Annual Environmental Report

2021

Kinnitty

D0363-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0363-01, Kinnitty, in Offaly 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.

There were no capital works, significant changes or operational improvements undertaken in 2021.

1.2 TREATMENT SUMMARY

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

- Kinnitty WWTP with a Plant Capacity PE of 750, the treatment type is 2 - Secondary treatment.

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
TPEFF2500D0363SW001	Kinnitty WWTP	Treated	Non-Compliant	BOD, 5 days with Inhibition (Carbonaceous) mg/l COD-Cr 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 KINNITTY WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - KINNITTY 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
Ammonia-Total (as N) mg/l	8	28	13
ortho-Phosphate (as P) - unspecified mg/l	8	4.37	1.19
pH pH units	4	7.62	7.27
Total Phosphorus (as P) mg/l	3	10	5.42
COD-Cr mg/l	8	3720	795.48
Suspended Solids mg/l	8	1600	367.47
BOD, 5 days with Inhibition (Carbonaceous) mg/l	8	947	236
Total Nitrogen mg/l	3	36	25
Hydraulic Capacity	N/A	455	309

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'.

2.1.2 EFFLUENT MONITORING SUMMARY - TPEFF2500D0363SW001

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	8	1	1	63	Fail
Suspended Solids mg/l	35	88	N/A	8	1	N/A	20	Pass
BOD, 5 days with Inhibition (Carbonaceous) mg/l	25	50	N/A	8	1	1	13	Fail
pH pH units	6.00	9.00	N/A	8	N/A	N/A	7.73	Pass
Ammonia-Total (as N) mg/l	5.00	6.00	N/A	8	N/A	N/A	0.175	Pass
ortho-Phosphate (as P) - unspecified mg/l	2.50	3.00	N/A	8	N/A	N/A	0.642	Pass
Nitrate (as N) mg/l	N/A	N/A	N/A	1	N/A	N/A	9.96	
Nitrite (as N) mg/l	N/A	N/A	N/A	1	N/A	N/A	0.069	

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)
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	3	N/A	N/A	5.68	
Total Nitrogen mg/l	N/A	N/A	N/A	3	N/A	N/A	8.34	

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):

Inadequate Operational Procedures/Training

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 TPEFF2500D0363SW001

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	220004, 206248	RS25C020150	No	No	No	No	Good
Downstream	217751, 206147	RS25C020300	No	Yes	No	No	Good

The results for ambient results and / or additional monitoring data sets are included in the **Appendix 7.1 - Ambient monitoring summary.**

Significance of Results:

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence for the following: COD-Cr mg/l and BOD, 5 days with Inhibition (Carbonaceous) mg/l.

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 & Ortho-P concentrations downstream of the effluent discharge is noted.

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 - KINNITTY WWTP

2.1.4.1 Treatment Efficiency Report - Kinnitty 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)
cBOD	26642	1331	95
COD	89718	6225	93
SS	41445	1987	95

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

2.1.4.2 Treatment Capacity Report Summary - Kinnitty 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.

Kinnitty WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	506
DWF to the Treatment Plant (m^3/day)	169
Current Hydraulic Loading - annual max (m^3/day)	455
Average Hydraulic loading to the Treatment Plant (m^3/day)	309
Organic Capacity (PE) - As Constructed	750

Kinnitty WWTP	
Organic Capacity (PE) - Collected Load (peak week)[Note1]	393
Organic Capacity (PE) - Remaining	357
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 - KINNITTY 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 Operational Procedures / Training	1	No	Yes

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	Total volume discharged in 2021 (m^3)	Monitoring Status
SW2	217984.02, 206020.53	Yes	Low	Meeting	Unknown	Not Monitored

SWO Summary	
How much sewage was discharged via monitored SWOs in the agglomeration in the year (m^3)?	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
Drinking Water Abstraction Point Risk Assessment	Yes	2014	No
Priority Substances Assessment	Yes	2014	No

5.1 DRINKING WATER ABSTRACTION POINT RISK ASSESSMENT

The Drinking Water Abstraction Point Risk Assessment Report has been included in the AER 2014.

5.2 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2014.

