Annual Environmental Report

2021

Portlaoise

D0001-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0001-01, Portlaoise, in Laois in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports where relevant are included as an appendix to the AER.

1.1 ANNUAL STATEMENT OF MEASURES

A summary of any improvements undertaken is provided where applicable.

There were no capital works, significant changes or operational improvements undertaken in 2021.

A Drainage Area Plan has completed for the Portlaoise agglomeration. The DAP encompassed both Storm Water Overflow and network assessments and comprehensively addressed the need to carry out separate Storm Water Overflow or Sewer Integrity Assessments. Consultants have been appointed by IW to progress with the tender stage for the implementation of the works which the DAP has identified as being the most beneficial to the system.

1.2 TREATMENT SUMMARY

The agglomeration is served by a wastewater treatment plant(s)

- PORTLAOISE WWTP with a Plant Capacity PE of 39000, the treatment type is 3NP - Tertiary N&P removal

1.3 ELV OVERVIEW

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.

Discharge Point Reference	Treatment Plant	Discharge Type	Compliance Status	Parameters failing if relevant
TPEFF1600D0001SW001	PORTLAOISE WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l Chloride mg/l

1.4 LICENCE SPECIFIC REPORTING

Assessment / Report
There are no Licence Specific Reports included in this AER.

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 PORTLAOISE WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - PORTLAOISE WWTP

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

Parameters	Number of Samples	Annual Max	Annual Mean
BOD, 5 days with Inhibition (Carbonaceous) mg/l	27	228	113
ortho-Phosphate (as P) - unspecified mg/l	27	4.20	2.39
COD-Cr mg/l	27	1174	488.94
Suspended Solids mg/l	27	861	316.00
Ammonia-Total (as N) mg/l	27	43	27
Total Nitrogen mg/l	13	51	35
pH pH units	27	8.10	7.66
Total Phosphorus (as P) mg/l	12	7.70	5.09
Hydraulic Capacity	N/A	28153	9948

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 2.1.5 if applicable.

Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity. The annual maximum hydraulic loading is greater than the peak Treatment Plant Capacity. Further details on the plant capacity and efficiency can be found under the sectional 'Operational Performance Summary'.

2.1.2 EFFLUENT MONITORING SUMMARY - TPEFF1600D0001SW001

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 exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Chloride mg/l	250	300	N/A	12	4	2	234	Fail
COD-Cr mg/l	125	250	N/A	27	N/A	N/A	16	Pass
Suspended Solids mg/l	35	88	N/A	27	N/A	N/A	1.41	Pass
Fats, Oils & Greases mg/l	15	18	N/A	11	N/A	N/A	11	Pass
pH pH units	6.00	9.00	N/A	27	N/A	N/A	7.93	Pass
Nitrate (as N) mg/l	7.30	8.76	N/A	27	N/A	N/A	5.14	Pass
BOD, 5 days with Inhibition (Carbonaceous) mg/l	4.00	8.00	N/A	27	N/A	N/A	0.746	Pass
Total Phosphorus (as P) mg/l	2.00	2.40	N/A	12	N/A	N/A	0.131	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 exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Ammonia-Total (as N) mg/l	0.260	0.310	N/A	27	2	2	0.124	Fail
ortho-Phosphate (as P) - unspecified mg/l	0.130	0.260	N/A	27	1	N/A	0.065	Pass
Conductivity @25°C µS/cm	N/A	N/A	N/A	12	N/A	N/A	1178	
Total Nitrogen mg/l	N/A	N/A	N/A	13	N/A	N/A	5.94	
E. Coli MPN/100ml	N/A	N/A	N/A	2	N/A	N/A	3557	
Coliform Bacteria (Total) MPN/100ml	N/A	N/A	N/A	1	N/A	N/A	10100	
Enterococci (Intestinal) MPN/100ml	N/A	N/A	N/A	2	N/A	N/A	1171	
Nitrite (as N) mg/l	N/A	N/A	N/A	27	N/A	N/A	0.015	

Notes:
1 – This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied
2 – For pH the WWDA specifies a range of pH 6 - 9

Cause of Exceedance(s):

Shock load to WWTP (INC1021345) & WWTP required to meet ELV (INC1020849)

Significance of Results:

The WWTP is non compliant with the ELV's set in the Wastewater Discharge Licence. The impact on receiving waters is assessed further in Section 2.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF1600D0001SW001

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.

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	River Station Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Ecological Status
Upstream	246849, 199036	RS14T010170	No	No	No	No	Poor
Downstream	246373, 200616	RS14T010200	No	No	No	No	Poor

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 for the following: Chloride mg/l, Ammonia-Total (as N) mg/l.

The ambient monitoring results do not meet the required EQS at the upstream and downstream monitoring locations- The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

Based on ambient monitoring results a deterioration in Ortho-P concentration downstream of the effluent discharge is noted.

