Report on River Water Quality in Waterford

2012

Contents

1. Overview

This report gives an assessment of river water quality in Waterford in 2012. It should be read in conjunction with the main report and the appendices for a complete picture of water quality in the county.

The first section of this report gives a general assessment of the state of rivers in the county, with a graph showing trends in chemical quality since 2006. The next section identifies the WFD priority river sites (in terms of pollution) and the suspected causes of pollution. They were selected on the basis of having a Q value less than 4 (i.e. moderate or worse status), poor chemistry, or there were other significant pollution issues. The third section gives a summary assessment of water quality for each river, having regard to the relevant Q values and WFD criteria for the 4 key chemical parameters BOD, ammonium, ortho-phosphate and TON. Finally there is a set of maps indicating river water quality for these chemical parameters.

2. General Assessment & Trends

Physico-chemical monitoring indicates steady conditions in river water quality in the county - see Figure 1. Many rivers are already of good quality, and the Suir continues to show signs of improvement. The St. John's, Brickey, Dunhill Stream and Mahon all still have problems in places.

Spikes in ortho-Phosphate, ammonia, TON and BOD levels in rivers were observed more frequently during 2012 than in other years. This may be explained (at least in part) by the wet weather experienced particularly during summer 2012, which led to higher run-off into rivers and streams. However diffuse agricultural and municipal pollution remain significant contributory factors to poor river water quality. Further details of the priority polluted sites in the county are available in following Table 2.

Chemical monitoring since 2006 indicates an improving trend in all Waterford rivers. In 2012, the number of sites passing chemistry stayed the same as 2011, with one site (on the St. John's) failing. The number of sites passing the criteria set for the four chemical parameters measured increased every year until 2012 – see Figure 1. This trend is based on an assessment of the four most significant contributing parameters to water quality, namely BOD, ammonium, o-phosphate and TON, details of which are available at https://www.epa.ie/wfdstatus/rivers/RW_Compliance_Rules_RiverChem_20110617.pdf. Sites are identified as passing or failing based on an assessment the mean and 95%ile of these parameters. Sites fail chemistry where 2 or more parameters fail the criteria set. While few sites fail two parameters, a significant number fail one (in the majority of cases this is due to TON). Where a site fails one parameter, it is described as being of concern.

While chemical monitoring indicates an improving trend, it is important to also remain focussed on maintaining the status of those sites that are already at good or higher status.

Table 1: Chemical Quality in Waterford Rivers 2006-2012

Year	No of Stations	Pass	Concern	Fail
2006	103	38	62	3
2007	68	30	34	4
2008	69	45	21	3
2009	84	30	48	6
2010	85	54	29	2
2011	83	56	27	0
2012	83	56	27	0

