

Slaney & Wexford Harbour Catchment Assessment 2010-2015 (HA 12)



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 Slaney & Wexford Harbour 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/>

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1 Introduction

This catchment includes the area drained by the River Slaney and all streams entering tidal water between the Raven Point and Greenore Point, Co. Wexford, draining a total area of 1,981km². The largest urban centre in the catchment is Wexford Town. The other main urban centres are Enniscorthy, Baltinglass, Tullow Rosslare and Kilrane. The total population of the catchment is approximately 106,203 with a population density of 54 people per km².

This catchment drains the south western and southern slopes of the Wicklow Mountains and the eastern side of the Blackstairs Mountains. The source of the River Slaney is in the North Prison corrie of Lugnaquilla Mountain. The Slaney flows west through the Glen of Imaal, where it is joined by the Little Slaney and then by the Carrigower. The Slaney turns south at Stratford, flowing through Baltinglass before it is joined by the Boleycarrigeen River. The Slaney flows through Tullow, after which it is joined by the Derreen River. The Slaney makes its way through the area between the Wicklow and Blackstairs Mountains, after which the Derry River flows in from the northeast.

The Clody River joins from the west at Bunclody, and the Slaney then continues south across central County Wexford being joined by the Ballingale, Bann, Tinnacross and Corbally Rivers. At Enniscorthy, the Slaney becomes tidal, and is joined by the River Urrin, the River Boro flowing from the southern end of the Blackstairs, and the Clonmore Tinnokilla and Muchwood Rivers from the west before entering Wexford Harbour at Ferrycarrig.

The Sow and Sinnottsmill Rivers, which drain the area north of Castlebridge, flow into the northern part of Wexford Harbour which then opens out, flowing past the reclaimed farmland of the Wexford Slobs and out to sea through the constantly shifting sands between The Raven Point and Rosslare Point.

The Slaney catchment comprises 16 subcatchments (Table 1, Figure 1) with 111 river water bodies, one lake, four transitional and three coastal water bodies, and 12 groundwater bodies. There is one designated heavily modified water body (HMWB) and no designated artificial water bodies (AWB) in the catchment.

Table 1. List of subcatchments in the Slaney catchment

Subcatchment ID	Subcatchment Name
12_1	Slaney_SC_070
12_2	Tinnokilla [Stream]_SC_010
12_3	Slaney_SC_060
12_4	Slaney_SC_080
12_5	Forth_Commons_SC_010
12_6	Slaney_SC_040
12_7	Urrin_SC_010
12_8	Slaney_SC_050
12_9	Derreen_SC_010
12_10	Slaney_SC_030
12_11	Derry[Slaney]_SC_010
12_12	Slaney_SC_010
12_13	Bann[Wexford]_SC_010
12_14	Boro_SC_010
12_15	Whitefort_SC_010
12_16	Slaney_SC_020

Overview

Slaney & Wexford Harbour Catchment (12)

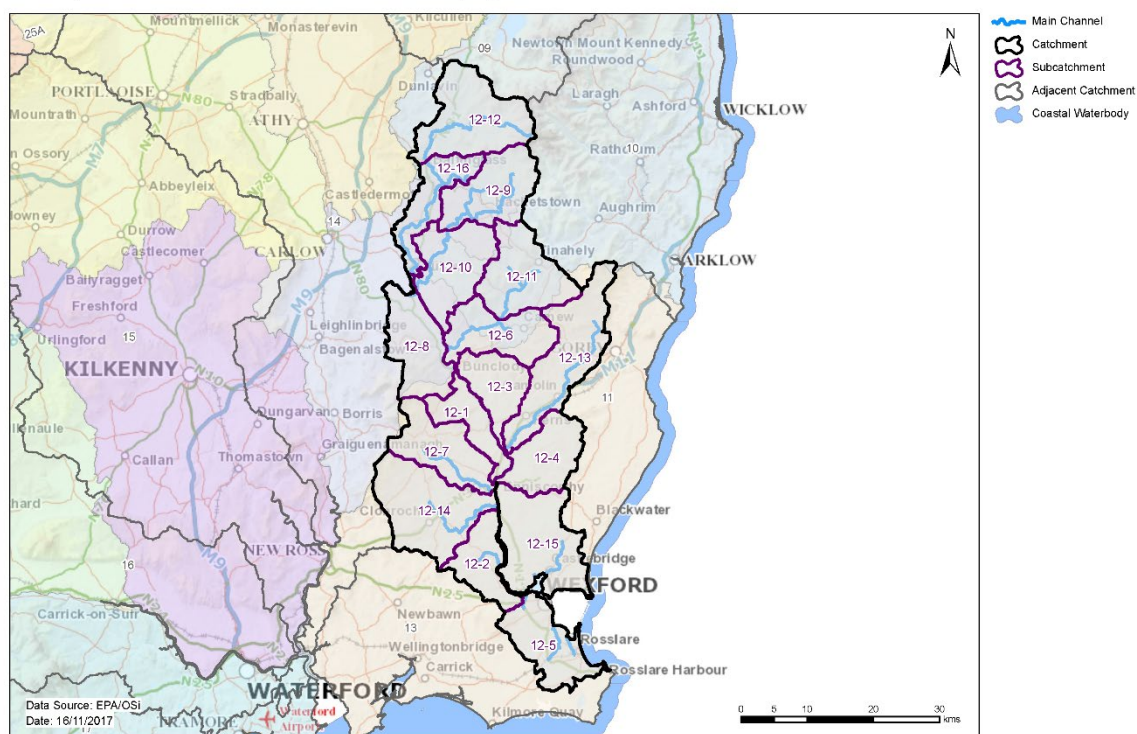


Figure 1. Subcatchments in the Slaney & Wexford Harbour catchment

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 37 (33%) river and lake water bodies at Good or High status, and 56 (50%) at less than Good status in 2015 (Table 2, Figure 2). Nineteen (17%) river and lake water bodies were unassigned.
- ◆ Twelve river water bodies have a high ecological status objective. In 2015, eight (67%) of these water bodies were at High status, three were at Good, and one was at Moderate (Figure 4, Appendix 1). There are also three additional monitoring sites which have a high status objective although they are located in water bodies where the overall water body objective is Good. All three sites were at Good status.
- ◆ The numbers of river water bodies at each status class in 2007-09 and 2010-15 is shown in Figure 5. There is one lake water body (Glenbough) which has remained unassigned throughout the monitoring cycles.
- ◆ Since 2007-09 when WFD monitoring began, eight water bodies have an improved status whereas 42 have deteriorated (Figure 5).
- ◆ The variation in nutrient concentrations and loads in the Slaney main channel is illustrated in Appendix 2.

2.1.2 Transitional and coastal (TraC)

- ◆ There are seven TraC water bodies, three coastal and four transitional; two at Good status in 2015, three at less than Good status and two that were unassigned (Figure 2, Table 2). The environmental objective for all seven water bodies is Good status.
- ◆ Between 2007-09 and 2010-15, two TraC water bodies deteriorated: the Lower Slaney Estuary deteriorated from Moderate to Poor and the North Slob Channels deteriorated from Moderate to Bad, and one water body, Upper Slaney Estuary, improved from Moderate to Good (Figure 6).
- ◆ There has been no change in status for both the Southwestern Irish Sea and Wexford Harbour. South Slob Channel and Rosslare Harbour remain Unassigned.
- ◆ Note that the coastal water body Southwestern Irish Sea (HAs 11;12) is shared with three other catchments (HAs 10,11,13).

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

	Number of water bodies	2010-15						Risk Categories		
		High	Good	Mod	Poor	Bad	Unassigned	Not at Risk	Review	At Risk
Rivers	111	8	29	41	15	0	18	30	21	60
Lake	1	0	0	0	0	0	1	1	0	0
TraCs	7	0	2	1	1	1	2	2	2	3

WFD Surface Water Body Status 2010 - 2015

Slaney & Wexford Harbour Catchment (12)

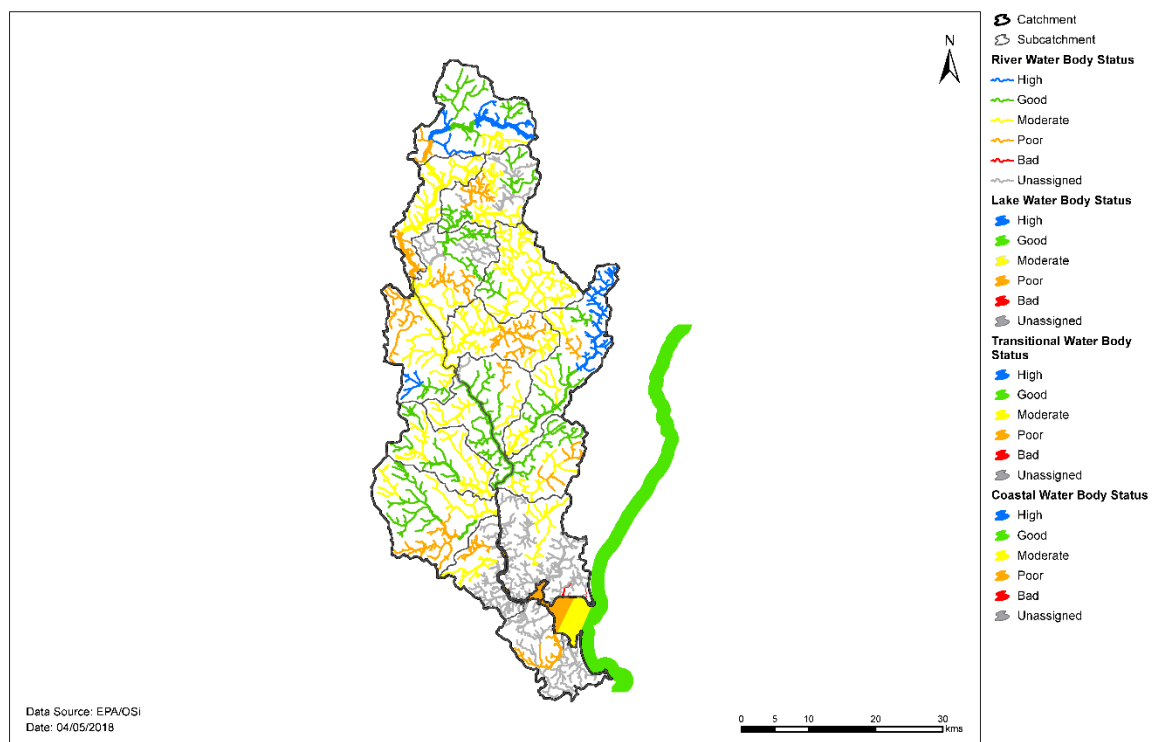


Figure 2. Surface water ecological status

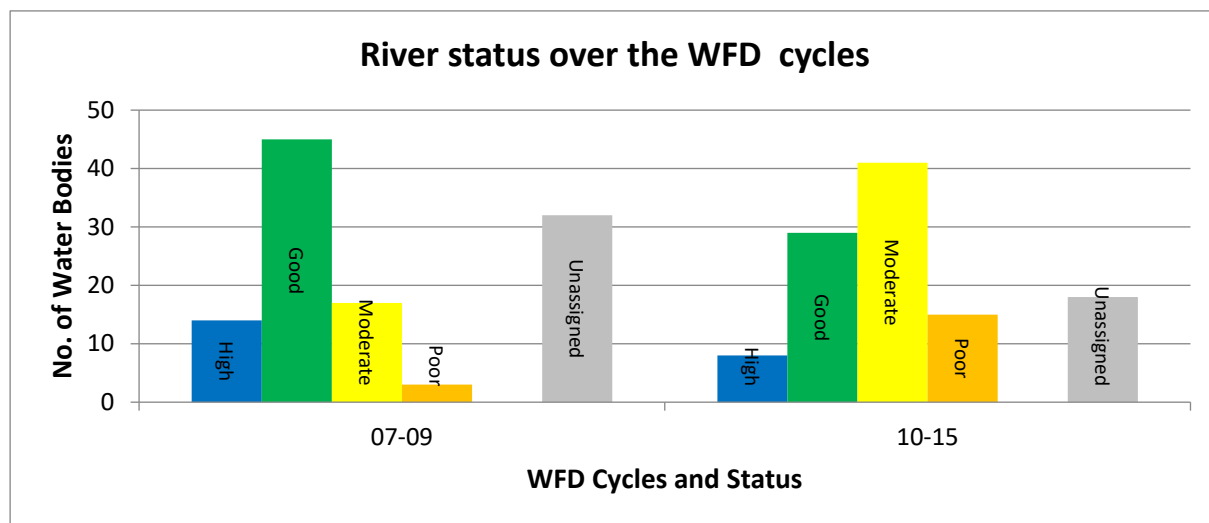


Figure 3. Number of rivers at each status class in 2007-09 and 2010-15

High Status Objective Water Bodies and Sites

Slaney & Wexford Harbour Catchment (12)

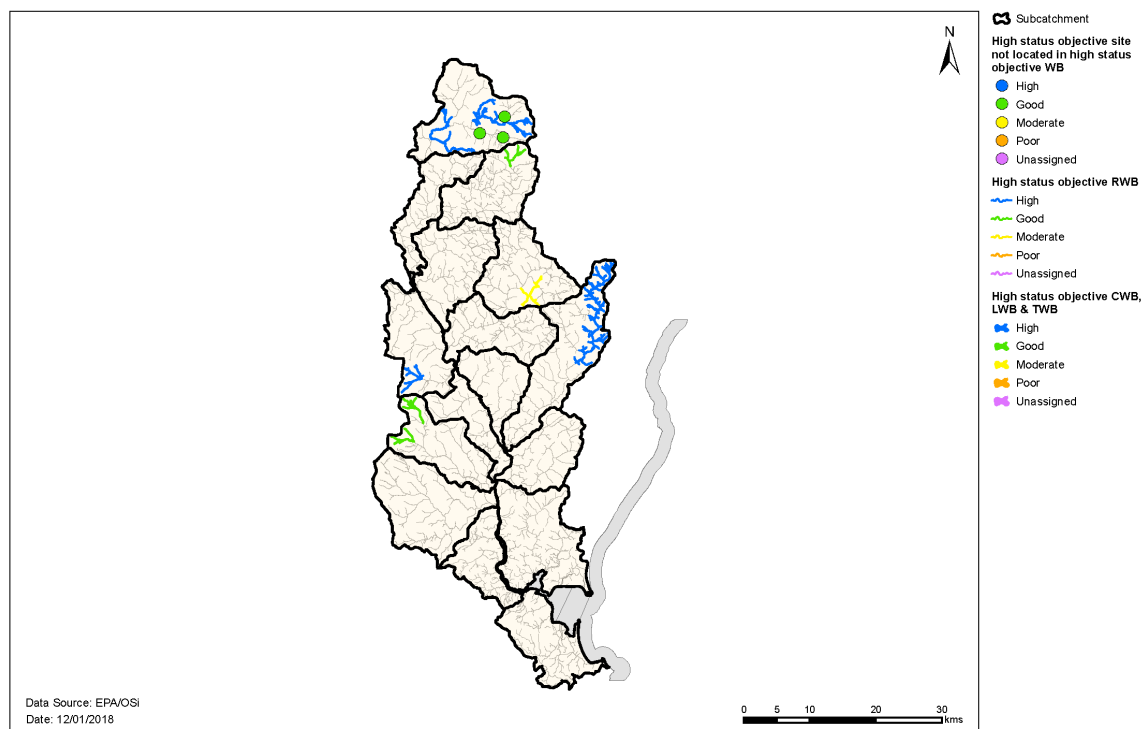


Figure 4. High ecological status objective water bodies and sites

WFD Surface Water Body Status Change 2007 - 2009 to 2010 - 2015

Slaney & Wexford Harbour Catchment (12)

