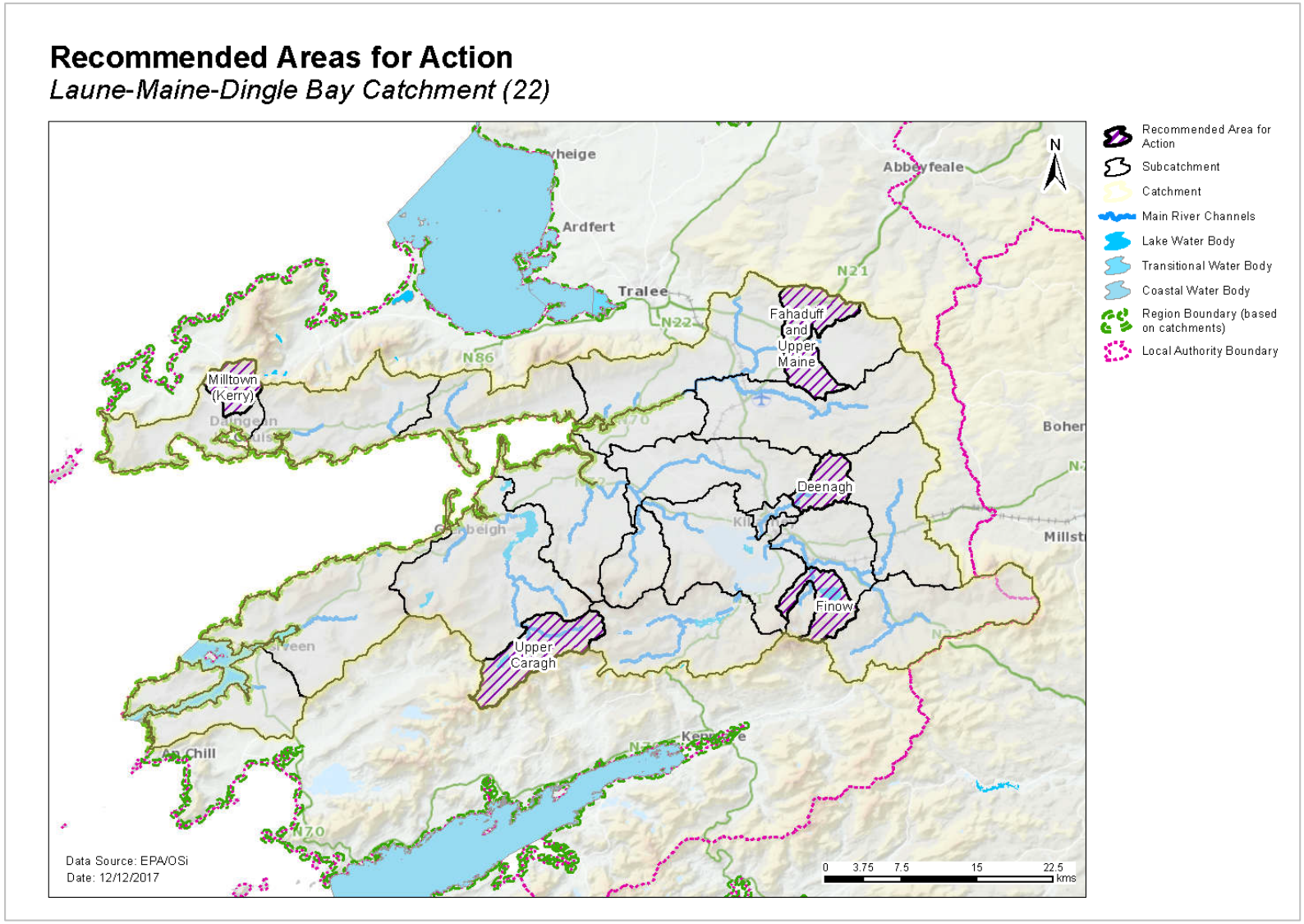


Figure 23. Location of Recommended Areas for Action in the Laune-Maine-Dingle Bay Catchment

