

Report on River Water Quality in Wexford

2012

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1. Overview

This report gives an assessment of river water quality in Wexford 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 slightly improved river water quality in the county – see Figure 1. However, the Assaly, Aughboy, Bann, Banoge, Blackwater, Chapel, Clonough, Inch, Mulmontry, Owenavorrigh, Pollmounty, Slaney, Sow, Tinnacross Stream and Tintern Abbey Stream all have problems at certain locations.

The Duncormick at station 0220, downstream of Taghmon WWTP, remained in poor condition during 2012. This plant has been identified in the WFD Water Management Unit study as requiring increased capacity and tertiary treatment/ relocation of outfall. It failed to achieve the required effluent quality standards in 2011 (most recent data). This plant and the one at Kilagoley in Enniscorthy achieved persistent failures in the most recent report by the EPA on Urban Waste Water Treatment, details of which are available at <http://www.epa.ie/downloads/pubs/water/wastewater/uww/Urban%20Waste%20Water%20Treatment%20in%202011.pdf>.

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 Table 2.

Chemical monitoring since 2006 indicates an improving trend in all Wexford rivers – 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 Wexford Rivers 2006-2012

Year	No of Stations	Pass	Concern	Fail
2006	97	11	84	2
2007	81	15	62	4
2008	85	15	69	1
2009	85	15	68	2
2010	85	18	66	1
2011	86	23	61	2
2012	86	27	58	1

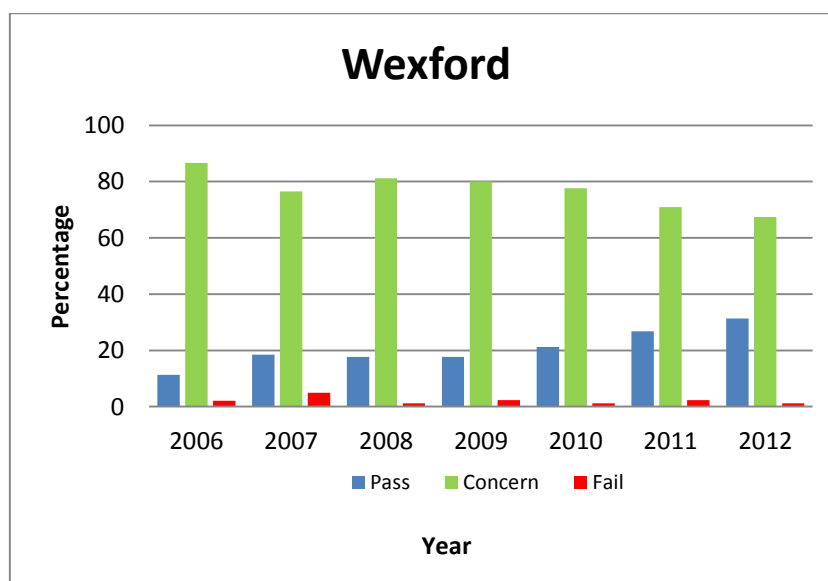


Figure 1: Trend in Water Quality in Wexford 2006-2012

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.

Because of geology and soil-type, Wexford is particularly vulnerable to contamination from domestic waste water treatments systems, with approximately 40% of the land area at very high risk from such contamination, see

https://www.epa.ie/downloads/pubs/water/wastewater/EPA_National_Inspection_Plan_2013.pdf.

Wexford County Council is undertaking or planning a programme of works on several waste water treatment plants that it is hoped will have a positive effect on several rivers, namely the Assally, Duncormick, Blackwater, Banoge, Owenavorrigh and Slaney over the coming years.