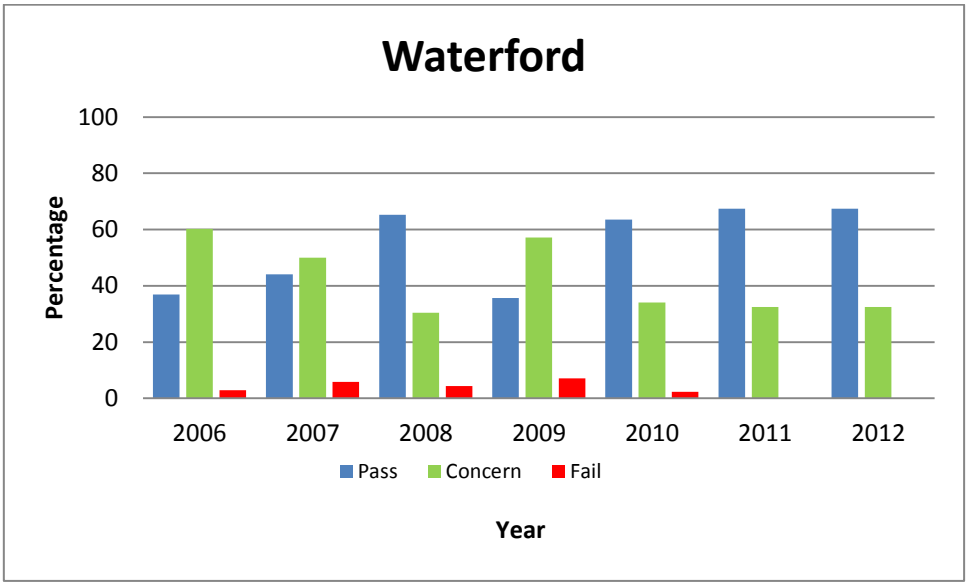


Figure 1: Trend in Chemical Quality in Waterford Rivers 2006-2012

3. WFD Priority Polluted River Sites

There are over 900 river sites of less than good status across the country – that is they have a Q value of 3-4 or less. Table 2 lists those river sites in the county where the most recent Q value is 3-4 or less. There are up to three suspected causes of pollution listed for each site. Roughly 50% are polluted due to point sources and 50% due to diffuse sources. It is hoped that targeting pollution at these sites will lead to continued improvement in river water quality in the county.

This list may be useful in assisting with investigative monitoring, particularly of diffuse sources of pollution. The point source discharges may be dealt with separately through licensing and enforcement measures. If sources of pollution affecting rivers can be reduced or eliminated, this will have a positive knock-on effect on lakes, estuaries and ground-waters in the region.

In 2012, Waterford City Council carried out works in Cherrymount to divert dry weather flow of contaminated surface water into the foul water system, which eliminated a source of pollution to the St. John's River. An ecological study was also carried out on Kilbarry Bog which is adjacent to this river (available form Waterford City Council).

Table 2: WFD Priority Polluted River Sites in Waterford

River	Code	Location	Q Value	Year	Category	Suspected Cause	Comment
SUIR	16S02-2700	Kilsheelan Br	3-4	2011	Urban		
ST JOHN'S	16S03-0500	Wyse's Bridge (Bath Street)	2-3	2009	Municipal	CSOs-Storm Overflows	
ST JOHN'S	16S03-0300	Bleach Bridge	2	2012	Landfill	Landfill	Oil released from substratum
BRICKEY	17B01-0050	Knockmahon Br	3-4	2010	Agriculture	Agricultural : Diffuse	
DUNHILL	17D02-0100	Ballyphilip Br	3-4	2010	Municipal	Integrated Constructed Wetlands	ICWs treating effluent from Dunhill Village
MAHON	17M01-0200	Br just S of Kilmacthomas	3-4	2010	Municipal	Sewage	

4. 2012 Summary of River Water Quality in Waterford

These assessments are based on physico-chemical measurements made during 2012, and the most recent Q values and assessments of the river biologists.

River	Remarks	Change from 2011
Clodiagh (Waterford) **16C03-0050** **16C03-0100** **16C03-0300 Q4 (2011)** **16C03-0400 Q4 (2011)** **16C03-0600** **16C03-0700**	The Clodiagh rises in the Commeragh Mountains and flows through Clonea and Portlaw. Station 0600 flows through the old tannery in Portlaw. Ammonia levels at station 0600 (caused by leachate from landfill at the old tannery in Portlaw which closed in 1985) were high again during 2012. BOD, ortho-phosphate and colour were high at several stations in August during heavy rain.	No significant change during 2012.
Carrickphilip **16C05-0100**	This small stream feeds Knockaderry reservoir. DO levels were low (possibly due to groundwater inflow) throughout the year.	No significant change from 2011.
Dawn **16D04-0100** **16D04-0300** **16D04-0500**	The first station on this river is an abstraction point for East Waterford Regional water supply. BOD, colour and ortho-Phosphate were high in August during heavy rain.	No significant change from 2011.
Glenary **16G02-0050**	This river rises in the Comeragh Mountains and the first station is a raw water abstraction point for Clonmel. Cryptosporidium contamination was reported in 2007, but not observed since. Satisfactory quality.	No change from 2011.
Nier **16N01-0010 Q4-5 (2011)** **16N01-0100 Q4-5 (2011)** **16N01-0400 Q4 (2011)**	This river rises in the Commeragh Mountains and flows through Ballymacarbry village. Physico-chemical results were satisfactory during 2012, and ecological quality is high to good.	No change from 2011.

