Report on River Water Quality in South Tipperary 2011

Contents

Overview

This report gives an assessment of river water quality in South Tipperary 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

There has been a reduction in unpolluted and seriously polluted sites during 2011. Physico-chemical monitoring indicates an overall improvement in river water quality in the Fishmoyne, Arglo and Rockwell Stream. However the Anner, Ara, Black Stream (Cashel), Cappawhite, Dead, Fidaghta, Moyle, Outerage and Suir all have problems at certain locations.

These problems are caused in the main by diffuse agricultural pollution, or point source pollution from waste water treatment plants and industry. 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 South Tipperary and Suspected Causes

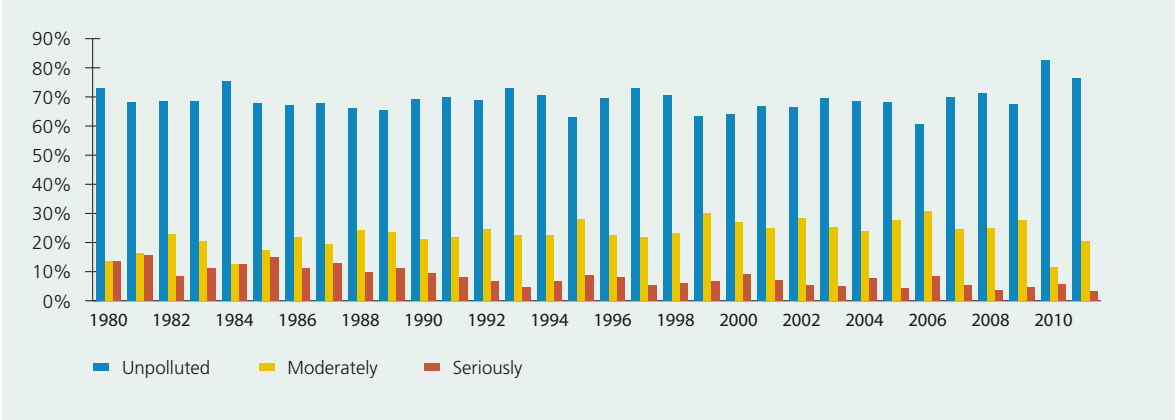
There are over 900 river sites of less than good status across the country – that is they have a Q value of 3-4 or less. The table below lists those river sites in the county where the most recent Q value is 3-4 or less. There are up to three suspected causes of pollution listed for each site. Roughly 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
ANNER	16A02-0600	Druman Br	3-4	2011	Agriculture	Agricultural: tillage	Extensive tillage u/s
ANNER	16A02-0100	Drangan Br	3	2011	Municipal	Sewage	
ANNER	16A02-0340	Ballycullin Br	3	2011	Municipal	Sewage	
ARA	16A03-0440	Br NE of Lacken	3-4	2011	Municipal	Sewage	
ARA	16A03-0100	Bohereenbuee Br	3	2011	Agriculture		
ARA	16A03-0300	1 km d/s Tipperary nr Railway Br	3	2011	Industrial		Creamery
BLACK STREAM (CASHEL)	16B05-0100	Br 0.5 km u/s Suir R confl	3	2011	Municipal	Sewage	
CAPPAWHITE STREAM	25C10-0200	Gortandrum Br	3	2008	Municipal	Sewage	Cappawhite WWTP located u/s
					Agriculture	Agricultural: Diffuse	Improved pasture – intensive land use u/s. Enriched with a lot of siltation – promotion of a vegetated buffer zone would help
DEAD	25D01-0100	Pope's Br	3-4	2008	Agriculture	Intensive Land use	Improved pasture & tillage u/s – enriched conditions
FIDAGHTA	16F01-0300	Kilnacask Br	3-4	2011	Agriculture	Agricultural: Diffuse	
FIDAGHTA	16F01-0100	Br nr Aughnagawer X Rds	3	2011	Agriculture	Agricultural: Diffuse	
MOYLE	16M01-0400	Br u/s Anner R confl	3	2011	Agriculture	Agricultural: Diffuse	
MOYLE	16M01-0200	Ballinavoher Br	Dry	2008	Hydromorph-ological	Misc.	Stagnant – many stations become dry in the summer
OUTERAGH STREAM	16O01-0200	Br u/s Suir R confl	3-4	2011	Agriculture	Agricultural: Diffuse	
SUIR	16S02-2850	1.5 km u/s Carrick-on-Suir	3-4	2011	Agriculture	Misc.	Cumulative
					Urban		
SUIR	16S02-2700	Kilsheelan Br	3-4	2011	Urban		
SUIR	16S02-0600	Br in Thurles	3	2011	Urban		