Table 2: WFD Priority Polluted River Sites in Wexford

River	Code	Location	Q Value	Year	Category	Suspected Cause	Comment
ASSALY	12A02-0300	Assaly Br.	3-4	2007	Agriculture	Agricultural : Diffuse	Runs through intensive agricultural land including Johnstown Castle estate
AUGHBOY (WEXFORD)	11A02-0200	Br at Riverchapel	2-3	2010	Municipal		Diffuse urban
BANN	12B01-0800	Milltown Br	3	2010	Municipal	Sewage	Ferns WWTP located on nearby u/s tributary. Camolin stream and WWTPs also located u/s.
					Agriculture	Agricultural : Diffuse	Tillage & improved pasture u/s

BANOGE	11B02-0300	Br u/s Owena-vorragh	3	2010	Municipal	Sewage	
BANOGE	11B02-0200	2 km S of Gorey (Knockduff)	2-3	2010	Municipal	Sewage	Gorey WWTP
BLACKWATER (WEXFORD)	11B03-0200	Footbridge E of Blackwater at Mill	3-4	2010	Municipal		Diffuse urban
					Agriculture	Agricultural : Diffuse	
BLACKWATER (WEXFORD)	11B03-0300	River Gap	3-4	2007	Municipal		Diffuse urban
					Agriculture	Agricultural : Diffuse	
CHAPEL STREAM	12C01-0100	Aughanann a Br	3	2010	Municipal	Sewage	Clonroche village & WWTP located u/s
					Agriculture	Agricultural : Diffuse	
CLONOUGH	11C01-0300	Clonough Br	3-4	2010	Agriculture	Agricultural : Diffuse	
CLONOUGH	11C01-0100	Br ENE of St Austin's Ho	3	2007	Municipal	Sewage	Clonough WWTP located u/s – new plant commissioned in 2009.
					Agriculture	Agricultural : Diffuse	
DUNCORMICK	13D01-0200	Br E of Ballynagale	3	2010	Municipal	Sewage	Taghmon agglomeration is 50% larger than the treatment plant capacity.
INCH (WEXFORD)	11I01-0200	Castletown Br	3-4	2010	Agriculture	Agricultural : Diffuse	
MULMONTY	13M01-0400	Mulmontry Bridge	3-4	2007	Agriculture	Agricultural : Diffuse	Nitrate slightly raised

OWENA-VORRAGH	11O01-0400	Ballycanew Br	3-4	2007	Agriculture	Agricultural : Diffuse	Lot of pasture and tillage u/s
					Municipal		Diffuse urban- Lot of new houses u/s Ballycanew - Killenagh no indication of WWTP - sewerage to Ballycanew or septic tanks?
OWENA-VORRAGH	11O01 0600	Boleany Br	3-4	2007	Municipal	Sewage	Banoge river enters u/s impacted by Gorey WWTP
					Agriculture	Agricultural : Diffuse	
OWENA-VORRAGH	11O01 -0500	Essex Br .	3-4	2010	Municipal	Sewage	Ballycanew WWTP and village located u/s
					Agriculture	Agricultural : Diffuse	
POLLMOUNT Y	14P03-0300	D/s Aughananagh R confl	3-4	2009	Industrial	Fish Farming rivers	
SLANEY	12S02-2400	1 km d/s Enniscorthy Br	3-4*	2007	Municipal	CSOs- Storm Overflows	Urban diffuse? CSO located u/s of Br - Enniscorthy town u/s but WWTP located d/s of sampling location
					Eutrophication	Regulation - Dams, Locks, Weirs, new impoundments	Tidal effects

SLANEY	12S02-2100	Ballycarney Br	3-4	2010	Agriculture	Agricultural : Diffuse	
					Municipal	Sewage	Ballycarney town at bridge, nearest WWTP noted on map at Castledockerell east of Ballycarney - urban diffuse?
SOW	12S03-0100	Ballinkeel Br	3-4*	2010	Municipal	Sewage	Ballaghkeen WWTP discharges in upper reaches, lot of new houses located nearby
					Agriculture	Agricultural : Diffuse	
TINNACROSS STREAM	12T01-0400	Carrigeen Br	3-4	2010	Agriculture	Agricultural : Diffuse	
					Municipal	Urban - few new houses located nearby??	
TINTERN ABBEY STREAM	13T01-0900	Bridge near Tintern Abbey	3*	2012	Agriculture	Agricultural : Diffuse	Nitrate levels raised.
					Agriculture	Siltation	Silted

