

Annual Environmental Report

2021



Shannon Town

D0045-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0045-01, Shannon Town, in Clare 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.

1.2 TREATMENT SUMMARY

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

- Shannon Town WWTP with a Plant Capacity PE of 28500, the treatment type is 2 - Secondary treatment

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
TPEFF0300D0045SW001	Shannon Town WWTP	Treated	Compliant	N/A

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 SHANNON TOWN WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - SHANNON TOWN 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	8	2.73	1.73
COD-Cr mg/l	13	473	241
Ammonia-Total (as N) mg/l	12	29	18
Phenols (Total) mg/l	3	0.015	0.007
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	224	110
pH units	6	7.73	7.51
Suspended Solids mg/l	13	270	161
Total Nitrogen mg/l	11	44	22
Total Phosphorus (as P) mg/l	12	6.90	3.26
Hydraulic Capacity	N/A	20881	6466

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'. The design of the wastewater treatment plant allows for peak values and therefore the peak loads have not impacted on compliance with Emission Limit Values.

2.1.2 EFFLUENT MONITORING SUMMARY - TPEFF0300D0045SW001

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	16	N/A	N/A	25	Pass
Ammonia-Total (as N) mg/l	35	42	N/A	15	N/A	N/A	0.443	Pass
Suspended Solids mg/l	35	87.5	N/A	16	N/A	N/A	5.58	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	15	N/A	N/A	6.34	Pass
Temperature °C	25	25	N/A	15	N/A	N/A	14	Pass
Total Oxidised Nitrogen (as N) mg/l	15	18	N/A	13	N/A	N/A	7.89	Pass
pH units	9.00	9.00	N/A	16	N/A	N/A	7.58	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)
Nitrate (as NO3) mg/l	N/A	N/A	N/A	3	N/A	N/A	7.38	
Lead - filtered mg/l	N/A	N/A	N/A	3	N/A	N/A	0.006	
Conductivity @25°C µS/cm	N/A	N/A	N/A	8	N/A	N/A	1125	
Selenium - filtered mg/l	N/A	N/A	N/A	3	N/A	N/A	0.004	
Conductivity @20°C µS/cm	N/A	N/A	N/A	2	N/A	N/A	1549	
Copper - unfiltered mg/l	N/A	N/A	N/A	3	N/A	N/A	0.013	
Kjeldahl Nitrogen mg/l	N/A	N/A	N/A	3	N/A	N/A	1.10	
Nickel - filtered mg/l	N/A	N/A	N/A	3	N/A	N/A	0.010	
ortho-Phosphate (as P) - unspecified mg/l	N/A	N/A	N/A	3	N/A	N/A	0.646	
Cyanide (unspecified) mg/l	N/A	N/A	N/A	3	N/A	N/A	0.009	

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)
Mercury - filtered mg/l	N/A	N/A	N/A	3	N/A	N/A	N/A	
Arsenic - filtered mg/l	N/A	N/A	N/A	3	N/A	N/A	0.001	
Fats, Oils & Greases mg/l	N/A	N/A	N/A	3	N/A	N/A	0.631	
Chromium - filtered mg/l	N/A	N/A	N/A	3	N/A	N/A	0.003	
Cadmium - filtered mg/l	N/A	N/A	N/A	2	N/A	N/A	0.001	
Phenols (Total) mg/l	N/A	N/A	N/A	3	N/A	N/A	0.005	
Total Nitrogen mg/l	N/A	N/A	N/A	15	N/A	N/A	7.92	
Sulphate mg/l	N/A	N/A	N/A	3	N/A	N/A	112	
Silver - unspecified mg/l	N/A	N/A	N/A	3	N/A	N/A	0.001	
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	14	N/A	N/A	1.64	

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)
Zinc - unspecified mg/l	N/A	N/A	N/A	3	N/A	N/A	0.155	

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):

Not applicable

Significance of Results:

The WWTP is compliant with the ELV's set in the Wastewater Discharge Licence.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF0300D0045SW001

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
Downstream	138528, 159128	TW03004128SN2006	No	No	No	No	Poor

Ambient Monitoring Point from WDDL (or as agreed with EPA)	Irish Grid Reference	River Station Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Ecological Status
Downstream	144527, 159156	TW03004128SN2005	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 compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

The discharge from the wastewater treatment plant does not have an observable impact on the water quality.

