

# **Environmental Impact Assessment Report (EIAR)**

## **Volume 6 of 6: Appendices**

### **(Appendix A9.7) EPA Monitoring Information**

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### Acronyms and Abbreviations

Acronym	Description
ECSR	European Communities Environmental Objectives (Surface Water) Regulations 2009 - 2019
ECQSW	European Communities (Quality of Salmonid Waters) Regulations 1988
UWWT	Urban Waste Water Treatment Regulations for Ireland 2001
WFD	Water Framework Directive
BOD	Biological Oxygen Demand
COD	Chemical Oxygen Demand
CaCO <sub>3</sub>	Calcium Carbonate
diss. filt	Dissolved filtration
HCO <sub>3</sub>	Bicarbonate
l	Litre
N	Nitrogen
NO <sub>2</sub>	Nitrite
NO <sub>3</sub>	Nitrate
NH <sub>3</sub>	Ammonia
P	Phosphorus
mg	Milligram
µg	Microgram

## 1. Introduction

1. This Appendix provides details of the results of chemical sampling carried out by the EPA on the surface water bodies which provide water for the commissioning phase of the pipeline. As water will be transferred between catchments, this information will inform the baseline characteristics as part of the environmental assessment. Results presented are sourced from catchments, i.e. for 2010 to 2025, where data is available.
2. Data reported in this Appendix has informed preliminary assessments of treatment requirements for commissioning water, both before and after use. Further monitoring should be undertaken in the lead up to commissioning to identify specific treatment requirements (see Appendix 5.2 for further detail).

### 1.1 Methodology

3. Baseline water quality data was not available for the Camcor\_030 nor the Kilmastulla\_040. Consultation with the EPA has confirmed that the Kilmastulla\_040 is not monitored for Water Framework Directive (WFD) chemistry. As a result, baseline water quality data for the Kilmastulla\_050 has been presented instead. Kilmastulla\_040 is a tributary of the Kilmastulla\_050 and so the waterbodies are hydrologically connected with the confluence of the Kilmastulla\_040 and Kilmastulla\_050 approximately 2.55km downstream of the proposed abstraction point from the Kilmastulla\_040.

#### 1.1.1 Parameters and Standards

4. Chemical sampling has been carried out for the parameters listed in Table 1.2. It is noted that Kilmastulla\_050 has a history of extractive industry and thus a table of heavy metal data is included.
5. Standards have been obtained from a number of sources with the standard applied to each parameter considered to be the most suitable. Standards are outlined below with sources comprising of the following:
  - European Communities Environmental Objectives (Surface Water) Regulations 2009 – 2019
  - Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 – in the absence of applicable standards in Ireland
  - European Communities (Quality of Salmonid Waters) Regulations 1988\*
  - Urban Waste Water Treatment Regulations for Ireland 2001\*\*.

*\*None of the sampled waterbodies are Salmonid Waters but this is used in absence of applicable standards*

*\*\*Used for Chemical Oxygen Demand (COD) and Total Nitrogen parameters in the absence of an applicable standard*

6. As noted in Table 1.1, all sampled waterbodies have ‘Good’, ‘Moderate’ or ‘Poor’ Water Framework Directive (WFD) status. Where a standard applied is in relation to WFD status, the mean value for ‘Good’ status is used.
7. In the results tables, where cells are shaded red, this denotes where a reported value exceeds the standard for that parameter as outlined in Table 1.2 below. Note that despite multiple rounds of sampling there remain too few samples taken to calculate %iles and so mean values are used as the standard thresholds.

**Table 1.1: Waterbody and WFD Ecological Status Details**

Waterbody	WFD Ecological Status
Camcor_030	Good
Clodiagh (Tullamore)_020	Good
Figile_030	Moderate
Kilmastulla_050	Moderate

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Waterbody	WFD Ecological Status
Liffey_140	Good
Little Brosna_030	Good
Nenagh_070	Moderate
Silver (Kilcormac)_020	Good

Table 1.2: Parameter Standards and Source

Parameter	Standard	Unit	Source
Alkalinity, Total as CaCO <sub>3</sub>	No suitable standard	-	-
Alkalinity, Total as HCO <sub>3</sub>	No suitable standard	-	-
Ammonia, Total as N	≤0.065	mg/l	ECSR
Ammonia, Total as NH <sub>3</sub>	≤0.065	mg/l	ECSR
BOD – 5 days (total)	≤1.5	mg/l	ECSR
BOD – 5 days with Inhibition (Carbonaceous BOD)	≤1.5	mg/l	ECSR
Chloride	No suitable standard	-	-
<i>COD – Cr</i>	125	mg/l	UWWT
Nitrate (as N)	No suitable standard	-	-
Nitrate (as NO <sub>3</sub> )	No suitable standard	-	-
Nitrite (as N)	≤0.05	mg/l	ECQSW
Nitrite (as NO <sub>2</sub> )	≤0.05	mg/l	ECQSW
Oxygen, dissolved	No suitable standard	-	-
Phosphate (Ortho as P)	No suitable standard	-	-
Sulphate	No suitable standard	-	-
<i>Suspended solids, Total</i>	≤25	mg/l	ECQSW
Total Hardness (as CaCO <sub>3</sub> )	No suitable standard	-	-
<i>Total Nitrogen</i>	10	mg/l	UWWT
Total Oxidised Nitrogen	No suitable standard	-	-
Total Phosphorus	No suitable standard	-	-
Aluminium	No suitable standard	-	-
Antimony	No suitable standard	-	-
Arsenic (diss.filt)	25	µg/l	ECSR
Barium	No suitable standard	-	-
Beryllium	No suitable standard	-	-
Boron	No suitable standard	-	-
Cadmium (diss.filt)	0.08 ≤50 mg/l CaCO <sub>3</sub> 0.09 (>50 and ≤100 mg/l CaCO <sub>3</sub> ) 0.15 (>100 and ≤200 mg/l CaCO <sub>3</sub> ) 0.25 (>=200 mg/l CaCO <sub>3</sub> )	µg/l	ECSR
Calcium	No suitable standard	-	-
Chromium (diss.filt)	No suitable standard	-	-
Cobalt	No suitable standard	-	-

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Parameter	Standard	Unit	Source
Copper (diss.filt)	5 ( $\leq 100$ mg/l CaCO <sub>3</sub> ) 30 ( $> 100$ mg/l CaCO <sub>3</sub> )	µg/l	ECSR
Iron	1000	µg/l	WFD
Lead (diss.filt)	1.2	µg/l	ECSR
Magnesium	No suitable standard	-	-
Manganese	123	µg/l	WFD
Mercury (diss.filt)	0.07	µg/l	ECSR
Molybdenum	No suitable standard	-	-
Potassium	No suitable standard	-	-
Selenium (diss.filt)	No suitable standard	-	-
Sodium	No suitable standard	-	-
Strontium	No suitable standard	-	-
Tin	No suitable standard	-	-
Uranium	No suitable standard	-	-
Vanadium	No suitable standard	-	-
Zinc (diss.filt)	8 ( $\leq 10$ mg/l CaCO <sub>3</sub> ) 50 ( $> 10$ and $\leq 100$ mg/l CaCO <sub>3</sub> ) 100 ( $> 100$ mg/l CaCO <sub>3</sub> )	µg/l	ECSR