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	Yes
List reason e.g., changes to monitoring requirements	Ambient Monitoring Location Changes
Have these processes commenced?	No
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: 20/02/2022

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

Appendix
Appendix 7.1 - Ambient monitoring summary

Kinnitty 2021 Ambient Monitoring Summary

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish National Grid Reference (Easting, Northing)	EPA Feature Coding Tool code	Receiving Waters Designation (Yes/No)			
			Bathing Water	Drinking Water	FWPM	Shellfish
Upstream Monitoring Point	212004, 206248	RS25C020150	No	No	No	No
Downstream Monitoring Point	217751, 206147	RS25C020300	No	Yes	No	No

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Current WFD Status	cBOD	o-Phosphate (as P)	Ammonia (as N)
Upstream Monitoring Point	Good	0.7812	0.0063	0.0236
Downstream Monitoring Point	Good	0.9553	0.0227	0.0268
Difference		*0.174*	*0.016*	*0.003*
EQS		1.500	0.035	0.065
% of EQS		11.607%	46.667%	4.945%

Kinnitty 2021 Ambient Monitoring Data

		Ammonia N	Biological Oxygen Demand	COD Chemical Oxygen Demand	Dissolved Oxygen	Total Nitrogen N	Dissolved Oxygen % Saturation	Temperature	Total Phosphorus P	Ortho-Phosphate P	pH	Suspended Solids
Station	Sample Date	mg/l	mg/l	mg/l	mg/l	mg/l	% Sat.	Degrees C	mg/l	mg/l	pH units	mg/l
Upstream	27-Jan-2021	< 0.02	< 1		10.87		99.2	6.9		< 0.006	7.83	
Upstream	9-Mar-2021	0.02	< 1	< 20	9.03		99.1	5.2		< 0.02	8.04	< 2
Upstream	23-Mar-2021	< 0.02	< 1	< 20	9.08		98.1	7		< 0.02	8.03	< 2
Upstream	26-May-2021	< 0.02	< 1		8.97		85.6	9		0.006	7.8	
Upstream	7-July-2021	< 0.02	1.3		10.11		99.3	13.9		0.006	7.8	
Upstream	22-Sep-2021	0.027	< 1	< 20	10.7	< 2	98.1	5.6	< 0.1	< 0.02	8.01	< 2
Upstream	23-Nov-2021	0.065	< 1	< 20	12	< 2	94.2	4.3	< 0.1	< 0.02	8.06	< 2
Upstream	14-Dec-2021	0.02	< 1		12.7		101.1	5.2		0.007	8.12	
	Mean	**0.0236**	**0.7812**	**14.1423**	**10.4325**	**1.4142**	**96.8375**	**7.1375**	**0.0707**	**0.0063**	**7.9613**	**1.4142**
	95%ile	**0.0517**	**1.0925**	**14.1423**	**12.4550**	**1.4142**	**100.4700**	**12.1850**	**0.0707**	**0.0069**	**8.0990**	**1.4142**

		Ammonia N	Biological Oxygen Demand	COD Chemical Oxygen Demand	Dissolved Oxygen	Total Nitrogen N	Dissolved Oxygen % Saturation	Temperature	Total Phosphorus P	Ortho-Phosphate P	pH	Suspended Solids
Station	Sample Date	mg/l	mg/l	mg/l	mg/l	mg/l	% Sat.	Degrees C	mg/l	mg/l	pH units	mg/l
Downstrear	27-Jan-2021	0.029	< 1		10.66		98.7	7.3		0.009	7.88	
Downstrear	9-Mar-2021	0.023	< 1	< 20	9.04		99.5	5		< 0.02	8.23	< 2
Downstrear	23-Mar-2021	< 0.02	1.7	< 20	10		99.1	7.4		< 0.02	8.14	< 2
Downstrear	26-May-2021	0.02	< 1		8.93		83.9	9.2		0.01	7.8	
Downstrear	7-July-2021	< 0.02	1.7		10.8		98.3	15.2		0.007	7.7	
Downstrear	22-Sep-2021	0.025	< 1	< 20	10.9	< 2	98.6	5.5	< 0.1	0.074	8.06	< 2
Downstrear	23-Nov-2021	0.065	< 1	< 20	12.3	< 2	99.1	4.2	< 0.1	0.027	8.03	< 2
Downstrear	14-Dec-2021	0.024	< 1		12.37		98.6	5.6		0.009	7.96	
	Mean	**0.0268**	**0.9553**	**14.1423**	**10.6250**	**1.4142**	**96.9750**	**7.4250**	**0.0707**	**0.0227**	**7.9750**	**1.4142**
	95%ile	**0.0524**	**1.7000**	**14.1423**	**12.3455**	**1.4142**	**99.3600**	**13.1000**	**0.0707**	**0.0623**	**8.1985**	**1.4142**

Note: Where the concentration in the result is less than the limit of detection (LOD), a value of LOD/sqrt(2) was used in calculating the mean and 95%ile concentrations.