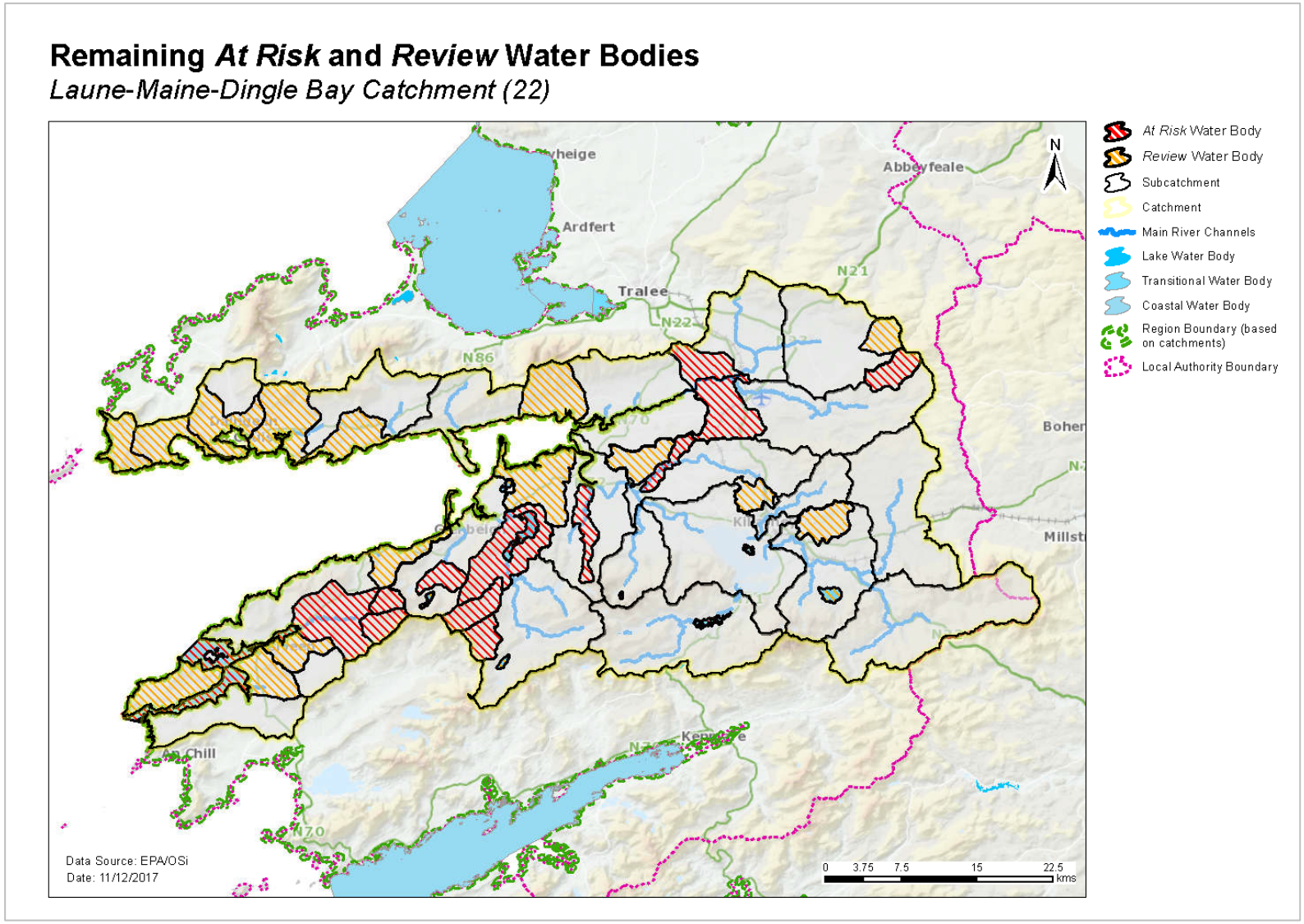


Figure 24. Location of *At Risk* and *Review* water bodies located outside Recommended Areas for Action in the Laune-Maine-Dingle Bay Catchment

Appendix 1 High ecological status objective water bodies

Water body/ Site	Type	Codes	2015 Status
FINOW_010	River	IE_SW_22F040100	High
DEENAGH_020	River	IE_SW_22D010500	High
CAHERLEHILLAN STREAM_010	River	IE_SW_22C200100	Good
TEERMOYLE STREAM_010	River	IE_SW_22T040500	Good
Caragh	Lake	IE_SW_22_207	Moderate
BEHY (KERRY)_020	River	IE_SW_22B021000	Good
CARAGH_010	River	IE_SW_22C020200	Poor
CARAGH_020	River	IE_SW_22C020400	Good
CARAGH_030	River	IE_SW_22C020600	High
CARAGH_040	River	IE_SW_22C020680	Moderate
COOMNACARRIG_010	River	IE_SW_22C060300	Good
MEELAGH_010	River	IE_SW_22M020100	Good
OWENROE (CARAGH)_010	River	IE_SW_22O040200	Good
Muckross	Lake	IE_SW_22_184	High
LOE_010	River	IE_SW_22L030400	High
OWNEYKEAGH_010	River	IE_SW_22O050400	High
GROIN_010	River	IE_SW_22G080300	High
LITTLE MAINE_010	River	IE_SW_22L020500	High
OWENASCAUL_010	River	IE_SW_22O021000	High
GADDAGH_010	River	IE_SW_22G010300	High
EMLAGH_010	River	IE_SW_22E010400	High
FLESK (KERRY)_050	River	IE_SW_22F020250	High
OWGARRIFF (FINOW)_010	River	IE_SW_22O060100	High
CRINNAGH_010	River	IE_SW_22C070200	High
GEARHAMEEN_010	River	IE_SW_22G030100	High
GEARHAMEEN_020	River	IE_SW_22G030300	High
OWENREAGH_010	River	IE_SW_22O030200	High
FLESK (KERRY)_020	River	IE_SW_22F020040	High
FLESK (KERRY)_030	River	IE_SW_22F020060	High
FLESK (KERRY)_040	River	IE_SW_22F020100	High
BROWN FLESK_020	River	IE_SW_22B030250	High
FERTA	Transitional	IE_SW_220_0100	Good
PORTMAGEE CHANNEL	Coastal	IE_SW_210_0000	Good
VALENCIA HARBOUR	Coastal	IE_SW_220_0000	Good

Appendix 2 Catchment scale nutrient concentrations and in-stream loads

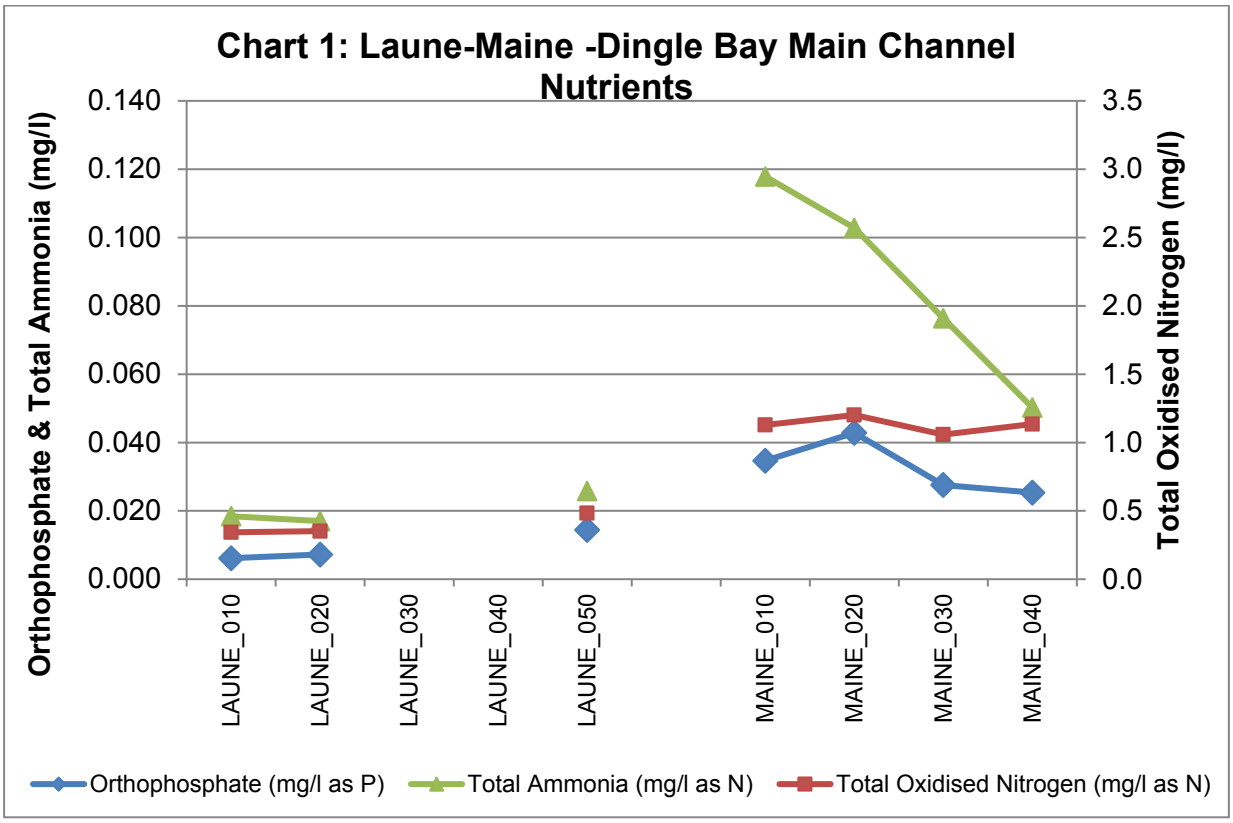
The results of the instream water quality assessment for the Laune-Maine-Dingle Bay catchment main channels are illustrated in Chart 1 and Chart 2. The assessment is based on the mean concentrations between 2013 and 2015 at each site from the headwaters down to the estuary. In the Laune River, orthophosphate concentrations increase from 0.006mg/l at the headwaters to 0.014mg/l at LAUNE_050. The EQS for orthophosphate (0.035mg/l) is not exceeded at any of the Laune water bodies where data is available.

