Annual Environmental Report

2022

Stamullen

D0262-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2022 AER

This Annual Environmental Report has been prepared for D0262-01, Stamullen, in Meath 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.

Planning permission has been obtained for future conversion of Stamullen WWTP to become a pumping station. The WWTP will remain in operation pending connection to Balbriggan Agglomeration.

Stamullen WWTP is one of three WWTPs taking part in an IW research project to validate if and how Aerobic Granular Sludge (AGS) grown within dedicated AGS WWTPs can be used in non-AGS WWTPs to increase their capacity and improve treatment performance and compliance. The AGS Project is currently ongoing.

1.2 TREATMENT SUMMARY

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

- Stamullen WWTP with a Plant Capacity PE of 2300, 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
TPEFF2300D0262SW001	Stamullen WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l BOD, 5 days with Inhibition (Carbonaceous) 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 STAMULLEN WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - STAMULLEN 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
Suspended Solids mg/l	12	334	219
COD-Cr mg/l	12	1199	621
Total Nitrogen mg/l	9	56	46
BOD, 5 days with Inhibition (Carbonaceous) mg/l	12	473	236
Total Phosphorus (as P) mg/l	12	21	7.59
Hydraulic Capacity	N/A	2396	988

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 - TPEFF2300D0262SW001

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	45	Pass
Suspended Solids mg/l	35	88	N/A	12	N/A	N/A	16	Pass
BOD, 5 days with Inhibition (Carbonaceous) mg/l	10	20	N/A	12	12	2	16	Fail
pH pH units	6.00	9.00	N/A	12	N/A	N/A	6.63	Pass
Ammonia-Total (as N) mg/l	0.750	1.50	N/A	12	12	12	5.30	Fail
ortho-Phosphate (as P) - unspecified mg/l	0.400	0.480	N/A	12	N/A	N/A	0.298	Pass
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.483	
Conductivity @25°C µS/cm	N/A	N/A	N/A	10	N/A	N/A	1126	
Total Nitrogen mg/l	N/A	N/A	N/A	7	N/A	N/A	25	

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 is overloaded. WwTP upgrade is required to meet ELVs.

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 TPEFF2300D0262SW001

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	314878, 265334	RS08D010300	No	No	No	No	Moderate*
Downstream	317089, 265756	RS08D010400	No	No	No	No	Poor

** The WFD status is Poor approx. 35, d/s of the u/s sampling point.*

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: BOD, 5 days with Inhibition (Carbonaceous) mg/l, Ammonia-Total (as N) mg/l.

The ambient monitoring results do not meet the required EQS at the upstream and the 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, Ortho-Phosphate & Ammonia concentrations downstream of the effluent discharge is noted.

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

As per the 3rd Cycle Draft Nanny Delvin Catchment Report (HA 07), the significant pressures on the At Risk Delvin_040 waterbody are Agriculture and Urban Waste Water. The Stamullen WWTP is listed as a significant pressure on the Delvin_040 waterbody in the Cycle 3 report.

The discharge from the wastewater treatment plant does have an observable negative impact on the Water Framework Directive status.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - STAMULLEN WWTP

2.1.4.1 Treatment Efficiency Report - Stamullen 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	14631	6585	55
TP	2571	129	95
cBOD	80095	4197	95
COD	210208	12107	94

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
SS	74264	4371	94

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

2.1.4.2 Treatment Capacity Report Summary - Stamullen 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.

Stamullen WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	1554
DWF to the Treatment Plant (m^3/day)	518
Current Hydraulic Loading - annual max (m^3/day)	2396
Average Hydraulic loading to the Treatment Plant (m^3/day)	988
Organic Capacity (PE) - As Constructed	2300
Organic Capacity (PE) - Collected Load (peak week)[Note1]	4564
Organic Capacity (PE) - Remaining	0
Will the capacity be exceeded in the next three years? (Yes/No)	Yes

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 - STAMULLEN 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
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 Uisce Éireann 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	Plant or equipment breakdown at WWTP	1	No	Yes
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	Yes
Breach of ELV	WWTP upgrade required to meet ELV	1	Yes	No

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Spillage	Plant or equipment breakdown at WWTP	1	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2022	4
Number of Incidents reported to the EPA via EDEN in 2022	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 2022 (m^3)	Monitoring Status
SW2	Unknown	Yes	Low Significance	Meeting Criteria	Unknown	Not Monitored
SW3	Unknown	Yes	Low Significance	Meeting Criteria	2024	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)?	2024
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	N/A
The SWO Assessment included the requirements of relevant of WWDL schedules?	Yes
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 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
D0262-SIP:01	Upgrade ammonia removal system	C	31/12/2014	Yes	Works Completed		
D0262-SIP:02	Upgrade orthophosphate removal system	C	31/12/2014	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.

