Annual Environmental Report

2018

Edgeworthstown

D0098-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 AER

This Annual Environmental Report has been prepared for D0098-01, Edgeworthstown, in Longford in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports are included as an appendix to the AER as follows:

1.1 Licence specific reporting included in AER

Assessment / Report	Included in AER
Small Stream Risk Score Assessment	Yes

1.2 Treatment Type

The agglomeration is served by a wastewater treatment plant Edgeworthstown WWTP with a Plant Capacity PE of 2700. The treatment process includes the following:

1.2.1 Edgeworthstown WWTP

Treatment type	Yes / No	Details
Preliminary Treatment	Yes	Screen
Primary Treatment	No	
Secondary Treatment	Yes	Aeration
Nutrient Removal	Yes	Chemical P
Tertiary Treatment	No	

The overall compliance of the final effluent with the Emission Limit Values (ELVs) is shown below. More detailed information on the below ELV's can be found in Section 2.2 Discharges from the agglomeration.

1.3 ELV Overview

1.3.1 Edgeworthstown WWTP

Compliance Status	
Were all parameters compliant for Edgeworthstown WWTP treatment plant	No
Where non compliant see Table 2.2.1 for details of parameters	

1.4 Sludge Removal

The amount of sludge removed from the wastewater treatment plant is shown below along with the transported destination of the sludge from the treatment plant.

Treatment Plant	Sludge type	Quantity	Unit	% Dry Solids	Destination
Edgeworthstown WWTP	Cake Sludge	211.6	Weight (Tonnes)	16.9	Longford WWTP
Edgeworthstown WWTP	Liquid Sludge	31.4	Volume (m3)	2	Longford WWTP

Annual Statement of Measures

There were no major capital or operational changes undertaken.

2 MONITORING REPORTS SUMMARY

2.1 Summary report on monthly influent monitoring

A summary of influent monitoring for the treatment plant is presented in below. This monitoring is primarily undertaken in order to determine the overall efficiency of the plant in removing pollutants from the raw wastewater.

2.1.1 Influent Monitoring Summary - Edgeworthstown WWTP

Parameters	Number of Samples	Annual Max	Annual Mean
BOD, 5 days with Inhibition (Carbonaceous BOD)	12	315	147.15
Total Phosphorus (as P)	12	8.14	5.14
COD-Cr	12	2030	511.23
Suspended Solids	12	980	265.11
Total Nitrogen	12	54.02	31.96
Hydraulic Capacity		3629	395

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 3.5 if applicable.

Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity as detailed further in Section 3.2. The annual maximum hydraulic loading is greater than the peak Treatment Plant Capacity as detailed further in Section 3.2.

2.2 Discharges from the agglomeration

2.2.1 Effluent Monitoring Summary - Edgeworthstown WWTP

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Conductivity 20 C	0	0	0	12	0	0	1122.5	N/A
COD-Cr	125	250	0	13	0	0	22.44	Pass
Visual Inspection	0	0	0	12	0	0	0	N/A
pH	6 to 9	0	0	13	0	0	7.26	Pass
ortho-Phosphate (as P) - unspecified	0.15	0.3	0	13	1	1	0.09	Fail
Temperature	25	0	0	12	0	0	10.96	Pass
Ammonia-Total (as N)	0.3	0.6	0	13	12	7	0.75	Fail
Total Phosphorus (as P)	2	2.4	0	13	0	0	0.21	Pass
Total Nitrogen	0	0	0	13	0	0	17.93	N/A
Suspended Solids	35	87.5	0	13	0	0	9.47	Pass

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included [Note 1]	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
BOD, 5 days with Inhibition (Carbonaceous BOD)	6	12	0	13	1	0	3.65	Pass

Notes:
1– This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied

Cause of Exceedance(s):

Not Applicable

Significance of Results:

The WWTP is non-compliant with the ELV's set in the Wastewater Discharge Licence. There were 12 exceedances in relation to the Ammonia-N ELV, 7 of which were above the Condition 2 ELV. There was one exceedance in relation to the Ortho-P Condition 2 ELV. The impact on receiving water is assessed further in Section 2.3.

2.3 Ambient monitoring summary

A summary of monitoring from ambient monitoring points associated with the wastewater discharge is provided in the sections below. For discharges to rivers upstream (U/S) and downstream (D/S) location data is provided. For other ambient points in lakes, coastal or transitional waters, monitoring data from the most appropriate monitoring station is selected.

2.3.1 Ambient Monitoring Report Summary - Edgeworthstown WWTP

The table below provides details of ambient monitoring locations and details of any designations as sensitive areas.

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Status
Upstream	226006, 271139	TPEFF2000D0098SW001	No	No	No	No	Poor
Downstream	226103, 270544	TPEFF2000D0098SW001	No	No	No	No	Poor

2.3.2 Ambient Monitoring Parameter Summary - Edgeworthstown WWTP

The results for ambient results and / or additional monitoring data sets are included in the **Appendix 7.1 - Ambient Monitoring Summary.**

Significance of Results:

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results did not meet the required EQS for Ammonia. Where the ambient monitoring results does not meet the EQS this relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

The discharge from the wastewater treatment plant may be having an observable impact on the water quality in terms of Ammonia.