The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status.

The discharge from the wastewater treatment plant does not have an observable impact on the coastal/transitional water quality.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - SHANNON TOWN WWTP

2.1.4.1 Treatment Efficiency Report - Shannon Town 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)
COD	546790	46401	92
TN	51333	14992	71
TP	7562	3119	59

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
SS	365027	10313	97
cBOD	254255	11993	95

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

2.1.4.2 Treatment Capacity Report Summary - Shannon Town 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.

Shannon Town WWTP	
Peak Hydraulic Capacity (m ³ /day) - As Constructed	13686
DWF to the Treatment Plant (m ³ /day)	6312
Current Hydraulic Loading - annual max (m ³ /day)	20881
Average Hydraulic loading to the Treatment Plant (m ³ /day)	6466
Organic Capacity (PE) - As Constructed	28500
Organic Capacity (PE) - Collected Load (peak week) ^{Note1}	16893
Organic Capacity (PE) - Remaining	11607
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 - SHANNON TOWN 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 sewer network)	7506	Volume (m3)		0.3	No	Yes	Yes

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)
Other	Shock load to the WWTP	1	Yes	No
Uncontrolled release	Broken Sewer Pipe	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	No. of times activated in 2021 (No. of events)	Total volume discharged in 2021 (m3)	Monitoring Status
SW2	143382, 159983	Yes	Low	Meeting	Unknown	32157	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 SWOs in the agglomeration in the year (m3)?	32157
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?	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/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
D0045-SIP:01	Refurbish the existing WWTP and upgrade it, resulting in a capacity to treat a population equivalent of 35,000.	C	31/12/2015	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
There is no Licence Specific Report Required in this AER Annual Review.			

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: 16/05/2022

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

Ambient Monitoring Point from WFDL (or as agreed)	Irish Grid Reference	EPA Feature Coding Tool code	Receiving Waters Designation (Y/N)				WFD Status
			Bathing Water	Drinking Water	EWPM	Shellfish	
SN310 - Tradaree (Bunnratty Buoy)	144527, 159156	TW03004128SN2005	No	No	No	No	Poor
SN330 - Carraig Bay Buoy	138528, 159128	TW03004128SN2006	No	No	No	No	Poor

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	High Status	Good Status
Ammonia (mg/l)	SN310 - Tradaree (Bunnratty Buoy)	0.067	SN330 - Carraig Bay Buoy	1.14		
BOD (mg/l)	SN310 - Tradaree (Bunnratty Buoy)	<1	SN330 - Carraig Bay Buoy	Not tested	<3	<4
Ortho Phosphate (mg/l)	SN310 - Tradaree (Bunnratty Buoy)	0.031	SN330 - Carraig Bay Buoy	0.035		
Dissolved Oxygen (% SAT)	SN310 - Tradaree (Bunnratty Buoy)	95	SN330 - Carraig Bay Buoy	97	Lower Limit >80% Higher Limit <120%	Lower Limit >70% Higher Limit
pH (pH units)	SN310 - Tradaree (Bunnratty Buoy)	8.13	SN330 - Carraig Bay Buoy	8.1		
Salinity (PSU)	SN310 - Tradaree (Bunnratty Buoy)	6.45	SN330 - Carraig Bay Buoy	12.45		
Silica (mg/l)	SN310 - Tradaree (Bunnratty Buoy)	2.425	SN330 - Carraig Bay Buoy	1.887		
TON (mg/l)	SN310 - Tradaree (Bunnratty Buoy)	0.8	SN330 - Carraig Bay Buoy	0.59		
Transparency	SN310 - Tradaree (Bunnratty Buoy)	0.2	SN330 - Carraig Bay Buoy	0.2		
Chlorophyll A	SN310 - Tradaree (Bunnratty Buoy)	1.75	SN330 - Carraig Bay Buoy	1.4		
Pheophytin A	SN310 - Tradaree (Bunnratty Buoy)	1.74	SN330 - Carraig Bay Buoy	1.33		