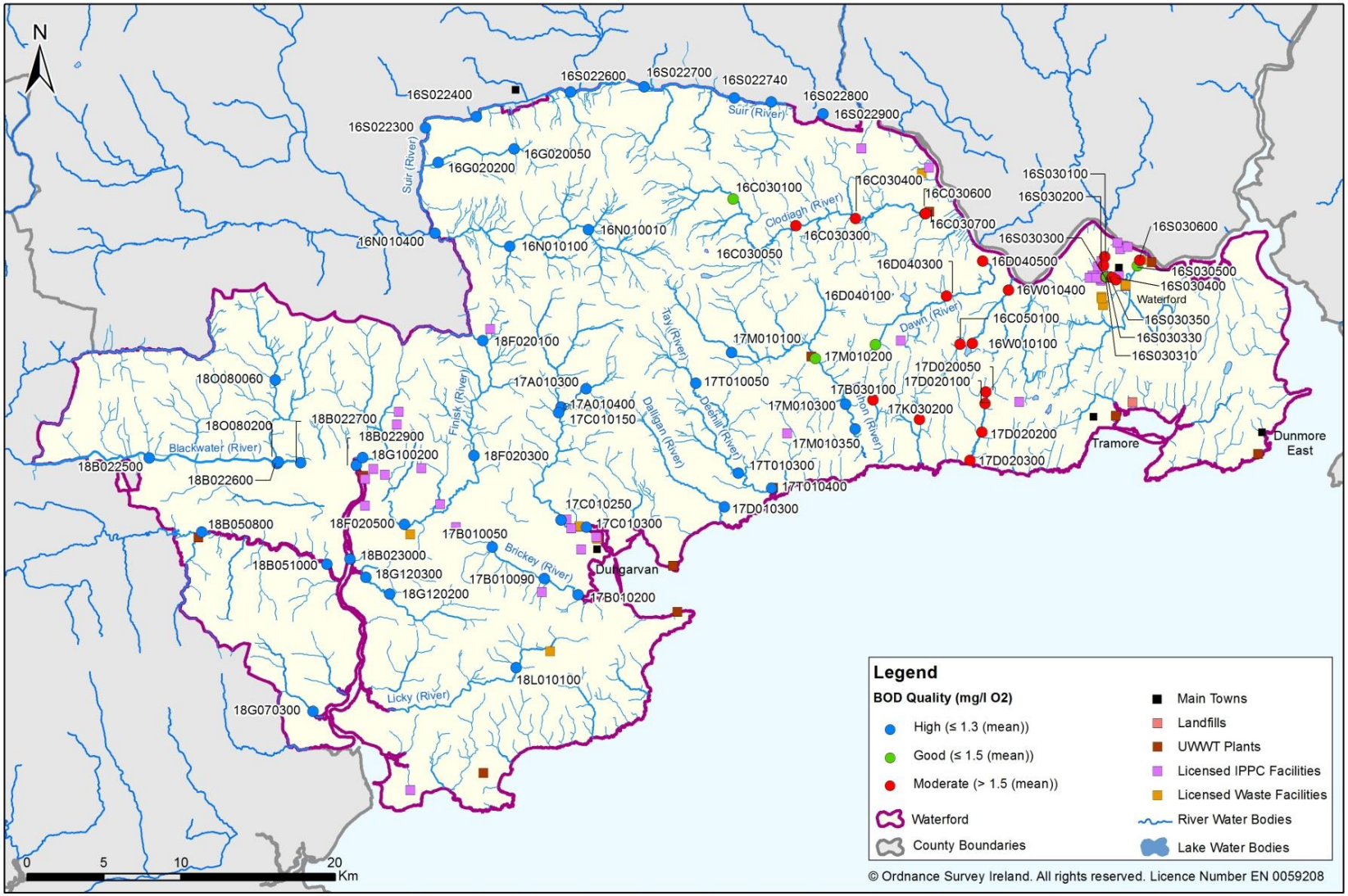
Suir **16S02-2300 Q4 (2011)** **16S02-2400 Q4 (2011)** **16S02-2600** **16S02-2700 Q4 (2011)** **16S02-2740 Q4 (2011)** **16S02-2800** **16S02-2900**	This river is 184 km long and has a catchment area of 3613 km^2. The Suir rises in North Tipperary and flows through Tipperary, along the Tipperary/ Waterford and the Kilkenny/Waterford borders before discharging in to Waterford Harbour. Physico-chemical quality was satisfactory during 2012, the high DOs observed at Kilsheelin Bridge (station 2700) and at Coolnamuck Weir (station 2800) in 2011 was not observed this year. Overall biological monitoring indicates good ecological conditions on this stretch of the river.	The improvement in water quality continues.
St. John's River (& tributaries) **16S03-0050** **16S03-0100** **16S03-0200** **16S03-0300 Q2 (2012)** **16S03-0330** **16S03-0350** **16S03-0400** **15S03-0500** **16S03-0600** **16S03-0310(trib)** **16S03-0315(trib)** **16S03-0320(trib)**	This river flows through Waterford City and a significant portion of it is tidal. Sewage, industrial effluents and leachates that previously were discharge to the river are now collected and treated at the new WWTP at Belview Port which was commissioned in 2008-2009. This small river is seriously polluted along most of its length. DOs are frequently low; BOD, ammonia, ortho-phosphate, nitrite and nitrate are frequently elevated. Quality is reasonably satisfactory above Waterford City (Station 0330 – Sheep's Bridge). Bad ecological quality at Bleach Bridge in 2012.	The quality of this river remains poor, despite the improved collection and treatment system for sewage, leachate and industrial effluents that came into operation in 2008/2009.
Whelans Bridge **16W01-0100** **16W01-0400**	This stream flows from Knockaderry Reservoir, through Kilmeaden Village to the River Suir. BOD and colour were intermittently high at both stations during the year.	No significant change from 2011.
Araglin (Colligan) **17A01-0300 Q4-5 (2010)** **17A01-0400**	Satisfactory quality	No change from 2011.
Brickey **17B01-0050 Q3-4 (2010)** **17B01-0090** **17B01-0200**	This river discharges into Dungarvan Harbour. The upper reaches have been drained and now comprise mainly drainage ditches and sluices. Nitrates are elevated at all stations throughout the year. Ammonia was high at station 0200 in May.	No significant change from 2011.