Other causes of deterioration in water quality in the area are unknown.

It is noted that consistent achievement with the ELVs would benefit the quality of the receiving water.

The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status. The status is Poor both u/s and d/s of the discharge.

3 OPERATIONAL REPORTS SUMMARY

3.1 Treatment Efficiency Report

Treatment efficiency is based on the removal of key pollutants from the influent wastewater by the treatment plant. In essence the calculation is based on the balance of load coming into the plant versus the load leaving the plant. The efficiency is presented as a percentage removal rate.

A summary presentation of the efficiency of the treatment process including information for all the parameters specified in the licence is included below:

3.1.1 Treatment Efficiency Report Summary - Edgeworthstown WWTP

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
SS	108644.53	4364.87	95.98
TP	2108.42	96.44	95.43
TN	13097.28	8267.72	36.87
COD	209504.34	10348.56	95.06
cBOD	60300.68	1684.76	97.21

Note: The above data is based on sample results for the number of dates reported.

3.2 Treatment Capacity Report Summary

Treatment capacity is an assessment of the hydraulic (flow) and organic (the amount of pollutants) load a treatment plant is designed to treat versus the current loading of that plant.

Edgeworthstown WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	1824
DWF to the Treatment Plant (m^3/day)	608
Current Hydraulic Loading - annual max (m^3/day)	3629
Average Hydraulic loading to the Treatment Plant (m^3/day)	395
Organic Capacity (PE) - As Constructed	2700
Organic Capacity (PE) - Collected Load (peak week)	2656
Organic Capacity (PE) - Remaining	44
Will the capacity be exceeded in the next three years? (Yes/No)	No

3.3 Complaints Summary

A summary of complaints of an environmental nature is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
6	Investigation Sewage Flooding - Below Ground Waste Water	0	6
4	Investigation Pollution Incident - Below Ground Waste Water	0	4

3.4 Reported Incidents Summary

Environmental incidents that arise in an agglomeration are reported on an on-going basis in accordance with our waste water discharge licences. Where an incident occurs and it is reportable under the licence, it is reported to the Environmental Protection Agency through their Environmental Data Exchange Network, or in some instances by telephone. Some incidents which arise in the agglomeration are recorded by Irish Water but may not be reportable under our licence for example where the incident does not have an impact on environmental performance.

A summary of reported incidents is included below.

3.4.1 Summary of Incidents

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Inadequate Operational Procedures	1	No	Yes
Uncontrolled release	EO caused by ragging or blocking	1	No	Yes
Non-compliance	Inadequate Infrastructure	1	Yes	No

3.4.2 Summary of Overall Incidents

Question	Answer
Number of Incidents in 2018	3
Number of Incidents reported to the EPA via EDEN in 2018	3
Explanation of any discrepancies between the two numbers above	N/A

3.5 Sludge / Other inputs to the WWTP

'Other inputs' to the waste water treatment plant are summarised in table below

Input type	Quantity	Unit	P.E.	% of load to WWTP	Included in Influent Monitoring (Y/N)?	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP?(Y/N)
Other	160	Volume (m^3)	1.9	100	No	Yes	No

4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

4.1 Storm Water Overflow Identification and Inspection Report

A summary of the operation of the storm water overflows and their significance where known is included below:

No Appendix Included.

4.1.1 SWO Identification

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow (High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2018 (No. of events)	Total volume discharged in 2018 (m^3)	Monitoring Status
SW002	225746, 271464	Yes	Medium	Meeting			Not Monitored
SW003	226082, 270589	Yes	Low	Meeting			Not Monitored
SW004	225650, 271860	Yes	Medium	Meeting			Not Monitored

4.1.2 Inspection Summary Report

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m^3)?	Not Monitored
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	No
The SWO Assessment included the requirements of relevant of WWDL schedules?	No

SWO Summary	
Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?	No

4.2 Report on progress made and proposals being developed to meet the improvement programme requirements.

4.2.1 Specified Improvement Programme Summary

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides list of the various reports required for this agglomeration and a brief summary of their recommendations.

Specified Improvement Programmes (under Schedule A and C of WWDL)	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
W2 Upgrading of Storm Water Overflows to comply with the criteria outlined in the DoEHLG "Procedures and Criteria in relation to Storm Water Overflows, 1995"	C	31/12/2016	Yes	Works Completed		
SW3 Upgrading of Storm Water Overflows to comply with the criteria outlined in the DoEHLG "Procedures and Criteria in relation to Storm Water Overflows, 1995"	C	31/12/2016	Yes	Works Completed		
Waste water treatment plant and ancillary works	C	31/12/2014	Yes	Works Completed		

A summary of the status of any improvements identified by under Condition 5.2 is included below.