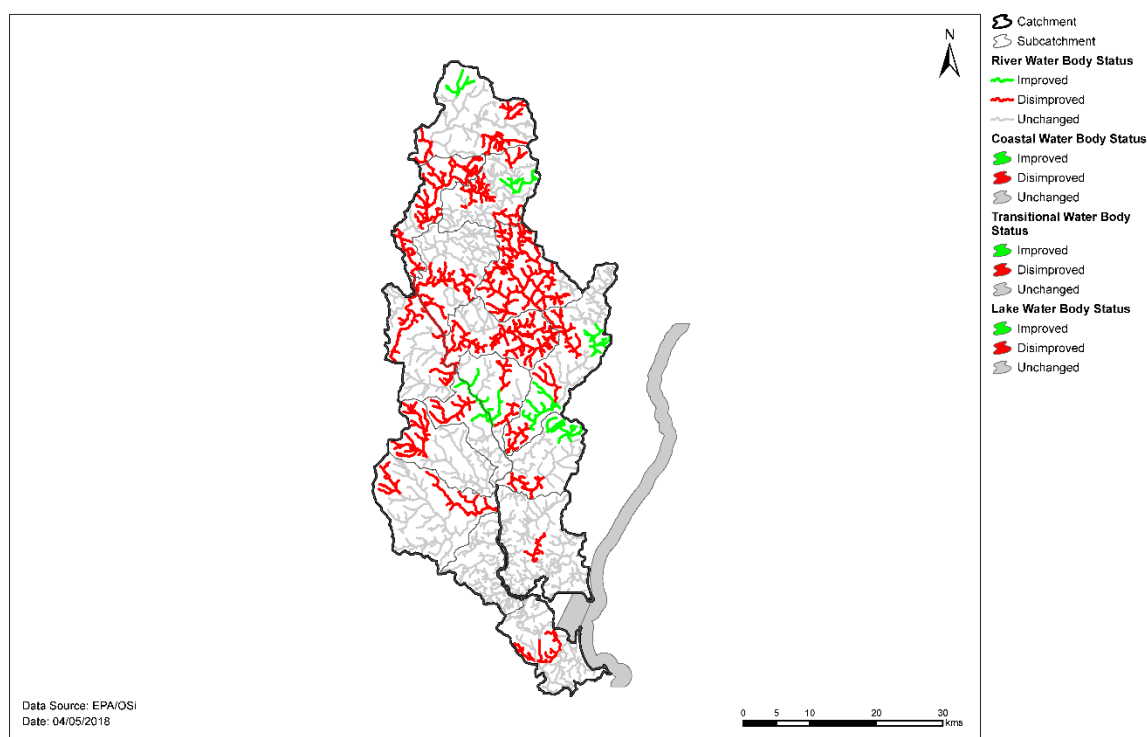


Figure 5. Surface water body status change from 2007-09 to 2010-15

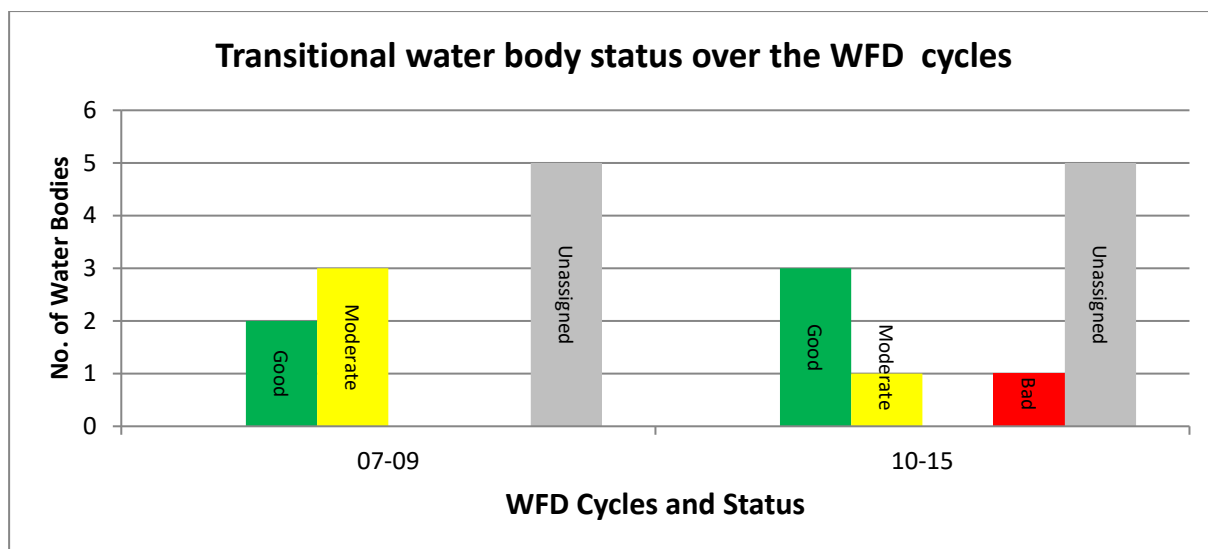


Figure 6. Number of TraCs at each status class in 2007-09 and 2010-15

2.2 Groundwater status

- ◆ There were nine groundwater bodies at Good status and three at Poor status in 2015 (Table 3).
- ◆ All 12 groundwater bodies were at Good status in 2007-12, Three groundwater bodies were classified at Poor status 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).

Table 3. Summary of water body status and risk for groundwaters

	Number of water bodies	2010-15		Risk Categories		
		Good	Poor	Not at Risk	Review	At Risk
Groundwater	12	9	3	5	3	4

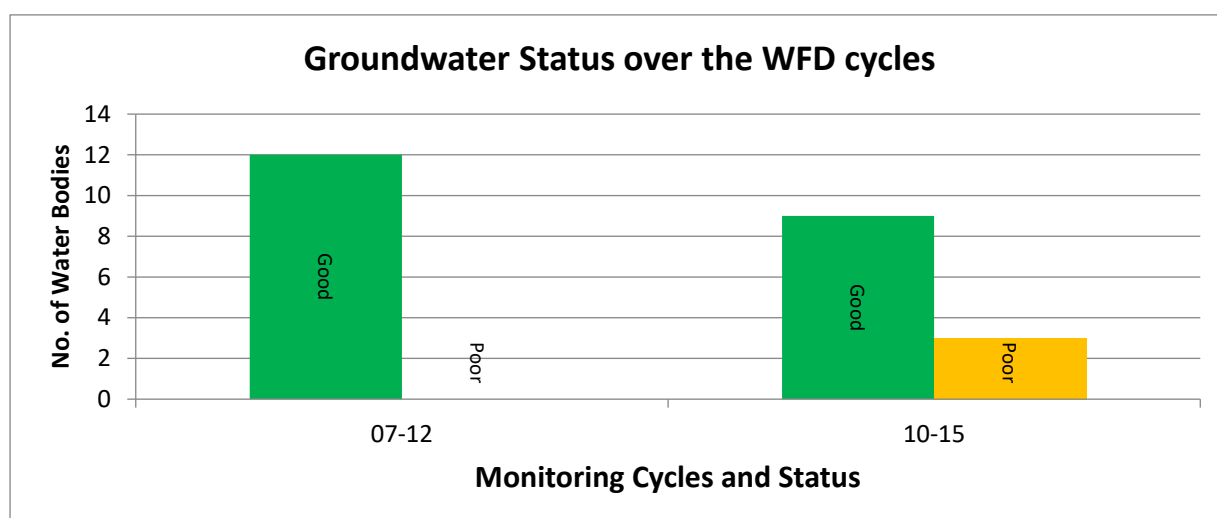


Figure 7. Number of groundwater bodies at each status class in 2007-12 and 2012-15

2.3 Risk of not meeting surface water environmental objectives

2.3.1 Rivers and lakes

- ◆ There are 31 *Not at Risk* river and lake water bodies (Figure 8, Table 2) and these require no additional investigative assessment or measures to be applied, other than those measures that are already in place.
- ◆ There are 21 surface water bodies in *Review*. This applies to 17 water bodies where more information is required and four water bodies where Good ecological status was recorded but nutrient concentrations are elevated.
- ◆ Sixty surface 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 two *Not at Risk* TraC water bodies (coastal water body the Southwestern Irish Sea (HAS 11;12) and Rosslare Harbour) (Figure 8, Table 2) and therefore require no additional investigative assessment or measures to be applied, other than those measures that are already in place.
- ◆ There are two TraC water bodies in *Review*, Upper Slaney Estuary and South Slob Channel where more information is required.
- ◆ Three TraC water bodies in the catchment are *At Risk* of not meeting their water quality objectives – Wexford Harbour, North Slob Channels and the Lower Slaney Estuary. Measures will be needed in these water bodies to improve the water quality outcomes.

2.4 Risk of not meeting groundwater environmental objectives

- ◆ Five groundwater bodies are *Not at Risk* (Figure 9, Table 3) and require no additional investigative assessment or measures to be applied, other than those measures that are already in place.
- ◆ Three groundwater bodies are in *Review*. Ballyglass (IE_SE_G_011) is in *Review* as it may be contributing phosphate to its associated surface water bodies. Both the Curracloe Gravels (IE_SE_G_162) and Castlebridge Gravels (IE_SE_G_164) are in *Review* due to elevated nitrate concentrations, within the groundwater body grouping.
- ◆ Four groundwater bodies are *At Risk*. Enniscorthy (IE_SE_G_061) is *At Risk* due to groundwater contribution of phosphate to associated surface water bodies and elevated nitrate concentration (Table 4). Waste Facility (W0016-02) (IE_SE_G_032) is *At Risk* due to elevated ammonia concentrations because of the facility. Industrial Facility (P0394-01) (IE_SE_G_062) is *At Risk* due to emissions of TCE and DCE from the industrial site. Industrial Facility (P0062-02) (IE_SE_G_151) is *At Risk* due to TCE emissions from the facility. Measures will be needed in these water bodies to improve water quality outcomes.

Water Body Risk

Slaney & Wexford Harbour Catchment (12)

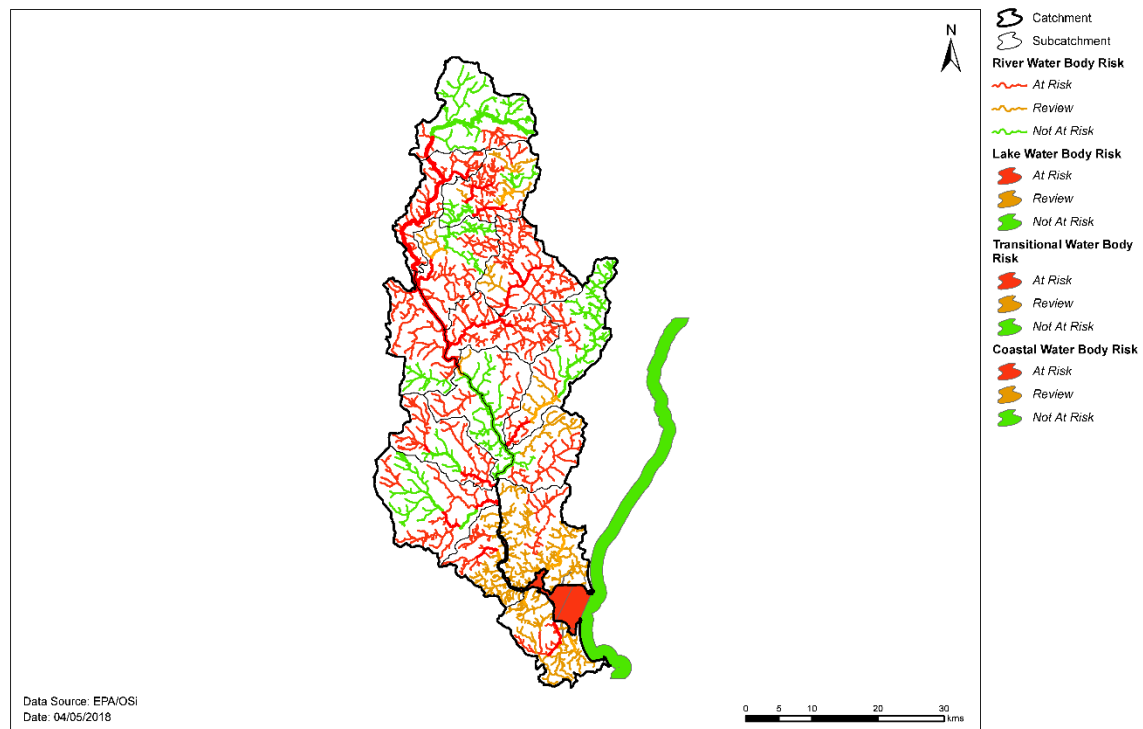


Figure 8. Surface water body risk

Groundwater Body Risk

Slaney & Wexford Harbour Catchment (12)

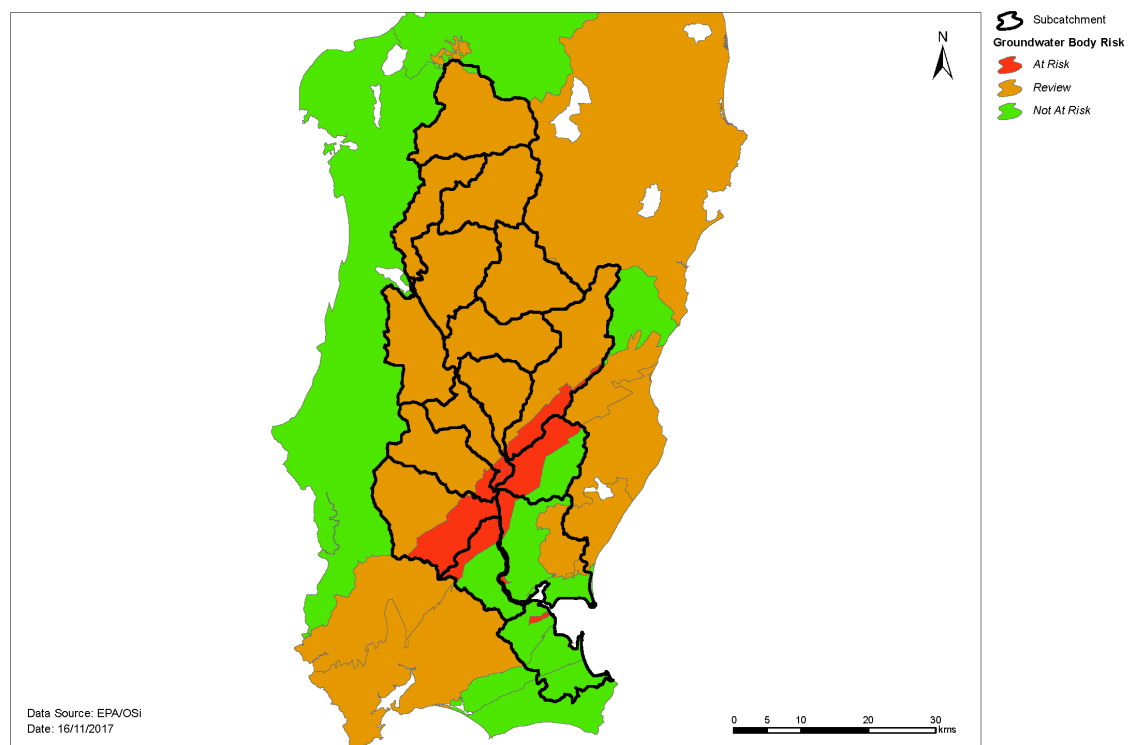


Figure 9. Groundwater body risk

Table 4. Summary of *At Risk* and *At Review* surface water bodies where phosphate from groundwater may contribute to an impact.

Groundwater body name	Receiving water body code	Receiving water body name
Ballyglass (<i>Review</i>)	IE_SE_12A030200	Askinvillar Stream_010
	IE_SE_12B011000	Bann_070
	IE_SE_12B020040	Boro_010
	IE_SE_12B020600	Boro_060
	IE_SE_12B040250	Blacklion Stream (Carlow)_010
	IE_SE_12B040400	Blacklion Stream (Carlow)_020
	IE_SE_12B060500	Ballingale Stream_010
	IE_SE_12B070400	Ballycarney Stream_010
	IE_SE_12B070700	Ballycarney Stream_020
	IE_SE_12B120990	Ballaghmore Distributary_010
	IE_SE_12C050100	Clonmore Stream_010
	IE_SE_12C070300	Coolboy_010
	IE_SE_12C070700	Coolboy_020
	IE_SE_12C080300	Camolin Stream_010
	IE_SE_12C100500	Clashavey River_010
	IE_SE_12D010050	Derreen_010
	IE_SE_12D010300	Derreen_050
	IE_SE_12D010420	Derreen_060
	IE_SE_12D010800	Derreen_100
	IE_SE_12D020100	Derry_010
	IE_SE_12D020350	Derry_020
	IE_SE_12D020500	Derry_030
	IE_SE_12D020800	Derry_050
	IE_SE_12D020910	Derry_060
	IE_SE_12D030200	Douglas (Ballon)_010
	IE_SE_12D030400	Douglas (Ballon)_020
	IE_SE_12D040300	Douglas (Kiltegan)_010
	IE_SE_12D040700	Douglas (Kiltegan)_020
	IE_SE_12G010200	Glasha (Slaney)_010
	IE_SE_12L010080	Lask_010
	IE_SE_12L020400	Little Slaney_010
	IE_SE_12M010200	Mine_010
	IE_SE_12M010600	Mine_020
	IE_SE_12R010200	Rosnastraw Stream_010
	IE_SE_12R010400	Rosnastraw Stream_020
	IE_SE_12S021010	Slaney_070
	IE_SE_12S021200	Slaney_090
	IE_SE_12S021600	Slaney_110
	IE_SE_12U010050	Urrin_010
	IE_SE_12U010200	Urrin_020
	IE_SE_12U010360	URRIN_040
	IE_SE_12U010500	URRIN_050
Enniscorthy (<i>At Risk</i>)	IE_SE_12B011000	Bann_070
	IE_SE_12B020600	Boro_060
	IE_SE_12C040300	Corbally Stream_020
	IE_SE_12C040400	Corbally Stream_030
	IE_SE_12C040900	Corbally Stream_040
	IE_SE_12C080300	Camolin Stream_010
	IE_SE_12C090100	Clonmore River (Slaney)_010
	IE_SE_12T020700	Tinnokilla Stream_010

2.5 Protected areas

2.5.1 Drinking water protected areas

- ◆ There are 71 abstractions in the Slaney Catchment comprising 40 public supplies (including three regional supplies), three private group water schemes and six private supplies (Appendix 4).
- ◆ Fifty of the abstractions are from five groundwater bodies and the remaining 21 are from 17 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.
- ◆ The Sow Regional Supply (3300PUB1641) was non-compliant for total pesticides and mecoprop in 2015, noted as abnormal contamination of the raw water source.
- ◆ Hacketstown Public Supply (0100PUB1123) was non-compliant in 2014 and 2015 due to MCPA.
- ◆ All other sources were compliant for pesticides in 2015.