4. 2012 Summary of River Water Quality in Wexford

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 2010
Aughboy 11A02-0200 Q2-3*(2009) (Note: Q2-3 at station 0180 in 2010)	This river discharges to the sea at Courtown harbour . The Aughboy is seriously polluted at Riverchapel. ortho-Phosphate is consistently very high, and ammonia, nitrite and colour are also high at times. BOD and DO levels were slightly improved from 2011 levels. The poor ecological quality of the river underlines the problem.	No significant change from 2011.
Banoge 11B02-0100 11B02-0200 Q2-3 (2010) 11B02-0300 Q3 (2010)	Gorey STW discharges to this river u/s of station 0200. BOD and nutrient levels have improved slightly. Works to divert flows from Gorey WWTP to Courtown WWTP may improve thing further. Q values indicate moderate to poor ecological quality.	No significant change from 2011.
Blackwater 11B03-0200 Q3-4 (2010) 11B03-0300	Nitrate levels remain elevated, however slight reduction in ortho-phosphate levels may be due to recent installation of chemical dosing for phosphate reduction at Blackwater WWTP. Biological monitoring in 2010 indicated moderate ecological quality.	No significant change from 2011.
Brackan 11B04-0200 Q3-4 (2010)	Physico-chemical monitoring was satisfactory in 2012, however biological monitoring indicates a slight deterioration to moderate ecological quality since 2007.	No change from 2011.
Clonough 11C01-0100 11C01-0200 11C01-0300 Q3-4 (2010)	The improvement seen in 2010 has been maintained, however ammonia was high in March.	No change from 2011.