Overall Trend of Water Quality in South County Tipperary 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	26	148	108	20	20	73.0%	13.5%	13.5%
1981	26	153	104	25	24	68.0%	16.3%	15.7%
1982	26	153	105	35	13	68.6%	22.9%	8.5%
1983	26	153	105	31	17	68.6%	20.3%	11.1%
1984	26	153	115	19	19	75.2%	12.4%	12.4%
1985	26	155	105	27	23	67.7%	17.4%	14.8%
1986	26	155	104	34	17	67.1%	21.9%	11.0%
1987	26	155	105	30	20	67.7%	19.4%	12.9%
1988	26	144	95	35	14	66.0%	24.3%	9.7%
1989	26	144	94	34	16	65.3%	23.6%	11.1%
1990	26	146	101	31	14	69.2%	21.2%	9.6%
1991	26	146	102	32	12	69.9%	21.9%	8.2%
1992	26	147	101	36	10	68.7%	24.5%	6.8%
1993	26	147	107	33	7	72.8%	22.4%	4.8%
1994	26	146	103	33	10	70.5%	22.6%	6.8%
1995	26	146	92	41	13	63.0%	28.1%	8.9%
1996	26	147	102	33	12	69.4%	22.4%	8.2%
1997	26	147	107	32	8	72.8%	21.8%	5.4%
1998	26	147	104	34	9	70.7%	23.1%	6.1%
1999	26	147	93	44	10	63.3%	29.9%	6.8%
2000	26	145	93	39	13	64.1%	26.9%	9.0%
2001	26	145	97	36	10	66.9%	24.8%	6.9%
2002	26	134	89	38	7	66.4%	28.4%	5.2%
2003	26	118	82	30	6	69.5%	25.4%	5.1%
2004	26	118	81	28	9	68.6%	23.7%	7.6%
2005	26	120	82	33	5	68.3%	27.5%	4.2%
2006	26	117	71	36	10	60.7%	30.8%	8.5%
2007	26	93	65	23	5	69.9%	24.7%	5.4%
2008	26	84	60	21	3	71.4%	25.0%	3.6%
2009	24	83	56	23	4	67.5%	27.7%	4.8%
2010	25	86	71	10	5	82.6%	11.6%	5.8%
2011	25	93	71	19	3	76.3%	20.4%	3.2%



2011 Summary of River Water Quality in South Tipperary

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.