Ballyscanlon Lake **17B02-0100**	This is an abstraction point for Tramore water supply. It was added to the monitoring programme under the Water Framework Directive in 2007 (but had previously been monitored under the Surface Water for the Abstraction of Drinking Water Regulations (SI 294 of 1989)). BOD was slightly elevated in August, this may be due to plankton present in the lake.	No change from 2011.
Belle Lake **17B04-0100**	This is the abstraction point for Dunmore East water supply. It was added to the monitoring programme under the Water Framework Directive in 2007 (but had previously been monitored under the Surface Water for the Abstraction of Drinking Water Regs (SI 294 of 1989). Quality is satisfactory.	No change from 2011.
Colligan **17C01-0150 Q4-5 (2010)** **17C01-0250 Q4 (2010)** **17C01-0300**	This river flows into Dungarvan Harbour and the lower reaches are tidal. Physico-chemical monitoring was satisfactory during 2012, and ecological quality was good to high in 2010.	No change from 2011.
Carrigavantry Lake **17C02-0100**	This lake is an abstraction point for Tramore water supply. It was added to the monitoring programme under the Water Framework Directive in 2007 (but had previously been monitored under the Surface Water for the Abstraction of Drinking Water Regs (SI 294 of 1989). BOD was slightly elevated in August, this may be due to plankton present in the lake. Otherwise quality is satisfactory.	No change from 2011.
Dalligan **17D01-0300 Q4-5 (2010)**	Physico-chemical monitoring was satisfactory during 2012, and ecological quality was high in 2010.	No change from 2011.
Dunhill (Annestown) Stream **17D02-0050** **17D02-0100 Q3-4 (2010)** **17D02-0200** **17D02-0300**	There are a number of constructed wetlands (reed beds) located along this catchment, and one is used to treat sewage from Dunhill Village. Nitrates are frequently elevated. High ammonia, ortho-phosphate and colour were recorded at station 0100 (Ballyphilip Bridge) at times in 2012 (this bridge is d/s of the reed-bed for Dunhill Village).	No change from 2011.

