Annual Environmental Report

2019

Carlow

D0028-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2019 AER

This Annual Environmental Report has been prepared for D0028-01, Carlow, in Carlow 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.

As part of Irish Waters Capital Investment plan, a major upgrade to increase capacity of WWTP, The preliminary design stage is complete, detailed design & planning stage commenced in September 2019. Under Irish Waters Activated sludge program works on the aeration control system are to take place in 2020.

1.2 TREATMENT SUMMARY

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

- CARLOW WWTP with a Plant Capacity PE of 36000, 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
TPEFF0100D0028SW001	CARLOW WWTP	Treated	Compliant	N/A

1.4 LICENCE SPECIFIC REPORTING INCLUDED IN AER

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

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 CARLOW WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - CARLOW 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
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	1290	255.37
Suspended Solids mg/l	12	3147	1572.95
Total Phosphorus (as P) mg/l	12	58.8	24.87
Total Nitrogen mg/l	12	39.1	18.27
COD-Cr mg/l	12	2560	667.28
Hydraulic Capacity	N/A	29421	15240

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 tretament 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 - TPEFF0100D0028SW001

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	16.24	Pass
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	7.89	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	15	30	N/A	12	N/A	N/A	3.02	Pass
pH pH units	9	9	N/A	12	N/A	N/A	7.68	Pass
Ammonia-Total (as N) mg/l	2	2.4	N/A	12	N/A	N/A	0.04	Pass
Total Phosphorus (as P) mg/l	1	1.2	N/A	12	N/A	N/A	0.32	Pass
ortho-Phosphate (as P) - unspecified mg/l	0.8	0.96	N/A	12	1	N/A	0.21	Pass
Conductivity 20 C µS/cm	N/A	N/A	N/A	12	N/A	N/A	727.01	
Fats, Oils & Greases mg/l	N/A	N/A	N/A	11	N/A	N/A	4.45	

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)
Fluoride mg/l	N/A	N/A	N/A	12	N/A	N/A	0.24	
Total Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	7.54	
Sulphate mg/l	N/A	N/A	N/A	12	N/A	N/A	118.44	
E. Coli MPN/100ml	N/A	N/A	N/A	2	N/A	N/A	N/A	
Temperature °C	N/A	N/A	N/A	13	N/A	N/A	14.13	
Faecal coliforms MPN/100ml	N/A	N/A	N/A	2	N/A	N/A	N/A	
Enterococci (Intestinal) cfu/100ml	N/A	N/A	N/A	2	N/A	N/A	0.49	

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):

Not applicable

Significance of Results:

The WWTP is compliant with the ELVs set in the WWDL.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF0100D0028SW001

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	271637, 176643	RS14B012310	No	No	No	No	Moderate
Downstream	270576, 174121	RS14B012460	No	No	No	No	Moderate

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	RS14B012310	2.05	RS14B012460	2.229	1.5	11.9
Ammonia-Total (as N) mg/l	RS14B012310	0.03	RS14B012460	0.034	0.065	6.2
ortho-Phosphate (as P) - unspecified mg/l	RS14B012310	0.03	RS14B012460	0.032	0.035	5.7
Conductivity 20 C µS/cm	RS14B012310	567	RS14B012460	564		

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Temperature °C	RS14B012310	10.57	RS14B012460	10.4		
Dissolved Oxygen % Saturation	RS14B012310	91.07	RS14B012460	92.63		
Total Nitrogen mg/l	RS14B012310	4.78	RS14B012460	5.01		
Suspended Solids mg/l	RS14B012310	12.38	RS14B012460	11.17		
Total Phosphorus (as P) mg/l	RS14B012310	0.06	RS14B012460	0.06		
COD-Cr mg/l	RS14B012310	26.7	RS14B012460	29.5		
Dissolved Oxygen mg/l	RS14B012310	10.228	RS14B012460	10.449		
pH pH units	RS14B012310	8.108	RS14B012460	8.14		

Significance of Results:

The WWTP discharge was compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results does not 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 - CARLOW WWTP

