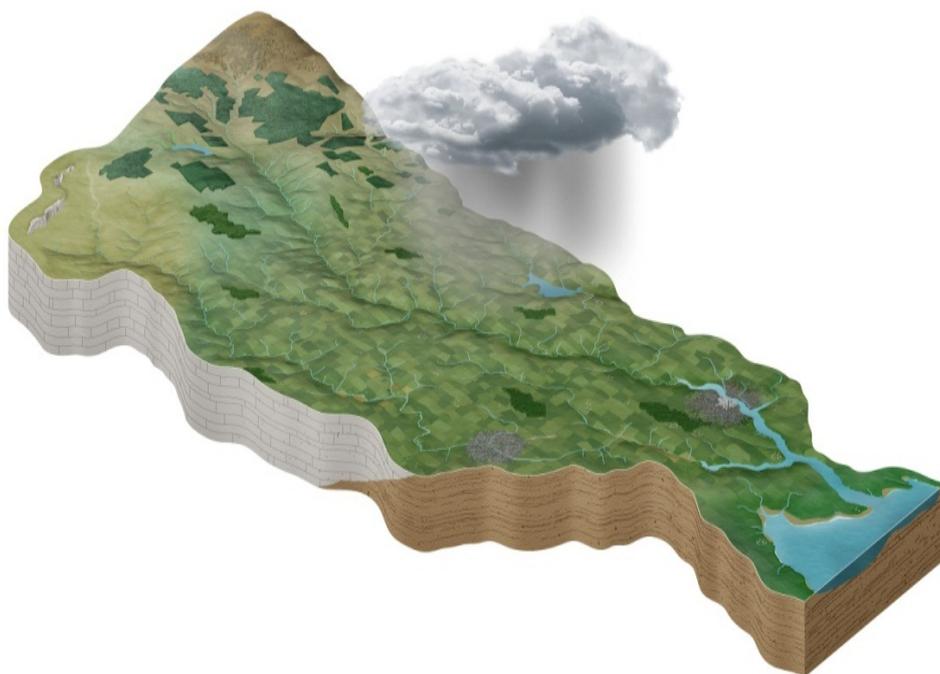


Munster Blackwater Catchment Assessment 2010-2015 (HA 18)



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 Munster Blackwater Catchment, which have been compiled and assessed by the EPA, with the assistance of local authorities and other public bodies, 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 action 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://www.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, which can be accessed on: www.catchments.ie.
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 Blackwater and all streams entering tidal water between East Point and Knockaverry, Youghal, Co. Cork, draining a total area of 3,310km². The largest urban centre in the catchment is Mallow. The other main urban centres are Fermoy, Mitchelstown, Youghal, Kanturk and Millstreet. The total population of the catchment is approximately 109,030 with a population density of 33 people per km².

The Blackwater rises on the southern side of Knockanefune in the Mullaghareirk Mountains and flows south to Rathmore where it is joined by the Cullavaw River and the Owentarglin River. The Blackwater continues eastwards to Banteer where it is joined by the Allow River from the north and the Glen River from the south. On its route east, the Blackwater is joined by the Awbeg, and the Cyldagh River before flowing through Mallow and eastwards to Fermoy.

Downstream of Fermoy, the river is joined by its tributaries, the Rivers Fursion, Ariglin and Owennashad. The Blackwater becomes tidal, before turning abruptly south at Cappoquin where the Glennafilla River joins from the northeast.

The tidal Blackwater is joined by the Finisk River and the Bride River from the west downstream of Villerstown. The Goish, Licky, Glendine and Tourig Rivers drain the lands adjacent to the estuarine part of the catchment, and the Blackwater then flows past Youghal and out to sea through Youghal Harbour.

The Munster Blackwater catchment comprises 28 subcatchments (Table 1, Figure 1) with 158 river water bodies, no lakes, three transitional and one coastal water body, and 18 groundwater bodies. There are no heavily modified or artificial water bodies in the Munster Blackwater Catchment.

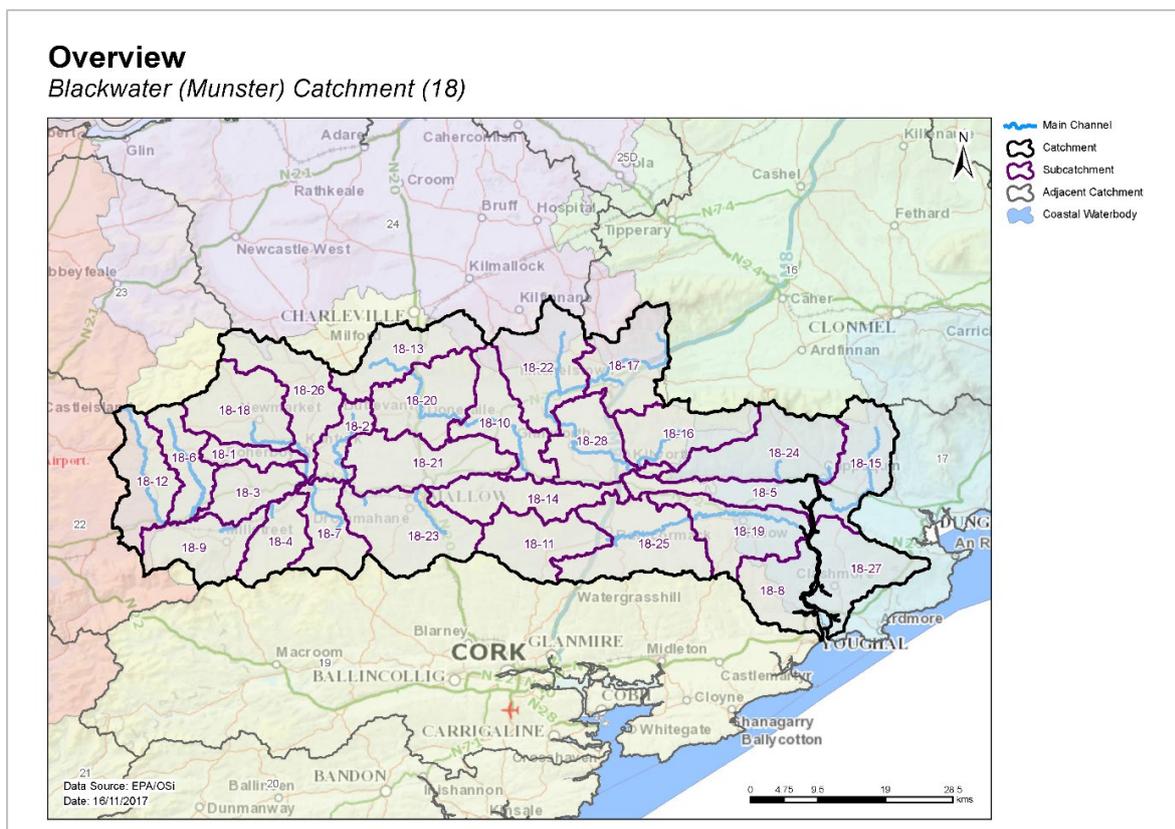


Figure 1. Subcatchments in the Munster Blackwater catchment

Table 1. List of subcatchments in the Munster Blackwater catchment

Subcatchment ID	Subcatchment Name
18_1	Brogeen_SC_010
18_2	Blackwater[Munster]_SC_060
18_3	Blackwater[Munster]_SC_030
18_4	Blackwater[Munster]_SC_050
18_5	Blackwater[Munster]_SC_130
18_6	Blackwater[Munster]_SC_020
18_7	Blackwater[Munster]_SC_070
18_8	Tourig_SC_010
18_9	Blackwater[Munster]_SC_040
18_10	Blackwater[Munster]_SC_100
18_11	Bride[Waterford]_SC_010
18_12	Blackwater[Munster]_SC_010
18_13	Awbeg[Buttevant]_SC_010
18_14	Blackwater[Munster]_SC_110
18_15	Finisk_SC_010
18_16	Crinnaghtane_SC_010
18_17	Funshion_SC_010
18_18	Dalua_SC_010
18_19	Bride[Waterford]_SC_030
18_20	Awbeg[Buttevant]_SC_020
18_21	Blackwater[Munster]_SC_090
18_22	Funshion_SC_020
18_23	Blackwater[Munster]_SC_080
18_24	Blackwater[Munster]_SC_140
18_25	Bride[Waterford]_SC_020
18_26	Dalua_SC_020
18_27	Goish_SC_010
18_28	Blackwater[Munster]_SC_120

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 96 (61%) river water bodies at Good or High status, and 40 (25%) at less than Good status in 2015 (Table 2, Figure 2). Twenty-two (14%) river water bodies are unassigned. There are no lake water bodies in the Munster Blackwater catchment.
- ◆ Thirty-one river water bodies and sites have a high ecological status objective. In 2015, 17 (55%) of these water bodies were at High status, 12 (39%) were at Good, and two (6%) were at Moderate (Figure 3, Appendix 1).
- ◆ The number of river water bodies at each status class in 2007-09 and 2010-15 is shown in Figure 4.
- ◆ Since 2007-09 when WFD monitoring began, 14 water bodies have an improved status whereas 45 have deteriorated (Figure 6).
- ◆ The variation in nutrient concentrations and loads in the Blackwater (Munster) main channel is illustrated in Appendix 2.

2.1.2 Transitional and coastal (TraC)

- ◆ There are two TraC water bodies at Good or High status, one unassigned and one at Moderate status (Table 2, Figure 2). There are no high ecological status objective, water bodies or sites.
- ◆ The numbers of water bodies at each status class in 2007-09 and 2010-15 are shown in Figure 5.

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

	Number of water bodies	2010-2015						Risk		
		High	Good	Mod	Poor	Bad	Un-assigned	Not at Risk	Review	At Risk
Rivers	158	22	74	29	11	0	22	91	15	52
TraCs	4	1	1	1	0	0	1	0	2	2

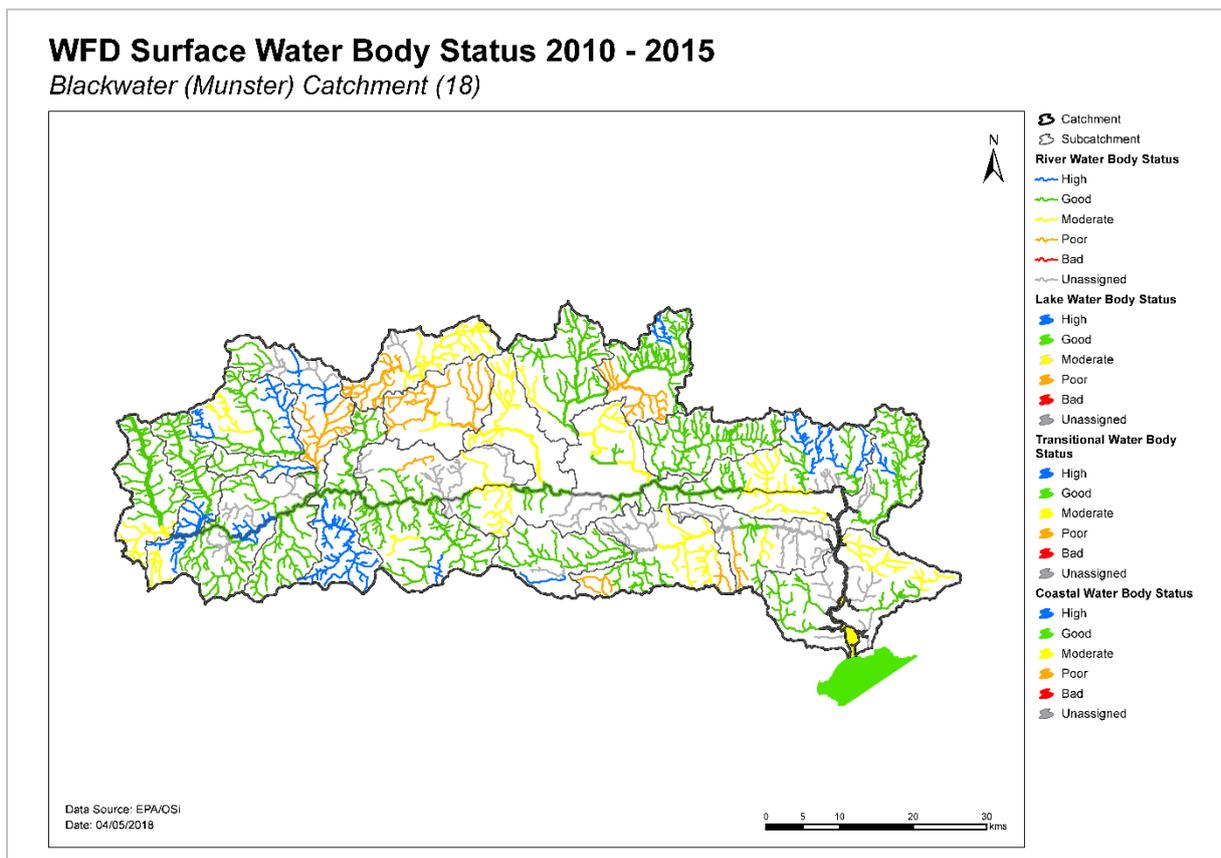


Figure 2. Surface water ecological status

High Status Objective Water Bodies and Sites

Blackwater (Munster) Catchment (18)

