

# Annual Environmental Report

2019



Castletroy

D0019-01

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# 1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2019 AER

This Annual Environmental Report has been prepared for D0019-01, Castletroy, 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.

Electrical upgrade at plant in 2019.

## 1.2 TREATMENT SUMMARY

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

- CASTLETROY WWTP with a Plant Capacity PE of 45000, 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
TPEFF1900D0019SW001	CASTLETROY WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l

## 1.4 LICENCE SPECIFIC REPORTING INCLUDED IN AER

Assessment / Report	Included in AER
<b>There are no Licence Specific Reports included in the AER.</b>	

## 2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

### 2.1 CASTLETROY WWTP - TREATED DISCHARGE

#### 2.1.1 INFLUENT MONITORING SUMMARY - CASTLETROY 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
Total Phosphorus (as P) mg/l	12	8.34	4.43
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	345	192.62
Suspended Solids mg/l	12	232	132.36
COD-Cr mg/l	12	1056	436.67
Total Nitrogen mg/l	12	41.3	27.91
Hydraulic Capacity	N/A	24728	7925

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 - TPEFF1900D0019SW001

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 with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	12	N/A	N/A	32.57	Pass
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	12.1	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	12	N/A	N/A	6.83	Pass
pH pH units	9	9	N/A	12	N/A	N/A	7.62	Pass
Ammonia-Total (as N) mg/l	5	6	N/A	12	1	1	1.44	Fail
Total Phosphorus (as P) mg/l	2	2.4	N/A	12	N/A	N/A	0.64	Pass
ortho-Phosphate (as P) - unspecified mg/l	1	1.2	N/A	12	N/A	N/A	0.41	Pass
Faecal coliforms cfu/100ml	N/A	N/A	N/A	1	N/A	N/A	20100	
E. Coli MPN/100ml	N/A	N/A	N/A	2	N/A	N/A	39411.07	

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 with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
<b>Enterococci (Intestinal) MPN/100ml</b>	N/A	N/A	N/A	2	N/A	N/A	8028.25	
<b>Coliform Bacteria (Total) MPN/100ml</b>	N/A	N/A	N/A	2	N/A	N/A	180638.31	
<b>Total Nitrogen mg/l</b>	N/A	N/A	N/A	12	N/A	N/A	9.75	

Notes:

1 – This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied

### Cause of Exceedance(s):

Electrical upgrade blowers been turned off

### Significance of Results:

The WWTP is not compliant with the ELVs set in the WWDI. 1 parameter failed ELV limits

## 2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF1900D0019SW001

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 Status
Upstream	161040, 158657	RS25S012561	No	No	No	No	Unassigned
Downstream	160519, 158489	RS25S012570	No	No	No	No	Unassigned

The table below provides a summary of monitoring results for designated ambient monitoring points. The upstream and downstream annual mean values are shown (mg/l), and the difference between both monitoring stations is given as a percentage of the Environmental Quality Standard (EQS) where relevant.

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
BOD - 5 days (Total) mg/l	RS25S012561	1	RS25S012570	1	1.5	0
Ammonia-Total (as N) mg/l	RS25S012561	0.024	RS25S012570	0.027	0.065	3.8
ortho-Phosphate (as P) - unspecified mg/l	RS25S012561	0.02	RS25S012570	0.019	0.035	-4.8
Faecal coliforms cfu/100ml	RS25S012561	168	RS25S012570	160		
Temperature °C	RS25S012561	11.825	RS25S012570	11.517		
Enterococci (Intestinal) MPN/100ml	RS25S012561	233	RS25S012570	258		
pH pH units	RS25S012561	8.217	RS25S012570	8.167		
E. Coli MPN/100ml	RS25S012561	1098.167	RS25S012570	598.583		



Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
<b>Coliform Bacteria (Total) MPN/100ml</b>	RS25S012561	4219.833	RS25S012570	3834.917		
<b>Dissolved Oxygen % O2</b>	RS25S012561	102.992	RS25S012570	99.892		

### Significance of Results:

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.