Total oxidised nitrogen (TON) and ammonia concentrations increase marginally from the headwaters to LAUNE_050. TON concentrations range from 0.34 to 0.48mg/l, while ammonia concentrations range between 0.018 and 0.026mg/l. The EQS threshold concentrations for TON (2.6mg/l) and ammonia (0.065mg/l) are not exceeded at any of the Laune water bodies where data is available.

In the Maine River, orthophosphate concentrations range from 0.025 to 0.043mg/l. Peak concentrations occur at MAINE_020, where the EQS (0.035mg/l) is exceeded. Concentrations decrease downstream of MAINE_020.

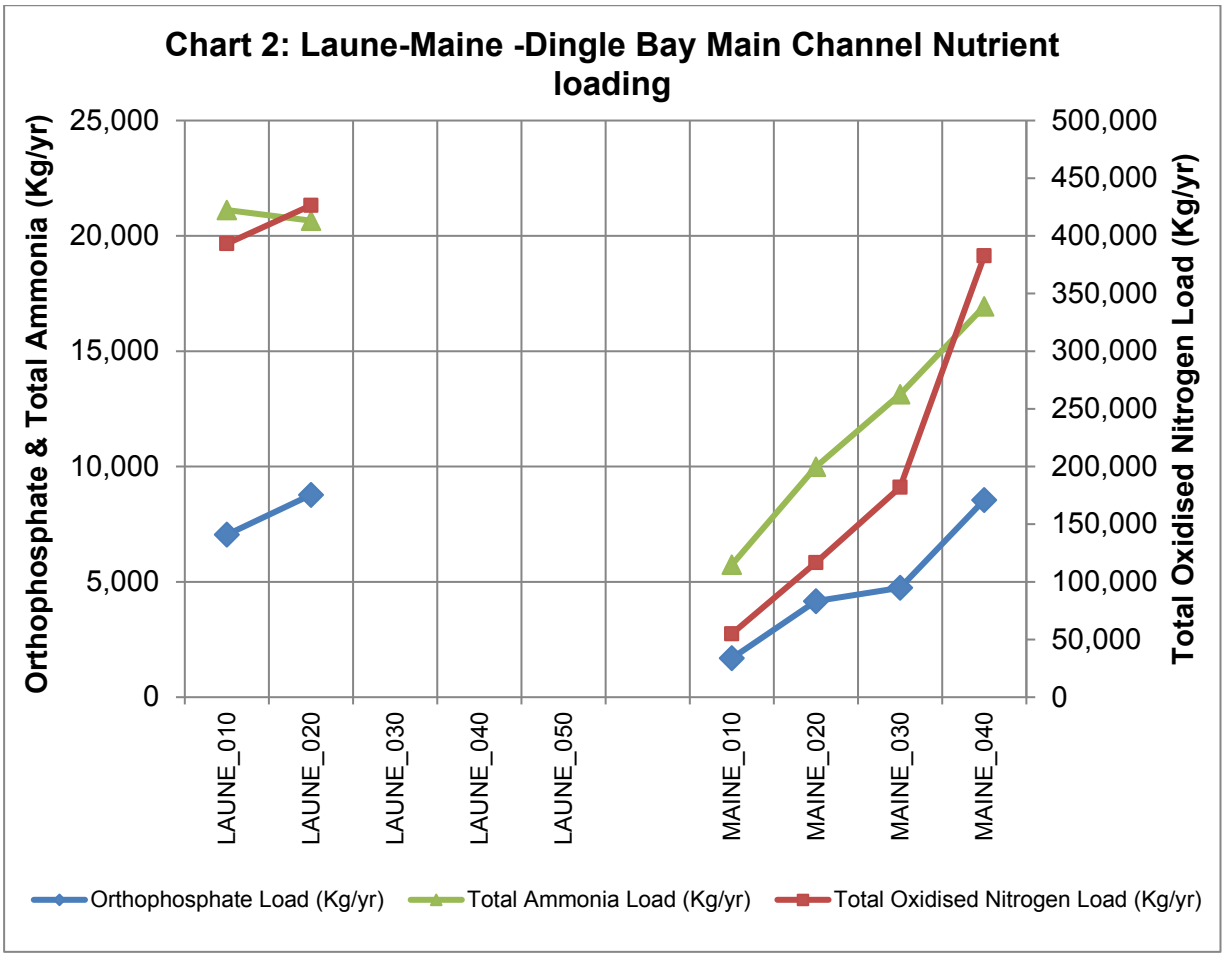
TON concentrations are moderately low, ranging from 1.1 to 1.2mg/l and show no evident spatial trend. The TON threshold (2.6mg/l) is not exceeded at any of the Maine river water bodies.

Ammonia concentrations decrease steadily from a maximum of 0.118mg/l at MAINE_010 to 0.05mg/l at MAINE_040. The EQS for ammonia (0.065mg/l) is exceeded at MAINE_010, MAINE_020 and MAINE_030.