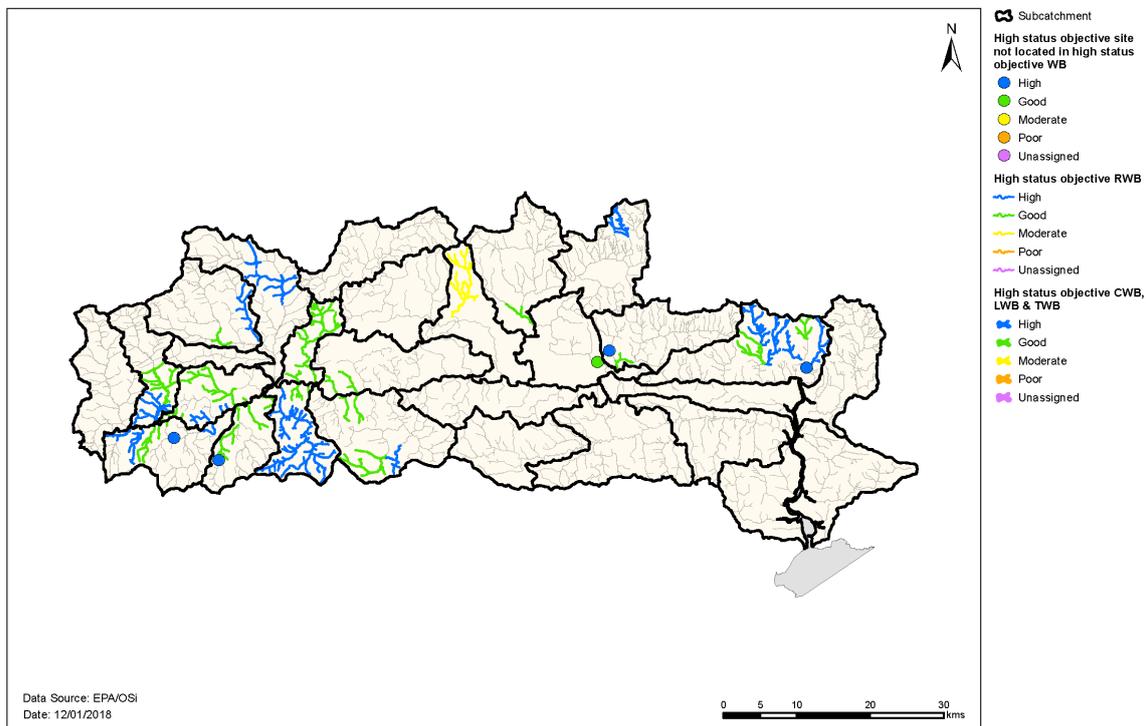


Figure 3. High ecological status objective water bodies and sites

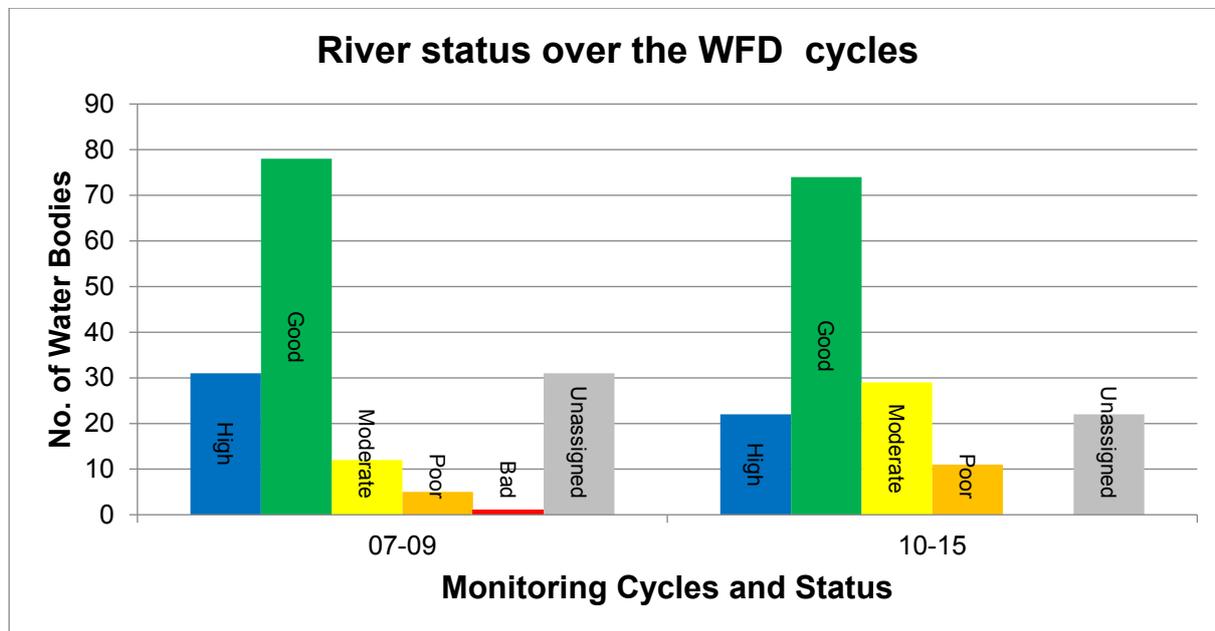


Figure 4. Number of rivers at each status class in 2007-09 and 2010-15

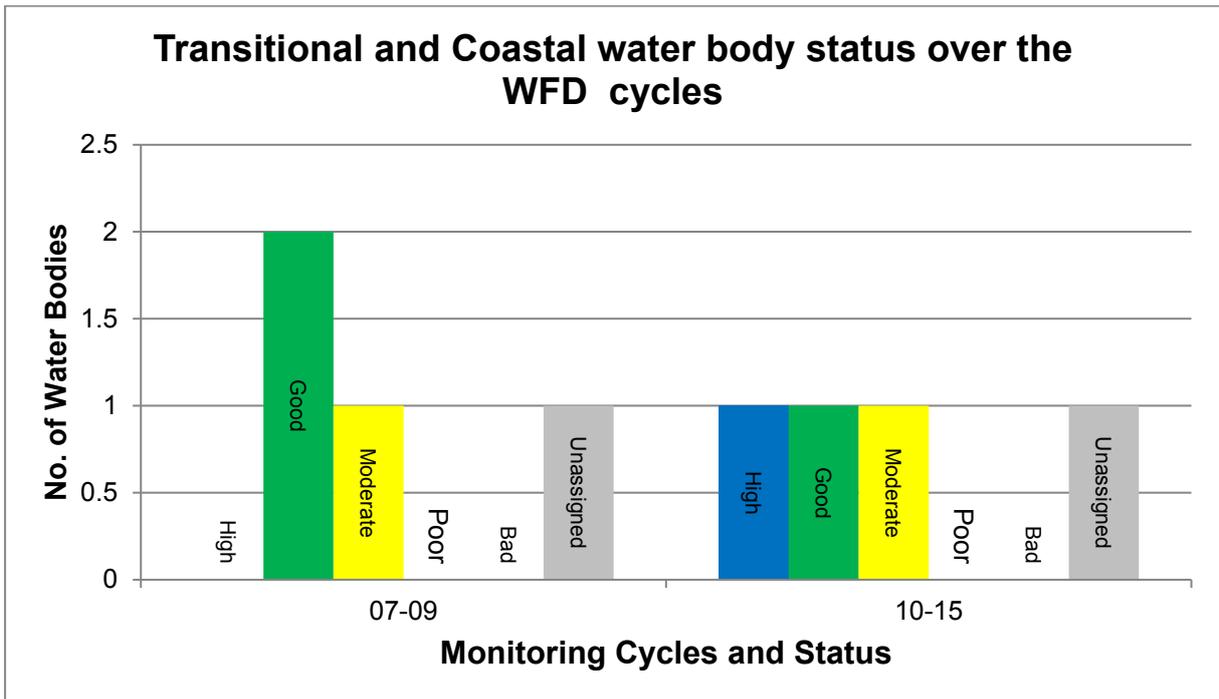


Figure 5. Number of TraCs at each status class in 2007-09 and 2010-15

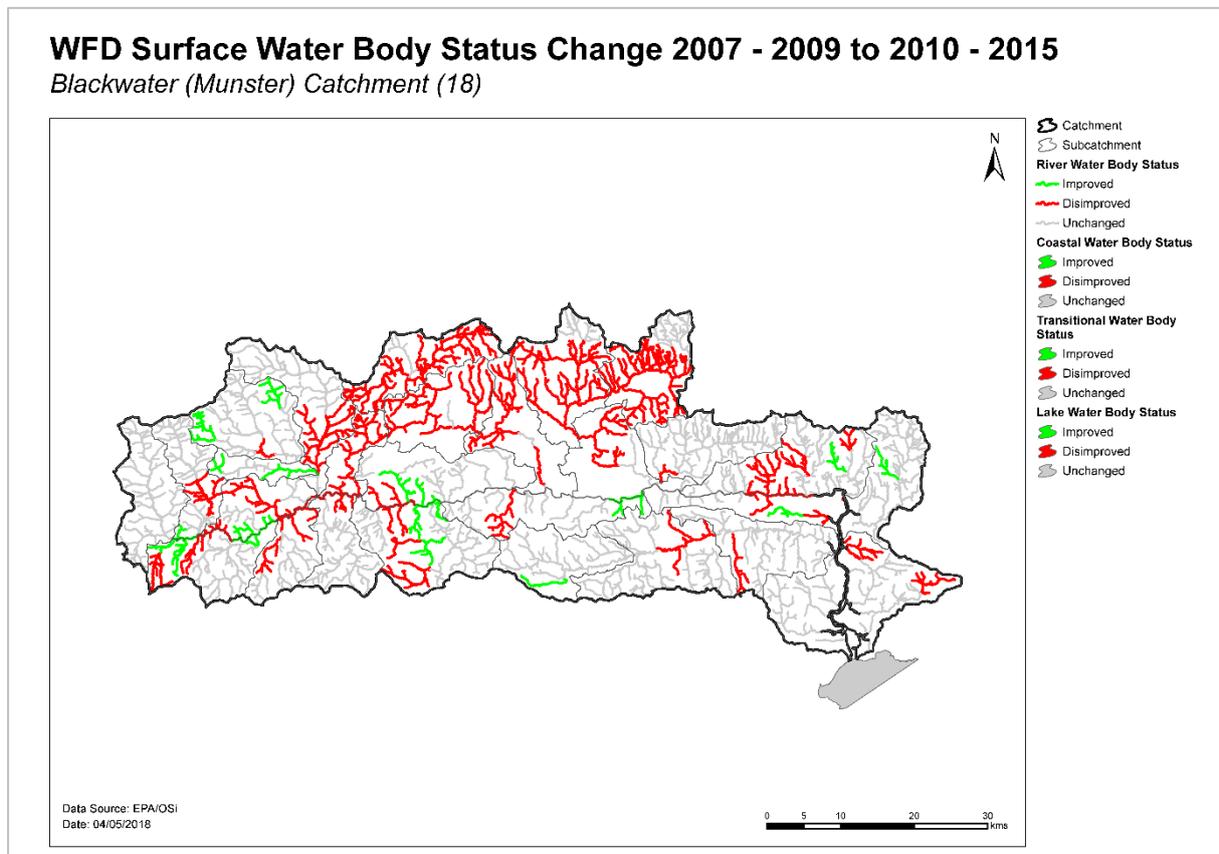


Figure 6. Surface water body status change from 2007-09 to 2010-15

2.2 Groundwater status

- ◆ There were 17 groundwater bodies at Good status and one at Poor status for the 2010-2015 period (Table 3, Figure 8).
- ◆ All groundwater bodies were classified as Good Status for the 2007-2012 period. The one water body (IE_SW_G_064) which was classified at Poor status in 2010-2015 period, was due to ammonia issues (Table 3, Figures 7 and 8). This apparent change was due to improved information being available and the development of the technical assessment approaches, rather than there being deterioration in water quality.

Table 3. Summary of groundwater body status and risk categories

	Number of water bodies	2010-15 Status		Risk Categories		
		Good	Poor	Not at Risk	Review	At Risk
Groundwater	18	17	1	5	8	5

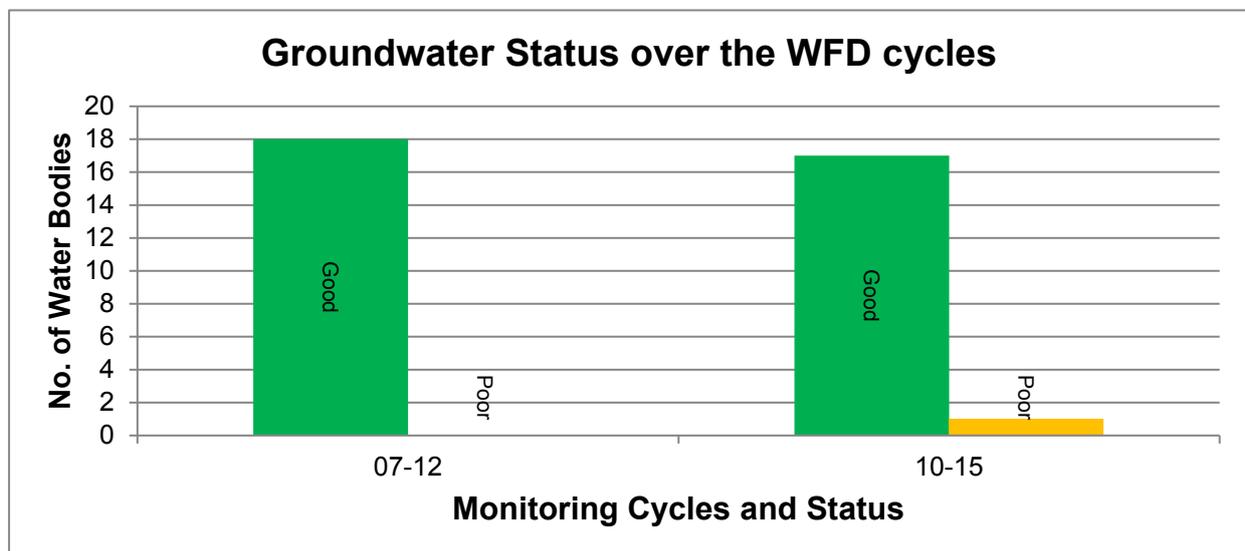


Figure 7. Number of groundwater bodies at each status class in 2007-09 and 2010-15

Groundwater Body Status 2010 - 2015

Blackwater (Munster) Catchment (18)

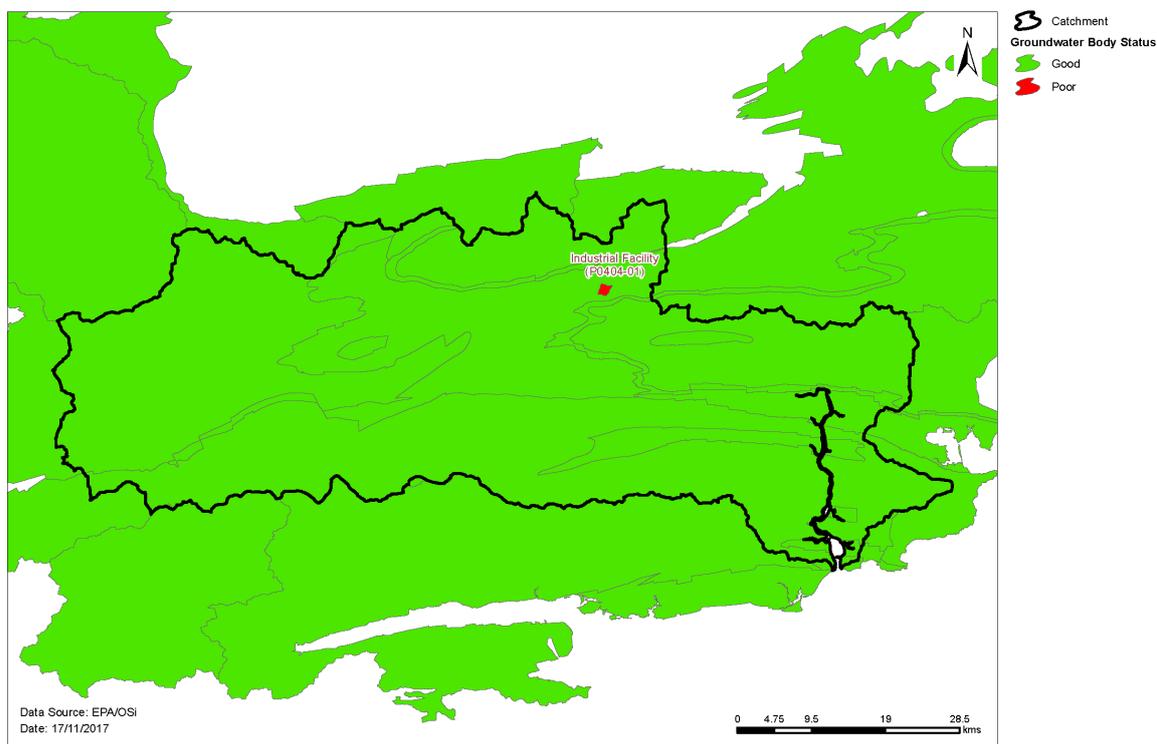


Figure 8. Groundwater body status

2.3 Risk of not meeting surface water environmental objectives

2.3.1 Rivers and lakes

- ◆ There are 91 *Not at Risk* river water bodies (Figure 9, 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 15 river water bodies in *Review*. This includes 11 water bodies where more information is required, and four water bodies where Good ecological status was recorded in 2010-2015, but nutrient concentrations are elevated.
- ◆ Fifty-two river 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)

- ◆ The Lower Blackwater M Estuary / Youghal Harbour and Youghal Bay are *At Risk* of not meeting their water quality objectives and measures will be needed to improve the water quality outcomes. Although Youghal Bay is at Good status, there has been an increase in N loads and opportunistic macroalgae during the 2013-2015 monitoring period.
- ◆ The Upper Blackwater estuary is in *Review* because of issues with opportunistic macroalgae.
- ◆ The unassigned water body (Lackaroe (Glendine Estuary)) is in *Review* as further information is required.

Water Body Risk

Blackwater (Munster) Catchment (18)

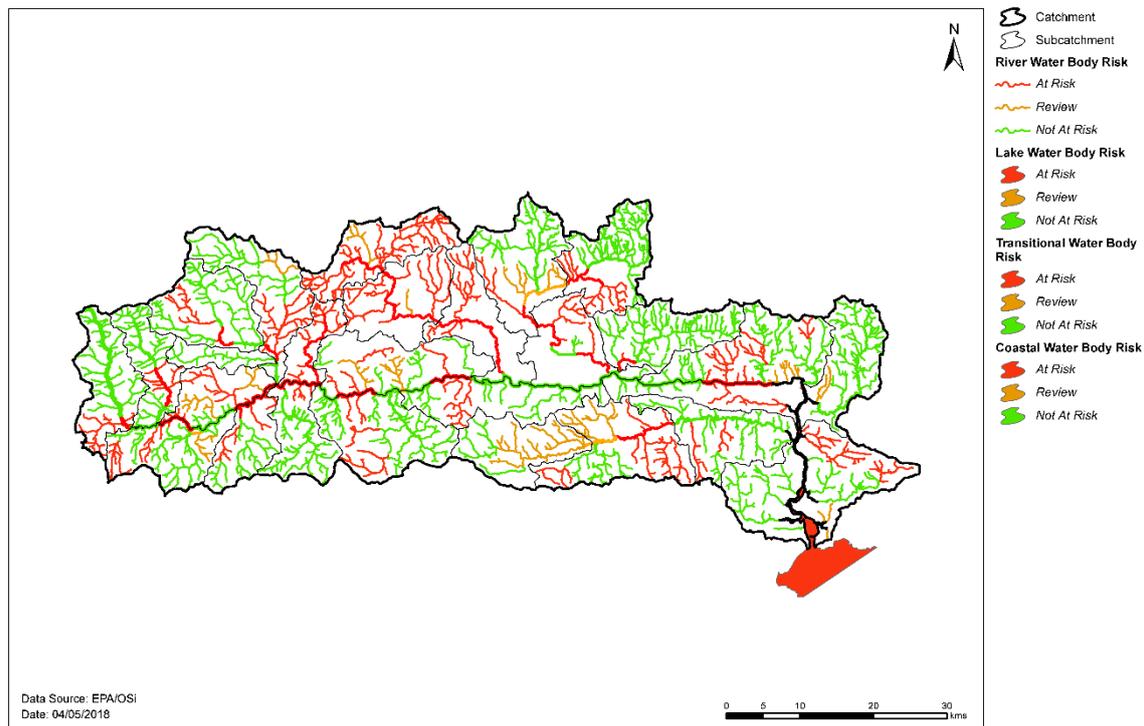


Figure 9. Surface water body risk

2.4 Risk of not meeting groundwater body environmental objectives

- ◆ Five groundwater bodies are *Not at Risk* (Ballyhoura, Kilmacleanine, Newtown Ballyhay, Rathmore West and Rathnacally) (Figure 10, Table 3) and require no additional investigative assessment or measures to be applied, other than those measures that are already in place.
- ◆ Eight groundwater bodies are in *Review*, due to elevated nitrate concentrations.
- ◆ There are five *At Risk* groundwater bodies. Ballyhoura Kiltorcan, Cappoquin Kiltorcan and Michelstown are *At Risk* as they are hydrologically linked to *At Risk* surface waters that are not meeting water quality objectives where it is considered likely that groundwater is a contributing source of phosphorus (Table 4). The Mitchelstown and Lismore groundwater bodies are *At Risk* due to nitrate concentrations exceeding the drinking water threshold value (TV) of 37.5 mg/l NO₃. One groundwater body – Industrial Facility (P0404-01) (IE_SW_G_064) – is *At Risk* due to ammonia issues. Measures will be needed in these water bodies to improve water quality outcomes.

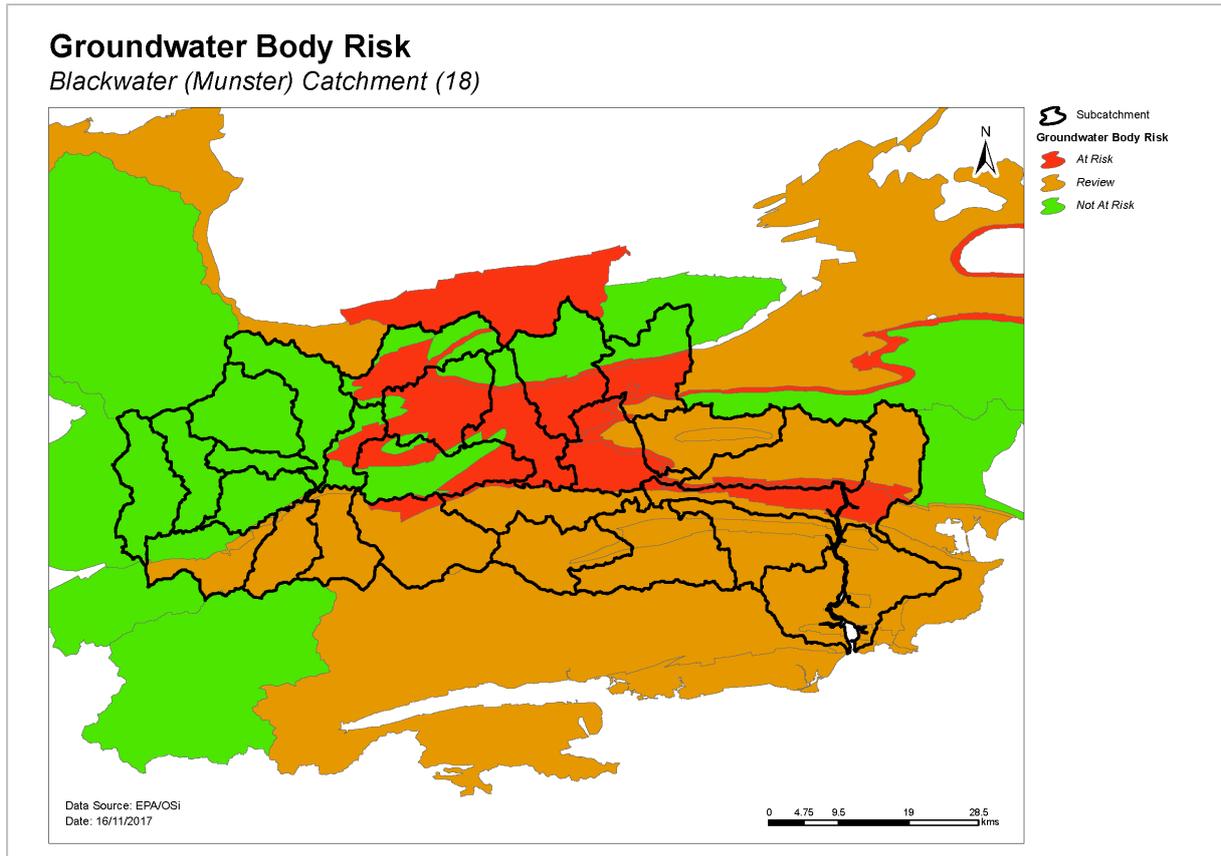


Figure 10. Groundwater body risk

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
Ballyhoura Kiltorcan	IE_SW_18A080120	AWBEG (BUTTEVANT) (EAST)_010
Ballyhoura Kiltorcan	IE_SW_18A080250	AWBEG (BUTTEVANT) (EAST)_020
Ballyhoura Kiltorcan	IE_SW_18F010300	FARAHY_010
Ballyhoura Kiltorcan	IE_SW_18F010500	FARAHY_020
Ballyhoura Kiltorcan	IE_SW_18F050310	FUNSHION_030
Ballyhoura Kiltorcan	IE_SW_18O010400	OGEEN_020
Cappoquin Kiltorcan	IE_SW_18F050800	FUNSHION_060
Cappoquin Kiltorcan	IE_SW_18F051100	FUNSHION_080
Mitchelstown	IE_SW_18A051100	AWBEG (BUTTEVANT) (MAIN CHANNEL)_050
Mitchelstown	IE_SW_18A051300	AWBEG (BUTTEVANT) (MAIN CHANNEL)_070
Mitchelstown	IE_SW_18A090300	AWBEG (BUTTEVANT) (WEST)_010
Mitchelstown	IE_SW_18A090400	AWBEG (BUTTEVANT) (WEST)_020
Mitchelstown	IE_SW_18B021200	BLACKWATER (MUNSTER)_090
Mitchelstown	IE_SW_18F010300	FARAHY_010
Mitchelstown	IE_SW_18F010500	FARAHY_020
Mitchelstown	IE_SW_18F050310	FUNSHION_030

Groundwater body name	Receiving water body code	Receiving water body name
Mitchelstown	IE_SW_18A050550	AWBEG (BUTTEVANT) (MAIN CHANNEL) _010
Mitchelstown	IE_SW_18F050700	FUNSHION_050
Mitchelstown	IE_SW_18F050800	FUNSHION_060
Mitchelstown	IE_SW_18F051100	FUNSHION_080
Mitchelstown	IE_SW_18O010400	OGEEN_020

2.5 Protected areas

2.5.1 Drinking water protected areas

- ◆ There are 149 abstractions in the Munster Blackwater Catchment comprising five group water schemes, 111 public supply schemes and six other private schemes (Appendix 4).
- ◆ One hundred and thirty-eight of the abstractions are from 13 groundwater bodies; and 11 are from nine river water bodies. The list of the public supplies and the associated water bodies is provided in Appendix 4.
- ◆ All drinking water sources were compliant with the standards for nitrate and pesticides in 2015.

