

Report on River Water Quality in County Carlow 2011

Contents

Overview	2
General Assessment	2
Priority Polluted Sites	2
Trends	4
2011 Summary...	5
Maps	9

Overview

This report gives an assessment of river water quality in County Carlow in 2011. 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 identifies the priority polluted sites and suspected causes of pollution. They were selected based on having a Q value less than 4 (i.e. moderate or worse status), or there were other significant pollution issues.

The next two sections show trends in river water quality since 1980, and give a summary assessment of water quality for each river in the county. The assessment is based on the experience and expert judgement of the author, in conjunction with an evaluation of the relevant Q values and physico-chemical data. Future reports will evaluate rivers to more stringent WFD criteria.

Finally there is a set of maps indicating river water quality for 6 parameters – ammonium, BOD, dissolved oxygen, o-phosphate, pH, o-phosphate and total oxidised nitrogen.

General Assessment

Physico-chemical monitoring indicates an overall, if modest, improvement in water quality in the Barrow, Dinin and Mountain during 2011. However the Aghalona, Burren, Derreen, Douglas, Lerr and Old Leighlin all have problems at certain locations. These are mainly caused by diffuse agricultural or municipal pollution, or point source pollution from waste water treatment plants. Further details of these sites are available in the following table.

It is hoped that targeting pollution at these sites will lead to continued improvement in river water quality in the county.

Priority Polluted Sites

Table showing Polluted Sites in Carlow and Suspected Causes

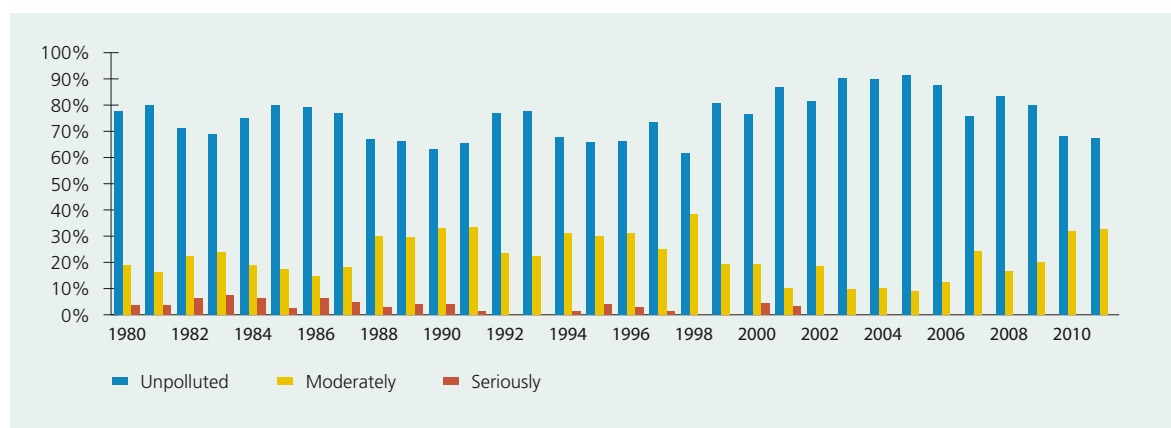
There are over 900 river sites of less than good status across the country – that is they have a Q value of 3-4 or less. The table below lists those river sites in the county where the most recent Q value is 3-4 or less. There are up to three suspected causes of pollution listed for each site. Roughly 50% are polluted due to point sources and 50% due to diffuse sources.

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.