A deterioration in water quality has been identified, however it is not known if it or is not caused by the WWTP.

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

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - PORTLAOISE WWTP

2.1.4.1 Treatment Efficiency Report - PORTLAOISE WWTP

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:

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
TN	130240	22427	82.78
SS	1118811	4993	99.55
cBOD	398345	2635	99.34
COD	1726197	56248	96.74
TP	19685	507	97.42

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

2.1.4.2 Treatment Capacity Report Summary - PORTLAOISE WWTP

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.

PORTLAOISE WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	23400
DWF to the Treatment Plant (m^3/day)	7800
Current Hydraulic Loading - annual max (m^3/day)	28153
Average Hydraulic loading to the Treatment Plant (m^3/day)	9948
Organic Capacity (PE) - As Constructed	39000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	31555
Organic Capacity (PE) - Remaining	7445
Will the capacity be exceeded in the next three years? (Yes/No)	No

Nominal design capacities can be based on conservative design principles. In some cases assessment of existing plants has shown organic capacities significantly higher than the nominal design capacity. Accordingly plants that appear to be overloaded when comparing a collected peak load with the nominal design capacity can be fully compliant due to the safety factors in the original design.

2.1.5 SLUDGE / OTHER INPUTS - PORTLAOISE 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)
Landfill Leachate (delivered by tanker)	5296.78	Weight (Tonnes)	64	0.15	No	No	No

3 COMPLAINTS AND INCIDENTS

3.1 COMPLAINTS SUMMARY

A summary of complaints of an environmental nature related to the discharge(s) to water from the WWTP and network is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
1	Discharge to waters	0	1

3.2 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.

3.2.1 SUMMARY OF INCIDENTS

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Abatement Equipment offline	Dosing pump failure or maintenance at WWTP	1	No	Yes
Breach of ELV	WWTP upgrade required to meet ELV	1	Yes	Yes
Breach of ELV	Shock load to the WWTP	1	Yes	No

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Blocked Sewer	1	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	4
Number of Incidents reported to the EPA via EDEN in 2021	4
Explanation of any discrepancies between the two numbers above	N/A

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:

4.1.1 SWO IDENTIFICATION

WWDL Name / Code for Storm Water Overflow (chamber) where applicable	Irish Grid Ref. (outfall)	Included in Schedule of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	Total volume discharged in 2021 (m^3)	Monitoring Status
TBC	246382.1, 200622.4	No	Medium	Meeting	Unknown	Not Monitored
TBC	247584.2, 197671.4	No	Medium	Meeting	Unknown	Not Monitored
TBC	246803.1, 199229.9	No	Medium	Meeting	Unknown	Not Monitored
TBC	248605.1, 200403	No	Medium	Meeting	Unknown	Not Monitored
TBC	247381.2, 198404.6	No	Medium	Meeting	Unknown	Not Monitored
SW002	245317.1, 200017.8	Yes	Medium	Meeting	Unknown	Not Monitored

WWDL Name / Code for Storm Water Overflow (chamber) where applicable	Irish Grid Ref. (outfall)	Included in Schedule of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	Total volume discharged in 2021 (m^3)	Monitoring Status
SW3	246597.1, 199599.2	Yes	Medium	Not Meeting	22639	Monitored

Any TBC SWO(s) were identified as part of the on-going National SWO programme and will be updated in subsequent AER(s) once the information is confirmed.

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 a 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)	Description	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
D0001-SIP:01	Discharge to cease: SW3 from old storm water tank at the treatment works	A	29/07/2009	Yes	Works Completed		
D0001-SIP:02	Discharge to cease: SW4 from the inlet works of the plant	A	29/07/2009	Yes	Works Completed		

A summary of the status of any other improvements identified by under Condition 5 assessments- is included below.

4.2.2 IMPROVEMENT PROGRAMME SUMMARY

Improvement Identifier	Improvement Description / or any Operational Improvements	Improvement Source	Expected Completion Date	Comments
No additional improvements planned at this time.				

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 Tables 4.2.1 and 4.2.2.

A Drainage Area Plan has completed for the Portlaoise agglomeration. The DAP encompassed both Storm Water Overflow and network assessments and comprehensively addressed the need to carry out separate Storm Water Overflow or Sewer Integrity Assessments. Consultants have been appointed by IW to progress with the tender stage for the implementation of the works which the DAP has identified as been most beneficial to the system.

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 a list of the various reports required for this agglomeration and a brief summary of their recommendations.