## **2. Baseline Sampling Results**

## **Kilmastulla\_050 (substitute for Kilmastulla\_040) (2010 – 2024)**

Parameter	Alkalinity, Total as CaCO3	Ammoniacal Nitrogen as N	BOD, 5 days (Total)	Chlorid e	Oxygen, dissolved	Nitrate (as N)	Nitrite (as N)	Phosphate (Ortho as P)	Total Hardness (as CaCO3)	Total Oxidised Nitrogen
Unit	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Standards	-	≤ 0.065 (ECSR)	≤ 1.5 (ECSR)	-	-	-	≤ 0.05 (ECQSW)	-	-	-
SampleDate										
02/02/2010	129	0.05		17			0.007	0.02	192	1.7
26/05/2010	206	0.01		17			0.008		257	1.34
20/07/2010	130	0.02	0.7	13			0.006	0.02	207	1.2
14/09/2010	84	0.04	2.9	10			0.004	0.04	103	1.18
28/10/2010	121	0.03	1.5	13			0.005	0.04	151	1.24
01/02/2011	168		0.5	16			0.005	0.02	217	2.42
28/03/2011	192	0.03	0.9	16			0.004	0.01	237	2.11
01/06/2011	166	0.02	0.7	14			0.004	0.03	206	1.49
28/07/2011	190	0.01	1.2	15			0.003	0.03	228	1.6
12/10/2011	127	0.02	1.3	14			0.006	0.03	159	1.21
08/12/2011	114	0.04	1.1	15			0.005	0.03	132	1.67
14/02/2012	166	0.02		16			0.005	0.02	209	2.06
12/04/2012	129	0.02	1.7	12			0.004	0.04	116	1.03
20/06/2012	190	0.02		13			0.005	0.02	226	1.5
03/09/2012	190		1.4	13			0.002	0.02	218	1.29
28/11/2012	184	0.03		13			0.006	0.02	211	1.69
30/05/2013	192	0.01	1.9	15			0.004		229	1.18
31/10/2013	141	0.05		16			0.005	0.02	180	1.8
28/01/2014	102	0.044		25			0.006	0.023	148	2.6
16/04/2014	177			19			0.005		213	1.9
23/07/2014	202			18					234	1.2
04/09/2014	170			17					209	1
04/11/2014	140			17				0.019	184	1.7
05/02/2015	161	0.022		20			0.005	0.015	195	2.8
22/04/2015	177			19					222	1.9
08/07/2015	197	0.022	1.3	19			0.007	0.016	242	1.4
09/09/2015	185			18					231	0.98
03/11/2015	169	0.049		17				0.02	219	1.1
03/03/2016	123	0.021		17.6	10.8	1.7		0.014	160	1.7
10/05/2016	185	0.027		17.9	9.2	1.4	0.008		232	1.4
14/07/2016	159			16.6	10.2	0.92		0.014	195	0.92
07/09/2016	153			15.3	9.2	0.98		0.018	200	0.98
08/11/2016	188			17	11.3	1.6		0.013	239	1.6
02/03/2017	124	0.023		20.9	11.4	2	0.0049	0.024	160	2
24/05/2017	203	0.021		17.9	9.8	1.3			252	1.3
11/07/2017	198			16.8	11	1.1		0.012	232	1.1
06/09/2017	161			16.4	10.6	1		0.02	207	1
07/11/2017	182			16.8	10.7	1.8		0.022	220	1.8

Parameter	Alkalinity, Total as CaCO3	Ammoniacal Nitrogen as N	BOD, 5 days (Total)	Chlorid e	Oxygen, dissolved	Nitrate (as N)	Nitrite (as N)	Phosphate (Ortho as P)	Total Hardness (as CaCO3)	Total Oxidised Nitrogen
Unit	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Standards	-	≤ 0.065 (ECSR)	≤ 1.5 (ECSR)	-	-	-	≤ 0.05 (ECQSW)	-	-	-
SampleDate										
08/03/2018	141	0.12		23.3	11.7	1.7	0.00634	0.025	187	1.7
24/05/2018	185			18.2	10.7	1.3	0.00444	0.01	227	1.3
10/07/2018	224		1	19.8	10.1	1		0.01	281	1
06/09/2018	198			18.2	9.4	0.86		0.01	247	0.86
06/11/2018	127		1.7	22.2	10.1	1.7	0.00538	0.023	192	1.7
11/03/2019	127	0.022		18.5	11.3	3.4		0.02	167	3.4
22/05/2019	197			18.2	10.7	1.6			251	1.6
09/07/2019	202			19	9.6	1.2		0.017	252	1.2
12/09/2019	134			16.3	9.8	1.4		0.016	167	1.4
16/10/2019	125	0.031	1.2	16.2	9.4	2.4	0.0197	0.03	167	2.4
18/02/2020	127			20.7	12	2.2		0.017	161	2.2
24/06/2020	170		1.1	21	10.2	1.2		0.013	208	1.2
11/08/2020	136		1.2	16.1	10.3	1.4		0.011	181	1.4
24/09/2020	107	0.18	4.4	19.6	10.4	1.5	0.00877	0.069	146	1.5
18/02/2021	86	0.044	1	14.6	11.8	1.1		0.032	104	1.1
15/04/2021	189			17.1	12.7	2		0.011	226	2
23/06/2021	198			18	10.4	1.6			254	1.6
06/09/2021	192		1	17.5	10.3	1.2		0.019	244	1.2
22/09/2021	191			17.6	10	0.97		0.017	248	0.97
17/02/2022	113			16.8	11.2	2.9		0.023	168	2.9
21/04/2022	167			18.7	13.1	1.3			207	1.3
22/06/2022	207	0.023		18.6	10.8	1.1	0.00415	0.015	257	1.1
04/08/2022	171			18.4	10.8	1.1		0.011	213	1.1
21/09/2022	184			17.9	12.2	0.94			234	0.94
22/02/2023	140			18.8	11.5			0.019	187	2.2
26/04/2023	176			17.6	12.4				204	2
17/05/2023	174			17	11.7				204	1.4
07/06/2023	200			17.6	10.8			0.012	232	1.6
20/07/2023	151			15.4	9.8			0.025	174	1.5
09/08/2023	158			15.9	10.7			0.013	174	1.4
11/10/2023	164			15	10			0.02	172	2.1
08/11/2023	160	0.028		14.1	10.8			0.023	152	2
14/11/2023	147			14.3	10.4			0.022	150	2.1
06/12/2023	178	0.02		16.6	12.2			0.015		2.5
22/02/2024	21	0.024		7.62	11			0.011	24	0.37
29/04/2024	181		2.1	14.9	11.5				212	1.6
17/07/2024	214	0.026	1.1	17.2	10.2				260	1.2
23/10/2024	149		1.1	16	11.1			0.019	192	1.1
20/02/2025	157	0.028	1.5	20.7	11.1			0.019	199	2.2
28/04/2025	164			17.5	10.8			0.015	206	1.7