River	Code	Location	Q Value	Year	Category	Suspected Cause	Comments
AGHALONA	14A02-0200	Br nr Moatalusha House	3-4	2011	Agriculture	Agricultural: Diffuse	Lot of improved pasture & tillage u/s
					Municipal		Lot of houses scattered u/s – onsite wastewater systems??
BURREN	14B05-0100	Ullard Br	3-4	2011	Municipal	Sewage	Fenagh WWTP located on u/s trib.
					Agriculture	Agricultural: Diffuse	Tillage & improved pasture
BURREN	14B05-0400	Staplestown Br	3-4	2011	Agriculture	Intensive Land use	Tillage & Improved pasture
					Municipal	Sewage	Rathoe WWTP located u/s
					Industrial	Quarrying	River runs alongside it u/s. Section 4 discharge licence
BURREN	14B05-0485	Ring Rd Br Carlow (d/s side)	3-4	2011	Municipal	Sewage	Kernanstown WWTP located u/s and CSO located just u/s. Lot of new houses around Carlow town
					Agriculture	Agricultural: Diffuse	Intensive land use – improved pasture & tillage
DEREEN	12D01-0700	Rathglass Bridge	3-4	2010	Agriculture	Agricultural: Diffuse	Q4-5 in 2007
DOUGLAS (BALLON)	12D03-0400	Bang Up Br	3-4	2010	Municipal	Sewage	Located d/s of Stn 0160 and Ballon
					Agriculture	Agricultural: Diffuse	
OLD LEIGHLIN STREAM	14O02-0700	Madlin Br	3-4	2011	Agriculture	Agricultural: Diffuse	Improved (enriched) pasture-abundant algal growths, elevated DO, heavy siltation & extensive bank erosion
					Municipal	Sewage	Old Leighlin WWTP located u/s
LERR	14L01-0300	Lerr Br	3-4	2011	Agriculture	Agricultural: Diffuse	Lot of tillage & improved pasture
					Municipal	Sewage	Palatine stream confluence u/s – Palatine WWTP located u/s

Overall Trend of Water Quality in County Carlow since 1980.

Year	Number of Rivers Monitored	Total Number of Sample Stations	Number of Sample Stations in each category			Percent of Sample Stations in each Category		
			Un-Polluted	Moderately Polluted	Seriously Polluted	Un-Polluted	Moderately Polluted	Seriously Polluted
1980	12	80	62	15	3	77.5%	18.8%	3.8%
1981	12	80	64	13	3	80.0%	16.3%	3.8%
1982	12	80	57	18	5	71.3%	22.5%	6.3%
1983	12	80	55	19	6	68.8%	23.8%	7.5%
1984	12	80	60	15	5	75.0%	18.8%	6.3%
1985	12	80	64	14	2	80.0%	17.5%	2.5%
1986	12	81	64	12	5	79.0%	14.8%	6.2%
1987	12	82	63	15	4	76.8%	18.3%	4.9%
1988	12	73	49	22	2	67.1%	30.1%	2.7%
1989	12	74	49	22	3	66.2%	29.7%	4.1%
1990	12	73	46	24	3	63.0%	32.9%	4.1%
1991	12	81	53	27	1	65.4%	33.3%	1.2%
1992	12	73	56	17	0	76.7%	23.3%	0.0%
1993	12	71	55	16	0	77.5%	22.5%	0.0%
1994	12	71	48	22	1	67.6%	31.0%	1.4%
1995	12	73	48	22	3	65.8%	30.1%	4.1%
1996	12	71	47	22	2	66.2%	31.0%	2.8%
1997	12	72	53	18	1	73.6%	25.0%	1.4%
1998	12	73	45	28	0	61.6%	38.4%	0.0%
1999	12	72	58	14	0	80.6%	19.4%	0.0%
2000	12	72	55	14	3	76.4%	19.4%	4.2%
2001	12	60	52	6	2	86.7%	10.0%	3.3%
2002	12	65	53	12	0	81.5%	18.5%	0.0%
2003	12	61	55	6	0	90.2%	9.8%	0.0%
2004	11	59	53	6	0	89.8%	10.2%	0.0%
2005	11	57	52	5	0	91.2%	8.8%	0.0%
2006	11	57	50	7	0	87.7%	12.3%	0.0%
2007	15	45	34	11	0	75.6%	24.4%	0.0%
2008	16	42	35	7	0	83.3%	16.7%	0.0%
2009	18	45	36	9	0	80.0%	20.0%	0.0%
2010	18	44	30	14	0	68.2%	31.8%	0.0%
2011	18	43	29	14	0	67.4%	32.6%	0.0%



2011 Summary of River Water Quality in Co. Carlow

This assessment is based on the experience and expert judgement of the author, in conjunction with an evaluation of relevant Q values and physico-chemical data. Future reports will evaluate rivers to more stringent WFD criteria.