The trend in nutrient loading along the two main river channels is shown in Chart 2. In the Laune River, flow data is unavailable for LAUNE_050. Orthophosphate and TON loads increase slightly between LAUNE_010 and LAUNE_020 corresponding to marginal increases in concentration and flow. The ammonia load decreased slightly between LAUNE_010 and LAUNE_020, following concentration.

In the Maine River, orthophosphate, TON and ammonia loads increased markedly from the headwaters to MAINE_050, despite typically decreasing concentrations. This increase in nutrient loads corresponds to an increase in flow of 1.5 to 10.7m^3/s.



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
22_1	IE_SW_22D010100	Deenagh_010	River	At Risk	Moderate	Poor	N	Peat	2027	Deenagh
22_3	IE_SW_22_182	Callee	Lake	Review	Unassigned	Unassigned	N		2027	
22_4	IE_SW_22S130900	Shanakeal_010	River	Review	Unassigned	Unassigned	N		2027	
22_5	IE_SW_22F090400	Fahaduff_010	River	At Risk	Moderate	Moderate	N	Ag,Other	2027	Fahaduff And Upper Maine
22_5	IE_SW_22M010400	Maine_020	River	At Risk	Moderate	Moderate	N	UWW	2027	Fahaduff And Upper Maine
22_5	IE_SW_22S010020	Shanowen (Maine)_010	River	Review	Good	Good	N		2027	
22_6	IE_SW_22W010300	Woodford 22 (Flesk)_010	River	Review	Unassigned	Unassigned	N		2027	
22_6	IE_SW_22_172	Guitane	Lake	Review	Good	Good	N		2027	
22_6	IE_SW_22F040100	Finow_010	River	At Risk	High	High	Y	Ag	2021	Finow
22_6	IE_SW_22F040300	Finow_020	River	At Risk	Moderate	Moderate	N	Other	2027	Finow
22_7	IE_SW_22_186	Upper KY	Lake	At Risk	Moderate	Moderate	N	For	2027	
22_9	IE_SW_22G070200	Glantane_010	River	At Risk	Good	Poor	N	For	2027	
22_10	IE_SW_22B390780	Boola 22_010	River	Review	Unassigned	Unassigned	N		2027	
22_10	IE_SW_22F240620	Feaghmaan_West_010	River	Review	Unassigned	Unassigned	N		2027	
22_10	IE_SW_210_0000	Portmagee Channel	Coastal	At Risk	High	Good	Y	Ag,DWW	2027	
22_10	IE_SW_220_0000	Valencia Harbour	Coastal	At Risk	Unassigned	Good	Y	Ag,DWW	2027	
22_10	IE_SW_220_0100	Ferta	Transitional	At Risk	Unassigned	Good	Y	Ag,DWW	2027	
22_11	IE_SW_22C030300	Carhan_020	River	Review	Unassigned	Unassigned	N		2027	
22_11	IE_SW_22F270920	Faha 22_010	River	Review	Unassigned	Unassigned	N		2027	
22_11	IE_SW_22C200100	Caherlehillan Stream_010	River	At Risk	High	Good	Y	Other	2027	
22_11	IE_SW_22F011000	Ferta_010	River	At Risk	Moderate	Moderate	N	Ag,M+Q	2027	
22_11	IE_SW_22T040500	Teermoyle Stream_010	River	At Risk	High	Good	Y	For,Peat	2027	
22_12	IE_SW_22D250950	Douglas 22_010	River	Review	Unassigned	Unassigned	N		2027	
22_12	IE_SW_22C050600	Cottoner's (Laune)_020	River	At Risk	Moderate	Poor	N	Ag,M+Q	2027	
22_13	IE_SW_22_201	Yganavan	Lake	Review	Unassigned	Unassigned	N		2027	
22_13	IE_SW_22_205	Coomasaharn	Lake	Review	Unassigned	Unassigned	N		2027	
22_13	IE_SW_22_206	Cloon KY	Lake	Review	Unassigned	Unassigned	N		2027	
22_13	IE_SW_22_207	Caragh	Lake	At Risk	High	Moderate	Y	Other	2027	
22_13	IE_SW_22B021000	Behy (Kerry)_020	River	At Risk	High	Good	Y	Other	2027	
22_13	IE_SW_22C020200	Caragh_010	River	At Risk	Unassigned	Poor	Y	Ag,Hymo	2027	Upper Caragh

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
22_13	IE_SW_22C020400	Caragh_020	River	At Risk	Good	Good	Y	Ag,Hymo	2027	Upper Caragh
22_13	IE_SW_22C020680	Caragh_040	River	At Risk	Moderate	Moderate	Y	Hymo	2027	
22_13	IE_SW_22C060300	Coomnacarrig_010	River	At Risk	Good	Good	Y	For	2027	
22_13	IE_SW_22M020100	Meelagh_010	River	At Risk	High	Good	Y	For	2027	
22_13	IE_SW_22O040200	Owenroe (Caragh)_010	River	At Risk	Good	Good	Y	Ag,Hymo	2021	Upper Caragh
22_14	IE_SW_22_209	Ross Bay	Lake	Review	Unassigned	Unassigned	N		2027	
22_15	IE_SW_22G040110	Glanooragh_010	River	Review	Unassigned	Unassigned	N		2027	
22_15	IE_SW_22K040500	Kealbrogeen Stream (Laune)_010	River	Review	Unassigned	Unassigned	N		2027	
22_15	IE_SW_22G061200	Gweestin_040	River	At Risk	Poor	Poor	N	Ag,Ind	2027	
22_17	IE_SW_22M010700	Maine_040	River	At Risk	Moderate	Moderate	N	Hymo	2027	
22_18	IE_SW_22M120990	MãM_An_Gharrãln_010	River	Review	Unassigned	Unassigned	N		2027	
22_18	IE_SW_22O010600	Owenalondrig_020	River	Review	Unassigned	Unassigned	N		2027	
22_19	IE_SW_22B410750	Ballinleague_010	River	Review	Unassigned	Unassigned	N		2027	
22_19	IE_SW_22G700680	Glanlick_010	River	Review	Unassigned	Unassigned	N		2027	
22_19	IE_SW_22M030400	Milltown (Kerry)_030	River	Review	Unassigned	Unassigned	N		2027	
22_19	IE_SW_22M030200	Milltown (Kerry)_010	River	At Risk	Poor	Poor	N	Ag,For,Hymo	2021	Milltown (Kerry)
22_19	IE_SW_22M030300	Milltown (Kerry)_020	River	At Risk	Good	Poor	N	Ag,For,Hymo	2021	Milltown (Kerry)

Ag: Agriculture

DWW: Domestic Waste Water

For: Forestry

Hymo: Hydromorphology

Ind: Industry

M+Q: Mines and Quarries

Peat: Peat Drainage and Extraction

DU: Diffuse Urban

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.

