

Annual Environmental Report

2019



Rathkeale

D0112-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2019 AER

This Annual Environmental Report has been prepared for D0112-01, Rathkeale, 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.

New PLC system to run plant has been installed in 2019.

1.2 TREATMENT SUMMARY

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

- Rathkeale WWTP with a Plant Capacity PE of 4000, 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
TPEFF1900D0112SW001	Rathkeale WWTP	Treated	Non-Compliant	Ammonia-Total (as N) 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 RATHKEALE WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - RATHKEALE 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	280	36.5
Suspended Solids mg/l	12	465	60.91
COD-Cr mg/l	12	861	103.48
Total Nitrogen mg/l	12	43.8	13.09
Total Phosphorus (as P) mg/l	12	7.08	1.53
Hydraulic Capacity	N/A	2325	780

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 - TPEFF1900D0112SW001

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	17.15	Pass
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	7.82	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	15	30	N/A	12	N/A	N/A	5.08	Pass
pH pH units	9	9	N/A	12	N/A	N/A	7.66	Pass
Ammonia-Total (as N) mg/l	2.4	2.88	N/A	12	1	1	0.57	Fail
Total Phosphorus (as P) mg/l	2	2.4	N/A	12	N/A	N/A	0.47	Pass
ortho-Phosphate (as P) - unspecified mg/l	1	1.2	N/A	12	N/A	N/A	0.26	Pass
Phenols (Total) µg/l	N/A	N/A	N/A	1	N/A	N/A	0.05	
Total Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	8.75	

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)
Enterococci (Intestinal) MPN/100ml	N/A	N/A	N/A	3	N/A	N/A	5021.63	
Coliform Bacteria (Total) MPN/100ml	N/A	N/A	N/A	3	N/A	N/A	58065.54	
Faecal coliforms cfu/100ml	N/A	N/A	N/A	3	N/A	N/A	27558.55	
E. Coli MPN/100ml	N/A	N/A	N/A	3	N/A	N/A	37754.8	
Fats, Oils & Greases mg/l	N/A	N/A	N/A	4	N/A	N/A	3.95	
Phenols (Total) mg/l	N/A	N/A	N/A	2	N/A	N/A	0.05	
Nitrate (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	7	
Conductivity 20 C μS/cm	N/A	N/A	N/A	11	N/A	N/A	550.42	
Nitrite (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.23	

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):

Diffuser maintenance.

Significance of Results:

The WWTP is non compliant with the ELVs set in the WWDL. The impact on receiving water is assessed further in Section 2.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF1900D0112SW001

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	136062, 141413	RS24D021100	No	No	No	No	Poor
Downstream	135548, 141296	RS24D021300	No	No	No	No	Poor

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	RS24D021100	1.963	RS24D021300	1.378	1.5	-39
Ammonia-Total (as N) mg/l	RS24D021100	0.05	RS24D021300	0.043	0.065	-10.8

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	RS24D021100	0.087	RS24D021300	0.085	0.035	-4.4
E. Coli MPN/100ml	RS24D021100	1839.5	RS24D021300	1684		
Calcium Hardness (as CaCO3) mg/l	RS24D021100	250.5	RS24D021300	257.25		
Dissolved Oxygen % O2	RS24D021100	87.72	RS24D021300	96.694		
Dissolved Oxygen mg/l	RS24D021100	11.24	RS24D021300	11.74		
Coliform Bacteria (Total) MPN/100ml	RS24D021100	9006	RS24D021300	13550.5		
Alkalinity-total (as CaCO3) mg/l	RS24D021100	222.889	RS24D021300	217.222		
Nitrate (as N) mg/l	RS24D021100	1.948	RS24D021300	2.069		
Colour PtCo Units	RS24D021100	25.7	RS24D021300	23.375		
Enterococci (Intestinal) MPN/100ml	RS24D021100	75	RS24D021300	1036		
Nitrite (as N) µg/l	RS24D021100	22.44	RS24D021300	19.06		
Conductivity 20 C µS/cm	RS24D021100	487.25	RS24D021300	493.25		
Dissolved Oxygen % Saturation	RS24D021100	102.6	RS24D021300	106.8		

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Total Oxidised Nitrogen (as N) mg/l	RS24D021100	1.969	RS24D021300	2.089		
True Colour mg/litre Pt Co	RS24D021100	26.6	RS24D021300	27.6		
Total Hardness (as CaCO3) mg/l	RS24D021100	252.4	RS24D021300	253.2		
Conductivity @25°C µS/cm	RS24D021100	538.8	RS24D021300	544.2		
Chloride mg/l	RS24D021100	27.5	RS24D021300	28.856		
Nitrite (as N) mg/l	RS24D021100	0.023	RS24D021300	0.023		
pH pH units	RS24D021100	8.095	RS24D021300	8.119		
Faecal coliforms cfu/100ml	RS24D021100	569.5	RS24D021300	594		
Total Nitrogen mg/l	RS24D021100	2.658	RS24D021300	2.695		
Temperature °C	RS24D021100	11.085	RS24D021300	11.381		

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.

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: River Deel is a high phosphate river. Intensive dairy industry both upstream and downstream of WWTP.

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 - RATHKEALE WWTP

2.1.4.1 Treatment Efficiency Report - Rathkeale 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	30408	3900	87
SS	17899	1778	90
cBOD	10725	1156	89
TN	3847	1990	48
TP	451	106	76

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

2.1.4.2 Treatment Capacity Report Summary - Rathkeale 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.

Rathkeale WWTP	
Peak Hydraulic Capacity (m ³ /day) - As Constructed	2938
DWF to the Treatment Plant (m ³ /day)	720
Current Hydraulic Loading - annual max (m ³ /day)	2325
Average Hydraulic loading to the Treatment Plant (m ³ /day)	780
Organic Capacity (PE) - As Constructed	4000
Organic Capacity (PE) - Collected Load (peak week) ^{Note1}	2318
Organic Capacity (PE) - Remaining	1682
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 - RATHKEALE 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 is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
There were no relevant environmental complaints in 2019.			

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	Plant or equipment maintenance at WWTP	1	No	Yes
Spillage	EO caused by power failure	1	No	Yes
Abatement Equipment offline	Inadequate Infrastructure	1	No	No

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2019	4
Number of Incidents reported to the EPA via EDEN in 2019	4
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
TBC	TBC	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	TBC	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW2	135944, 141491	Yes	Low	Not Meeting	Unknown	Unknown	Not Monitored

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
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
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There are no Specified Improvement Programmes for this Agglomeration.

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
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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
Priority Substances Assessment	Yes	2016	No	

5.1 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2016

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	Yes

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