River	Number of Sampling Stations in each category			Remarks	Change from 2010
	Generally Satisfactory	Moderately Polluted at times	Seriously Polluted at times		
Blacklion Stream (12B04) <i>Q3-4 (2010)</i> This stream was first sampled in 2007 under the WFD.	1			Nitrates are elevated, and abundant weed growth had been recorded, otherwise quality is satisfactory.	No change.
Clody (12C03) <i>Q 4-5 at station 0300 (2010)</i>	2			Generally satisfactory quality.	No change from 2010.
Clonmore Stream (12C05) This river is a tributary of the Derreen river and flows through agricultural land in NE Carlow.	1			Generally satisfactory quality	No change from 2010.
Derreen (12D01) <i>Q value range 3-4 to 4 (2010)</i> This report deals with the Carlow stretch of the Derreen only (u/s stretches are in Co. Wicklow). The Derreen sub-catchment is protected under the Freshwater Pearl Mussel Regulations (S.I. 296 of 2009).	4	1		The colour in this river tends to be high (naturally occurring). Nitrate levels seem to have been reducing slightly over the last two years. Q values indicate a deterioration in the lower reaches and an improvement d/s Hacketstown WWTP.	Overall, no change significant change from 2010.
Derry (12D02) <i>Q 4 (2007)</i> This report only deals with the Carlow/ Wexford stretch of the river, however biological monitoring indicates moderate to good conditions in Co. Wicklow in 2010.	1			Satisfactory quality	No change.
Douglas (Ballon) (12D03) <i>Q 3-4 (2010)</i> This river flows through agricultural land and past the villages of Myshall and Ballon in Co. Carlow.		3		BOD, o-phosphate, colour and nitrate are all elevated at times. Quality is moderate. High BOD, ammonia and o-phosphate recorded in August 2011 indicate intermittent pollution.	No change from 2010.

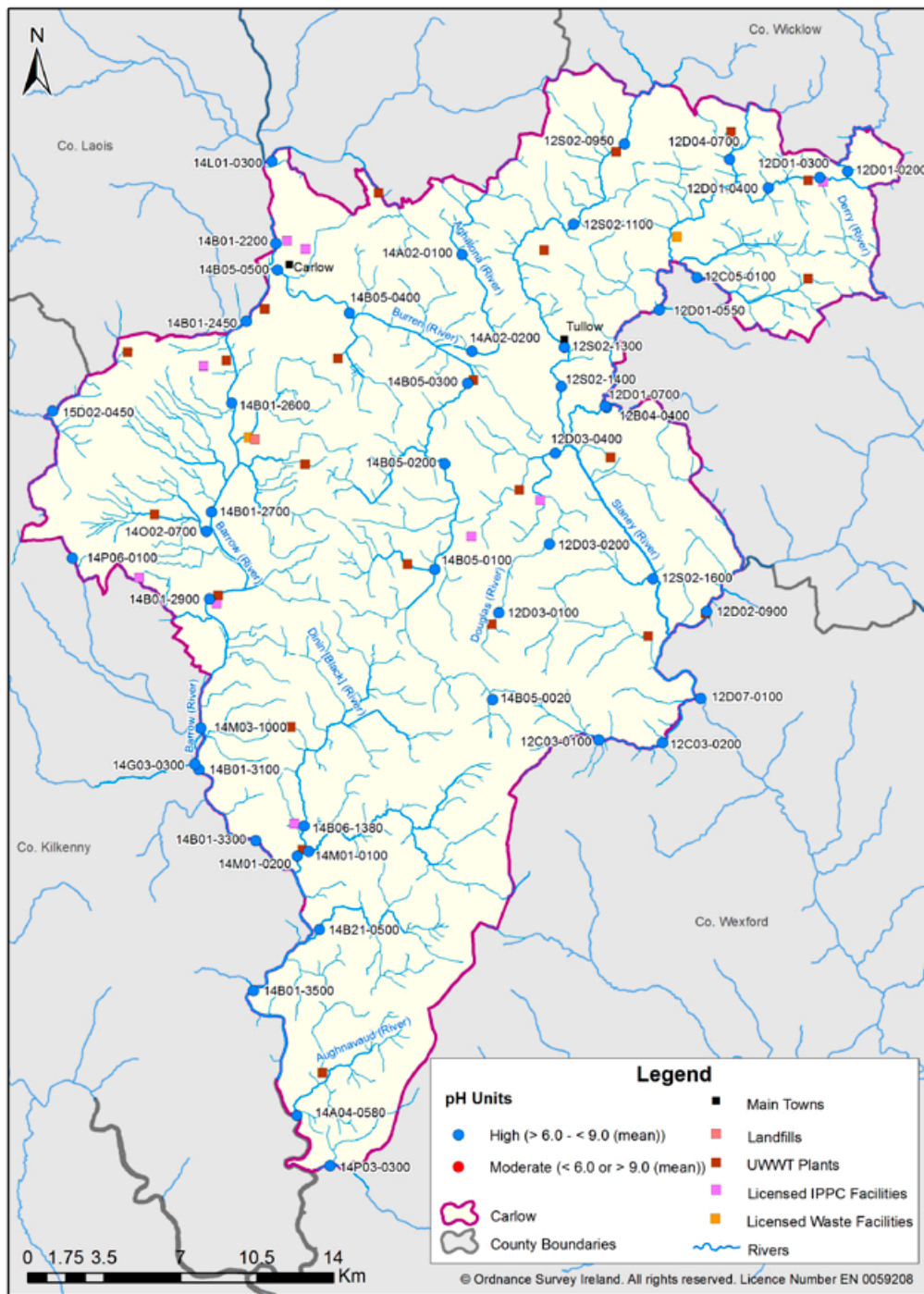