2.5.2 Bathing waters

- ◆ There is one designated bathing waters in the catchment (Table 5) and it is compliant with the environmental objective for bathing waters.

Table 5. Designated bathing water in the catchment

Bathing water		Water body intersection		Objective met?	
Name	Code	Name	Code	Yes	No
Rosslare Strand	IESEBWC010_0000_0100	Southwestern Irish Sea (HAs 11;12)	IE_SE_010_0000	✓	

2.5.3 Shellfish areas

- ◆ There are three designated shellfish areas in the catchment (Table 6).
- ◆ Two water bodies did not meet their water quality objectives in 2015, both of which intersect with Wexford Harbour Outer shellfish area. The 2012 Pollution Reduction Programme for Wexford Harbour Outer identified urban waste water treatment from Wexford town, septic tank systems and agriculture as the significant pressures.
- ◆ Wexford Harbour Inner was not sampled in 2015, however based on previous results this is also non-compliant with its water quality objectives.

Table 6. Designated shellfish areas in the catchment

Shellfish area		Water body intersection		Objective met?	
Name	Code	Name	Code	Yes	No
Wexford Harbour Outer	IEPA2_0058	Lower Slaney Estuary	IE_SE_040_0200		✓
Wexford Harbour Outer	IEPA2_0058	Wexford Harbour	IE_SE_040_0000		✓
Wexford Harbour Inner	IEPA2_0059	Lower Slaney Estuary	IE_SE_040_0200		✓

2.5.4 Nutrient sensitive areas

- ◆ There are three designated nutrient sensitive areas (Slaney Estuary (Upper), Slaney Estuary (Lower) and Wexford Harbour) associated with two urban waste water treatment plants (Enniscorthy and Wexford).
- ◆ One of the urban waste water treatment plants (Wexford) has tertiary treatment and, therefore, is compliant with the environmental objectives for NSAs.
- ◆ Enniscorthy urban waste water treatment is not compliant with the environmental objective for NSAs but is due to be upgraded to tertiary treatment in 2020.
- ◆ The list of NSAs, associated agglomerations and intersecting water bodies are provided in Table 7.

Table 7. Nutrient sensitive areas in the catchment

Nutrient Sensitive Area		Agglomeration		Intersecting water bodies		Objective met?		Comment
Name	Code	Name	Code	Name	Code	Yes	No	
Slaney Estuary (Upper)	IETW_SE_2001_0028	Enniscorthy	D0029	Upper Slaney Estuary	IE_SE_040_0300		✓	Upgrade to include tertiary treatment is due in 2020.
Slaney Estuary (Lower)	IETW_SE_2001_0029			Lower Slaney Estuary	IE_SE_040_0200			
Wexford Harbour	IETW_SE_2010_0003	Wexford	D0030	Wexford Harbour	IE_SE_040_0000	✓		Tertiary treatment is in place.

2.5.5 Natura 2000 sites

- ◆ There are seven 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.
- ◆ Nineteen rivers water bodies 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 three Special Protected Areas (SPAs) in the catchment:
 - The Raven SPA (004019)
 - Wexford Harbour and Slobbs SPA (004076)
 - Wicklow Mountains SPA (004040)

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.

2.6 Heavily modified water bodies

- ◆ There is one designated heavily modified water body (HMWB) in the catchment – Rosslare Harbour due to port facilities.
- ◆ There are no artificial water bodies (AWB) in the Slaney catchment.

3 Significant issues in *At Risk* water bodies

- ◆ Excess phosphate leading to eutrophication is the dominant issue for surface water bodies in the catchment, while excess ammonia is also of concern it is only for a limited number of water bodies.
- ◆ Alteration of hydromorphological (or physical) conditions is also of concern in rivers and lakes in Slaney catchment due to impacts by excess sediment. Such impacts have altered the morphology of water bodies and in turn, altered habitat conditions.
- ◆ Pesticides (MCPA) is the issue in Derreen_050.

- ◆ Of the 12 groundwater bodies, four are *At Risk*. Licenced industrial and waste facilities are the pressure in three cases, whilst elevated nitrate concentrations and the potential to impact associated *At Risk* surface water bodies via groundwater are driving the risk for the remaining groundwater body.
- ◆ Wexford Harbour is *At Risk* and remains at Moderate status (driven by benthos). Elevated nutrients are the significant issue in this water body. The North Slob Channels are also *At Risk* and have deteriorated further to Bad status. Fish status and nutrients are the significant issues. The Lower Slaney Estuary is *At Risk* remaining at Poor status and is impacted by excess nutrients, phytoplankton and deteriorated dissolved oxygen conditions.

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 10 shows a breakdown of the number of *At Risk* water bodies in each significant pressure category.

4.1.1 Rivers, lakes, transitional and coastal

- ◆ There are no *At Risk* lake water bodies. Significant pressures have been identified by the initial characterisation process in 63 water bodies, 27 of which have multiple pressures. The significant pressures will be refined as further characterisation is carried out.
- ◆ The significant pressure affecting the greatest number of river water bodies is agriculture, followed by urban waste water, forestry, other, industry, domestic waste water, diffuse urban, hydromorphological pressures, and mines and quarries (Figure 10).
- ◆ The significant pressures affecting the greatest number of TraC water bodies is agriculture, followed by urban waste water (Figure 10).

4.1.2 Groundwater

- ◆ The significant pressure in the Enniscorthy (IE_SE_G_061) water body is agriculture resulting in elevated nitrate concentrations and contribution of phosphate to associated surface water bodies.
- ◆ Waste Facility (W0016-02) (IE_SE_G_032) water body is *At Risk* due to elevated ammonia concentrations because of the facility. Industrial Facility (P0394-01) (IE_SE_G_062) water body is *At Risk* due to emissions of TCD and DCE from the industrial site. Industrial Facility (P0062-02) (IE_SE_G_151) is *At Risk* due to TCE emissions from the facility.

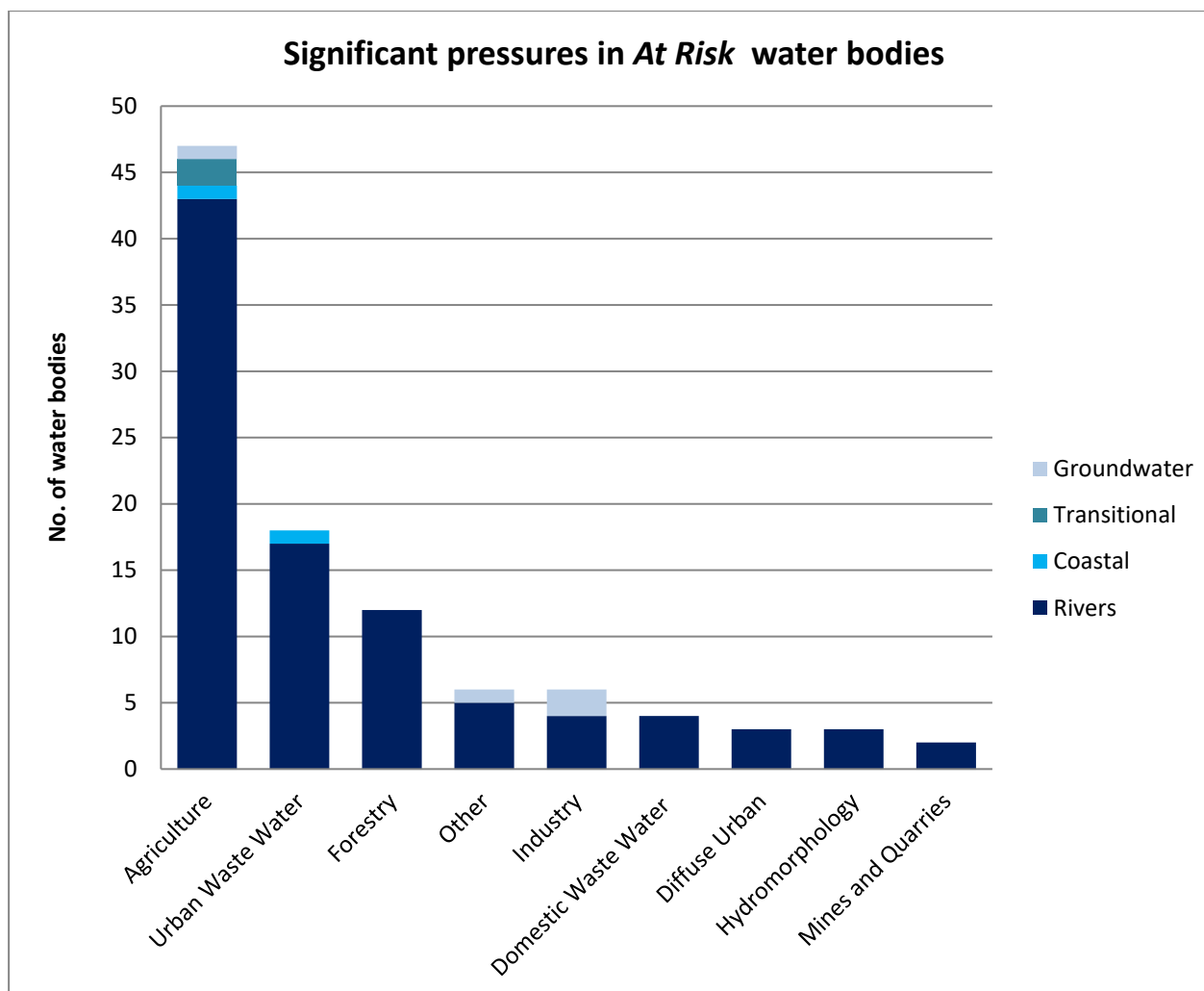


Figure 10. Significant pressures impacting on *At Risk* water bodies

4.2 Pressure type

4.2.1 Agriculture

- ◆ Agriculture is the dominant significant pressure in this catchment, impacting 43 river water bodies across almost every subcatchment, except for subcatchment 12_12, two transitional water bodies, and one coastal water body. The water bodies affected by farming are shown in Figure 11. The impacts related to farming in this catchment are diffuse phosphorus 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. There are significant areas of poorly drained soils and the pollution impact potential map showing areas of relative risk for phosphorus loss from agriculture to surface water is given in Appendix 6. In Derreen_050, pesticides (MCPA) is impacting on a drinking water source (Hacketstown); the local authority has noted that this may be arising in the upper reaches of the Derreen river.

4.2.2 Urban waste water treatment plants

- ◆ Urban Waste Water Treatment Plants (WWTPs) and agglomeration networks have been highlighted as a significant pressure in 19 *At Risk* water bodies; details are given in Table 9 and Figure 12. Three *At Risk* water bodies, Slaney_100, Bann_070 and Urrin_050 are impacted by WWTPs and agglomeration networks that are scheduled to be upgraded, while a further four water bodies are impacted by WWTPs where upgrade works have already been completed.

Table 9. 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 Ecological Status	Expected Completion Date
Tinahely D0221	1,001 to 2,000 p.e.	Derry_020	Moderate	Complete
Coolboy A0050	< 500 p.e.	Coolboy_010	Moderate	NA ¹
Davidstown A0264	< 500 p.e.	Boro_060	Moderate	NA ¹
Clonmore A0193	< 500 p.e.	Clonmore Stream_010	Unassigned ²	NA ¹
Clonroche D0404	500 to 1,000 p.e.	Boro_040	Poor	Complete
Ballymurn D0407	500 to 1,000 p.e.	Sow_010	Moderate	Complete
Ballaghkeen D0398	500 to 1,000 p.e.	Sow_010	Moderate	NA ¹
Tullow D0091	2,001 to 10,000 p.e.	Slaney_100	Poor	2021
Rathvilly D0237	1,001 to 2,000 p.e.	Slaney_080	Moderate	Complete
Ballyhoge A0256	< 500 p.e.	Tinnokilla Stream_010	Moderate	NA ¹
Bree A0253	< 500 p.e.	Clonmore River (Slaney)_010	Poor	NA ¹
Boleyvogue A0258	< 500 p.e.	Corbally Stream_010	Poor	NA ¹
Clonegal D0395	500 to 1,000 p.e.	Derry_060	Moderate	NA ¹
Carnew D0064	2,001 to 10,000 p.e.	Mine_020	Poor	NA ¹
Enniscorthy D0029	> 10,000 p.e.	Urrin_050 ³	Moderate	2020
Kildavin A0097	< 500 p.e.	Kildavin Stream_010	Moderate	NA ¹
Myshall D0390	500 to 1,000 p.e.	Douglas (Ballon)_010	Poor	NA ¹
Tiknock A0229	< 500 p.e.	Douglas (Kiltegan)_020	Poor	NA ¹
Ferns D0169	2,001 to 10,000 p.e.	Bann_070	Moderate	2023
Wexford Town D0030	> 10,000 p.e.	Wexford Harbour	Moderate	NA ¹

¹ Currently not specified in improvement plans.

² Ecological Status is not available for Clonmore Stream_010, however, following discussions with Carlow County Council, this water body was deemed to be At Risk of not meeting its environmental objectives.

³ The agglomeration network, rather than the WWTP, has been identified as a significant pressure impacting Urrin_050.

4.2.3 Forestry

- ◆ Forestry has been identified as significant pressure in 12 river water bodies (Figure 13). The significant issues are a combination of general forestry activities and clearfelling in particular.

4.2.4 Other significant pressures

- ◆ *Water Supply*
Wicklow County Council suspect an abstraction (Knockanarrigan Davidstown Public Supply), with an associated treatment plant, might be causing a pressure in the Little Slaney_010 (Figure 14). During the South East Regional Workshop, an abstraction was identified as a significant pressure on Kildavin Stream_010 (Figure 14).
- ◆ *Unknown Anthropogenic*
Two *At Risk* river water bodies, Lask_010 and Slaney_120, have unknown anthropogenic pressures (Figure 14).
- ◆ *Tourism*
During the South East Regional Workshop, a private estate was identified as a significant pressure on one river water body, Coolboy_020 where the significant issues are a combination of sediment and nutrients (Figure 14).
- ◆ *Waste*
The licenced Waste Facility (W0016-02) is identified as a significant pressure on groundwater body IE_SE_G_032.

4.2.5 Industry

- ◆ Industry has been identified as a significant pressure in four river water bodies (Figure 15). For the most part, these point source pressures are causing nutrient and organic issues in these water bodies. An industrial facility has been identified as the significant pressure impaction Derry_040, while discharges from licensed facilities have been identified as significant pressures in Ballaghmore Distributary_010, Little Slaney_010 and Lask_020.

4.2.6 Domestic waste water

- ◆ Domestic waste water has been identified as a potentially significant pressure in four river water bodies (Figure 16). The significant issues are a combination due to excess nutrients entering surface waters.
- ◆ In the Sow_010 sub basin, several the septic tank systems are mapped on areas of high susceptibility to phosphate transport via near surface pathways. In Assaly1_020 there is a high density of septic tank systems in the upper reaches of the sub basin, along the northern tributary.
- ◆ In addition to septic tank systems, there are issues with discharges from housing estates and developments. In both Urrin_040, Wexford County Council have noted ongoing water quality issues associated with misconnections/cross-connections in unfinished housing estates that are privately owned and not managed.