4.2.2 Improvement Programme Summary

Improvement Identifier	Improvement Description	Improvement Source	Expected Completion Date	Comments
There are no Improvements Programme for this Agglomeration.				

4.2.3 Sewer Integrity Risk Assessment

The utilisation of multiple capital maintenance programmes and the outputs of the workshops with the Local Authority Operations Staff held under the programme can be used to satisfy the requirements of Condition 5 regarding network integrity. Improvement works identified by way of these programmes and workshops will be included in the Improvements Summary Table.

5 LICENCE SPECIFIC REPORTS

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides list of the various reports required for this agglomeration and a brief summary of their recommendations.

5.a Licence Specific Reports Summary Table

Licence Specific Report	Required by licence	Year included in AER	Included in this AER	Reference to relevant section of AER
Small Stream Risk Score Assessment	Yes	2018	Yes	5.1

5.1 Small Stream Risk Score Assessment

The Small Stream Risk Score Assessment Report is included in Appendix 7.2 - Small Stream Risk Score Assessment. A summary of the findings of this report is included below.

Parameter	Value
Condition 5 Improvement Programme Reference	None
Does SSRS indicate discharges are posing a pollution risk?	Yes
Does improvement programme include any procedural and/or infrastructural works?	No
Downstream SSRS Water Quality Risk	At Risk
SSRS Required?	Yes
Upstream SSRS Water Quality Risk	At Risk
What is Downstream SSRS?	1.6

Parameter	Value
What is Upstream SSRS?	2.4

6 CERTIFICATION AND SIGN OFF

6.1 Summary of AER Contents

Parameter	Answer
Does the AER include an Executive Summary?	Yes
Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and or Environmental Quality Standards)?	Yes
Is there a need to advise the EPA for consideration of a Technical Amendment / Review of the licence?	No
List reason e.g. additional SWO identified	N/A
Is there a need to request/advise the EPA of any modifications to the existing WWDL?	No
List reason e.g. changes to monitoring requirements	N/A
Have these processes commenced?	N/A
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	N/A

I certify that the information given in this Annual Environmental Report is truthful, accurate and complete:

Date: 19/03/2019

This AER has been produced by Irish Water's Environmental Information System (EIMS) and has been electronically signed off in that system for and on behalf of,

Eleanor Roche

Acting Head of Environmental Regulation.

7 APPENDIX

Appendix
Appendix 7.1 - Ambient Monitoring Summary
Appendix 7.2 - Small Stream Risk Score Assessment

Edgeworthstown

			Receiving Waters Designation (Yes/No)					Mean (mg/l)		
Ambient Monitoring Point from WWDL (or as agreed with EPA)	**Irish National Grid Reference (Easting, Northing)**	**EPA Feature Coding Tool code**	**Bathing Water**	**Drinking Water**	**FWPM**	**Shellfish**	**Current WFD Status**	**cBOD**	**o-Phosphate (as P)**	**Ammonia (as N)**
Upstream Monitoring Point	226006, 271139	RS26B050050					Poor	1.000	0.088	0.185
Downstream Monitoring Point	226103, 270544	RS26B050080	No	No	No	No	Poor	2.490	0.064	0.686
Difference								*1.490*	*-0.024*	*0.501*
EQS								2.600	0.075	0.140
% of EQS								57.308%	-32.400%	357.714%

Edgeworthstown 2018 Ambient Data

Upstream Results								
Date		Ammonia (mg/l) *	Ortho P (mg/l) *	BOD (mg/l) *	Total N (mg/l)	D.O (% Sat)	D.O (mg/l)	pH (mg/l)
14/02/18	U/S	0.132	0.052	0.500	1.0	95.0	11.22	8.08
14/03/18	U/S	0.057	0.030	0.500	1.3	104.1	10.26	7.57
11/04/18	U/S	0.159	0.045	0.500	0.9	112.2	11.27	8.04
09/05/18	U/S	0.044	0.059	0.500	0.3	105.2	10.90	8.04
13/06/18	U/S	0.961	0.149	1.400	1.1	78.8	8.52	8.18
11/07/18	U/S	0.034	0.250	1.900	0.7	108.4	10.10	8.27
08/08/18	U/S	0.293	0.042	1.400	1.5	91.3	9.38	7.59
10/10/18	U/S	0.041	0.177	0.500	0.6	103.0	8.86	8.09
14/11/18	U/S	0.050	0.047	1.600	1.5	102.4	9.40	7.54
12/12/18	U/S	0.082	0.033	1.200	2.3	103.9	10.60	7.56
Mean		**0.185**	**0.088**	**1.000**	1.1	100.4	10.05	7.90
95%ile		**0.660**	**0.217**	**1.765**	1.9	110.5	11.25	8.23

