

Annual Environmental Report

2021



Rathangan

D0175-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0175-01, Rathangan, in Kildare 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.

In May 2021, SBR1 was cleaned, and re-seeded following surface aerator replacement works.

1.2 TREATMENT SUMMARY

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

- Rathangan WWTP with a Plant Capacity PE of 4000, the treatment type is 3P - Tertiary 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
TPEFF1400D0175SW001	Rathangan WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l ortho-Phosphate (as P) - unspecified 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 RATHANGAN WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - RATHANGAN 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
Total Phosphorus (as P) mg/l	8	6.50	4.46
ortho-Phosphate (as P) - unspecified mg/l	13	5.60	2.67
Ammonia-Total (as N) mg/l	13	70	27
Total Nitrogen mg/l	7	35	24
pH pH units	10	7.78	7.50
BOD, 5 days with Inhibition (Carbonaceous) mg/l	13	266	156
COD-Cr mg/l	13	781	482.55
Suspended Solids mg/l	13	536	204.93
Hydraulic Capacity	N/A	2797	1052

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 - TPEFF1400D0175SW001

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)
COD-Cr mg/l	125	250	N/A	12	N/A	N/A	35	Pass
Suspended Solids mg/l	35	88	N/A	12	N/A	N/A	7.59	Pass
BOD, 5 days with Inhibition (Carbonaceous) mg/l	25	50	N/A	12	N/A	N/A	5.88	Pass
pH pH units	6.00	9.00	N/A	12	N/A	N/A	7.58	Pass
Ammonia-Total (as N) mg/l	2.00	2.40	N/A	12	4	4	4.33	Fail
ortho-Phosphate (as P) - unspecified mg/l	1.00	1.20	N/A	12	1	1	0.622	Fail
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	6	N/A	N/A	1.32	

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)
Total Nitrogen mg/l	N/A	N/A	N/A	6	N/A	N/A	12	
Conductivity @20°C µS/cm	N/A	N/A	N/A	4	N/A	N/A	934	

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):

WWTP Biological Sludge Issues. (INCI0018694)

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 TPEFF1400D0175SW001

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	266636, 219135	RS14S010206	No	No	No	No	Moderate
Downstream	266445, 218676	RS14S010220	No	Yes	No	No	Unassigned

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: Ammonia-Total (as N) mg/l, ortho-Phosphate (as P) - unspecified 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 BOD and Ortho-P concentrations 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 downstream ambient monitoring location is on the Unassigned Rathangan_Demesne_010 waterbody. Approx. 30m downstream of this monitoring point, and approx. 160m downstream of the SW001 & SW002, the At Risk Slate_070 waterbody is at Moderate status.

As per the 3rd Cycle Draft Barrow Catchment Report (HA 14), the significant pressures on the At Risk Slate_070 waterbody are Agriculture, Peat, Hydromorphology and Urban Waste Water. The Rathangan SWOs are identified as a significant pressure on the Slate_070 waterbody in the Draft 3rd Cycle Catchment Report.

Based on the above, and the effluent compliance results, the discharge from the wastewater treatment plant may be having an observable negative impact on the downstream Slate_070 Water Framework Directive status.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - RATHANGAN WWTP

2.1.4.1 Treatment Efficiency Report - Rathangan 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)
SS	74167	2224	97
COD	174641	10388	94
cBOD	56451	1724	97
TN	11031	4268	61
TP	1875	492	74

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

2.1.4.2 Treatment Capacity Report Summary - Rathangan 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.

Rathangan WWTP	
Peak Hydraulic Capacity (m ³ /day) - As Constructed	2400
DWF to the Treatment Plant (m ³ /day)	800
Current Hydraulic Loading - annual max (m ³ /day)	2797
Average Hydraulic loading to the Treatment Plant (m ³ /day)	1052
Organic Capacity (PE) - As Constructed	4000
Organic Capacity (PE) - Collected Load (peak week) ^{Note1}	3808
Organic Capacity (PE) - Remaining	192
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 - RATHANGAN 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)
There is no Sludge and Other Input data for the Treatment Plant included in the AER.							

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
There were no relevant environmental complaints in 2021.			

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)
Breach of ELV	WWTP biological sludge issue	1	Yes	No
Spillage	Broken Sewer Pipe	1	No	Yes
Uncontrolled release	Network Infrastructure	1	No	Yes

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Network Infrastructure	1	Yes	Yes
Uncontrolled release	Network Infrastructure	1	No	Yes
Uncontrolled release	Plant or equipment breakdown at WWTP	1	No	Yes
Uncontrolled release	Network Infrastructure	1	No	Yes
Uncontrolled release	EO caused by power failure	1	No	Yes
Uncontrolled release	SWO exceptional rainfall and overflow expected	1	No	Yes
Uncontrolled release	Plant or equipment maintenance at WWTP	1	No	Yes
Uncontrolled release	SWO exceptional rainfall and overflow expected	1	No	Yes
Uncontrolled release	SWO exceptional rainfall and overflow expected	1	No	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	12
Number of Incidents reported to the EPA via EDEN in 2021	12
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
SW002	266502.163, 218761.343	Yes	Low	Meeting	4736	Monitored
SW003	266632.531, 219145.74	Yes	Low	Meeting	3274	Monitored
SW004	266502.163, 218761.343	Yes	Low	Not Meeting	5	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.