4.2.7 Diffuse urban

- ◆ Diffuse urban pressures, caused by misconnections, leaking sewers and runoff from paved and unpaved areas, have been identified as a significant pressure in three river water bodies – Urrin_050, Slaney_050, Slaney_060 (Figure 17). Elevated concentrations of phosphates and ammonia are the significant issues. Ecological status has consistently deteriorated over the last three monitoring cycles.

4.2.8 Hydromorphology

- ◆ Three river water bodies within the Slaney (SC12_4), Whiteford (SC12_15) and Derreen (SC_010) subcatchments are subject to extensive modification. Drainage schemes exist within these water bodies which may have led to high levels of siltation. Land drainage is an issue within a river water body of the Derreen (SC12_9) subcatchment (Figure 18)

4.2.9 Mines and quarries

- ◆ Quarries have been identified as a significant pressure in two river water bodies, Tinnokilla Stream_010 and Derreen_060 (Figure 19). There are two quarries located along the Tinnokilla Stream_010. During the 2007 and 2010 surveys siltation was noted as excessive with compaction of substratum, however in 2013 siltation was noted as slight. For Derreen_060, there is a quarry located just upstream of the station that is failing (station 12D010420) however the exact pressures are unclear and require further investigation.

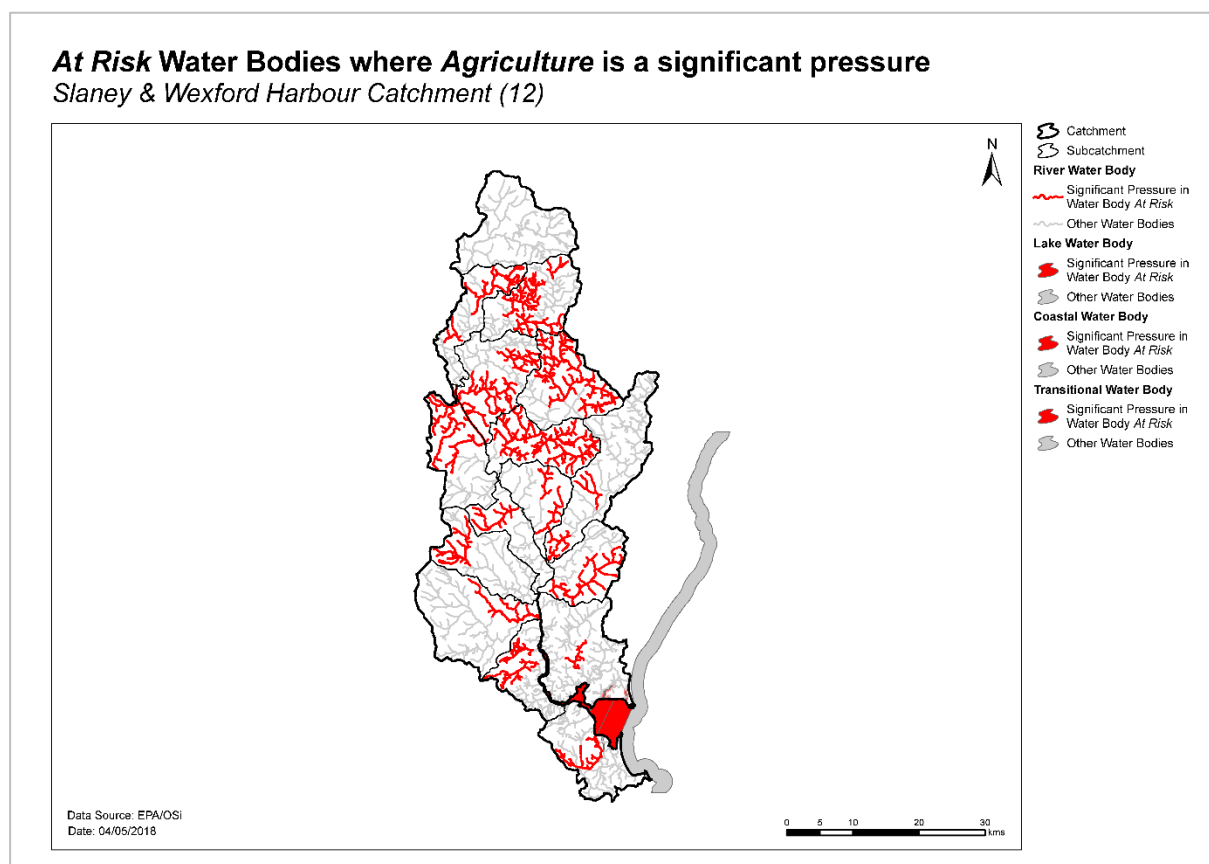


Figure 11. Water bodies that are *At Risk* and are impacted by agricultural activities

At Risk Water Bodies where Urban Waste Water is a significant pressure
 Slaney & Wexford Harbour Catchment (12)

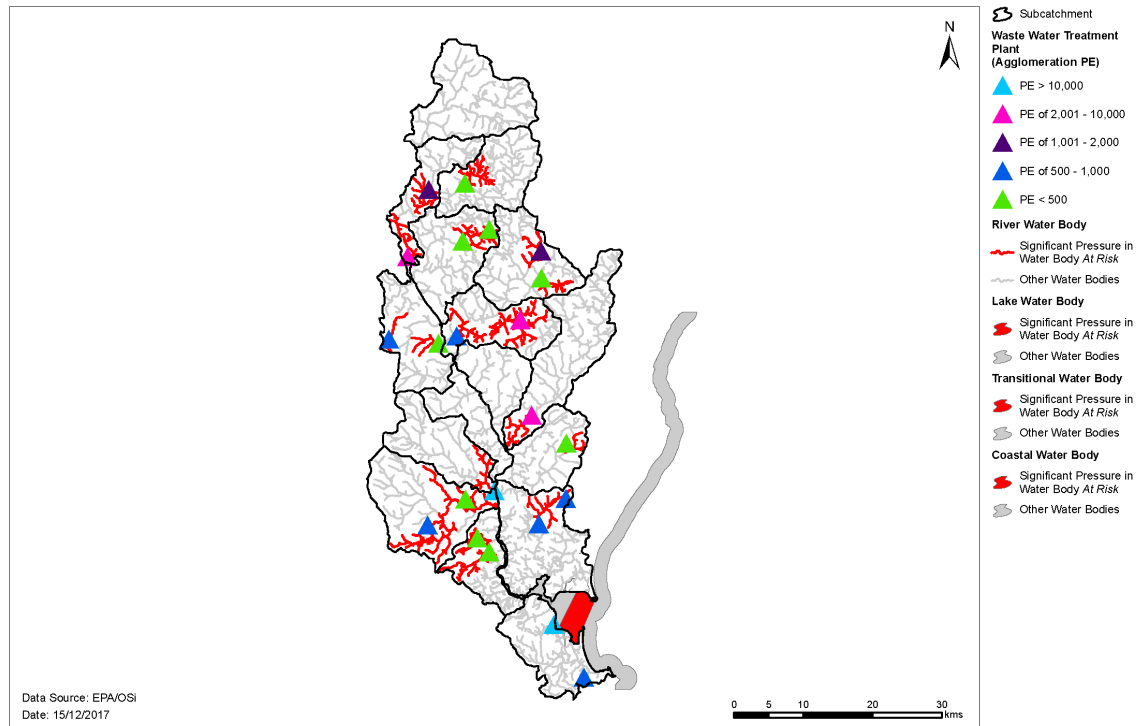


Figure 12. Water bodies that are *At Risk* and are impacted by urban waste water

At Risk Water Bodies where Forestry is a significant pressure
 Slaney & Wexford Harbour Catchment (12)

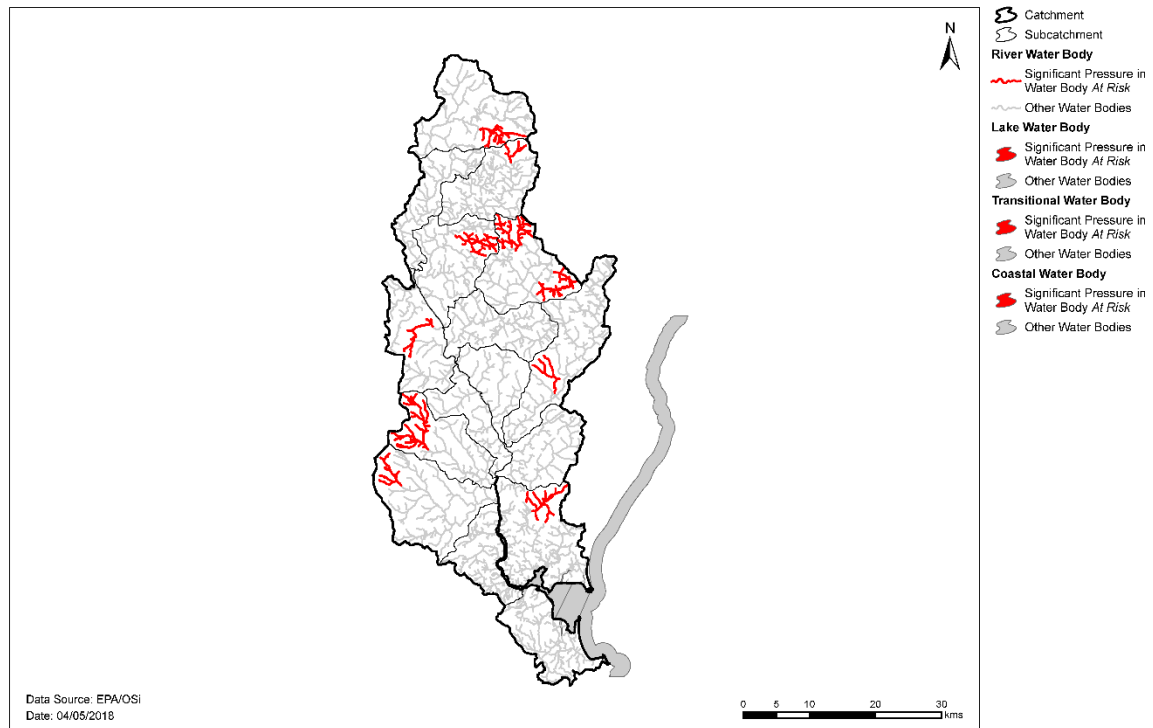


Figure 13. Water bodies that are *At Risk* and are impacted by forestry activities

At Risk Water Bodies where *Other Anthropogenic Pressures* is a significant pressure
Slaney & Wexford Harbour Catchment (12)

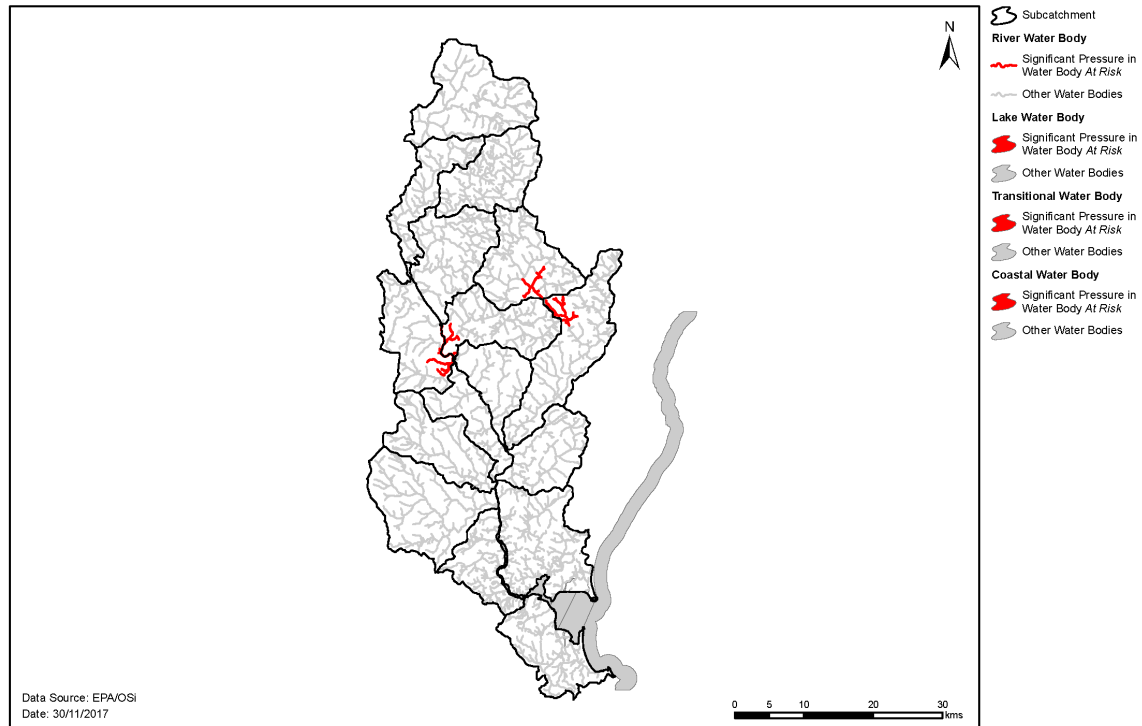


Figure 14. Water bodies that are *At Risk* and are impacted by other anthropogenic pressures

At Risk Water Bodies where *Industry* is a significant pressure
Slaney & Wexford Harbour Catchment (12)

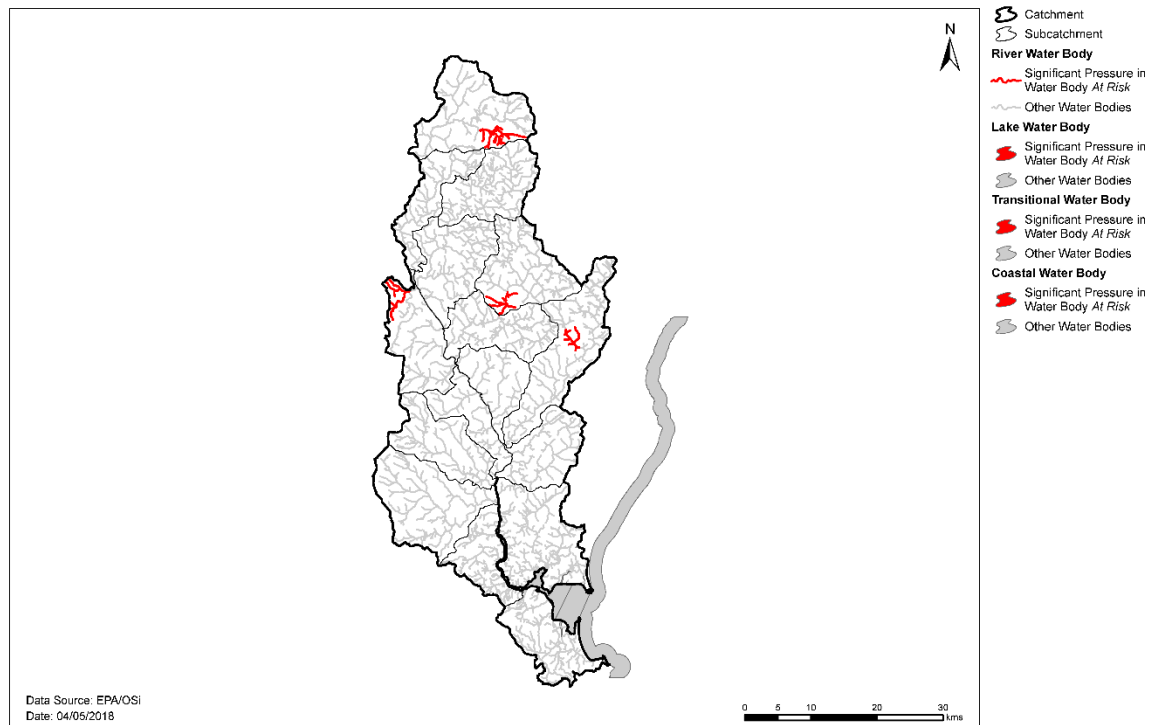


Figure 15. Water bodies that are *At Risk* and are impacted by industry

At Risk Water Bodies where Domestic Waste Water is a significant pressure
 Slaney & Wexford Harbour Catchment (12)