2.5.2 Bathing waters

- ◆ There is one designated bathing water in the catchment (Youghal Front Strand Beach). It failed to meet its environmental objective due to bacteriological water quality, as outlined in Table 5.

Table 5. Designated bathing waters in the catchment

Bathing Water Name	Water Body Intersection Code	Objective met? Name	Comment Code	Objective met?		Comment
				Yes	No	
Youghal Front Strand Beach	IESWBWC020_0000_0300	Youghal Bay	IE_SW_020_0000		✓	Youghal Front Strand beach was classified as having poor water quality (based on the assessment of bacteriological results) during 2011-2014 and 2012-2015.

2.5.3 Shellfish areas

- ◆ There are no designated shellfish areas in the catchment.

2.5.4 Nutrient sensitive areas

- ◆ There are three designated Nutrient Sensitive Areas (NSAs) (Blackwater (River), Blackwater Estuary Upper and Blackwater Estuary Lower) associated with three waste water treatment plants (Mallow, Fermoy and Youghal).
- ◆ Two of the three urban waste water treatment plants (Mallow and Fermoy) have tertiary treatment and, therefore, were compliant with the environmental objectives for NSAs.
- ◆ Youghal urban waste water treatment was not compliant with the environmental objective for NSAs in 2015. Works are currently underway to provide secondary treatment at the plant.
- ◆ The list of NSAs, associated agglomerations and intersecting water bodies are provided in Table 6.

Table 6. Nutrient sensitive areas in the catchment

Nutrient Sensitive Area		Agglomeration		Intersecting water bodies		Objective met?		Comment
Name	Code	Name	Code	Name	Code	Yes	No	
Blackwater (River)	IERI_SW_2001_0022	Mallow	D0052	BLACKWATER (MUNSTER)_130	IE_SW_18B021600	✓		
				BLACKWATER (MUNSTER)_140	IE_SW_18B021720			
				BLACKWATER (MUNSTER)_150	IE_SW_18B021800			
				BLACKWATER (MUNSTER)_160	IE_SW_18B021900			
				BLACKWATER (MUNSTER)_170	IE_SW_18B022000			
				BLACKWATER (MUNSTER)_180	IE_SW_18B022100			
				BLACKWATER (MUNSTER)_190	IE_SW_18B022300			
				BLACKWATER (MUNSTER)_200	IE_SW_18B022450			
				BLACKWATER (MUNSTER)_210	IE_SW_18B022500			
				BLACKWATER (MUNSTER)_220	IE_SW_18B022700			
		Fermoy	D0058	BLACKWATER (MUNSTER)_190	IE_SW_18B022300	✓		
				BLACKWATER (MUNSTER)_200	IE_SW_18B022450			
				BLACKWATER (MUNSTER)_210	IE_SW_18B022500			
				BLACKWATER (MUNSTER)_220	IE_SW_18B022700			
Blackwater Estuary Upper	IETW_SW_2001_0039	Fermoy	D0058	Upper Blackwater M Estuary	IE_SW_020_0500	✓		
Blackwater Estuary Lower	IETW_SW_2001_0040	Youghal	D0139	Lower Blackwater M Estuary / Youghal Harbour	IE_SW_020_0100		✓	Tertiary treatment not in place.

2.5.5 Natura 2000 sites

- ◆ There are five Special Areas of Conservation (SACs) in the catchment (Appendix 5), not all of which have water quality and/or quantity conservation objectives for their qualifying interests.
- ◆ Thirteen river water bodies have been prioritised for action as the water conservation objectives for their species and/or habitats are not being supported by ecological status (Appendix 5). This includes seven water bodies with designated freshwater pearl mussel populations.
- ◆ There are five Special Protected Areas (SPAs) in the catchment:
 - Blackwater Callows SPA
 - Blackwater Estuary SPA
 - Kilcolman Bog SPA
 - Mullaghanish to Musheramore Mountains SPA
 - Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA

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

- ◆ There are 37 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. Fifteen of these water bodies have not met their WFD Protected area objectives (Appendix 5).

2.6 Heavily modified water bodies

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

3 Significant issues in *At Risk* water bodies

- ◆ Alteration of hydromorphological (or physical) conditions is one of the most significant issues in rivers in the Munster Blackwater Catchment. This includes inputs of excess fine sediment and alteration of the morphology of the river channel, which in turn alter habitat conditions. This can occur because of, for example, implementing river and field drainage schemes, forestry activities, animal access, and discharge from quarries.
- ◆ Excess phosphate leading to eutrophication is also a significant issue of concern in several water bodies.
- ◆ The Lower Blackwater estuary and Youghal Bay are being impacted by excess nutrients, which is leading to problems with phytoplankton and macroalgae, respectively.
- ◆ The issues affecting groundwater bodies include excess ammonia and phosphorus concentrations that are being delivered to surface water bodies that are *At Risk*, via groundwater. There are also high nitrate concentrations above the drinking water thresholds in two groundwater bodies.

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

4.1.1 Rivers, lakes, transitional and coastal (TraC)

- ◆ Significant pressures have been identified through the initial characterisation process in 86 surface water bodies, 55 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 forestry, hydromorphological pressures, urban waste water, other pressures (unknown and waste), industry, diffuse urban, mines and quarries, and domestic waste water (Figure 11).
- ◆ The significant pressure affecting the greatest number of TraC water bodies is agriculture (Figure 11).

4.1.2 Groundwater

- ◆ Figure 11 also shows a breakdown of the number of *At Risk* groundwater bodies in each significant pressure category. The significant pressure affecting the Industrial Facility (P0404-01) IE_SW_G_064 groundwater body is the licenced industrial facility P0404-01, and the key parameter of concern is ammonia.
- ◆ Cappoquin Kiltorcan and Lismore groundwater bodies both have agriculture as the significant pressure, impacting phosphate and nitrate concentrations. Agriculture is the significant pressure in the Mitchelstown and Ballyhoura Kiltorcan groundwater bodies.

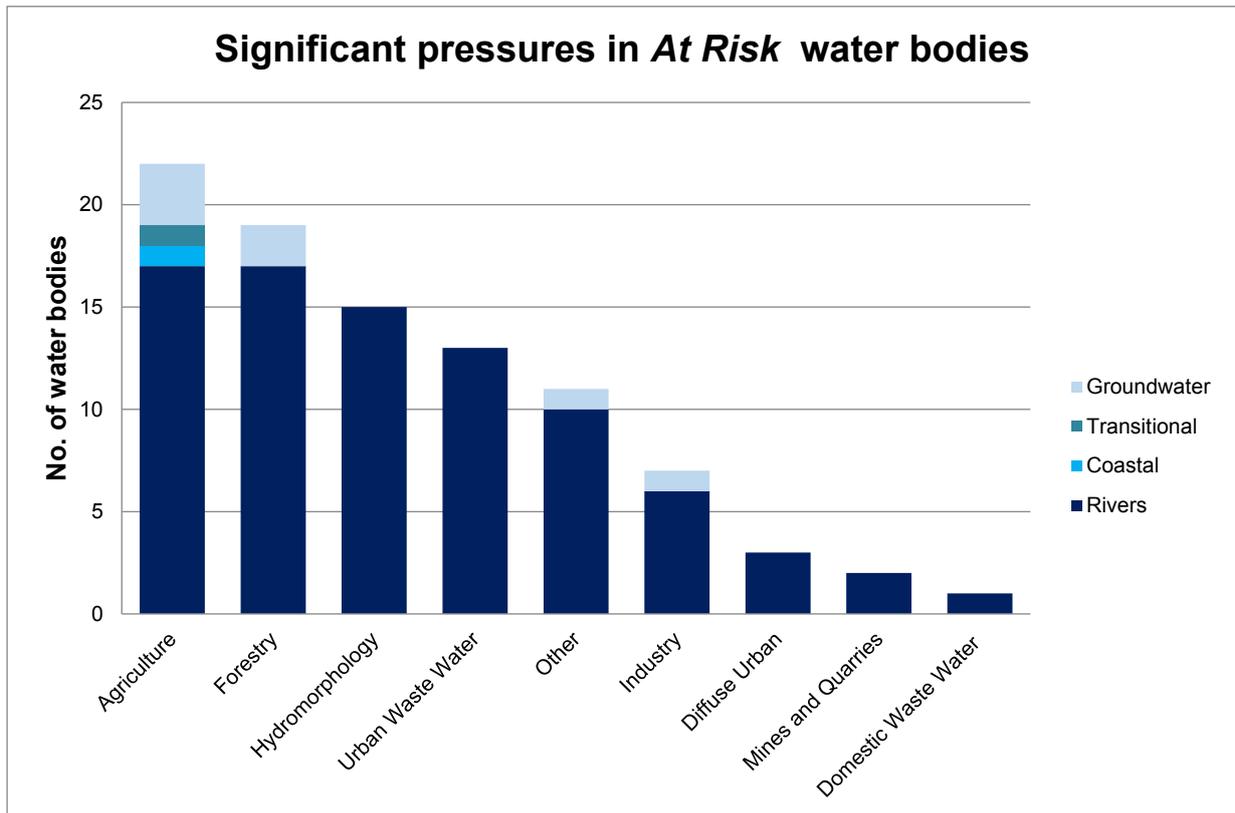


Figure 11. Significant pressures impacting on *At Risk* water bodies

4.2 Pressure type

4.2.1 Agriculture

- ◆ Agriculture is a significant pressure in 17 river water bodies, one coastal and one transitional water body. The water bodies affected by farming are shown in Figure 12. In river water bodies, the issues 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. The pollution impact potential map showing areas of relative risk for diffuse phosphorus loss from agriculture to surface water is given in Appendix 6.

4.2.2 Forestry

- ◆ Forestry has been identified as a significant pressure in 17 river water bodies (Figure 13). The types of problems encountered include for example: losses of sediment and/or nutrients during afforestation, tree felling and abstraction; losses of sediment from access roads and during road construction; losses of nutrients during aerial fertilisation and impacts from public access.

At Risk Water Bodies where Agriculture is a significant pressure
 Blackwater (Munster) Catchment (18)

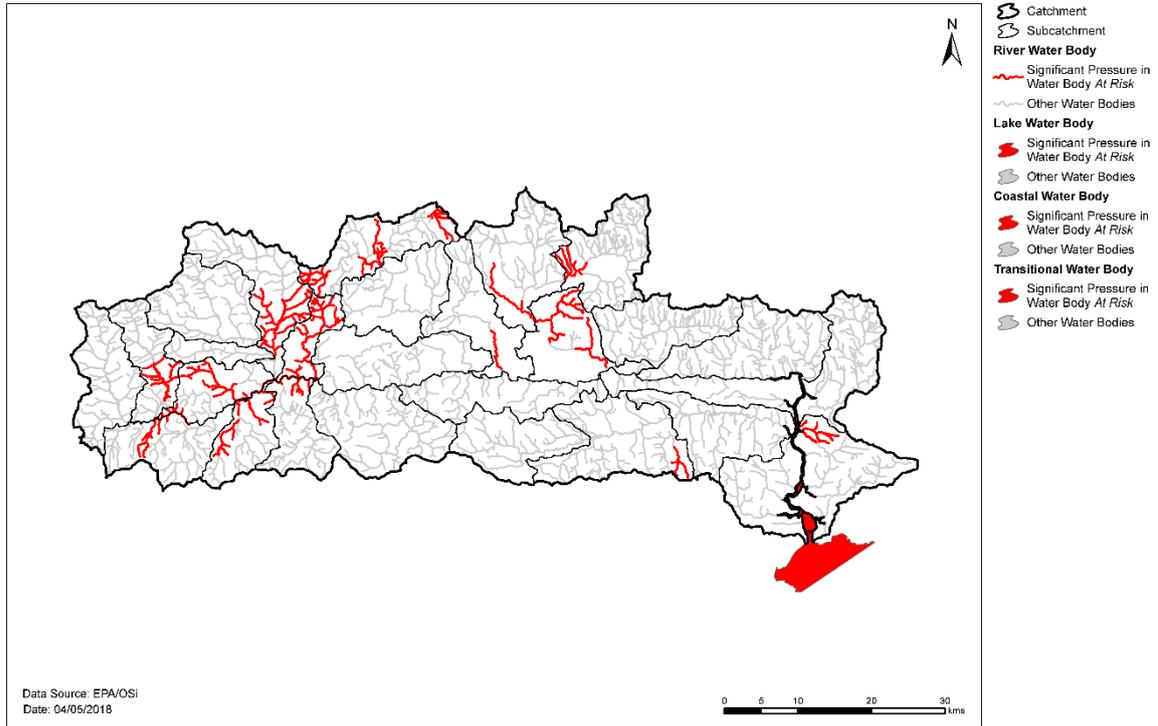


Figure 12. Water bodies that are *At Risk* and are impacted by agricultural activities

At Risk Water Bodies where Forestry is a significant pressure
 Blackwater (Munster) Catchment (18)

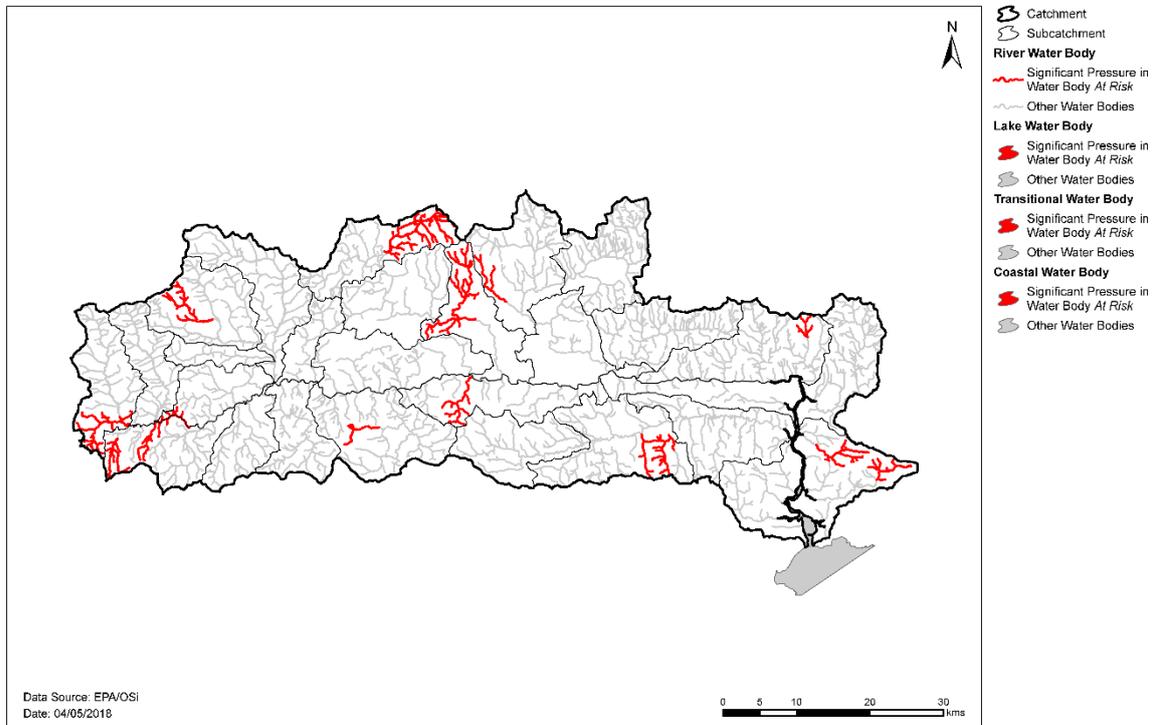


Figure 13. Water bodies that are *At Risk* and are impacted by forestry activities

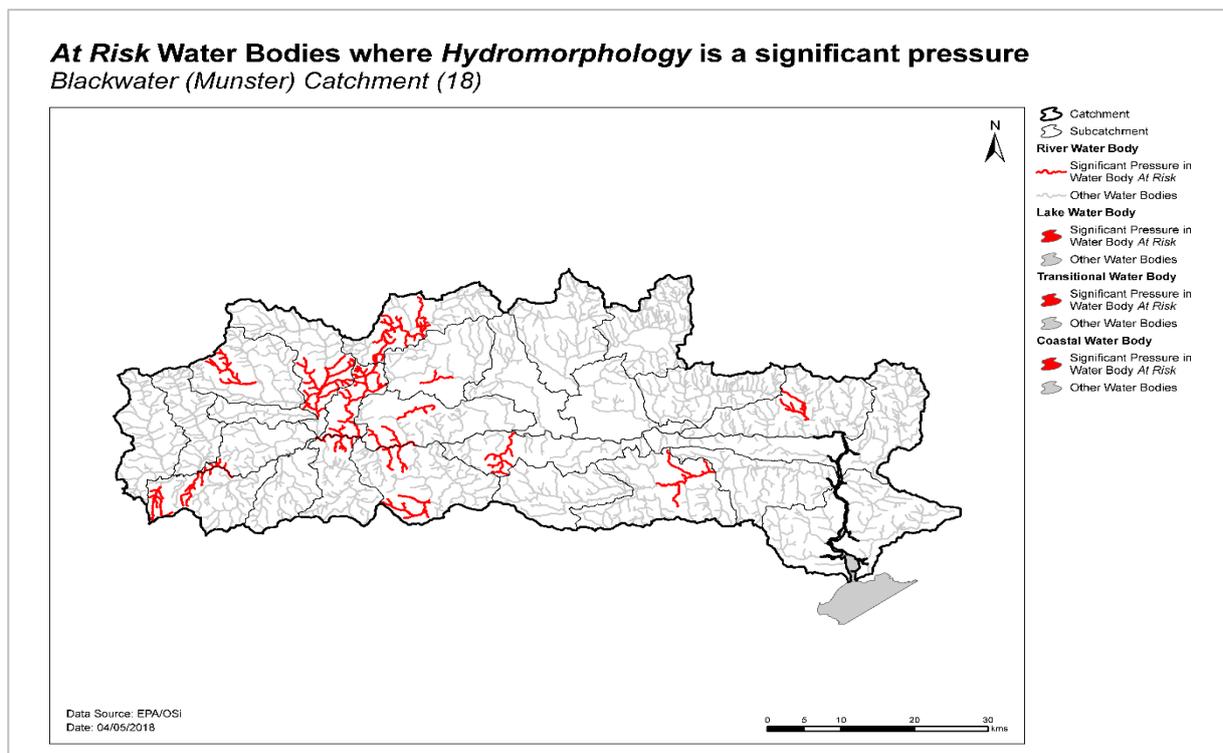
4.2.3 Hydromorphology

There are 15 water bodies which are considered *At Risk* due to morphological issues. These are summarised in Table 6a. Typically, these types of pressures either have the effect of degrading the habitat or riparian zone of the river, obstructing flows, separating the river from its flood plain or instigating a secondary water quality issue such as siltation. On water body, Awbeg (Main Channel) 030 is subject to both channelization and erosion pressures.

