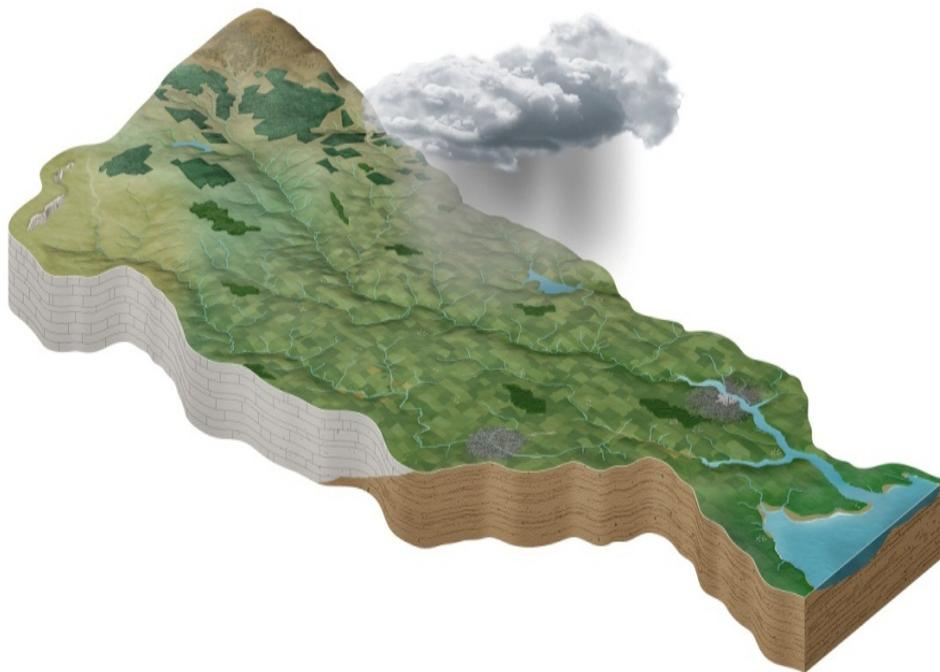


# Nore Catchment Assessment 2010-2015 (HA 15)



Catchment Science & Management Unit

Environmental Protection Agency

December 2018

Version no. 3

## Preface

This document provides a summary of the characterisation outcomes for the water resources of the Nore 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](http://catchments.ie) website. The purpose of this document is to provide an overview of the situation in the catchment and help inform further action and analysis of appropriate measures and management strategies.

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

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

## Table of contents

1	Introduction.....	1
2	Water body status and risk of not meeting environmental objectives.....	3
2.1	Surface water ecological status.....	3
2.1.1	Rivers and lakes.....	3
2.1.2	Transitional and coastal (TraC) .....	3
2.2	Groundwater status.....	6
2.3	Risk of not meeting surface water environmental objectives.....	6
2.3.1	Rivers and lakes.....	6
2.3.2	Transitional and Coastal (TraC).....	7
2.4	Risk of not meeting groundwater environmental objectives .....	7
2.5	Protected areas .....	9
2.5.1	Drinking water protected areas.....	9
2.5.2	Bathing waters .....	9
2.5.3	Shellfish areas .....	9
2.5.4	Nutrient sensitive areas .....	9
2.5.5	Natura 2000 sites .....	10
2.6	Heavily modified water bodies.....	10
3	Significant issues in At Risk water bodies .....	10
4	Significant pressures.....	10
4.1	Water bodies .....	10
4.1.1	Rivers, lakes, transitional and coastal.....	11
4.1.2	Groundwater.....	11
4.2	Pressure type .....	11
4.2.1	Agriculture.....	11
4.2.2	Urban waste water treatment plants .....	12
4.2.3	Industry .....	12
4.2.4	Forestry .....	13
4.2.5	Other significant pressures.....	13
4.2.6	Diffuse urban.....	13
4.2.7	Hydromorphology .....	13
4.2.8	Extractive industry .....	13
4.2.9	Domestic waste water .....	13
5	Load reduction assessment.....	18
5.1	River water body load reductions .....	18
5.2	TraC load reductions.....	20
6	Further characterisation and local catchment assessments .....	21
7	Catchment summary .....	21
8	Areas for Action .....	21

8.1	Process of Selection.....	22
8.2	Overview of process .....	22
9	Environmental Objectives .....	25
9.1	Surface Water .....	25
9.2	Groundwater .....	26
10	Acknowledgements.....	26

## 1 Introduction

This catchment includes the area drained by the River Nore and all streams entering tidal water between its confluence with the River Barrow at Ringwood, and the Barrow railway bridge at Drumdowney, Co. Kilkenny, draining a total area of 2,595km<sup>2</sup>. The largest urban centre in the catchment is Kilkenny. The other main urban centres in this catchment are Abbeyleix, Callan and Thomastown. The total population of the catchment is approximately 94,700 with a population density of 37 people per km<sup>2</sup>.

The Nore Rises on the north-eastern slopes of Borrisnoe Mountain, from where it runs northeast over an area underlain by a large gravel aquifer and past Borris-in-Ossory. The southern slopes of the Slieve Bloom Mountains are drained by the Tonet, Delour and Mountrath Rivers which join the Nore east and south of Mountrath.

The next sizable tributaries that flow into the Nore are the Cappanacloghy River and the Ballyroan River, which drains the area around Abbeyleix. Downstream of this confluence, the River Gully enters the Nore before the Erkina River joins at Durrow. It then flows over a gravel aquifer which follows the course of the river as far downstream as Kilkenny City.

The Owveg River joins the Nore north of Ballyragget before the Nuenna River joins from the west near Freshford. Downstream of this, the Dinin River flows into the Nore near Threecastles. On entering Kilkenny City, the Bregagh River and the Brownstown River join the Nore. There is a sparsity of drainage channels in the catchment south of Kilkenny City as the karstified nature of the bedrock in this location means that much of the rain falling in this area infiltrates underground.

The next major tributary to join the Nore is the King's River, which drains the southern side of the Slieve Ardagh Hills. Flowing south in a steep-sided valley, the Nore is joined by the Little Arrigle River and the Dungarvan Glebe. The Nore becomes tidal just upstream of Inistioge before continuing southeast to its confluence with the River Barrow at Ringwood. Flood relief works were completed during 2006.

The Nore catchment comprises 21 subcatchments (Table 1, Figure 1) with 123 river water bodies, four transitional and coastal water bodies, and 28 groundwater bodies.

Table 1. List of subcatchments in the Nore catchment

Subcatchment ID	Subcatchment Name
15_1	Nore_SC_030
15_2	Glory_SC_010
15_3	Dinin[South]_SC_010
15_4	Nore_SC_100
15_5	Munster_SC_010
15_6	Nore_SC_090
15_7	Nore_SC_060
15_8	Nore_SC_080
15_9	Nore_SC_020
15_10	Nore_SC_040
15_11	King's[Kilkenny]_SC_010
15_12	Dinin[North]_SC_010
15_13	Nore_SC_010
15_14	Erkina_SC_010
15_15	Goul_SC_010
15_16	Nore_SC_050
15_17	Nore_SC_120
15_18	Nore_SC_140
15_19	Nore_SC_110
15_20	Nore_SC_130
15_21	Nore_SC_070

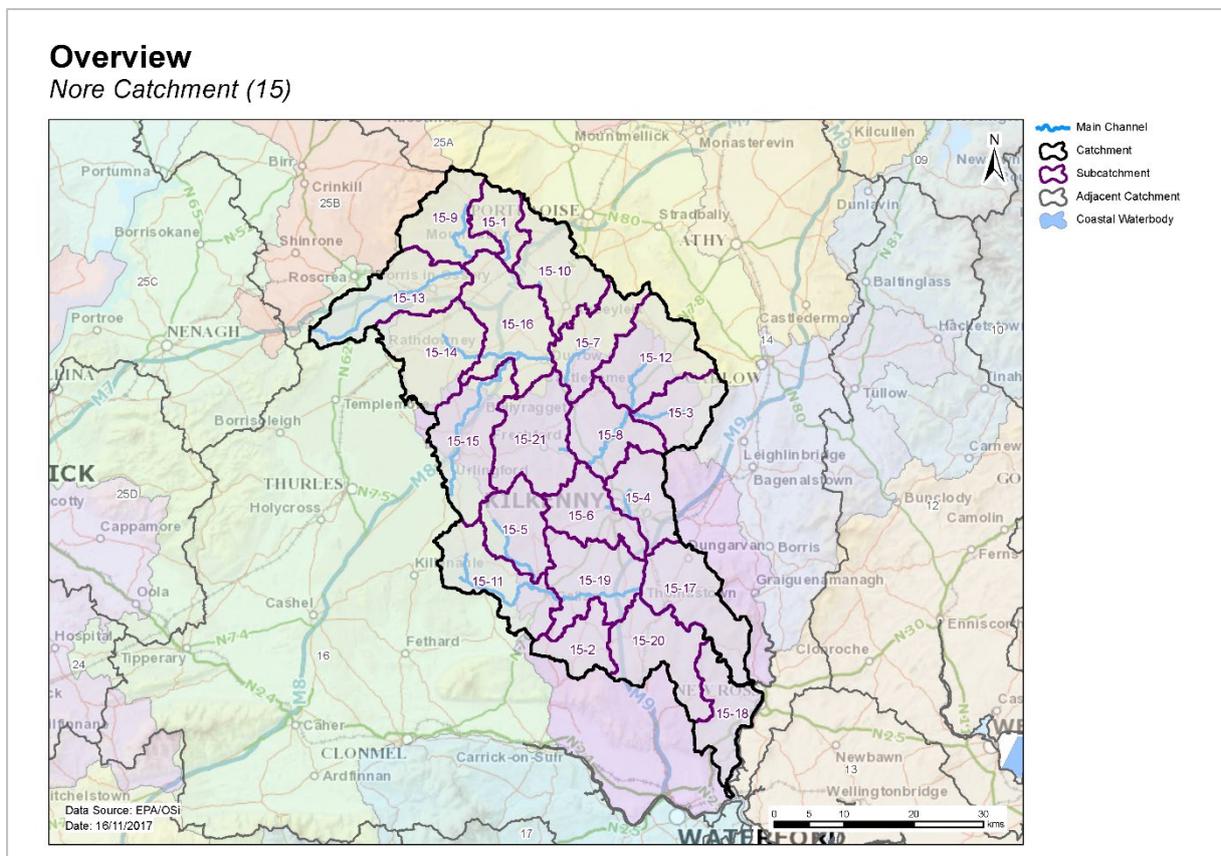


Figure 1. Subcatchments in the Nore catchment

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

### 2.1 Surface water ecological status

#### 2.1.1 Rivers and lakes

- ◆ There were 51 (41%) river water bodies at Good or High status, and 38 (31%) at less than Good status in 2015 (Table 2, Figure 3). Thirty-four (28%) river water bodies are unassigned.
- ◆ Seven river water bodies and sites have a high ecological status objective. In 2015, five (71%) of these water bodies were at High status, and two were at Good (Figure 4, Appendix 1).
- ◆ The numbers of river water bodies at each status class in 2007-09 and 2010-15 are shown in Figure 3.
- ◆ Since 2007-09 when WFD monitoring began, 21 water bodies have an improved status whereas 24 have deteriorated (Figure 6).
- ◆ The variation in nutrient concentrations and loads in the Nore main channel is illustrated in Appendix 2.

#### 2.1.2 Transitional and coastal (TraC)

- ◆ There are five TraC water bodies, all of which are transitional water bodies. Two of the water bodies were at Good status in 2015 (Upper Barrow Estuary and Barrow Nore Estuary Upper), while the remaining three (New Ross Port, Nore Estuary and Lower Suir Estuary (Little Island – Cheekpoint)) were at Moderate status (Figure 5, Table 2).
- ◆ The numbers of water bodies in each status class for the TraC water bodies in 2007-09 and 2010-15 is shown in Figure 5. Nore Estuary and New Ross Port have remained at Moderate since 2007-09 and 2010-15, while Barrow Nore Estuary Upper has remained at Good since 2007-09 and 2010-15. Upper Barrow Estuary improved from Moderate in 2007-09 to Good in 2010-15, while Lower Suir Estuary (Little Island – Cheekpoint) deteriorated from Good in 2007-09 to Moderate in 2010-15.
- ◆ Note Lower Suir Estuary (Little Island - Cheekpoint) transitional water body is shared with HA's 14 and 16.

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	123	5	46	21	17	0	34	46	29	48
TraC	5	0	2	3	0	0	0	0	2	3

## WFD Surface Water Body Status 2010 - 2015

Nore Catchment (15)

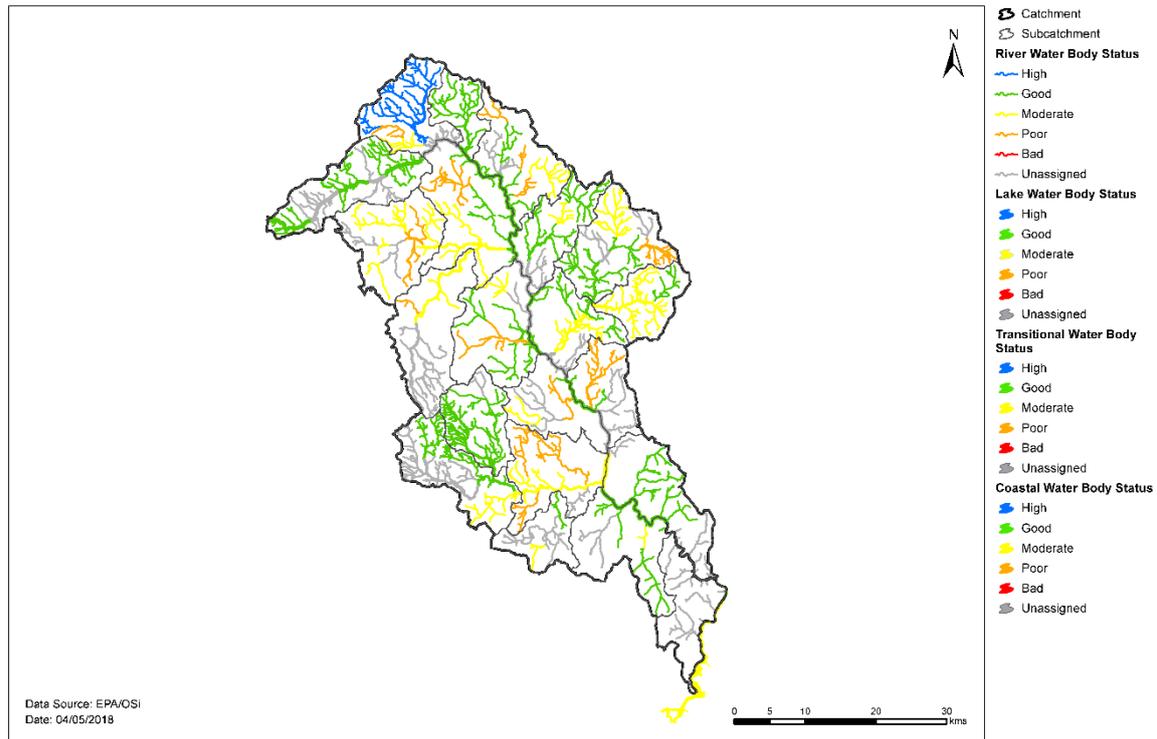


Figure 2. Surface water ecological status

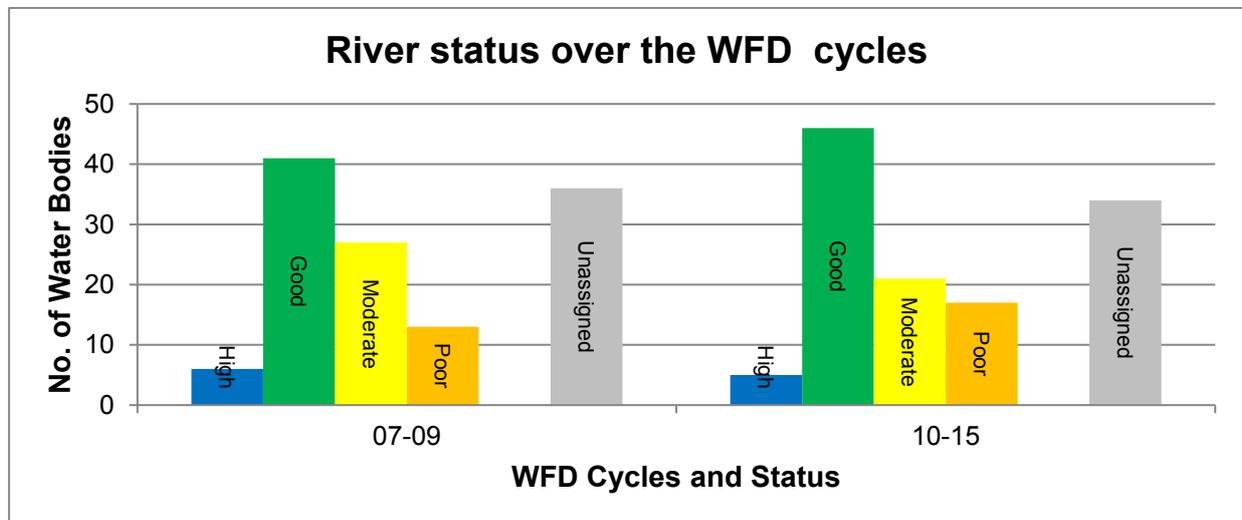


Figure 3. Number of rivers at each status class in 2007-09 and 2010-15

## High Status Objective Water Bodies and Sites

Nore Catchment (15)