River	Number of Sampling Stations in each category			Remarks	Change from 2010
	Generally Satisfactory	Moderately Polluted at times	Seriously Polluted at times		
Slaney (12S02) <i>Q value range 3-4 to 4 (2010)</i> The Slaney rises in the Wicklow mountains and flows through Carlow and Wexford, before flowing into the sea at Wexford Harbour. This report deals with the freshwater stretches that flow through Carlow and Wexford.	4	1		Elevated BOD, o-phosphate and ammonia are observed d/s Tullow STW, otherwise quality is satisfactory.	No change from 2010.
Aughalona (14A02) <i>Q 3-4 (2011)</i> This river flows through a major tillage area, which may explain the high nitrate levels.		2		DO, BOD and o-phosphate are elevated at times. Nitrates high at both stations. Biological assessment in 2009 of Q3-4 underlines the unsatisfactory conditions.	No significant change observed.
Aughavaud (14A04) <i>Q 4-5 (2011)</i> This river was added to the sampling programme in 2009 when the sub-catchment was designated a protected habitat under the Freshwater Pearl Mussel Regulations (S.I. 296 of 2009)	1			Satisfactory conditions. Biological assessment indicated satisfactory conditions in 2011 (Q4-5).	No change observed.
Barrow (14B01) <i>Q value range 3-4 to 4-5 over length of river (2011)</i> The Barrow rises in the Slieve Bloom mountains and flows through counties Laois, Kildare, Carlow, Kilkenny and Wexford. It converges with the Nore and Suir rivers before discharging to Waterford Harbour. The lowest reaches are tidal and they are dealt with under the Transitional Waters monitoring programme.	9			BOD and o-phosphate were slightly raised on one occasion at Graiguenamanagh Bridge. Overall the physico-chemical quality of the river has improved since 2010.	Improvement in physico-chemical quality since 2010.