Table 6a– Hydromorphological Pressures in the Munster Blackwater Catchment

Pressure	Sub-Catchment	Water body Code
Modification due to Drainage Schemes (Channelisation)	Awbeg (Buttevant)	Awbeg (Main Channel) _010
		Awbeg (Main Channel) _030
		Awbeg (west)_020
	Blackwater (Munster)	Clyda_010
Bank Modification	Blackwater (Munster)	Blackwater_090
	Blackwater (Munster)	Owenashad_020
Land Drainage	Dalua	Glenlara_010
	Dalua	Allow_060
	Blackwater (Munster)	Awnaskirtaun_010
	Blackwater (Munster)	Blackwater_0110
In River Structures	Blackwater (Munster)	Ballyclogh Stream_010
Bank Erosion	Awbeg (Buttevant)	Awbeg (Main Channel) _030
	Blackwater (Munster)	Blackwater_060
	Blackwater (Munster)	Ross_010
	Bride (Waterford)	Bride_040 & 050

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



4.2.4 Urban waste water treatment plants

- ◆ Urban Waste Water Treatment Plants (WWTPs) and agglomeration networks have been identified as a significant pressure in 13 *At Risk* water bodies (Figure 15); details are given in Table 7. Two *At Risk* water bodies, Ross (Killavullen)_010 and Blackwater (Munster)_110, were considered to be impacted by WWTPs that will be upgraded in 2017, and so the risk will be reviewed once adequate monitoring has been carried out to confirm the expected improvements. Allow_060 is impacted by Kanturk WWTP, which is scheduled to be upgraded by 2024, and Gradoge_010 and Funshion_030 are impacted by Mitchelstown WWTP, which is scheduled to be upgraded in 2021.

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

Facility name	Facility Type	Water Body	2010-15 Ecological Status	Expected Completion Date
Shanballymore A0331	< 500 p.e.	Awbeg (Buttevant)_060	Moderate	NA ¹
Castletownroche D0293	1,001 to 2,000 p.e.	Awbeg (Buttevant)_070	Moderate	NA ¹
Killavullen D0447	500 to 1,000 p.e.	Ross (Killavullen)_010	Moderate	2017
Mitchelstown D0202	2,001 to 10,000 p.e.	Gradoge_010	Poor	2021
Mitchelstown D0202	2,001 to 10,000 p.e.	Funshion_030	Poor	2021
Banteer D0448	500 to 1,000 p.e.	Blackwater (Munster)_090 ²	Good	NA ¹
Buttevant D0303	1,001 to 2,000 p.e.	Awbeg (Buttevant)_020 ³	Poor	NA ¹
Ballyclough D0441	500 to 1,000 p.e.	Blackwater (Munster)_110 ²	Good	2017
Ballynoe A0343	< 500 p.e.	Douglas (Bride)_010	Poor	NA ¹
Bridesbridge A0333	< 500 p.e.	Bride (Blackwater)_040	Moderate	NA ¹
Watergrasshill D0201	2,001 to 10,000 p.e.	Flesk (Bride)_010	Poor	NA ¹
Kanturk D0203	2,001 to 10,000 p.e.	Allow_060	Poor	2024
Cullen A0342	< 500 p.e.	Owentaraglin_030 ²	Good	NA ¹

¹ Currently not specified in improvement plans.

² Blackwater (Munster)_090, Blackwater (Munster)_110 and Owentaraglin_030 are High Status Objective water bodies.

³ The agglomeration network, rather than the WWTP, has been identified as a significant pressure impacting Awbeg (Buttevant)_020.

At Risk Water Bodies where *Urban Waste Water* is a significant pressure
Blackwater (Munster) Catchment (18)

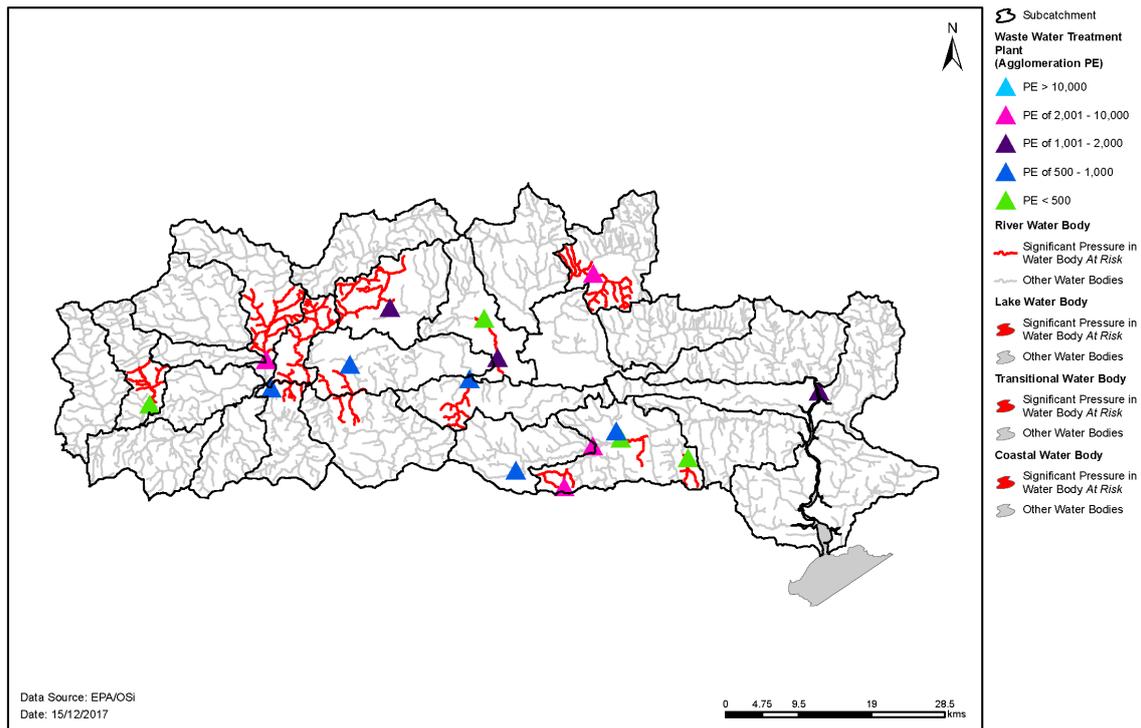


Figure 15. Water bodies that are *At Risk* and are impacted by urban waste water

At Risk Water Bodies where *Historically Polluted Sites* is a significant pressure
Blackwater (Munster) Catchment (18)

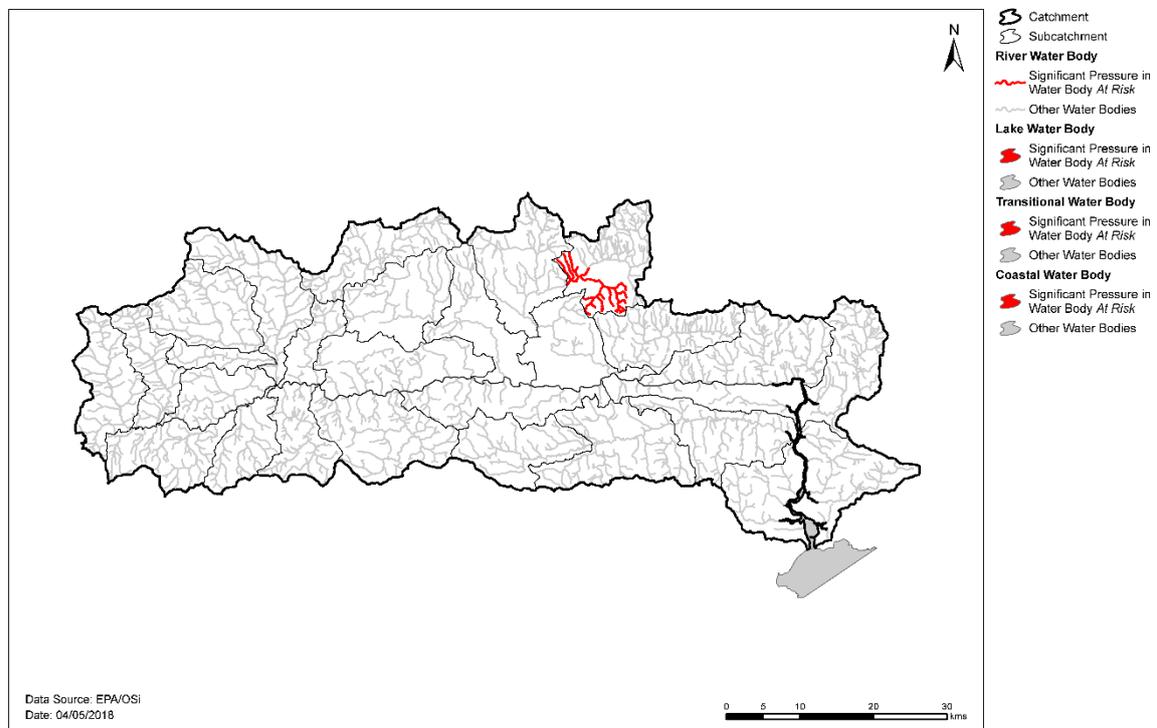


Figure 16. Water bodies that are *At Risk* and impacted by historically polluted sites pressures

**At Risk Water Bodies where Other Anthropogenic Pressures is a significant pressure
Blackwater (Munster) Catchment (18)**

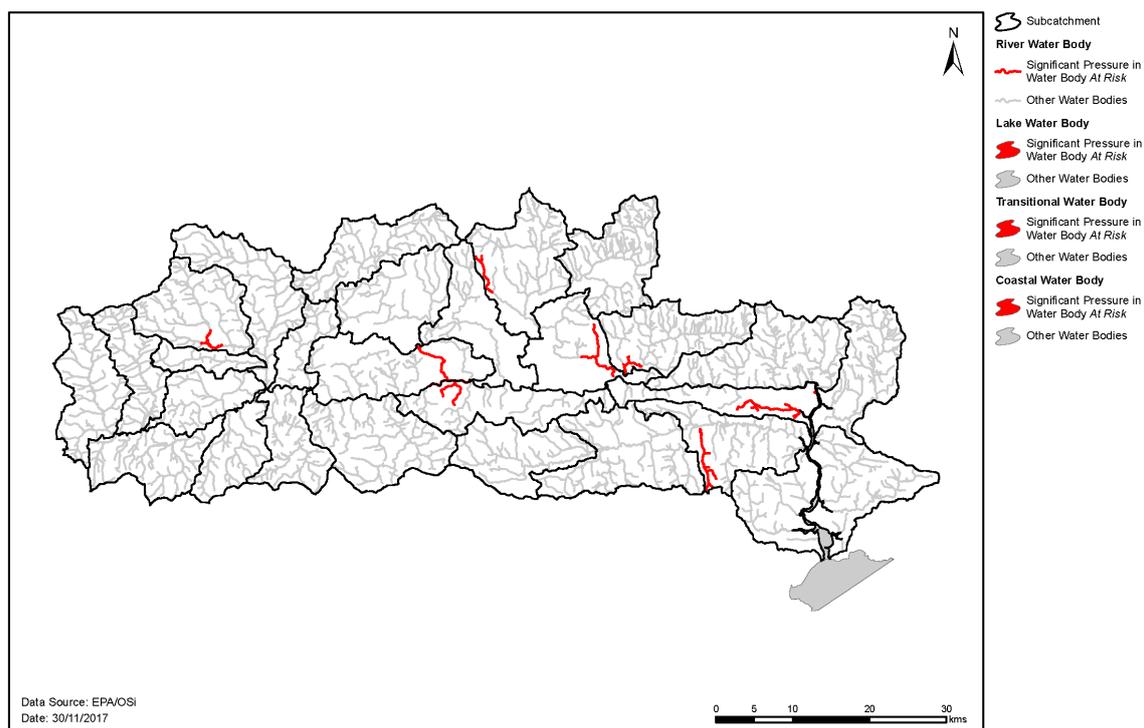


Figure 17. Water bodies that are *At Risk* and are impacted by Other Unknown Anthropogenic pressures

4.2.5 Industry

- ◆ Industry has been identified as a significant pressure in six river water bodies. EPA licenced facilities were identified as significant pressures in four water bodies, Awbeg (Buttevant)_060, Gradoge_010, Funshion_030 and Flesk (Bride)_010, while Funshion_080 is impacted by both EPA and Section 4 licenced facilities. Allow_060 is impacted by a Section 4 licence only. Elevated nutrient and organic concentrations in the receiving waters are the primary impacts related to these facilities. The water bodies impacted by industry are shown in Figure 18.

4.2.6 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 – Glenaboy_020, Awbeg (Buttevant) (Main Channel) _020, and Awbeg (Buttevant) (Main Channel) _040 (Figure 19). Elevated concentrations of phosphate and ammonia are the significant impacts.

At Risk Water Bodies where Industry is a significant pressure
 Blackwater (Munster) Catchment (18)

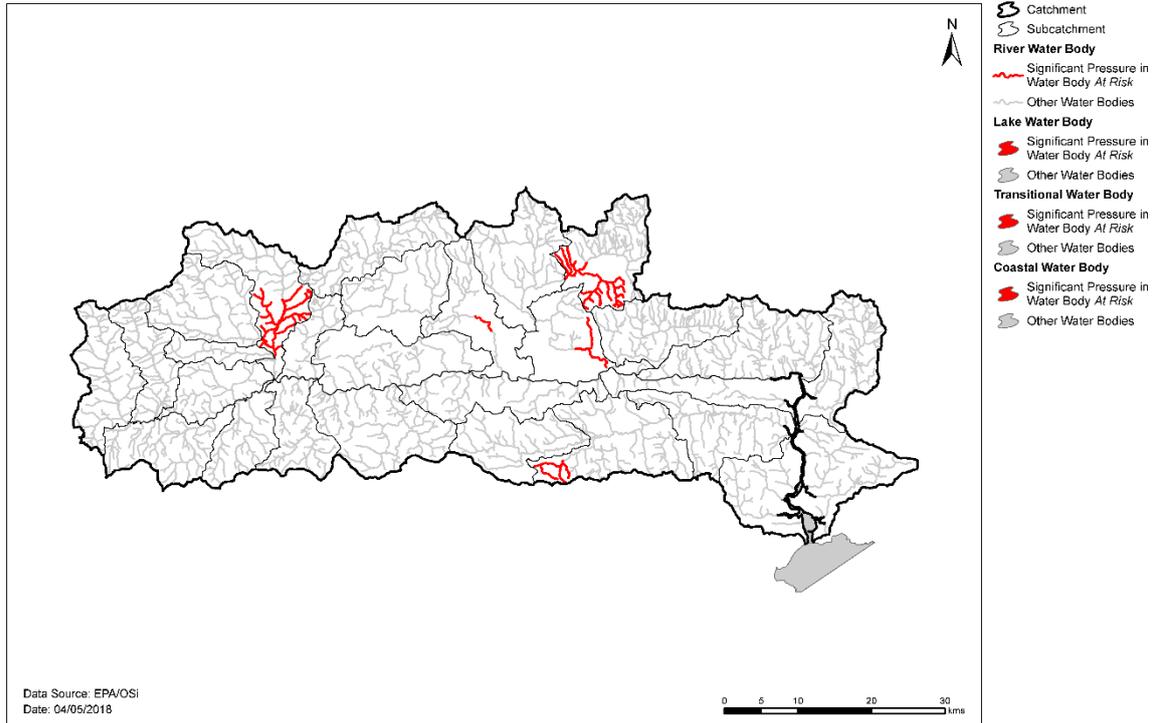


Figure 18. Water bodies that are *At Risk* and are impacted by industry

At Risk Water Bodies where Diffuse Urban is a significant pressure
 Blackwater (Munster) Catchment (18)

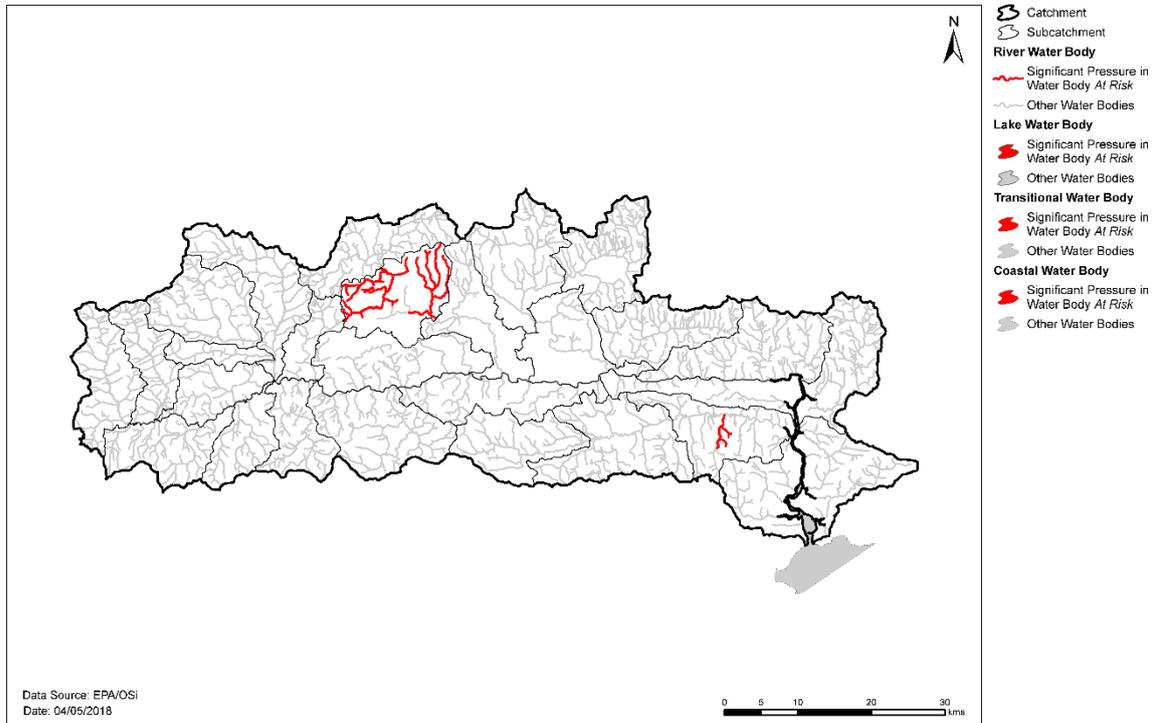


Figure 19. Water bodies that are *At Risk* and are impacted by diffuse urban impacts

4.2.7 Extractive industry

◆ Quarries

Quarries have been identified as a significant pressure in Awbeg (Buttevant) (East)_020 and Blackwater (Munster)_220, because of excess sediment impacting on habitat morphology (Figure 20).

