

# Annual Environmental Report

2021



Limerick

D0013-01

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7.1 AMBIENT MONITORING SUMMARY

# 1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 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.

In 2021- Replaced all primary bridges with stainless steel bridges. Replaced all control panels on the primary bridges with new control panels. Overhauled main inlet screen. For 2022 - Replace all five secondary clarifier bridges with stainless steel bridges. As part of this work also replacing 5 control panels on these bridges. Replacement of all four screens at Corcanree Pumping Station.

## 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 3NP - Tertiary N&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
TPEFF1800D0013SW001	Limerick WWTP	Treated	Non-Compliant	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
Suspended Solids mg/l	246	482	164
ortho-Phosphate (as P) - unspecified mg/l	148	20	4.89
COD-Cr mg/l	246	1874	361
Total Nitrogen mg/l	238	68	29
Total Phosphorus (as P) mg/l	244	55	8.72
pH units	223	9.59	7.34
Ammonia-Total (as NH <sub>3</sub> ) mg/l	245	70	24
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	146	835	107
Hydraulic Capacity	N/A	118605	45062

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 - 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)
<b>COD-Cr mg/l</b>	125	250	N/A	245	5	N/A	37	Pass
<b>Suspended Solids mg/l</b>	35	87.5	N/A	245	18	4	17	Fail
<b>BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l</b>	25	50	N/A	145	2	N/A	5.67	Pass
<b>pH units</b>	9.00	9.00	N/A	220	N/A	N/A	7.32	Pass
<b>ortho-Phosphate (as P) - unspecified mg/l</b>	6.50	7.80	N/A	148	N/A	N/A	2.42	Pass
<b>Nitrate (as N) mg/l</b>	N/A	N/A	N/A	137	N/A	N/A	8.79	
<b>Kjeldahl Nitrogen mg/l</b>	N/A	N/A	N/A	218	N/A	N/A	12	

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)
<b>Total Phosphorus (as P) mg/l</b>	N/A	N/A	N/A	244	N/A	N/A	3.25	
<b>Temperature °C</b>	N/A	N/A	N/A	219	N/A	N/A	14	
<b>Conductivity @25°C µS/cm</b>	N/A	N/A	N/A	134	N/A	N/A	923	
<b>Ammonia-Total (as NH3) mg/l</b>	N/A	N/A	N/A	245	N/A	N/A	9.93	
<b>Total Nitrogen mg/l</b>	N/A	N/A	N/A	237	N/A	N/A	18	
<b>Ammonia-Total (as N) mg/l</b>	N/A	N/A	N/A	245	N/A	N/A	8.18	
<b>Nitrite (as N) mg/l</b>	N/A	N/A	N/A	142	N/A	N/A	0.175	

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 pH6 - 9

### Cause of Exceedance(s):

Solid carryover due to high flows

### Significance of Results:

Suspended Solid breaches of ELV

## 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
<b>Upstream</b>	156373, 156661	TW36004129SN1002	No	No	No	No	Good
<b>Downstream</b>	153107, 156009	TW36004129SN1001	No	No	No	No	Good

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: Suspended Solids mg/l.

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.

Based on ambient monitoring results a deterioration in Ortho Phosphorus, concentrations downstream of the effluent discharge is noted.

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)
<b>COD</b>	6297422	703093	89
<b>TP</b>	151520	61267	60
<b>TN</b>	511031	337318	34
<b>cBOD</b>	1856111	108291	94
<b>SS</b>	2851342	317312	89

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	
<b>Peak Hydraulic Capacity (m<sup>3</sup>/day) - As Constructed</b>	88500
<b>DWF to the Treatment Plant (m<sup>3</sup>/day)</b>	29500
<b>Current Hydraulic Loading - annual max (m<sup>3</sup>/day)</b>	118605

Limerick WWTP	
Average Hydraulic loading to the Treatment Plant (m <sup>3</sup> /day)	45062
Organic Capacity (PE) - As Constructed	186233
Organic Capacity (PE) - Collected Load (peak week) <sup>Note1</sup>	111377
Organic Capacity (PE) - Remaining	74856
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)
Industrial / Commercial Sludge	67871	Weight (Tonnes)	301	1	No	Yes	Yes
Domestic /Septic Tank Sludge	26528	Weight (Tonnes)	117	1	No	Yes	Yes
Landfill Leachate (delivered by tanker)	10470	Weight (Tonnes)	47	1	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)
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	Yes
Abatement Equipment offline	Plant or equipment maintenance at WWTP	1	No	Yes
Abatement Equipment offline	Plant or equipment maintenance at WWTP	1	No	Yes