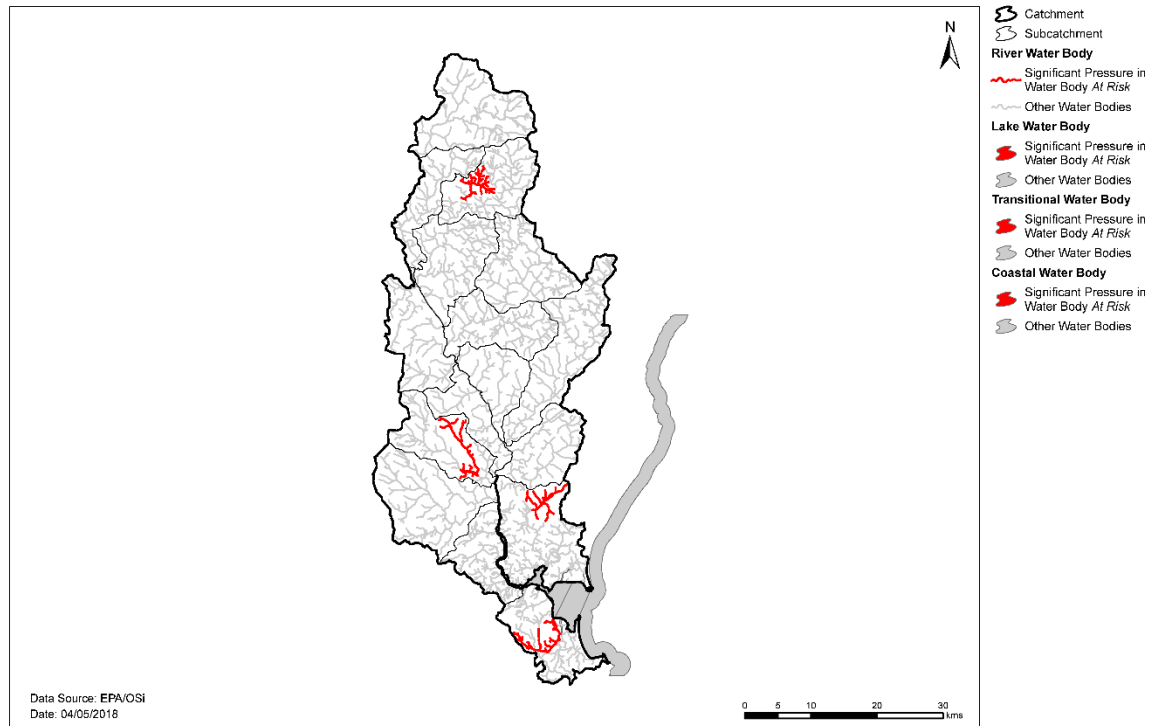


Figure 16. Water bodies that are *At Risk* and are impacted by domestic waste water

At Risk Water Bodies where Diffuse Urban is a significant pressure
 Slaney & Wexford Harbour Catchment (12)

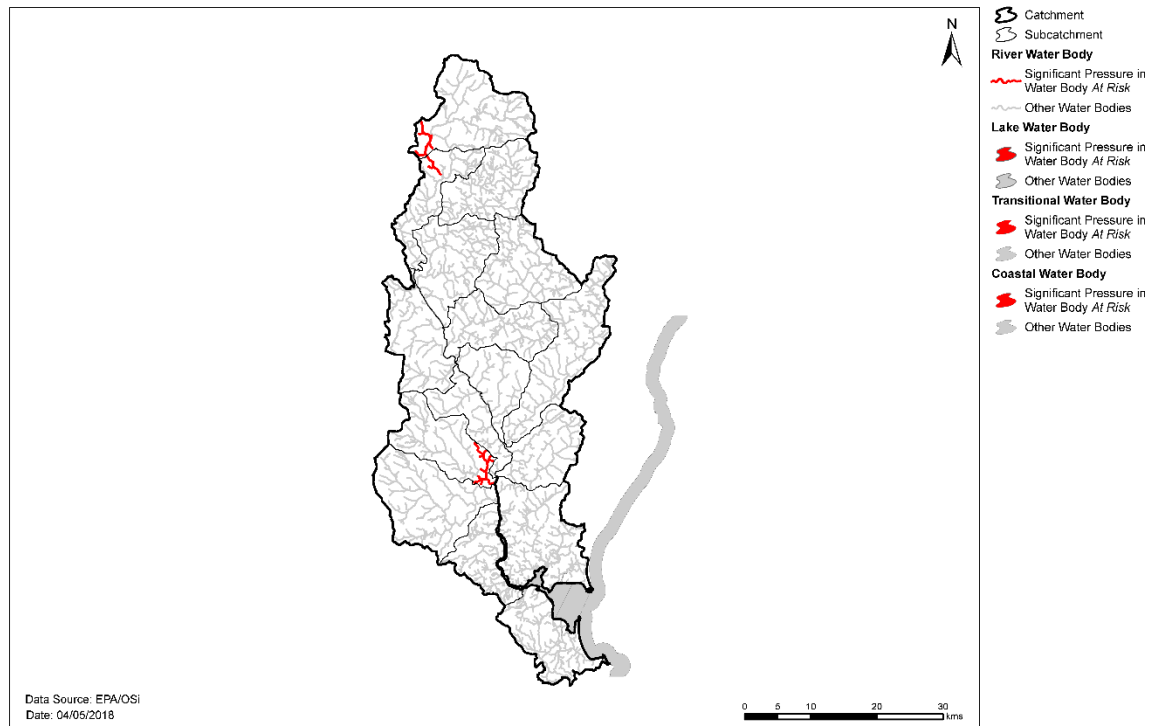


Figure 17. Water bodies that are *At Risk* and are impacted by diffuse urban impacts

At Risk Water Bodies where Hydromorphology is a significant pressure
 Slaney & Wexford Harbour Catchment (12)

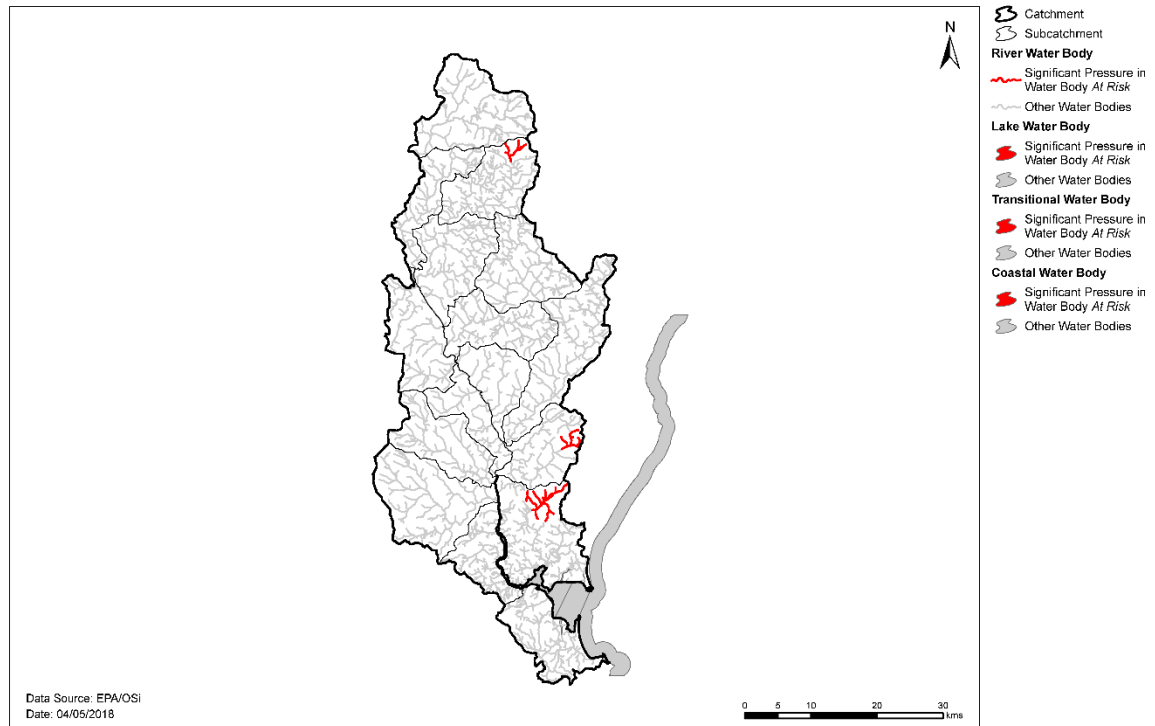


Figure 18. Water bodies that are *At Risk* and are impacted by hydromorphological pressures

At Risk Water Bodies where Extractive Industry is a significant pressure
 Slaney & Wexford Harbour Catchment (12)

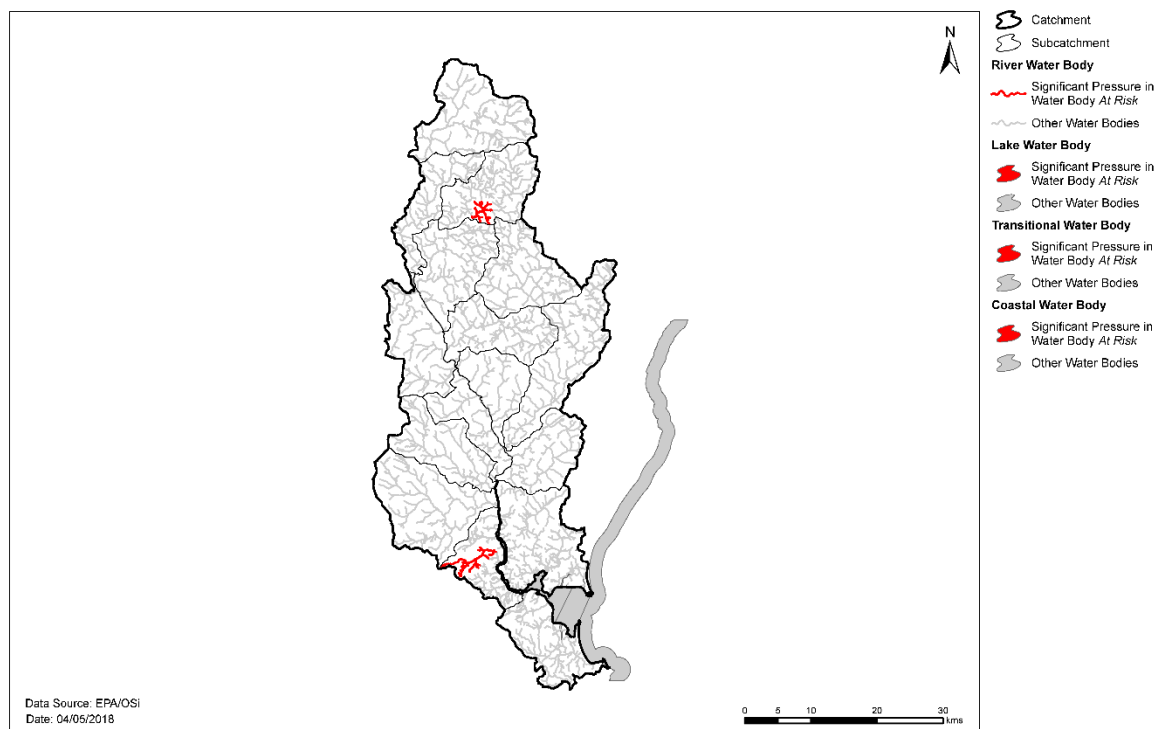


Figure 19. Water bodies that are *At Risk* and are impacted by the Extractive industry

5 Load reduction assessment

5.1 River water body load reductions

- ◆ The results of the main channel assessment for the Slaney river indicates that orthophosphate, is the main parameter of concern in river water bodies (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 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 Slaney catchment, the available data indicate that orthophosphate load reduction is required in six river water bodies (Table 10).
- ◆ The nitrate assessment is aimed at reducing the nitrate loading to the associated TraC water bodies. For water bodies where nitrate monitoring data are available, the reduction in TON load that would be required to bring the annual concentrations back to 2.60 mg/l can be estimated.
- ◆ In the Slaney catchment, the available data indicate that nitrogen load reductions are required in 18 river water bodies (Table 11).

Table 10. Relative load reductions required in monitored water bodies that are *At Risk*.

Water body	P Load Reduction Required
Assaly1_010	Med
Douglas (Ballon)_020	Med
Coolboy_010	Low
Douglas (Kiltegan)_020	Low
Clonmore Stream_010	Low
Douglas (Ballon)_010	Low

Table 11. Relative load reductions required in monitored water bodies that are *At Risk*.

Water body	N Load Reduction Required
SLANEY_120	V. High
SLANEY_160	V. High
BORO_030	High
SLANEY_150	V. High
SLANEY_080	V. High
URRIN_050	V. High
BORO_040	High
DERREEN_080	High
SLANEY_100	V. High
BANN_050	High
BANN_060	High
BANN_070	High
DOUGLAS (BALLON)_020	V. High
SLANEY_060	V. High
MINE_020	High
LASK_020	V. High
BANN_030	High
URRIN_030	High

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 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. Further assessments of Wexford Harbour, the North Slob Channels and the Lower Slaney Estuary are required to assess potential excess nutrients from Urban waste water (including Wexford town) and other sources.

As part of the Ireland's commitment to the OSPAR Convention, nutrient flux or load monitoring has been carried out on the Slaney 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>

Figure 19a – Total Nitrogen Load (Tonnes/year) 1990-2015

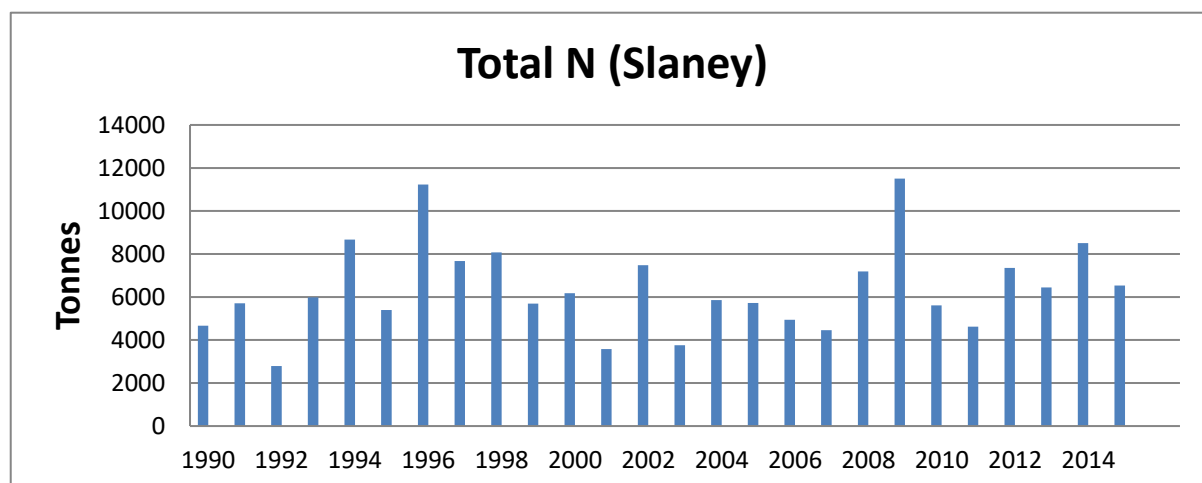
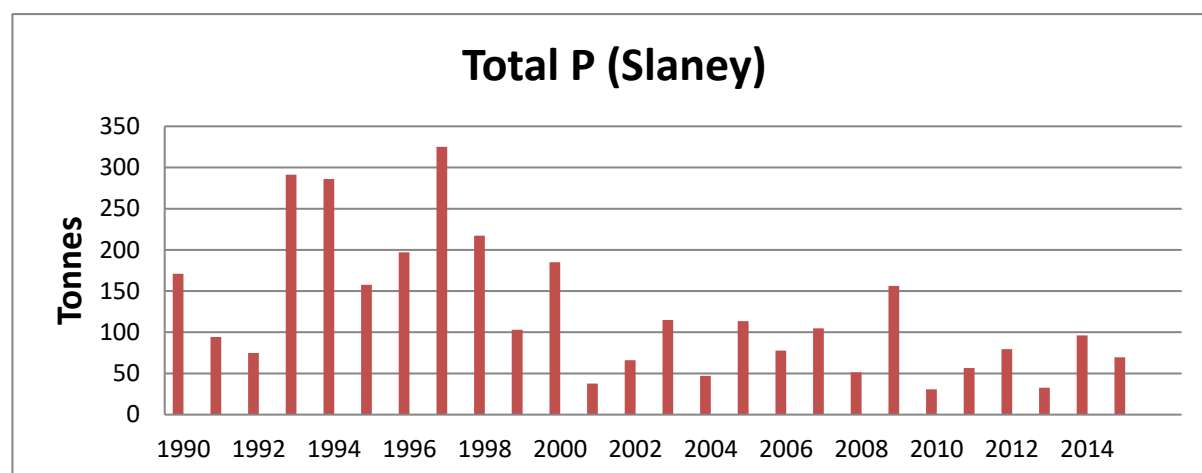


Figure 19b – Total Phosphorus Load (Tonnes/year) 1990-2015



6 Further characterisation and investigative assessments

- ◆ Further characterisation through local catchment assessments is needed in 60 of the *At Risk* river 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 details on the 10 IA assessment scenarios are given in Appendix 7.
- ◆ A specialist assessment will be required to determine the extent of the reduction in agricultural losses of nitrogen that will be required to improve ecological status in the estuary.