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
1300PRI2017	Lyranes	Cahersiveen	IE_SW_G_022	N/A	No data
1300PRI3012	Cappanalea GWS	Cahersiveen	IE_SW_G_022	Yes	N/A
1300PRI2014	Lougher	EMLAGH_010	IE_SW_22E010400	N/A	No data
1300PRI2024	Inch/Foildaun	FLESK (KERRY)_040	IE_SW_22F020100	N/A	No data
1300PRI2065	Kells	REACASHLAGH_010	IE_SW_22R120790	N/A	No data
1300PUB1036	Fahan PWSS 036D	Dingle	IE_SW_G_033	N/A	No data
1300PUB1055	Portmagee PWSS 064H	Cahersiveen	IE_SW_G_022	Yes	N/A
	Portmagee PWSS 064H	KNOCKEENAWADDRA_010	IE_SW_22K480900	Yes	N/A
	Portmagee PWSS 064H	KNOCKEENAWADDRA_010	IE_SW_22K480900	Yes	N/A
1300PUB1032	An Baile Mor PWSS 012D	Dingle	IE_SW_G_033	Yes	N/A
	An Baile Mor PWSS 012D	Dingle	IE_SW_G_033	Yes	N/A
	An Baile Mor PWSS 012D	Dingle	IE_SW_G_033	Yes	N/A
	An Baile Mor PWSS 012D	Dingle	IE_SW_G_033	Yes	N/A
1300PUB1033	Cathair B?? Sine PWSS 018D	Dingle	IE_SW_G_033	Yes	N/A
1300PUB1035	Dún Chaoin PWSS 034D	Dingle	IE_SW_G_033	Yes	N/A
1300PUB1029	Annascaul PWSS 002D	Dingle	IE_SW_G_033	Yes	N/A
	Annascaul PWSS 002D	Dingle	IE_SW_G_033	Yes	N/A
1300PUB1110	Glanfahan Spring S35	Dingle	IE_SW_G_033	N/A	No data
1300PUB1116	An Mhín Aird Gualainn WTP	Dingle	IE_SW_G_033	Yes	N/A
	An Mhín Aird Gualainn WTP	OWENALONDRIG_010	IE_SW_22O010500	Yes	N/A
1300PUB1118	Mid Kerry: Knocknavota 302A*	Castlemaine	IE_SW_G_026	Yes	N/A
1300PUB1119	Mountain Stage PWSS 062A	Cahersiveen	IE_SW_G_022	Yes	N/A
	Mountain Stage PWSS 062A	Coomaglaslaw	IE_SW_22_197	Yes	N/A
	Mountain Stage PWSS 062A	COOMNACRONIA LOUGH STREAM_010	IE_SW_22C180300	Yes	N/A

Scheme Code	Scheme Name	Water Body	Water Body Code	Objective met? Yes /No	Reason why not met
1300PUB1045	Ceann Trá PWSS 074D	Mount Eagle	IE_SW_22_58	Yes	N/A
1300PUB1046	Caragh Lake PWSS022A	Cummernamuck	IE_SW_22_199	Yes	N/A
1300PUB1016	Central Regional: Lough Guitane (H) 400F	Guitane	IE_SW_22_172	Yes	N/A
	Central Regional: Lough Guitane (H) 400F	OWGARRIFF (FINOW)_010	IE_SW_22O060100	Yes	N/A
1300PUB1063	Mid Kerry : Gearha (H) 300A	Callee	IE_SW_22_182	Yes	N/A
	Mid Kerry : Gearha (H) 300A	GADDAGH_020	IE_SW_22G010500	Yes	N/A
1300PUB1121	Shrone PWSS 078A	Glannafreaghaun	IE_SW_22_152	Yes	N/A
	Shrone PWSS 078A	BEHEENAGH_010	IE_SW_22B010600	Yes	N/A
1300PUB1034	An Daingean PWSS 030D	OWENALONDRIG_020	IE_SW_22O010600	Yes	N/A
	An Daingean PWSS 030D	OWENALONDRIG_020	IE_SW_22O010600	Yes	N/A
1300PUB1015	Barraduff PWSS 602E	OWNEYKEAGH_010	IE_SW_22O050400	Yes	N/A
1300PUB1040	Inch PWSS 044D	SHANAKEAL_010	IE_SW_22S130900	Yes	N/A
1300PUB1042	An Mhin Aird Puc No . 1 PWSS 060D	OWENALONDRIG_010	IE_SW_22O010500	Yes	N/A
1300PUB1050	Cahersiveen PWSS 017H	CAHERLEHILLAN STREAM_010	IE_SW_22C200100	Yes	N/A
1300PUB1053	Emlaghpeasta PWSS 035H	KNOCKEENAWADDRA_010	IE_SW_22K480900	Yes	N/A
1300PUB1094	Breanlee PWSS 088A	COTTONER'S (LAUNE)_010	IE_SW_22C050400	Yes	N/A