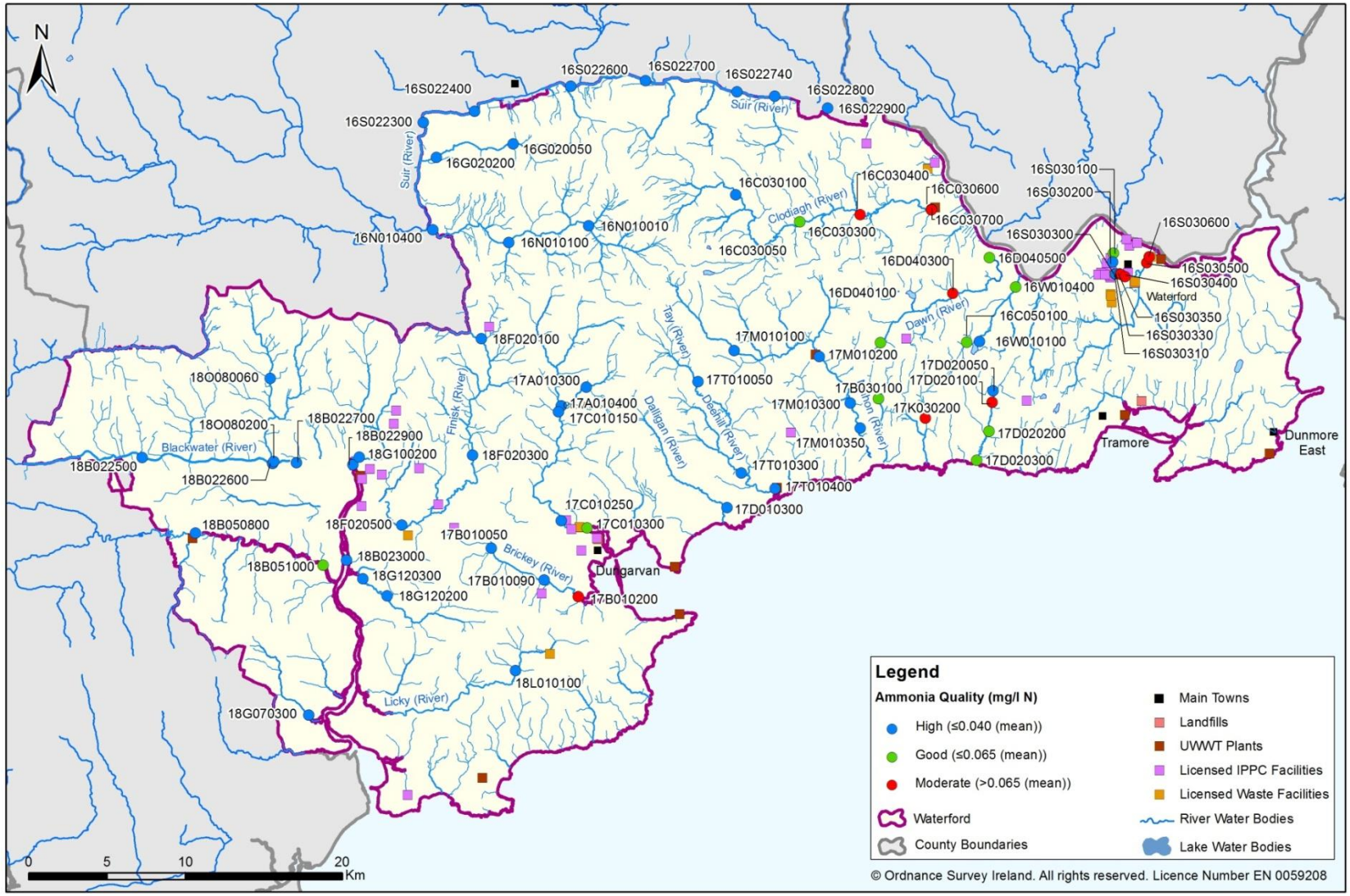
Kilmurrin Cove **17K03-0200**	This stream receives effluent from Kill Village. Elevated BOD, o-phosphate, ammonia, nitrite and nitrite in this river were recorded in 2012.	No change from 2011.
Mahon **17M01-0100 Q4-5 (2010)** **17M01-0200 Q3-4 (2010)** **17M01-0300** **17M01-0350 Q4 (2010)**	This river flows through Kilmacthomas. Physico-chemical monitoring was satisfactory during 2012. Biological monitoring indicates moderate quality d/s of Kilmacthomas.	No change from 2011.
Tay **17T01-0050 Q4-5 (2010)** **17T01-0300** **17T01-0400 Q4 (2010)**	This river rises in the Monavullagh Mountains and flows into the sea at Stradbally. Physico-chemical monitoring was satisfactory during 2012. Ecological quality was good to high in 2010.	No change from 2011.
Blackwater **18B02-1900 Q4 (2012)** **18B02-2500 Q4 (2012)** **18B02-2600 Q4 (2012)** **18B02-2700 Q4 (2012)** **18B02-2900** **18B02-3000**	The Blackwater is a Designated Salmonid River under the Freshwater Fish Directive (78/659/EEC). It rises in Co. Cork and flows into Co. Waterford. Only the latter stretch is covered in this report. Parts of the river are a protected habitat under the Freshwater Pearl Mussel Regulations (SI 296 0f 2009). BOD was slightly elevated at Killavullen Bridge (d/s Mallow) in November and December, and at LIsmore Bridge in December. Colour is also intermittently high, otherwise physico-chemical monitoring was satisfactory. Biological monitoring in 2012 indicated good to high ecological conditions with pearl mussels and most recently, crayfish being found. Part of the upper Blackwater Estuary at Cappoquin has suffered in the past from the effects of effluent from Cappoquin Poulty. This facility was granted an IPPC licence by the EPA in 2008, and the company is working with the Agency to improve the quality of its effluent.	Ecology of this river has improved since the last biological assessment in 2009.
Bride **18B05-0800 Q4 (2012)** **18B05-1000**	The Bride is a Designated Salmonid River under the Freshwater Fish Directive (78/659/EEC). It rises in Co. Cork and flows into Co. Waterford. Only the latter stretch is covered in this report. Nitrates can be elevated at both stations, and BOD was elevated in June at Tallowbridge, while ecological quality was good at the same location.	No change from 2011.