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 - CASTLETROY WWTP

### 2.1.4.1 Treatment Efficiency Report - CASTLETROY 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>SS</b>	462282	42260	91
<b>TP</b>	15466	2240	86

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
<b>cBOD</b>	672739	23838	96
<b>TN</b>	97477	34067	65
<b>COD</b>	1525134	113765	93

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

### **2.1.4.2 Treatment Capacity Report Summary - CASTLETROY 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.

<b>CASTLETROY WWTP</b>	
<b>Peak Hydraulic Capacity (m<sup>3</sup>/day) - As Constructed</b>	17280
<b>DWF to the Treatment Plant (m<sup>3</sup>/day)</b>	5306
<b>Current Hydraulic Loading - annual max (m<sup>3</sup>/day)</b>	24728
<b>Average Hydraulic loading to the Treatment Plant (m<sup>3</sup>/day)</b>	7925
<b>Organic Capacity (PE) - As Constructed</b>	45000
<b>Organic Capacity (PE) - Collected Load (peak week)<sup>Note1</sup></b>	39938
<b>Organic Capacity (PE) - Remaining</b>	5062
<b>Will the capacity be exceeded in the next three years? (Yes/No)</b>	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 - CASTLETROY 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)
Other	600	Volume (m3)	2666	0.02	Yes	No	No

## 3 COMPLAINTS AND INCIDENTS

### 3.1 COMPLAINTS SUMMARY

A summary of complaints of an environmental nature is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
1	Blocked Sewer	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 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	Dosing pump failure or maintenance at WWTP	1	No	Yes
Spillage	Blocked Sewer	1	No	Yes
Breach of ELV	Plant or equipment maintenance at WWTP	1	No	Yes

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Spillage	EO caused by pump failure	1	No	No
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	No
Spillage	Blocked Sewer	1	No	Yes
Spillage	Blocked Sewer	1	No	Yes

### 3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2019	7
Number of Incidents reported to the EPA via EDEN in 2019	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	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
SW4	160587, 158561	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW5	160587, 158561	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	166089, 162871	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	164264, 157912	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	165540, 161853	No	Low	Meeting	Unknown	Unknown	Not Monitored

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	96974
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	Yes
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?	Yes

## 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 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
<b>D0019-SIP:01</b>	Installation of Phosphate removal technology	C	31/12/2009	Yes	Works Completed		
<b>D0019-SIP:02</b>	SW-4 Upgrading of Storm Water Overflows to comply with the criteria outlined in the DoEHLG 'Procedures and	C	31/12/2020	Yes	At Planning Stage	31/12/2024	Drainage Area Plan Investigation Study to be completed -

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
	Criteria in relation to Storm Water Overflows, 1995						Completion date refers to DAP
<b>D0019-SIP:03</b>	SW-5 Upgrading of Storm Water Overflows to comply with the criteria outlined in the DoEHLG 'Procedures and Criteria in relation to Storm Water Overflows, 1995	C	31/12/2020	Yes	At Planning Stage	31/12/2024	Drainage Area Plan Investigation Study to be completed - Completion date refers to DAP
<b>D0019-SIP:04</b>	WWTP short term upgrade	C	31/12/2009	Yes	Works Completed		

A summary of the status of any improvements identified by under Condition 5.2 is included below.

#### 4.2.2 IMPROVEMENT PROGRAMME SUMMARY

Improvement Identifier	Improvement Description / or any Operational Improvements	Improvement Source	Expected Completion Date	Comments
<b>There are no Improvements Programme for this Agglomeration.</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 Table.



## 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 list of the various reports required for this agglomeration and a brief summary of their recommendations.

5.a Licence Specific Reports Summary Table

Licence Specific Report	Required by licence	Year included in AER	Included in this AER	Reference to relevant section of AER
Toxicity of Final Effluent	Yes	2011	No	

### 5.1 TOXICITY OF FINAL EFFLUENT

The Toxicity of Final Effluent Report has been included in the AER 2011

## 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	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	No

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

Signed:    Date: 10/03/2020

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**

There are no Appendices included