

Annual Environmental Report

2021



Stamullen

D0262-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 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 will run over 2 years (2021 to 2022).

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 BOD) 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
ortho-Phosphate (as P) - unspecified mg/l	1	4.34	4.34
Total Nitrogen mg/l	12	72	49
Ammonia-Total (as N) mg/l	1	30	30
COD-Cr mg/l	12	1011	649.12
Suspended Solids mg/l	12	284	216.95
Total Phosphorus (as P) mg/l	12	9.39	6.29
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	819	342
Hydraulic Capacity	N/A	2511	970

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 BOD) mg/l	10	20	N/A	12	11	3	18	Fail
pH pH units	6.00	9.00	N/A	12	N/A	N/A	6.91	Pass
Ammonia-Total (as N) mg/l	0.750	1.50	N/A	12	12	12	6.35	Fail
ortho-Phosphate (as P) - unspecified mg/l	0.400	0.480	N/A	12	1	N/A	0.292	Pass
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.461	

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	12	N/A	N/A	30	
Conductivity @25°C µS/cm	N/A	N/A	N/A	12	N/A	N/A	1145	

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	Unassigned*
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 BOD) mg/l and 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 Ammonia & BOD 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.

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.

Based on the effluent compliance results the discharge from the wastewater treatment plant may be having 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)
cBOD	107304	4450	96
TP	1971	116	94
SS	68002	3959	94
TN	15305	7477	51
COD	203461	11386	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 (m³/day) - As Constructed	1554
DWF to the Treatment Plant (m³/day)	518
Current Hydraulic Loading - annual max (m³/day)	2511
Average Hydraulic loading to the Treatment Plant (m³/day)	970
Organic Capacity (PE) - As Constructed	2300
Organic Capacity (PE) - Collected Load (peak week)^{Note1}	4485
Organic Capacity (PE) - Remaining	0
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 - 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
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 upgrade required to meet ELV	1	Yes	No
Spillage	Tank Overflow	1	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	2
Number of Incidents reported to the EPA via EDEN in 2021	2
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
SW2	315139.97, 265871.84	Yes	Low	Meeting	Unknown	Not Monitored
SW3	315136.78, 265863.98	Yes	Low	Meeting	5635	Monitored

SWO Summary	
How much sewage was discharged via monitored SWOs in the agglomeration in the year (m ³)?	5635
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	Reference to relevant section of AER
Priority Substances Assessment	Yes	2014	No	N/A

5.1 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2014.

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: 18/02/2022

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

Stamullen 2021 Ambient Monitoring Summary

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)			
			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

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Current WFD Status	Mean (mg/l)		
		cBOD	o-Phosphate (as P)	Ammonia (as N)
Upstream Monitoring Point	Unassigned*	1.803	0.2186	0.0377
Downstream Monitoring Point	Poor	1.911	0.1582	0.0657
<i>Difference</i>		<i>0.108</i>	<i>-0.0604</i>	<i>0.0280</i>
EQS		1.500	0.035	0.065
% of EQS		7.219%	-172.571%	43.077%

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

Stamullen 2021 Ambient Monitoring Data

		D.O.	D.O.	pH	B.O.D.	Ortho-P	Total N	Ammonia
Station	Sample Date	mg/l	% Sat.	pH units	mg/l	mg/l	mg/l	mg/l
u/s Stamullen WWTP	25-Mar-2021	11.3	98	8.19	0.87	0.075	4.7	0.03
u/s Stamullen WWTP	15-Apr-2021	12.8	105	8.17	1.89	0.06	5.05	< 0.015
u/s Stamullen WWTP	19-May-2021	11.8	105	8.04	1.16	0.074	4.09	< 0.015
u/s Stamullen WWTP	23-June-2021	9.9	95	8.05	5.16	0.634	7	0.018
u/s Stamullen WWTP	28-July-2021	9.5	95	8.15	2.42	0.523	5.09	0.048
u/s Stamullen WWTP	25-Aug-2021	10.3	103	8.25	< 1	0.195	3.45	< 0.015
u/s Stamullen WWTP	23-Sep-2021	9.5	92	8.19	1.27	0.203	5.96	0.131
u/s Stamullen WWTP	14-Oct-2021	10.4	95	8.04	0.86	0.163	3.86	0.065
u/s Stamullen WWTP	18-Nov-2021	10.6	97	8.14	1.14	0.106	2.64	< 0.015
u/s Stamullen WWTP	7-Dec-2021	13.2	109	8	2.55	0.153	3.52	0.043
	Mean	10.930	99.400	8.122	1.803	0.2186	4.536	0.0377
	95%ile	13.020	107.200	8.223	3.986	0.5841	6.532	0.1013
		D.O.	D.O.	pH	B.O.D.	Ortho-P	Total N	Ammonia
Station	Sample Date	mg/l	% Sat.	pH units	mg/l	mg/l	mg/l	mg/l
d/s Stamullen WWTP	25-Mar-2021	11	95	8.22	1.32	0.085	4.98	0.16
d/s Stamullen WWTP	15-Apr-2021	12.1	99	8.15	1.97	0.076	5.29	< 0.015
d/s Stamullen WWTP	19-May-2021	10.8	96	8.03	1.59	0.19	5.42	0.025
d/s Stamullen WWTP	23-June-2021	8.9	85	8	5.29	0.171	5.93	0.207
d/s Stamullen WWTP	28-July-2021	8.4	85	8.13	2.48	0.204	6.57	< 0.015
d/s Stamullen WWTP	25-Aug-2021	9.3	92	8.193	1.04	0.252	4.45	< 0.015
d/s Stamullen WWTP	23-Sep-2021	9.1	89	8.14	0.91	0.25	6	0.096
d/s Stamullen WWTP	14-Oct-2021	9.8	91	8.01	1.1	0.125	5.65	0.101
d/s Stamullen WWTP	18-Nov-2021	10.5	95	8.15	1.28	0.106	3.4	< 0.015
d/s Stamullen WWTP	7-Dec-2021	13	107	8	2.13	0.123	3.91	0.026
	Mean	10.290	93.400	8.102	1.911	0.1582	5.160	0.0657
	95%ile	12.595	103.400	8.208	4.026	0.2511	6.314	0.1859

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.