4.2.8 Domestic waste water

◆ Domestic waste water has been identified as a possible significant pressure in Owenbaun (Rathcool)_020 (Figure 21), which is a High-status objective water body, although this would need confirmation through the further characterisation process. The significant issues are excess nutrients entering surface waters.

4.2.9 Other significant pressures

◆ Historically polluted sites

A historical landfill is present in the upper reaches of the Gradogue_010 river water body, and this has been identified as a significant pressure on Gradogue_010 and in Funshion_030 (Figure 16). Elevated ammonium is a known issue at this site.

◆ Unknown Anthropogenic

Eight *At Risk* water bodies (Araglin (Blackwater)_040, Curragheen (Cork)_010, Dalua_030, Blackwater (Munster)_160, Farahy_010, Owbeg (Waterford)_010, Owbeg (Waterford)_020 and Funshion_080) have unknown anthropogenic pressures (Figure 17) that have resulted in siltation issues and negative impacts on fish statuses.

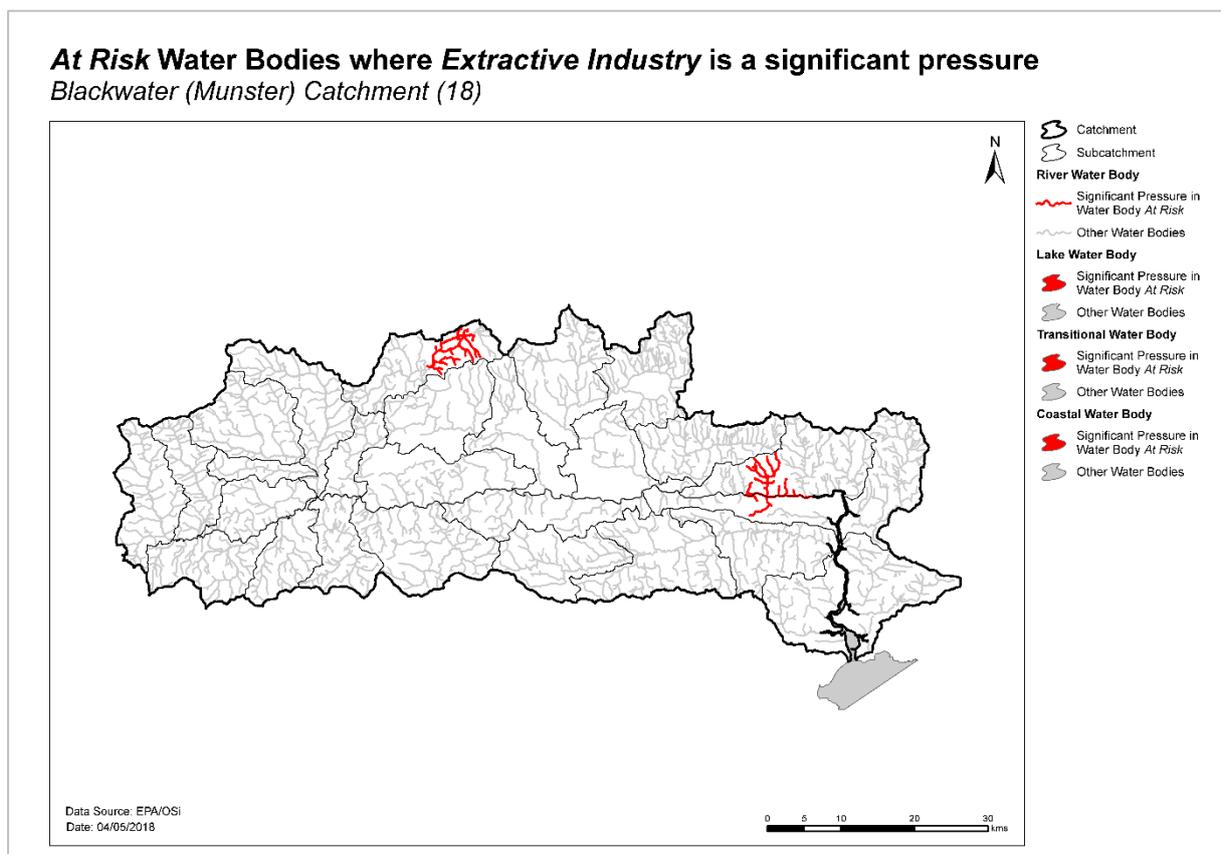


Figure 20. Water bodies that are *At Risk* and are impacted by Extractive industry (quarries)

At Risk Water Bodies where Domestic Waste Water is a significant pressure
Blackwater (Munster) Catchment (18)

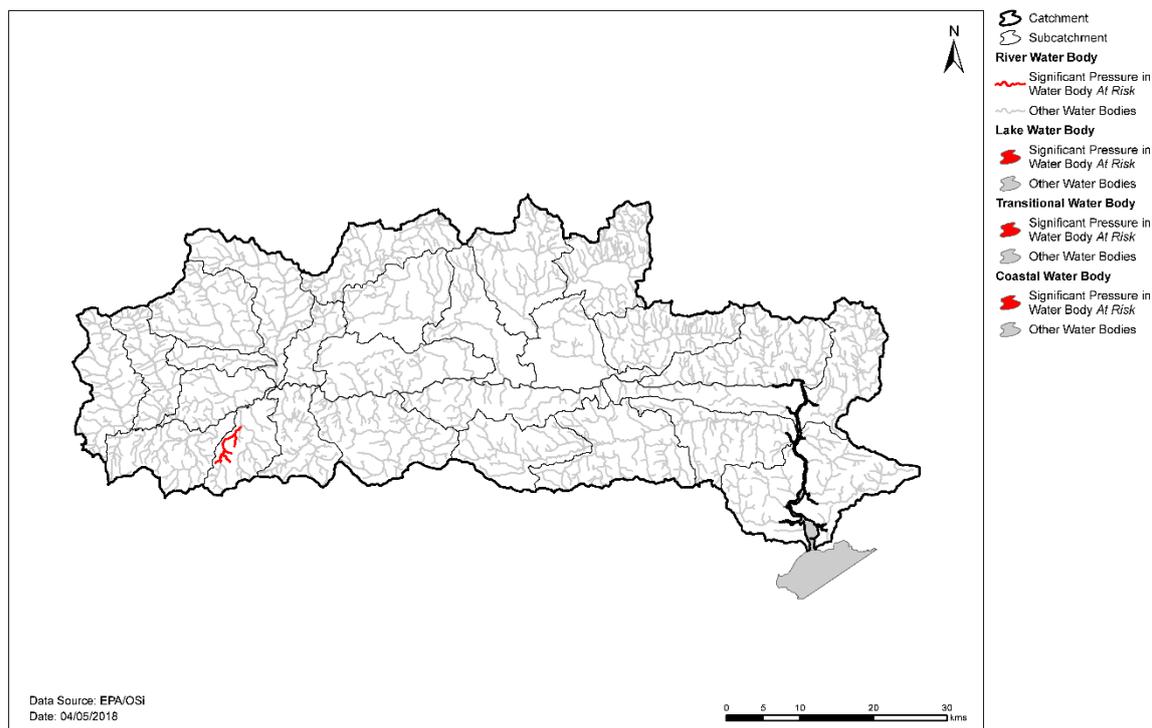


Figure 21. Water bodies that are *At Risk* and are possibly impacted by domestic waste water

5 Load reduction assessment

5.1 River water body load reductions

- ◆ The results of the main channel assessment for the Blackwater (Munster) river indicate that orthophosphate and ammonia are relatively low, and TON concentrations increase moving 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 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 Blackwater Munster catchment, water chemistry data are available for 67 of the 158 water bodies monitoring stations. The available data indicate that load reductions are required in three river water bodies (Table 8).

Table 8. Relative load reductions required in monitored water bodies that are *At Risk*.

Water body	P Load Reduction Required
Allow_060	V. High
Gradoge_010	Med
Awbeg (Buttevant)(Main Channel)_030	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.

- ◆ Estuarine water quality modelling has been carried out by the EPA for the Blackwater estuary system which is impacted by excess macroalgae in the lower reaches. The lower estuary is N limited and will require N load reductions to improve the status.
- ◆ Load apportionment modelling indicates that waste water contributes <5% of the N load and that agriculture contributes 90%. There are 20 groundwater monitoring points within the catchment, half of which also have elevated N concentrations which illustrates that this is a widespread issue. Specialist further characterisation is required to identify where specifically within the catchment targeted measures to reduce N leaching will be required, and the load reductions needed.
- ◆ There are issues with opportunistic macroalgae on beaches outside Youghal. Youghal waste water treatment plant is now operational and will reduce the nutrient loads entering the Lower Blackwater M Estuary / Youghal Harbour which is expected to lead to an improvement. However, long term monitoring data indicate that the catchment N loads flowing into Youghal Bay decreased in the period 2000 to 2012 but have started to increase again in recent years, which is a concern.

As part of the Ireland’s commitment to the Oskar Convention, nutrient flux or load monitoring has been carried out on the Blackwater Estuary since 1990 (Figure 21a and 21b). Further analysis of these nutrient load trends is available at <http://dx.doi.org/10.3318/BIOE.2016.23>.

Figure 21a – Total Nitrogen Load (Tonnes/year) 1990-2015

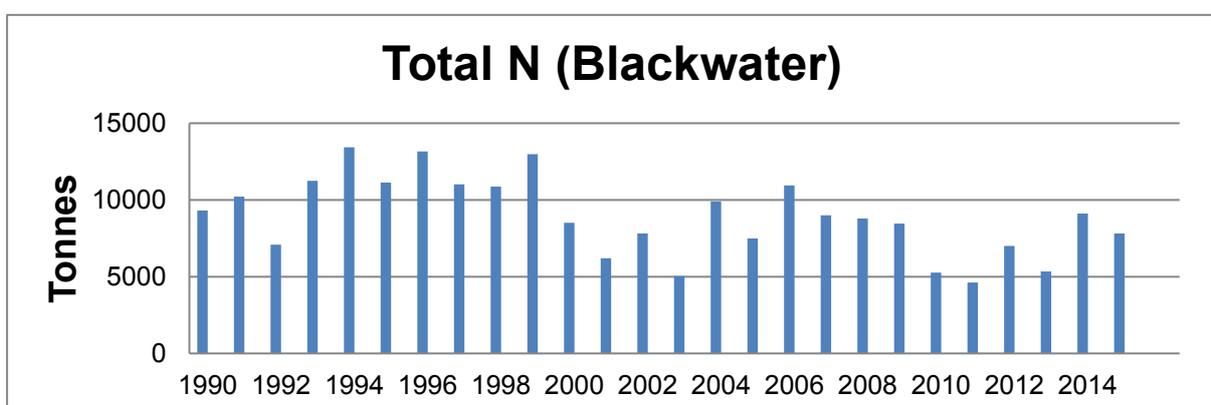
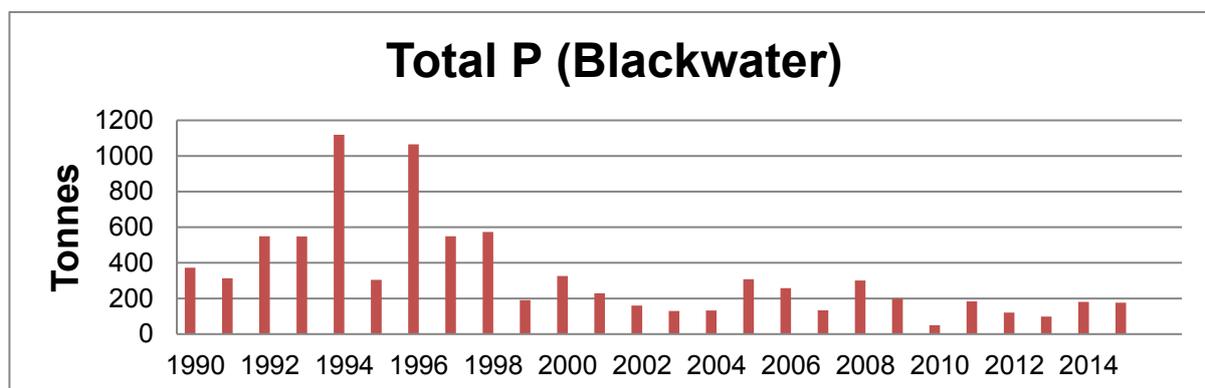


Figure 21b – Total Phosphorus Load (Tonnes/year) 1990-2015



6 Further characterisation and local catchment assessments

- ◆ Further characterisation through local catchment assessments is needed in 52 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 15 of the *Review* 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.
- ◆ 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.
- ◆ Brief details on the 101 assessment scenarios are given in Appendix 7.

Table 9. Number and type of local catchment assessments required in *At Risk* and *Review* River and Lake Water Bodies

Risk	IA 1	IA 2	IA 3	IA4	IA 5	IA6	IA 7	IA 8	IA 9	Total
<i>At Risk</i>	19	0	0	3	1	3	30	20		76
<i>Review</i>	6	0	10	1	0	1	0	1		19

Note water bodies may have multiple categories of Local Catchment Assessments

7 Catchment summary

- ◆ Of the 158 river water bodies, 52 are *At Risk* of not meeting their WFD objectives.
- ◆ Hydromorphological (or physical) conditions (including the input of excessive fine sediment) and poor habitat quality are a major issue for several surface water bodies. This is caused by several pressures, which include forestry, agriculture, anthropogenic unknown and quarries.
- ◆ Excess phosphorus leading to eutrophication is also a concern in several water bodies. While excess ammonium is also of concern, it is only for a limited number of water bodies. This is caused by several pressures which include agriculture, urban waste water, industry and domestic waste water.

- ◆ Of the four transitional and coastal water bodies, two are *At Risk*. In the Lower Blackwater Estuary, elevated nutrients are the main issue leading to excess opportunistic macroalgae. In Youghal Bay there is an increasing trend in N loads in recent years. Agriculture is the main pressure.
- ◆ Of the 18 groundwater bodies, five are *At Risk*. For one groundwater body, ammonia from the licenced waste site has the potential for contribution to impact in associated *At Risk* surface water bodies via groundwater. Three groundwater bodies have a potential to contribute phosphate to surface waters that are *At Risk* of not meeting water quality objectives. There are two groundwater bodies *At Risk* due to nitrate concentrations exceeding the drinking water threshold value of 37.5 mg/l NO₃.

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 eight areas for action in the Munster Blackwater 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.

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, areas for action will 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 Munster Blackwater catchment are summarised below.

- ◆ Eight recommended areas for actions (Table 10, Figure 22) were selected.
- ◆ These are the Awbeg (Buttevant) West, Farahy, Glenaboy, Licky, Ogeen, Owentaraglin, and Upper Funshion.
- ◆ These include 12 *At Risk* and one *Review* river water bodies.
- ◆ Four groundwater bodies, that are *At Risk* or *Review* due to groundwater contribution of nutrients to surface water bodies, intersect with four of the recommended areas for action,

see Table 11. Actions taken to improve surface water will need to take account of the groundwater contribution to surface water.

A remaining fifty-eight *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 23. These include:

- ◆ fifty-four river and lake water bodies – 40 *At Risk* and 14 *Review*, and
- ◆ four transitional and coastal water bodies – two *At Risk* and two *Review*.

Table 10. Recommended Areas for Action in the Munster Blackwater Catchment

Recommended area for action	Number of water bodies	SCs	Local authority	Reason for Selection
Owentaraglin	1	18_6	Cork	<ul style="list-style-type: none"> • Five deteriorated Water bodies. • Three water bodies on the main channel only dropped to less than Good status in the last monitoring cycle. • Starts at the Headwaters. • Supports salmonid and SAC protected areas • Build on planned improvements in Ballybofey/Stranorlar WWTP upgrade. • Cross Border Partnership with Loughs Agency on-going. • Supports improvement of the Foyle-Faughan estuary
Allow	2	18_26	Cork	<ul style="list-style-type: none"> • Failing to meet protected area objectives for Freshwater Pearl Mussel (19 of 27 catchments of S.I. 296 2009). • Build on proposed improvements at Kanturk WWTP • Life project on this water body – potential to build on previous work with Teagasc, NPWS, IFI. • Building on previous community and farmer engagement. • One deteriorated water body. • One potential ‘quick win’.
Ogeen	2	18_10	Cork	<ul style="list-style-type: none"> • Failing to meet protected area objectives for Freshwater Pearl Mussel (19 of 27 catchments of S.I. 296 2009). • Opportunity for Forest Service and Coillte to work together. • Two deteriorated High Ecological Status objective water bodies. • Tributaries to main channel of the Awbeg, which is <i>At Risk</i>.
Farahy	2	18_22	Cork	<ul style="list-style-type: none"> • Community groups in the area. • Two deteriorated water bodies. • Tributaries to Funshion_050, a deteriorated HES objective water body.
Upper Funshion	2	18_17	Cork	<ul style="list-style-type: none"> • Building on proposed improvements at Mitchelstown WWTP • Two water bodies are failing to meet protected area objectives for Freshwater Pearl Mussel (19 of 27 catchments of S.I. 296 2009). • Two deteriorated water bodies.
Awbeg (Buttevant) West	2	18_13	Cork	<ul style="list-style-type: none"> • Test case for drainage issues. • Upper reaches of subcatchment, headwaters to At Risk water bodies. • Failing to meet protected area objectives for Crayfish. • The IFI reported this is a good trout river. • Two deteriorated water bodies.
Glenaboy	1	18_19	Waterford	<ul style="list-style-type: none"> • Test case for diffuse urban issues. • Building on existing work by IFI. • Headwater tributary to the main channel of the Bridge (Blackwater) • One deteriorated water body.
Licky	1	18_27	Waterford	<ul style="list-style-type: none"> • Failing to meet protected area objectives for Freshwater Pearl Mussel (19 of 27 catchments of S.I. 296 2009). • Building on existing work by Inland Fisheries Ireland. • Heritage: St Declans trail crosses the river Licky. • One deteriorated water body.

Table 11. Groundwater bodies intersecting with surface water bodies in recommended areas for action

Groundwater bodies			Intersecting surface water bodies		Recommended Area for Action
Code	Name	Risk	Code	Name	
IE_SW_G_082	Mitchelstown	At risk	IE_SW_18A090300	AWBEG (BUTTEVANT) (WEST)_010	Awbeg (Buttevant) West
			IE_SW_18A090400	AWBEG (BUTTEVANT) (WEST)_020	
			IE_SW_18F010500	FARAHY_020	Farahy
			IE_SW_18F010300	FARAHY_010	
IE_SW_G_011	Ballyhoura Kiltorcan	At risk	IE_SW_18F010500	FARAHY_020	Farahy
			IE_SW_18F010300	FARAHY_010	
			IE_SW_18O010400	OGEEN_020	Ogeen
IE_SW_G_082	Mitchelstown	At risk	IE_SW_18O010400	OGEEN_020	Upper Funshion
			IE_SW_18F050310	FUNSHION_030	
			IE_SW_18G130200	GRADOGE_010	
IE_SW_G_011	Ballyhoura Kiltorcan	At risk	IE_SW_18F050310	FUNSHION_030	Upper Funshion
IE_SW_G_025	Cappoquin Kiltorcan	At risk	IE_SW_18G130200	GRADOGE_010	
IE_SW_G_047	Knockmealdown	Review	IE_SW_18G130200	GRADOGE_010	

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 12 *At Risk* river water bodies, it is predicted that four (33%) will improve by 2021 and eight (67%) will achieve their objective by 2027. For the one *Review* river water body, the absence of information on this water body means that there is no scientific basis to quantify an environmental objective date, and therefore a 2027 date is set for this water body, see Table 12.