Finisk **18F02-0100** **18F02-0300 Q4 (2012)** **18F02-0500 Q4-5 (2012)**	This river joins the Blackwater d/s Cappoquin. Satisfactory with good to high ecological quality.	No change from 2011.
Glendine **18G07-0300 Q4 at station 0290 (2012)**	This river drains an area north of Youghal and is a tributary of the Blackwater. Satisfactory with good ecological quality.	No change from 2011.
Glennafallia **18G10-0200 Q4 (2012)**	This river rises in the Knockmealdown Mountains and is a tributary of the Blackwater. Satisfactory with good ecological quality.	No change from 2011.
Goish **18G12-0200** **18G12-0300 Q4 (2012)**	This river drains an area east of Villierstown and is a tributary of the Balckwater. Satisfactory with good ecological quality.	No change from 2011.
Lickey **18L01-0100 Q4 (2012)**	Station 0100 is a surveillance site under the Water Framework Directive. This sub-catchment is a protected habitat under the Freshwater Pearl Mussel Regulations (SI 296 of 2009). BOD and ammonia were high in April after heavy rain, otherwise satisfactory with good ecological quality.	No change from 2011.
Owennashad **18O08-0060 Q4-5 (2012)** **18O01-0200 Q4-5 (2012)**	This river rises in the Knockmealdown Mountains and joins the Blackwater at Lismore. Satisfactory quality – ecological quality has improved from good to high at station 0200 (u/s Blackwater confluence).	Ecological quality has improved to high.