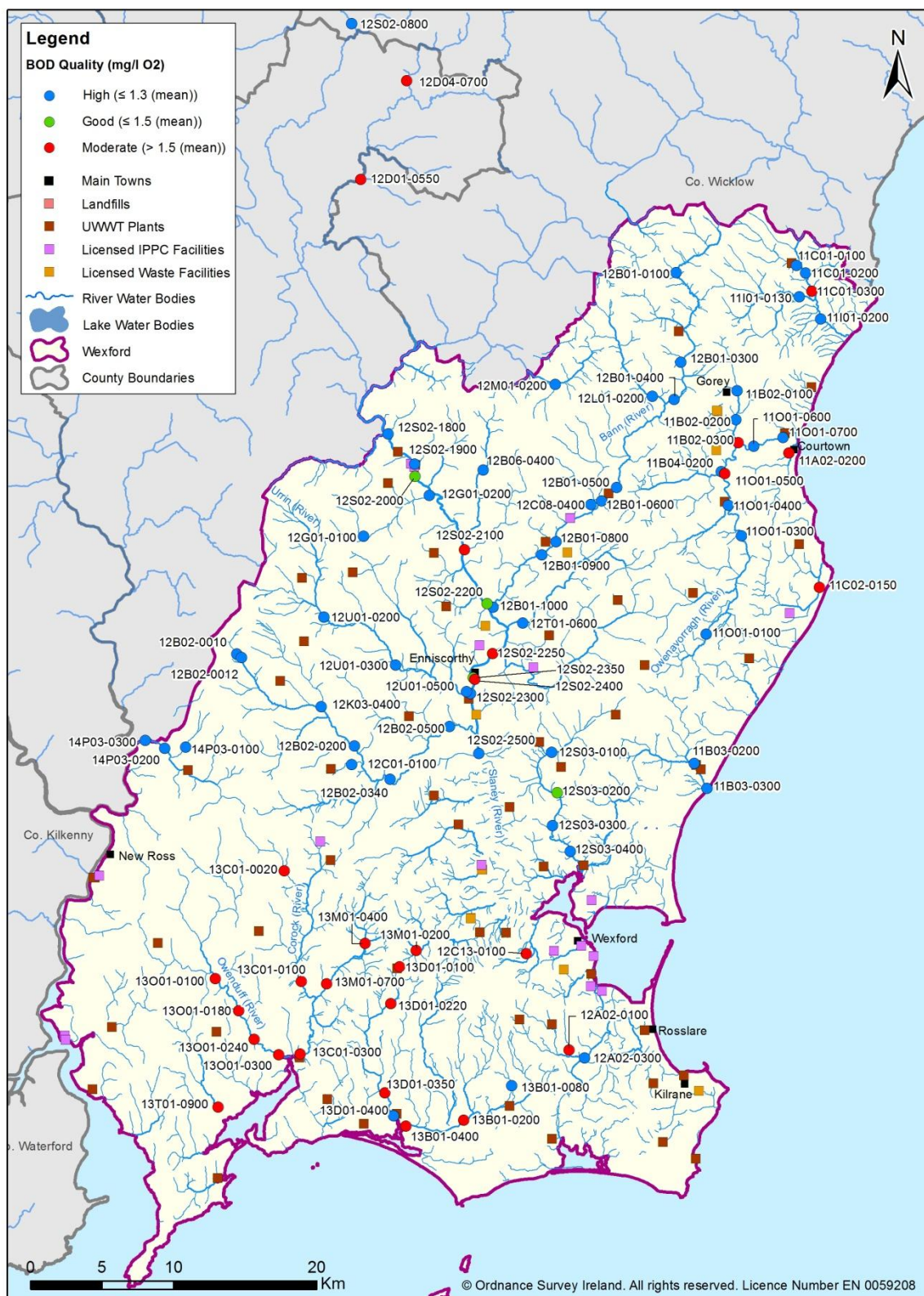
Cahore Canal 11C02-0150	The Cahore Canal flows through an agricultural area in east County Wexford and water quality has been poor since monitoring started in 1986. High BOD, ammonia, ortho-phosphate and low DOs (8% in September) were typical during 2012.	Poor quality continues.
Inch 11I01-0130 11I01-0200 Q3-4 (2010) Q4 at station 0095 (2010)	BOD was high in October, otherwise physico-chemical monitoring was satisfactory. Good ecological quality upstream, deteriorating to moderate further downstream.	No change from 2011.
Owenavorrhagh 11O01-0100 11O01-0300 Q3-4 (2010) 11O01-0400 11O01-0500 Q3-4 (2010) 11O01-0600 11O01-0700 Q4 (2010)	This river flows through low-lying agricultural land with drainage channels. It also receives treated effluent from Gorey WWTP via the Banoge. BOD and ortho-phosphate were high in November during heavy rain. Ecological quality is good in the upper and lower reaches, moderate elsewhere. It is hoped the proposed upgrade to Ballycanew WWTP will improve water quality.	No significant change in 2012.
Assaly 12A02-0100 12A02-0150 12A02-0300 Q3-4 (2007) (Q4 at station 0200 in 2007)	There are several branches to this river. Station 0100 can be dry at times. Station 0200 was replaced by station 0300 for safety reasons, and in late 2009 station 0150 was added (u/s of confluence of the various branches). The Assaly discharges into the drainage channels for the South Wexford Slob. ortho-Phosphate levels d/s Piercestown Village remain high, however it is hoped conditions here will improve with the completion of works to divert discharge to Wexford in 2013.	No change from 2011.
Bann 12B01-0100 Q4-5 (2010) 12B01-0300 12B01-0400 Q4-5 (2010) 12B01-0500 12B01-0600 Q4 (2010) 12B01-0800 Q3 (2010) 12B01-0900 Q3-4 (2010) 12B01-1000 Q4 (2010)	Physico-chemical quality in 2012 was satisfactory. Biological monitoring in 2010 indicated poor quality at station 0800 (d/s Irish Country Meats), and a deterioration from high to moderate quality at station 0900 since 2007.	No significant change from 2011.