Table 12. Investigative assessment allocation for *At Risk* and *Review* river and lake water bodies in the catchment

Risk	IA 1	IA 2	IA 3	IA4	IA 5	IA6	IA 7	IA 8	IA 9	Total
At Risk	27	1	0	4	4	3	44	3	0	86
Review	7	0	19	0	1	4	1	0	0	32

Note water bodies may have multiple categories of Local Catchment Assessments

7 Catchment summary

- ◆ Of the 119 surface water bodies (rivers, lakes, TraCs), 63 are *At Risk* of not meeting their WFD objectives.
- ◆ Excess phosphorus leading to eutrophication is a major issue in several water bodies. While excess ammonium is also of concern, it is only for a limited number of water bodies.
- ◆ Hydromorphological (or physical) conditions (including the input of excessive fine sediment) and poor habitat quality are also issues of concern for several surface water bodies.
- ◆ The three *At Risk* transitional water bodies, Wexford Harbour IE_SE_040_0000, the North Slob Channels IE_SE_040_0100 and the Lower Slaney Estuary IE_SE_040_0200, are being impacted by excess nutrients, with the significant pressures being agriculture and urban waste water from Wexford town.
- ◆ There are four groundwater bodies which are *At Risk*. Waste Facility (W0016-02) (IE_SE_G_032) is *At Risk* due to elevated ammonia concentrations because of the facility. Industrial Facility (P0394-01) (IE_SE_G_062) is *At Risk* due to emissions of TCE and DCE from the industrial site. Industrial Facility (P0062-02) (IE_SE_G_151) is *At Risk* due to TCE emissions from the facility. Enniscorthy (IE_SE_G_061) is *At Risk* due to the potential for groundwater contribution of phosphate to associated surface water bodies and elevated nitrate concentration.

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 6 areas for action in the Slaney 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 Slaney catchment are summarised below.

- ◆ Six recommended areas for actions (Table 13, Figure 20) were selected.
- ◆ These are the Sow, Urrin, Wexford Harbour, Slaney, Dereen and Douglas (Kiltegan), and Derry-Coolboy-Rosnastrow.
- ◆ These include:
 - 39 river water bodies – 30 *At Risk* and nine *Review*, and
 - one *At Risk* coastal water body.
- ◆ Two groundwater bodies, that are *At Risk* or *Review* due to groundwater contribution of nutrients to surface water bodies, intersect with five of the recommended areas for action, see Table 14. Actions taken to improve surface water will need to take account of the groundwater contribution to surface water.

A remaining 46 *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:

- ◆ 42 river and lake water bodies – 30 *At Risk* and 12 *Review*, and
- ◆ four transitional water bodies – two *At Risk* and two *Review*.

Table 13. Recommended Areas for Action in the Slaney catchment

Recommended area for action	Number of water bodies	SCs	Local authority	Reason for Selection
Sow	4	12_15	Wexford	<ul style="list-style-type: none"> • Potential to utilise County Council involvement in local drainage schemes. • Important water abstraction - Wexford town and area north of Wexford. • Woodlands for water scheme is being developed in the area. • Important amenity area. • Opportunity to work with demonstration farm project. • Important heritage areas, such as Edenvale, in the area. • Active community groups in the area. • One deteriorated water body. • Drinking water protected area objective not met.
Urrin	5	12_7	Wexford	<ul style="list-style-type: none"> • Building on completed and planned improvements from Enniscorthy upgrade works. • Three deteriorated water bodies. • Two of the three deteriorated water bodies are <i>At Risk</i> High Ecological Status objective water bodies. • One potential 'quick win'.
Wexford Harbour	3	12_15 12_5	Wexford	<ul style="list-style-type: none"> • Estuary project. • Failing protected area objective: Shellfish area (Wexford harbour). • Building on work by Wexford CoCo. • SAC and SPA.
Slaney	5	12_16	Wicklow (Slaney_060 & 070) Carlow	<ul style="list-style-type: none"> • Building on planned Irish Water improvements at Rathvilly. • Four deteriorated water bodies. • Failing protected area objective (salmon). • Water abstraction at Rathvilly. • Three potential 'quick wins'.
Derreen and Douglas (Kiltegan)	12	12_9 12_10	Wicklow Carlow	<ul style="list-style-type: none"> • Protected area objectives not met for Freshwater Pearl Mussel (19 catchments of S.I. 296 2009). • Build on WWTP upgrades at Hacketstown. • Active community group. • Three of the five water bodies are deteriorated water bodies. • One of the three deteriorated water bodies is a High Ecological Status objective water body. • Three potential 'quick wins'.
Derry-Coolboy-Rosnastrow	11	12_11	Wicklow Carlow (Derry_010 only)	<ul style="list-style-type: none"> • The most important tributaries on the Slaney for salmon spawning. • Building on planned instream works by Inland Fisheries Ireland on Coolboy_010 at Coolattin estate. • Three potential 'quick wins'. • Eight deteriorated water bodies. • One At Risk High Ecological Status objective water body. • Derry_010 is failing its protected area objectives for drinking water (pesticides).

Table 14 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_SE_G_011	Ballyglass	Review	IE_SE_12D010050	DERREEN_010	Derreen and Douglas (Kiltegan)
			IE_SE_12D010100	DERREEN_020	
			IE_SE_12D010200	DERREEN_040	
			IE_SE_12D010300	DERREEN_050	
			IE_SE_12D010420	DERREEN_060	
			IE_SE_12D040300	DOUGLAS (KILTEGAN)_010	
			IE_SE_12D040700	DOUGLAS (KILTEGAN)_020	
			IE_SE_12K460150	KNOCKBOY 12_010	
			IE_SE_12D020800	DERRY_050	Derry
			IE_SE_12D020910	DERRY_060	
			IE_SE_12C070300	COOLBOY_010	
			IE_SE_12C070700	COOLBOY_020	Derry-Coolboy-Rosnastraw
			IE_SE_12D020100	DERRY_010	
			IE_SE_12D020350	DERRY_020	
			IE_SE_12D020500	DERRY_030	
			IE_SE_12D020700	DERRY_040	
			IE_SE_12R010200	ROSTASTRAW STREAM_010	
			IE_SE_12R010400	ROSTASTRAW STREAM_020	
			IE_SE_12S010500	SHILLELAGH 12_010	
			IE_SE_12S020800	SLANEY_060	Slaney
			IE_SE_12S021010	SLANEY_070	
			IE_SE_12S021100	SLANEY_080	
			IE_SE_12S021200	SLANEY_090	
			IE_SE_12S021400	SLANEY_100	
			IE_SE_12A030200	ASKINVILLAR STREAM_010	Urrin
			IE_SE_12U010050	URRIN_010	
			IE_SE_12U010200	URRIN_020	
			IE_SE_12U010360	URRIN_040	
			IE_SE_12U010500	URRIN_050	
IE_SE_G_061	Enniscorthy	At risk	IE_SE_12U010500	URRIN_050	

9 Environmental Objectives

9.1 Surface Water

- ◆ Assuming resources are available and actions are taken in the recommended areas for action, of the 31 *At Risk* surface water bodies, it is predicted that 9 (30%) will improve by 2021 and 21 (70%) will achieve their objective by 2027. For the nine *Review* surface 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 15.

Table 15. Environmental objective dates for 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
Rivers			
<i>At Risk</i>	30	9	21
<i>Review</i>	9	0	9
TraCs			
<i>At Risk</i>	1	0	1
<i>Review</i>	0	0	0
Total	40	9	31

- ◆ Thirty-three surface water bodies have met their 2015 environmental objective.
- ◆ Due to planned upgrade works at an urban waste water treatment plant, a 2021 objective is applied to the one of the remaining 32 *At Risk* water bodies. As action is not yet planned to be taken in the remaining 31 *At Risk* surface water bodies, a 2027 date is applied to these water bodies.
- ◆ For the 14 *Review* surface 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 16.

Table 16. 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
Rivers			
<i>At Risk</i>	30	1	29
<i>Review</i>	12	0	12
TraCs			
<i>At Risk</i>	2	0	2
<i>Review</i>	2	0	2
Total	46	1	45

9.2 Groundwater

- ◆ Nine of the 12 groundwater bodies in the catchment are Good status and, therefore, have met their environmental objectives.
- ◆ Of the three groundwater bodies that are Poor status, all have a 2027 environmental objective, see Table 17.

Table 17 Environmental Objective dates of Poor status groundwater bodies in the Slaney catchment

Water body code	Water body name	Environmental Objective
IE_SE_G_032	Waste Facility (W0016-02)	2027
IE_SE_G_062	Industrial Facility (P0394-01)	2027
IE_SE_G_151	Industrial Facility (P0062-02)	2027

10 Acknowledgements

This Slaney & Wexford Harbour Catchment Assessment (Version 2) has been produced by the Catchment Science & Management Unit, EPA, with the assistance of the following:

- Wexford County Council
- Carlow County Council.
- Wicklow 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.
- Geological Survey Ireland.
- National Federation of Group Water Schemes.
- National Parks and Wildlife Service.
- Waterways Ireland.
- Board Iascaigh Mhara.
- Marine Institute.
- Sea Fisheries Protection Authority.

Recommended Areas for Action

Slaney & Wexford Harbour Catchment (12)

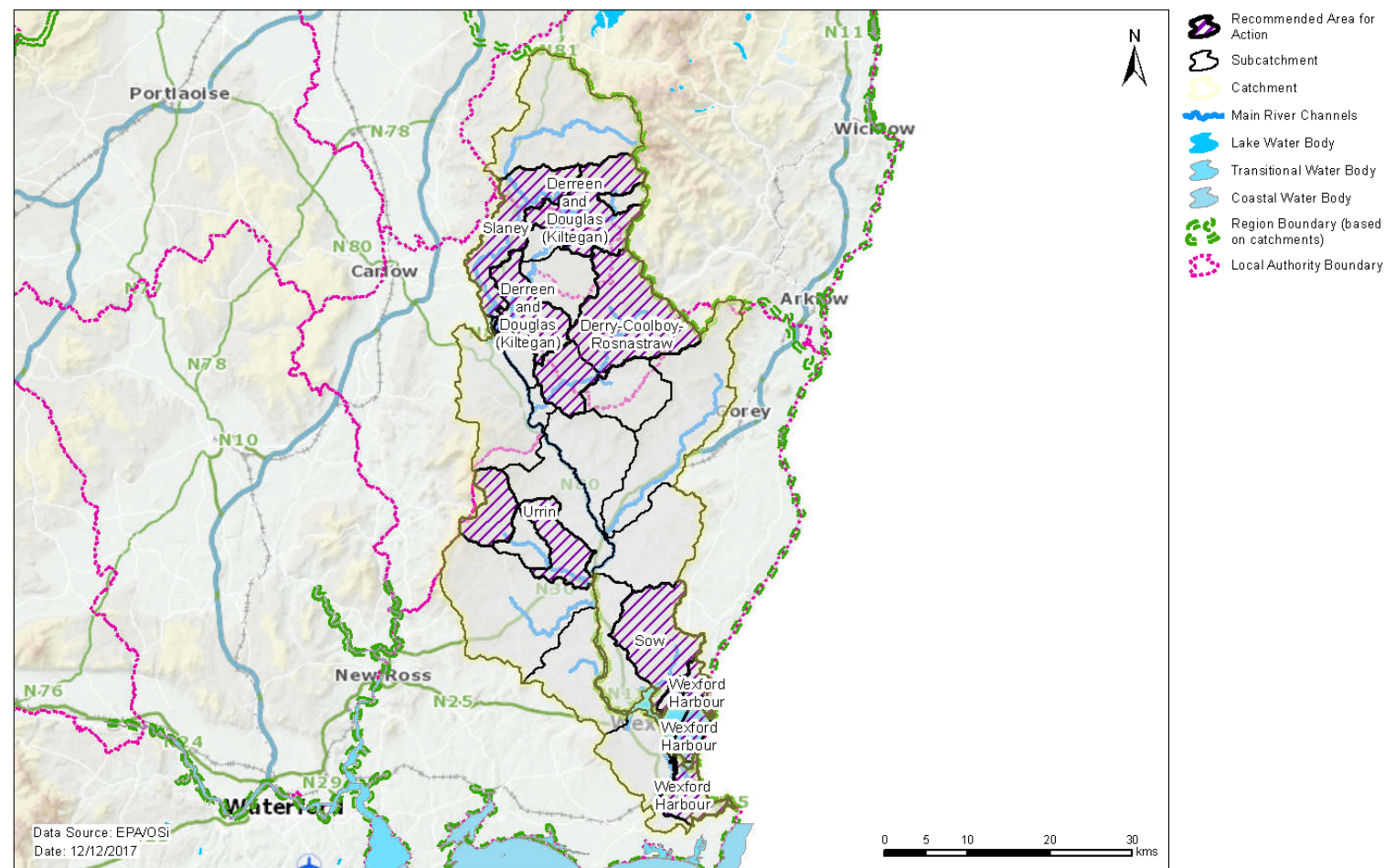


Figure 20. Location of Recommended Areas for Action in the Slaney Catchment

Remaining *At Risk* and *Review* Water Bodies

Slaney & Wexford Harbour Catchment (12)

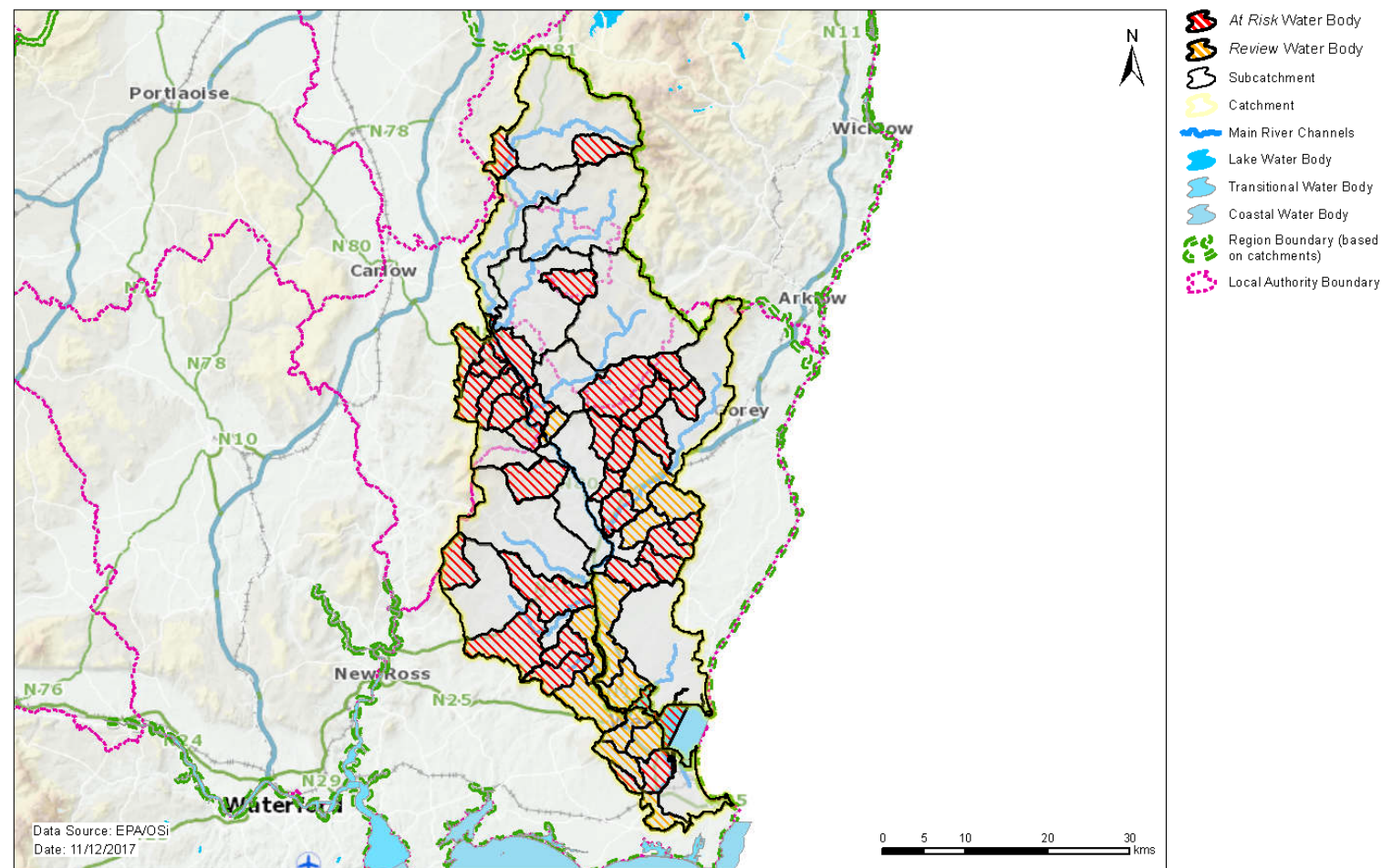


Figure 21. Location of *At Risk* and *Review* water bodies located outside Recommended Areas for Action in the Slaney Catchment

Appendix 1 High ecological status objective water bodies

Water body/ Site	Type	Codes	2015 Status
Slaney_010	River	IE_SE_12S020100	High
Slaney_020	River	IE_SE_12S020200	High
Slaney_040	River	IE_SE_12S020600	High
Bann_010	River	IE_SE_12B010100	High
Bann_020	River	IE_SE_12B010200	High
Bann_030	River	IE_SE_12B010400	High
Bann_040	River	IE_SE_12B010450	High
Clody_010	River	IE_SE_12C030080	High
Askinvillar Stream_010	River	IE_SE_12A030200	Good
Urrin_010	River	IE_SE_12U010050	Good
Derreen_010	River	IE_SE_12D010050	Good
Coolboy_020	River	IE_SE_12C070700	Moderate

Appendix 2 Catchment scale nutrient concentrations and in-stream loads

The results of the water quality assessment for the Slaney main channel are illustrated in Chart 1.