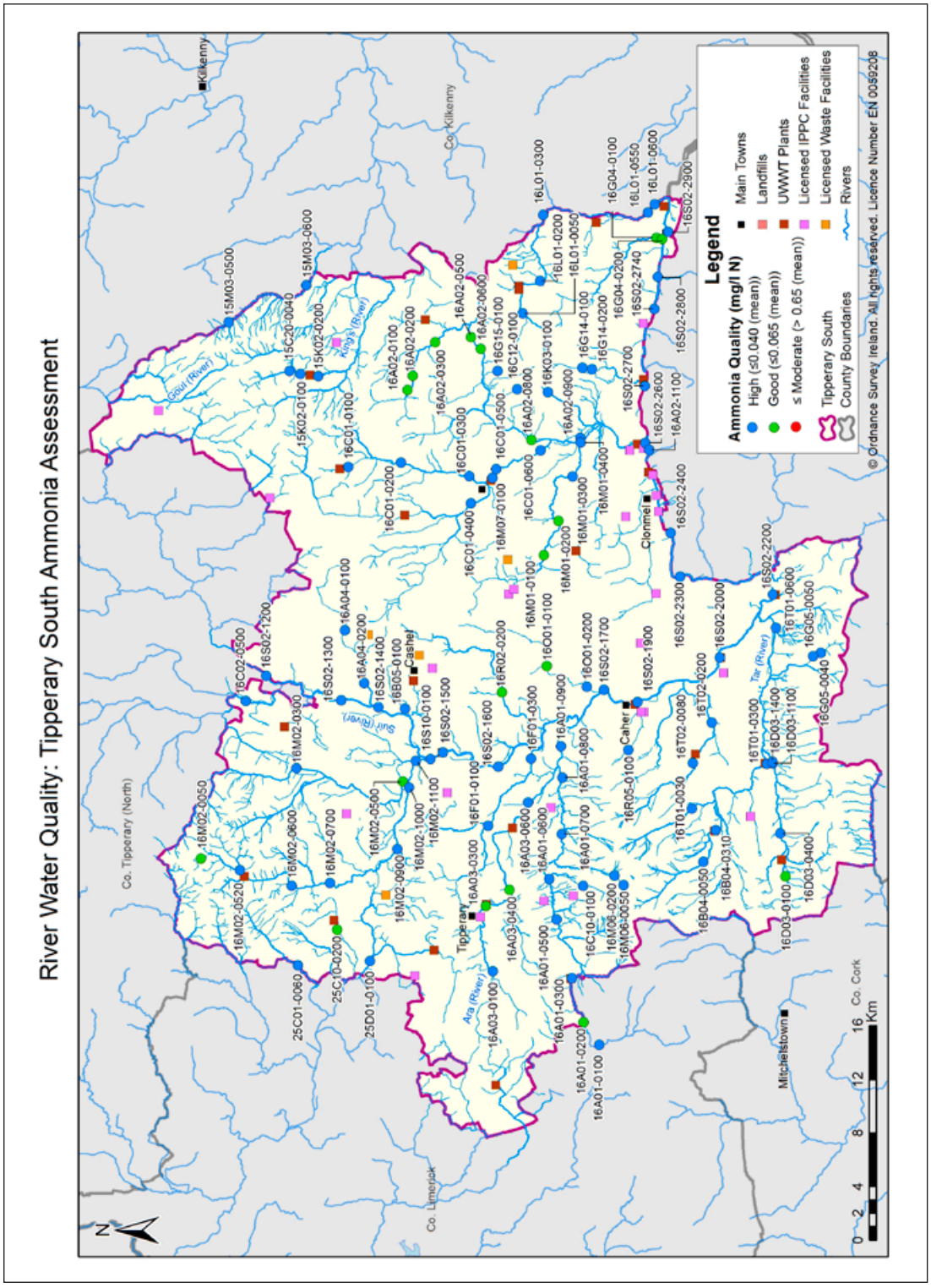
River	Number of Sampling Stations in each category			Remarks	Change from 2010
	Generally Satisfactory	Moderately Polluted at times	Seriously Polluted at times		
Coalbrook Stream (15C20) *Q 4 (2010)* Rising in the Slieveardagh Hills, this tributary of the Kings River flows past the village of Coalbrook in South Tipperary. It was added to the work programme in 2007 under the Water Framework directive.	1			Quality is satisfactory.	No significant change from 2010.
Aherlow (16A01) *Q value range 4 to 4-5 (2011)* The Aherlow is a Designated Salmonid River under the Freshwater Fish Directive (78/659/EEC). It flows through Co. Limerick and South Tipperary.	8			BOD was high at Station 0900 (Kilardry Bridge) in May and October, indicating intermittent pollution (the river has a history of pollution from slurry run-offs after heavy rain). Otherwise quality is satisfactory.	No change from 2010.
Anner (16A02) *Q value range 3 to 4 (2011)* There are two branches in the upper Anner – the first three stations are on the western branch (Drangan), the next is on the eastern branch (Mullinhane) the remaining stations are on the main channel after the confluence.	3	2	3	Poor quality in the western branch where BOD, o-phosphate, nitrite and ammonia are high – this branch can also suffer from very low flows. The second branch (Mullinahone stream) is also of poor quality – BOD, o-phosphate, ammonia and nitrite are all high. Inadequate sewage treatment at Mullinahone and Drangan may be responsible. The main branch has moderate quality – there is evidence of eutrophic conditions at the lower reaches.	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		
Ara (16A03) *Q value range 3 to 4 (2011)* The Ara flows through Tipperary town and is a tributary of the Aherlow.	1	3		o-Phosphate was high at station 0100 (Shronell) in July, otherwise that station was satisfactory. Poor quality at Station 0300 (Tipperary Town), where BOD, o-phosphate, ammonia and nitrite are elevated; and d/s of Tipperary WWTP and Bansha where o-phosphate levels are high.	No change from 2010.
Arglo (16A04) *Q 4 (2011)*	2			Overall quality is good.	Biological monitoring in 2011 indicated improved ecological quality.
Burncourt (16B04) *Q 4 at station 0300 (2011)* This river rises in the Galtee mountains and is a tributary of the Tar.	2			Quality is satisfactory.	No change from 2010.
Black Stream (Cashel) (16B05) *Q 3 (2011)* This small stream receives sewage discharge at Cashel.		1		BOD has increased slightly, and DO has decreased slightly since 2010.	Improvements in DO and BOD since 2009 were not seen in 2011, and biological monitoring indicates poor ecological quality in 2011.
Clashawley (16C01) *Q value range 3 to 4 (2011)* There are two branches to the Clashawley, which join to form the main channel for the final two stations.	5	1		o-Phosphate and nitrate were high at station 0100 (d/s Killenaule)	No significant change from 2010.
Clodiagh (Tipperary) (16C02) *Q value range 4 to 4-5 (2011)*	1			Colour can occasionally be high. Biological monitoring indicates an improving situation.	No significant change from 2010.
College Stream (16C10) This stream is an abstraction point for the Galtee Regional water supply.	1			Satisfactory quality.	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		
Duag (16D03) *Q 4 over length of river (2011)* The final station on this river (1400) is a tributary of the Duag and is a spring used as a raw water supply.	4			BOD slightly elevated u/s Ballyporeen, otherwise quality is satisfactory.	No change from 2010.
Fidaghta (16F01) *Q value range 3 to 3-4 (2011)*	1	1		Nitrates are slightly elevated, otherwise chemical quality is satisfactory. Biological monitoring in 2011 indicates deterioration at station 0100 to Q3.	Slight deterioration in quality at station 0100.
Fishmoyne (16F03) *Q value range 3 to 4 (2011)*	2	1		High BOD measured at station 0200 in September.	Improvements observed in 2009 appear to be continuing.
Glenary (16G02) This river rises in the Comeragh Mountains, the first station is a raw water abstraction point for Clonmel. Cryptosporidium contamination was reported in 2007, but not observed since.	2			Satisfactory quality	No change from 2010.
Glenbrook (16G04) This tributary of the Suir flows through Carrick-on-Suir.	2			Satisfactory quality. Improvement since 2005 has been maintained.	No change from 2010.
Lingaun (16L01) *Q value range 3-4 to 4-5 (2011)* This river rises in Slievenamon and flows along the Kilkenny/ Tipperary border. The water supply for Carrick-on-Suir is abstracted near station 0550.	6			Quality is satisfactory.	No change from 2010.
Moyle (16M01) *Q 3 (2011)* There is a history of serious pollution in this river downstream of National Proteins. The upper stations can have very low or no flow in dry weather.		4		Conditions have improved slightly d/s National Proteins (station 0100) Station 0200 (Ballinvoher Br) was dry in June. There are indications of eutrophic conditions at station 0400 (u/s Anner confluence).	The improvements indicated in recent years did not reverse in 2011.