## **Little Brosna\_030 (2010 – 2024)**

Parameter	Alkalinity, Total as CaCO3	Alkalinity, Total (as HCO3)	Ammoniacal Nitrogen as N	BOD, 5 days (Total)	Chloride	Oxygen, dissolved	Nitrate (as N)	Nitrite (as N)	Phosphate (Ortho as P)	Total Hardness (as CaCO3)	Total Oxidised Nitrogen
Unit	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Standards	-	-	≤ 0.065 (ECSR)	≤ 1.5 (ECSR)	-	-	-	≤ 0.05 (ECOSW)	-	-	-
SampleDate											
18/01/2010		313.74	0.074	0.79	18.01	10.83	2.321	0.018	0.015	321	2.339
16/02/2010		356.29	0.09	1.66	20.7	10.05	3.168	0.02	0.015	388.7	3.188
18/02/2010	353		0.14	0.5	20			0.024	0.02	411	3.5
15/03/2010		333.78	0.128	1.06	22.55	11.89	3.531	0.032	0.011	370.2	3.563
19/04/2010		309.11	0.037	0.97	20.72	11.74	3.259	0.017	0.005	358.7	3.276
17/05/2010		323.59	0.033	1.31	23.63	8.92	3.468	0.023	0.004	358.8	3.491
25/05/2010			0.05	1.1	26			0.029			3.42
14/06/2010		319.74	0.066	1.21	24.05	10.84	3.437	0.052	0.007	345.5	3.489
13/07/2010		311.63	0.044	1.81	29.35	9.66	2.889	0.04	0.025	344.9	2.929
14/07/2010	338		0.06	1.3	29			0.053	0.06		3.68
16/08/2010		301.14	0.012	1.19	26.93	9.66	3.094	0.02	0.014	323.4	3.114
01/09/2010	297		0.01	0.8	42			0.03	0.02	359	4.35
13/09/2010		301.91	0.037	0.77	19.13	8.73	1.862	0.025	0.029	336.5	1.887
18/10/2010		308.56	0.012	0.38	23.2	8.62	3.092	0.015	0.023	355.8	3.107
04/11/2010	238		0.06	1.6	17			0.013	0.04	291	1.95
15/11/2010		313.2	0.043	1.39	18.12	9.41	2.526	0.015	0.017	327.2	2.541
13/12/2010		326.29	0.027	1.24	19.65	12.83	2.767	0.019	0.015	345	2.786
18/01/2011		313.28	0.057	0.92	21.04	10.94	2.946	0.015	0.016	322.6	2.961
26/01/2011	304		0.07	1	19			0.02	0.03	334	2.85
14/02/2011		296.24	0.031	0.85	20.25	12.81	3.029	0.011	0.014	294.5	3.04
14/03/2011		325.06	0.044	1.63	23.21	12.06	3.156	0.013	0.012	332.8	3.169
06/04/2011	330		0.08	1.9	27			0.026	0.03	318	2.83
13/04/2011		310.37	0.3	1.87	37.58	10.01	4.033	0.063	0.048	319.7	4.096
18/05/2011		325.27		1.29	38.22	12.81	2.995	0.046	0.008	335.2	3.041
13/06/2011	301		0.02		24			0.024	0.03	326	2.68
16/06/2011		306.07	0.011	1.02	42.68	9.38	3.569	0.057	0.009	313.7	3.626
12/07/2011		286.13	0.046	1.33	19.29	7.91	2.036	0.021	0.026	328.8	2.036
11/08/2011	322		0.056	1.18	30	7.14	3.13	0.057	0.04	328	3.187
12/09/2011		312.84	0.012	1.27	29.87	8.04	2.613	0.032	0.044	336.9	2.645
13/10/2011		316.75	0.035	1.03	25.58	7.99	2.215	0.022	0.02	332.6	2.237
27/10/2011	268		0.03	1.5	18			0.013	0.03	289	2.22
07/11/2011		357.19	0.046	0.7	18.63	10.24	2.376	0.015	0.018	349.2	2.391
15/12/2011		293.55	0.032	1.23	20.28	11.28	2.646	0.018	0.017	324.5	2.664
11/01/2012		291.92	0.045	1.12	18.94	9.9	3.031	0.022	0.021	330.8	3.053
02/02/2012	330		0.05		19			0.013	0.02	354	3.07
13/02/2012		325.26	0.022		18.09	12.98	3.051	0.008	0.089	386	3.059
07/03/2012		314.04	0.069	1.15	21.28	10.15	3.13	0.019	0.029	360.4	3.149
12/04/2012		326.97	0.03		21.41	11.02	2.72	0.018	0.015	351.7	2.738
19/04/2012	324		0.04	1	20			0.018	0.03	333	2.55
09/05/2012		319.81	0.067	1.79	18.32	8.55	2.002	0.025	0.019	341.5	2.027
13/06/2012		274.42	0.018	1.48	15.06	8.48	1.817	0.015	0.014	291.8	1.832
04/07/2012	329		0.04	1.1	16			0.016	0.03	352	2.29
16/07/2012		227.23	0.109	2.19	23.29	7.83	2.503	0.028	0.05	333.3	2.531
08/08/2012		342.82	0.051	1.03	17.92	7.47	2.476	0.013	0.016	371.4	2.489
12/09/2012		340.88	0.041		18.4	9.1	2.577	0.023	0.016	379.6	2.6
27/09/2012	338		0.06	2.5	21			0.025	0.02	392	2.4
09/10/2012		334.93	0.051	1.45	18.84	9.54	1.775	0.029	0.008	388.2	1.804
06/11/2012		389.88	0.053	1.28	26.31	10.78	2.977	0.022	0.016	414.4	2.999
04/12/2012		320.82	0.049	2.05	16.85	8	1.854	0.014	0.023	392.9	1.868
05/12/2012	355		0.06	1	20			0.015	0.03	355	2.17
07/01/2013	357.55	357.55	0.058	1.25	17.49	9.43	2.477	0.022	0.018	369.8	2.499
06/02/2013	350		0.05		19			0.014		373	2.32
12/02/2013	322.06	322.06	0.116	1.17	18.58	9.99	2.27	0.01	0.017	380.4	2.28
11/03/2013	338.26	338.26	0.055	1.54	19.74	11.4	2.889	0.013	0.015	389.5	2.902
16/04/2013	351.89	351.89	0.052		21.96	10.45	2.548	0.016	0.011	385.8	2.564
17/04/2013	349		0.08		36			0.024	0.01	371	2.84
09/05/2013	325.02	325.02	0.026	1.04	24.07	10.09	2.433	0.023	0.011	376.1	2.456
10/06/2013	327.83	327.83	0.032		26.81	10.75	3.037	0.035	0.005	330.7	3.072
02/07/2013			0.04	1	37			0.088		359	3.64
10/07/2013	326.94	326.94	0.034	1.1	39.96	9.21	3.124	0.051	0.01	371.2	3.175
13/08/2013	300.59	300.59	0.031	1.76	43.46	10.02	3.097	0.016	0.007	338.9	3.113
09/09/2013			0.01		31			0.02		319	3.43
16/09/2013	308.39	308.39	0.016	1.1	31.41	10.82	3.77	0.023	0.005	344.6	3.793
15/10/2013	317.07	317.07	0.045		28.65	10.63	3.703	0.033	0.157	371.4	3.736
13/11/2013	327		0.044	1.6	21			0.016	0.021	385	2.6
19/11/2013	335.51	335.51	0.051		20.76	10.59	2.138	0.021	0.014	352.1	2.159
10/12/2013	316.3	316.3	0.027		21	11.91	3.143	0.022	0.015	384.4	3.165
14/01/2014	421.9	421.9	0.045	1.05	23.09	12.29	3.466	0.021	0.015	352.7	3.487
11/02/2014	361.9	361.9	0.009	1.14	22.83	11.18	3.934	0.011	0.011	295.8	2.945
20/02/2014	254				23			0.013		296	2.9
11/03/2014	419.7	419.7	0.066	1.33	22.2	13.38	2.823	0.037	0.007	350.6	2.86
23/04/2014	319		0.05		30			0.016	0.012	357	3.8
24/04/2014	288.7	288.7	0.045	1	27.69	12.01	3.166	0.016	0.013	350.3	3.482
13/05/2014	297.8	297.8	0.015	1	20.75	12.23	2.538	0.011	0.005	340.4	2.549
24/06/2014	312	312	0.046	1.17	29.63	12.33	3.896	0.035	0.013	348.2	3.931
26/06/2014	313		0.1		31			0.058	0.066	382	3.2
09/07/2014	301.6	301.6	0.292	1	31.45	12.2	3.389	0.033	0.024	350.5	3.422
19/08/2014	311.5	311.5	0.03	1	31.58	11	2.996	0.02	0.013	368.8	3.016
27/08/2014	323		0.036		31			0.032	0.018	337	3.2
02/09/2014	321.9	321.9	0.029	1.46	33.27	7.85	2.562	0.025	0.021	349.3	2.787
01/10/2014	302.8		0.036	2.55	34.9	8.91	3.242	0.02	0.015	350	3.262
12/11/2014	246.6		0.087	1.42	21.74	11.47	2.335	0.027	0.021	357.5	2.362