Licence Specific Report	Required by licence	Year included in AER	Included in this AER
Priority Substances Assessment	Yes	2014	No

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
Has a Technical amendment/licence review application been submitted to the Agency by IW?	No
List reason e.g., additional SWO identified	N/A
Is there a need to request/advise the EPA of any modification to the existing WWDL with respect to condition 4 changes to monitoring location, frequency etc	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: 04/03/2022

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,

Katherine Walshe

Acting Head of Environmental Regulation.

7 APPENDIX

Appendix
Appendix 7.1 - Ambient monitoring summary

Portlaoise Ambient Monitoring Summary 2021

			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	246849, 199036	RS14T010170	No	No	No	No	Poor	1.693	0.048	0.106
Downstream Monitoring Point	246373, 200598	RS14T010200	No	No	No	No	Poor	1.660	0.051	0.096
Difference								*-0.033*	*0.002*	*-0.010*
EQS								1.500	0.035	0.065
% of EQS								-2.183%	5.952%	-15.256%

Portlaoise Ambient Monitoring Summary 2021

Upstream Results										
Date		Temp °C	pH pH units	SS mG/L	COD mg/l	BOD mg/ l	Total Ammonia as N mg/l	Ortho-Phosphate as P mg/l	Total Nitrogen as N mg/l	DO % sat
21/01/2021	U/S	6.8	7.86	11.2	32	1.2	0.072	0.024	3.9	92.7
23/02/2021	U/S	10.4	7.93	13.6	23	0.5	0.13	0.028	4.6	92.2
11/03/2021	U/S	8.1	7.96	22.8	20	1.8	0.11	0.047	4.1	99.3
27/04/2021	U/S	10.1	7.77	15.2	< 20	1.4	0.068	< 0.02	4.6	106.3
28/05/2021	U/S	12	7.98	11.8	24	1.3	0.12	0.12	3.1	98.8
22/06/2021	U/S	15.1	8.19	< 2	< 20	< 1	0.034	0.053	< 2	84.8
28/07/2021	U/S	14.8	7.95	36.8	< 20	1.8	0.04	0.031	< 2	78.6
30/08/2021	U/S	15.6	8.15	< 2	< 20	1.2	0.04	0.026	4	86.4
28/09/2021	U/S	12.4	8.21	51.6	< 20	2.5	0.045	0.054	4.5	86
28/10/2021	U/S	13.6	7.68	128	54	4.6	0.054	0.059		81.7
02/12/2021	U/S	7.2	8.11	< 2	23	< 1	0.061	0.03	< 2	102
15/12/2021	U/S	9.8	7.73	< 2	37	2.6	0.5	0.095	< 2	84
	Mean	**11.325**	**7.960**	**24.721**	**23.643**	**1.693**	**0.106**	**0.048**	**3.132**	**91.067**
	95%ile	**15.325**	**8.199**	**85.980**	**44.650**	**3.500**	**0.297**	**0.106**	**4.600**	**103.935**

Downstream Results										
Date		Temp °C	pH pH units	SS mG/L	COD mg/l	BOD mg/ l	Total Ammonia as N mg/l	Ortho-Phosphate as P mg/l	Total Nitrogen as N mg/l	DO % sat
21/01/2021	D/S	7.9	7.84	1	26	1.2	0.082	0.03	3.9	90.6
23/02/2021	D/S	10.7	7.94	16.8	21	2.2	0.093	0.042	4	92.1
11/03/2021	D/S	8.3	7.92	12.4	< 20	1.9	0.085	0.03	4.2	96.8
27/04/2021	D/S	10.3	8.26	< 2	< 20	< 1	0.28	< 0.02	4.9	114.1
28/05/2021	D/S	12	8.02	8.4	24	1.1	0.066	0.039	3.8	102
22/06/2021	D/S	15.8	8.09	< 2	< 20	1.7	0.048	0.053	2.6	88.1
28/07/2021	D/S	16.3	7.57	25.6	< 20	3.6	0.024	0.18	4.1	77.9
30/08/2021	D/S	15.6	8.18	< 2	< 20	1.6	0.073	0.049	4.6	86.4
28/09/2021	D/S	14.4	7.98	< 2	< 20	< 1	0.034	0.029	4.4	92
28/10/2021	D/S	14	7.75	61	38	3.5	0.054	0.039		85
02/12/2021	D/S	8.8	8.06	< 2	< 20	< 1	0.036	0.04	2.1	107.2
15/12/2021	D/S	9.5	8.01	< 2	26	1	0.28	0.061	< 2	84.1
	Mean	**11.967**	**7.968**	**11.140**	**19.500**	**1.660**	**0.096**	**0.051**	**3.638**	**93.025**
	95%ile	**16.025**	**8.216**	**41.530**	**31.400**	**3.545**	**0.280**	**0.115**	**4.750**	**110.305**

Note: Where the concentration in the result is less than the limit of detection (LOD), a value of LOD/sqrt(2) was used in calculating the mean and 95%ile concentrations.