River	Number of Sampling Stations in each category			Remarks	Change from 2010
	Generally Satisfactory	Moderately Polluted at times	Seriously Polluted at times		
Multeen (16M02) *Q value range 4 to 4-5 (2011)* There are two raw water abstraction points on the Multeen for Dundrum water supply. The river is also an important habitat for the freshwater pearl mussel and crayfish.	7			High BOD at station 0600 in september, otherwise quality is satisfactory.	No significant change from 2011. Biological assessment in 2008 also indicated good ecological quality.
Nier (16N01) *Q value range 4 to 4-5 (2011)* This river rises in the Commeraghs and flows through Ballymacarbry village	3			BOD, o-phosphate and ammonia were high at station 0100 (Ballymacarbry) in May, indicating intermittent pollution, otherwise satisfactory quality	No change from 2010.
Outeragh Stream (16O01) *Q 3-4 at station 0200 (2011)* The first sampling station is d/s of New Inn village (but u/s of WWTP discharge), the second station is d/s Dairygold Creamery at New Inn.	2			Nitrates can be elevated, especially at station 0200 (u/s Suir) otherwise quality is satisfactory.	No change from 2010.
Rockwell Stream (16R02)	1			High BOD in June and nitrate is slightly elevated, otherwise satisfactory quality.	The deterioration noted in 2009 appears to have been reversed.
Suir (16S02) *Q value range 3 to 4 (2011)* 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.	12	4		DO and BOD are periodically elevated at station 2700 (Kilsheelin Br). DO is also elevated at station2800 (Coolnamuck Weir) and station 2900 (d/s Carrick-on-Suir). Overall biological monitoring indicates an improving situation with 4 stations improving from Q3 in 2008 to Q3/4 in 2011. However quality deteriorated from Q4 to Q3-4 at station 2000 (Ardfinnan Bridge) in 2011.	The improvement in water quality continues.
Tar (16T01) *Q value range 4 to 4-5 (2011)*	3			Satisfactory quality	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		
Thonoge (16T02) *Q 4 (2011)*	2			Satisfactory quality.	No change from 2010.
Cahernahallia (25C01) This river rises in Co. Tipperary and flows into Co. Limerick. This report deals with the Co. Tipperary stretch only.	1			Satisfactory quality	No change from 2010.
Cappawhite Stream (25C10) *Q 3 (2008)*		1		Moderately polluted – ammonia and o-phosphate are elevated at times due to the effects of sewage from Cappawhite. Biological monitoring indicates moderate ecological quality.	The slight improvement noted in ammonia and o-phosphate levels since 2009 appears to be continuing.
Dead (25D01) *Q 3-4 (2008)* This river rises in Co. Tipperary and flows into Co. Limerick. This report deals with the Co. Tipperary stretch only. The Donohill landfill is within its catchment.		1		o-Phosphate was elevated at times during the year, as was DO. The river has been subject to intermittent pollution over the years – probably from agriculture and the landfill at Donohill.	No change from 2010.
Total number of stations in each category	71	19	3		


River Water Quality: Tipperary South Ammonia Assessment
Legend
Ammonia Quality (mg/l N)
High (≤0.040 (mean))
Good (≤0.065 (mean))
≤ Moderate (> 0.65 (mean))
Tipperary South
County Boundaries
Main Towns
Landfills
UWWT Plants
Licensed IPPC Facilities
Licensed Waste Facilities
Rivers
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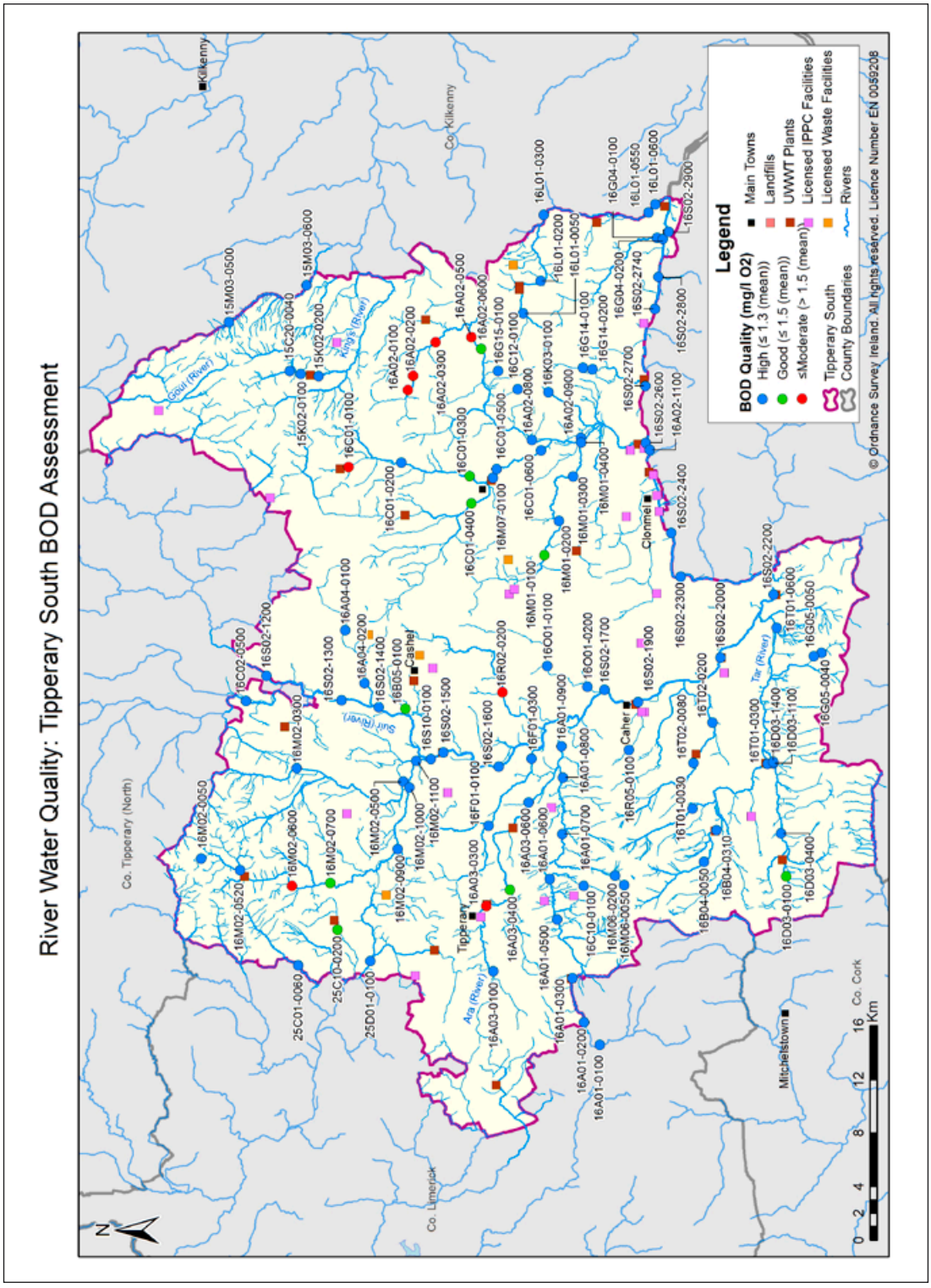
Co. Kilkenny
Co. Tipperary (North)
Co. Limerick
Co. Cork
Kilkenny
Clonmel
Cashel
Caher
Tipperary
Mitchelstown
Suir (River)
Ara (River)
Tar (River)
Km