Parameter	Alkalinity, Total as CaCO3	Alkalinity, Total (as HCO3)	Ammoniacal Nitrogen as N	BOD, 5 days (Total)	Chloride	Oxygen, dissolved	Nitrate (as N)	Nitrite (as N)	Phosphate (Ortho as P)	Total Hardness (as CaCO3)	Total Oxidised Nitrogen
Unit	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Standards	-	-	≤ 0.065 (ECSR)	≤ 1.5 (ECSR)	-	-	-	≤ 0.05 (ECOSW)	-	-	-
SampleDate											
16/12/2014	305		0.042	1.66	22.4	8.6	2.922	0.011	0.013	354	2.933
27/01/2015	321		0.047	1.2	25			0.014	0.015	357	3.6
28/01/2015	329.1		0.065	1.11	23.78	11.89	3.259	0.016	0.015	390.8	3.274
18/02/2015	315.8		0.065	1.2	23.57	10.99	3.748	0.013	0.015	396.5	3.761
11/03/2015	331.1		0.053	1.34	29.11	10.71	3.659	0.017	0.011	376.1	3.659
08/04/2015	303		0.029		24			0.01	0.015	375	3.2
16/04/2015	297.9		0.079		23.61	11.75	3.162	0.015		399.7	3.177
19/05/2015	308		0.116	8.5	22.02	11.31	3.323	0.013		391.7	3.336
09/06/2015	316		0.01		31.17	12.07	3.616	0.021		388	3.637
21/07/2015	329.4		0.037	1.1	28.59	10.03	3.018	0.033	0.014	384.9	3.051
11/08/2015	305.2		0.02		28.17	9.89	3.052	0.035	0.026	367	3.087
01/09/2015	283				31			0.018	0.024	361	3.2
15/09/2015	307.6		0.038	2.4	27.12	9.51	2.875	0.044	0.061	385.7	2.919
06/10/2015	332.6		0.028	1.2	37.91	10.12	3.8	0.017	0.027	379.7	3.817
17/11/2015	278.275		0.048	1.6	23.869	9.03	2.897	0.022	0.038	352.131	2.919
15/12/2015	238		0.036	1.2	20.9	8.78	2.612	0.018	0.015	289	2.63
25/02/2016	307		0.039		23.8	11.8	3.2	0.008	0.014	392	3.2
26/04/2016	305		0.035		27.5	11.5	3.3	0.015	0.01	368	3.3
29/06/2016	296		0.06		25.4	8.3	2.6	0.028	0.028	350	2.6
25/08/2016	298		0.025		24.7	8.2	2.2	0.025	0.041	361	2.2
27/10/2016	344		0.02		32.4	7.2	3.1	0.016	0.027	396	3.1
22/02/2017	299		0.063	1.7	22.5	9.4	2.7	0.0358	0.023	351	2.7
27/04/2017	337		0.053		26.2	11.3	4.1	0.0168	0.013	362	4.1
29/06/2017	335		0.054		24.6	10	2.6	0.0256	0.038	359	2.6
30/08/2017	325		0.026		32.6	9.6	3.1	0.0257	0.04	374	3.1
26/10/2017	332		0.036		21	8	2.6	0.0272	0.023	363	2.7
04/04/2018	313		0.065		21.7	10.6	2.7	0.0106	0.014	355	2.8
02/05/2018	248		0.051		23.6	11.8	3.3	0.0182		289	3.3
12/07/2018	310			1	38.2	10.7	3.6	0.0305		346	3.6
25/10/2018	334		0.024		39.6	9.9	3.4	0.0123	0.013	393	3.5
26/02/2019	321		0.05	1.8	28.2	12.8	4.7	0.0236	0.015	381	4.7
09/04/2019	330		0.035		23.1	10.4	4.7	0.0117	0.011	367	4.7
25/06/2019	302		0.032	2.7	30.5	14	3.7	0.0393		354	3.8
08/08/2019	309				31.2	10	3.2	0.0212		319	3.2
07/10/2019	294		0.051	1.5	21.1	9	3.1	0.0307	0.021	357	3.1
26/02/2020	232			1.6	18.7	14	2.8	0.00768	0.012	275	2.8
22/06/2020	322		0.026		27.7	7.4	3.5	0.0371	0.02	352	3.5
31/08/2020	292		0.028		21.4	8.9	2.3	0.016	0.019	361	2.4
19/10/2020	340		0.022		23.3	8.6	3	0.0199	0.018	394	3.1
24/02/2021	247		0.022		16.3	9.4	2.2	0.011	0.019	269	2.2
06/04/2021	350		0.042	1.7	22	11.1	3.7	0.013	0.017	398	3.7
29/06/2021	309		0.029		32.9	10	3.5	0.0339	0.011	377	3.5
10/08/2021	204		0.056	2.1	18.2	8.1	1.9	0.0279	0.039	223	1.9
27/10/2021	340		0.03	2	30.5	8.4	2.9	0.0171	0.046	405	2.9
23/02/2022	283		0.028		24.2	10	4.5	0.0144	0.02	335	4.5
04/04/2022	346		0.07	1.3	24.4	11	4.2	0.0217	0.019	389	4.2
28/06/2022	291		0.37	6.3	35.2	6.4	2.8	0.105	0.096	301	2.9
23/08/2022	327		0.022		33.8	9	3.1	0.00761	0.039	351	3.1
25/10/2022	276		0.039	2.1	22.8	7.6	3.2	0.0249	0.03	326	3.2
28/02/2023	352		0.067		23.3	11.2			0.019	381	4.2
27/04/2023	340		0.047	1	23.8	10.1			0.016	359	3.9
27/07/2023	312				19.9	9.3			0.025	334	2.3
23/11/2023	369		0.035	1.1	18.7	9.2			0.019	382	3.3
21/03/2024	350		0.031		17.7	10.8			0.015	368	2.9
20/06/2024	343		0.048	2.1	25.2	10.4				356	3.2
24/09/2024	358			1	34	11.5			0.018	353	3.7
13/11/2024	349		0.033	1.3	30.8	10			0.034	373	3.3
27/02/2025	339		0.035	1.4	22.3	12.2			0.02	369	3.2
29/05/2025	307		0.052		24.8	8.6			0.027	328	2.7