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
<b>Abatement Equipment offline</b>	Plant or equipment maintenance at WWTP	1	No	Yes
<b>Breach of ELV</b>	Adverse Weather	1	Yes	Yes
<b>Breach of ELV</b>	Adverse Weather	1	No	Yes
<b>Breach of ELV</b>	Adverse Weather	1	No	Yes
<b>Breach of ELV</b>	Adverse Weather	1	No	Yes
<b>Breach of ELV</b>	Adverse Weather	1	No	Yes
<b>Breach of ELV</b>	Plant or equipment breakdown at WWTP	1	Yes	No
<b>Breach of ELV</b>	Adverse Weather	1	No	Yes
<b>Spillage</b>	Blocked Sewer	1	Yes	Yes
<b>Spillage</b>	Blocked Sewer	1	No	No
<b>Spillage</b>	Blocked Sewer	1	No	Yes
<b>Spillage</b>	Blocked Sewer	1	No	Yes
<b>Spillage</b>	Blocked Sewer	1	No	Yes
<b>Spillage</b>	Blocked Sewer	1	No	Yes
<b>Uncontrolled release</b>	Plant or equipment breakdown at WWTP	1	No	Yes
<b>Uncontrolled release</b>	Shock load to the WWTP	1	No	No
<b>Uncontrolled release</b>	Blocked Sewer	1	No	Yes

### 3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	20
Number of Incidents reported to the EPA via EDEN in 2021	20
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
DP1	155435, 156125	Yes	Low	Not yet Assessed	Unknown	1054392	Monitored
TBC	156298, 154842	No	Low	Meeting	Unknown	Unknown	Monitored
TBC	159289, 158980.	No	Low	Not yet Assessed	Unknown	Unknown	Monitored
TBC	155388, 156260	No	Low	Meeting	Unknown	Unknown	Monitored
TBC	159170, 158860	No	Low	Meeting	Unknown	Unknown	Monitored
TBC	158261, 157709	No	Low	Meeting	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 2021 (No. of events)	Total volume discharged in 2021 (m3)	Monitoring Status
TBC	157330, 156992	No	Low	Not yet Assessed	Unknown	Unknown	Monitored
TBC	158258, 157694	No	Low	Not yet Assessed	Unknown	Unknown	Monitored
TBC	157178, 158554.	No	Low	Not yet Assessed	Unknown	Unknown	Monitored
TBC	158232, 157938	No	Low	Not yet Assessed	Unknown	Unknown	Monitored
TBC	157485, 157425	No	Low	Not yet Assessed	Unknown	Unknown	Monitored
TBC	156603, 154943	No	Low	Not yet Assessed	Unknown	Unknown	Monitored
TBC	TBC, TBC	No	Low	Not yet Assessed	Unknown	Unknown	Monitored
TBC	TBC, TBC	No	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	TBC, TBC	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	164263, 157912.	No	Low	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 2021 (No. of events)	Total volume discharged in 2021 (m3)	Monitoring Status
TBC	166136, 161665	No	Low	Meeting	Unknown	Unknown	Monitored
TBC	158063, 160202.	No	Low	Meeting	Unknown	Unknown	Monitored
TBC	157680, 157799	No	Low	Meeting	Unknown	Unknown	Monitored
TBC	152531, 150990	No	Low	Meeting	Unknown	Unknown	Monitored
TBC	150651, 149288	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	159668, 155480	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	157973, 160375	No	Low	Meeting	Unknown	Unknown	Not 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)?	Unknown
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?

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
D0013-SIP:01	Rehabilitation of sewerage system	C	31/12/2020	No	At Planning Stage	2026	Drainage Area Plan Investigation Study to be completed. Completion date 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
<b>No additional improvements planned at this time.</b>				

## 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
Toxicity of Final Effluent	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 licence?	Yes
List reason e.g. additional SWO identified	Alteration to the agglomeration boundary to include Patrickswell collection network
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?	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:

Signed:    Date: 20/04/2022

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