Table 12. 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>	12	4	8
<i>Review</i>	1	0	1
Total	13	4	9

- ◆ Ninety-one surface water bodies have met their 2015 environmental objective.
- ◆ As action is not yet planned to be taken in the remaining 42 *At Risk* surface water bodies, a 2027 date is applied to all 42 water bodies. For the 16 *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 applied, see Table 13.

Table 13. 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>	40	0	40
<i>Review</i>	14	0	14
TRaC			
<i>At Risk</i>	2	0	2
<i>Review</i>	2	0	2
Total	58	0	58

9.2 Groundwater

- ◆ Seventeen of the eighteen groundwater bodies are currently at Good status and, therefore, have met their environmental objectives.
- ◆ The one groundwater body, Industrial Facility (P0404-01), in the Munster Blackwater catchment that is less than Good status has an environmental objective date of 2027.

10 Acknowledgements

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

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

Recommended Areas for Action Blackwater (Munster) Catchment (18)

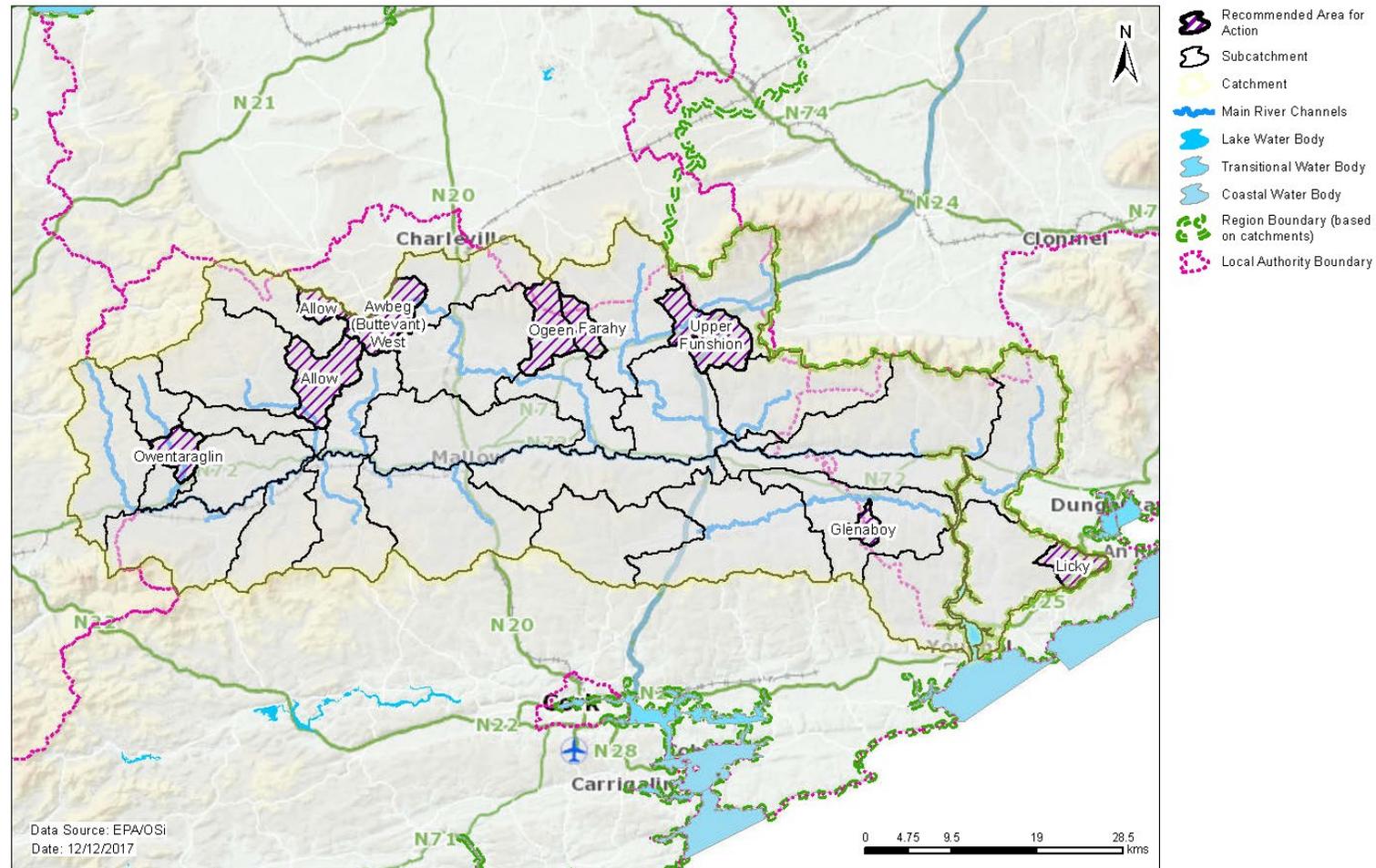


Figure 22 Location of Recommended Areas for Action in the Munster Blackwater Catchment

Remaining *At Risk* and *Review* Water Bodies

Blackwater (Munster) Catchment (18)

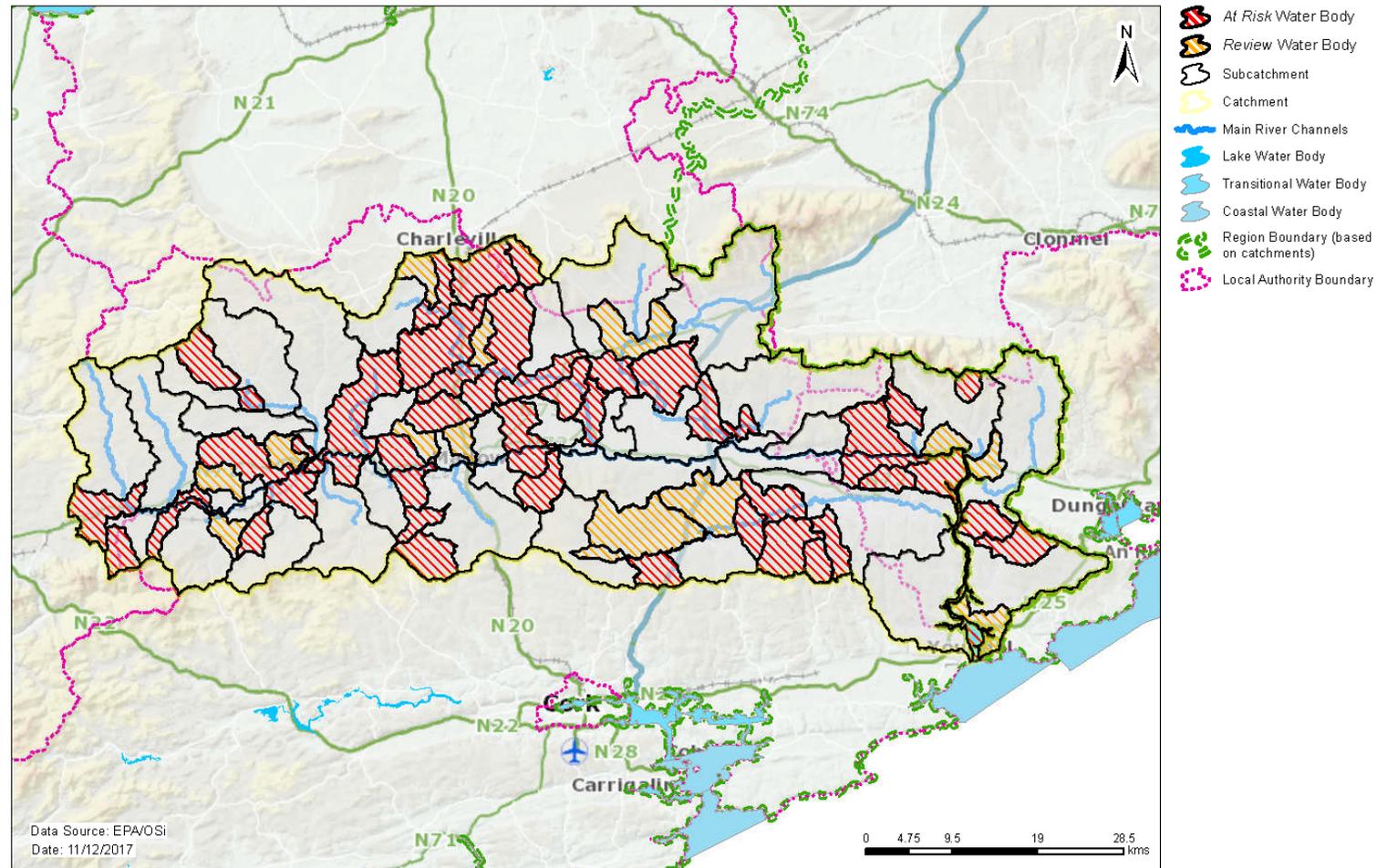


Figure 23 Location of *At Risk* and *Review* water bodies located outside Recommended Areas for Action in the Munster Blackwater Catchment

Appendix 1 High ecological status objective water bodies

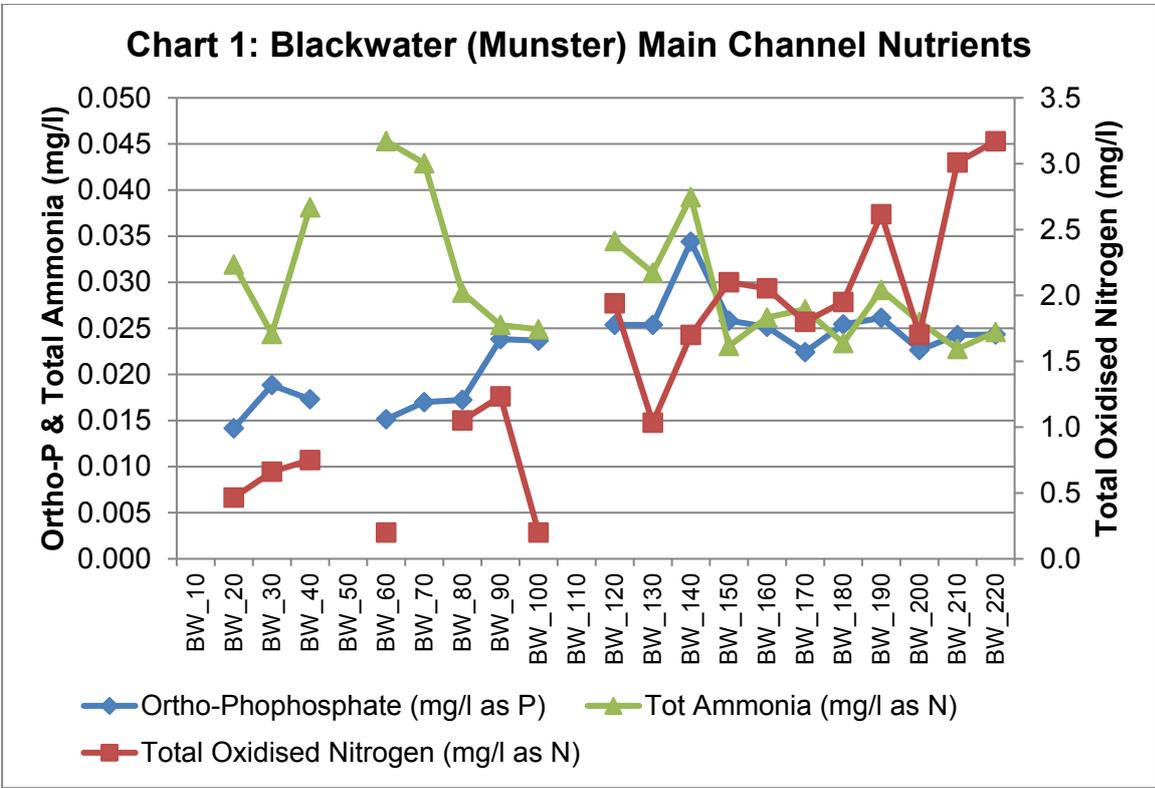
Water body/ Site	Type	Codes	2015 Status
ALLOW_030	River	IE_SW_18A020100	High
ALLOW_050	River	IE_SW_18A020300	High
ARAGLIN (BLACKWATER)_040	River	IE_SW_18A030500	Good
BEHANAGH_010	River	IE_SW_18B010300	High
BLACKWATER (MUNSTER)_050	River	IE_SW_18B020600	High
BLACKWATER (MUNSTER)_060	River	IE_SW_18B020750	Good
BLACKWATER (MUNSTER)_070	River	IE_SW_18B020900	High
BLACKWATER (MUNSTER)_080	River	IE_SW_18B021000	Good
BLACKWATER (MUNSTER)_090	River	IE_SW_18B021200	Good
BLACKWATER (MUNSTER)_110	River	IE_SW_18B021400	Good
CLYDA_010	River	IE_SW_18C020070	Good
CLYDA_020	River	IE_SW_18C020090	High
DALUA_030	River	IE_SW_18D010300	Good
FUNSHION_050	River	IE_SW_18F050700	Good
GLEN (BANTEER)_010	River	IE_SW_18G040600	High
GLEN (BANTEER)_020	River	IE_SW_18G040900	High
GLEN (BANTEER)_030	River	IE_SW_18G041100	High
GLENAKEEFE_010	River	IE_SW_18G060200	High
GLENAKEEFE_020	River	IE_SW_18G060400	High
GLENNAFALLIA_010	River	IE_SW_18G100040	Good
GLENSHELANE_010	River	IE_SW_18G110300	High
MONAVUGGA_010	River	IE_SW_18M010100	High
NAD_010	River	IE_SW_18N010400	High
OGEEN_010	River	IE_SW_18O010200	Moderate
OGEEN_020	River	IE_SW_18O010400	Moderate
OWENANARE_020	River	IE_SW_18O040600	High
OWENBAUN (RATHCOOL)_020	River	IE_SW_18O050900	Good
OWENNASHAD_010	River	IE_SW_18O080060	High
OWENNASHAD_020	River	IE_SW_18O080140	Good
OWENTARAGLIN_030	River	IE_SW_18O091100	Good
OWENTARAGLIN_040	River	IE_SW_18O091200	High

Appendix 2 Catchment scale nutrient concentrations and in-stream loads

The results of the instream water quality assessment for the Blackwater (Munster) main channel are illustrated in Chart 1. The assessment is based on the mean concentrations between 2013 and 2015 at each site from the headwaters down to the estuary. Orthophosphate results in the increase gradually downstream from 0.014mg/l to 0.024mg/l, with one notable spike in concentration at Blackwater (Munster)_140 at 0.034mg/l, marginally below the below the EQS for good status (0.035mg/l).

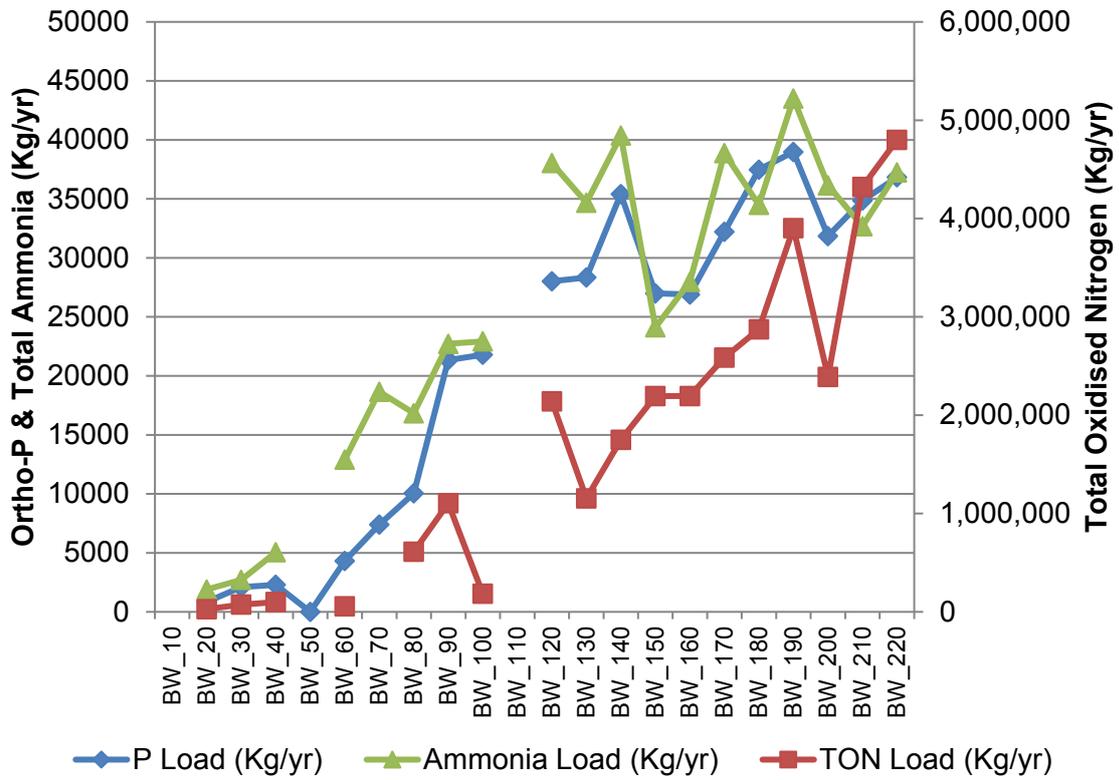
Ammonia concentrations in the Blackwater (Munster) main channel remain below the EQS for good status (0.065mg/l), but show the highest concentrations between Blackwater (Munster)_040 and Blackwater (Munster)_070, from 0.038 to 0.045mg/l, after which there is a decline in concentration. Another small spike in ammonia concentration is observed at Blackwater (Munster)_140 at 0.039mg/l, after which the concentrations remains relatively stable between 0.023 to 0.29mg/l.

TON concentrations increase along the Blackwater (Munster) main channel from 0.046mg/l at Blackwater (Munster)_020 until they exceed the 2.6mg/l drinking water threshold value at Blackwater (Munster)_090, Blackwater (Munster)_210 and Blackwater (Munster)_220 (2.62 to 3.17mg/l).



The nutrient loadings for the Blackwater (Munster) main channel (Chart 2) in comparison to the concentration trends (in Chart 1), shows a general increase in loading for P, TON and Ammonia towards the catchment outlet. The loading trends for ammonia in the headwater water bodies shows that the slightly higher concentrations correspond to water bodies with lower flows.

