Annual Environmental Report

2021

Rathcormac

D0200-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0200-01, Rathcormac, in Cork 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.

Optimisation of the Treatment Process to address the continued Ammonia (as N) Non-Compliance.

1.2 TREATMENT SUMMARY

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

- Rathcormac WWTP with a Plant Capacity PE of 2670, 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
TPEFF0500D0200SW001	Rathcormac WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l 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 RATHCORMAC WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - RATHCORMAC 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	12	532	247
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	515	321
Total Nitrogen mg/l	12	117	70
Total Phosphorus (as P) mg/l	12	10	7.31
COD-Cr mg/l	12	1336	771
Hydraulic Capacity	N/A	1725	349

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 less 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 - TPEFF0500D0200SW001

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	12	4	N/A	99	Fail
Suspended Solids mg/l	25	62.5	N/A	12	4	N/A	23	Fail
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	12	4	1	24	Fail
pH units	9.00	9.00	N/A	12	N/A	N/A	7.76	Pass
Ammonia-Total (as N) mg/l	5.00	6.00	N/A	12	12	12	48	Fail
ortho-Phosphate (as P) - unspecified mg/l	2.00	2.40	N/A	12	3	3	1.08	Fail

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):

There were a number of BOD, COD and Suspended Solids ELV Exceedances in 2021. There was a BOD ELV Exceedance on 20/01/2021 plus BOD, COD and Suspended Solids ELV Breaches on 11/02/2021, 31/03/2021, 14/04/2021 and 02/12/2021. These Exceedances are all associated with on-going Optimisation of the Process and attempts to build a Sludge Age sufficient to achieve Ammonia (as N) removal in accordance with the WWDL

ELV. Site Automation of Sludge Wasting on the basis of Sludge Age has been completed and errors in associated PLC Code generating excess Solids build up in the Process eliminated throughout 2021. There have been 12 No. Ammonia (as N) ELV Exceedances throughout 2021 on 20/01/2021, 11/02/2021, 31/03/2021, 14/04/2021, 26/05/2021, 10/06/2021, 08/07/2021, 05/08/2021, 09/09/2021, 14/10/2021, 04/11/2021 and 02/12/2021. These are all associated with the difficulty in establishing a Process Sludge of sufficient age to achieve Ammonia (as N) removal as referred to above. There were 3 No. Ortho-Phosphate (as P) ELV Exceedances on 14/04/2021, 26/05/2021 and 10/06/2021. These are all associated with faults in Ferric Dosing which were subsequently resolved and the Parameter returned to compliance.

Significance of Results:

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

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF0500D0200SW001

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	180832, 90620	RS18B050300	No	No	Yes	No	Good
Downstream	181295, 90676	RS18B050320	No	No	Yes	No	Good

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	RS18B050300	1.15	RS18B050320	1.46	1.50	20.5
Ammonia-Total (as N) mg/l	RS18B050300	0.016	RS18B050320	0.040	0.065	36.2
ortho-Phosphate (as P) - unspecified mg/l	RS18B050300	0.018	RS18B050320	0.017	0.035	-4.6
pH units	RS18B050300	7.74	RS18B050320	7.80	N/A	
Dissolved Oxygen mg/l	RS18B050300	11	RS18B050320	N/A	N/A	
Nitrite (as N) µg/l	RS18B050300	3.46	RS18B050320	N/A	N/A	
Dissolved Oxygen % Saturation	RS18B050300	101	RS18B050320	101	N/A	
Temperature °C	RS18B050300	12	RS18B050320	12	N/A	
Nitrate (as N) mg/l	RS18B050300	2.72	RS18B050320	N/A	N/A	
True Colour mg/litre Pt Co	RS18B050300	38	RS18B050320	N/A	N/A	
Conductivity @25°C µS/cm	RS18B050300	195	RS18B050320	N/A	N/A	
Total Oxidised Nitrogen (as N) mg/l	RS18B050300	2.72	RS18B050320	N/A	N/A	
Suspended Solids mg/l	RS18B050300	4.15	RS18B050320	5.71	N/A	

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Alkalinity-total (as CaCO3) mg/l	RS18B050300	57	RS18B050320	N/A	N/A	
Total Hardness (as CaCO3) mg/l	RS18B050300	76	RS18B050320	N/A	N/A	
Chloride mg/l	RS18B050300	16	RS18B050320	N/A	N/A	

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.

Based on ambient monitoring results a deterioration in BOD & Ammonia (as N), 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 - RATHCORMAC WWTP

2.1.4.1 Treatment Efficiency Report - Rathcormac 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)
TP	932	N/A	N/A

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
cBOD	40962	2939	93
COD	98279	11914	88
TN	8990	N/A	N/A
SS	31451	2757	91

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

2.1.4.2 Treatment Capacity Report Summary - Rathcormac 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.

Rathcormac WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	1802
DWF to the Treatment Plant (m^3/day)	600
Current Hydraulic Loading - annual max (m^3/day)	1725
Average Hydraulic loading to the Treatment Plant (m^3/day)	349
Organic Capacity (PE) - As Constructed	2670
Organic Capacity (PE) - Collected Load (peak week)[Note1]	2113
Organic Capacity (PE) - Remaining	557
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 - RATHCORMAC 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)
There is no Sludge and Other Input data for the Treatment Plant included in the AER.							

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)
Breach of ELV	Inadequate Infrastructure	1	Yes	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	1
Number of Incidents reported to the EPA via EDEN in 2021	1
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
SW001	180977, 90732	Yes	Low	Meeting	Unknown	Unknown	Monitored
SW2	180941, 91608	Yes	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
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
There are no Specified Improvement Programmes for this Agglomeration.							

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	Year included in AER	Included in this AER
Habitats Impact Assessment	Yes		No
Priority Substances Assessment	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
Has a Technical amendment/licence review application been submitted to the Agency by IW?	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	N/A

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

Date: 28/04/2022

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

There are no Appendices included