## **Nenagh\_070 (2010 – 2024)**

Parameter	Alkalinity, Total as CaCO3	Ammoniacal Nitrogen as N	BOD, 5 days (Total)	Chlorid e	Oxygen, dissolved	Nitrate (as N)	Nitrite (as N)	Phosphate (Ortho as P)	Total Hardness (as CaCO3)	Total Oxidised Nitrogen
Unit	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Standards	-	≤ 0.065 (ECSR)	≤ 1.5 (ECSR)	-	-	-	≤ 0.05 (ECQSW)	-	-	-
SampleDate										
17/02/2010	241	0.08	0.9	22			0.011	0.02	302	4
19/05/2010	279	0.02	1	26			0.03		312	4.67
05/07/2010			1	33			0.026	0.07	295	3.67
02/09/2010	233	0.01	1	39			0.012	0.03		4.28
26/10/2010	227		2.2	26			0.029	0.04	258	3.72
02/02/2011	251	0.03	1.4	20			0.013	0.02	288	4
07/04/2011	220	0.09	1.5	24			0.015	0.02	235	3.54
09/06/2011	193	0.03	1.1	26			0.025	0.05	226	3.01
04/08/2011	255	0.02	0.9	33			0.035	0.02	257	3.85
10/10/2011	156	0.02	2.7	19			0.013	0.03	193	2.47
07/12/2011	177	0.04		16			0.01	0.03	216	3.18
15/02/2012	252	0.07	1.5	18			0.013	0.02	267	4.01
10/04/2012	202	0.02	1.4	22			0.019	0.02	215	3.4
03/07/2012	216	0.02	1.4	17			0.01	0.03	247	3.23
02/10/2012	247	0.02		23			0.013	0.02	262	3.84
29/11/2012	266	0.03		17			0.006	0.02	271	3.35
04/02/2013	255	0.03	1	18			0.009	0.02	257	3.22
04/04/2013	277	0.07		21			0.016		279	3.67
28/05/2013	232	0.01	2.2	23			0.056		254	3.05
14/08/2013	248	0.02		30			0.014	0.02		3.43
17/10/2013	127	0.03	4	25			0.008	0.03	151	2.5
20/02/2014	183	0.043		25			0.017	0.025	220	3.8
28/04/2014	234			27			0.01		247	3.4
05/08/2014	241			36			0.014	0.024	267	4
29/01/2015	219	0.041	1.1	30			0.014	0.016	252	3.6
13/04/2015	213	0.081	1.5	25			0.009	0.024	258	3.2
22/06/2015	260	0.024		30			0.021	0.012	282	4.3
03/09/2015	202		1	33			0.009	0.023	224	3.3
03/12/2015	177	0.027	1	20			0.012	0.023	206	3.5
08/03/2016	215	0.024		20.4	11.1	3.5	0.007	0.014	246	3.5
11/05/2016	230	0.034		26.8	9.5	3.5	0.021	0.012	270	3.6
26/07/2016	223		1.2	31	9.4	3.5	0.012	0.018	256	3.5

Parameter	Alkalinity, Total as CaCO3	Ammoniacal Nitrogen as N	BOD, 5 days (Total)	Chlorid e	Oxygen, dissolved	Nitrate (as N)	Nitrite (as N)	Phosphate (Ortho as P)	Total Hardness (as CaCO3)	Total Oxidised Nitrogen
Unit	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Standards	-	≤ 0.065 (ECSR)	≤ 1.5 (ECSR)	-	-	-	≤ 0.05 (ECQSW)	-	-	-
SampleDate										
06/09/2016	184	0.027	1	27.9	8.7	2.4	0.099	0.025	195	2.5
14/11/2016	218			23.7	10.3	2.8	0.007	0.021	238	2.8
07/03/2017	201	0.024		21.2	11.3	3.9	0.0061	0.031	234	3.9
10/05/2017	254			32.1	10.2	4.1	0.00799			4.1
25/07/2017	234			33	8.9	3.1	0.00916	0.018	252	3.2
05/09/2017	213			32.4	9.1	2.8		0.025	255	2.8
14/11/2017	220	0.077		22.9	10.4	3.4	0.0127	0.056	246	3.4
06/03/2018	220	0.039		29.1	11.6	3.7	0.011	0.024	267	3.8
09/05/2018	261			26.6	10		0.0093		291	
24/07/2018	252	0.026		51.1	8	5.2	0.0164		283	5.2
04/09/2018	243			46.1	8.9	3.8	0.0059		267	3.8
13/11/2018	129	0.079	1	23.2	10.7	3.8	0.017	0.033	169	3.8
06/03/2019	123	0.057	2.1	17.5	10.5	3.3	0.00651	0.053	152	3.3
09/05/2019	242	0.031	2.4	34	11.5	5.4	0.0218		279	5.4
23/07/2019	228	0.025		41.5	9	4.5	0.0252	0.014	263	4.5
03/09/2019	193		1.1	32.6	11	3.5	0.005	0.014	225	3.5
14/11/2019	189	0.039	1	21.7	11.5	4.1	0.0166	0.025	218	4.1
11/03/2020	173	0.039		19.6	11.7	3.4	0.00817	0.053	184	3.4
12/05/2020	248	0.021	1	37.9	11.6	5.8	0.0222		287	5.8
23/07/2020	210			52.2	9.8	4.4	0.0297	0.015	248	4.4
02/09/2020	204	0.02		23.1	10	3.7	0.00731	0.022	234	3.7
03/11/2020	174	0.027		19.1	11.2	3	0.0082	0.025	213	3
15/03/2021	198	0.035		17.7	11.8	3.4	0.00627	0.02	224	3.4
11/05/2021	240			42.6	11.8	3.9	0.00802		267	3.9
22/07/2021	244	0.04	1.2	63.1	8.8	4.2	0.0364	0.15	290	4.3
02/09/2021	237		2.4	66.9	9.8	4.8	0.00799	0.01	266	4.8
03/11/2021	145			20.6	11.3	2.7		0.024	173	2.7
15/03/2022	192			21.7	12	4.4		0.025	216	4.4
17/05/2022	236			41.2	10.1	4.2	0.0196		288	4.2
21/07/2022	224	0.025		62.6	9.7	3.8	0.00858	0.018	257	3.9
01/09/2022	232	0.026		101	9.6	4.2	0.011		265	4.2
02/11/2022	157	0.037	2.3	21.3	10.4	3.9	0.0105	0.033	188	3.9
23/03/2023	173	0.027		20.3	11.4			0.019	187	3.5
20/06/2023	217	0.18	1	42.5	8.9			0.069	245	3.7
06/09/2023	245			45.2	10.1			0.029	267	4.1
02/11/2023	211	0.021	1.2	19.1	10.2			0.029	225	3.6
13/03/2024	223	0.032	2	22	10.8			0.018	238	3.3
21/05/2024	271	0.029	2.9	37.5	9.5				285	4.4
04/09/2024	257	0.023		66.3	9.6			0.019	266	4.2
20/11/2024	156	0.02	1.3	28.1	11.9			0.026	175	2.4
12/03/2025	253	0.024	1.9	26.6	11.9			0.012	282	4.8
21/05/2025	206		1.5	31.4	10.8				226	3.7