Orthophosphate concentrations are relatively low along the main channel, ranging from 0.005 to 0.031mg/l, remaining below the EQS (0.035mg/l) at all sampling points. Total ammonia concentrations are below the EQS (0.065mg/l) at all points along the main channel, with peaks in concentration (0.060 and 0.054mg/l) occurring at SLANEY_070 and SLANEY_130.

TON concentrations increase steadily from the headwaters to river outlet, ranging from 0.2 to 4.2mg/l. The monitoring results from SLANEY_080 to SLANEY_170 consistently exceed the 2.6mg/l TON threshold.

In the Slaney channel, stream discharge increases substantially from the headwaters at SLANEY_010 to SLANEY_170 ranging from 1.2 to 31.2m³/sec. Orthophosphate and TON loads increased downstream corresponding to increasing flow (orthophosphate) and increasing flow and concentration (TON). Localised spikes in ammonia concentration in downstream reaches are reflective of substantially greater loads than upstream sampling locations.

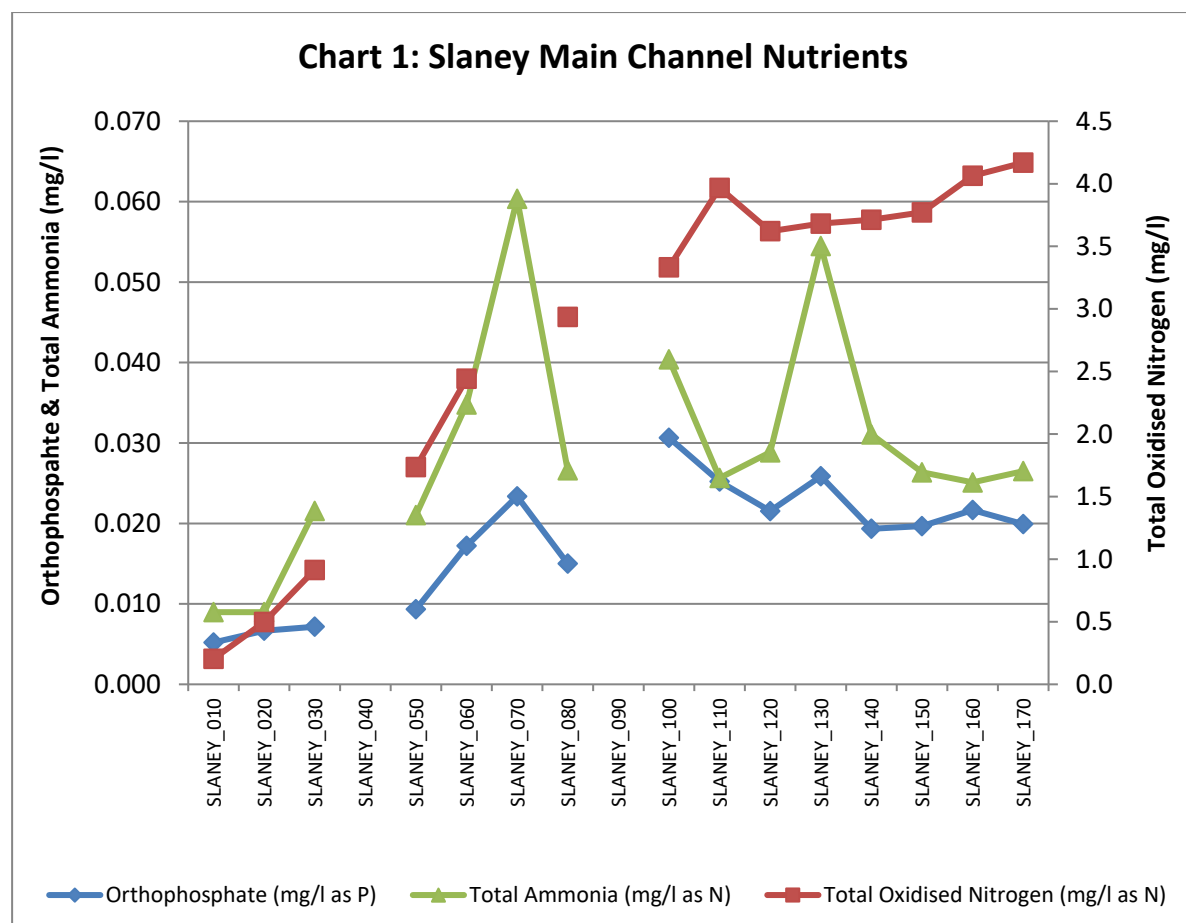
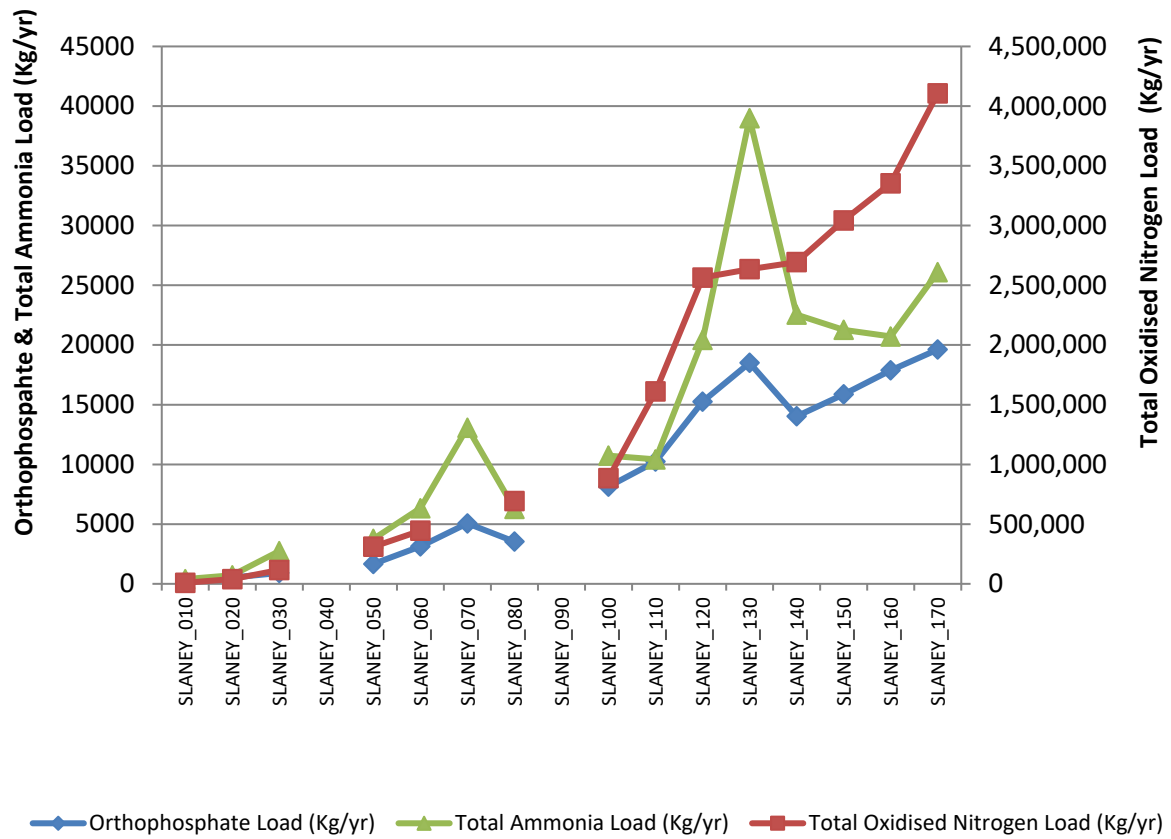


Chart2: Slaney Main Channel Nutrient Loading



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

Sub-Catchment 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
12_1	IE_SE_12G010200	Glasha (Slaney)_010	River	At risk	Good	Moderate	N	Ag	2027	
12_1	IE_SE_12S021850	Slaney_130	River	Review	Unassigned	Unassigned	N		2027	
12_1	IE_SE_040_0300	Upper Slaney Estuary	Transitional	Review	Moderate	Good	N		2027	
12_2	IE_SE_12C090100	Clonmore River (Slaney)_010	River	At risk	Unassigned	Poor	N	Ag,UWW	2027	
12_2	IE_SE_12K110490	Kilgibbon_010	River	Review	Unassigned	Unassigned	N		2027	
12_2	IE_SE_12M810970	Muchwood 12_010	River	Review	Unassigned	Unassigned	N		2027	
12_2	IE_SE_12T020700	Tinnokilla Stream_010	River	At risk	Moderate	Moderate	N	Ag,M+Q,UWW	2027	
12_3	IE_SE_12B060500	Ballingale Stream_010	River	At risk	Good	Poor	N	Ag	2027	
12_3	IE_SE_12B070400	Ballycarney Stream_010	River	At risk	Unassigned	Moderate	N	Ag	2027	
12_3	IE_SE_12B070700	Ballycarney Stream_020	River	At risk	Good	Moderate	N	Ag	2027	
12_4	IE_SE_12C040200	Corbally Stream_010	River	At risk	Unassigned	Poor	N	Ag,Hymo,UWW	2027	
12_4	IE_SE_12C040300	Corbally Stream_020	River	At risk	Moderate	Moderate	N	Ag	2027	
12_4	IE_SE_12C040400	Corbally Stream_030	River	At risk	Unassigned	Poor	N	Ag	2027	
12_4	IE_SE_12C040900	Corbally Stream_040	River	At risk	Good	Moderate	N	Ag	2027	
12_4	IE_SE_12T010400	Tinnacross Stream_010	River	Review	Moderate	Good	N		2027	
12_4	IE_SE_12T010600	Tinnacross Stream_020	River	Review	Good	Good	N		2027	
12_5	IE_SE_12A020300	Assaly1_010	River	At risk	Moderate	Poor	N	Ag,DWW	2027	

Sub-Catchment 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
12_5	IE_SE_12C130100	Coolree Stream_010	River	Review	Unassigned	Unassigned	N		2027	
12_5	IE_SE_12J040840	Johnstown 12_010	River	Review	Unassigned	Unassigned	N		2027	
12_5	IE_SE_12M860440	Milltown, Rosslare_010	River	Review	Unassigned	Unassigned	N		2027	Wexford Harbour
12_5	IE_SE_12R020920	Rathaspick_010	River	Review	Unassigned	Unassigned	N		2027	
12_5	IE_SE_12S350630	Stephenstown 12_010	River	Review	Unassigned	Unassigned	N		2027	
12_5	IE_SE_040_0400	South Slob Channel	Transitional	Review	Unassigned	Unassigned	N		2027	
12_6	IE_SE_12D020800	Derry_050	River	At risk	Unassigned	Moderate	N	Ag	2027	Derry-Coolboy-Rosnastraw
12_6	IE_SE_12D020910	Derry_060	River	At risk	Good	Moderate	N	Ag,UWW	2027	Derry-Coolboy-Rosnastraw
12_6	IE_SE_12M010200	Mine_010	River	At risk	Good	Moderate	N	Ag	2027	
12_6	IE_SE_12M010600	Mine_020	River	At risk	Good	Poor	N	Ag,UWW	2027	
12_6	IE_SE_12S021800	Slaney_120	River	At risk	Good	Moderate	N	Other	2027	
12_7	IE_SE_12A030200	Askinvillar Stream_010	River	At risk	High	Good	Y	Ag,For	2021	Urrin
12_7	IE_SE_12U010050	Urrin_010	River	At risk	High	Good	Y	For	2027	Urrin
12_7	IE_SE_12U010200	Urrin_020	River	At risk	Good	Moderate	N	Ag,For	2027	Urrin
12_7	IE_SE_12U010360	Urrin_040	River	At risk	Unassigned	Moderate	N	DWW	2027	Urrin
12_7	IE_SE_12U010500	Urrin_050	River	At risk	Moderate	Moderate	N	DU,UWW	2027	Urrin
12_8	IE_SE_12B120990	Ballaghmore Distributary_010	River	At risk	Poor	Poor	N	Ag,Ind	2027	
12_8	IE_SE_12C100500	Clashavey River_010	River	At risk	Unassigned	Moderate	N	Ag,For	2027	
12_8	IE_SE_12D030200	Douglas (Ballon)_010	River	At risk	Moderate	Poor	N	Ag,UWW	2027	
12_8	IE_SE_12D030400	Douglas (Ballon)_020	River	At risk	Moderate	Poor	N	Ag	2027	

Sub-Catchment 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
12_8	IE_SE_12K040800	Kildavin Stream_010	River	At risk	Unassigned	Moderate	N	Other,UWW	2027	
12_9	IE_SE_12D010050	Derreen_010	River	At risk	High	Good	Y	Ag,For,Hymo	2027	Derreen and Douglas (Kiltegan)
12_9	IE_SE_12D010100	Derreen_020	River	Review	Unassigned	Unassigned	N		2027	Derreen and Douglas (Kiltegan)
12_9	IE_SE_12D010200	Derreen_040	River	Review	Moderate	Unassigned	N		2027	Derreen and Douglas (Kiltegan)
12_9	IE_SE_12D010300	Derreen_050	River	At risk	Good	Moderate	N	Ag	2027	Derreen and Douglas (Kiltegan)
12_9	IE_SE_12D010420	Derreen_060	River	At risk	Moderate	Moderate	N	Ag,M+Q	2021	Derreen and Douglas (Kiltegan)
12_9	IE_SE_12D040300	Douglas (Kiltegan)_010	River	At risk	Moderate	Moderate	N	Ag	2021	Derreen and Douglas (Kiltegan)
12_9	IE_SE_12D040700	Douglas (Kiltegan)_020	River	At risk	Good	Poor	N	Ag,DWW,UWW	2027	Derreen and Douglas (Kiltegan)
12_9	IE_SE_12K460150	Knockboy 12_010	River	Review	Unassigned	Unassigned	N		2027	Derreen and Douglas (Kiltegan)
12_10	IE_SE_12B040250	Blacklion Stream (Carlow)_010	River	At risk	Moderate	Moderate	N	Ag	2027	Derreen and Douglas (Kiltegan)
12_10	IE_SE_12B040400	Blacklion Stream (Carlow)_020	River	At risk	Good	Poor	N	Ag	2027	Derreen and Douglas (Kiltegan)
12_10	IE_SE_12C050100	Clonmore Stream_010	River	At risk	Unassigned	Unassigned	N	Ag,For,UWW	2027	
12_10	IE_SE_12D010600	Derreen_090	River	Review	Unassigned	Unassigned	N		2027	Derreen and Douglas (Kiltegan)
12_10	IE_SE_12D010800	Derreen_100	River	At risk	High	Moderate	N	Ag	2027	Derreen and Douglas (Kiltegan)
12_10	IE_SE_12S021600	Slaney_110	River	At risk	Good	Moderate	N	Ag	2027	
12_11	IE_SE_12C070300	Coolboy_010	River	At risk	Good	Moderate	N	Ag,For,UWW	2027	Derry-Coolboy-Rosnastraw
12_11	IE_SE_12C070700	Coolboy_020	River	At risk	High	Moderate	Y	Other	2021	Derry-Coolboy-Rosnastraw
12_11	IE_SE_12D020100	Derry_010	River	At risk	Good	Moderate	N	Ag,For	2027	Derry-Coolboy-Rosnastraw
12_11	IE_SE_12D020350	Derry_020	River	At risk	Good	Moderate	N	Ag,UWW	2027	Derry-Coolboy-Rosnastraw