River Water Quality: Tipperary South BOD Assessment
Legend
BOD Quality (mg/l O2)
High (≤ 1.3 (mean))
Good (≤ 1.5 (mean))
≤Moderate (> 1.5 (mean))
Tipperary South County Boundaries
Main Towns
Landfills
UWWT Plants
Licensed IPPC Facilities
Licensed Waste Facilities
Rivers
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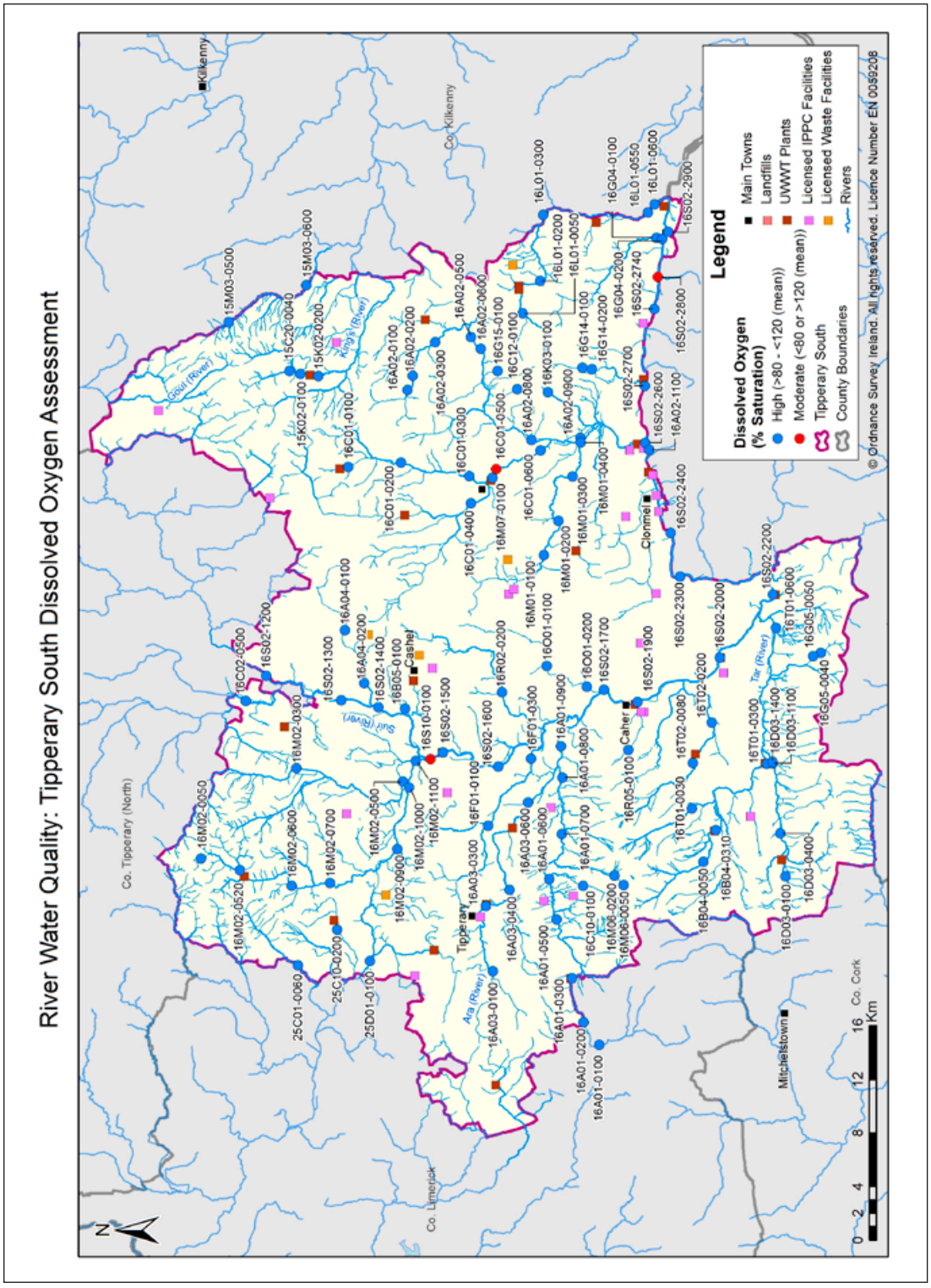
Co. Kilkenny
Co. Tipperary (North)
Co. Limerick
Co. Cork
Clonmel
Cashel
Caher
Tipperary
Mitchelstown
Suir (River)
Ara (River)
Tar (River)
Km
0 2 4 8 12 16