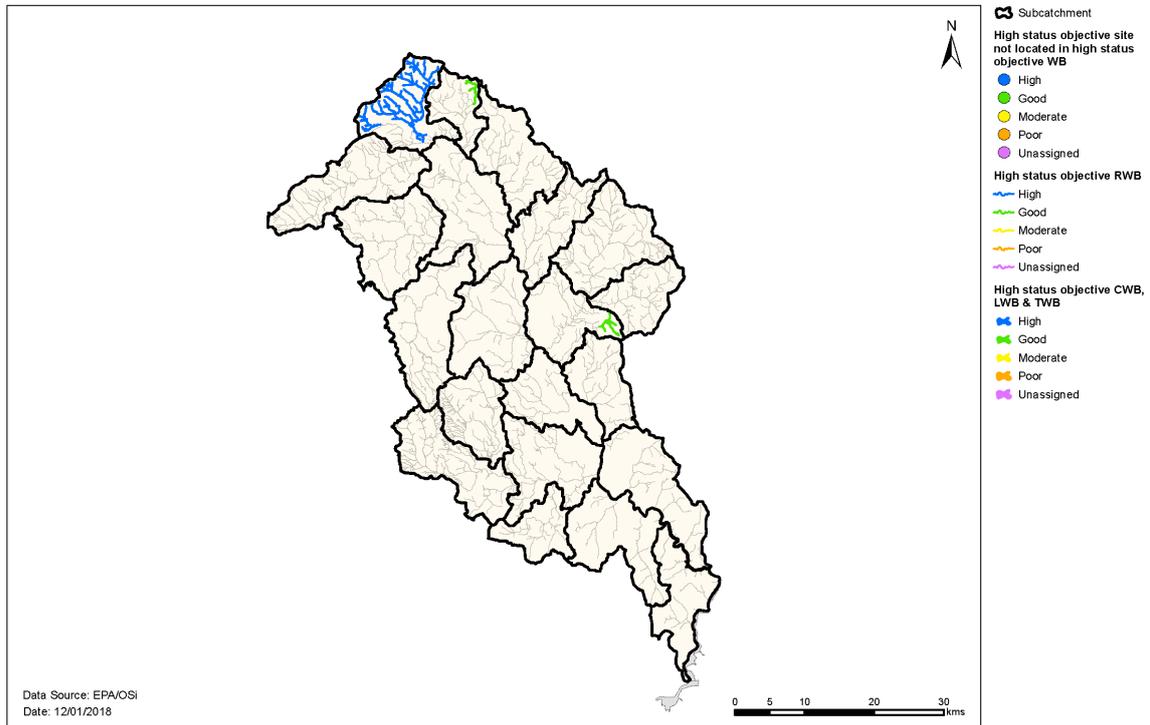


Figure 4. High ecological status objective water bodies and sites

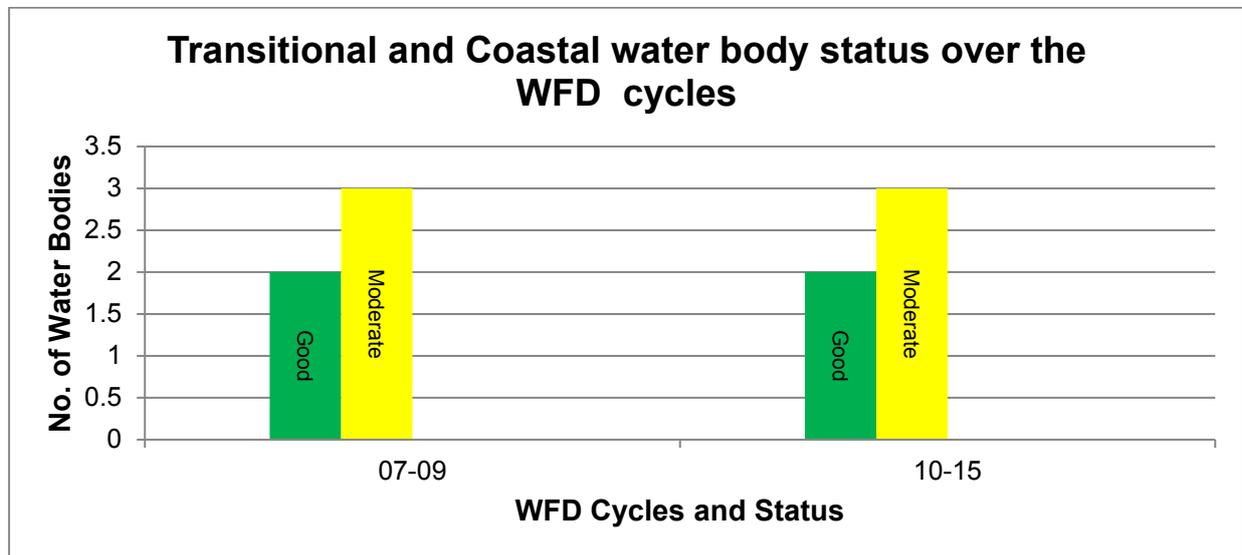


Figure 5. Number of TraC water bodies at each status class in 2007-09 and 2010-15.

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

Nore Catchment (15)

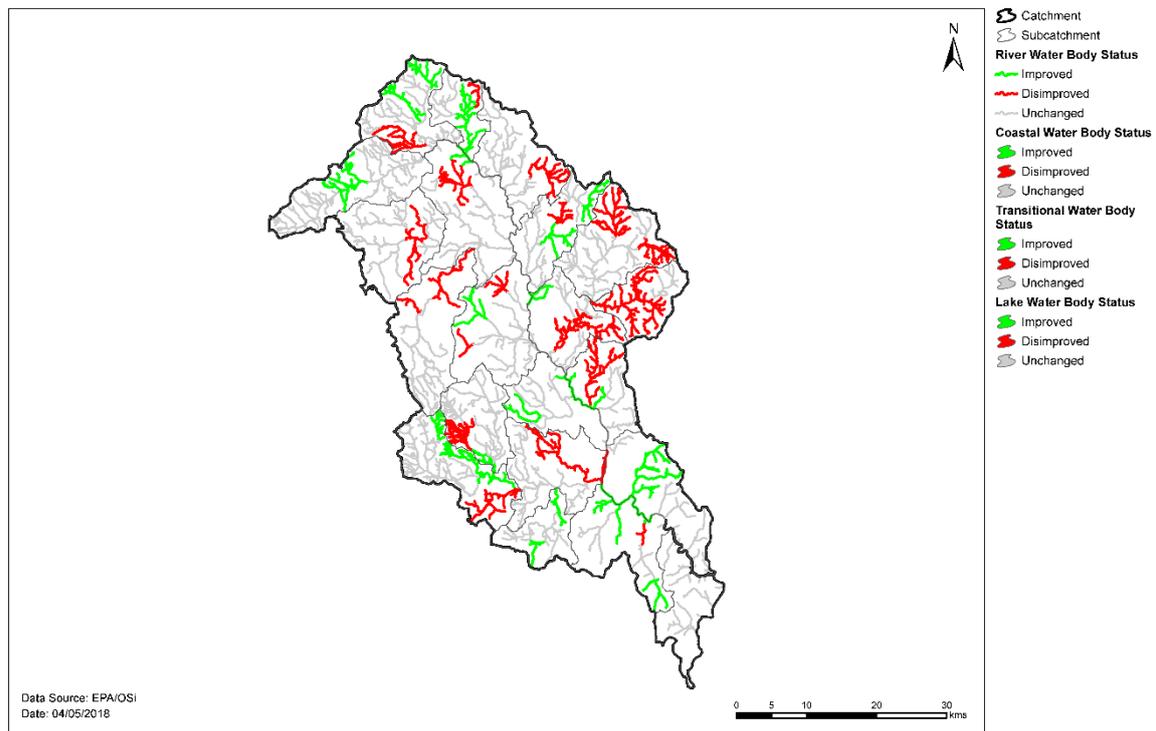


Figure 6. Surface water body status change from 2007-09 to 2010-15

## 2.2 Groundwater status

- ◆ All 28 groundwater bodies at Good status in 2015 (Table 3).

Table 3. Summary of water body status and risk for ground waters

	Number of water bodies	2010-15 Status		Risk Categories		
		Good	Poor	Not at Risk	Review	At Risk
Groundwater	28	28	0	12	12	4

## 2.3 Risk of not meeting surface water environmental objectives

### 2.3.1 Rivers and lakes

- ◆ There are 46 *Not at Risk* surface water bodies (Figure 7, 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 29 surface water bodies in *Review*. This includes 20 water bodies where more information is required.
- ◆ Forty-eight 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 TraC water body in *Review* and therefore more information is required.
- ◆ Three TraC water bodies in the catchment are *At Risk* of not meeting their water quality objectives – New Ross Port, Nore Estuary and the Lower Suir Estuary (Little Island - Cheekpoint). Measures will be needed in these water bodies to improve the water quality outcomes.

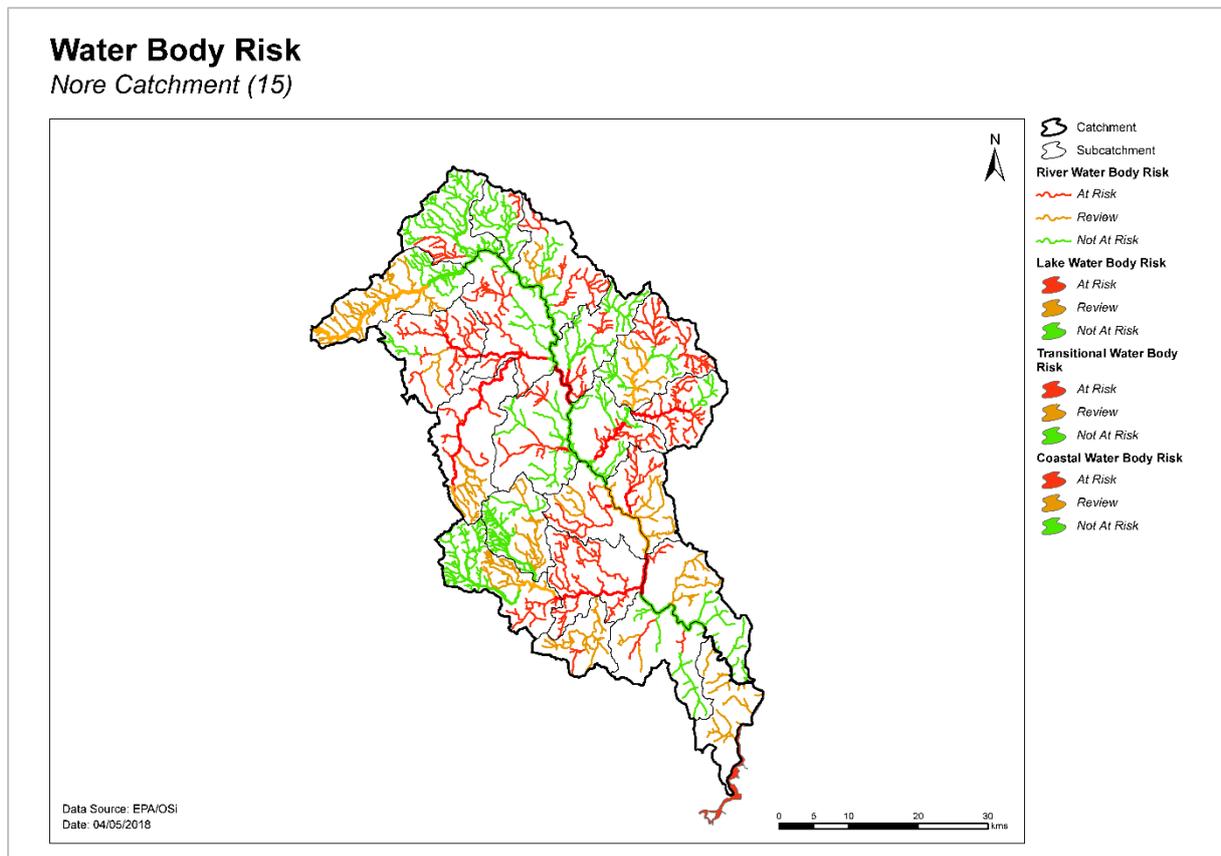


Figure 7. Surface water body risk

### 2.4 Risk of not meeting groundwater environmental objectives

- ◆ Twelve groundwater bodies are *Not at Risk* (Figure 8, Table 3) and require no additional investigative assessment or measures to be applied, other than those measures that are already in place.
- ◆ Twelve groundwater bodies are in *Review*. Eight groundwater bodies are hydrologically linked to surface waters that are not meeting water quality objectives where it is considered likely that groundwater is a contributing source of phosphorus (Figure 8). Bennettsbridge, Derrymore Gravels, Donaghmore and Castletown Gravels have elevated nitrate concentrations, while GWDTE – The Loughlans Turlough (SAC000407) has agriculture and septic tanks as priority issues.
- ◆ There are four groundwater bodies *At Risk*. Callan, Kilkenny, and Thomastown are hydrologically linked to surface waters that are not meeting water quality objectives where it is considered that groundwater is a contributing source of nutrients and Durrow has elevated nitrate concentrations (Table 4).

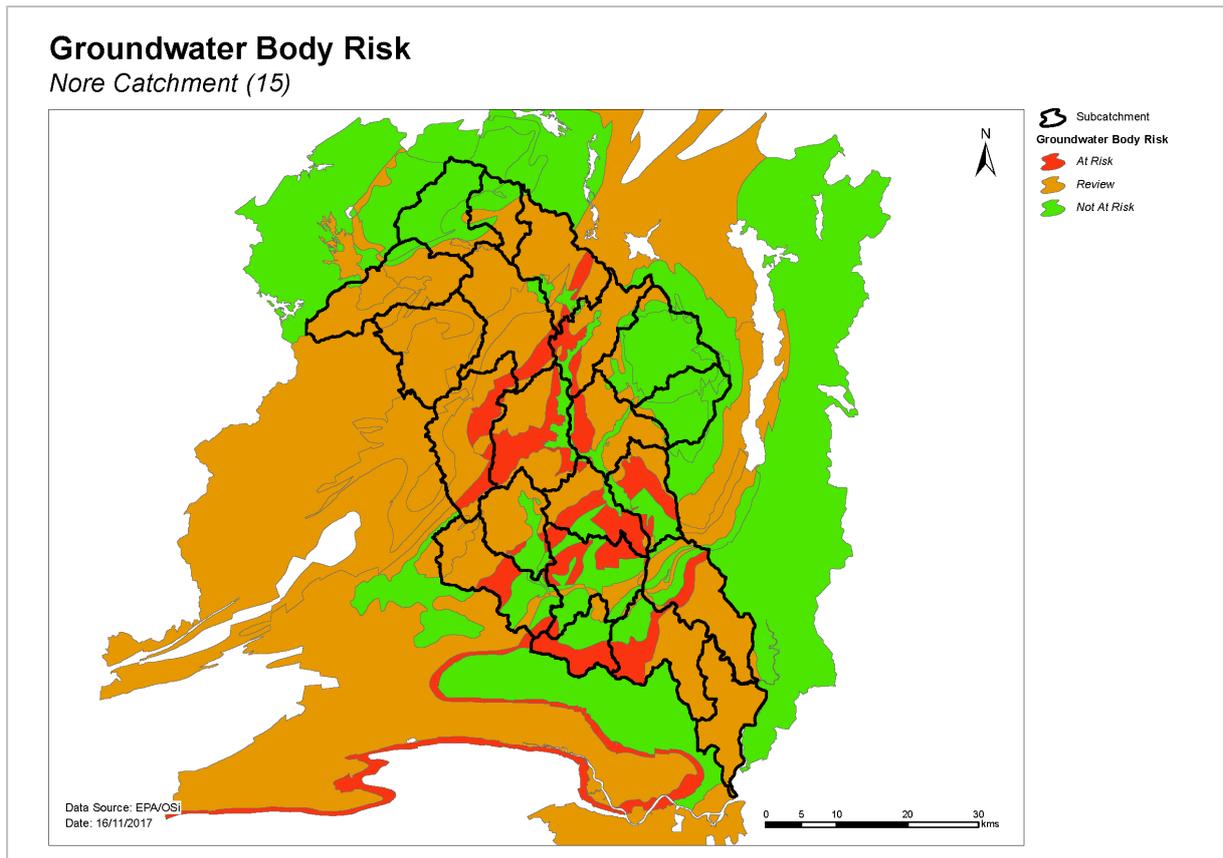


Figure 8. Groundwater body risk

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

Groundwater body name	Receiving water body code	Receiving water body name
Callan	IE_SE_15D040500	DESART STREAM_010
Callan	IE_SE_15E020700	ENNISNAG STREAM_010
Callan	IE_SE_15K020910	KING'S (KILKENNY)_050
Kilkenny	IE_SE_15B020080	BREGAGH (KILKENNY)_010
Kilkenny	IE_SE_15B020100	BREGAGH (KILKENNY)_020
Kilkenny	IE_SE_15B020100	BREGAGH (KILKENNY)_020
Kilkenny	IE_SE_15B020350	BREGAGH (KILKENNY)_030
Kilkenny	IE_SE_15B020350	BREGAGH (KILKENNY)_030
Kilkenny	IE_SE_15D040500	DESART STREAM_010
Kilkenny	IE_SE_15E020700	ENNISNAG STREAM_010
Thomastown	IE_SE_15C120400	CAHERLESK STREAM_010
Thomastown	IE_SE_15G010045	GLORY_010
Thomastown	IE_SE_15K020600	KING'S (KILKENNY)_040

## 2.5 Protected areas

### 2.5.1 Drinking water protected areas

- ◆ There are 97 abstractions in the Nore Catchment comprising 28 group water schemes, 29 public supply schemes and three other schemes (Cullahill, Donaghmore and Garrintaggert No.1).
- ◆ Eighty-eight of the abstractions are from 25 groundwater bodies and nine are from five river water bodies (Nore\_210, Dinin (Main channel) \_020, Nore\_160, Clodiagh\_010 and Dinin (North)\_030). The list of the public supplies and the associated water bodies is provided in Appendix 4.
- ◆ There was one drinking water source which was non-compliant with the standards for nitrates in 2015 – Durrow groundwater body. All other sources were compliant.
- ◆ All drinking water sources were compliant with the standards for pesticides in 2015.
- ◆ There is no information available on Bennettsbridge, Callan, Clifden, Kilkenny and GWDTE-The Loughlans Turlough (SAC000407) groundwater bodies.