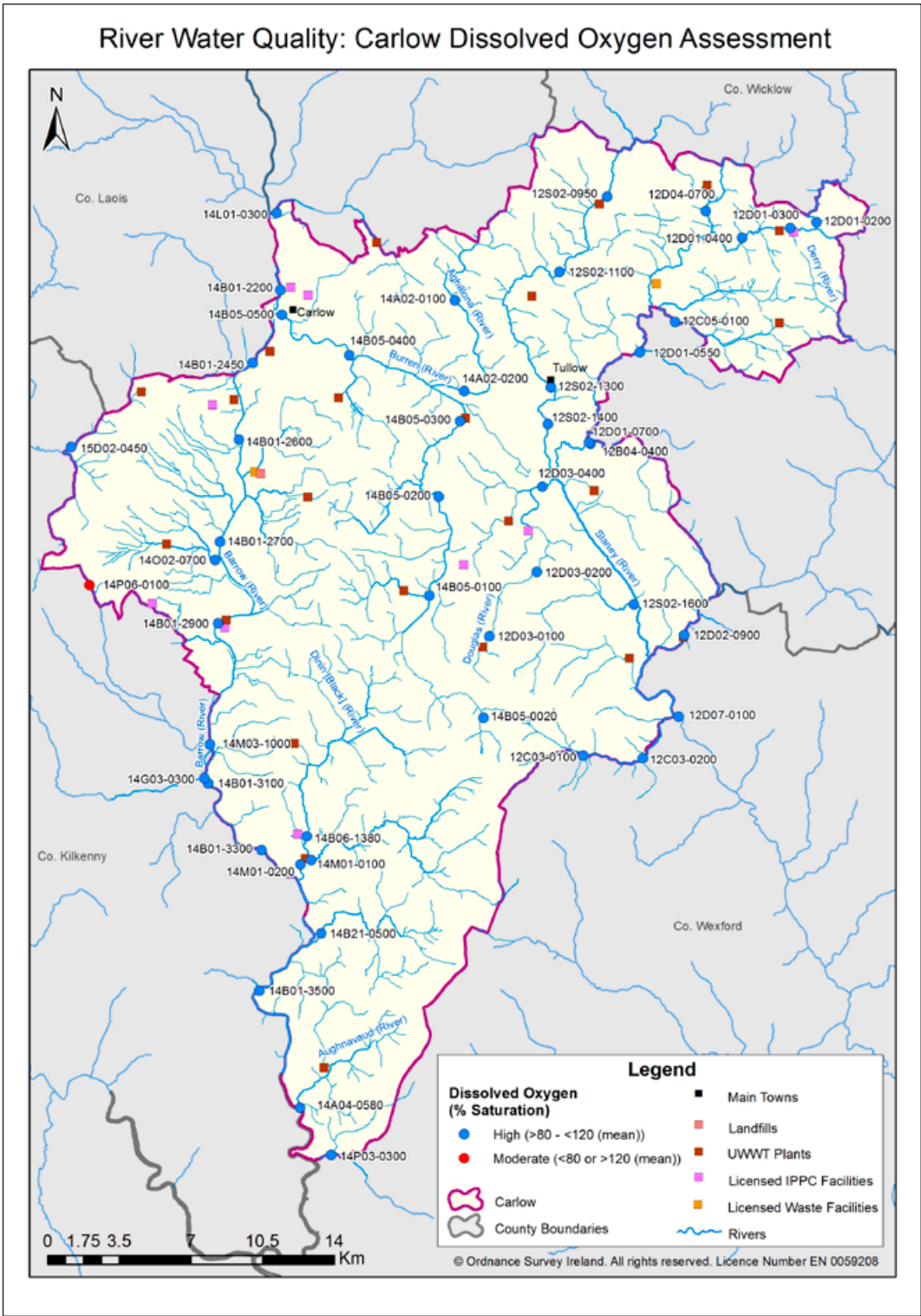
River	Number of Sampling Stations in each category			Remarks	Change from 2010
	Generally Satisfactory	Moderately Polluted at times	Seriously Polluted at times		
Burren (14B05) <i>Q value range 3-4 to 4-5 over length of river (2011)</i> This river flows through a tillage area in north Co. Carlow hence the elevated nitrate levels.	3	3		Nitrates are high in the lower reaches of this river. Station 0400 (Br near Ballycrogue – SW abstraction point) showed improvements in BOD and o-Phosphate, but DO was high. Overall quality is moderate.	No significant change from 2010.
Ballymurphy (Barrow) (14B21) <i>Q4 (2011)</i> This river was added to the sampling programme in 2009 when the sub-catchment was designated a protected habitat under the Freshwater Pearl Mussel Regulations (S.I. 296 of 2009)	1			Nitrates are slightly elevated, otherwise quality is satisfactory.	No change from 2010.
Lerr (14L01) <i>Q 3-4 (2011)</i> This river flows through areas of intensive tillage farming in Co. Kildare. Only station 0300 (u/s of Barrow) is monitored here.		1		Nitrate levels are high throughout the year. Quality is only moderate with biological assessments indicating eutrophication and excessive siltation.	No significant change from 2010.
Mountain (14M01) <i>Q 4 at station 0200 (2009)</i> The Mountain sub-catchment was designated a protected habitat under the Freshwater Pearl Mussel Regulations (S.I. 296 of 2009)	2			Improvement in conditions (especially BOD) at station 0200 (d/s of Borris WWTP) – quality is satisfactory.	Improvement observed at station 0200.
Old Leighlin Stream (14O02) <i>Q 3-4 (2011)</i> A tributary of the Barrow, this river flows through an agricultural area. It was added to the work programme in 2007 under the WFD.		1		Slight improvement in physico-chemical quality in 2011, but biological assessments indicate eutrophic conditions.	No significant change from 2010.