Boro 12B02-0010 12B02-0012 12B02-0200 Q4 (2010) 12B02-0340 Q4 (2010) 12B02-0500	The first two stations are surface water abstraction points for Rathnure and Ballywilliam respectively, and pH can be low at both locations. Nitrate levels are elevated from Ballymackesy Br (Station 0200) downstream, but ecological quality is good.	No change from 2011.
Chapel Stream 12C01-0100 Q3 (2007)	This river receives sewage effluent from Clonroche. Poor quality with consistently high ortho-phosphate and nitrate levels.	No change from 2011.
Clody 12C03-0100 12C03-0200 Q4-5 (2010)	Physico-chemical and biological monitoring indicate good to high quality.	No change from 2011.
Camolin Stream 12C08-0400 Q3-4 at station 0300 (2010)	Nitrates are elevated, and ecological quality is moderate.	No change from 2011.
Derry 12D02-0900 Q 4 (2007)	This report only deals with the Carlow /Wexford stretch of the river, however biological monitoring indicates a deterioration in quality at most stations in Co. Wicklow from 2007 to 2010. BOD was high in August during heavy rain.	No significant change from 2011.
Glasha 12G01-0100 Q4-5 (2010) 12G01-0200 Q4 (2010)	The Glasha is a tributary of the Slaney, south of Clohamon. Good to high ecological quality.	No change from 2011.
Kileen Stream 12K03-0400 Q4 (2010)	This stream is a tributary of the Boro and Slaney. Good ecological quality and physico-chemical results.	No change from 2011.
Lask 12L01-0200 Q3-4 (2010)	Ammonia and nitrate were elevated during 2012, and ecological quality is moderate.	No change from 2011.
Mine 12M01-0200 Q3-4 (2010)	This river is a tributary of the Derry and Slaney. BOD was high in August (after rain), and ecological quality is moderate.	No change from 2011.

Slaney 12S02-0800 Q4 (2010) 12S02-1800 Q4 (2010) 12S02-1900 12S02-2000 Q4 (2010) 12S02-2100 Q3-4 (2010) 12S01-2200 Q4 (2010) 12S02-2250 12S02-2300 12S02-2350 12S02-2400 12S02-2500	<p>The Slaney rises in the Wicklow mountains and flows through Carlow and Wexford, before meeting flowing into the sea at Wexford Harbour.</p> <p>This assessment deals with the freshwater stretches that flow through Wexford. BOD was high at several stations in April and August after heavy rain, otherwise physico-chemical monitoring was satisfactory. Ecological quality was only moderate at Ballycarney Bridge where considerable algal growth was observed.</p>	No change from 2011.
Sow 12S03-0100 Q3-4 (2010) 12S03-0200 12S03-0300 12S03-0400 Q3-4 at station 0250 and Q4 at station 0370 (2010)	<p>BOD was high in July at Kilmallock Bridge (station 0200), otherwise physico-chemical monitoring was satisfactory. Biological monitoring in 2010 indicated good to moderate conditions in the river.</p>	No significant change from 2011.
Tinnacross Stream 12T01-0600 Q3-4 (2010)	<p>ortho-Phosphate was high in August, otherwise physico-chemical monitoring was satisfactory. Ecological quality was moderate, with heavy siltation.</p>	No change from 2011.
Urrin 12U01-0200 Q4 (2010) 12U01-0300 Q4 (2010) 12U01-0500 Q3-4 (2010)	<p>Physico-chemical monitoring was satisfactory in 2012, however biological monitoring recorded slime growth at station 0500 in 2010.</p>	No change from 2011.
Bridgetown 13B01-0080 Q4 (2010) 13B01-0200 13B01-0400	<p>The Bridgetown is a complex river system that drains low-lying land, and has been subject to land reclamation and arterial draining. Station 0080 is freshwater, stations 0200 and 0400 are tidal and mainly mud flats. The river discharges into Ballyteige Bay. BOD, ortho-phosphate and ammonia levels were elevated at stations 0200 & 0400 during 2012.</p>	No change from 2011.
Corock 13C01-0020 Q4 (2010) 13C01-0100 Q4 (2010) 13C01-0300	<p>This river discharges into Bannow Bay and the last station is tidal. BOD was high at all stations on occasion in 2012, and ortho-phosphate was also high at station 0100. Ecological quality was good in 2010.</p>	Deterioration in chemistry at station 0100 during 2012.