Chart 2: Blackwater (Munster) Main Channel Nutrients Loading



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

Subcatchment code	Water body code	Water body name	Water body type	Risk	Ecological Status 07-09	Ecological Status 10-15	High Ecological Status Objective Water Body Y/N	Significant Pressures	Date to Meet Environmental Objective	Recommended Area for Action Name
18_2	IE_SW_18B021200	Blackwater (Munster)_090	River	At risk	High	Good	Y	Ag,Hymo,UWW	2027	
18_3	IE_SW_18K030940	Keale Stream_010	River	Review	Unassigned	Unassigned	N		2027	
18_3	IE_SW_18K980670	Knockaneroe 18_010	River	Review	Unassigned	Unassigned	N		2027	
18_3	IE_SW_18B020750	Blackwater (Munster)_060	River	At risk	High	Good	Y	Ag,For,Hymo	2027	
18_3	IE_SW_18B021000	Blackwater (Munster)_080	River	At risk	High	Good	Y	Ag	2027	
18_4	IE_SW_18O050900	Owenbaun (Rathcool)_020	River	At risk	High	Good	Y	Ag,DWW	2027	
18_5	IE_SW_18O020400	Owbeg (Waterford)_010	River	At risk	Poor	Moderate	N	Other	2027	
18_5	IE_SW_18O020800	Owbeg (Waterford)_020	River	At risk	Good	Moderate	N	Other	2027	
18_6	IE_SW_18O091100	Owentaraglin_030	River	At risk	High	Good	Y	Ag,UWW	2021	Owentaraglin
18_8	IE_SW_020_0400	Lackaroe (Glendine Estuary)	Transitional	Review	Unassigned	Unassigned	N		2027	
18_9	IE_SW_18A070200	Awnaskirtaun_010	River	At risk	Good	Moderate	N	For,Hymo	2027	
18_9	IE_SW_18F030400	Finnow (Blackwater)_040	River	Review	Unassigned	Good	N		2027	
18_10	IE_SW_18A051100	Awbeg (Buttevant)(Main Channel)_050	River	At risk	Good	Moderate	N	For	2027	
18_10	IE_SW_18A051200	Awbeg (Buttevant)(Main Channel)_060	River	At risk	Unassigned	Moderate	N	Ind,UWW	2027	
18_10	IE_SW_18A051300	Awbeg (Buttevant)(Main Channel)_070	River	At risk	Good	Moderate	N	Ag,UWW	2027	
18_10	IE_SW_18O010200	Ogeen_010	River	At risk	High	Moderate	Y	For	2027	Ogeen
18_10	IE_SW_18O010400	Ogeen_020	River	At risk	High	Moderate	Y	For	2027	Ogeen
18_11	IE_SW_18G020500	Glashanabrack_020	River	Review	Unassigned	Unassigned	N		2027	
18_11	IE_SW_18B050320	Bride (Blackwater)_020	River	Review	Good	Good	N		2027	
18_12	IE_SW_18B020400	Blackwater (Munster)_040	River	At risk	Moderate	Moderate	N	For	2027	
18_13	IE_SW_18O120820	Oakfront_010	River	Review	Unassigned	Unassigned	N		2027	
18_13	IE_SW_18A050550	Awbeg (Buttevant)(Main Channel)_010	River	At risk	Good	Moderate	N	Ag,Hymo	2027	
18_13	IE_SW_18A080120	Awbeg (Buttevant) (East)_010	River	At risk	Good	Moderate	N	Ag,For	2027	
18_13	IE_SW_18A080250	Awbeg (Buttevant) (East)_020	River	At risk	Good	Moderate	N	For,M+Q	2027	
18_13	IE_SW_18A090300	Awbeg (Buttevant) (West)_010	River	At risk	Good	Poor	N	Ag	2021	Awbeg (Buttevant) West
18_13	IE_SW_18A090400	Awbeg (Buttevant) (West)_020	River	At risk	Moderate	Poor	N	Hymo	2027	Awbeg (Buttevant) West
18_14	IE_SW_18B021600	Blackwater (Munster)_130	River	Review	Unassigned	Unassigned	N		2027	
18_14	IE_SW_18B021900	Blackwater (Munster)_160	River	At risk	Moderate	Moderate	N	Other	2027	
18_14	IE_SW_18R020500	Ross (Killavullen)_010	River	At risk	Good	Moderate	N	For,Hymo,UWW	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
18_15	IE_SW_18M260940	Moneygorm_010	River	Review	Unassigned	Unassigned	N		2027	
18_15	IE_SW_020_0100	Lower Blackwater M Estuary / Youghal Harbour	Transitional	At risk	Moderate	Moderate	N	Ag	2027	
18_15	IE_SW_020_0500	Upper Blackwater M Estuary	Transitional	Review	Good	High	N		2027	
18_16	IE_SW_18A030500	Araglin (Blackwater)_040	River	At risk	High	Good	Y	Other	2027	
18_17	IE_SW_18F050310	Funshion_030	River	At risk	Good	Poor	N	Ag,Ind,Other,UWW	2027	Upper Funshion
18_17	IE_SW_18G130200	Gradoge_010	River	At risk	Moderate	Poor	N	Ind,Other,UWW	2027	Upper Funshion
18_18	IE_SW_18D010300	Dalua_030	River	At risk	High	Good	Y	Other	2027	
18_18	IE_SW_18G080500	Glenlara_010	River	At risk	Moderate	Moderate	N	For,Hymo	2027	
18_19	IE_SW_18C060400	Curraheen (Cork)_010	River	At risk	Good	Poor	N	Other	2027	
18_19	IE_SW_18G050600	Glenaboy_020	River	At risk	Moderate	Moderate	N	DU	2027	Glenaboy
18_20	IE_SW_18L570860	Lackfrancis_010	River	Review	Unassigned	Unassigned	N		2027	
18_20	IE_SW_18A050700	Awbeg (Buttevant)(Main Channel)_020	River	At risk	Moderate	Poor	N	DU,UWW	2027	
18_20	IE_SW_18A050900	Awbeg (Buttevant)(Main Channel)_030	River	At risk	Good	Moderate	N	Hymo	2027	
18_20	IE_SW_18A051000	Awbeg (Buttevant)(Main Channel)_040	River	At risk	Good	Poor	N	DU	2027	
18_21	IE_SW_18B021400	Blackwater (Munster)_110	River	At risk	High	Good	Y	Hymo,UWW	2027	
18_21	IE_SW_18B080300	Ballyclogh Stream_010	River	At risk	Poor	Poor	N	Hymo	2027	
18_21	IE_SW_18B080500	Ballyclogh Stream_020	River	Review	Moderate	Good	N		2027	
18_22	IE_SW_18F010300	Farahy_010	River	At risk	Good	Moderate	N	For,Other	2021	Farahy
18_22	IE_SW_18F010500	Farahy_020	River	At risk	Good	Moderate	N	Ag,For	2027	Farahy
18_22	IE_SW_18F050600	Funshion_040	River	Review	High	Good	N		2027	
18_22	IE_SW_18F050700	Funshion_050	River	At risk	High	Good	Y	Ag	2027	
18_23	IE_SW_18C020070	Clyda_010	River	At risk	High	Good	Y	Hymo	2027	
18_23	IE_SW_18L020900	Lyre_010	River	At risk	Good	Moderate	N	For	2027	
18_24	IE_SW_18L220930	Lyrenacallee_East_010	River	Review	Unassigned	Unassigned	N		2027	
18_24	IE_SW_18B022700	Blackwater (Munster)_220	River	At risk	Good	Moderate	N	M+Q	2027	
18_24	IE_SW_18G100040	Glennafallia_010	River	At risk	High	Good	Y	For	2027	
18_24	IE_SW_18O080140	Owennashad_020	River	At risk	High	Good	Y	Hymo	2027	
18_25	IE_SW_18B050400	Bride (Blackwater)_030	River	Review	Unassigned	Unassigned	N		2027	
18_25	IE_SW_18B050500	Bride (Blackwater)_040	River	At risk	Good	Moderate	N	Hymo,UWW	2027	
18_25	IE_SW_18B050600	Bride (Blackwater)_050	River	At risk	Good	Moderate	N	Hymo	2027	
18_25	IE_SW_18D020300	Douglas (Bride)_010	River	At risk	Unassigned	Poor	N	Ag,UWW	2027	
18_25	IE_SW_18D020800	Douglas (Bride)_020	River	At risk	Moderate	Moderate	N	For	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
18_25	IE_SW_18F040500	Flesk (Bride)_010	River	At risk	Poor	Poor	N	Ind,UWW	2027	
18_26	IE_SW_18A020200	Allow_040	River	Review	Unassigned	Unassigned	N		2027	Allow
18_26	IE_SW_18A020490	Allow_060	River	At risk	Good	Poor	N	Ag,Hymo,Ind,UWW	2021	Allow
18_27	IE_SW_18K540860	Kilmeedy_West_010	River	Review	Unassigned	Unassigned	N		2027	
18_27	IE_SW_18G120200	Goish_010	River	At risk	Moderate	Moderate	N	For	2027	
18_27	IE_SW_18G120300	Goish_020	River	At risk	Good	Moderate	N	Ag	2027	
18_27	IE_SW_18L010100	Licky_010	River	At risk	Good	Moderate	N	For	2027	Licky
18_27	IE_SW_020_0000	Youghal Bay	Coastal	At risk	Good	Good	N	Ag	2027	
18_28	IE_SW_18F050800	Funshion_060	River	At risk	Good	Moderate	N	Ag	2027	
18_28	IE_SW_18F051100	Funshion_080	River	At risk	Moderate	Moderate	N	Ag,Ind,Other	2027	

Ag: Agriculture

M+Q: Mines and Quarries

DWW: Domestic Waste Water

Peat: Peat Drainage and Extraction

For: Forestry

DU: Diffuse Urban

Hymo: Hydromorphology

UWW: Urban Waste Water

Ind: Industry

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

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

Appendix 4 Drinking water supplies in the catchment

Scheme Code	Scheme Name	Water Body	Water Body Code	Objective met? Yes /No	Reason why not met
0500PRI1713	Taurbeagh GWSS Michelstown	Knockmealdown	IE_SW_G_047	N/A	No data
0500PRI1714	Ballinguiroe/Tankardstown	Mitchelstown	IE_SW_G_082	N/A	No data
1900PRI3012	Ballyorgan	Ballyhoura	IE_SW_G_010	Yes	N/A
1900PRI3014	Glenroe	Ballyhoura	IE_SW_G_010	Yes	N/A
0500PRI1711	Kilally GWSS Kilworth	Knockmealdown	IE_SW_G_047	N/A	No data
0500PRI1705	Curraghalla GWSS	Knockmealdown	IE_SW_G_047	N/A	No data
0500PRI1701	Aghern	Glenville	IE_SW_G_037	N/A	No data
	Aghern	Glenville	IE_SW_G_037	N/A	No data
0500PRI1702	Blackpool / Curraglass	Glenville	IE_SW_G_037	N/A	No data
0500PRI1704	Caherdrinny GWSS	Knockmealdown	IE_SW_G_047	N/A	No data
0500PRI1707	Downing GWSS	Cappoquin Kiltorcan	IE_SW_G_025	N/A	No data
0500PRI1708	Graigne Private WS Kildorrery	Ballyhoura	IE_SW_G_010	N/A	No data
0500PUB1104	Doneraile	Mitchelstown	IE_SW_G_082	Yes	N/A
0500PUB1106	Skahanagh	Ballyhoura Kiltorcan	IE_SW_G_011	N/A	No data
0500PUB1201	Ballynoe	Glenville	IE_SW_G_037	N/A	No data
	Ballynoe	Glenville	IE_SW_G_037	N/A	No data
0500PUB1202	Bartlemy	Glenville	IE_SW_G_037	N/A	No data
0500PUB2510	Youghal Regional	Glenville	IE_SW_G_037	Yes	N/A
0500PUB1101	Allow Regional	Rathmore West	IE_SW_G_070	Yes	N/A
	Allow Regional	ALLOW_040	IE_SW_18A020200	Yes	N/A
0500PUB1102	Castlewrixon	Ballyhoura	IE_SW_G_010	N/A	No data
0500PUB1103	Charleville	Mitchelstown	IE_SW_G_082	Yes	N/A
	Charleville	Mitchelstown	IE_SW_G_082	Yes	N/A
	Charleville	Mitchelstown	IE_SW_G_082	Yes	N/A
0500PUB1203	Castletownroche	Mitchelstown	IE_SW_G_082	Yes	N/A
0500PUB1205	Conna Village	Tallow	IE_SW_G_074	N/A	No data
	Conna Village	Glenville	IE_SW_G_037	N/A	No data
0500PUB1206	Downing Bridge	Mitchelstown	IE_SW_G_082	Yes	N/A
0500PUB1207	Fermoy	Glenville	IE_SW_G_037	Yes	N/A
	Fermoy	Glenville	IE_SW_G_037	Yes	N/A
0500PUB1208	Kilally (Kilworth)	Cappoquin Kiltorcan	IE_SW_G_025	Yes	N/A
0500PUB1209	Kilclare	Glenville	IE_SW_G_037	N/A	No data
0500PUB1210	Kilmagnier	Glenville	IE_SW_G_037	N/A	No data
0500PUB1212	Knockdrumacloagh	Glenville	IE_SW_G_037	N/A	No data
0500PUB1213	Moydelligo	Glenville	IE_SW_G_037	N/A	No data
0500PUB1214	Monanig	Glenville	IE_SW_G_037	N/A	No data
0500PUB1215	Strawhall (public)	Glenville	IE_SW_G_037	N/A	No data
	Strawhall (public)	Glenville	IE_SW_G_037	N/A	No data
0500PUB1217	Kilmurry	Knockmealdown	IE_SW_G_047	N/A	No data

Scheme Code	Scheme Name	Water Body	Water Body Code	Objective met? Yes /No	Reason why not met
	(Mitchelstown)				
0500PUB1218	Gortnaskehy	Araglin	IE_SW_G_001	N/A	No data
0500PUB1219	Macronev	Cappoquin Kiltorcan	IE_SW_G_025	N/A	No data
0500PUB1220	Coolagown	Glenville	IE_SW_G_037	N/A	No data
0500PUB1221	Castlecooke	Knockmealdown	IE_SW_G_047	N/A	No data
0500PUB1301	Ballyclough	Mitchelstown	IE_SW_G_082	N/A	No data
0500PUB1302	Bottlehill	Glenville	IE_SW_G_037	N/A	No data
0500PUB1303	Burnfort	Glenville	IE_SW_G_037	N/A	No data
0500PUB1304	Bweeng	Glenville	IE_SW_G_037	N/A	No data
0500PUB1305	Ballinamona	Glenville	IE_SW_G_037	N/A	No data
0500PUB1306	Ballyhooly	Mitchelstown	IE_SW_G_082	Yes	N/A
0500PUB1307	Cregane	Glenville	IE_SW_G_037	Yes	N/A
0500PUB1308	Dromahane	Glenville	IE_SW_G_037	Yes	N/A
0500PUB1309	Gortnagreighe	Glenville	IE_SW_G_037	N/A	No data
0500PUB1310	Killavullen	Mitchelstown	IE_SW_G_082	Yes	N/A
0500PUB1311	Kilcolman	Glenville	IE_SW_G_037	N/A	No data
0500PUB1312	Lombardstown/Glanta ne	Glenville	IE_SW_G_037	N/A	No data
	Lombardstown/Glanta ne	Glenville	IE_SW_G_037	N/A	No data
	Lombardstown/Glanta ne	Glenville	IE_SW_G_037	N/A	No data
0500PUB1313	Mallow	Glenville	IE_SW_G_037	Yes	N/A
	Mallow	BLACKWATER (MUNSTER)_150	IE_SW_18B021800	Yes	N/A
	Mallow	CLYDA_030	IE_SW_18C020300	Yes	N/A
0500PUB1314	Monaparson	Glenville	IE_SW_G_037	N/A	No data
0500PUB1315	Monee	Glenville	IE_SW_G_037	N/A	No data
0500PUB1316	Mount North	Mitchelstown	IE_SW_G_082	Yes	N/A
0500PUB1318	Rahan	Glenville	IE_SW_G_037	N/A	No data
0500PUB1319	Carrigcleena	Glenville	IE_SW_G_037	N/A	No data
0500PUB1320	Box Cross	Glenville	IE_SW_G_037	Yes	N/A
	Box Cross	Mitchelstown	IE_SW_G_082	Yes	N/A
	Box Cross	Mitchelstown	IE_SW_G_082	Yes	N/A
0500PUB1401	Banteer	Banteer	IE_SW_G_018	Yes	N/A
0500PUB1402	Caherbarnagh	Glenville	IE_SW_G_037	N/A	No data
0500PUB1403	Cockhill	Glenville	IE_SW_G_037	N/A	No data
0500PUB1404	Glenleigh p.p	Glenville	IE_SW_G_037	N/A	No data
0500PUB1405	Kilcorney	Glenville	IE_SW_G_037	N/A	No data
0500PUB1406	Lyre	Glenville	IE_SW_G_037	N/A	No data
0500PUB1407	Lyravuckane Borehole	Rathmore West	IE_SW_G_070	N/A	No data
0500PUB1408	Millstreet	Rathmore West	IE_SW_G_070	Yes	N/A
0500PUB1409	Toureen /Derry	Glenville	IE_SW_G_037	N/A	No data
0500PUB1501	Ballykenley/Johnstown	Mitchelstown	IE_SW_G_082	Yes	N/A

Scheme Code	Scheme Name	Water Body	Water Body Code	Objective met? Yes /No	Reason why not met
0500PUB1503	Kildorrery	Mitchelstown	IE_SW_G_082	Yes	N/A
	Kildorrery	Mitchelstown	IE_SW_G_082	Yes	N/A
0500PUB1504	Knockanevin	Ballyhoura	IE_SW_G_010	N/A	No data
0500PUB1505	Labbamollogga P.P.	Ballyhoura	IE_SW_G_010	N/A	No data
0500PUB1507	Mitchelstown South	Knockmealdown	IE_SW_G_047	Yes	N/A
	Mitchelstown South	Knockmealdown	IE_SW_G_047	Yes	N/A
	Mitchelstown South	Knockmealdown	IE_SW_G_047	Yes	N/A
0500PUB1508	Mountain Barracks	Knockmealdown	IE_SW_G_047	N/A	No data
0500PUB1601	Newmarket/ Ballinatona	Rathmore West	IE_SW_G_070	Yes	N/A
	Newmarket/ Ballinatona	Rathmore West	IE_SW_G_070	Yes	N/A
	Newmarket/ Ballinatona	Rathmore West	IE_SW_G_070	Yes	N/A
	Newmarket/ Ballinatona	Rathmore West	IE_SW_G_070	Yes	N/A
	Newmarket/ Ballinatona	Rathmore West	IE_SW_G_070	Yes	N/A
0500PUB1602	Ballydesmond	Rathmore West	IE_SW_G_070	N/A	No data
	Ballydesmond	Rathmore West	IE_SW_G_070	N/A	No data
0500PUB1603	Kiskeam	Rathmore West	IE_SW_G_070	N/A	No data
0500PUB1605	Knockeragh	Rathmore West	IE_SW_G_070	N/A	No data
0500PUB2503	Inch	Glenville	IE_SW_G_037	N/A	No data
1900PUB1029	Glenosheen PUB DWS	Ballyhoura	IE_SW_G_010	N/A	No data
1900PUB1033	Jamestown	Ballyhoura	IE_SW_G_010	Yes	N/A
1900PUB1033	Mount Russell	Ballyhoura Kiltorcan	IE_SW_G_011	Yes	N/A
3100PUB1048	Geoish	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1011	Ballyheaphy	Knockmealdown	IE_SW_G_047	Yes	N/A
3100PUB1015	Ballymoate	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1006	Ballycurrane	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1026	Carrignagower	Knockmealdown	IE_SW_G_047	Yes	N/A
3100PUB1002	Aglis (Curraheen)	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1150	Aglis (Cul Rua)	Tallow	IE_SW_G_074	Yes	N/A
3100PUB1019	Ballysaggart	Knockmealdown	IE_SW_G_047	Yes	N/A
3100PUB1139	Ballynoe	Knockmealdown	IE_SW_G_047	Yes	N/A
3100PUB1007	Ballydasoon	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1108	Dromore Upper	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1033	Cooneen Dromore	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1059	Tinalyra (Kilcooney)	Knockmealdown	IE_SW_G_047	Yes	N/A
3100PUB1126	Clashmore White Well (Laurentum)	Tourig Group 2	IE_SW_G_076	Yes	N/A
3100PUB1029	Clashmore (Coolboa)	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1027	Carrowgarriff	Knockmealdown	IE_SW_G_047	Yes	N/A
3100PUB1073	Lacken	Knockmealdown	IE_SW_G_047	N/A	No data
3100PUB1094	Killenagh (Strancally)	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1066	Kilmore-Kilbeg	Glenville	IE_SW_G_037	Yes	N/A