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
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 modification to the existing WWDL with respect to condition 4 changes to monitoring location, frequency etc	Yes
List reason e.g. changes to monitoring requirements	Ambient Monitoring Location Changes
Have these processes commenced?	No
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: 23/02/2023

This AER has been produced by Uisce Éireann'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

Stamullen 2022 Ambient Monitoring Summary

			Receiving Waters Designation (Yes/No)			
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**
Upstream Monitoring Point	314878, 265334	RS08D010300	No	No	No	No
Downstream Monitoring Point	317089, 265756	RS08D010400	No	No	No	No

		Mean (mg/l)		
Ambient Monitoring Point from WWDL (or as agreed with EPA)	**Current WFD Status**	**cBOD**	**o-Phosphate (as P)**	**Ammonia (as N)**
Upstream Monitoring Point	Moderate*	1.496	0.1853	0.0267
Downstream Monitoring Point	Poor	1.627	0.2095	0.0420
Difference		*0.131*	*0.0242*	*0.0153*
EQS		1.500	0.035	0.065
% of EQS		8.733%	69.143%	23.473%

*The WFD Status is Poor approx. 35m d/s of the u/s sampling point

Stamullen 2022 Ambient Monitoring Data

StationName	Sample Date	Ammonium NH4-N	Biological Oxygen Demand	Dissolved Oxygen % Saturation	Dissolved Oxygen	Ortho-Phosphate P	pH	Temperature	Total Nitrogen N
		mg/l	mg/l	% Sat.	mg/l	mg/l	pH units	°c	mg/l
Upstream	23/03/2022	0.032	1.5	104	12.4	0.041	8.04	8.4	4.88
Upstream	21/04/2022	<0.015	1.1	116	13.2	0.071	8.01		4.66
Upstream	25/05/2022	0.065	1.46	103	10.8	0.188	8		2.56
Upstream	15/06/2022	0.022	1.57	99	10.3	0.204	8		3.64
Upstream	20/07/2022	<0.015	1.21	98	9.8	0.401	8.14	15.9	3.87
Upstream	31/08/2022	<0.015	2.09	95	9.9	0.502	8.1	13.9	5.35
Upstream	28/09/2022	<0.015	1.28	97	10.7	0.19	8	10.9	3.51
Upstream	17/11/2022	<0.015	1.81	102	11.6	0.094	7.89	8.3	4.13
Upstream	29/11/2022	0.03	1.64	99	11.5	0.094	7.9	8.5	4.01
Upstream	14/12/2022	0.065	1.3	95	11.9	0.068	8	4.5	5.7
	Mean	**0.0267**	**1.4960**	**100.8000**	**11.2100**	**0.1853**	**8.0080**	**10.0571**	**4.2310**
	95%ile	**0.0650**	**1.9640**	**110.6000**	**12.8400**	**0.4566**	**8.1220**	**15.3000**	**5.5425**
Downstream	23/03/2022	0.047	1.57	101	12	0.048	8		5.49
Downstream	21/04/2022	<0.015	0.93	103	11.8	0.119	7.96		4.77
Downstream	25/05/2022	0.065	1.66	91	9.6	0.289	8		3.29
Downstream	15/06/2022	0.057	1.75	90	9.4	0.281	7.93		5.33
Downstream	20/07/2022	0.018	1.3	91	9	0.347	8.08	16.5	7.11
Downstream	31/08/2022	0.039	2.37	83	8.8	0.335	8.1	14.8	6.82
Downstream	28/09/2022	0.032	1.44	93	10	0.414	8.04	11.3	4.67
Downstream	17/11/2022	0.015	2.14	98	11.2	0.101	7.93	8.5	4.33
Downstream	29/11/2022	0.068	1.7	95	11.1	0.105	7.99	8.7	4.21
Downstream	14/12/2022	0.068	1.41	99	12.6	0.056	8.05	4.6	5.49
	Mean	**0.0420**	**1.6270**	**94.4000**	**10.5500**	**0.2095**	**8.0080**	**10.7333**	**5.1510**
	95%ile	**0.0680**	**2.2665**	**102.1000**	**12.3300**	**0.3839**	**8.0910**	**16.0750**	**6.9795**

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.