Annual Environmental Report

2023

Uisce Éireann
Irish Water

Limerick

D0013-01

CONTENTS

7 APPENDIX

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2023 AER

This Annual Environmental Report has been prepared for D0013-01, Limerick, in Limerick 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)

- Limerick WWTP with a Plant Capacity PE of 186233, the treatment type is 3N - Tertiary N 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
TPEFF1800D0013SW001	Limerick WWTP	Treated	Non-Compliant	COD-Cr mg/l ortho-Phosphate (as P) - unspecified mg/l Suspended Solids 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 LIMERICK WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - LIMERICK 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
COD-Cr mg/l	247	1965	404
BOD, 5 days with Inhibition (Carbonaceo mg/l	150	832	123
Total Phosphorus (as P) mg/l	246	31	7.78
Suspended Solids mg/l	247	1052	218
pH pH units	246	8.22	7.42
Ammonia-Total (as NH3) mg/l	247	110	23
Total Nitrogen mg/l	247	443	31
ortho-Phosphate (as P) - unspecified mg/l	151	16	3.36
Hydraulic Capacity	N/A	83395	55446

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 - TPEFF1800D0013SW001

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	248	3	1	38	Fail
Suspended Solids mg/l	35	87.5	N/A	248	10	3	15	Fail
BOD, 5 days with Inhibition (Carbonaceo mg/l	25	50	N/A	159	3	N/A	5.47	Pass
pH pH units	9	9	N/A	248	N/A	N/A	7.52	Pass
ortho-Phosphate (as P) - unspecified mg/l	6.5	7.8	N/A	155	6	4	1.55	Fail
Fats, Oils & Greases mg/l	N/A	N/A	N/A	4	N/A	N/A	9.41	

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)
Kjeldahl Nitrogen mg/l	N/A	N/A	N/A	214	N/A	N/A	14	
Conductivity @25°C µS/cm	N/A	N/A	N/A	248	N/A	N/A	970	
Ammonia-Total (as NH3) mg/l	N/A	N/A	N/A	248	N/A	N/A	10	
Nitrite (as N) mg/l	N/A	N/A	N/A	151	N/A	N/A	0.241	
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	248	N/A	N/A	2.44	
Total Nitrogen mg/l	N/A	N/A	N/A	248	N/A	N/A	21	
Ammonia-Total (as N) mg/l	N/A	N/A	N/A	248	N/A	N/A	8.36	
Temperature °C	N/A	N/A	N/A	248	N/A	N/A	12	
Nitrate (as N) mg/l	N/A	N/A	N/A	151	N/A	N/A	10	

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):

Refer to Incident Section of Report

Significance of Results:

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

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF1800D0013SW001

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	156373, 156661	TW36004129SN1002	No	No	No	No	Poor
Downstream	153107, 156009	TW36004129SN1001	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 coastal/transitional 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 WWTP discharge was not 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.

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

Other causes of deterioration in water quality in the area are unknown.

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

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - LIMERICK WWTP

2.1.4.1 Treatment Efficiency Report - Limerick 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	4698268	309654	93
TN	671825	429574	36
cBOD	2660766	112985	96
TP	167459	49419	70
COD	8702637	765941	91

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

2.1.4.2 Treatment Capacity Report Summary - Limerick 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.

Limerick WWTP	
Peak Hydraulic Capacity (m³/day) - As Constructed	74736
DWF to the Treatment Plant (m³/day)	29500
Current Hydraulic Loading - annual max (m³/day)	83395
Average Hydraulic loading to the Treatment Plant (m³/day)	55446
Organic Capacity (PE) - As Constructed	186233
Organic Capacity (PE) - Collected Load (peak week)[Note1]	122317
Organic Capacity (PE) - Remaining	63916
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 - LIMERICK 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)
Domestic /Septic Tank Sludge	12537.7	Weight (Tonnes)		0.06	No	Yes	No

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)
Industrial / Commercial Sludge	28658.93	Weight (Tonnes)		0.14	No	Yes	No
Landfill Leachate (delivered by tanker)	33906.05	Volume (m3)		0.17	No	Yes	No
Waterworks Sludge	714.48	Weight (Tonnes)		0	No	Yes	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
There were no relevant environmental complaints in 2023.			

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	Recurring (Y/N)	Closed (Y/N)
Breach of ELV	Other (add details)	No	Yes
Breach of ELV	Inadequate Operational Procedures/Training	No	Yes
Breach of ELV	Shock load to the WWTP	No	Yes

Incident Type	Cause	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Screen not operating	No	Yes
Spillage	Blocked Sewer	No	Yes
Spillage	Blocked Sewer	No	Yes
Breach of ELV	Adverse Weather	No	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2023	7
Number of Incidents reported to the EPA via EDEN in 2023	7
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 2023 (No. of events)	Total volume discharged in 2023 (m3)	Monitoring Status
DP1	155435,156125	Yes	Low Significance	Not yet Assessed	Unknown	3053552	Monitored
TBC	156298,154842	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Monitored
TBC	159289,158980	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Monitored
TBC	155388,156260	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Monitored
TBC	159170,158860	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Monitored
TBC	158261,157709	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	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	No. of times activated in 2023 (No. of events)	Total volume discharged in 2023 (m3)	Monitoring Status
TBC	157331,156992	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Monitored
TBC	158259,157695	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Monitored
TBC	157178,158554	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Monitored
TBC	158232,157938	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Monitored
TBC	157486,157425	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Monitored
TBC	156604,154943	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Monitored
TBC	-,-	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Monitored
TBC	-,-	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	-,-	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	164263,157913	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	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	No. of times activated in 2023 (No. of events)	Total volume discharged in 2023 (m3)	Monitoring Status
TBC	166137,161665	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Monitored
TBC	158064,160202	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Monitored
TBC	157681,157800	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Monitored
TBC	152531,150990	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Monitored
TBC	150651,149289	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	TBC
TBC	159669,155480	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	TBC
TBC	157973,160375	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	TBC