Ambient Monitoring Results Summary

Monitoring point	Date	Ammonia (mg/l)	BOD (mg/l)	Ortho Phosphate (mg/l)	Dissolved Oxygen (% SAT)	pH (pH units)	Salinity (PSU)	Silica (mg/l)	TON (mg/l)	Transparency	Chlorophyll A	Pheophytin A
SN310 - Tradaree (Bunnratty Buoy)	31/05/2021 (surface)	0.057	<1	0.04	108	8.2	4.1	2.2	0.83	0.2	1.8	1.4
SN310 - Tradaree (Bunnratty Buoy)	09/08/2021 (Bottom)	0.1	<1	0.014	106	8.1	10.6	2	0.6	0.2		
SN310 - Tradaree (Bunnratty Buoy)	01/03/2021 (Surface)	0.034	<1	0.024	87	8	0.2	3.6	1.3	0.2	0.29	0.55
SN310 - Tradaree (Bunnratty Buoy)	01/03/2021 (Bottom)	0.065	<1	0.022	93	8.3	0.2	3.6	1.3	0.2		
SN310 - Tradaree (Bunnratty Buoy)	09/08/2021 (Surface)	0.11	<1		92	8.1	3.4	2.4	0.71	0.2	2.9	3.4
SN310 - Tradaree (Bunnratty Buoy)	31/05/2021 (Bottom)	0.033	<1	0.046	91	8	10.5	1.7	0.68	0.2		
SN310 - Tradaree (Bunnratty Buoy)	06/09/2021 (Surface)	0.066	<1	0.042	97	8.3	10.3	2	0.48	0.2	2	1.6
SN310 - Tradaree (Bunnratty Buoy)	06/09/2021 (Bottom)	0.07	<1	0.031	87	8.1	12.3	1.9	0.48	0.2		

Monitoring point	Date	Ammonia (mg/l)	BOD (mg/l)	Ortho Phosphate (mg/l)	Dissolved Oxygen (% SAT)	pH (pH units)	Salinity (PSU)	Silica (mg/l)	TON (mg/l)	Transparency	Chlorophyll A	Pheophytin A
SN330 - Carraig Bay Buoy	31/05/2021 (surface)	0.058	Not tested	0.032	99	8.1	13.5	1.3	0.54	0.2	2	1.1
SN330 - Carraig Bay Buoy	09/08/2021 (Bottom)	0.066	Not tested	<0.005	95	8	21.4	1	0.33	0.2		
SN330 - Carraig Bay Buoy	01/03/2021 (Surface)	0.042	Not tested	0.034	105	8.3	0.2	3.6	0.98	0.2	0.41	0.72
SN330 - Carraig Bay Buoy	01/03/2021 (Bottom)	0.032	Not tested	0.023	106	8.3	0.2	3.6	1.2	0.2		
SN330 - Carraig Bay Buoy	09/08/2021 (Surface)	0.067	Not tested	<0.005	100	8	11.8	1.7	0.52	0.2	2.2	2
SN330 - Carraig Bay Buoy	31/05/2021 (Bottom)	0.053	Not tested	0.03	97	8.1	17.7	1.1	0.47	0.2		
SN330 - Carraig Bay Buoy	06/09/2021 (Surface)	0.068	Not tested	0.046	88	8	17.3	1.4	0.37	0.2	1	1.5
SN330 - Carraig Bay Buoy	06/09/2021 (Bottom)	0.1	Not tested	0.049	89	8	17.3	1.4	0.33	0.2		