### 2.5.2 Bathing waters

- ◆ There are no designated bathing waters in the catchment.

### 2.5.3 Shellfish areas

- ◆ There is one designated shellfish area in the catchment – Waterford Harbour (Cheekpoint/ Arthurstown/ Creadan). It is compliant with the relevant standards and there are no water quality issues of concern.
- ◆ Details on the shellfish area and its associated water body are summarised in Table 5.

Table 5. Designated shellfish area in the catchment

Shellfish area		Water body intersection		Objective met?	
Name	Code	Name	Code	Yes	No
Waterford Harbour (Cheekpoint/Arthurstown/Creadan)	IEPA2_0056	New Ross Port	IE_SE_100_0200	✓	

### 2.5.4 Nutrient sensitive areas

- ◆ There is one nutrient sensitive area (Nore (River)) associated with one urban waste water treatment plant (Kilkenny) in the catchment. The waste water treatment plant has tertiary treatment and, therefore, is compliant with the environmental objectives for NSAs.
- ◆ Details on the NSA, its associated agglomeration and intersecting water bodies, are provided in Table 6.

Table 6. Nutrient sensitive areas in the catchment

Nutrient Sensitive Area		Agglomeration		Water body		Objective met?	
Name	Code	Name	Code	Name	Code	Yes	No
Nore (River)	IERI_SE_2001_0017	Kilkenny	D0018	NORE_180	IE_SE_15N012000	✓	
				NORE_190	IE_SE_15N012090		
				NORE_200	IE_SE_15N012130		
				NORE_210	IE_SE_15N012200		
				NORE_220	IE_SE_15N012310		
				NORE_230	IE_SE_15N012330		
				NORE_240	IE_SE_15N012400		
				NORE_250	IE_SE_15N012500		

### 2.5.5 Natura 2000 sites

- ◆ There are 11 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.
- ◆ Twenty-eight 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 29 river water bodies that are designated as Freshwater Pearl Mussel rivers (under Freshwater pearl mussel regulations (S.I. 296 2009)) but are not located within SACs. Twenty-two of these water bodies have not met their WFD Protected area objectives (Appendix 5).
- ◆ There are two Special Protected Areas (SPA) in the catchment:
  - River Nore SPA (004233)
  - Slieve Bloom Mountains SPA (004160)

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 are three designated heavily modified water bodies (HMWB) in the catchment: Bregagh (Kilkenny)\_030; Lower Suir Estuary (Little Island-Cheekpoint); and New Ross Port due to port facilities. Bregagh (Kilkenny)\_030 was classified as having Poor Ecological Potential in 2013-15, while the other two HMWBs were of Moderate Ecological Potential.
- ◆ There are no artificially modified water bodies (AWB) in the catchment.

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

- ◆ Excess phosphate, leading to eutrophication, and elevated nitrates are the dominant issues in rivers in Nore Catchment. Excess ammonia is also of concern in several water bodies.
- ◆ Alteration of hydromorphological (or physical) conditions is also an issue in rivers, due to impacts by excess fine sediment, however this is only of concern in a limited number of water bodies.
- ◆ The significant issues for the TraC water bodies are elevated nutrient conditions, which impact on invertebrates and fish.
- ◆ The significant issues for groundwater bodies are elevated nitrate concentrations and the potential of groundwater contribution of phosphate to surface waters that are *At Risk* of not meeting water quality objectives.

## 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 9 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 lake or coastal water bodies in the Nore catchment. Significant pressures have been identified in 51 surface water bodies through the initial characterisation exercise, 19 of which have multiple pressures. These 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, industry, forestry, other, diffuse urban, hydromorphological pressures, peat drainage and extraction, domestic waste water, and mines and quarries.
- ◆ The significant pressure affecting the greatest number of transitional water bodies is agriculture.

#### 4.1.2 Groundwater

- ◆ The significant pressures affecting Callan, Kilkenny, Thomastown and Durov are agricultural, which is resulting in excess phosphates and nitrates in the groundwater bodies and the potential to impact associated surface water bodies.

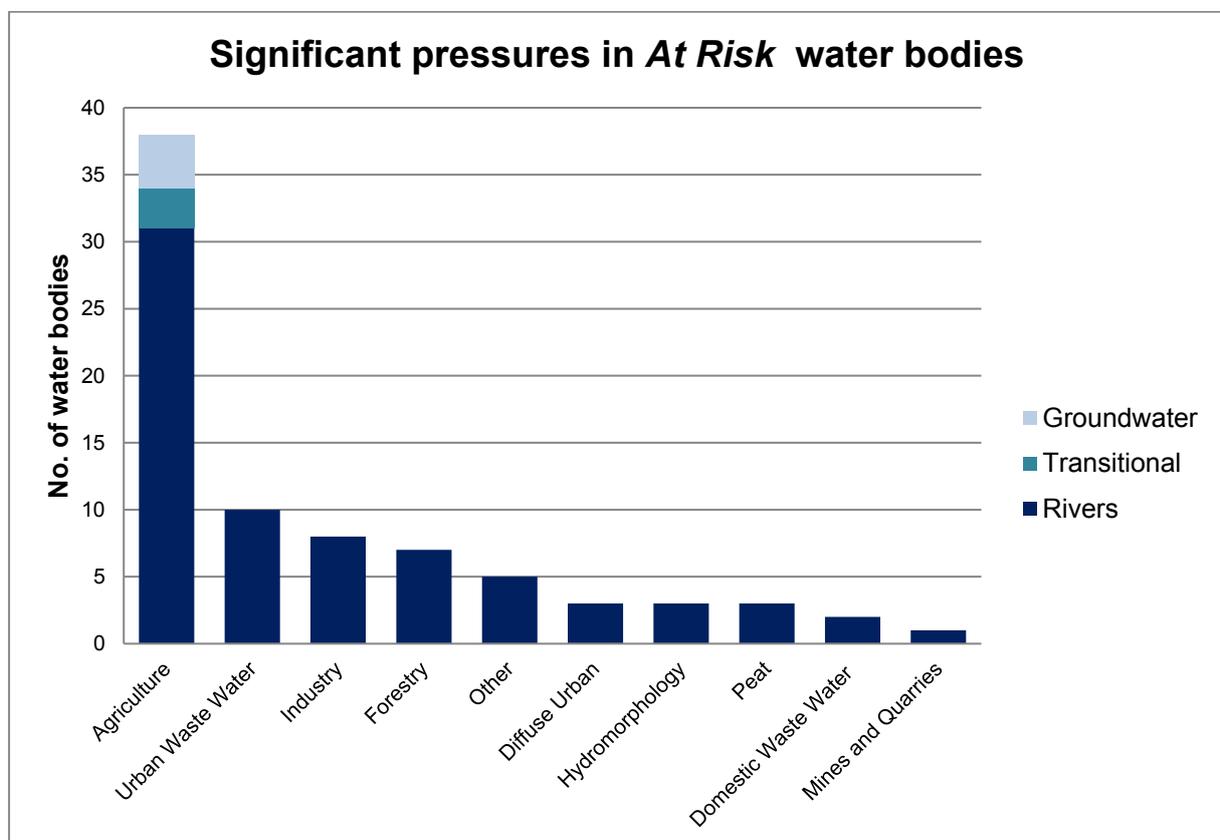


Figure 9. Significant pressures impacting on *At Risk* river water bodies

## 4.2 Pressure type

### 4.2.1 Agriculture

- ◆ Agriculture is a significant pressure in 34 river water bodies across 15 subcatchments and three transitional water bodies (Nore Estuary, New Ross Port and Lower Suir Estuary (Little Island – Cheekpoint), Figure 10). The issues related to farming in this catchment are diffuse phosphorus loss to surface waters, for example, direct discharges; or runoff from yards, roadways or other compacted surfaces, or runoff from poorly draining soils. Sediment can also be a problem from land drainage works, bank erosion from animal access or stream crossings. The pollution impact potential map showing areas of relative risk for phosphorus loss from agriculture to surface water is given in Appendix 6.

#### 4.2.2 Urban waste water treatment plants

- ◆ Urban Waste Water Treatment Plants (WWTPs) have been highlighted as a significant pressure in 10 *At Risk* water bodies; details are given in Table 7 and Figure 11. Five of these *At risk* water bodies, Erkina\_030, Erkina\_040, Goul\_030, King's (Kilkenny)\_050 and Nuenna\_020 are impacted by WWTPs where upgrade works are now complete.

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
Ballyroan D0385	500 to 1,000 p.e.	Ballyroan_010	Moderate	N/A <sup>1</sup>
Rathdowney D0288	2,001 to 10,000 p.e.	Erkina_030	Poor	Complete
Rathdowney D0288	2,001 to 10,000 p.e.	Erkina_040	Moderate	Complete
Gortnahoe A0423	< 500 p.e.	Goul_020	<i>Unassigned</i> <sup>2</sup>	<i>N/A Error! Bookmark not defined.</i>
Johnstown D0401	500 to 1,000 p.e.	Goul_030	<i>Unassigned</i> <sup>2</sup>	Complete
Urlingford D0336	1,001 to 2,000 p.e.	Goul_030	<i>Unassigned</i> <sup>2</sup>	Complete
Bennettsbridge D0400	500 to 1,000 p.e.	Nore_200	<i>Unassigned</i> <sup>2</sup>	<i>N/A Error! Bookmark not defined.</i>
Kells A0161	< 500 p.e.	King's (Kilkenny)_050	Moderate	<i>N/A Error! Bookmark not defined.</i>
Stonyford D0338	< 500 p.e.	King's (Kilkenny)_050	Moderate	Complete
Kilmaganny A0155	< 500 p.e.	Glory_010	Moderate	<i>N/A Error! Bookmark not defined.</i>
Ballyhale-Knocktopher D0530	500 to 1,000 p.e.	Little Arrigle_010	<i>Unassigned</i> <sup>2</sup>	<i>N/A Error! Bookmark not defined.</i>
Freshford D0526	500 to 1,000 p.e.	Nuenna_020	Poor	Complete

<sup>1</sup> Currently not specified in improvement plans.

<sup>2</sup> Ecological Status is not available for Goul\_020, Goul\_030, Nore\_200 and Little Arrigle\_010, however, following discussions with Tipperary County Council and Kilkenny County Council, these water bodies were deemed to be *At Risk* of not meeting their environmental objectives.

#### 4.2.3 Industry

Industry has been identified as a significant pressure in eight river water bodies, which are shown in Figure 12. These are point pressures arising from industrial discharges, resulting in nutrient and organic impacts issues, as well as metals, which are a legacy issue for one IE licensed site.

#### 4.2.4 Forestry

- ◆ Forestry has been identified as a significant pressure in seven water bodies (Figure 13). The significant issues are a combination of forestry activities which include planting and clearfelling, which have resulted in siltation and excess nutrients in surface water bodies.

#### 4.2.5 Other significant pressures

- ◆ *Unknown Anthropogenic*  
Three water bodies (Erkina\_010, Dinin (South)\_020 and Ballyroan\_020) are an *At Risk* water bodies which have unknown anthropogenic pressures (Figure 14).
- ◆ *Golf course*  
King's (Kilkenny)\_040 has a golf course identified as a potential significant pressure due to intensive land management that may be impacting biological and chemical status (Figure 14).
- ◆ *Water supply*  
Dinin (Main Channel) \_020 has two drinking water abstractions taking place, and these have been identified as potential significant pressures (Figure 14).

#### 4.2.6 Diffuse urban

- ◆ Diffuse urban pressures, caused by misconnections, leaking sewers and runoff from paved and unpaved areas, have been identified as significant in three river water bodies – Nore\_200 which flows through Bennettsbridge; Little Arrigle\_010 which flows through Knocktopher; and Brownstown (Pococke)\_010) which flows through the outskirts of Kilkenny city, Figure 15. Elevated concentrations of phosphates and ammonia are the significant issues.

#### 4.2.7 Hydromorphology

- ◆ River water bodies (three) within the Nore (SC15\_6), King's [Kilkenny] (SC15\_11) and Nore (SC15\_16) subcatchments are subject to extensive modification. Drainage schemes exist within these subcatchments, in addition to an embankment scheme within the Nore (SC15\_6), which may impact habitat conditions.

#### 4.2.8 Extractive industry

- ◆ *Peat*  
Peat drainage has been identified as a significant pressure in three water bodies – Needleford Stream\_010, Cappanacloghy\_010 and Clonawoolan Stream\_010. Elevated nutrient concentrations of phosphates and ammonia, as well as pollution from organic matter are the significant issues (Figure 17).
- ◆ *Quarry*  
A quarry has been identified as a significant pressure on Dinin (Main Channel) \_020, impacting on the main channel of the water body (Figure 17).
- ◆ *Mines*  
The discharge from a wetland at mine in the catchment area of Rathdowney Stream\_010 has been identified as a significant pressure (Figure 17).

#### 4.2.9 Domestic waste water

- ◆ Domestic waste water has been identified as a significant pressure in two river water bodies – Stonyford Stream (Kilkenny)\_010 and Ennisnag Stream\_010. This is due to a concentration of domestic waste water treatment systems in close proximity to the water bodies. (Figure 18).
- ◆ See Appendix 3 for information on these water bodies.

**At Risk Water Bodies where Agriculture is a significant pressure**  
 Nore Catchment (15)

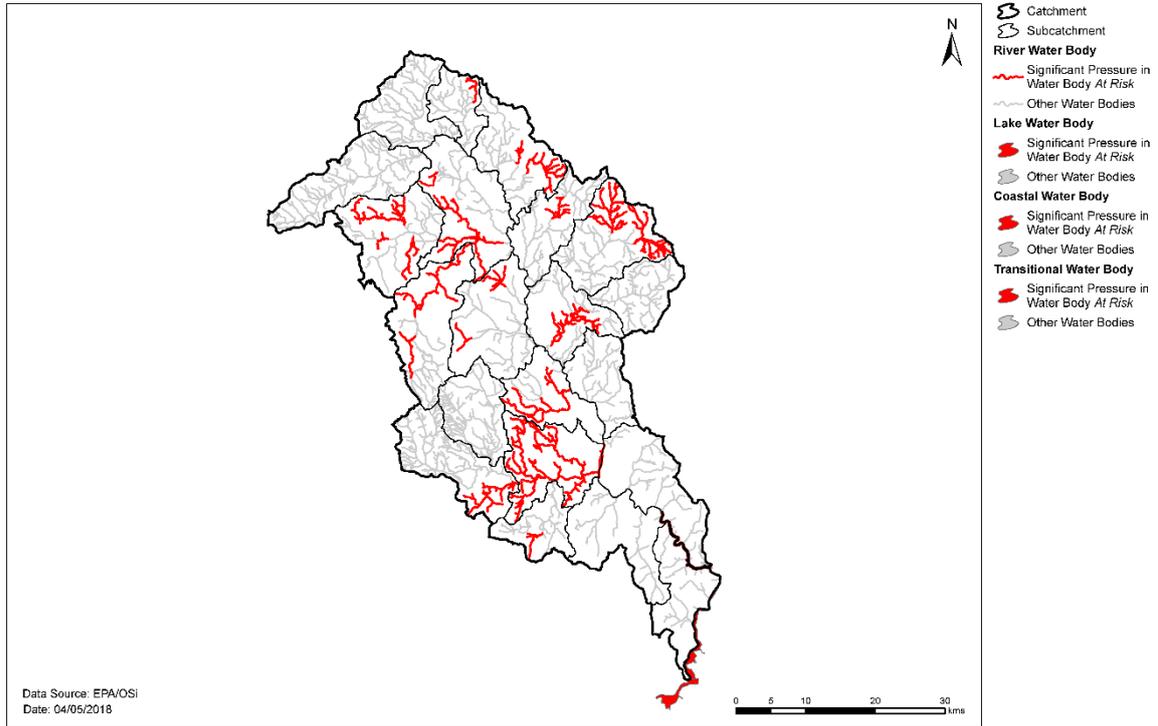


Figure 10. Water bodies that are *At Risk* and are impacted by agricultural activities