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 wastewater discharge by metered SWOs during the year (m3)?	3053552
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

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/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
D0013-SIP:01	Rehabilitation of sewerage system	C	31/12/2020	No	At Planning Stage	2035	DAP to be completed 2024
D0013-SIP:02	Westbury pumping station	C	01/08/2009	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.

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	Included in this AER
D0013-01-Priority Substances Assessment	Yes	No
D0013-01-Toxicity of Final Effluent	Yes	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?	Yes
List reason e.g. additional SWO identified	EPA Initiated Review
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	N/A
List reason e.g. changes to monitoring requirements	N/A
Have these processes commenced?	No
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	No

I certify that the information given in this Annual Environmental Report is truthful, accurate and complete:

Signed: Date: 04/06/2024

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

Head of Environmental Regulation.

7 APPENDIX

Appendix
Appendix 7.1 - Ambient monitoring summary
Appendix 7.2 - Other

Ambient Points

Ambient Monitoring Point from WWDL (or as agreed with EPA)	*Irish Grid Reference*	EPA Feature Coding Tool code	Receiving Waters Designation (Y/N)				WFD Status
			Bathing Water	Drinking Water	FWPM	Shellfish	
TW36004129SN1001	153107, 156009	TPEFF1800D0013SW001	No	No	No	No	Poor
TW36004129SN1002	156373, 156661	TPEFF1800D0013SW001	No	No	No	No	Poor

Ambient Impact Assessment Table

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	%EQS
Ammonia - Total (as N) mg/l	TW36004129SN1002	0.05	TW36004129SN1001	0.05		
BOD - 5 days (Total) mg/l	TW36004129SN1002	0.7	TW36004129SN1001	1	4	
Dissolved Inorganic Nitrogen (as N) mg/l	TW36004129SN1002	1.4	TW36004129SN1001	1.4		
Dissolved Oxygen % saturation	TW36004129SN1002	108.4	TW36004129SN1001	112.5	70-130	
E. Coli MPN/100ml	TW36004129SN1002	31	TW36004129SN1001	135		
Enterococci (Intestinal) MPN/100ml	TW36004129SN1002	4	TW36004129SN1001	54		
Nitrate (as N) mg/l	TW36004129SN1002	1.4	TW36004129SN1001	1.4		
Nitrite (as N) mg/l	TW36004129SN1002	0.01	TW36004129SN1001	0.01		
Ortho-Phosphate (as P) – unspecified mg/l	TW36004129SN1002	0.0159	TW36004129SN1001	0.018	0.06	
pH	TW36004129SN1002	7.84	TW36004129SN1001	7.86		
Total Phosphorus (as P) mg/l	TW36004129SN1002	0.029	TW36004129SN1001	0.031		

Ambient Raw Data

Downstream												
Monitoring Point	**Date**	**Ammonia-Total (as N) mg/l**	**BOD - 5 days (Total) mg/l**	**Dissolved Inorganic Nitrogen (as N) mg/l**	**Dissolved Oxygen % Saturation**	**E. Coli MPN/100ml**	**Enterococci (Intestinal) MPN/100ml**	**Nitrate (as N) mg/l**	**Nitrite (as N) mg/l**	**ortho-Phosphate (as P) - unspecified mg/l**	**pH**	**Total Phosphorus (as P) mg/l**
TW36004129SN1001	11/01/2023	-	-	-	-	-	-	-	-	0.014	-	0.031
	25/01/2023	0.05	1	1.4	112.5	135	54	1.4	0.01	0.018	7.86	0.031
	25/01/2023	-	-	-	-	-	-	-	-	0.021	-	-
mean		0.05	1	1.4	112.5	135	54	1.4	0.01	0.01766667	7.86	0.031
95%ile		0.05	1	1.4	112.5	135	54	1.4	0.01	0.0207	7.86	0.031

Upstream												
Monitoring Point	**Date**	**Ammonia-Total (as N) mg/l**	**BOD - 5 days (Total) mg/l**	**Dissolved Inorganic Nitrogen (as N) mg/l**	**Dissolved Oxygen % Saturation**	**E. Coli MPN/100ml**	**Enterococci (Intestinal) MPN/100ml**	**Nitrate (as N) mg/l**	**Nitrite (as N) mg/l**	**ortho-Phosphate (as P) - unspecified mg/l**	**pH**	**Total Phosphorus (as P) mg/l**
TW36004129SN1002	11/01/2023	-	-	-	-	-	-	-	-	0.015	-	0.031
	25/01/2023	0.05	0.7	1.4	108.4	31	4	1.4	0.01	0.016	7.84	0.029
	25/01/2023	-	-	-	-	-	-	-	-	0.014	-	-
mean		0.05	0.7	1.4	108.4	31	4	1.4	0.01	0.015	7.84	0.029
95%ile		0.05	0.7	1.4	108.4	31	4	1.4	0.01	0.0159	7.84	0.0309