## **Silver (Kilcormac)\_020 (2013)**

Parameter	Alkalinity, Total (as HCO <sub>3</sub> )	Ammoniacal Nitrogen as N	Chloride	Oxygen, dissolved	Nitrate (as N)	Phosphate (Ortho as P)	Total Hardness (as CaCO <sub>3</sub> )	Total Oxidised Nitrogen
Unit	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Standards	-	≤ 0.065 (ECSR)	-	-	-	-	-	-
SampleDate								
21/02/2013	194.36	0.032	12.32	12.24	0.646	0.005	217.7	0.646

## **Clodiagh (Tullamore)\_020 (2012 – 2020)**

Parameter	Ammoniacal Nitrogen as N	Ammoniacal Nitrogen as NH3	BOD, 5 days (Total)	BOD, 5 days with inhibition (Carbonaceous BOD)	Chloride	COD, unfiltered	Oxygen, dissolved	Nitrate (as N)	Nitrate (as NO3)	Nitrite (as NO2)	Phosphate (Ortho as P)	Sulphate	Suspended solids, Total	Total Nitrogen	Total Phosphorus (as P)
Unit	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Standards	≤ 0.065 (ECSR)	≤ 0.065 (ECSR)	≤ 1.5 (ECSR)	≤ 1.5 (ECSR)	-	125 (UWWT)	-	-	-	≤ 0.05 (ECQSW)	-	-	≤ 25 (ECQSW)	10 (UWWT)	-
SampleDate															
12/01/2012		0.033		1.98	10	27	10.56		0.224	0.004	0.051	6		0	
29/02/2012		0.045		1.66	7	18	10.44		0.424	0.001	0.03	7		0.6	
21/03/2012		0.019		2.1	6	5	10.14		0.141	0	0.035	8		0	
17/04/2012		0.01		2.22	4	38	10.1		0.56	0	0.013	9			
21/06/2012		0.008		2.11	8	68	9.8		0.931	0	0.034	33		0.1	
24/07/2012		0		1.3	3	24	8.37		0	0	0.007	7		0	
21/08/2012		0.002		1.53	3	17	9.09				0.004	7			
11/09/2012				2.28	2	34	9.92				0.002	10			
18/10/2012		0.017		2	8	45	9.89		0.642		0.016				
22/11/2012		0.027		1.81	2	41	10.81		0.54		0.033	20			
04/12/2012		0.023		2	5	57	11.37		0.358			17			
06/03/2013	0.14			2			11				0.03			2	
15/05/2013	0.02			1			10.6				0.03			2	
05/07/2013	0.03			1			9.8				0.03			2	
20/11/2013	0.09			1			11.6				0.03			2	
09/01/2014	0.02			2		24	12	1			0.03			2	
30/04/2014	0.04			1		20	11.41				0.03			2	
30/07/2014	0.04			1		20		1			0.03			2	
31/10/2014	0.12			1		26	9.63	1			0.03			2	
25/03/2015	0.04		1			20		1			0.03			2.2	
21/05/2015	0.02		2			20		1			0.03		5		
05/08/2015	0.02					52		1		0.015	0.03		11	2	
14/10/2015	0.03		1			20		1		0.015	0.03		5		0.2
13/01/2016	0.049		1			21		1			0.032		5	2	
29/07/2016	0.02		1.6			38		1			0.03		5	2	
13/10/2016	0.02		1.1			20					0.03		5	2	
22/12/2016	0.035		1.2			20					0.03			2	
27/04/2017	0.02		3.2			20					0.03		5	2	
28/06/2017	0.02		1.5			49					0.03		5	2	
26/10/2017	0.092		1			35					0.03		5	2	
21/12/2017	0.074		1			20					0.03		6	2	
25/04/2018	0.02		1			33					0.02		7	2	
06/06/2018	0.025		1			20					0.02		5	2	
28/08/2018	0.02		1			30					0.02		5	2	
12/12/2018	0.02		1.5			44					0.02		5	2	
29/05/2019	0.06		1		6.7	20		1			0.027		5	2	
25/07/2019	0.064		1			20					0.02		5	2	
27/11/2019	0.045		1.4			20					0.02		10	2	
29/01/2020	0.049		1			26					0.02		5	2	
21/05/2020	0.027		1			20					0.22		5	2	
30/07/2020	0.024		1.6			73					0.02		23	2	
28/10/2020	0.02		1			30					0.02		5	2	