**At Risk Water Bodies where Urban Waste Water is a significant pressure**  
 Nore Catchment (15)

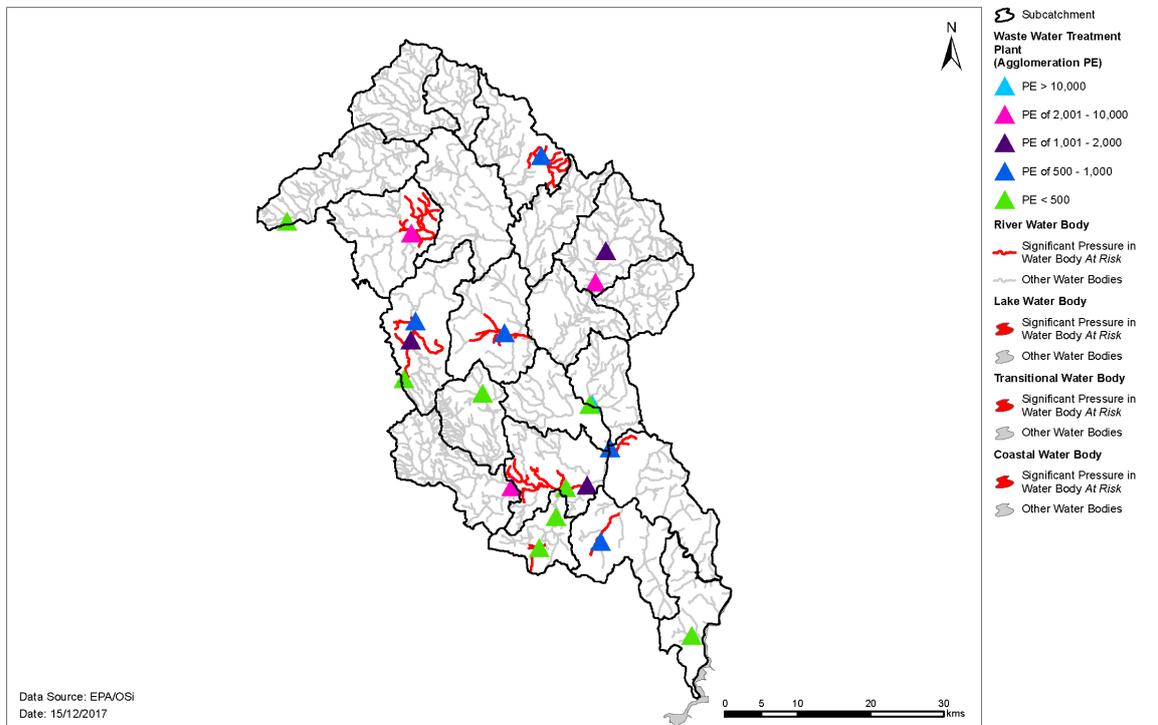


Figure 11. Water bodies that are *At Risk* and are impacted by urban waste water

**At Risk Water Bodies where Industry is a significant pressure**  
 Nore Catchment (15)

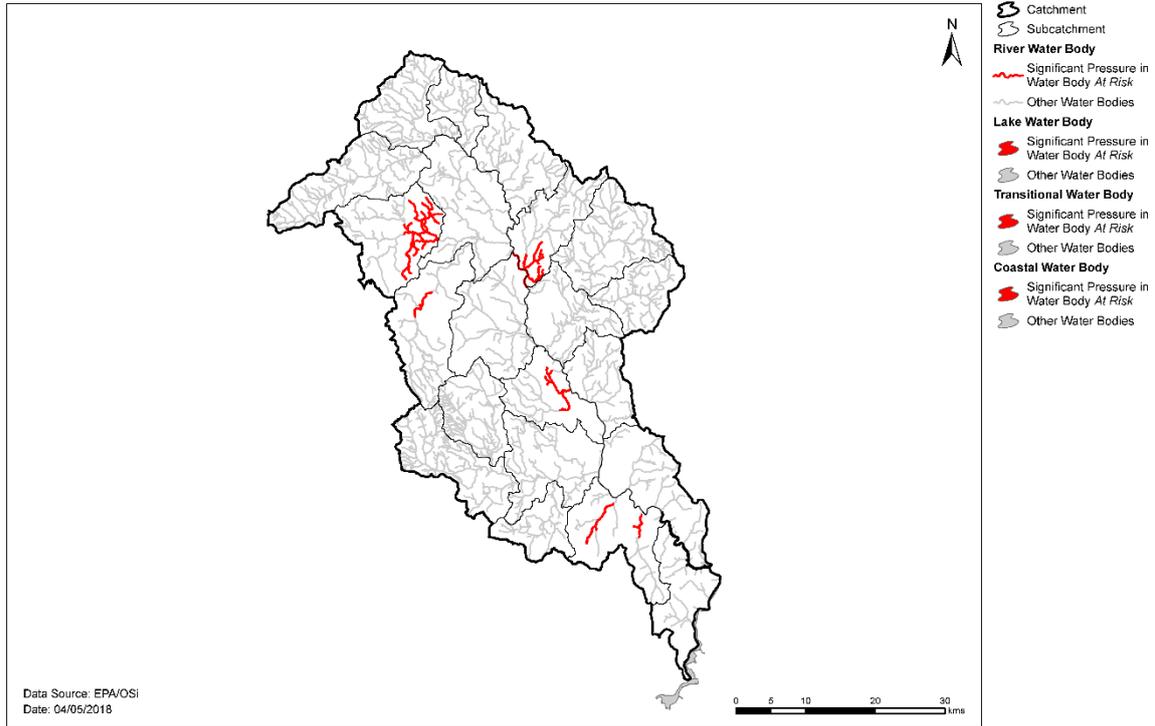


Figure 12. Water bodies that are *At Risk* and are impacted by industry

**At Risk Water Bodies where Forestry is a significant pressure**  
 Nore Catchment (15)

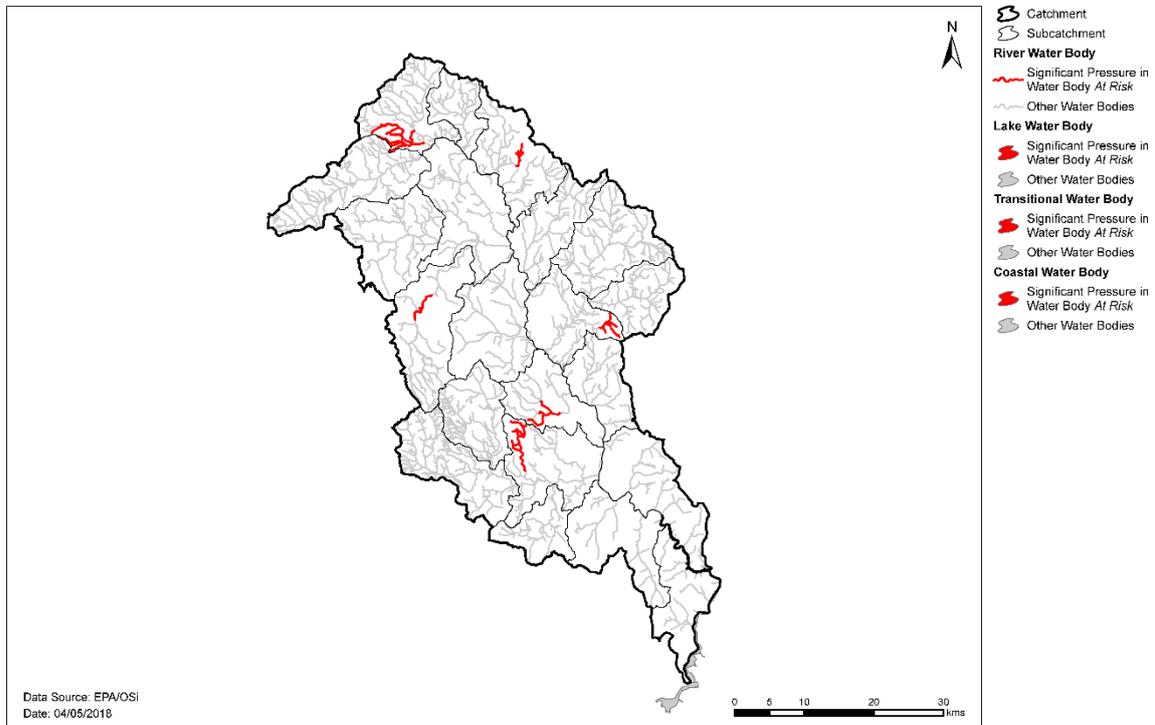


Figure 13. Water bodies that are *At Risk* and are impacted by forestry activities

**At Risk Water Bodies where Other Anthropogenic Pressures is a significant pressure**  
 Nore Catchment (15)

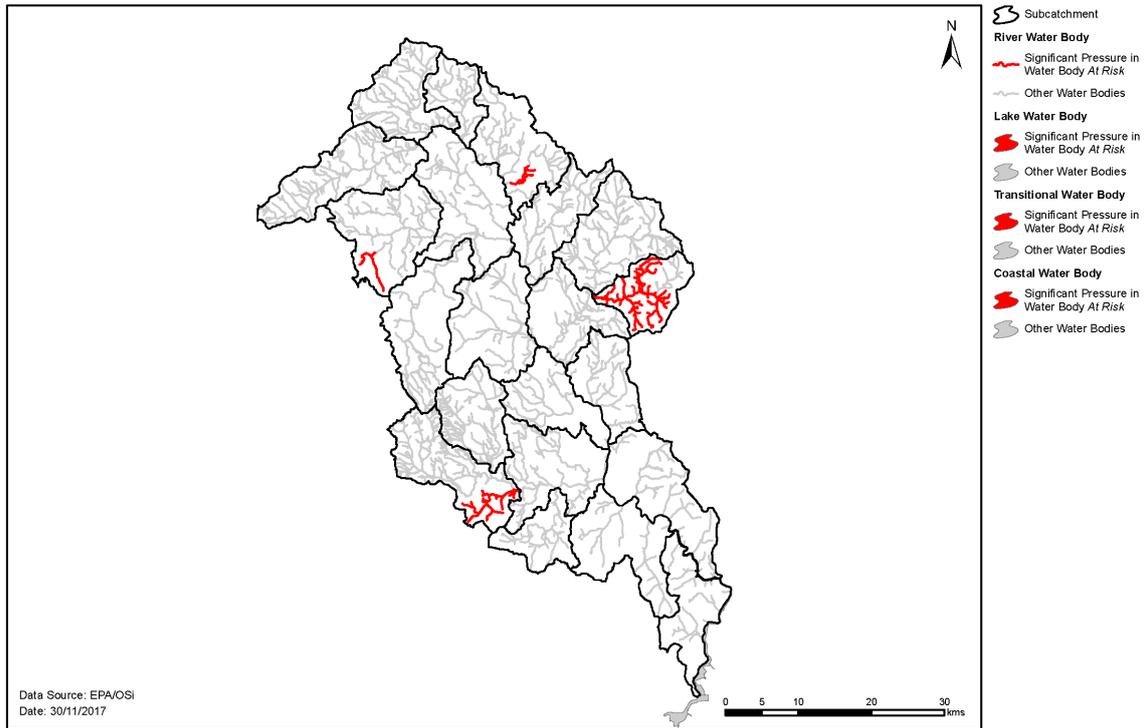


Figure 14. Water bodies that are *At Risk* and are impacted by other anthropogenic pressures

**At Risk Water Bodies where Diffuse Urban is a significant pressure**  
 Nore Catchment (15)

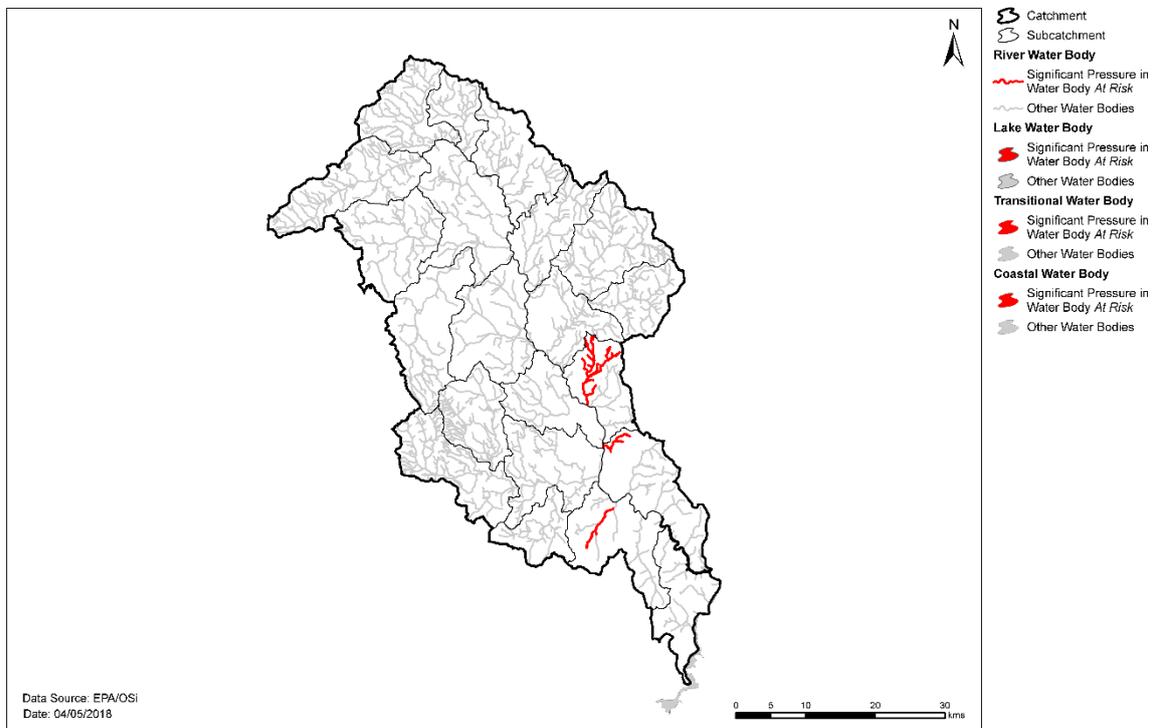


Figure 15. Water bodies that are *At Risk* and are impacted by diffuse urban impacts

**At Risk Water Bodies where Hydromorphology is a significant pressure**  
 Nore Catchment (15)

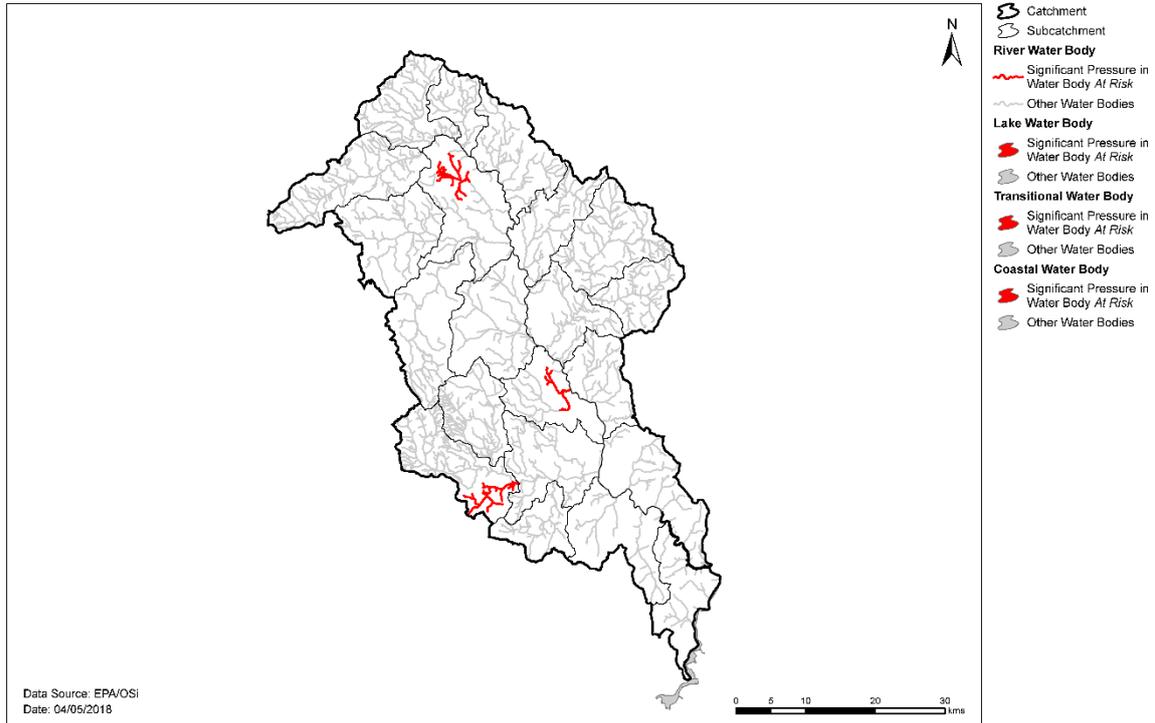


Figure 16. Water bodies that are *At Risk* and are impacted by hydromorphological pressures

**At Risk Water Bodies where Extractive Industry is a significant pressure**  
 Nore Catchment (15)

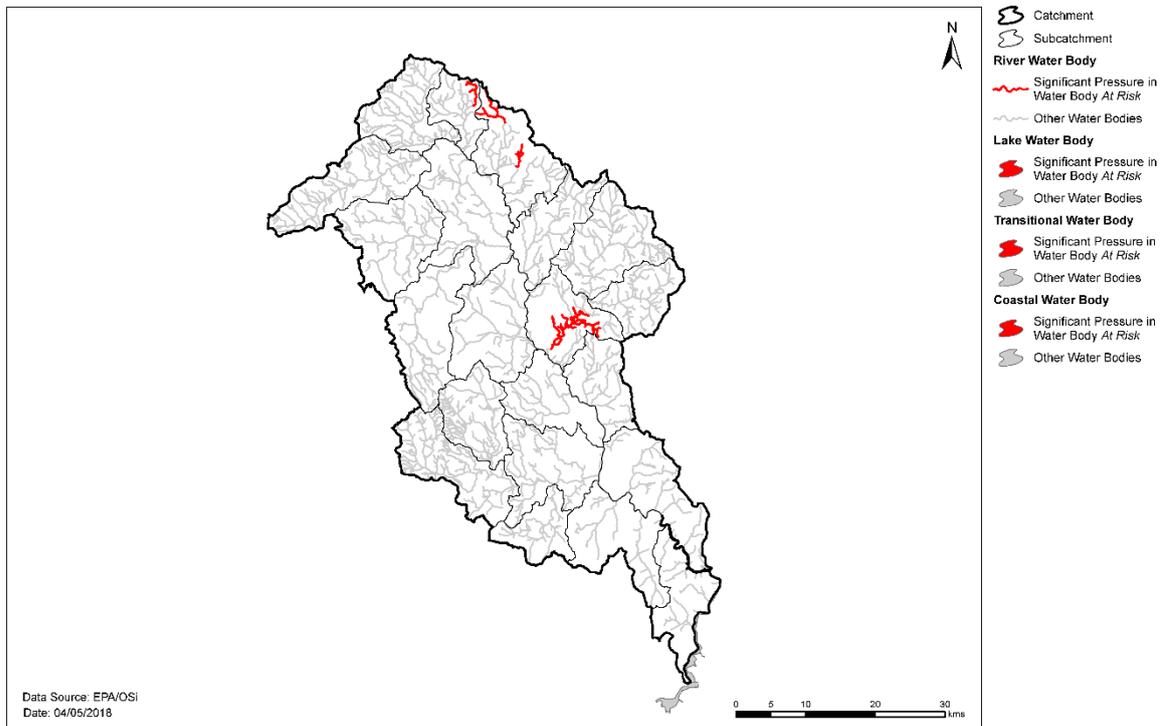


Figure 17. Water bodies that are *At Risk* and are impacted by the extractive industry