Downstream Results								
Date		Ammonia (mg/l) *	Ortho P (mg/l)	BOD (mg/l) *	Total N (mg/l)	D.O (% Sat)	D.O (mg/l)	pH (mg/l)
14/02/18	D/S	0.252	0.055	2.300	2.8	86.6	10.85	8.01
14/03/18	D/S	0.213	0.031	2.400	1.5	100.4	9.89	7.57
11/04/18	D/S	0.296	0.030	1.100	5.8	96.7	10.25	7.54
09/05/18	D/S	0.073	0.060	0.500	1.1	108.6	10.93	8.02
13/06/18	D/S	0.564	0.075	4.800	18.6	67.2	6.91	8.28
11/07/18	D/S	2.040	0.151	1.600	35.0	85.6	8.00	7.57
08/08/18	D/S	0.305	0.024	1.500	1.8	91.4	9.42	7.58
10/10/18	D/S	2.970	0.131	8.300	11.0	91.4	7.78	7.76
14/11/18	D/S	0.060	0.051	1.200	1.5	101.8	9.32	7.63
12/12/18	D/S	0.088	0.033	1.200	2.3	105.0	10.52	7.59
Mean		**0.686**	**0.064**	**2.490**	8.1	93.5	9.39	7.76
95%ile		**2.552**	**0.142**	**6.725**	27.6	107.0	10.89	8.16

** Where the concentration in the result is less than the limit of detection (LOD), a value of 50% of the LOD was used in calculating the mean and 95%ile concentrations.*

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Biological Water Quality Assessment of the River Black, Edgeworthstown, Co. Longford

River Black at Tinnynarr

Water Services Department
Longford County Council
December 2018

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1 INTRODUCTION

1.1 BACKGROUND

In February 2011, the Environmental Protection Agency issued a Waste Water Discharge License in respect of the waste water treatment plant at Edgeworthstown, Co. Longford (License No. D0098-0). This treatment plant discharges into the River Black at Tinnynarr, Edgeworthstown, Co. Longford. As part of the requirements for this license, it is necessary to monitor the biological quality of the River Black, both upstream and downstream of the waste water treatment plant discharge on an annual basis.

Since 2011, Whitehill Environmental has been commissioned by Longford County Council to undertake the annual investigation of the biological water quality of the River Black close to the discharge point of the treatment plant. This report presents the results of the 2018 monitoring programme.

Q VALUE ASSESSMENT

Along with other parameters (fish, morphology, chemistry), the Q value is used to determine the ecological status of the waterbody, which is an action required under the obligations set out in the EU Water Framework Directive. Under this Directive, all water bodies are required to meet good status within a certain time period. Ireland is now in the second cycle of the Water Framework Directive and therefore good status should be achieved in all water bodies by the end of this current cycle, i.e., 2021. If a waterbody is unlikely to achieve this status, then it is deemed to be *At Risk.* Table 1 summaries the Q values in relation to Water Framework Directive status.

Q Value	WFD Status	Pollution Status	Condition
Q5, Q4-5	High	Unpolluted	Satisfactory
Q4	Good	Unpolluted	Satisfactory
Q3-4	Moderate	Slightly polluted	Unsatisfactory
Q3, Q2-3	Poor	Moderately polluted	Unsatisfactory
Q2, Q1-2, Q1	Bad	Seriously polluted	Unsatisfactory

Table 1 – Q Rating in Relation to WFD Status

SMALL STREAM RISK SCORE (SSRS)

The Small Stream Risk Score (SSRS) is a biological risk assessment system for detecting potential sources of pollution in streams. The main aim of the SSRS is to support the programme of measures for the Water Framework Directive. The main objective of this directive is to ensure the achievement of good ecological status in all water bodies in the EU within a specified time period.

SSRS surveys are designed to assist in the identification of diffuse sources of pollution and they are valuable in pinpointing the likely geographical location of the sources that are causing the main channel rivers in their failure to achieve good status. The SSRS will identify whether the water body in question is At Risk of not achieving good ecological status as required under the Water Framework Directive.

2 METHODOLOGY

2.1 PERSONNEL

This ecological assessment was carried out by Noreen McLoughlin, BA, MSc, MCIEEM, of Whitehill Environmental. Noreen has an honours degree in Zoology and an MSc in Freshwater Ecology from Trinity College, Dublin and she has been a full member of the Chartered Institute of Ecology and Environmental Managements for 12 years. Noreen has over 15 years experience as a professional ecologist in Ireland.

2.2 BIOLOGICAL ASSESSMENT

Biological water quality assessment was carried out at two separate locations on the River Black, both upstream and downstream of the effluent discharge point. These locations are summarised in Table 1 and illustrated in Figure 1.

Station No.	Location	NGR Location
1	~ 35m u/s of discharge	N 260517 70648
2	~35m d/s of discharge	N 26046 70574
	Discharge Point	N 26009 70652

Table 1 – Stations Sampled as Part of this Assessment

Fieldwork was carried out on 3rd December 2018.

At each station, the surrounding habitats were noted along with other parameters such as water flow, stream depth and the predominance of vegetation. All samples were taken with a Freshwater Biological Association approved hand held sweep net with a mesh diameter of 500µm. At both stations, a two minute kick and stone wash sample was taken at a suitable riffle site, if there was one present. The samples were retained in plastic containers at the sampling site and removed to the laboratory for further analysis. In the lab, any fine mud and debris were removed from each sample by sieving under running water through a 500 µm sieve. The samples were then sorted live in a white tray under a bench lamp. All macro-invertebrates were preserved in 70% methanol, before being counted and identified to the appropriate taxonomic level. This was generally to family level but where necessary to species level.