River Water Quality: Tipperary South Dissolved Oxygen Assessment
Legend
Dissolved Oxygen (% Saturation)
High (>80 - <120 (mean))
Moderate (<80 or >120 (mean))
Main Towns
Landfills
UWWT Plants
Licensed IPPC Facilities
Tipperary South
Licensed Waste Facilities
County Boundaries
Rivers
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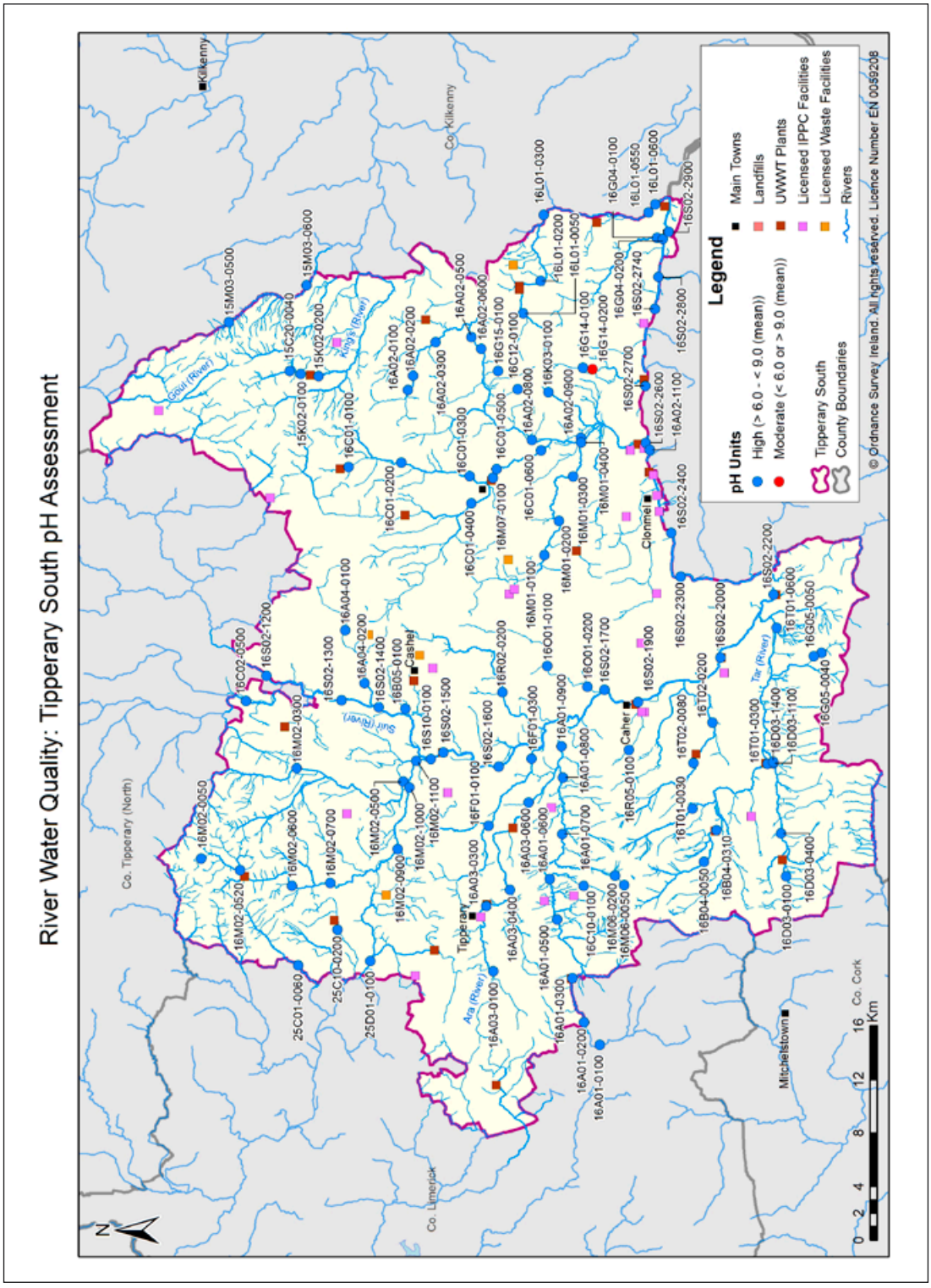
Co. Kilkenny
Co. Tipperary (North)
Co. Limerick
Co. Cork
Kilkenny
Clonmel
Cashel
Caher
Tipperary
Mitchelstown
Suir (River)
Tar (River)
Ara (River)
Nore (River)
King's (River)
N
0 2 4 8 12 16 Km