## At Risk Water Bodies where Domestic Waste Water is a significant pressure

Nore Catchment (15)

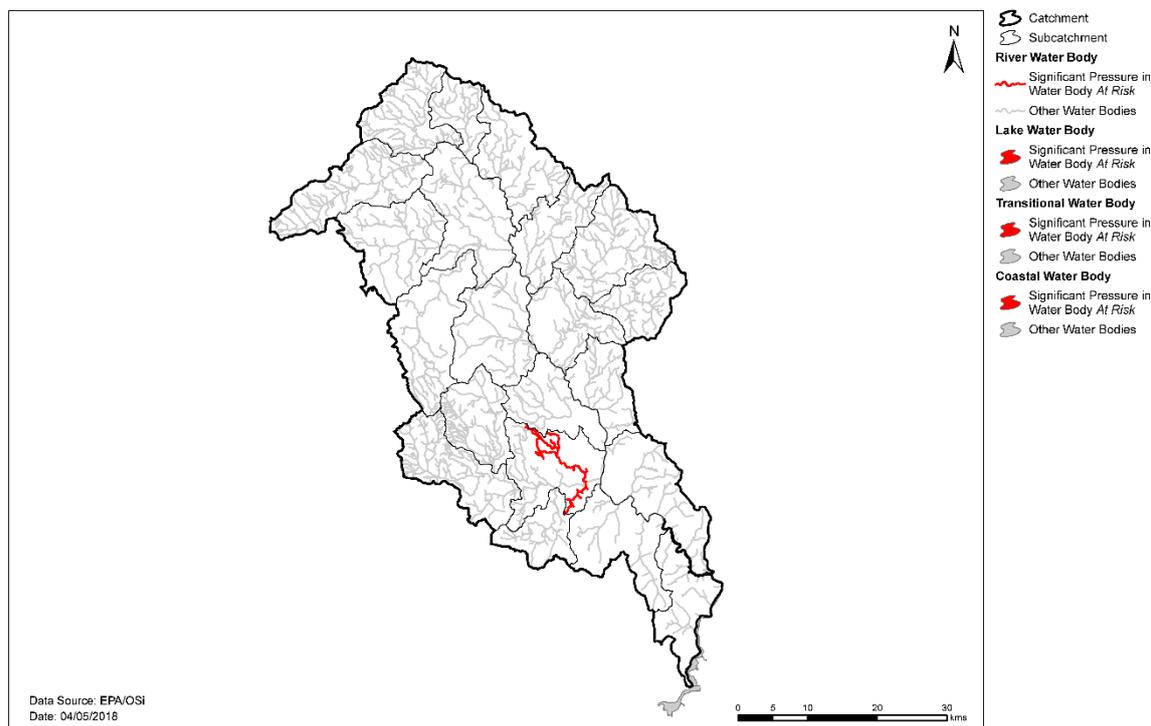


Figure 18. Water bodies that are *At Risk* and are impacted by domestic waste water

## 5 Load reduction assessment

### 5.1 River water body load reductions

- ◆ The results of the main channel assessment for the Nore river indicate that orthophosphate and ammonia concentrations are elevated in places, with TON concentrations increasing downstream (Appendix 2).
- ◆ For water bodies where phosphorus monitoring data are available, the reduction in P load that would be required to bring the mean concentration back to the EQS of 0.035 mg/l as P, can be estimated using a simple method based on the average 2013 to 2015 concentration and the average flow, or the estimated 30<sup>th</sup> percentile flow (Q30) where flow data are not available. The relative load reductions are ranked on a national scale from Very High (>1 kg/Ha/y), to High (0.5-1 kg/Ha/y), to Medium (0.25-0.5 kg/Ha/y) to Low (<0.25 kg/Ha/y). Note that P load reductions may also be required in other water bodies, but without chemistry monitoring data a quantitative estimate cannot be calculated.
- ◆ In the Nore catchment, the available data indicate that load reductions are required in 11 river water bodies (Table 9).

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

Water body	P Load Reduction Required
Erkina_030	V. High
Goul_020	High
King's (Kilkenny)_050	Med
Ballyroan_010	Med
Bregagh (Kilkenny)_020	Med
Little Arrigle_010	Med
Arrigle_030	Med
Holly Park Stream_010	Low
Stonyford Stream (Kilkenny)_010	Low
Bregagh (Kilkenny)_030	Low
Brownstown (Pococke)_010	Low

- ◆ 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 Nore catchment, the available data indicate that load reductions are required in 17 river water bodies (Table 10).

Table 10. Relative load reductions required in monitored water bodies.

Water body	N Load Reduction Required
NORE_180	V. High
ERKINA_050	High
GOUL_030	Med
BREGAGH (KILKENNY)_030	Med
LITTLE ARRIGLE_010	Med
NUENNA_010	Med
GOUL_040	Med
ERKINA_030	Med
BROWNSTOWN (POCOCKE)_010	Low
BREGAGH (KILKENNY)_020	Low
RATHDOWNEY STREAM_010	Low
BALLYROAN_010	Low
GLORY_010	Low
TULLAROAN STREAM_010	Low
ARRIGLE_030	Low
STONYFORD STREAM (KILKENNY)_010	Low
GOUL_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 Oskar Convention). This has shown that generally over the long term, nutrients have decreased but further reduction will be required in many cases to support Good Ecological Status. However, many estuaries have not been monitored to the same degree, and where monitoring data is insufficient, an ongoing programme of modelling has been undertaken to estimate potential nutrient load removal from contributing sub-catchments.

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

- ◆ The Nore Estuary and New Ross Port have potential excessive nitrogen in winter from agricultural sources. Further assessments are required to determine if load reductions are required and where specifically within the catchment the N reductions might come.

As part of the Ireland's commitment to the Oskar Convention, nutrient flux or load monitoring has been carried out on the Nore Estuary since 1990 (Figure 18a and 18b). Further analysis of these nutrient load trends is available at <http://dx.doi.org/10.3318/BIOE.2016.23>

Figure 18a – Total Nitrogen Load (Tonnes/year) 1990-2015

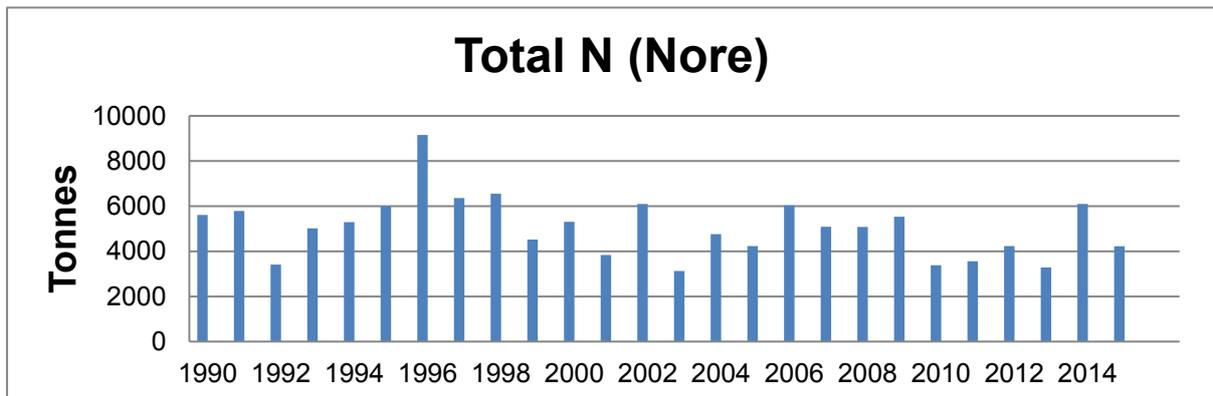
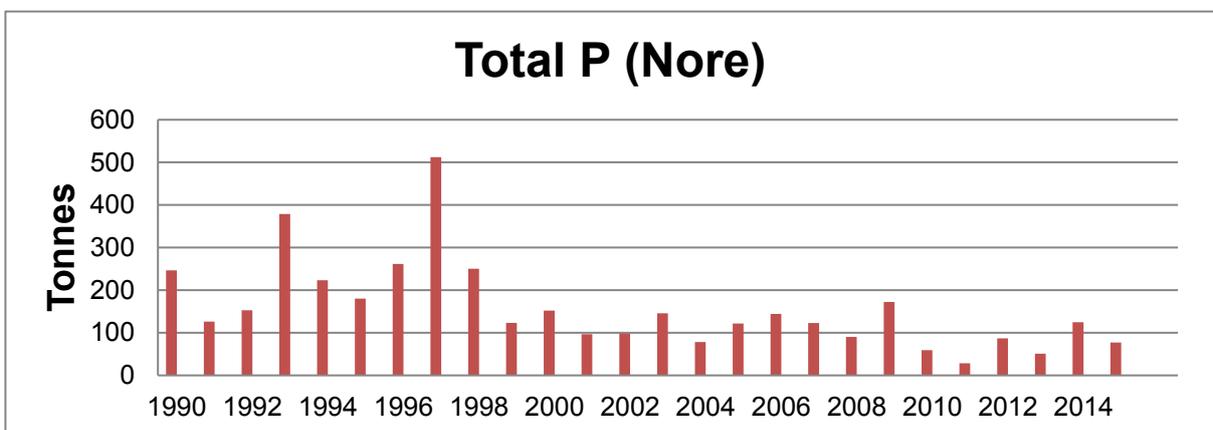


Figure 18b – Total Phosphorus Load (Tonnes/year) 1990-2015



## 6 Further characterisation and local catchment assessments

- ◆ Further characterisation through local catchment assessments is needed in 48 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 29 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 11. Local catchment assessment allocation for *At Risk* and *Review* river water bodies in the catchment

Risk	IA 1	IA 2	IA 3	IA4	IA 5	IA6	IA 7	IA 8	IA 9	IA10	Total
<i>At Risk</i>	16	0	1	3	4	3	31	2	0	0	<b>60</b>
<i>Review</i>	13	1	13	1	2	6	3	0	0	0	<b>39</b>

Note water bodies may have multiple categories of Local Catchment Assessments

## 7 Catchment summary

- ◆ Of the 123 river water bodies, 48 are *At Risk* of not meeting their WFD objectives.
- ◆ Excess phosphate and elevated nitrates is the dominant issue in rivers in Nore Catchment. Excess ammonia is also of concern in a significant number of water bodies.
- ◆ Hydromorphological conditions are also an issue, however this is only of concern in a limited number of water bodies.
- ◆ Three of the transitional water bodies are *At Risk*, due to nutrient conditions which are impacting invertebrates and fish. The pressures acting on the water bodies include agriculture and inputting river water bodies.
- ◆ Of the 28 groundwater bodies, there are three *At Risk* due to elevated nitrate concentrations and the potential for groundwater phosphate contribution to impact associated surface waters that are *At Risk* of not meeting water quality objectives and one *At Risk* due to elevated nitrate concentrations. The groundwater bodies which are *At Risk* are in areas of karstified limestone, which represent a close interaction between surface water and groundwater. Any contamination of surface water is rapidly transported into the groundwater system and vice versa.

## 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 seven areas for action in the Nore 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 Overview of process

The outcomes for the Nore catchment are summarised below.

- ◆ Seven recommended areas for actions (Table 12, Figure 19) were selected.
- ◆ These are the Brownstown (Pocoke), Bregagh (Kilkenny), Dinin (south, main and muckalee), Nuenna, Erkina, Owveg (Nore) and Ballyroan.
- ◆ These include 22 river water bodies – 20 *At Risk* and two *Review*.
- ◆ Six groundwater bodies, that are *At Risk* or *Review* due to groundwater contribution of nutrients to surface water bodies, intersect with seven of the recommended areas for action, see Table 13. Actions taken to improve surface water will need to take account of the groundwater contribution to surface water.

A remaining 60 *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 20. These include:

- ◆ 55 river water bodies – 28 *At Risk* and 27 *Review*, and
- ◆ five transitional water bodies – three *At Risk* and two *Review*

Table 12 Recommended Areas for Action in the Nore catchment

Recommended area for action	Number of water bodies	SCs	Local authority	Reason for Selection
Brownstown (Pococke)	1	15_4	Kilkenny	<ul style="list-style-type: none"> <li>• Important amenity value, close to the Kilkenny city.</li> <li>• First wetland to deal with diffuse urban issues.</li> <li>• Important for salmon spawning, potential to work with fisheries.</li> <li>• One deteriorated water body.</li> <li>• Protected area objective not met (crayfish).</li> </ul>
Bregagh (Kilkenny)	4	15_6	Kilkenny	<ul style="list-style-type: none"> <li>• Amenity value - close to city where a linear park is planned.</li> <li>• Community group - actively removing invasive species and looking at starting a Rivers Trust. Also, involved in Nore Vision Strategy.</li> <li>• Opportunity to address water quality and hydromorphology issues</li> </ul>
Dinin (south, main and muckalee)	3	15_3 15_8	Kilkenny Carlow	<ul style="list-style-type: none"> <li>• Active community groups in the area.</li> <li>• Important for salmon spawning.</li> <li>• Three potential 'quick wins'.</li> <li>• Three deteriorated water bodies.</li> <li>• One of the three deteriorated water bodies has a High Ecological Status objective.</li> </ul>
Nuenna	3	15_21	Kilkenny Laois	<ul style="list-style-type: none"> <li>• Building on completed upgrades at Freshford WWTP.</li> <li>• Potential pilot project to examine nitrate issues from pasture.</li> <li>• Lots of historical information from pathways project.</li> <li>• Potential to work with a recently established, active tidy towns group.</li> <li>• Six group water schemes in the area. Lots of ZOC work completed recently.</li> <li>• Two potential 'quick wins'.</li> <li>• Two of the three water bodies are deteriorated water bodies.</li> </ul>
Erkina	8	15_14 15_16	Laois	<ul style="list-style-type: none"> <li>• Groundwater abstraction at Durrow is failing for nitrates.</li> <li>• Potential to work with active community groups.</li> <li>• Important amenity – local groups are in the process of trying to establish a blueway.</li> <li>• Potential to work with active group water schemes.</li> <li>• Two deteriorated water bodies.</li> </ul>
Owveg (Nore)	1	15_7	Laois	<ul style="list-style-type: none"> <li>• One deteriorated water body.</li> <li>• Will restore all water bodies in the subcatchment to Good status.</li> <li>• One potential quick win.</li> </ul>
Ballyroan	2	15_10	Laois	<ul style="list-style-type: none"> <li>• Building on improvements at the plant (Ballyroan hydraulically overloaded and works are due to be completed on the inlet works).</li> <li>• Discrete area, would build on the improvements in the adjacent subcatchment.</li> <li>• Deteriorated water body (Ballyroan_010).</li> <li>• Both Owveg and Ballyroan discharge into Freshwater Pearl Mussel water bodies.</li> </ul>

Table 13 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_156	Durrow	At risk	IE_SE_15B010100	BALLYROAN_010	Ballyroan
			IE_SE_15B010200	BALLYROAN_020	
IE_SE_G_114	Rathdowney	Review	IE_SE_15B010100	BALLYROAN_010	
			IE_SE_15B010200	BALLYROAN_020	
IE_SE_G_119	Shanahoe	Review	IE_SE_15B010200	BALLYROAN_020	
IE_SE_G_009	Ballingarry	Review	IE_SE_15B010100	BALLYROAN_010	
			IE_SE_15B020080	BREGAGH (KILKENNY)_010	
			IE_SE_15B020350	BREGAGH (KILKENNY)_030	
IE_SE_G_078	Kilkenny	At risk	IE_SE_15B020080	BREGAGH (KILKENNY)_010	
			IE_SE_15B020100	BREGAGH (KILKENNY)_020	
			IE_SE_15B020100	BREGAGH (KILKENNY)_020	
			IE_SE_15B020350	BREGAGH (KILKENNY)_030	
			IE_SE_15B020350	BREGAGH (KILKENNY)_030	
			IE_SE_15D420500	DREELINGSTOWN_010	
IE_SE_G_009	Ballingarry	Review	IE_SE_15D420500	DREELINGSTOWN_010	Brownstown (Pococke)
			IE_SE_15B041100	BROWNSTOWN (POCOCKE)_010	
			IE_SE_15B041100	BROWNSTOWN (POCOCKE)_010	Dinin (south, main and muckalee)
			IE_SE_15D020800	DININ (MAIN CHANNEL)_020	
			IE_SE_15D080600	DININ (SOUTH)_020	
			IE_SE_G_009	Ballingarry	Review
IE_SE_15O010160	OWVEG (NORE)_030				
IE_SE_15N020100	NUENNA_010	Nuenna			
IE_SE_15N020400	NUENNA_020				
IE_SE_G_156	Durrow	At risk	IE_SE_15N020100	NUENNA_010	
			IE_SE_15N020400	NUENNA_020	
IE_SE_G_088	Lisdowney	Review	IE_SE_15L020100	LISDOWNEY_010	Erkina
			IE_SE_15N020400	NUENNA_020	
			IE_SE_15E010550	ERKINA_050	
IE_SE_G_114	Rathdowney	Review	IE_SE_15D030700	DONAGHMORE STREAM_010	
			IE_SE_15D030700	DONAGHMORE STREAM_010	
			IE_SE_15E010040	ERKINA_010	
			IE_SE_15E010100	ERKINA_020	
			IE_SE_15E010200	ERKINA_030	
			IE_SE_15E010300	ERKINA_040	
			IE_SE_15E010550	ERKINA_050	
			IE_SE_15E010550	ERKINA_050	
			IE_SE_15E030500	ERRILL_020	
IE_SE_G_119	Shanahoe	Review	IE_SE_15R031100	RATHDOWNEY STREAM_010	
			IE_SE_15E010300	ERKINA_040	
			IE_SE_15E010550	ERKINA_050	
IE_SE_G_156	Durrow	At risk	IE_SE_15E010550	ERKINA_050	

## 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 20 *At Risk* surface water bodies, it is predicted that six (30%) will improve by 2021 and 14 (70%) will achieve their objective by 2027. For the two *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, see Table 13.