Based on the relative abundance of indicator species, a biotic index (Q rating) was determined for the sites in accordance with the biological assessment procedure used by the

Environmental Protection Agency. In addition, the Small Stream Risk Score (SSRS) was also calculated for the upstream and downstream stations. This assessment gives a quick overview of the risk status of the water body in question.

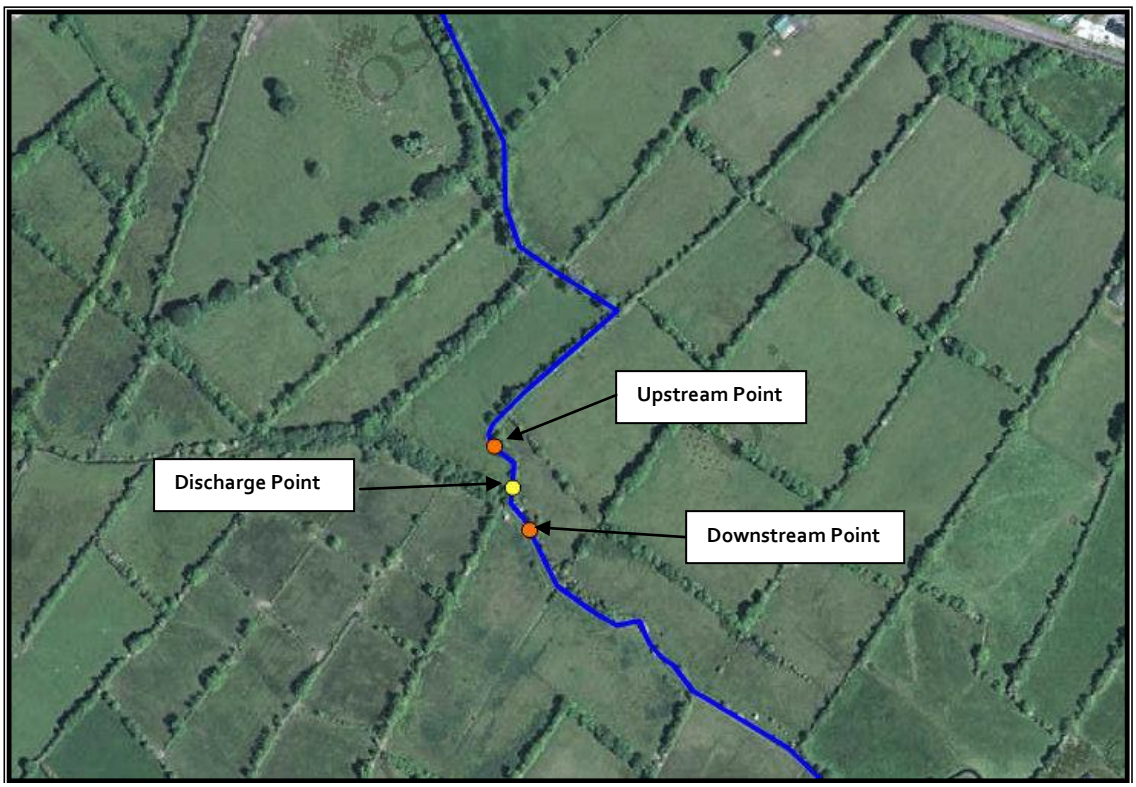

Figure 1 – Location of Sampling Points on the River Black

Q VALUE

Based on the relative abundance of indicator species, the Q value was determined for the sites in accordance with the biological assessment procedure used by the Environmental Protection Agency (Toner *et al.* 2005). The method categorises invertebrates into one of five different groups based on their sensitivity or tolerance to pollution. Group A are the most sensitive forms, Group B are less sensitive, Group C are tolerant, Group D are very tolerant and Group E are the most tolerant. Overall, the higher the biological diversity and the greater the abundance of invertebrate species that are sensitive to organic pollution, then the higher the water quality is assumed to be and the higher the Q value assigned to that sampling station.

The relative abundance of each group of invertebrates in the samples was assigned as follows:

- Present (1/2 individuals)
- Scarce/Few (<1%)
- Small Numbers (<5%)

- Fair Numbers (5-10%)
- Common (10-20%)
- Numerous (25-50%)
- Dominant (50-75%)
- Excessive (>75%)

SSRS

The SSRS methodology only uses certain biological indicators to calculate the risk. The taxa used have been placed into 5 groups:

Group 1 – Ephemeroptera (Mayflies)

Group 2 – Plecoptera (Stoneflies)

Group 3 – Trichoptera (Caddisflies)

Group 4 – G.Ol.D (Gastropods, Oligochaetes and Dipterns)

Group 5 – Asellus (Waterlouse)

The groupings are based on their sensitivity to organic pollution, e.g., mayflies and stoneflies are sensitive to pollution and are given a high score, whilst taxa within Group 4 are less sensitive and are given a lower score. The overall score for each river sample is based on the number of taxon present in each sample along with the relative abundance of each taxon. These scores are added together and divided by five to give an average index score (AIS). The final SSRS is achieved by multiplying the AIS by 2. Table 3 outlines the risk categories.

