

Annual Environmental Report

2020



Carlow

D0028-01

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Rev 1 Note: Section 4.1.1 Question 1 answer changed to "Unknown". Approved 23/07/2021.

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2020 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.

1.2 TREATMENT SUMMARY

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

- CARLOW WWTP - 2020 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 - 2020	Treated	Non-Compliant	ortho-Phosphate (as P) - unspecified mg/l Total Phosphorus (as P) mg/l

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 - 2020 - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - CARLOW WWTP - 2020

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	63.5	30.39
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	996	454.02
Total Nitrogen mg/l	12	44.5	19.34
COD-Cr mg/l	12	5050	2091.22
Suspended Solids mg/l	12	4237	1922.19
Hydraulic Capacity	N/A	23920	15922

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 - 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	16.08	Pass
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	5.4	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	15	30	N/A	12	N/A	N/A	1.93	Pass
pH pH units	9	9	N/A	12	N/A	N/A	7.53	Pass
Ammonia-Total (as N) mg/l	2	2.4	N/A	12	N/A	N/A	0.09	Pass
Total Phosphorus (as P) mg/l	1	1.2	N/A	12	1	1	0.63	Fail
ortho-Phosphate (as P) - unspecified mg/l	0.8	0.96	N/A	12	1	1	0.44	Fail
Enterococci (Intestinal) cfu/100ml	N/A	N/A	N/A	2	N/A	N/A	7867.69	
Faecal coliforms cfu/100ml	N/A	N/A	N/A	1	N/A	N/A	48000	

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)
Sulphate mg/l	N/A	N/A	N/A	11	N/A	N/A	79.39	
Total Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	6.8	
Faecal coliforms MPN/100ml	N/A	N/A	N/A	1	N/A	N/A	N/A	
E. Coli cfu/100ml	N/A	N/A	N/A	1	N/A	N/A	26000	
Conductivity @20°C µS/cm	N/A	N/A	N/A	12	N/A	N/A	708.43	
Temperature °C	N/A	N/A	N/A	12	N/A	N/A	12.08	
E. Coli MPN/100ml	N/A	N/A	N/A	1	N/A	N/A	2421	
Fluoride mg/l	N/A	N/A	N/A	11	N/A	N/A	0.33	
Fats, Oils & Greases mg/l	N/A	N/A	N/A	11	N/A	N/A	5.19	

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):

There was no issues identified in the treatment plant or process, operational monitoring showed the Total Phosphorus and ortho-phosphate levels below the set ELV's. The exceedance is believed to be a laboratory error.

Significance of Results:

The results for Total Phosphorus and ortho-phosphate in the sample taken on the 14/02/20 were above the ELV's set for each parameter. The failure was attributed to laboratory error as operational monitoring results on the day and during that extended period were consistently below the ELV's

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	1.608	RS14B012460	1.635	1.5	1.8
Ammonia-Total (as N) mg/l	RS14B012310	0.062	RS14B012460	0.068	0.065	8.3

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
ortho-Phosphate (as P) - unspecified mg/l	RS14B012310	0.028	RS14B012460	0.027	0.035	-3.2
pH pH units	RS14B012310	8	RS14B012460	8.052		
Total Nitrogen mg/l	RS14B012310	4.033	RS14B012460	4.178		
Temperature °C	RS14B012310	13.508	RS14B012460	14.278		
Suspended Solids mg/l	RS14B012310	2.836	RS14B012460	3.429		
Dissolved Oxygen % Saturation	RS14B012310	87.656	RS14B012460	92.3		
Total Phosphorus (as P) mg/l	RS14B012310	0.075	RS14B012460	0.075		
Dissolved Oxygen mg/l	RS14B012310	9.701	RS14B012460	9.564		
COD-Cr mg/l	RS14B012310	15.452	RS14B012460	17.282		

Significance of Results:

The WWTP discharge was not 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.

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 - 2020

2.1.4.1 Treatment Efficiency Report - CARLOW WWTP - 2020

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)
TP	159653	3334	98
COD	10984910	84473	99
TN	101600	35724	65
SS	10097046	28349	100
cBOD	2384927	10156	100

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 - 2020

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 - 2020	
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)	23920

CARLOW WWTP - 2020	
Average Hydraulic loading to the Treatment Plant (m ³ /day)	15922
Organic Capacity (PE) - As Constructed	36000
Organic Capacity (PE) - Collected Load (peak week) ^{Note1}	31121
Organic Capacity (PE) - Remaining	4879
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 - 2020

'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)	4595	Weight (Tonnes)		0.1	Yes	Yes	Yes
Waterworks Sludge	1771	Volume (m3)	500	0.04	Yes	Yes	No
Other	8695	Volume (m3)	500	0.2	Yes	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	141.3	Weight (Tonnes)		0.02	Yes	Yes	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)
Breach of ELV	Inadequate Operational Procedures / Training	1	No	Yes
Uncontrolled release	EO caused by pump failure	1	No	Yes
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2020	3
Number of Incidents reported to the EPA via EDEN in 2020	3
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 2020 (No. of events)	Total volume discharged in 2020 (m3)	Monitoring Status
P - OUT 1	28138, 166470	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
P - OUT 2	271684, 176814	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
P - OUT 3	271612, TBC	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
P - OUT 4	271832, 176828	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
P - OUT 5	271752, 176531	Yes	Medium	Meeting	Unknown	Unknown	Monitored
P - OUT 6	271693, 176255	Yes	Medium	Meeting	Unknown	Unknown	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 2020 (No. of events)	Total volume discharged in 2020 (m3)	Monitoring Status
P - OUT 7	271622, 175646	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
P - OUT 8	272322, 176369	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
SW11	271598, 176731	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
SW12	271857, 177166	Yes	Medium	Meeting	Unknown	Unknown	Monitored
TBC	271608, 175605	No	Medium	Meeting	Unknown	Unknown	Unknown
TBC	271165, 174886	No	Medium	Not yet Assessed	Unknown	Unknown	Unknown
TBC	271655, 175756	No	Medium	Meeting	Unknown	Unknown	Unknown
TBC	273927, 175192	No	Medium	Meeting	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?	Yes

SWO Summary	
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?	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 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: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		
D0028-SIP:10	Henry Street Overflow (E-SWO11) to cease from 31st December 2011.	A	31/12/2011	Yes	Works Completed		
D0028-SIP:11	Maryborough P.S. Overflow (E-SWO9)	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:12	Morris Lane Overflow (E-SWO10)	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?	Yes
List reason e.g. additional SWO identified	Additional SWO identified
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: 21/07/2021

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