River Water Quality: Waterford BOD Assessment 2012



River Water Quality: Waterford Ammonia Assessment 2012



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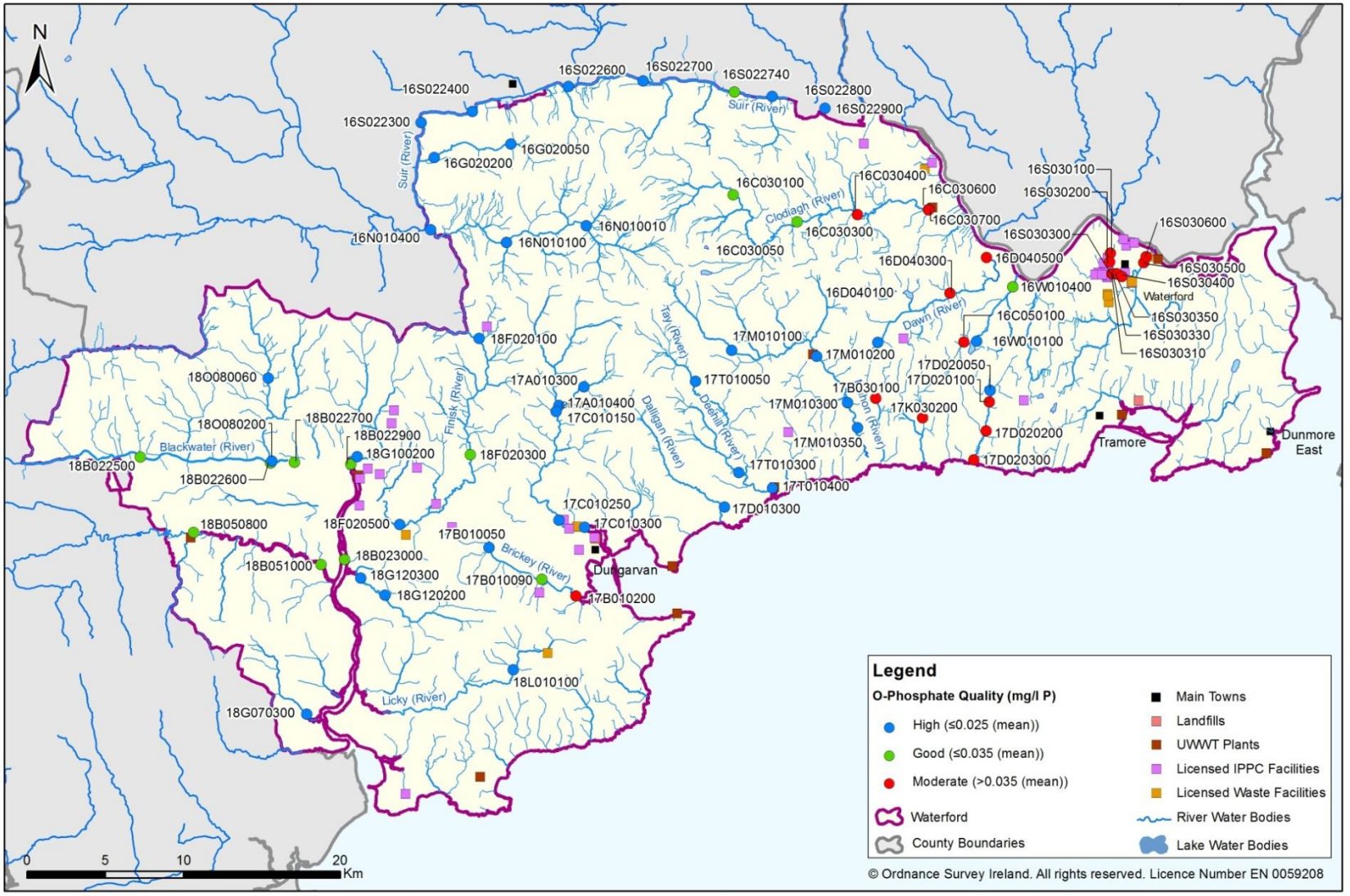

River Water Quality: Waterford Total Oxidised Nitogen Assessment 2012