SSRS	Risk Category
<6.5	At Risk
6.5-7.25	Probably at Risk
>7.25	Not at Risk

Table 3 – SSRS Risk Categories

3 RECEIVING ENVIRONMENT

The Edgeworthstown waste water treatment plant is located in the townland of Tinnynarr, approximately 0.5km south of the town and just off the N4 Dublin – Sligo Road. It is surrounded mostly by agricultural / grazing land. The discharge from the treatment plant enters the River Black at a point approximately half a kilometre south of the treatment plant. A map showing the location of the treatment plant is shown in Figure 1.

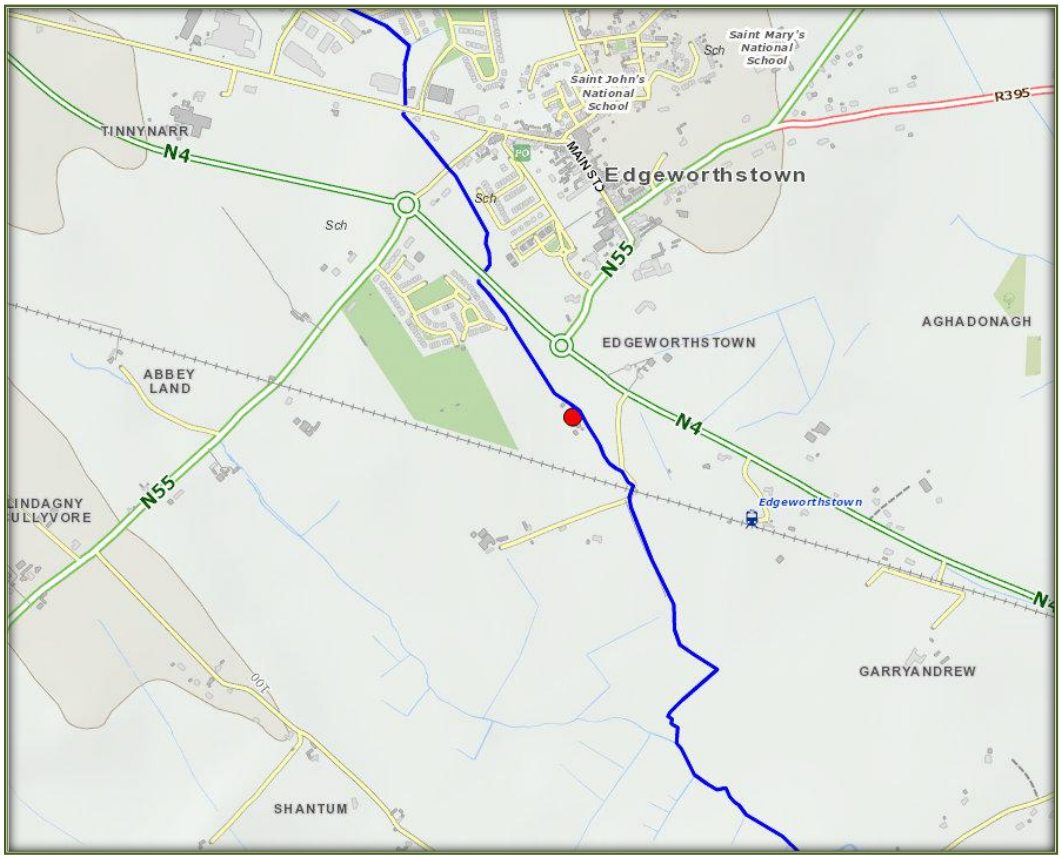

Figure 1 – Site Location Map. The Course of the River Black is Highlighted in Blue. The Location of the Treatment Plant is Shown with a Red Dot.

3.1 THE RIVER BLACK

The River Black rises in the townland of Lisnanagh, approximately 3km north-west of Edgeworthstown. It then flows through low lying agricultural land where it joined by a network of drainage ditches. On the western outskirts of the town if flows behind a pet food factory and through a housing estate. On the east side of the town it flows through agricultural land again and towards the Longford – Westmeath county boundary where it flows through an area of raised and cutover bog and a conifer plantation. Historically (old version OSI maps) the River Black flowed into and out of Glen Lough (prior to the drainage scheme that drained this lake) before it flowed north-east and then south-east towards the River Inny, where it joined it in the townland of Boltomy just downstream of Lough Iron.

However, since the lake was drained the flow of the river has been altered and it is now connected to the marsh area of Glen Lough by a drainage channel.