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

Note that additional water dependent species have been added that are not qualifying interests within the SACs (i.e. Arctic char (Salvelinus alpinus) has been added to Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Mount Brandon SAC). River water bodies that are designated as salmonid rivers (under Salmonid Regulations (S.I. 293 / 1988)) 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?
Blasket Islands SAC 002172	none							
Castlemaine Harbour SAC 000343	2190	Good GW level	Groundwater	Laune Muckross	Good (R)	No	IE_SW_G_048	Yes
				Dingle	Good (NAR)	No	IE_SE_G_033	Yes
	1106	Good	River	Gweestin_010	Good (NAR)	No	IE_SW_22G060300	No
			River	Gweestin_020	High (NAR)	No	IE_SW_22G060600	No
			River	Gweestin_030	Good (NAR)	No	IE_SW_22G060900	No
			River	Gweestin_040	Poor (AT RISK)	Yes	IE_SW_22G061200	No
			River	Loe_010	High (NAR - HES Obj)	No	IE_SW_22L030400	No
			River	Laune_020	Good (NAR)	No	IE_SW_22L010200	No
			River	Laune_030	Good (NAR)	No	IE_SW_22L010300	No
			River	Laune_040	Good (NAR)	No	IE_SW_22L010400	No
			River	Laune_050	Unassigned (NAR)	No	IE_SW_22L010510	No
			River	Gaddagh_020	Good (NAR)	No	IE_SW_22G010500	No
			River	Finglas (Laune)_010	Good (NAR)	No	IE_SW_22F030700	No
			River	Cottoner's (Laune)_010	Good (NAR)	No	IE_SW_22C050400	No
			River	Cottoner's (Laune)_020	Poor (AT RISK)	Yes	IE_SW_22C050600	No
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC 000365	3110	At least Good	Lake	Coomnacronia	Unassigned (NAR)	No	IE_SW_22_196	No
			Lake	Coomaglaslaw	Unassigned (NAR)	No	IE_SW_22_197	No
			Lake	Coomasaharn	Unassigned (R)	No	IE_SW_22_205	No
			Lake	Coomeeneragh	Unassigned (NAR)	No	IE_SW_22_198	No
			Lake	Reagh Mullaghanattin	Unassigned (NAR)	No	IE_SW_22_192	No
			Lake	Cloon KY	Unassigned (R)	No	IE_SW_22_206	No

SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC 000365	3110	At least Good	Lake	Caragh	Moderate (AT RISK - HES Obj)	No	IE_SW_22_207	No
			Lake	Cappanalea	Unassigned (NAR)	No	IE_SW_22_25	No
			Lake	Nambrackdarrig Caragh	Unassigned (NAR)	No	IE_SW_22_200	No
			Lake	Nakirka	Unassigned (NAR)	No	IE_SW_22_26	No
			Lake	Cummernamuck	High (NAR)	No	IE_SW_22_199	No
			Lake	Acoose	Good (NAR)	No	IE_SW_22_208	No
			Lake	Coomloughra	Unassigned (NAR)	No	IE_SW_22_153	No
			Lake	Eagher	Unassigned (NAR)	No	IE_SW_22_174	No
			Lake	Curraghmore	Unassigned (NAR)	No	IE_SW_22_168	No
			Lake	Duff	Unassigned (NAR)	No	IE_SW_22_145	No
			Lake	Gouragh	Unassigned (NAR)	No	IE_SW_22_179	No
			Lake	Callee	Unassigned (R)	No	IE_SW_22_182	No
			Lake	Cummeenapeasta	Unassigned (NAR)	No	IE_SW_22_176	No
			Lake	Reagh Macgillicuddy Reeks	Unassigned (NAR)	No	IE_SW_22_161	No
			Lake	Cummeenduff	Unassigned (NAR)	No	IE_SW_22_181	No
			Lake	Black KY	Unassigned (NAR)	No	IE_SW_22_148	No
			Lake	Auger	Unassigned (NAR)	No	IE_SW_22_173	No
			Lake	Looscaunagh	Unassigned (NAR)	No	IE_SW_22_178	No
			Lake	Upper KY	Moderate (AT RISK)	Yes	IE_SW_22_186	No
			Lake	Glas	Unassigned (NAR)	No	IE_SW_22_177	No
			Lake	Long Range	Unassigned (NAR)	No	IE_SW_22_187	No
			Lake	Leane	Good (NAR)	No	IE_SW_22_210	No
			Lake	Ross Bay	Unassigned (R)	No	IE_SW_22_209	No
			Lake	Muckross	High (NAR - HES Obj)	No	IE_SW_22_184	No
			Lake	Doo KY	Unassigned (NAR)	No	IE_SW_22_165	No
			Lake	Devils Punchbowl	Unassigned (NAR)	No	IE_SW_22_156	No
			Lake	Erhogh	Unassigned (NAR)	No	IE_SW_22_160	No
			Lake	Managh	Unassigned (NAR)	No	IE_SW_22_154	No
			Lake	Crohane	Unassigned (NAR)	No	IE_SW_22_149	No
			Lake	Garagarry	Unassigned (NAR)	No	IE_SW_22_169	No

SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC 000365	3110	At least Good	Lake	Guitane	Good (R)	No	IE_SW_22_172	No
			Lake	Glannafreaghaun	Unassigned (NAR)	No	IE_SW_22-152	No
	3130	At least Good	Lake	Leane	Good (NAR)	No	IE_SW_22_210	No
	1029 (8 priority catchments)	High	River	Caragh_010	Poor (AT RISK - HES Obj)	Yes	IE_SW_22C020200	Yes
			River	Caragh_020	Good (AT RISK - HES Obj)	Yes	IE_SW_22C020400	Yes
			River	Caragh_030	High (NAR - HES Obj)	No	IE_SW_22C020600	Yes
			River	Caragh_040	Moderate (AT RISK - HES Obj)	Yes	IE_SW_22C020680	Yes
			River	Meelagh_010	Poor (AT RISK - HES Obj)	Yes	IE_SW_22M020100	Yes
			River	Coomnacarrig_010	Good (AT RISK - HES Obj)	Yes	IE_SW_22C060300	Yes
			River	Owenroe (Caragh)_010	Good (AT RISK - HES Obj)	Yes	IE_SW_22O040200	Yes
	1029 (19 catchments of S.I. 296 2009)	Good	River	Owenreagh_010	High (NAR - HES Obj)	No	IE_SW_22O030200	Yes
			River	Owenreagh_020	Good (NAR)	No	IE_SW_22O030400	Yes
			River	Gearhameen_010	High (NAR - HES Obj)	No	IE_SW_22G030100	Yes
			River	Gearhameen_020	High (NAR - HES Obj)	No	IE_SW_22G030300	Yes
	1106	Good	River	Killurly_West_010	Unassigned (NAR)	No	IE_SW_22K540860	No
			River	Reacashlagh 22_010	Unassigned (NAR)	No	IE_SW_22R120790	No
			River	Ferta_010	Moderate (AT RISK)	Yes	IE_SW_22F011000	No
			River	Caherlehillan Stream_010	Good (AT RISK - HES Obj)	No	IE_SW_22C200100	No
			River	Faha 22_010	Unassigned (R)	No	IE_SW_22F270920	No
			River	Teermoyle Stream_010	Good (AT RISK - HES Obj)	No	IE_SW_22T040500	No
			River	Coomnacronia Lough Stream_010	Good (NAR)	No	IE_SW_22C180300	No
			River	Behy (Kerry)_010	Good (NAR)	No	IE_SW_22B020800	No

SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC 000365	1106	Good	River	Owenroe (Caragh)_010	Good (AT RISK - HES Obj)	No	IE_SW_22O040200	No
			River	Caragh_010	Poor (AT RISK - HES Obj)	Yes	IE_SW_22C020200	No
			River	Caragh_020	Good (AT RISK - HES Obj)	No	IE_SW_22C020400	No
			River	Caragh_030	High (NAR - HES Obj)	No	IE_SW_22C020600	No
			River	Caragh_040	Moderate (AT RISK - HES Obj)	Yes	IE_SW_22C020680	No
			River	Loe_010	High (NAR - HES Obj)	No	IE_SW_22L030400	No
			River	Coomnacarrig_010	Good (AT RISK - HES Obj)	No	IE_SW_22C060300	No
			River	Meelagh_010	Poor (AT RISK - HES Obj)	Yes	IE_SW_22M020100	No
			River	Cottoner's (Laune)_010	Good (NAR)	No	IE_SW_22C050400	No
			River	Cottoner's (Laune)_020	Poor (AT RISK)	Yes	IE_SW_22C050600	No
			River	Finglas (Laune)_010	Good (NAR)	No	IE_SW_22F030700	No
			River	Gaddagh_010	High (NAR - HES Obj)	No	IE_SW_22G010300	No
			River	Gaddagh_020	Good (NAR)	No	IE_SW_22G010500	No
			River	Laune_010	Unassigned (NAR)	No	IE_SW_22L010100	No
			River	Gearhameen_010	High (NAR - HES Obj)	No	IE_SW_22G030100	No
			River	Gearhameen_020	High (NAR - HES Obj)	No	IE_SW_22G030300	No
			River	Owenreagh_010	High (NAR - HES Obj)	No	IE_SW_22O030200	No
			River	Owenreagh_020	Good (NAR)	No	IE_SW_22O030400	No
			River	Long Range_010	Unassigned (NAR)	No	IE_SW_22L080100	No
			River	Crinnagh_010	High (NAR - HES Obj)	No	IE_SW_22C070200	No
			River	Finow_010	High (AT RISK - HES Obj)	No	IE_SW_22F040100	No
			River	Finow_020	Moderate (AT RISK)	Yes	IE_SW_22F040300	No
			River	Owgarriff (Finow)_010	High (NAR - HES Obj)	No	IE_SW_22O060100	No
			River	Loo_010	Good (NAR)	No	IE_SW_22L040400	No
			River	Woodford 22 (Flesk)_010	Unassigned (R)	No	IE_SW_22W010300	No
			River	Flesk (Kerry)_010	Good (NAR)	No	IE_SW_22F020010	No

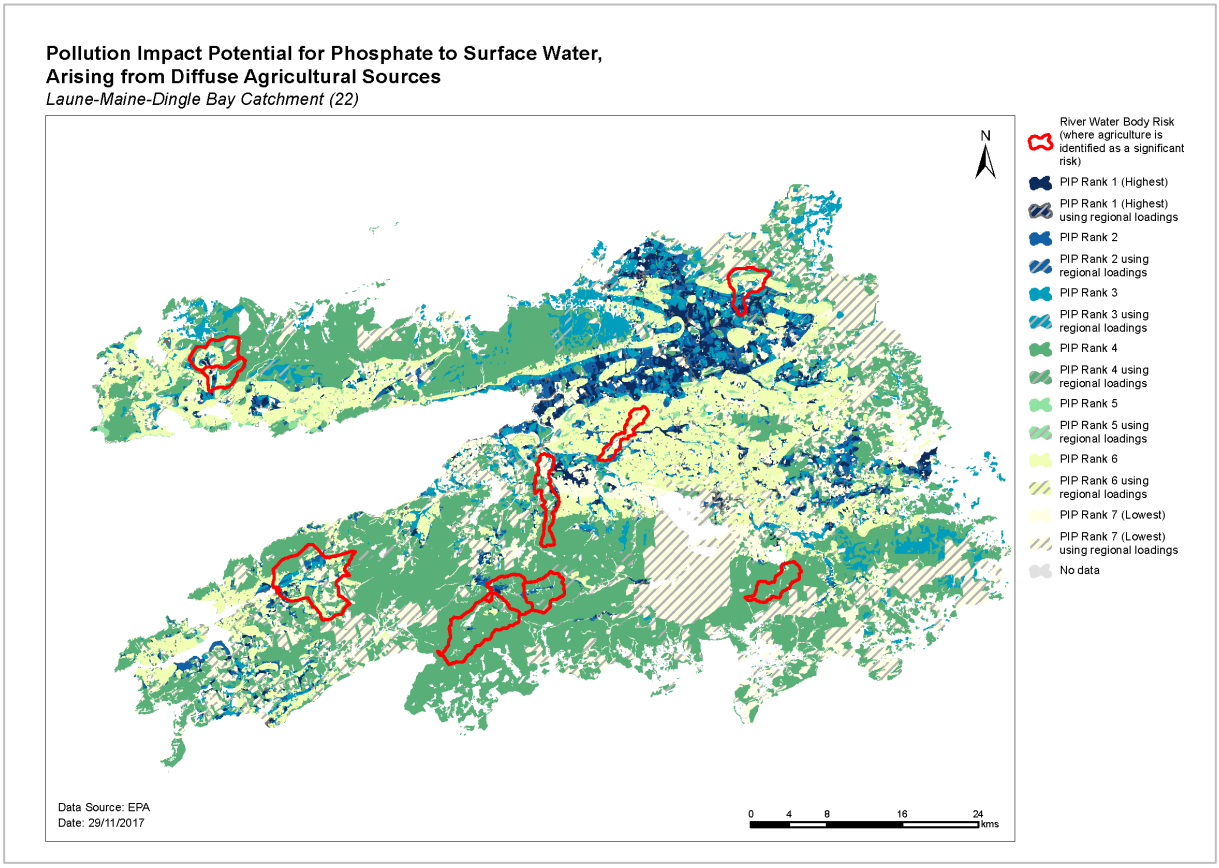
SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC 000365	1106	Good	River	Flesk (Kerry)_020	High (NAR - HES Obj)	No	IE_SW_22F020040	No
			River	Flesk (Kerry)_030	High (NAR - HES Obj)	No	IE_SW_22F020060	No
			River	Flesk (Kerry)_040	High (NAR - HES Obj)	No	IE_SW_22F020100	No
			River	Flesk (Kerry)_050	High (NAR - HES Obj)	No	IE_SW_22F020250	No
			River	Flesk (Kerry)_060	Good (NAR)	No	IE_SW_22F020310	No
			River	Owneykeagh_010	High (NAR - HES Obj)	No	IE_SW_22O050400	No
			River	Quagmire_010	Good (NAR)	No	IE_SW_22Q010400	No
			River	Beheenagh_010	Good (NAR)	No	IE_SW_22B010600	No
			River	Deenagh_010	Poor (AT RISK)	Yes	IE_SW_22D010100	No
			River	Deenagh_020	High (NAR - HES Obj)	No	IE_SW_22D010500	No
	1833	At least Good	Lake	Leane	Good (NAR)	No	IE_SW_22_210	No
			Lake	Coomnacronia	Unassigned (NAR)	No	IE_SW_22_196	No
			Lake	Coomaglaslaw	Unassigned (NAR)	No	IE_SW_22_197	No
			Lake	Coomasaharn	Unassigned (R)	No	IE_SW_22_205	No
			Lake	Coomeeneragh	Unassigned (NAR)	No	IE_SW_22_198	No
			Lake	Reagh Mullaghanattin	Unassigned (NAR)	No	IE_SW_22_192	No
			Lake	Cloon KY	Unassigned (R)	No	IE_SW_22_206	No
			Lake	Caragh	Moderate (AT RISK - HES Obj)	Yes	IE_SW_22_207	No
			Lake	Cappanalea	Unassigned (NAR)	No	IE_SW_22_25	No
			Lake	Nambrackdarrig Caragh	Unassigned (NAR)	No	IE_SW_22_200	No
			Lake	Nakirka	Unassigned (NAR)	No	IE_SW_22_26	No
			Lake	Cummernamuck	High (NAR)	No	IE_SW_22_199	No
			Lake	Acoose	Good (NAR)	No	IE_SW_22_208	No
			Lake	Coomloughra	Unassigned (NAR)	No	IE_SW_22_153	No
			Lake	Eagher	Unassigned (NAR)	No	IE_SW_22_174	No
			Lake	Curraghmore	Unassigned (NAR)	No	IE_SW_22_168	No
			Lake	Duff	Unassigned (NAR)	No	IE_SW_22_145	No
			Lake	Gouragh	Unassigned (NAR)	No	IE_SW_22_179	No
			Lake	Callee	Unassigned (R)	No	IE_SW_22_182	No
			Lake	Cummeenapeasta	Unassigned (NAR)	No	IE_SW_22_176	No

SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC 000365	1833	At least Good	Lake	Reagh Macgillicuddy Reeks	Unassigned (NAR)	No	IE_SW_22_161	No
			Lake	Cummeenduff	Unassigned (NAR)	No	IE_SW_22_181	No
			Lake	Black KY	Unassigned (NAR)	No	IE_SW_22_148	No
			Lake	Auger	Unassigned (NAR)	No	IE_SW_22_173	No
			Lake	Looscaunagh	Unassigned (NAR)	No	IE_SW_22_178	No
			Lake	Upper KY	Moderate (AT RISK)	Yes	IE_SW_22_186	No
			Lake	Glas	Unassigned (NAR)	No	IE_SW_22_177	No
			Lake	Long Range	Unassigned (NAR)	No	IE_SW_22_187	No
			Lake	Leane	Good (NAR)	No	IE_SW_22_210	No
			Lake	Ross Bay	Unassigned (R)	No	IE_SW_22_209	No
			Lake	Muckross	High (NAR - HES Obj)	No	IE_SW_22_184	No
			Lake	Doo KY	Unassigned (NAR)	No	IE_SW_22_165	No
			Lake	Devils Punchbowl	Unassigned (NAR)	No	IE_SW_22_156	No
			Lake	Erhogh	Unassigned (NAR)	No	IE_SW_22_160	No
			Lake	Managh	Unassigned (NAR)	No	IE_SW_22_154	No
			Lake	Crohane	Unassigned (NAR)	No	IE_SW_22_149	No
			Lake	Garagarry	Unassigned (NAR)	No	IE_SW_22_169	No
			Lake	Guitane	Good (R)	No	IE_SW_22_172	No
			Lake	Glannafreaghaun	Unassigned (NAR)	No	IE_SW_22-152	No
	Arctic char (not listed)	Good	Lake	Coomasaharn	Unassigned (R)	No	IE_SW_22_205	No
Lough Yganavan And Lough Nambrackdarrig SAC 000370	3110	At least Good	Lake	Yganavan	Unassigned (R)	No	IE_SW_22_201	No
			Lake	Ballintleave Commons	Unassigned (NAR)	No	IE_SW_22_39	No
			Lake	Nambrackdarrig Glenbeigh	Unassigned (NAR)	No	IE_SW_22_202	No
Mullaghanish Bog SAC 001890	none							
Mount Brandon SAC 000375	Potential 3110	At least Good	Lake	Bhearna na Gaoithe	Unassigned (NAR)	No	IE_SW_22_67	Yes
	Potential 3110/3130	At least Good	Lake	Anscaul-Scail	Unassigned (NAR)	No	IE_SW_22_189	Yes

SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
Mount Brandon SAC 000375	Arctic char (not listed)	Good	Lake	Anscaul-Scail	Unassigned (NAR)	No	IE_SW_22_189	No
Old Domestic Building, Curraglass Wood SAC 002041	none							
Sheheree (Ardagh) Bog SAC 000382	none							
Slieve Mish Mountains SAC 002185	none							
Valencia Harbour/Portmagee Channel SAC 002262	none							
Salmonids (outside SACs)	1106	Good	River	Brown Flesk_010	Good (NAR)	No	IE_SW_22B030100	Yes
			River	Brown Flesk_020	High (NAR - HES Obj)	No	IE_SW_22B030250	Yes
			River	Brown Flesk_030	Good (NAR)	No	IE_SW_22B030500	Yes
			River	Maine_040	Moderate (AT RISK)	Yes	IE_SW_22M010700	Yes
			River	Maine_050	Unassigned (NAR)	No	IE_SW_22M010800	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