River	Number of Sampling Stations in each category			Remarks	Change from 2010
	Generally Satisfactory	Moderately Polluted at times	Seriously Polluted at times		
Pollmounty (14P03) <i>Q 4 (2011)</i>		1		BOD, o-phosphate and ammonia were elevated at station 0300 (below confluence with Aughamanagh River and d/s of a fish farm), but the biological assessment indicates good quality here, despite continued enrichment.	No significant change from 2010.
Dinin (15D02) <i>Q value range 3-4 to 4-5 over length of river (2010)</i> There are two branches (north and south) that come together into a main channel for the final two sampling points. Some sampling locations were changed in 2007 under the WFD.		1		This river can be highly coloured at times. BOD and o-phosphate are also periodically elevated. Generally good quality at this station.	Improvements noted in 2009 (and reversed in 2010) have reappeared.
Total number of stations in each category	29	14	0		

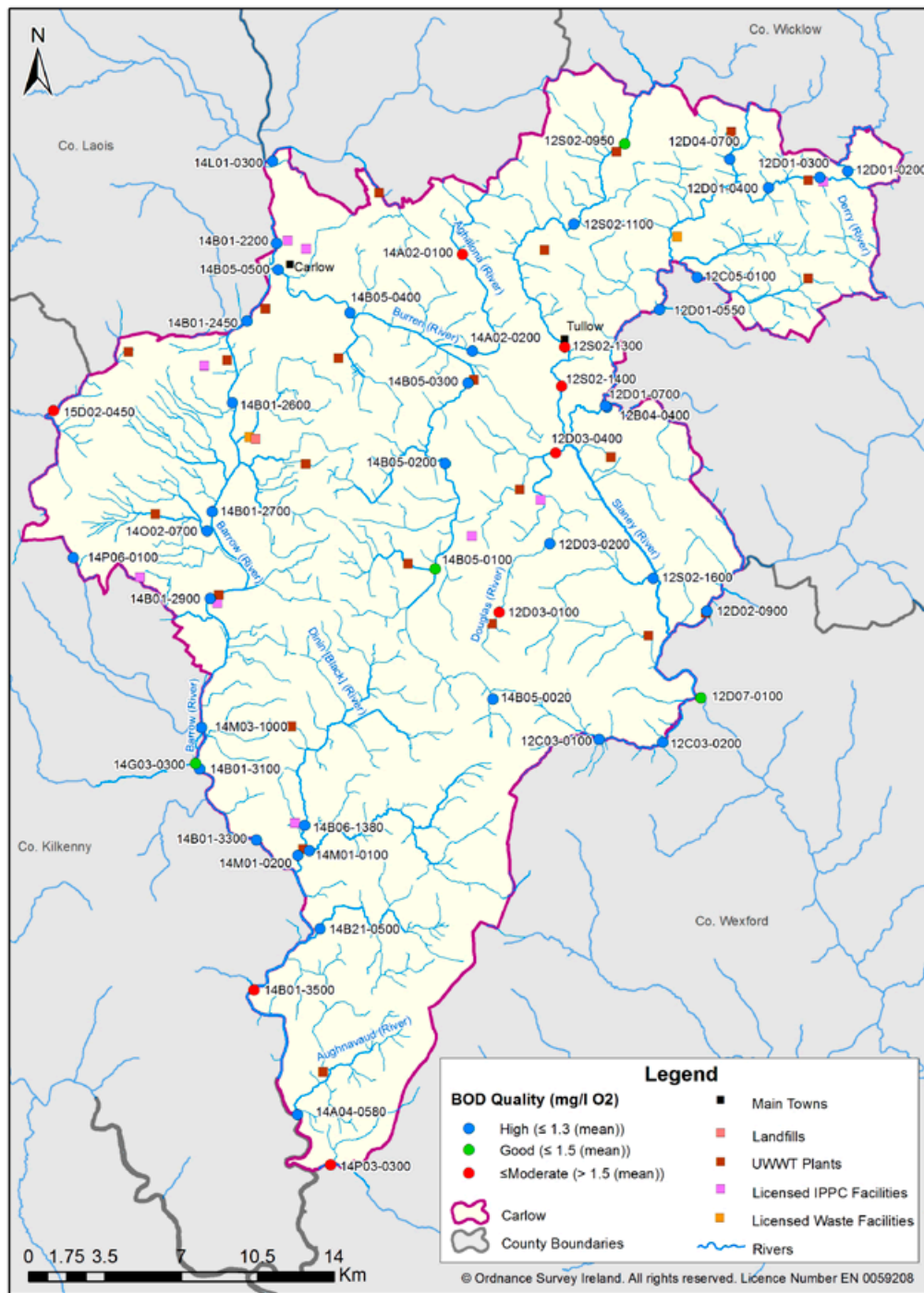


River Water Quality: Carlow pH Assessment





River Water Quality: Carlow BOD Assessment





River Water Quality: Carlow Total Oxidised Nitrogen Assessment