Table 13. 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
<b>Rivers</b>			
<i>At Risk</i>	20	6	14
<i>Review</i>	2	0	2
<b>Total</b>	22	6	16

- ◆ Forty-six surface water bodies have met their 2015 environmental objective. One of the 46 water bodies met its environmental objective for ecological status but failed to meet its protected area objective.
- ◆ As action is not yet planned to be taken in 28 (25 rivers plus 3 transitional) of the remaining 31 *At Risk* surface water bodies, a 2027 date is applied to all 28 of these water bodies. A 2021 objective is set for the remaining three river water bodies; urban waste water treatment plant upgrades are planned for one of the water bodies while an industrial facility is the single significant pressure in two of these water bodies.
- ◆ For the 29 *Review* surface water bodies, the absence of information on 28 of these water bodies means that there is no scientific basis to quantify an environmental objective date and therefore a 2027 date is set. For one of the 29 *Review* surface water bodies, Good ecological status was recorded but nutrient concentrations are elevated. It is predicted that this water body will improve by 2021, see Table 14.

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

Risk Category	No. of Water Bodies	No. of WBs for 2021 Improvement	No. of WBs for 2027 Status Improvement
<b>Rivers</b>			
<i>At Risk</i>	28	3	25
<i>Review</i>	27	1	26
<b>TraCs</b>			
<i>At Risk</i>	3	0	3
<i>Review</i>	2	0	2
<b>Total</b>	60	4	56

## 9.2 Groundwater

All 28 groundwater bodies in the catchment are Good status and, therefore, have met their environmental objectives.

## 10 Acknowledgements

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

- Kilkenny County Council
- Laois County Council.
- Carlow County Council.
- Tipperary 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.

# Recommended Areas for Action

## Nore Catchment (15)

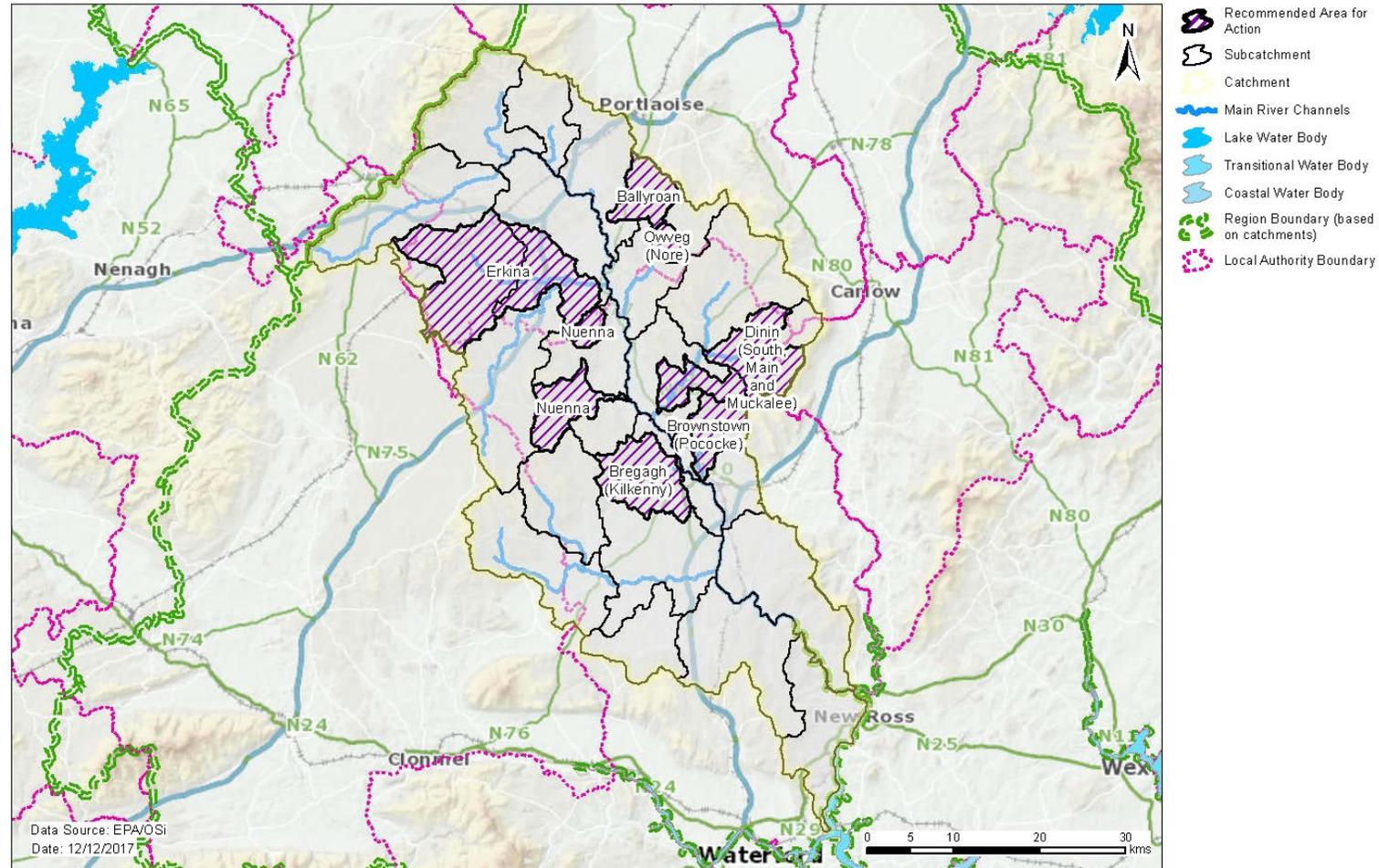


Figure 19. Location of Recommended Areas for Action in the Nore Catchment

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

Nore Catchment (15)

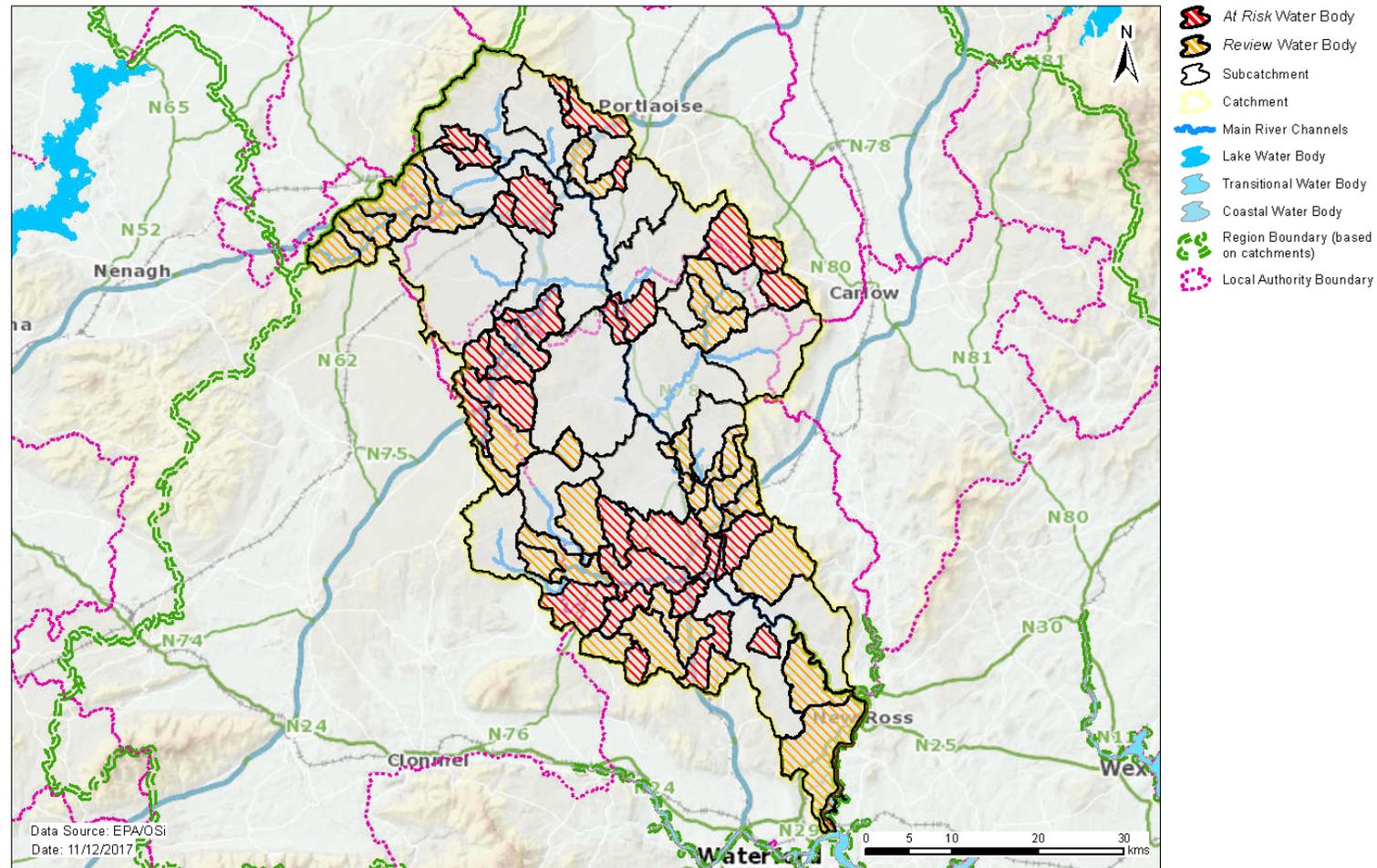


Figure 20. Location of *At Risk* and *Review* water bodies located outside Recommended Areas for Action in the Nore Catchment

## Appendix 1 High ecological status objective water bodies and sites

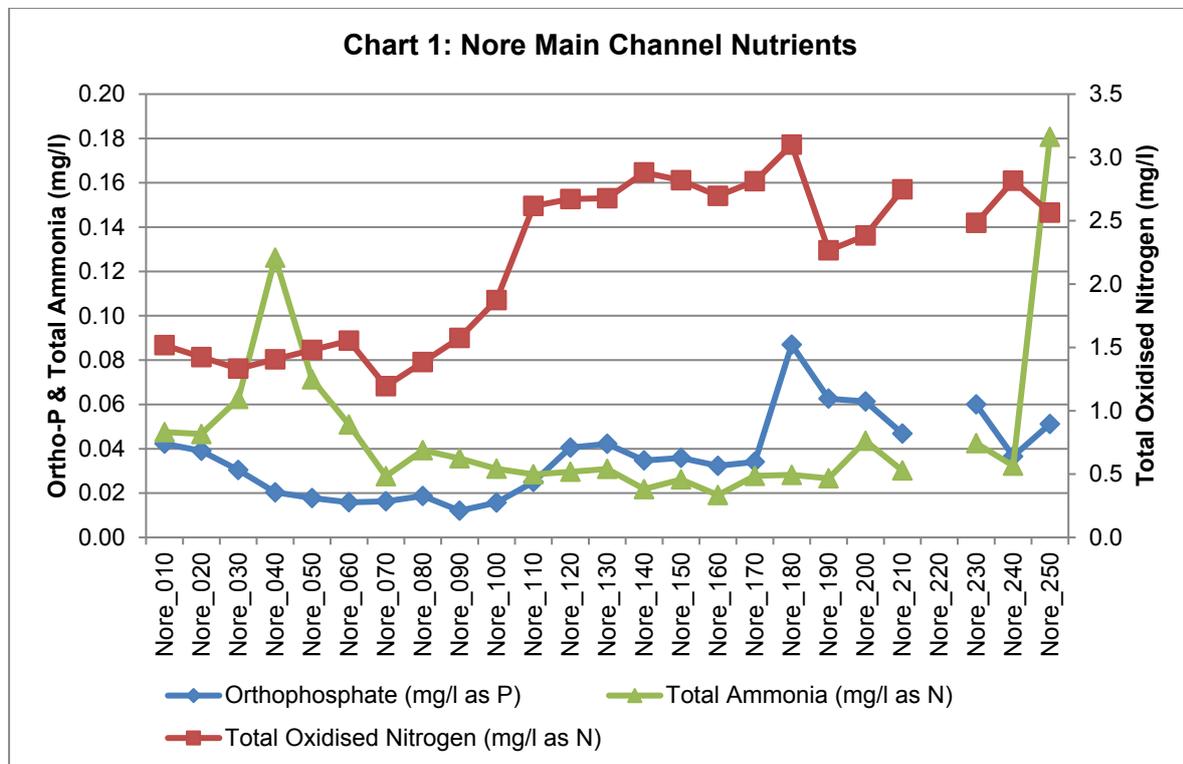
Water body/ Site	Type	Codes	2015 Status
DELOUR_010	River	IE_SE_15D010060	High
DELOUR_020	River	IE_SE_15D010150	High
DELOUR_030	River	IE_SE_15D010400	High
KILLEEN (DELOUR)_010	River	IE_SE_15K010400	High
MUCKALEE_010	River	IE_SE_15M020100	Good
NEEDLEFORD STREAM_010	River	IE_SE_15N040200	Good
TONET_010	River	IE_SE_15T010200	High

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

The results of the water quality assessment for the Nore catchment are illustrated in Chart 1. This shows the 2015 baseline orthophosphate concentrations along the main channel range from 0.012mg/l up to 0.087mg/l. A significant spike in the orthophosphate data is observed at Nore\_180 which is likely to be related to the contributions from Kilkenny City Waste Water Treatment Plant (WWTP) which discharges into that stretch of the river. Concentrations of orthophosphate decrease slightly but remain elevated downstream.

Elevated concentrations of ammonia (above the EQS for good status, 0.065mg/l) are observed between Nore\_030 and Nore\_050 and peak at Nore\_040 (0.126mg/l). The elevated concentrations are considered to be related to peat drainage and extraction. The ammonia concentrations reduce significantly downstream of this point to concentrations generally within the range of 0.019mg/l to 0.05mg/l. Another significantly peak of ammonia is observed at Nore\_250. This peak however, corresponds to an outlier of 4.8mg/l taken on 19/08/2013. If the outlier were to be omitted from the dataset the 2013 to 2015 concentration for ammonia at Nore\_250 would be 0.027mg/l, which is consistent with the upstream water quality. The Nore\_250 receives the primary discharge from the Inistioge WWTP, however its size (PE<500) is unlikely to result in such high concentrations and therefore this one-off measurement may need to be interrogated more closely to confirm its accuracy or omitted.

TON concentrations in the river headwaters and up-gradient sections are relatively low, ranging between 1.19mg/l and 1.58mg/l. The TON concentrations increase steadily downstream of Nore\_100 as the river starts to flow over the regionally important limestone and Sand & Gravel aquifers found along the Nore River valley south of this point. These aquifers provide a significant groundwater contribution to the river which may be the source of the additional nitrate. The concentrations downstream of Nore\_110 range from 2.6mg/l to 3.1mg/l. A localised spike in TON concentrations at Nore\_180 may correspond to the primary discharge of the Kilkenny City WWTP at that location.