River Water Quality: Tipperary South pH Assessment
Legend
pH Units
High (> 6.0 - < 9.0 (mean))
Moderate (< 6.0 or > 9.0 (mean))
Main Towns
Landfills
UWWT Plants
Licensed IPPC Facilities
Licensed Waste Facilities
Rivers
Tipperary South
County Boundaries
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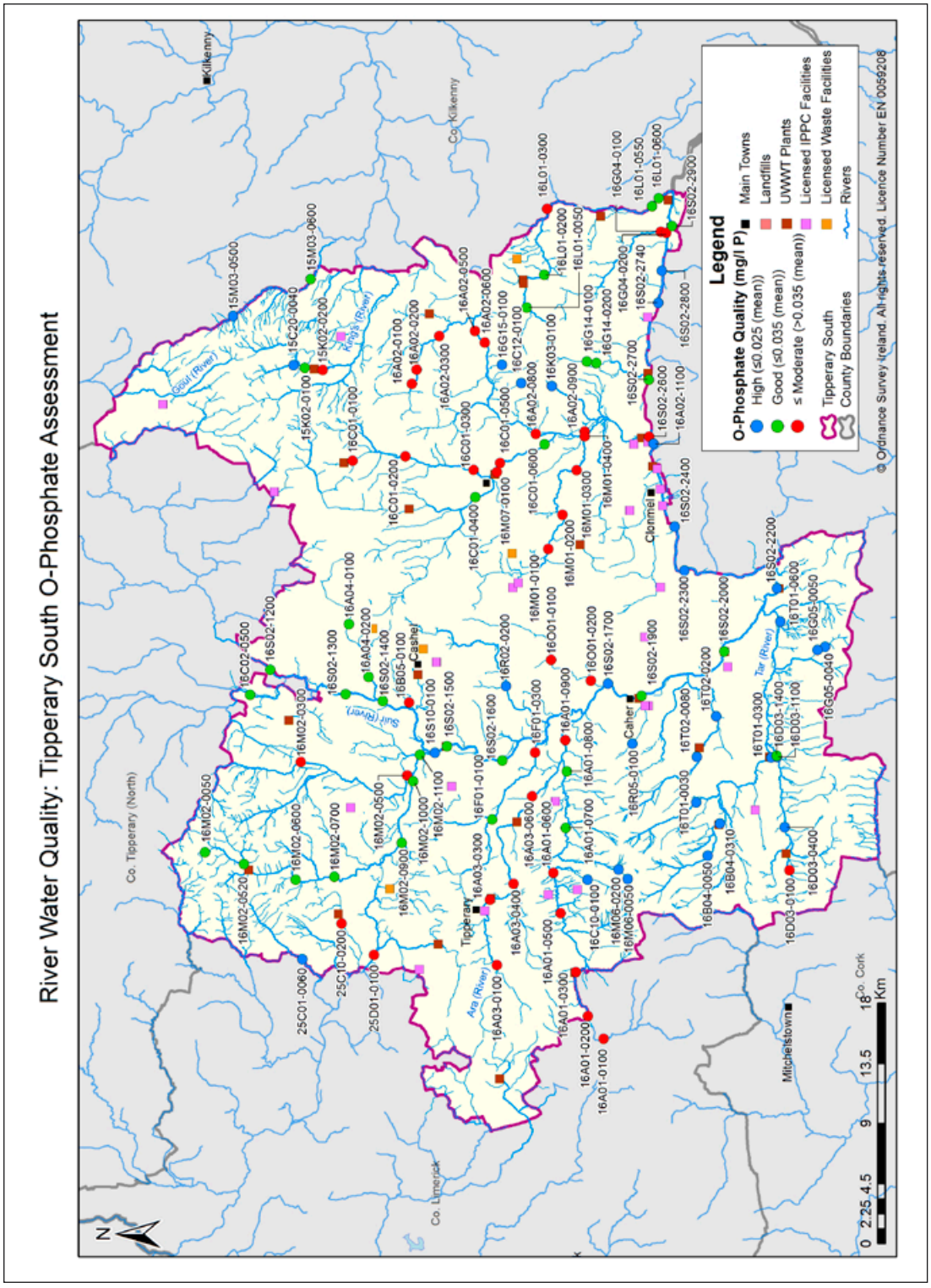
Co. Kilkenny
Co. Tipperary (North)
Co. Limerick
Co. Cork
Kilkenny
Clonmel
Cashel
Caher
Tipperary
Mitchelstown
Suir (River)
Tar (River)
Ara (River)
King's (River)
Goul (River)
0 2 4 8 12 16 Km
N