3.2 RECEIVING WATER QUALITY

EPA'S BIOLOGICAL WATER QUALITY MONITORING

Since the commencement of the EPA's Water Quality Monitoring Programme, the River Black has consistently failed to reach good ecological status, i.e., it has always been of poor – moderate water quality. The earliest information from the EPA comes from 1987, when a Q value of 1-2 (i.e., bad status / severe pollution) was assigned to the river at the sampling station at the Ballymahon Bridge in Edgeworthstown (upstream of the waste water treatment plant).

In 2014, the River Black at the Ballymahon Road Bridge received a Q2-3 (Poor Ecological Status). This is a deterioration since the previous assessment in 2011, when a Q3-4 (moderate status) was obtained. Other points sampled by the EPA include the bridge at Ballinlaghta and the bridge at Lissanure. The latest EPA rating (2014) from the Ballinlaghta station is a Q3-4, i.e., moderate status.

PREVIOUS MONITORING RESULTS

Tables 2 and 3 summaries the previous results obtained by Whitehill Environmental during the biological water quality monitoring studies on the River Black. The 2010 results were obtained as part of the Appropriate Assessment Screening for the original license application. Subsequent results were obtained upon condition of the granting of the license. The SSRS for the River Black only commenced in 2016.

Year	Q Value & Status Upstream	Q Value &Status Downstream
2010	Q3: Poor Status	Q3: Poor Status
2011	Q3: Poor Status	Q3: Poor Status
2012 (2013)	Q3: Poor Status	Q3-4: Moderate Status
2013	Q3: Poor Status	Q3: Poor Status
2015	Q3: Poor Status	Q3: Poor Status
2016	Q3: Poor Status	Q3: Poor Status
2017	Q3: Poor Status	Q3: Poor Status

Table 2 – Summary of Findings of the Previous Biological Water Quality Assessment.

Year	SSRS & Risk Status Upstream	SSRS & Risk Status Downstream
2016	1.6	3.2
2017	1.6	4

Table 3 – Summary of Findings of the Previous SSRS for the River Black

4 RESULTS OF THIS ASSESSMENT

Results from the current biological water quality monitoring are summarised in Table 3.

Station	Location	Q Value & Status	SSRS
1	~ 35m u/s of discharge	Q3 - *Poor Status*	2.4 - *At Risk*
2	~ 35m d/s of	Q2-3 - *Poor Status*	1.6 - *At Risk*

Table 3 – Summary of Findings of the 2018 Biological Water Quality Assessment

STATION ONE

The sample from station 1 (upstream of discharge) was dominated by Group C taxa and these were found in the sample in excessive numbers. Group C macro-invertebrates are tolerant of moderate levels of organic pollution. The Group C taxa were dominated by the fresh water shrimp *Gammarus duebeni* (61%) whilst diptern larvae from the Chironomidae family were common. The mayfly *Baetis rhodani* was present in fair numbers. Group A taxa (sensitive to organic pollution) were absent and Group B taxa (less sensitive) were present in small numbers. They were represented by cased caddis larvae from the Limnephilidae family. Group D taxa were present in small numbers and were represented by the water louse *Asellus aquaticus*. Group D taxa are very tolerant of organic pollution. Based on the relative abundance of these indicator groups and the occurrence of Group C taxa in excessive numbers, this station was assigned a Q3, i.e., poor status. Under the requirements of the EU Water Framework Directive, this is unsatisfactory.

The SSRS obtained at Station 1 was also low (2.4), putting it within the At Risk category. The reason for this low score was due to the absence of Ephemeroptera and Plecoptera and the relatively high numbers of GOLD taxa (Gastopods, Oligochaetes, Dipterns) and *Asellus*.

STATION TWO

Station 2 (downstream of the discharge) was dominated by Group D taxa and the water louse *Asellus aquaticus* was the most common organism in the sample (47%). Other Group D taxa represented included the Sphaeriidae Pisidium and leeches from the Erpobdellidae and Glossiphonidae families. Group D taxa are quite tolerant of organic pollution. The most sensitive Group A taxa were absent from this samples, whilst Group B taxa were present in small numbers. This group was represented solely by cased caddis from Limnephilidae family, which are probably more tolerant to pollution than other Limnephilid families. Group C were numerous in the sample (435) and they were represented by *Gammarus duebeni*, along with beetles from the Elminthidae families, the mayfly *Baetis rhodani* and dipterns from the Chironomidae and Ceratopogonidae families. Although not used as part of the Q assessment, it was noted what worms from the Naidinae order were present in large numbers in the sample. These worms are very tolerant of pollution.

Overall, based on the relative abundance of these indicator groups and the overall dominance of Group D taxa, this station was assigned a Q2-3, i.e., poor status.

The SSRS obtained at this station was 1.6, which puts this station in the At Risk category.

5 DISCUSSION AND CONCLUSIONS

There has been no significant change in the ecological status of the River Black upstream of the discharge. It has maintained its Q3, which is the value it has received since the start of this monitoring programme. There has been a slight increase in the SSRS result, increasing from a 1.6 in 2016 and 2017, to a score of 2.4 this year. This increase was due to a higher relative abundance of Trichoptera (caddis) since 2017.