SWO Summary	
How much sewage was discharged via monitored SWOs in the agglomeration in the year (m ³)?	8015
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?	Yes

SWO Summary

Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?

N/A

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/NAY)	Status of Works	Timeframe for Completing the Work	Comments
D0175-SIP:01	Improvement works to ensure compliance with the criteria of stormwater overflows as set out in the DoECLG 'Procedures and Criteria in relation to Storm Water Overflows', 1995 SW002.	C	31/12/2015	Yes	Works Completed		Compliant from SWO assessment carried out
D0175-SIP:02	Improvement works to ensure compliance with the criteria of stormwater overflows as set out in the DoECLG 'Procedures and	C	31/12/2015	Yes	Works Completed		Compliant from SWO

Specified Improvement Programmes (under Schedule A and C of WWDL)	Description	Licence Schedule	Licence Completion Date	Date Expired? (N/N/A/Y)	Status of Works	Timeframe for Completing the Work	Comments
	Criteria in relation to Storm Water Overflows', 1995 SW003.						assessment carried out

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.

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
Drinking Water Abstraction Point Risk Assessment	Yes	2016	No
Priority Substances Assessment	Yes	2016	No

5.1 DRINKING WATER ABSTRACTION POINT RISK ASSESSMENT

The Drinking Water Abstraction Point Risk Assessment Report has been included in the AER 2016.

5.2 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2016.

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: 02/03/2022

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

Rathangan Ambient Monitoring Summary 2021

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish National Grid Reference (Easting, Northing)	EPA Feature Coding Tool code	Receiving Waters Designation (Yes/No)				Current WFD Status	Mean (mg/l)		
			Bathing Water	Drinking Water	FWPM	Shellfish		cBOD	o-Phosphate (as P)	Ammonia (as N)
Upstream Monitoring Point	266636, 219135	RS14S010206	No	No	No	No	Moderate	0.973	0.041	0.248
Downstream Monitoring Point	266445, 218676	RS14S010220	No	Yes	No	No	Unassigned	1.000	0.041	0.219
<i>Difference</i>								<i>0.027</i>	<i>0.000</i>	<i>-0.029</i>
EQS								1.500	0.035	0.065
% of EQS								1.775%	0.974%	-45.280%

Rathangan Ambient Monitoring Summary 2021

Date		Biological Oxygen Demand	COD Chemical Oxygen Demand	Suspended Solids	pH	Total Ammonia N	Total Nitrogen N	Ortho-Phosphate P	Coloration	Dissolved Oxygen	Temperature
		mg/l	mg/l	mg/l	pH units	mg/l	mg/l	mg/l		mg/l	Degrees C
07/01/2021	U/S	1	44	1	7.77	0.45	2.8	0.03		9.37	9.1
26/01/2021	U/S	1	43	1	7.22	0.28	1	0.04	115	8.7	
25/02/2021	U/S	1	48	1	7.32	0.4	1.4	0.06	155	9.53	
23/03/2021	U/S	1	40	2	6.98	0.23	2	0.07	33	8.82	
20/04/2021	U/S	1	2	1	6.94	0.08	2	0.03	17	7.92	
29/04/2021	U/S	1	31	1	7.04	0.07		0.01	13	8.53	
25/05/2021	U/S	1	39.4	4	6.98	0.98	1.58	0.09		8.5	
13/07/2021	U/S	1		<1		0.09	1.58	0.03		7.67	7.73
15/07/2021	U/S	1		<1		0.07		0.02		7.89	7.68
26/08/2021	U/S	<1	4.3	1	7.51	0.07	1.81	0.02		9.27	18.1
01/10/2021	U/S	1		1	7.7	0.01		0.05			13.2
Mean		0.973	31.463	1.310	7.273	0.248	1.771	0.041	66.600	8.620	11.162
95%ile		1.000	46.600	3.000	7.742	0.715	2.520	0.080	147.000	9.458	17.120
Downstream Results											
Date		Biological Oxygen Demand	COD Chemical Oxygen Demand	Suspended Solids	pH	Total Ammonia N	Total Nitrogen N	Ortho-Phosphate P	Coloration	Dissolved Oxygen	Temperature
		mg/l	mg/l	mg/l	pH units	mg/l	mg/l	mg/l		mg/l	Degrees C
07/01/2021	D/S				7.82						9
26/01/2021	D/S				7.18						
25/02/2021	D/S				7.4						
23/03/2021	D/S	1	33	6	7.02	0.25	1.4	0.08	34	8.86	
20/04/2021	D/S	1	1	1	6.98	0.05	2	0.03	12	8.08	
29/04/2021	D/S	1	30	1	7.05	0.11	2	0.02	14	8.45	
25/05/2021	D/S	1	14	<1	6.98	0.9	1.65	0.09		8.86	12.5
13/07/2021	D/S	1		<1	8.17	0.09		0.03		7.65	
15/07/2021	D/S	1		<1	7.65	0.08		0.02		7.84	
26/08/2021	D/S	1	0.8	1	7.48	0.18	1.8	0.04		9.24	18.2
01/10/2021	D/S	1		1	7.48	0.09		0.02			12.6
Mean		1.000	15.760	1.515	7.383	0.219	1.770	0.041	20.000	8.426	13.075
95%ile		1.000	32.400	4.250	7.995	0.673	2.000	0.087	32.000	9.126	17.360

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.