Sub-Catchment 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
12_11	IE_SE_12D020500	Derry_030	River	At risk	Good	Moderate	N	Ag	2027	Derry-Coolboy-Rosnastraw
12_11	IE_SE_12D020700	Derry_040	River	At risk	Good	Moderate	N	Ind	2027	Derry-Coolboy-Rosnastraw
12_11	IE_SE_12R010200	Rosnastraw Stream_010	River	At risk	Unassigned	Moderate	N	Ag,For	2021	Derry-Coolboy-Rosnastraw
12_11	IE_SE_12R010400	Rosnastraw Stream_020	River	At risk	Good	Moderate	N	Ag	2021	Derry-Coolboy-Rosnastraw
12_11	IE_SE_12S010500	Shillelagh 12_010	River	Review	High	Good	N		2027	Derry-Coolboy-Rosnastraw
12_12	IE_SE_12L020400	Little Slaney_010	River	At risk	High	Moderate	N	For,Ind,Other	2027	
12_12	IE_SE_12S020700	Slaney_050	River	At risk	Good	Poor	N	DU	2027	
12_13	IE_SE_12B010900	Bann_060	River	Review	Moderate	Good	N		2027	
12_13	IE_SE_12B011000	Bann_070	River	At risk	Good	Moderate	N	Ag,UWW	2027	
12_13	IE_SE_12C080300	Camolin Stream_010	River	At risk	Good	Moderate	N	Ag,For	2027	
12_13	IE_SE_12L010080	Lask_010	River	At risk	Good	Moderate	N	Other	2027	
12_13	IE_SE_12L010200	Lask_020	River	At risk	Good	Poor	N	Ind	2027	
12_14	IE_SE_12B020040	Boro_010	River	At risk	Good	Moderate	N	For	2027	
12_14	IE_SE_12B020340	Boro_040	River	At risk	Poor	Poor	N	UWW	2021 (measures planned)	
12_14	IE_SE_12B020600	Boro_060	River	At risk	Good	Moderate	N	Ag,UWW	2027	
12_15	IE_SE_12_11	Glenbough	Lake	Review	Unassigned	Unassigned	N		2027	
12_15	IE_SE_12S030100	Sow_010	River	At risk	Moderate	Moderate	N	DWW,For,Hymo,UWW	2027	Sow
12_15	IE_SE_12S030200	Sow_020	River	Review	Good	Unassigned	N		2027	Sow
12_15	IE_SE_12S030370	Sow_030	River	At risk	Good	Moderate	N	Ag	2027	Sow
12_15	IE_SE_12S030600	Sow_040	River	Review	Unassigned	Unassigned	N		2027	Sow

Sub-Catchment 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
12_15	IE_SE_12S440630	SALVILLE_Or_MOTABEG_010	River	Review	Unassigned	Unassigned	N		2027	
12_15	IE_SE_12W010550	Whitefort 12_010	River	Review	Unassigned	Unassigned	N		2027	
12_15	IE_SE_12W330990	White Gap_010	River	Review	Unassigned	Unassigned	N		2027	Wexford Harbour
12_15	IE_SE_040_0000	Wexford Harbour	Coastal	At risk	Moderate	Moderate	N	Ag,UWW	2027	Wexford Harbour
12_15	IE_SE_040_0100	North Slob Channels	Transitional	At risk	Moderate	Bad	N	Ag	2027	
12_15	IE_SE_040_0200	Lower Slaney Estuary	Transitional	At risk	Moderate	Poor	N	Ag	2027	
12_16	IE_SE_12S020800	Slaney_060	River	At risk	Good	Moderate	N	DU	2027	Slaney
12_16	IE_SE_12S021010	Slaney_070	River	At risk	Good	Moderate	N	Ag	2021	Slaney
12_16	IE_SE_12S021100	Slaney_080	River	At risk	Good	Moderate	N	UWW	2021 (measures planned)	Slaney
12_16	IE_SE_12S021200	Slaney_090	River	At risk	Unassigned	Moderate	N	Ag	2021	Slaney
12_16	IE_SE_12S021400	Slaney_100	River	At risk	Good	Poor	N	UWW	2027	Slaney

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
3400PRI1101	Gormanstown	Kilcullen	IE_EA_G_003	Yes	n/a
	Gormanstown Private GWS				
3400PUB1017	Baltinglass Public Supply	Slaney_060	IE_SE_12S020800	Yes	n/a
	Baltinglass Public Supply	Ballyglass	IE_SE_G_011	Yes	n/a
	Baltinglass Public Supply				
0100PUB1139	Tynock				
3300PRI2187	Dunishal				
3300PRI2224	Mullawn				
3300PUB1003	Ballindaggin Borehole*				
3300PUB1005	Kiltealy Spring 2*				
	Kiltealy Spring 1*				
3300PUB1006	Clohamon Borehole*				
3300PUB1293	Castledockrell Borehole*				
3300PUB1294	Marshallstown Borehole*				
3300PUB1295	Kilmyshall Borehole*				
3300PUB1305	Brady'S Hill Borehole*				
3300PUB1833	Askamore Springs				
3400PRI1107	Ballingate Springs*				
3400PRI1108	Tombrean-Umrygar				
3400PUB1027	Brown Beck Brook Stream				
3400PUB1030	Coolboy Coolafancy Public Supply				
3400PUB1031	Kiltegan Public Supply				
3400PUB1033	Raheengraney Public Supply				
3400PUB1035	Knockananna Public Supply				
3400PUB1048	Ballyconnell Public Supply				
3300PUB1425	Bunclody WSS				
	Bunclody WSS				
	Bunclody WSS				
	Bunclody WSS				
	Bunclody WSS	Slaney_120	IE_SE_12S021800	Yes	n/a
	Bunclody WSS	Clody_020	IE_SE_12C030200		
3300PUB1001	Ballyhogue Borehole*	Castlebridge North	IE_SE_G_031	Yes	n/a
3300PUB1014	Glynn Borehole*				
3300PUB1296	Boolavogue Borehole*				
3300PUB1641	Sow Regional	Castlebridge North	IE_SE_G_031	No	Dalapon Troclop pyr Mecoprop
	Sow Regional	Sow_020	IE_SE_12S030200		
	Sow Regional				

Scheme Code	Scheme Name	Water Body	Water Body Code	Objective met? Yes /No	Reason why not met
3300PUB1491	Enniscorthy Town & Environs	Enniscorthy	IE_SE_G_061	No	Dalapon
3300PRI2138	Borrmount	Enniscorthy	IE_SE_G_061	Yes	n/a
3300PUB1002	Bree Borehole*				
3300PUB1007	Davidstown Borehole*				
3300PUB1009	Camolin Boreholes*				
3300PUB1013	Clonroche Borehole*				
3300PUB1292	Monageer Borehole*				
3300PUB1304	Killagoley Borehole 1*				
	Killagoley Borehole 2*				
3300PUB1304	Greenville Borehole*	Slaney_170	IE_SE_12S022300	Yes	n/a
	River Slaney*				
3300PUB1314	Ballyfinogue Borehole 1*	Fardystown	IE_SE_G_064	Yes	n/a
	Ballyfinogue Borehole 2*				
	Rowestown Borehole 2*				
3300PUB1497	Fardystown R.W.S.S.				
	Fardystown R.W.S.S.				
	Fardystown R.W.S.S.				
	Fardystown R.W.S.S.				
0100PRI2110	Craan/Newstown	Blacklion Stream (Carlow)_020	IE_SE_12B040400	Yes	n/a
0100PUB1123	Hacketstown	Derreen_050	IE_SE_12D010300	No	MCPA
0100PUB1131	Tullow	Slaney_100	IE_SE_12S021400	Yes	n/a
0100PUB1142	Carlow North Regional	Slaney_070	IE_SE_12S021010	Yes	n/a
3300PRI2117	Blackstairs GWS	Boro_010	IE_SE_12B020040	Yes	n/a
3300PRI2135	Blackstairs GWS				
	Blackstairs GWS				
	Blackstairs GWS				
	Blackstairs GWS				
3300PUB1306	Bann River, Upper*	Bann_010	IE_SE_12B010100	Yes	n/a
	Bann River, Lower*	Bann_030	IE_SE_12B010400	Yes	n/a
3300PUB1313	Coolree Reservoir*	Coolree Stream_010	IE_SE_12C130100	Yes	n/a
3300PUB1498	Ferns Regional	Ballingale Stream_010	IE_SE_12B060500	Yes	n/a
3400PUB1013	Tinahely Regional Supply	Derry_020	IE_SE_12D020350	No	MCPA
3400PUB1034	Rathdangan Public Supply	Derreen_020	IE_SE_12D010100	Yes	n/a
3400PUB1047	Knockanarrigan Davidstown Public Supply	Little Slaney_010	IE_SE_12L020400	Yes	n/a

* No scheme name in spreadsheet, just scheme code. Abstraction location used as substitute.

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

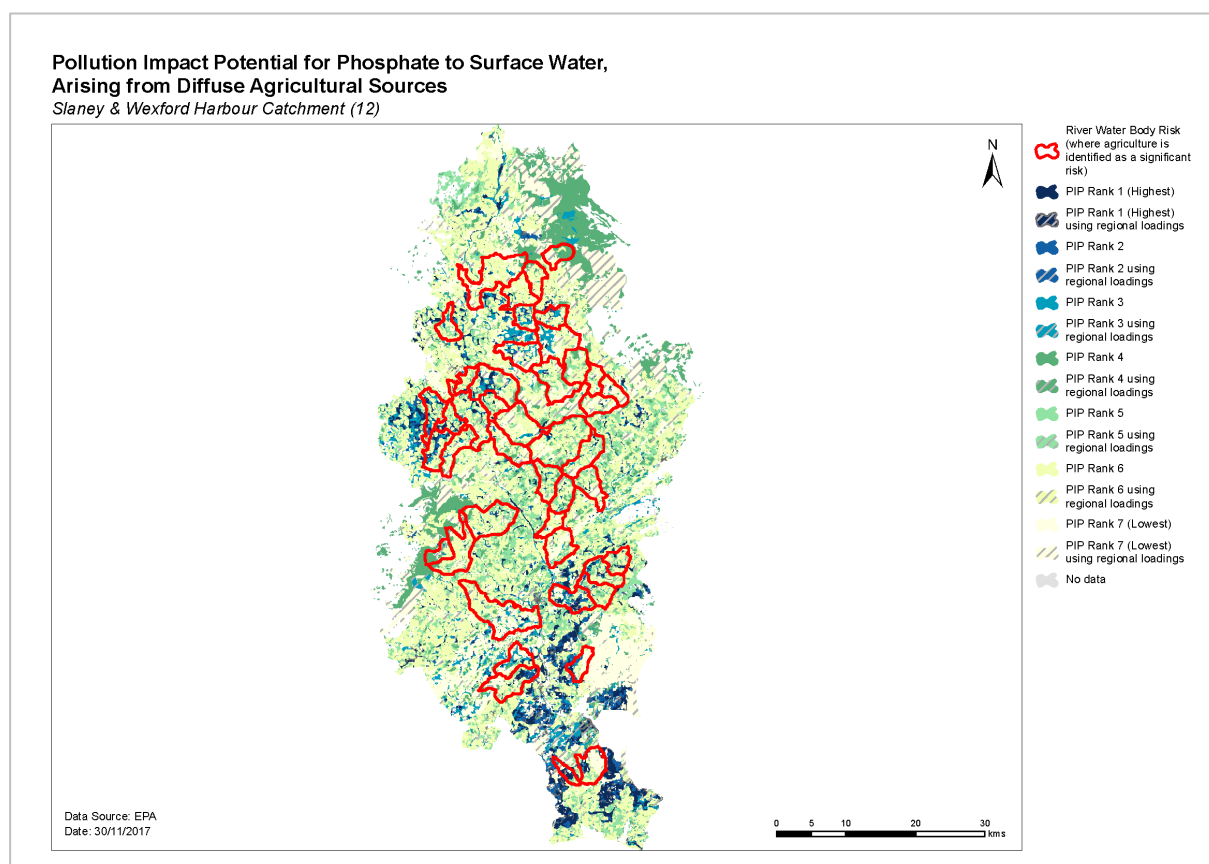
Note that additional water dependent species have been added that are not qualifying interests within the SACs (i.e. Freshwater Pearl Mussel (*Margaritifera margaritifera*; 1029) and Salmon (*Salmo salar*; 1106) have been added to Wicklow Mountains SAC). River water bodies that are also designated as 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?
Blackstairs Mountains SAC 000770	none							
Carnsore Point SAC 002269	none							
Holdenstown Bog SAC 001757	none							
Raven Point Nature Reserve SAC 000710	2190	Good GW level	Groundwater	Castlebridge South	Good (NAR)	No	IE_SE_G_033	Yes
Screen Hills SAC 000708	3110	At least Good	Lake	Glenbough	Unassigned (R)	No	IE_SE_12_11	No
Wicklow Mountains SAC 002122	1029 (19 of 27 catchments of S.I. 296 2009)(not listed)	Good	River	Derreen_010	Good (AT RISK - HES obj)	No	IE_SE_12D010050	Yes
	1106 (not listed)	Good	River	Derreen_010	Good (AT RISK - HES obj)	No	IE_SE_12D010050	Yes
Freshwater pearl mussel (outside SACs)	1029 (19 catchments of S.I. 296 2009)	Good	River	Clonmore Stream_010	Unassigned (AT RISK)	Yes	IE_SE_12C050100	Yes
			River	Douglas (Kiltegan)_010	Moderate (AT RISK)	Yes	IE_SE_12D040300	Yes

SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
Slaney River Valley SAC 000781	1029 (19 catchments of S.I. 296 2009)	Good	River	Derreen_020	Unassigned (R)	Yes	IE_SE_12D010100	Yes
			River	Derreen_030	Good (NAR)	No	IE_SE_12D010150	Yes
			River	Derreen_040	Unassigned (R)	Yes	IE_SE_12D010200	Yes
			River	Derreen_050	Moderate (AT RISK)	Yes	IE_SE_12D010300	Yes
			River	Derreen_060	Moderate (AT RISK)	Yes	IE_SE_12D010420	Yes
			River	Derreen_070	Good (NAR)	No	IE_SE_12D010500	Yes
			River	Derreen_080	Good (NAR)	No	IE_SE_12D010550	Yes
			River	Derreen_090	Unassigned (R)	Yes	IE_SE_12D010600	Yes
			River	Derreen_100	Moderate (AT RISK)	Yes	IE_SE_12D010800	Yes
			River	Douglas (Kiltegan)_020	Poor (AT RISK)	Yes	IE_SE_12D040700	Yes
			River	Knockboy 12_010	Unassigned (R)	Yes	IE_SE_12K460150	Yes
	1106	Good	River	Slaney_010	High (NAR - HES obj)	No	IE_SE_12S020100	Yes
			River	Slaney_020	High (NAR - HES obj)	No	IE_SE_12S020200	Yes
			River	Slaney_030	Good (NAR)	No	IE_SE_12S020400	Yes
			River	Slaney_040	High (NAR - HES obj)	No	IE_SE_12S020600	Yes
			River	Slaney_050	Poor (AT RISK)	Yes	IE_SE_12S020700	Yes
			River	Slaney_060	Moderate (AT RISK)	Yes	IE_SE_12S020800	Yes
			River	Slaney_070	Moderate (AT RISK)	Yes	IE_SE_12S021010	Yes
			River	Slaney_080	Moderate (AT RISK)	Yes	IE_SE_12S021100	Yes
			River	Slaney_090	Moderate (AT RISK)	Yes	IE_SE_12S021200	Yes
			River	Slaney_100	Poor (AT RISK)	Yes	IE_SE_12S021400	Yes
			River	Slaney_110	Moderate (AT RISK)	Yes	IE_SE_12S021600	Yes
			River	Slaney_120	Moderate (AT RISK)	Yes	IE_SE_12S021800	Yes
			River	Slaney_130	Unassigned (R)	Yes	IE_SE_12S021850	Yes
			River	Slaney_140	Good (NAR)	No	IE_SE_12S022000	Yes
			River	Slaney_150	Good (NAR)	No	IE_SE_12S022100	Yes
			River	Slaney_160	Good (NAR)	No	IE_SE_12S022200	Yes
			River	Slaney_170	Good (NAR)	No	IE_SE_12S022300	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 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