**Figile\_030 (2010 – 2025)**

Parameter	Alkalinity, Total as CaCO3	Alkalinity, Total (as HCO3)	Ammoniacal Nitrogen as N	BOD, 5 days (Total)	Chloride	Oxygen, dissolved	Nitrate (as N)	Nitrite (as N)	Phosphate (Ortho as P)	Total Hardness (as CaCO3)	Total Oxidised Nitrogen
Unit	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Standards	-	-	≤ 0.065 (ECSR)	≤ 1.5 (ECSR)	-	-	-	≤ 0.05 (ECQSW)	-	-	-
SampleDate											
08/03/2010		263.7	0.428	2.65	36.33	11.07	2.048	0.019	0.031	295.7	2.067
21/06/2010		270.26	0.032	3.47	94.39	7.66	2.031	0.029	0.022	379.2	2.06
07/10/2010		222.71	0.087	2.71	42.56	7.91	1.68	0.031	0.044	308.9	1.711
09/12/2010		370.67	0.378	5.66	36.6	9.5	1.459	0.018	0.033	308.6	1.477
21/02/2011		208.1	0.268	2.87	21.19	10	2.288	0.021	0.03	239.7	2.309
30/05/2011		240.43	0.093	2.12	115.75	9.21	1.877	0.08	0.024	374.9	1.957
25/08/2011		204.78	0.077	1.41	62.68	7.82	0.985	0.012	0.028	284.86	0.997
23/11/2011		175.5	0.168	2.28	17.74	7.99	1.534	0.023	0.025	231.8	1.557
22/02/2012		250.55	0.21	1.87	30.57	8.47	2.496	0.034	0.037	298.4	2.53
28/05/2012		289.43	0.057	1.71	87.36	7.69	1.672	0.039	0.025	388.4	1.711
02/08/2012		246.76	0.102	1.75	13.15	6.51	1.258	0.037	0.032	257.3	1.295
01/11/2012		233.72	0.296	2.27	19.71	7.91	1.558	0.027	0.026	270	1.585
26/02/2013	288.8	288.8	0.413	2.28	28.82	11.27	3.357	0.025	0.028	346.1	3.382
29/05/2013	252.22	252.22	0.077	2.22	16.42	8.27	1.469	0.031	0.009	274.3	1.5
21/08/2013	178.08	178.08	0.093	1.76	122.09	6.15	2.351	0.034	0.03	370.16	2.385
26/11/2013	201.78	201.78	0.197	2.26	29.09	9.68	1.872	0.018	0.022	266.6	1.89
27/02/2014	221.2		0.293	2.69	20.56	11.73	1.8	0.017	0.009	209.4	1.817
01/05/2014	268.4		0.013	2.8	60.38	9.06	2.277	0.036		365.5	2.313
07/08/2014	160		0.174	2.08	15.26	5.89	1.139	0.09	0.034	222.7	1.229
13/11/2014	135.2		0.266	5.31	16.81	11.62	1.826	0.026	0.038	198.8	1.852
24/02/2015	132.9		0.421	1.89	19.34	11.01	2.321	0.012	0.014	197.3	2.332
13/08/2015	108		0.15	1.92	69.9	8.35	1.25	0.019	0.023	308.3	1.269
22/10/2015	198.2		0.244	2.3	71.2	9.1	2.355	0.044	0.018	406.4	2.399
02/12/2015	158		0.282	2.09	18.2	8.71	3.38	0.054	0.022	242	3.434
03/02/2016	225		0.22	2.7	21.5	10.8	2.2	0.014	0.029	307	2.3
05/04/2016	172		0.21	2.8	15.2	10.1	1.6	0.013	0.019	215	1.6
08/06/2016	277		0.098	1.6	67.2	6.6	2.5	0.04	0.092	405	2.5
09/08/2016	252		0.03	1	107	8.4	2.1	0.004	0.037	442	2.1
06/10/2016	257		0.026	1.2	49.5	6.8	2	0.007	0.046	355	2
02/02/2017	196		0.18	2.1	23.5	8.7	2.2	0.0232	0.028	240	2.3
06/04/2017	270		0.031	1.4	29.3	9.8	2.5	0.0117	0.026	333	2.5
01/06/2017	203		0.051	2	48.9	5.5	1.9	0.025	0.028	279	1.9

Parameter	Alkalinity, Total as CaCO3	Alkalinity, Total (as HCO3)	Ammoniacal Nitrogen as N	BOD, 5 days (Total)	Chloride	Oxygen, dissolved	Nitrate (as N)	Nitrite (as N)	Phosphate (Ortho as P)	Total Hardness (as CaCO3)	Total Oxidised Nitrogen
Unit	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Standards	-	-	≤ 0.065 (ECSR)	≤ 1.5 (ECSR)	-	-	-	≤ 0.05 (ECQSW)	-	-	-
SampleDate											
10/08/2017	252		0.042		112	8	1.6		0.024	450	1.6
05/10/2017	302			2	39.2	7	1.7	0.00693	0.015	305	1.7
12/02/2018	190		0.19	1.2	18.9	9.1	2.8	0.0127	0.021	241	2.8
16/05/2018	329		0.031	1.1	21.9	10.2	3	0.0374	0.01	429	3
07/06/2018	249		0.051	1.8	87.1	6.8	2	0.0343	0.018	393	2
23/08/2018	228		0.03	1.5	229	6.4	1.3	0.00926	0.016	552	1.3
04/10/2018	222		0.023	1.5	106	7.6	1.9	0.0191	0.031	393	1.9
14/02/2019	207		0.082	1.3	28.3	9.9	3.6	0.0199	0.026	291	3.6
08/05/2019	248		0.04	2.2	41	8.8	2.2	0.0136	0.023	323	2.2
11/06/2019	214		0.041	1.9	18.5	6.5	1.4	0.0185	0.031	267	1.5
27/08/2019	196		0.034	2.3	31.2	4.8	1.6	0.00709	0.031	266	1.6
24/10/2019	252		0.046	3.3	28.5	9.8	2.5	0.0144	0.019	331	2.5
03/02/2020	226		0.15	2.3	22.6	9.5	2.6	0.0246	0.022	241	2.6
04/06/2020	298		0.093	2.4	213	9.6	2.6	0.0192	0.015	586	
06/08/2020	182		0.028	1.4	16.1	5.7	0.93		0.034		0.94
01/10/2020	229		0.15	1.7	25	8.2	1.4	0.0221	0.019	283	1.4
04/02/2021	135		0.1	8.1	14.7	8.6	3.2	0.0116	0.014	170	
27/04/2021	297			1.8	92.2	9.4	2.2	0.00799		440	2.2
02/06/2021	248		0.06	1.6	47	5.9	1.5	0.00939	0.049	325	
26/08/2021	224		0.054	2.1	32.1		0.32		0.043	283	0.32
07/10/2021	157		0.04	1.4	37.2	7.1	1.5	0.0166	0.028	243	1.5
03/02/2022	252		0.042	1.2	33.6	8.6	2.7	0.0121	0.035	328	
28/04/2022	289		0.022	1.5	90.7	11.6	2.1		0.018	430	2.1
02/06/2022	286		0.036	1	110	9.4	1.8	0.00845	0.022	448	1.9
30/08/2022	239		0.049	1.6	433	6.3	1.3	0.0123	0.016	819	1.4
11/10/2022	140		0.038	1.3	21.1	7.3	1.8	0.0235	0.02	199	1.8
09/02/2023	274		0.09	1	26.5	10.5			0.031	312	2.9
12/04/2023	203		0.11	2.4	18.3	9.4			0.016	252	2.3
04/07/2023	290		0.022		26.9	7.5			0.02	331	1.1
29/11/2023	255		0.074	1.1	23.9	9.4			0.035	299	2.2
05/03/2024	161		0.059	1.7	14	10.4			0.014	197	2.9
25/06/2024	308		0.024	3.6	113	7.3				446	1.6
04/09/2024	281		0.029	1.1	20.6	7.6			0.027	296	0.93
21/11/2024	156		0.21	2.4	17.6	8.8			0.023	211	
21/01/2025	217		0.067	1.6	21.6	8.9			0.02	279	
16/04/2025	283		0.026	2.2	71.6	10			0.017	381	1.7