2.1.4.1 Treatment Efficiency Report - CARLOW 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	3823059	95129	98
TN	104666	44155	58
TP	142506	1868	99
SS	9011941	46215	99
cBOD	1596132	17718	99

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

2.1.4.2 Treatment Capacity Report Summary - CARLOW 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.

CARLOW WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	21168
DWF to the Treatment Plant (m^3/day)	8467
Current Hydraulic Loading - annual max (m^3/day)	29421

CARLOW WWTP	
Average Hydraulic loading to the Treatment Plant (m^3/day)	15240
Organic Capacity (PE) - As Constructed	36000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	30807
Organic Capacity (PE) - Remaining	5193
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 - CARLOW 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 tanker)	9843	Weight (Tonnes)		0.8	Yes	Yes	Yes
Domestic /Septic Tank Sludge	639	Weight (Tonnes)	726	1.3	Yes	Yes	Yes
Domestic /Septic Tank Sludge	5577	Volume (m3)		0.1	Yes	Yes	Yes
Waterworks Sludge	650	Volume (m3)		0.01	Yes	Yes	Yes

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	237.26	Weight (Tonnes)		0.01	Yes	Yes	Yes

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
225	Blocked Sewer	1	224

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)
Uncontrolled release	EO caused by pump failure	1	No	Yes
Breach of ELV	Other	1	No	Yes
Uncontrolled release	Blocked Sewer	1	No	Yes

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Blocked Sewer	1	No	Yes
Uncontrolled release	EO caused by ragging or blocking	1	No	Yes
Uncontrolled release	Blocked Sewer	1	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2019	6
Number of Incidents reported to the EPA via EDEN in 2019	6
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
P - Out 1	28138, 166470	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW12	27613, 176405	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW2	271707, 176811	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW3	271866, 177150	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW5	271661, 176561	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW7	271626, 175620	Yes	Low	Meeting	Unknown	Unknown	Not Monitored

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
SW8	271618, 175593	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	TBC	No	Low	Not yet Assessed	Unknown	Unknown	Unknown
SW10	28138, 166470	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW11	271613, 176405	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW4	273997, 175223	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW6	271703, 176211	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	TBC	No	Low	Not yet Assessed	Unknown	Unknown	Unknown

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?	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 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
D0028-SIP:01	Carlow Surface Water Drainage scheme	C	31/12/2011	Yes	Works Completed		
D0028-SIP:02	Discharge events from Burrin Bridge Overflow (E-SWO8) to cease	A	31/12/2011	Yes	Works Completed		
D0028-SIP:03	Discharge events from Hanover Bridge Overflow Chamber (E-SWO5) to cease	A	31/12/2011	Yes	Works 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
D0028-SIP:04	Discharge events from Kilkenny Road Overflow (E-SWO2) to cease	A	31/12/2011	Yes	Works Completed		
D0028-SIP:11	Maryborough P.S. Overflow (E-SWO9)	A	31/12/2011	Yes	Works Completed		
D0028-SIP:12	Morris Lane Overflow (E-SWO10)	A	31/12/2011	Yes	Works Completed		
D0028-SIP:05	Discharge events from Pembroke Overflow Chamber (E-SWO3) and IT Carlow Overflow (E-SWO4) to cease	A	31/12/2011	Yes	Works Completed		
D0028-SIP:06	Discharge events from Pembroke Overflow Chamber (E-SWO3) to cease	A	31/12/2011	Yes	Works Completed		
D0028-SIP:07	Discharge events from Skinners Lane Overflow (E-SWO7) to cease	A	31/12/2011	Yes	Works Completed		
D0028-SIP:08	Discharge events from Walls Forge Pumping Station Overflow (E-SWO6) to cease	A	31/12/2011	Yes	Works Completed		
D0028-SIP:09	E-Out 1 discharge shall revert to an emergency overflow	A	31/12/2011	Yes	Works 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
D0028-SIP:10	Henry Street Overflow (E-SWO11) to cease from 31st December 2011.	A	31/12/2011	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
There are no Improvements Programme for this Agglomeration.				

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
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
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?	No
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	Yes

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

Signed: Date: 16/04/2020

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