Scheme Code	Scheme Name	Water Body	Water Body Code	Objective met? Yes /No	Reason why not met
1300PUB1017	Rathmore PWSS 065A	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1098	Touraneena	Knockmealdown	IE_SW_G_047	Yes	N/A
3100PUB1109	LCB (Ballyduff/Aglish/Glencairn)	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1089	LCB Ballyhane	Lismore	IE_SW_G_050	Yes	N/A
3100PUB1074	LCB Cappoquin Monument	Lismore	IE_SW_G_050	Yes	N/A
3100PUB1144	LCB Lismore (Deerpark)	Lismore	IE_SW_G_050	Yes	N/A
3100PUB1057	Kereen	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1021	BooLavonteem	Knockmealdown	IE_SW_G_047	Yes	N/A
3100PUB1024	Camphire	Tallow	IE_SW_G_074	Yes	N/A
3100PUB1143	Grange	Tourig Group 3	IE_SW_G_077	N/A	No data
3100PUB1054	Inchinleamy	Knockmealdown	IE_SW_G_047	Yes	N/A
3100PUB1116	Modeligo	Knockmealdown	IE_SW_G_047	Yes	N/A
3100PUB1096	Tallow Hill	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1121	Tiknock	Glenville	IE_SW_G_037	N/A	No data
3100PUB1097	Tinnabinna	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1100	Villierstown	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1090	Shean	Glenville	IE_SW_G_037	Yes	N/A
3100PUB1151	Monatarrif	Knockmealdown	IE_SW_G_047	Yes	N/A
3100PUB1137	Moore's Well	Knockmealdown	IE_SW_G_047	Yes	N/A
3100PUB1140	Melleray	Knockmealdown	IE_SW_G_047	Yes	N/A
1300PUB1017	Rathmore PWSS 065A	Glenville	IE_SW_G_037	Yes	N/A
	Rathmore PWSS 065A	Glenville	IE_SW_G_037	Yes	N/A
	Rathmore PWSS 065A	Glenville	IE_SW_G_037	Yes	N/A
0500PUB1204	Conna Regional	BRIDE (BLACKWATER)_040	IE_SW_18B05 0500	Yes	N/A
0500PUB1506	Mitchelstown North	BEHANAGH_010	IE_SW_18B01 0300	Yes	N/A
0500PUB2510	Youghal Regional	GLENDINE (BLACKWATER)_010	IE_SW_18G07 0300	Yes	N/A
	Youghal Regional	GLENDINE (BLACKWATER)_010	IE_SW_18G07 0300	Yes	N/A
	Youghal Regional	TOURIG_020	IE_SW_18T03 0700	Yes	N/A
3100PUB1138	LCB Lismore (Filter Beds)	GLENAKEEFE_010	IE_SW_18G06 0200	Yes	N/A
	LCB Lismore (Filter Beds)	GLENAKEEFE_010	IE_SW_18G06 0200	Yes	N/A
3100PUB1095	Tallow	Bride [Waterford]_010	IE_SW_18B05 1000	Yes	N/A

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

River water bodies that are designated as freshwater pearl mussel rivers (under Freshwater Pearl Mussel (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?
Ballyhoura Mountains SAC 002036	none							
Blackwater River (Cork/Waterford) SAC 002170	1029 (19 of 27 catchments of S.I. 296 2009)	Good	River	Licky_010	Moderate (AT RISK)	Yes	IE_SW_18L010100	Yes
			River	Licky_020	Good (NAR)	No	IE_SW_18L010150	Yes
			River	Licky_030	Good (NAR)	No	IE_SW_18L010200	Yes
			River	Owentaraglin_040	High (NAR – HES Obj)	No	IE_SW_18O091200	Yes
			River	Allow_030	High (NAR – HES Obj)	No	IE_SW_18A020100	Yes
			River	Allow_040	Unassigned	Yes	IE_SW_18A020200	Yes
			River	Allow_050	High (NAR - HES Obj)	No	IE_SW_18A020300	Yes
			River	Allow_060	Poor (AT RISK)	Yes	IE_SW_18A020490	Yes
			River	Allow_070	Good (NAR)	No	IE_SW_18A020600	Yes
			River	Blackwater (Munster)_030	Good (NAR)	No	IE_SW_18B020200	Yes
			River	Blackwater (Munster)_040	Moderate (AT RISK)	Yes	IE_SW_18B020400	Yes
			River	Blackwater (Munster)_050	High (NAR - HES Obj)	No	IE_SW_18B020600	Yes
			River	Blackwater (Munster)_060	Good (AT RISK - HES Obj)	No	IE_SW_18B020750	Yes
			River	Blackwater (Munster)_070	High (NAR - HES Obj)	No	IE_SW_18B020900	Yes
			River	Blackwater (Munster)_080	Good (AT RISK - HES Obj)	No	IE_SW_18B021000	Yes
			River	Blackwater (Munster)_090	Good (AT RISK - HES Obj)	No	IE_SW_18B021200	Yes
			River	Blackwater (Munster)_100	Good (NAR)	No	IE_SW_18B021300	Yes
			River	Blackwater (Munster)_110	Good (AT RISK - HES Obj)	No	IE_SW_18B021400	Yes
			River	Blackwater (Munster)_120	Good (NAR)	No	IE_SW_18B021510	Yes
			River	Blackwater (Munster)_130	Unassigned(R)	Yes	IE_SW_18B021600	Yes
River	Blackwater (Munster)_140	Unassigned (NAR)	No	IE_SW_18B021720	Yes			
River	Blackwater (Munster)_150	Good (NAR)	No	IE_SW_18B021800	Yes			
River	Blackwater (Munster)_160	Moderate (AT RISK)	Yes	IE_SW_18B021900	Yes			

SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?	
Blackwater River (Cork/Waterford) SAC 002170	1029 (19 of 27 catchments of S.I. 296 2009)	Good	River	Blackwater (Munster)_170	Good (NAR)	No	IE_SW_18B022000	Yes	
			River	Blackwater (Munster)_180	Unassigned (NAR)	No	IE_SW_18B022100	Yes	
			River	Blackwater (Munster)_190	Good (NAR)	No	IE_SW_18B022300	Yes	
			River	Blackwater (Munster)_200	Good (NAR)	No	IE_SW_18B022450	Yes	
			River	Blackwater (Munster)_210	Good (NAR)	No	IE_SW_18B022500	Yes	
				River	Blackwater (Munster)_220	Moderate (AT RISK)	Yes	IE_SW_18B022700	Yes
	1092	At least Moderate	River	Awbeg (Buttevant) (Main channel)_010	Moderate (AT RISK)	No	IE_SW_18A050550	Yes	
			River	Awbeg (Buttevant) (West)_020	Poor (AT RISK)	Yes	IE_SW_18A090400	Yes	
			River	Awbeg (Buttevant) (East)_020	Moderate (AT RISK)	No	IE_SW_18A080250	Yes	
			River	Awbeg (Buttevant) (Main channel)_020	Poor (AT RISK)	Yes	IE_SW_18A050700	Yes	
			River	Awbeg (Buttevant) (Main channel)_030	Moderate (AT RISK)	No	IE_SW_18A050900	Yes	
			River	Awbeg (Buttevant) (Main channel)_040	Poor (AT RISK)	Yes	IE_SW_18A051000	Yes	
			River	Awbeg (Buttevant) (Main channel)_050	Moderate (AT RISK)	No	IE_SW_18A051100	Yes	
			River	Awbeg (Buttevant) (Main channel)_060	Moderate (AT RISK)	No	IE_SW_18A051200	Yes	
			River	Awbeg (Buttevant) (Main channel)_070	Moderate (AT RISK)	No	IE_SW_18A051300	Yes	
			River	Blackwater (Munster)_110	Good (AT-RISK - HES Obj)	No	IE_SW_18B021400	Yes	
			River	Blackwater (Munster)_170	Good (NAR)	No	IE_SW_18B022000	Yes	
			River	Blackwater (Munster)_180	Unassigned (NAR)	No	IE_SW_18B022100	Yes	
	1106	Good	River	Blackwater (Munster)_020	Good (NAR)	No	IE_SW_18B020075	Yes	
			River	Blackwater (Munster)_030	Good (NAR)	No	IE_SW_18B020200	Yes	
			River	Blackwater (Munster)_040	Moderate (AT RISK)	Yes	IE_SW_18B020400	Yes	
River			Blackwater (Munster)_050	High-(NAR - HES Obj)	No	IE_SW_18B020600	Yes		
River			Blackwater (Munster)_060	Good (AT-RISK - HES Obj)	No	IE_SW_18B020750	Yes		
River			Blackwater (Munster)_070	High-(NAR - HES Obj)	No	IE_SW_18B020900	Yes		

SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
Blackwater River (Cork/Waterford) SAC 002170	1106	Good	River	Blackwater (Munster)_080	Good (AT-RISK - HES Obj)	No	IE_SW_18B021000	Yes
			River	Blackwater (Munster)_090	Good (AT-RISK - HES Obj)	No	IE_SW_18B021200	Yes
			River	Blackwater (Munster)_100	Good (NAR)	No	IE_SW_18B021300	Yes
			River	Blackwater (Munster)_110	Good (AT-RISK - HES Obj)	No	IE_SW_18B021400	Yes
			River	Blackwater (Munster)_120	Good (NAR)	No	IE_SW_18B021510	Yes
			River	Blackwater (Munster)_130	Unassigned(R)	Yes	IE_SW_18B021600	Yes
			River	Blackwater (Munster)_140	Unassigned (NAR)	No	IE_SW_18B021720	Yes
			River	Blackwater (Munster)_150	Good (NAR)	No	IE_SW_18B021800	Yes
			River	Blackwater (Munster)_160	Moderate (AT RISK)	Yes	IE_SW_18B021900	Yes
			River	Blackwater (Munster)_170	Good (NAR)	No	IE_SW_18B022000	Yes
			River	Blackwater (Munster)_180	Unassigned (NAR)	No	IE_SW_18B022100	Yes
			River	Blackwater (Munster)_190	Good (NAR)	No	IE_SW_18B022300	Yes
			River	Blackwater (Munster)_200	Good (NAR)	No	IE_SW_18B022450	Yes
			River	Blackwater (Munster)_210	Good (NAR)	No	IE_SW_18B022500	Yes
			River	Blackwater (Munster)_220	Moderate (AT RISK)	Yes	IE_SW_18B022700	Yes
			River	Bride (Blackwater)_010	Good (NAR)	No	IE_SW_18B050050	Yes
			River	Bride (Blackwater)_020	Good (R)	No	IE_SW_18B050320	Yes
			River	Bride (Blackwater)_030	Unassigned (R)	Yes	IE_SW_18B050400	Yes
			River	Bride (Blackwater)_040	Moderate (AT RISK)	Yes	IE_SW_18B050500	Yes
			River	Bride (Blackwater)_050	Moderate (AT RISK)	Yes	IE_SW_18B050600	Yes
River	Bride (Blackwater)_060	Unassigned (NAR)	No	IE_SW_18B050700	Yes			
River	Bride (Blackwater)_070	Good (NAR)	No	IE_SW_18B050820	Yes			
Carrigeenamronety Hill SAC 002037	none							
Galtee Mountains SAC 000646	none							
Killarney National Park, M'cgillycuddy's Reeks and Caragh River Catchment SAC 000365	none							

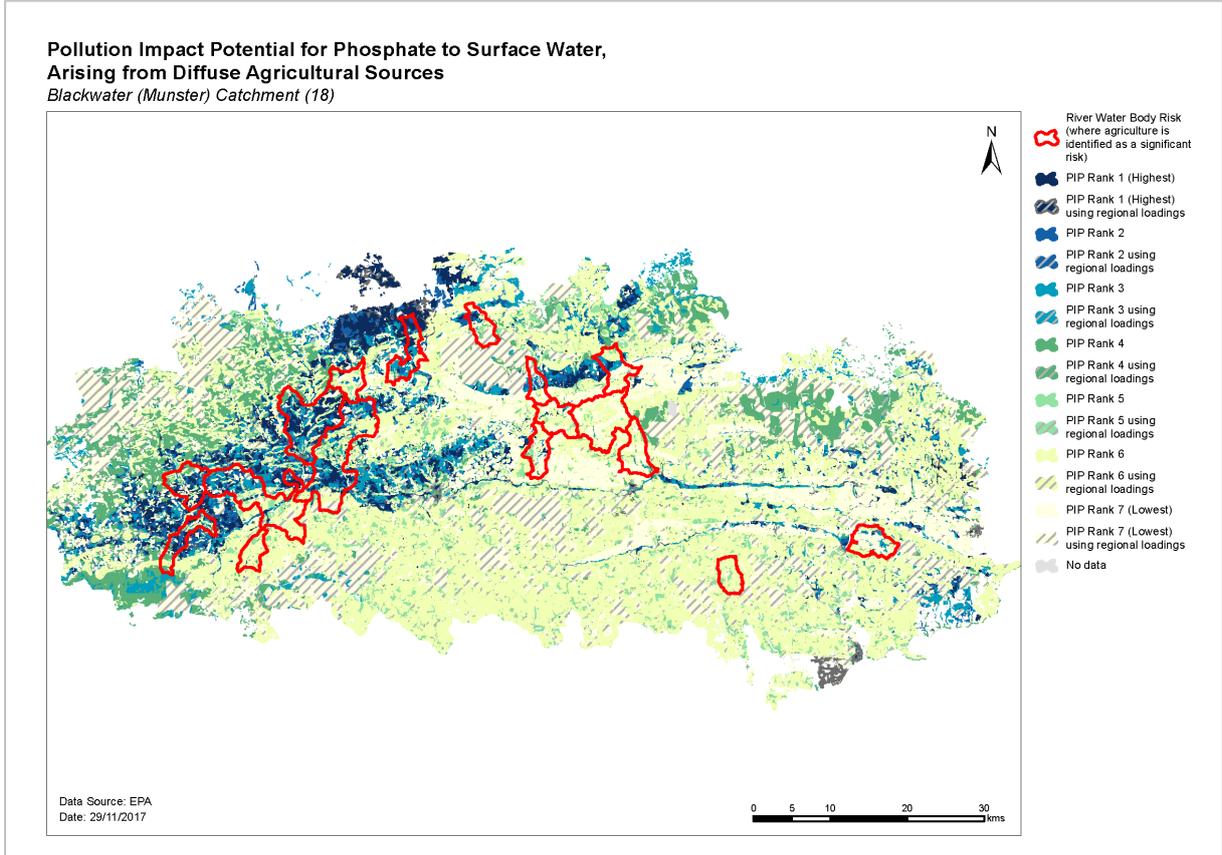
SAC Name	Relevant Qualifying interests	Target status	Water body type	Water bodies	Status (risk)	Prioritise?	Code	Survey data?
Freshwater Pearl Mussels (Not within SACs)	1029 (19 of 27 catchments of S.I. 296 2009)	Good	River	Clyda_010	Good (AT RISK - HES Obj)	No	IE_SW_18C020070	Yes
			River	Clyda_02-	High (NAR - HES Obj)	No	IE_SW_18C020090	Yes
			River	Lyre_010	Moderate (AT RISK)	Yes	IE_SW_18L020900	Yes
			River	Ballyclogh Strel020	Good (R)	No	IE_SW_18B080500	Yes
			River	Owenbaun (Rathcool)_010	Good (NAR)	No	IE_SW_18O050500	Yes
			River	Keale Stream_010	Unassigned (R)	Yes	IE_SW_18K030940	Yes
			River	Knockanerone_010	Unassigned (R)	Yes	IE_SW_18K980670	Yes
			River	Finnow (Blackwater)_010	Good (NAR)	No	IE_SW_18F030060	Yes
			River	Brogeen_010	Good (NAR)	No	IE_SW_18B060100	Yes
			River	Owenkeal_010	High (NAR)	No	IE_SW_18O060500	Yes
			River	Dalua_010	Good (NAR)	No	IE_SW_18D010050	Yes
			River	Allow_010	Good (NAR)	No	IE_SW_18A020020	Yes
			River	Owenanare_010	High (NAR)	No	IE_SW_18O040200	Yes
			River	Owenanare-020	High (NAR - HES Obj)	No	IE_SW_18O040600	Yes
			River	Oakfront_010	Unassigned (R)	Yes	IE_SW_18O120820	Yes
			River	Awbeg (Buttevant) (West)_010	Poor (AT RISK)	Yes	IE_SW_18A090300	Yes
			River	Awbeg (Buttevant) (East)_010	Moderate (AT RISK)	Yes	IE_SW_18A080120	Yes
			River	Awbeg (Buttevant) (East)_020	Moderate (AT RISK)	Yes	IE_SW_18A080250	Yes
			River	Blackwater (Munster)_010	Good (NAR)	No	IE_SW_18B020050	Yes
			River	Crinnaghtane_010	Good (NAR)	No	IE_SW_18C070300	Yes
			River	Araglin (Blackwater)_010	Good (NAR)	No	IE_SW_18A030080	Yes
			River	Farahy_010	Moderate (AT RISK)	Yes	IE_SW_18F010300	Yes
			River	Farahy_020	Moderate (AT RISK)	Yes	IE_SW_18F010500	Yes
			River	Sheep_010	Good (NAR)	No	IE_SW_18S030200	Yes
			River	Sheep_020	Good (NAR)	No	IE_SW_18S030400	Yes
			River	Sheep_030	Good (NAR)	No	IE_SW_18S030600	Yes
			River	Funshion_010	Good (NAR)	No	IE_SW_18F050030	Yes
			River	Funshion_020	Good (NAR)	No	IE_SW_18F050100	Yes
			River	Funshion_030	Poor (AT RISK)	Yes	IE_SW_18F050310	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)	1029 (19 of 27 catchments of S.I. 296 2009)	Good	River	Funlon_040	Good (R)	No	IE_SW_18F050600	Yes
			River	Funshion_-50	Good (AT RISK - HES Obj)	No	IE_SW_18F050700	Yes
			River	Funshion_060	Moderate (AT RISK)	Yes	IE_SW_18F050800	Yes
			River	Funshion_070	Good (NAR)	No	IE_SW_18F050900	Yes
			River	Funshion_080	Moderate (AT RISK)	Yes	IE_SW_18F051100	Yes
			River	Ogeen_010	-Moderate (AT RISK - HES Obj)	Yes	IE_SW_18O010200	Yes
			River	Ogeen_020	-Moderate (AT RISK - HES Obj)	Yes	IE_SW_18O010400	Yes
River	Gradoge_010	Poor (AT RISK)	Yes	IE_SW_18G130200	Yes			

Natura Codes of Qualifying interests with water conservation objectives, with defined supporting water requirements			
3110	Oligotrophic waters containing very few minerals of sandy plains	1106	Salmon (<i>Salmo salar</i>)
3130	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i>	1029, 1990	Freshwater pearl mussel (<i>Margaritifera margaritifera</i>)
3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp	1092	White-clawed Crayfish
3150	Natural eutrophic lakes with Magnopotamin or Hydrocharition type vegetation	21A0	Machairs (in Ireland)
3160	Natural dystrophic lakes and ponds.	2190	Humid dune slacks
3180	Turloughs	7220	Petrifying springs with tufa deposits
1833	Slender Naiad (<i>Najas flexilis</i>)	7230	Alkaline fens
1150	Coastal Lagoons	Arctic char	Arctic Char has no Natura Code

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