## **Liffey\_140 (2010 – 2025)**

Parameter	Alkalinity, Total as CaCO3	Ammoniacal Nitrogen as N	BOD, 5 days (Total)	BOD, 5 days with inhibition (Carbonaceous BOD)	Chloride	Oxygen, dissolved	Nitrate (as N)	Nitrite (as N)	Phosphate (Ortho as P)	Sulphate	Total Hardness (as CaCO3)	Total Oxidised Nitrogen
Unit	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Standards	-	≤ 0.065 (ECSR)	≤ 1.5 (ECSR)	≤ 1.5 (ECSR)	-	-	-	≤ 0.05 (ECOSW)	-	-	-	-
SampleDate												
24/02/2010	186	0.1			19	12.4	2.01	0.026		11	221	2.04
21/04/2010	258				18	13.9	2.49	0.011	0.03	14	295	2.5
15/07/2010	197				18	9.8	2.04	0.019	0.07	14	201	2.06
03/09/2010	162				14	10.9	1.41			9	193	1.42
29/10/2010	208				18	10.4	1.98	0.009	0.05	13	224	1.99
16/12/2010	247	0.11			20		2.8	0.026		18	308	2.83
24/02/2011	126	0.03			13	12.4	1.52	0.033		9	144	1.56
14/04/2011	282	0.03			21	11.4	3.25	0.019		14	252	
16/06/2011	182				21	10.2	4.34	0.019	0.04	14	210	4.36
26/08/2011	164				19	10.2	1.75	0.005		12	181	
19/10/2011	179	0.06			19	11	2.03	0.011	0.04	14	217	
17/11/2011	93	0.03		2	12		1.12	0.013	0.04	8	104	1.14
16/02/2012	183	0.03			14	11.3	2.12	0.012		11	202	2.13
12/04/2012	210				19		2.2		0.08	15	228	
14/06/2012	103	0.04			11	9.1	0.96	0.013		7	120	0.98
30/08/2012	138	0.07			11	9	1.12	0.016	0.05	8	153	
11/10/2012	119				10		1	0.005		7	141	1
06/12/2012	119				13	12.3	1.22	0.006		9	135	1.23
15/02/2013	147	0.03			12	13.6	1.35	0.009		8	164	1.36
11/04/2013	240				22	13.5	2.34	0.006		16	292	2.35
19/06/2013	193			1	20	9.3	1.98	0.029	0.04	13	214	2.01
30/08/2013	143				18	12	1.78	0.008	0.05	11	160	1.79
20/02/2014	149	0.07		1	16	11.5	1.62	0.022		11	161	1.64
04/04/2014	255	0.05			19	10.8	2.22	0.026	0.03	16	298	2.24
12/06/2014	127	0.03			17	9.9	1.44	0.012	0.03	10	189	
27/08/2014	188	0.02			22	10.4	2.06	0.028	0.04	14	208	2.08
10/10/2014	130	0.02		1	18	10.4	1.61	0.014	0.1	13	169	1.62
05/12/2014	100	0.05		2	10		1.04	0.01	0.02	6	116	1.05
12/02/2015	239	0.03		1	18	12.2	3.17	0.017	0.03	15	273	3.19
09/04/2015	237	0.02			21	11.2	2.68	0.016	0.02	17	286	2.7
11/06/2015	207	0.02		1	24	10.8	2.54	0.009	0.07	15	235	2.55
20/08/2015	132	0.02			22	10.3	1.79	0.012	0.04	11	157	1.8
02/10/2015	181	0.01			23		2.53	0.01	0.02	13	222	2.54
04/12/2015	146	0.06		2	14	11.2	1.87	0.012	0.1	13	175	1.88
09/03/2016	134	0.04	5		16	12.2	0.99	0.017	0.02	9	151	1.01
25/05/2016	216	0.02	1		21	11.6	1.78	0.007	0.02	17	243	1.78
24/08/2016	204	0.03	2		19	9.9	1.75	0.012	0.06	18	227	1.76

Parameter	Alkalinity, Total as CaCO3	Ammoniacal Nitrogen as N	BOD, 5 days (Total)	BOD, 5 days with inhibition (Carbonaceous BOD)	Chlorid e	Oxygen, dissolved	Nitrate (as N)	Nitrite (as N)	Phosphate (Ortho as P)	Sulphat e	Total Hardness (as CaCO3)	Total Oxidised Nitrogen
Unit	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Standards	-	≤ 0.065 (ECSR)	≤ 1.5 (ECSR)	≤ 1.5 (ECSR)	-	-	-	≤ 0.05 (ECOSW)	-	-	-	-
SampleDate												
13/10/2016	209	0.04			19	11.9	1.71	0.014	0.09	18	231	1.72
14/12/2016	206	0.02	4		20	11.9	1.88		0.05	18	229	1.89
10/02/2017	145	0.01			13	12.9	1.38		0.02	12	166	1.38
10/05/2017	153	0.02	1		18	11.3	1.43		0.02	13	167	1.43
14/07/2017	183	0.06	1		17	12.4	1.63	0.005	0.04	25	205	1.63
08/09/2017	180	0.03	2		17	11	1.18		0.03	15	197	1.18
09/11/2017	199	0.05			15	12.6	1.21	0.008	0.09	13	215	1.22
15/02/2018	185	0.02			17	13	1.7		0.02	9	202	1.7
17/05/2018	220	0.02	1		19	12.9	1.62			15	243	1.62
12/07/2018	118	0.02	1		14	10.1	0.96		0.04	9	135	0.96
20/09/2018	149	0.02	1		20	11.1	1.14	0.005	0.02	15	176	1.14
15/11/2018	204	0.02	1		21	11.2	2.16	0.012	0.03	31	254	
01/03/2019	208	0.02			20	13	2.29		0.03	23	245	2.29
12/04/2019	219	0.01	1		20	12.4	2.01		0.02	22	255	2.02
19/06/2019	205	0.02			19	10.6	1.21		0.02	20	229	
07/08/2019	149	0.01			19	9.9	1.07		0.04	15	168	1.08
14/11/2019	169	0.08	1		17	11.4	1.64	0.007	0.09	15	198	
11/02/2020	220	0.051	1.5		22.5	12	2.7	0.0103	0.039		247	2.7
21/04/2020	164				20.4	11.1	2.1				238	2.1
11/06/2020	188				20.6	9.9	2	0.00689			227	2
04/08/2020	187				19.2	10.4	1.5		0.014		237	1.5
20/10/2020	91		1		12.1	10	0.86		0.011		110	0.86
02/02/2021	140	0.029	1.8		15.5	11.3	1.7	0.00603	0.026		166	
20/04/2021	223				21.4	11.9	2.3	0.0046			265	2.3
08/06/2021	219	0.034	1.2		20.3	10	2.2	0.00682	0.016		247	
09/08/2021	119				19.7	10.4	1.4		0.016		220	1.4
19/10/2021	155		1.4		18.1	10.3	1.6		0.022		174	
01/02/2022	231	0.06			25.2	12.2	3.2	0.0057	0.022		259	
19/04/2022	223	0.021			24.1	13.2	2.2				247	2.2
07/06/2022	189				21.4	10.5	1.8	0.00509	0.012		226	1.8
02/08/2022	158				20.5	9.1	1.5		0.026		189	1.5
18/10/2022	196		1.1		22.2	10.8	2.2	0.00425	0.019		234	
07/02/2023	235				23.1	11.2			0.022		278	3
02/05/2023	249				22.8	10.5			0.018		275	
18/07/2023	185		1.1		18.7	9.2			0.036		210	
07/11/2023	109				11.4	11			0.019		127	1.1
27/02/2024	199				18	11.8			0.022		223	2
09/04/2024	242	0.047	2.4		19.4	11.4			0.035		266	
06/08/2024	182	0.023			18.4	10.1			0.02		203	1.6
15/10/2024	155				17.3	11.5			0.017		170	1.9
11/02/2025	198	0.023			21.5	12.2			0.03		222	2.4
15/04/2025	200	0.02	1		25.4	12.9			0.019		225	2.5
08/07/2025	177	0.027	1.6		22.4	10.3			0.022		205	1.9