There has been a notable decrease in ecological status of the River Black downstream of the discharge. This station had previously achieved a Q3 from 2013 – 2017. However, the current sample saw a marked increase in Group D taxa compared to previous years. The abundance of *Asellus aquaticus* is a strong indicator that there is a high level of organic pollution in the river at this point. In 2017's sample, Group D taxa comprised 6% of the sample. This has risen to 51% in the current sample, an indicator of the ecological stresses that this system is under. In addition, the abundance of the Nais worms (Naidinae) was quite high in the sample. These usually respond to organic pollution by large increases in numbers. The SSRS result is also indicative of the deterioration. In 2017, a result of 4 was obtained and this has fallen to 1.6.

Overall, the status of the River Black along its entire length is unsatisfactory. There is a significant decrease in the ecological status of the river upstream and downstream of the WWTP discharge this year. This indicates that the current discharge from the Edgeworthstown WWTP is likely to be having a negative impact upon water quality in this river.

6 APPENDIX I- RESULTS OF RIVER BLACK MONITORING

Station One (Upstream) – Q Value

Indicator Group	Taxon	Number	Abundance
Group A	**Absent**	**0**	**0**
(Very sensitive)			
Group B		**25**	**5.5**
(Moderately sensitive)	**Cased Trichoptera**		
	Limnephilidae	25	5.5
Group C		**387**	**85**
(Moderately tolerant)	**Ephemeroptera**		
	Baetis rhodani	36	7.9
	Amphipoda		
	Gammarus duebeni	278	61
	Diptera		
	Chironomidae	65	14.3
	Ceratopognidae	1	0.2
	Chaoboridae		
	Caseless Trichoptera		
	Polycentropodidae	4	0.8
	Gastropoda		
	Lymnaea glabra	3	0.6
Group D		**39**	**8.6**
(Very tolerant)	**Isopoda**		
	Asellus aquaticus	15	3.3
	Hirudinae		
	Glossiphonidae	7	1.5
	Erpobdellidae stagnalis	6	1.3
	Bivalvia		
	Pisidium	11	2.4
Group E	**Absent**	**0**	**0**
(Most tolerant)			
Not Assigned		**3**	**0.6**
	Oligochaeta		
	Naidinae	3	0.6
Total Abundance		**454**	
Q Value	**Q3**		

Results from the Biological Water Quality Monitoring of Station One (Upstream of Discharge)

Station Two (Downstream) – Q Value

Indicator Group	Taxon	Number	Abundance
Group A	**Absent**	**0**	**0**
(Very sensitive)			
Group B		**40**	**5.3**
(Moderately sensitive)	**Cased Trichoptera**		
	Limnephilidae	40	5.3
Group C		**328**	**43.6**
(Moderately tolerant)	**Ephemeroptera**		
	Baetis rhodani	91	12.1
	Amphipoda		
	Gammarus duebeni	90	11.9
	Diptera		
	Chironomidae	111	14.7
	Ceratopognidae	11	1.5
	Coleoptera		
	Elminthidae	18	2.4
	Gastropoda		
	Ancylidae	6	0.8
	Lymnaea glabra	1	0.1
Group D		**384**	**51**
(Very tolerant)	**Isopoda**		
	Asellus aquaticus	356	47.3
	Hirudinae		
	Erpobdellidae	17	2.2
	Helobdella stagnalis	1	1.5
	Glossiphonidae	2	0.3
	Bivalvia		
	Pisidium	8	1
Group E	**Absent**		
(Most tolerant)			
Not Assigned			
	Oligochaetes		
	Naidinae	Abundant (100s)	
Total Abundance		**752**	
Q Value	**Q2/3**		

Results from the Biological Water Quality Monitoring of Station Two (Downstream of Discharge)

Indicator Group	Taxon	No of Taxa	Total Relative Abundance *2	Score
Group 1	**Ephemeroptera**	0	0	0
Group 2	**Plecoptera**	0	0	0
Group 3	**Trichoptera**	**2**	**4**	**4**
Group 4	**G Ol D**	**4**	**7**	**0**
Group 5	*Asellus aquaticus*		**Common**	**2**
Total Index Score (TIS)				6
Average Index Score (AIS = TIS/5)				1.2
SSR Score (AIS x 2)				2.4
SSRS Category				*At Risk*

SSRS (Upstream)

Indicator Group	Taxon	No of Taxa	Total Relative Abundance *2	Score
Group 1	**Ephemeroptera**	0	0	0
Group 2	**Plecoptera**	0	0	0
Group 3	**Trichoptera**	**1**	**3**	**4**
Group 4	**G Ol D**	**5**	**15**	**0**
Group 5	*Asellus aquaticus*		**Common**	**0**
Total Index Score (TIS)				4
Average Index Score (AIS = TIS/5)				0.8
SSR Score (AIS x 2)				1.6
SSRS Category				*At Risk*

SSRS (Downstream)