River Water Quality: Tipperary South O-Phosphate Assessment
Legend
O-Phosphate Quality (mg/l P)
High (≤0.025 (mean))
Good (≤0.035 (mean))
≤ Moderate (>0.035 (mean))
Tipperary South
County Boundaries
Main Towns
Landfills
UWWT Plants
Licensed IPPC Facilities
Licensed Waste Facilities
Rivers
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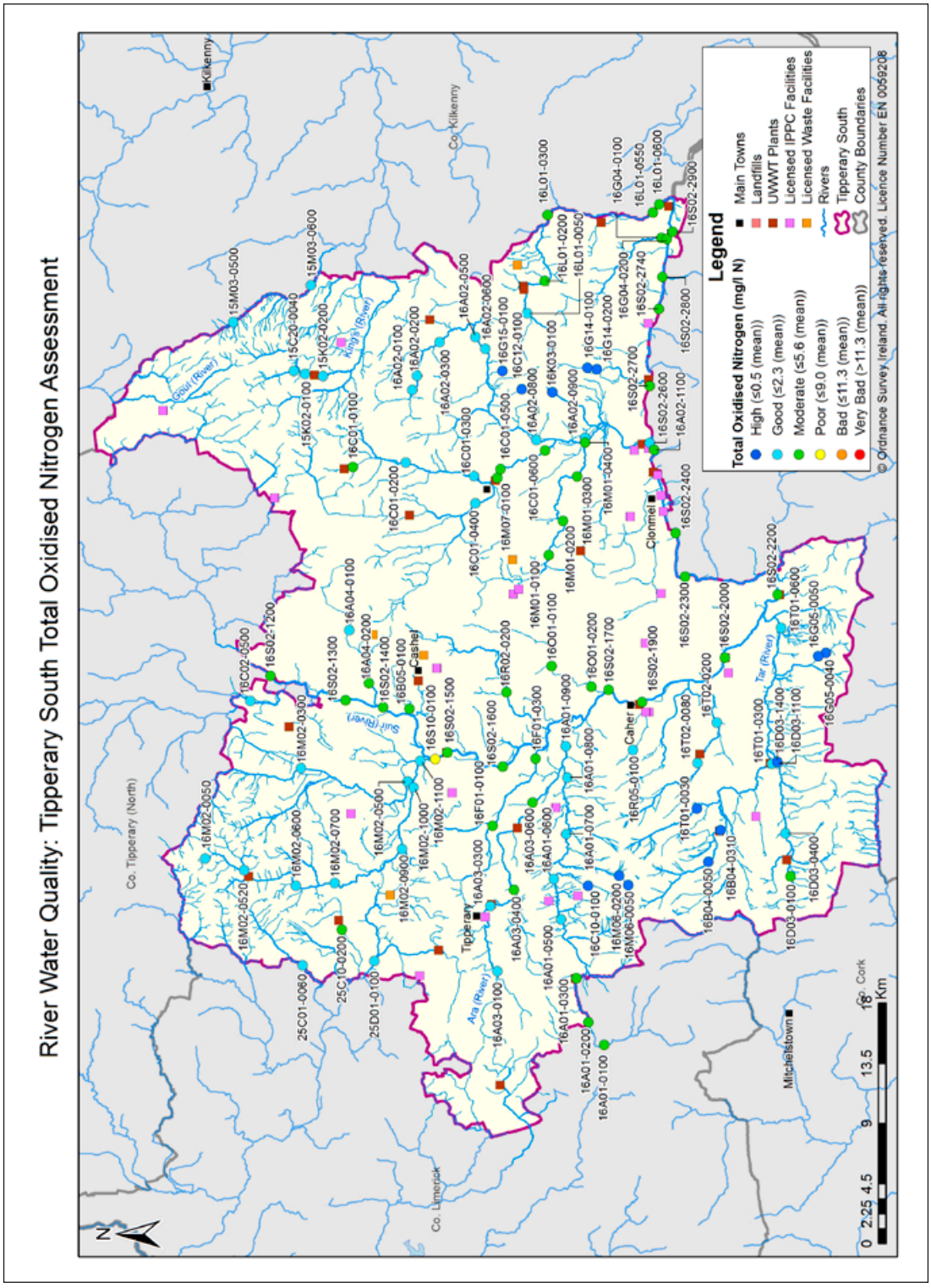
Co. Kilkenny
Co. Tipperary (North)
Co. Limerick
Co. Cork
Kilkenny
Tipperary
Clonmel
Cashel
Caher
Mitchelstown
Suir (River)
Nore (River)
Tar (River)
Ara (River)
Goul (River)
0 2.25 4.5 9 13.5 18 Km
N


River Water Quality: Tipperary South Total Oxidised Nitrogen Assessment
Legend
Total Oxidised Nitrogen (mg/l N)
High (≤0.5 (mean))
Good (≤2.3 (mean))
Moderate (≤5.6 (mean))
Poor (≤9.0 (mean))
Bad (≤11.3 (mean))
Very Bad (>11.3 (mean))
Main Towns
Landfills
UWWT Plants
Licensed IPPC Facilities
Licensed Waste Facilities
Rivers
Tipperary South
County Boundaries
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Co. Kilkenny
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Kilkenny
Cashel
Clonmel
Caher
Tipperary
Mitchelstown
Suir (River)
Tar (River)
Ara (River)
Goul (River)
Kings (River)
0 2.25 4.5 9 13.5 18 Km
N