Duncormick 13D01-0100 13D01-0220 13D01-0350 13D01-0400 Q4 (2010)	This river discharges into Ballyteige Bay and the last station is tidal. Flows can be very low at the first station (0100) in summer. Overall quality is poor – particularly at station 0220 d/s Taghmon, where BOD, ortho-phosphate, ammonia and nitrite are all elevated. Station 0100 at Taghmon has elevated nitrate levels, and station 0350 (near Duncormick Railway station) also experienced high BOD and ortho-phosphate during 2012. Ecological quality upstream of station 0400 is poor to moderate.	No significant change from 2011.
Mulmontry 13M01-0200 Q4 (2010) 13M01-0400 13M01-0700 Q4 (2010)	This river is a tributary of the Corock. High BOD , ortho-phosphate and colour at all stations in June and August, after heavy rain. Ecological quality was good in 2010.	No significant change from 2011.
Owenduff 13O01-0100 Q4 (2010) 13O01-0180 Q4 (2010) 13O01-0240 Q4 (2010) 13O01-0300	This river discharges into Bannow Bay and the last station is tidal. BOD, colour, ortho-phosphate and nitrate were high at all stations at times during 2012, especially after heavy rain. Ecological quality was good in 2010.	Slight deterioration in chemistry since 2011.
Tintern Abbey Stream 13T01-0900 Q3* (2012)	BOD was high in June and August after heavy rain, and siltation, noted in 2010 remains a problem in this stream.	No change from 2011.
Pollmounty 14P03-0100 14P03-0200 14P03-0300 Q4 (2011)	Nitrates are elevated at stations 0200 and 0300, otherwise chemical was satisfactory in 2012. Biological monitoring indicated good quality downstream of the Aughananagh River confluence in 2011.	No significant change from 2011.

River Water Quality: Wexford BOD Assessment 2012



River Water Quality: Wexford Ammonia Assessment 2012



Legend

- O-Phosphate Quality (mg/l P)
 - High (≤ 0.025 (mean))
 - Good (≤ 0.035 (mean))
 - Moderate (> 0.035 (mean))
- Main Towns
- Landfills
- UWWT Plants
- Licensed IPPC Facilities
- Licensed Waste Facilities
- River Water Bodies
- Lake Water Bodies
- Wexford
- County Boundaries

The map displays the following locations and features:

- Towns:** New Ross, Enniscorthy, Wexford, Rosslare, Kiltrane.
- Rivers:** Urrin River, Bantry River, Owenavonagh River, Sarsney River, Corcock River, Oulartun River.
- Sampling Points:** Numerous points are labeled with codes such as 12S02-0800, 12D04-0700, 12D01-0550, 12B01-0100, 11C01-0100, 11C01-0200, 11C01-0300, 11O1-0130, 11O1-0200, 12M01-0200, 12B01-0400, 12L01-0200, 11B02-0100, 11B02-0300, 11O01-0600, 11O01-0700, 11A02-0200, 11B02-0200, 11O01-0500, 11O01-0400, 11O01-0300, 11C02-0150, 12G01-0100, 12S02-1800, 12S02-1900, 12B06-0400, 12B01-0500, 12C08-0400, 12B01-0600, 12B01-0800, 12B01-0900, 12S02-2100, 12S02-2200, 12B01-1000, 12S02-2250, 12S02-2350, 12S02-2300, 12S02-2500, 12S03-0100, 11B03-0200, 11B03-0300, 12S03-0200, 12S03-0300, 12S03-0400, 14P03-0300, 14P03-0200, 14P03-0100, 12B02-0010, 12B02-0012, 12U01-0200, 12U01-0300, 12U01-0500, 12K03-0400, 12B02-0500, 12B02-0340, 12C01-0100, 13C01-0020, 13M01-0400, 13M01-0200, 12C13-0100, 13D01-0100, 13M01-0700, 13D01-0220, 13O01-0100, 13O01-0180, 13O01-0240, 13O01-0300, 13T01-0900, 13D01-0400, 13B01-0200, 13B01-0400, 13D01-0350, 12A02-0100, 12A02-0300, 13D01-0400.

Scale: 0 to 20 Km.

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River Water Quality: Wexford Total Oxidised Nitrogen Assessment 2012