### 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
15_1	IE_SE_15N040200	Needleford Stream_010	River	At risk	High	Good	Y	Ag,Peat	2027	
15_2	IE_SE_15G010190	Glory_020	River	Review	Unassigned	Unassigned	N		2027	
15_2	IE_SE_15G820400	Glory River_010	River	Review	Unassigned	Unassigned	N		2027	
15_2	IE_SE_15G010045	Glory_010	River	At risk	Poor	Moderate	N	Ag,UWW	2027	
15_2	IE_SE_15G010300	Glory_030	River	Review	Moderate	Good	N		2027	
15_3	IE_SE_15D080600	Dinin (South)_020	River	At risk	Good	Moderate	N	Other	2021	Dinin (south, main and muckalee)
15_4	IE_SE_15K540650	Kilderry 15_010	River	Review	Unassigned	Unassigned	N		2027	
15_4	IE_SE_15N012090	Nore_190	River	Review	Unassigned	Unassigned	N		2027	
15_4	IE_SE_15R370950	RATHGARVAN_Or_CLIFDEN_010	River	Review	Unassigned	Unassigned	N		2027	
15_4	IE_SE_15B041100	Brownstown (Pococke)_010	River	At risk	Good	Poor	N	DU	2027	Brownstown (Pococke)
15_4	IE_SE_15N011950	Nore_170	River	Review	Moderate	Good	N		2027	
15_4	IE_SE_15N012000	Nore_180	River	Review	Poor	Good	N		2027	
15_5	IE_SE_15T020200	Tullaroan Stream_010	River	Review	Unassigned	Unassigned	N		2027	
15_5	IE_SE_15T020450	Tullaroan Stream_030	River	Review	Good	Good	N		2027	
15_6	IE_SE_15B020100	Bregagh (Kilkenny)_020	River	At risk	Unassigned	Unassigned	N	Ag,For	2027	Bregagh (Kilkenny)
15_6	IE_SE_15D420500	Dreelingstown_010	River	Review	Unassigned	Unassigned	N		2027	Bregagh (Kilkenny)
15_6	IE_SE_15B020080	Bregagh (Kilkenny)_010	River	At risk	Poor	Moderate	N	Ag	2027	Bregagh (Kilkenny)
15_6	IE_SE_15B020350	Bregagh (Kilkenny)_030	River	At risk	Poor	Poor	N	Ag,Hymo,Ind	2027	Bregagh (Kilkenny)
15_7	IE_SE_15O010160	Owveg (Nore)_030	River	At risk	Good	Moderate	N	Ag	2021	Owveg (Nore)
15_8	IE_SE_15D020800	Dinin (Main Channel)_020	River	At risk	Good	Moderate	N	Ag,M+Q,Other	2021	Dinin (south, main and muckalee)
15_8	IE_SE_15M020100	Muckalee_010	River	At risk	High	Good	Y	For	2021	Dinin (south, main and muckalee)
15_9	IE_SE_15T010400	Tonet_020	River	At risk	Moderate	Poor	N	For	2027	
15_9	IE_SE_15T010600	Tonet_030	River	At risk	Good	Moderate	N	For	2027	
15_10	IE_SE_15C060990	Cappanacloghy_030	River	Review	Unassigned	Unassigned	N		2027	
15_10	IE_SE_15B010100	Ballyroan_010	River	At risk	Good	Moderate	N	Ag,UWW	2027	Ballyroan

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
15_10	IE_SE_15B010200	Ballyroan_020	River	At risk	Poor	Poor	N	Other	2027	Ballyroan
15_10	IE_SE_15C060600	Cappanacloghy_010	River	At risk	Poor	Poor	N	Peat	2027	
15_10	IE_SE_15C191100	Clonawoolan Stream_010	River	At risk	Poor	Poor	N	Ag,For,Peat	2027	
15_11	IE_SE_15M340730	Modeshil_010	River	Review	Unassigned	Unassigned	N		2027	
15_11	IE_SE_15K020560	King's (Kilkenny)_030	River	Review	Moderate	Good	N		2027	
15_11	IE_SE_15K020600	King's (Kilkenny)_040	River	At risk	Good	Moderate	N	Ag,Hymo,Other	2027	
15_12	IE_SE_15D070250	Dinin (North)_030	River	Review	Unassigned	Unassigned	N		2027	
15_12	IE_SE_15H010300	Holly Park Stream_010	River	At risk	Unassigned	Unassigned	N	Ag	2027	
15_12	IE_SE_15C030300	Clogh_010	River	At risk	Good	Moderate	N	Ag	2027	
15_12	IE_SE_15D070080	Dinin (North)_010	River	At risk	Good	Poor	N	Ag	2027	
15_12	IE_SE_15D070400	Dinin (North)_040	River	Review	Good	Good	N		2021 (measures planned)	
15_13	IE_SE_15N010100	Nore_020	River	Review	Unassigned	Unassigned	N		2027	
15_13	IE_SE_15N010200	Nore_030	River	Review	Unassigned	Unassigned	N		2027	
15_13	IE_SE_15N010400	Nore_050	River	Review	Unassigned	Unassigned	N		2027	
15_13	IE_SE_15N010080	Nore_010	River	Review	Good	Good	N		2027	
15_13	IE_SE_15N010300	Nore_040	River	Review	Moderate	Good	N		2027	
15_14	IE_SE_15E010100	Erkina_020	River	Review	Unassigned	Unassigned	N		2027	Erkina
15_14	IE_SE_15D030700	Donaghmore Stream_010	River	At risk	Moderate	Moderate	N	Ag	2027	Erkina
15_14	IE_SE_15E010040	Erkina_010	River	At risk	Moderate	Moderate	N	Other	2027	Erkina
15_14	IE_SE_15E010200	Erkina_030	River	At risk	Moderate	Poor	N	Ind,UWW	2027	Erkina
15_14	IE_SE_15E010300	Erkina_040	River	At risk	Moderate	Moderate	N	Ind,UWW	2027	Erkina
15_14	IE_SE_15E030500	Errill_020	River	At risk	Moderate	Moderate	N	Ag	2027	Erkina
15_14	IE_SE_15R031100	Rathdowney Stream_010	River	At risk	Moderate	Poor	N	Ag,Ind	2027	Erkina
15_15	IE_SE_15A030960	Ardreagh_010	River	Review	Unassigned	Unassigned	N		2027	
15_15	IE_SE_15G020060	Goul_010	River	Review	Unassigned	Unassigned	N		2027	
15_15	IE_SE_15G020110	Goul_020	River	At risk	Unassigned	Unassigned	N	Ag,UWW	2027	
15_15	IE_SE_15G020200	Goul_030	River	At risk	Unassigned	Unassigned	N	UWW	2021 (measures planned)	
15_15	IE_SE_15B120080	Baunballinlough Stream_010	River	At risk	Moderate	Poor	N	Ag	2027	
15_15	IE_SE_15G020300	Goul_040	River	At risk	Moderate	Moderate	N	Ag,For,Ind	2027	
15_15	IE_SE_15G020360	Goul_050	River	At risk	Good	Moderate	N	Ag	2027	
15_15	IE_SE_15G020500	Goul_060	River	At risk	Good	Moderate	N	Ag	2027	

Subcatchment code	Water body code	Water body name	Water body type	Risk	Ecological Status 07-09	Ecological Status 10-15	High Ecological Status Objective Water Body Y/N	Significant Pressures	Date to Meet Environmental Objective	Recommended Area for Action Name
15_16	IE_SE_15E010550	Erkina_050	River	At risk	Moderate	Moderate	N	Ag	2027	Erkina
15_16	IE_SE_15G030060	Gully_010	River	At risk	Poor	Poor	N	Ag	2027	
15_16	IE_SE_15G030100	Gully_020	River	At risk	Good	Poor	N	Hymo	2027	
15_17	IE_SE_15N012130	Nore_200	River	At risk	Unassigned	Unassigned	N	DU,UWW	2027	
15_17	IE_SE_15N012200	Nore_210	River	At risk	Good	Moderate	N	Ag	2027	
15_17	IE_SE_15N012330	Nore_230	River	Review	Poor	Good	N		2027	
15_17	IE_SE_100_0250	Barrow Nore Estuary Upper	Transitional	Review	Good	Good	N		2027	
15_17	IE_SE_100_0300	Upper Barrow Estuary	Transitional	Review	Moderate	Good	N		2027	
15_17	IE_SE_100_0400	Nore Estuary	Transitional	At risk	Moderate	Moderate	N	Ag	2027	
15_18	IE_SE_14O130860	Oaklands_010	River	Review	Unassigned	Unassigned	N		2027	
15_18	IE_SE_15T360920	Tullagher 15_010	River	Review	Unassigned	Unassigned	N		2027	
15_18	IE_SE_100_0200	New Ross Port	Transitional	At risk	Moderate	Moderate	N	Ag	2027	
15_18	IE_SE_100_0500	Lower Suir Estuary (Little Island - Cheekpoint)	Transitional	At risk	Good	Moderate	N	Ag	2027	
15_19	IE_SE_15S010100	Stonyford Stream (Kilkenny)_010	River	At risk	Unassigned	Unassigned	N	Ag,DWW	2027	
15_19	IE_SE_15C120400	Caherlesk Stream_010	River	At risk	Poor	Poor	N	Ag	2027	
15_19	IE_SE_15D040500	Desart Stream_010	River	At risk	Poor	Poor	N	Ag,For	2027	
15_19	IE_SE_15E020700	Ennisnag Stream_010	River	At risk	Moderate	Poor	N	Ag,DWW	2027	
15_19	IE_SE_15K020910	King's (Kilkenny)_050	River	At risk	Moderate	Moderate	N	Ag,UWW	2027	
15_20	IE_SE_15G720980	Glebe 15_010	River	Review	Unassigned	Unassigned	N		2027	
15_20	IE_SE_15K750910	Knockwilliam_010	River	Review	Unassigned	Unassigned	N		2027	
15_20	IE_SE_15L010200	Little Arrigle_010	River	At risk	Unassigned	Unassigned	N	DU,Ind,UWW	2027	
15_20	IE_SE_15A020300	Arrigle_030	River	At risk	Good	Moderate	N	Ind	2021	
15_21	IE_SE_15N011400	Nore_120	River	At risk	Unassigned	Unassigned	N	Ind	2021	
15_21	IE_SE_15L020100	Lisdowney_010	River	At risk	Good	Moderate	N	Ag	2021	Nuenna
15_21	IE_SE_15N020100	Nuenna_010	River	At risk	Moderate	Poor	N	Ag	2027	Nuenna
15_21	IE_SE_15N020400	Nuenna_020	River	At risk	Poor	Poor	N	UWW	2021 (measures planned)	Nuenna

**Ag:** Agriculture    **Ind:** Industry    **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

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
2900PRI0145	Fennor/ Inchirourke GWS	Shanahoe	IE_SE_G_119	Yes	N/A
1500PRI3012	Tullaroan GWS	Kilmanagh Gravels	IE_SE_G_083	Yes	N/A
1500PRI3001	Kilree/Stonyford GWS	Bennettsbridge	IE_SE_G_021	No data	N/A
1500PRI3146	Listerlin GWS	Inistioge	IE_SE_G_076	No data	N/A
1500PRI3005	Maddoxtown GWS	Clifden	IE_SE_G_038	No data	N/A
1500PRI3037	Newtown GWS	Clifden Northwest	IE_SE_G_161	No data	N/A
1500PRI3078	Seskin Lisdowney Ballyconra GWS	Killkenny-Ballynakill Gravels	IE_SE_G_163	Yes	N/A
	Seskin Lisdowney Ballyconra GWS	Killkenny-Ballynakill Gravels	IE_SE_G_163	Yes	N/A
	Seskin Lisdowney Ballyconra GWS	Killkenny-Ballynakill Gravels	IE_SE_G_163	Yes	N/A
1500PRI3106	Tubrid Lower GWS	Durrow	IE_SE_G_156	No data	N/A
1500PRI3089	Windgap GWS	Thomastown	IE_SE_G_135	No data	N/A
1500PRI3107	Baunmore GWS	Shanahoe	IE_SE_G_119	No data	N/A
1500PRI3040	Castlewarren GWS Borehole 5	Castlecomer	IE_SE_G_034	Yes	N/A
	Castlewarren GWS Borehole 4	Castlecomer	IE_SE_G_034	Yes	N/A
1500PRI3166	Castleinch GWS	Clifden Northwest	IE_SE_G_161	No data	N/A
1500PRI3108	Baunmore GWS	Shanahoe	IE_SE_G_119	No data	N/A
1500PRI3169	Cuffesgrange GWS	Clifden Northwest	IE_SE_G_161	No data	N/A
1500PRI3061	Clomantagh Killashulan GWS	Durrow	IE_SE_G_156	No data	N/A
1500PRI3006	Balief & Clomantagh GWS	GDTE-The Loughlans Turlough (SAC000407)	IE_SE_G_134	No data	N/A
	Balief & Clomantagh GWS Well 2	GDTE-The Loughlans Turlough (SAC000407)	IE_SE_G_134	No data	N/A
	Balief & Clomantagh GWS Well 2	GDTE-The Loughlans Turlough (SAC000407)	IE_SE_G_134	No data	N/A
1600PRI3042	Ballacolla Coolfin Borehole 2	Shanahoe	IE_SE_G_119	Yes	N/A
	Ballacolla Coolfin Borehole 1	Donaghmore	IE_SE_G_051	Yes	N/A
	Ballacolla Grantstown	Shanahoe	IE_SE_G_119	Yes	N/A

Scheme Code	Scheme Name	Water Body	Water Body Code	Objective met? Yes /No	Reason why not met
	Borehole				
	Ballacolla Shanahoe Well	Poormansbridge Gravels	IE_SE_G_168	Yes	N/A
	Ballacolla Tinraheen Well	Rathdowney	IE_SE_G_114	Yes	N/A
	Ballacolla Dairyhill Well	Shanahoe	IE_SE_G_119	Yes	N/A
	Ballacolla Coolfin Standby Borehole	Shanahoe	IE_SE_G_119	Yes	N/A
1600PRI3001	Cullahill	Durrow	IE_SE_G_156	No	Nitrates
1500PRI3165	Barna/Kilrush GWS	Durrow	IE_SE_G_156	No data	N/A
1500PRI3164	Ballymack GWS	Callan	IE_SE_G_026	No data	N/A
1500PRI3010	Ballycallan Muintir Agric Co-op Soc. Ltd.	Kilmanagh Gravels	IE_SE_G_083	Yes	N/A
1500PRI3092	Caherleske/Coolagh GWS	Thomastown	IE_SE_G_135	Yes	N/A
1500PRI3002	Clifden GWS	Kilkenny	IE_SE_G_078	No data	N/A
1500PRI3009	Highrath GWS	Clifden	IE_SE_G_038	No data	N/A
1500PRI3008	Graine GWS	Rathdowney	IE_SE_G_114	No data	N/A
	Graine GWS	Durrow	IE_SE_G_156	No data	N/A
1500PRI3049	Dunmore GWS	Ballingarry	IE_SE_G_009	No data	N/A
1600PRI3041	Ballypickas PrGWS	Abbeyleix Gravels	IE_SE_G_171	Yes	N/A
1600PRI3046	Attanagh	Kilkenny-Ballynakill Gravels	IE_SE_G_163	Yes	N/A
1600PRI3047	Aghmacart	Rathdowney	IE_SE_G_114	No data	N/A
1600PRI3030	Donaghmore	Rathdowney	IE_SE_G_114	Yes	N/A
1600PRI3029	Errill Borehole at Ballagh, Erril	Rathdowney	IE_SE_G_114	Yes	N/A
	Errill Ballagharahin Well	Rathdowney	IE_SE_G_114	Yes	N/A
1600PRI3027	Garrintaggert No. 1	Ballingarry	IE_SE_G_009	No data	N/A
2900PRI0145	Fennor/ Inchirourke GWS	Shanahoe	IE_SE_G_119	Yes	N/A
1600PUB1055	Mountrath No 2 PWS (Drim)	Coolrain	IE_SE_G_047	Yes	N/A
1600PUB1057	Mountrath No 3 PWS (Clonin Hill)	Coolrain	IE_SE_G_047	Yes	N/A
1500PUB1019	Kilmaganny WS	Thomastown	IE_SE_G_135	Yes	N/A
2900PUB0103	Ballincurry PWS	Slieveardagh Hills	IE_SE_G_126	No data	N/A
0100PUB1106	Bilboa	Castlecomer	IE_SE_G_034	Yes	N/A
1500PUB1016	Gorteen Ws	Newtown	IE_SE_G_104	Yes	N/A
1500PUB1014	Thomastown Water Supply Scheme	Stoneyford Gravels	IE_SE_G_128	Yes	N/A
1500PUB1015	Johnstown / Urlingford Water Supply Scheme	Rathdowney	IE_SE_G_114	Yes	N/A
	Johnstown / Urlingford Water Supply Scheme	Rathdowney	IE_SE_G_114	Yes	N/A
	Johnstown / Urlingford Water Supply Scheme	Rathdowney	IE_SE_G_114	Yes	N/A
	Johnstown / Urlingford Water Supply Scheme	Rathdowney	IE_SE_G_114	Yes	N/A

Scheme Code	Scheme Name	Water Body	Water Body Code	Objective met? Yes /No	Reason why not met
1500PUB1001	Ballyragget Water Supply Scheme	Killkenny-Ballynakill Gravels	IE_SE_G_163	Yes	N/A
	Ballyragget Water Supply Scheme, Ballyragget	Killkenny-Ballynakill Gravels	IE_SE_G_163	Yes	N/A
1500PUB1003	Callan Water Supply Scheme, Westcourt (spring)	Clifden Northwest	IE_SE_G_161	Yes	N/A
	Callan Water Supply Scheme, (borehole)	Clifden Northwest	IE_SE_G_161	Yes	N/A
1600PUB1007	Borris in Ossory PWS, Derrin Borehole	Rathdowney	IE_SE_G_114	Yes	N/A
	Borris in Ossory PWS, Townspark Borehole	Derrymore Gravels	IE_SE_G_050	Yes	N/A
	Borris in Ossory PWS, Kavanagh'S Borehole	Derrymore Gravels	IE_SE_G_050	Yes	N/A
	Borris in Ossory PWS, Burns Borehole	Derrymore Gravels	IE_SE_G_050	Yes	N/A
	Borris-in-Ossory PWS, Borehole in Dunacleggan townland	Rathdowney	IE_SE_G_114	Yes	N/A
1600PUB1074	Ballyroan PWS, Tullore Spring	Ballingarry	IE_SE_G_009	Yes	N/A
	Ballyroan PWS, Tullore Spring in Tullore Townland	Ballingarry	IE_SE_G_009	Yes	N/A
	Ballyroan PWS, Cross of Newtown Borehole in Ballyroan Townland	Durrow	IE_SE_G_156	Yes	N/A
1600PUB1056	Abbeyleix 1 PWS	Abbeyleix Gravels	IE_SE_G_171	Yes	N/A
	Abbeyleix No 1 PWS (Aughfeerish)	Abbeyleix Gravels	IE_SE_G_171	Yes	N/A
	Abbeyleix No 1 PWS (Aughfeerish)	Abbeyleix Gravels	IE_SE_G_171	Yes	N/A
1600PUB1054	Mountrath No 1PWS	Coolrain	IE_SE_G_047	Yes	N/A
1600PUB1044	Rathdowney PWS	Rathdowney	IE_SE_G_114	Yes	N/A
1600PUB1002	Durrow 1 PWS	Durrow	IE_SE_G_156	Yes	N/A
	Durrow No 2 PWS (Fermoyle)	Durrow	IE_SE_G_156	Yes	N/A
1600PUB1010	Swan PWS	Newtown	IE_SE_G_104	Yes	N/A
1500PUB1006	Glenmore Water Supply Scheme	Inistioge	IE_SE_G_076	Yes	N/A
1500PUB1004	Castlecomer (old) Regional Water Supply Scheme	Castlecomer	IE_SE_G_034	Yes	N/A
1500PUB1002	Bennettsbridge Regional Water Supply Scheme	Stoneyford Gravels	IE_SE_G_128	Yes	N/A
	Bennettsbridge Regional Water Supply Scheme, ABS 18b borehole 4	Clifden South	IE_SE_G_159	Yes	N/A
	Bennettsbridge Regional Water Supply Scheme, ABS	Stoneyford Gravels	IE_SE_G_128	Yes	N/A

Scheme Code	Scheme Name	Water Body	Water Body Code	Objective met? Yes /No	Reason why not met
	18b borehole 3				
	Bennettsbridge Regional Water Supply Scheme, ABS 18b borehole 2	Stoneyford Gravels	IE_SE_G_128	Yes	N/A
	Bennettsbridge Regional Water Supply Scheme, ABS 18b filtration gallery 3	NORE_210	IE_SE_15N012200	Yes	N/A
	Bennettsbridge Regional Water Supply Scheme, Knockanore, ABS 18b filtration gallery 1	NORE_210	IE_SE_15N012200	Yes	N/A
	Bennettsbridge Regional Water Supply Scheme, ABS 18b filtration gallery 2	NORE_210	IE_SE_15N012200	Yes	N/A
1600PUB1102	Abbeyleix No 2 PWS (5 Wells)	Abbeyleix Gravels	IE_SE_G_171	Yes	N/A
1600PUB1101	Ballinakill No 2 PWS (Fermoyle)	Durrow	IE_SE_G_156	Yes	N/A
2900PUB0112	Commons PWS	Ballingarry	IE_SE_G_009	Yes	N/A
2800PUB1026	Roscrea PWS	Rathdowney	IE_SE_G_114	Yes	N/A
2900PUB0111	Coalbrook PWS	Slieveardagh Hills	IE_SE_G_126	Yes	N/A
1500PUB1010	Kilkenny City (Radestown) WS, townlands of Drumerhin & Linsafunshin: Douglas River	DININ (MAIN CHANNEL)_020	IE_SE_15D020800	Yes	N/A
	Kilkenny City (Radestown) WS, townlands of Drumerhin & Linsafunshin: Dinan River	DININ (MAIN CHANNEL)_020	IE_SE_15D020800	Yes	N/A
1500PUB1011	Kilkenny City & Environs & Freshford Water Supply Scheme	NORE_160	IE_SE_15N011750	Yes	N/A
1500PUB1009	Inistioge Water Supply Scheme	Clodiagh_010	IE_SE_15C050100	Yes	N/A
1500PUB1005	Clogh / Castlecomer Regional Water Supply Scheme, Loan, Borehole abstraction beside river	DININ (NORTH)_030	IE_SE_15D070250	Yes	N/A
	Clogh / Castlecomer Regional Water Supply Scheme, Loan, Abstraction via Filtration Gallery	DININ (NORTH)_030	IE_SE_15D070250	Yes	N/A

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

Additional water dependent species have been added that are not qualifying interests within the SACs (i.e. Freshwater Pearl Mussel (*Margaritifera durrovensis*) has been added to the Slieve Bloom Mountains SAC). River water bodies that are 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?
Coolrain Bog SAC 002332	none							
Cullahill Mountain SAC 000831	none							
Galmoy Fen SAC 001858	7230	Good GW level	Groundwater	Shanahoe GWB	Good (R)	No	IE_SE_G_119	No
Hugginstown Fen SAC 000404	7230	Good GW level	Groundwater	Thomastown GWB	Good (AT RISK)	No	IE_SE_G_135	No
Knockacoller Bog SAC 002333	none							
Lisbigney Bog SAC 000869	none							
Slieve Bloom Mountains SAC 000412	1990 (19 of 27 catchments of S.I. 296 2009) (not listed)	Good	River	Needleford Stream_010	Good (AT RISK - HES Obj)	No	IE_SE_15N040200	Yes
			River	Tonet_010	High (NAR - HES obj)	No	IE_SE_15T010200	Yes
			River	Delour_010	High (NAR - HES obj)	No	IE_SE_15D010060	Yes
			River	Delour_020	High (NAR - HES obj)	No	IE_SE_15D010150	Yes
			River	Delour_030	High (NAR - HES obj)	No	IE_SE_15D010400	Yes
			River	Killeen (Delour)_010	High (NAR - HES obj)	No	IE_SE_15K010400	Yes
Spahill And Clomantagh Hill SAC 000849	none							
The Loughans SAC 000407	3180	Good GW level/quality	Groundwater	GWDTE-The Loughrans Turlough(SAC000407)	Good (R)	No	IE_SE_G_134	No
	1990 (19 of 27 catchments of S.I. 296 2009) (not listed)	Good	River	Goul_030	Unassigned (AT RISK)	Yes	IE_SE_15G020200	Yes
Thomastown Quarry SAC 002252	7220	Good GW level	Groundwater	Clifden South GWB	Good (NAR)	No	IE_SE_G_159	No

SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
River Barrow And River Nore SAC 002162	7220	Good GW level	Groundwater	Inistioge GWB	Good (R)	No	IE_SE_G_076	Yes
	1990 (19 of 27 catchments of S.I. 296 2009)	Good	River	Nore_090	Good (NAR)	No	IE_SE_15N010900	Yes
			River	Nore_100	Good (NAR)	No	IE_SE_15N011100	Yes
			River	Nore_110	Good (NAR)	No	IE_SE_15N011300	Yes
			River	Nore_120	Unassigned (AT RISK)	Yes	IE_SE_15N011400	Yes
			River	Nore_130	Good (NAR)	No	IE_SE_15N011500	Yes
	1092	At least Moderate	River	Delour_030	High (NAR - HES obj)	No	IE_SE_15D010400	Yes
			River	Nore_070	Unassigned (NAR)	No	IE_SE_15N010600	Yes
			River	Nore_080	Good (NAR)	No	IE_SE_15N010700	Yes
			River	Nore_090	Good (NAR)	No	IE_SE_15N010900	Yes
			River	Nore_110	Good (NAR)	No	IE_SE_15N011300	Yes
			River	Nore_120	Unassigned (AT RISK)	Yes	IE_SE_15N011400	Yes
			River	Nore_130	Good (NAR)	No	IE_SE_15N011500	Yes
			River	Nore_150	Good (NAR)	No	IE_SE_15N011700	Yes
			River	Nore_160	Unassigned (NAR)	No	IE_SE_15N011750	Yes
			River	Nore_180	Good (R)	No	IE_SE_15N012000	Yes
			River	Nore_210	Moderate (AT RISK)	No	IE_SE_15N012200	Yes
			River	Nore_220	Good (NAR)	No	IE_SE_15N012310	Yes
			River	Nore_230	Good (AT RISK)	No	IE_SE_15N012330	Yes
			River	Little Arrigle_010	Unassigned (AT RISK)	Yes	IE_SE_15L010200	Yes
River	Erkina_050	Moderate (AT RISK)	No	IE_SE_15E010550	Yes			
River	Owveg (Nore)_030	Moderate (AT RISK)	No	IE_SE_15O010160	Yes			
River	Owveg (Nore)_040	Good (NAR)	No	IE_SE_15O010280	Yes			

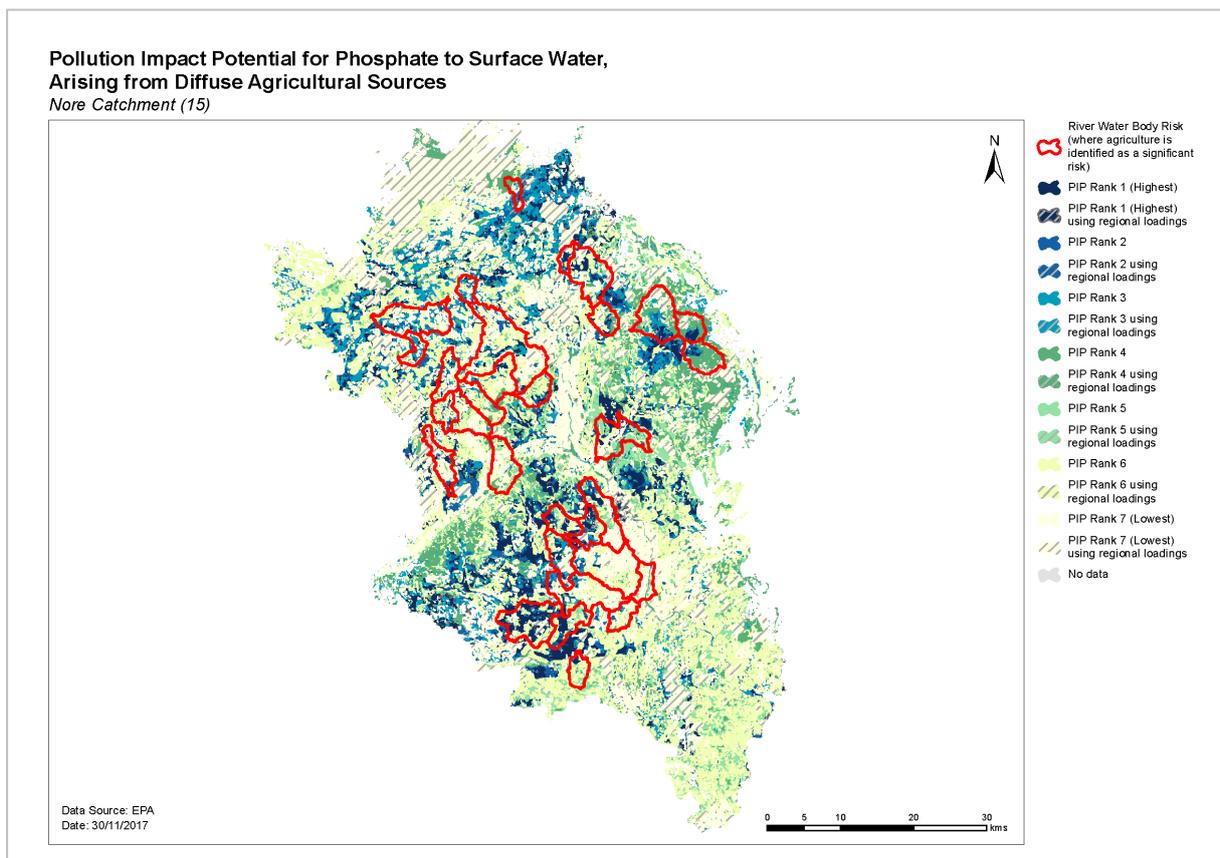
SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
River Barrow And River Nore SAC 002162	1092	At least Moderate	River	Owveg (Nore)_050	Good (NAR)	No	IE_SE_15O010400	Yes
			River	Brownstown (Pococke)_010	Poor (AT RISK)	Yes	IE_SE_15B041100	Yes
			River	Dinin (Main channel)_020	Moderate (AT RISK)	No	IE_SE_15D020800	Yes
			River	Dinin (North)_040	Good (R)	No	IE_SE_15D070400	Yes
			River	Munster_020	Good (NAR)	No	IE_SE_15M030600	Yes
			River	Munster_030	Good (NAR)	No	IE_SE_15M030700	Yes
			River	King's (Kilkenny)_020	Unassigned (NAR)	No	IE_SE_15K020400	Yes
			River	King's (Kilkenny)_030	Good (R)	No	IE_SE_15K020560	Yes
			River	King's (Kilkenny)_040	Moderate (AT RISK)	No	IE_SE_15K020600	Yes
			River	King's (Kilkenny)_050	Moderate (AT RISK)	No	IE_SE_15K020910	Yes
	River	Glory_030	Good (R)	No	IE_SE_15G010300	Yes		
	1106	Good	River	Nore_010	Good (R)	No	IE_SE_15N010080	Yes
			River	Nore_020	Unassigned (R)	Yes	IE_SE_15N010100	Yes
			River	Nore_030	Unassigned (R)	Yes	IE_SE_15N010200	Yes
			River	Nore_040	Good (R)	No	IE_SE_15N010300	Yes
			River	Nore_050	Unassigned (R)	Yes	IE_SE_15N010400	Yes
			River	Nore_060	Good (NAR)	No	IE_SE_15N010500	Yes
			River	Nore_070	Unassigned (NAR)	No	IE_SE_15N010600	Yes
			River	Nore_080	Good (NAR)	No	IE_SE_15N010700	Yes
			River	Nore_090	Good (NAR)	No	IE_SE_15N010900	Yes
River			Nore_100	Good (NAR)	No	IE_SE_15N011100	Yes	
River			Nore_110	Good (NAR)	No	IE_SE_15N011300	Yes	
River			Nore_120	Unassigned (AT RISK)	Yes	IE_SE_15N011400	Yes	
River			Nore_130	Good (NAR)	No	IE_SE_15N011500	Yes	
River			Nore_140	Unassigned (NAR)	No	IE_SE_15N011600	Yes	

SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
River Barrow And River Nore SAC 002162	1106	Good	River	Nore_150	Good (NAR)	No	IE_SE_15N011700	Yes
			River	Nore_160	Unassigned (NAR)	No	IE_SE_15N011750	Yes
			River	Nore_170	Good (R)	No	IE_SE_15N011950	Yes
			River	Nore_180	Good (R)	No	IE_SE_15N012000	Yes
			River	Nore_190	Unassigned (R)	Yes	IE_SE_15N012090	Yes
			River	Nore_200	Unassigned (AT RISK)	Yes	IE_SE_15N012130	Yes
			River	Nore_210	Moderate (AT RISK)	Yes	IE_SE_15N012200	Yes
			River	Nore_220	Good (NAR)	No	IE_SE_15N012310	Yes
			River	Nore_230	Good (AT RISK)	No	IE_SE_15N012330	Yes
			River	Nore_240	Good (NAR)	No	IE_SE_15N012400	Yes
River	Nore_250	Good (NAR)	No	IE_SE_15N012500	Yes			
Slieve Bloom Mountains SAC 000412	1990 (19 of 27 catchments of S.I. 296 2009)	Good	River	Needleford Stream_010	Good (AT RISK - HES Obj)	No	IE_SE_15N040200	Yes
Freshwater Pearl Mussels (Not within SACs)	1990 (19 of 27 catchments of S.I. 296 2009)	Good	River	Cappanacloghy_010	Poor (AT RISK)	Yes	IE_SE_15C060600	Yes
			River	Cappanacloghy_020	Good (NAR)	No	IE_SE_15C060900	Yes
			River	Mountrath_010	Good (NAR)	No	IE_SE_15M010080	Yes
			River	Mountrath_020	Good (NAR)	No	IE_SE_15M010100	Yes
			River	Nore_010	Good (R)	No	IE_SE_15N010080	Yes
			River	Nore_020	Unassigned (R)	Yes	IE_SE_15N010100	Yes
			River	Nore_030	Unassigned (R)	Yes	IE_SE_15N010200	Yes
			River	Nore_040	Good (R)	No	IE_SE_15N010300	Yes
			River	Nore_050	Unassigned (R)	Yes	IE_SE_15N010400	Yes
			River	Nore_060	Good (NAR)	No	IE_SE_15N010500	Yes
			River	Tonet_020	Poor (AT RISK)	Yes	IE_SE_15T010400	Yes
			River	Tonet_030	Moderate (AT RISK)	Yes	IE_SE_15T010600	Yes
			River	Ardreagh_010	Unassigned (R)	Yes	IE_SE_15A030960	Yes
			River	Goul_010	Unassigned (R)	Yes	IE_SE_15G020060	Yes
			River	Goul_020	Unassigned (AT RISK)	Yes	IE_SE_15G020110	Yes
River	Goul_040	Moderate (AT RISK)	Yes	IE_SE_15G020300	Yes			
River	Goul_050	Moderate (AT RISK)	Yes	IE_SE_15G020360	Yes			

SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
Freshwater Pearl Mussels (Not within SACs)	1990 (19 of 27 catchments of S.I. 296 2009)	Good	River	Clonawoolan Stream_010	Poor (AT RISK)	Yes	IE_SE_15C191100	Yes
			River	Ballyroan_010	Moderate (AT RISK)	Yes	IE_SE_15B010100	Yes
			River	Ballyroan_020	Poor (AT RISK)	Yes	IE_SE_15B010200	Yes
			River	Errill_010	Unassigned (NAR)	Yes	IE_SE_15E030400	Yes
			River	Errill_020	Moderate (AT RISK)	Yes	IE_SE_15E030500	Yes
			River	Erkina_010	Moderate (AT RISK)	Yes	IE_SE_15E010040	Yes
			River	Erkina_020	Unassigned (R)	Yes	IE_SE_15E010100	Yes
			River	Erkina_030	Poor (AT RISK)	Yes	IE_SE_15E010200	Yes
			River	Erkina_040	Moderate (AT RISK)	Yes	IE_SE_15E010300	Yes
			River	Gully_010	Poor (AT RISK)	Yes	IE_SE_15G030060	Yes
			River	Gully_020	Poor (AT RISK)	Yes	IE_SE_15G030100	Yes
			River	Gully_030	Good (NAR)	No	IE_SE_15G030300	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