Annual Environmental Report

2022

Kilkenny City and Environs

D0018-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2022 AER

This Annual Environmental Report has been prepared for D0018-01, Kilkenny City and Environs, in Kilkenny 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 was no major capital or operational changes undertaken

1.2 TREATMENT SUMMARY

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

- Kilkenny City and Environs WWTP with a Plant Capacity PE of 77000, 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
TPEFF1500D0018SW001	Kilkenny City and Environs WWTP	Treated	Compliant	N/A

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 KILKENNY CITY AND ENVIRONS WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - KILKENNY CITY AND ENVIRONS 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	48	740	338
Total Nitrogen mg/l	48	70	38
COD-Cr mg/l	48	956	526
pH pH units	48	7.86	7.67
Ammonia-Total (as N) mg/l	48	28	19
Total Phosphorus (as P) mg/l	48	13	6.47
BOD, 5 days with Inhibition (Carbonaceo mg/l	48	204	112
Hydraulic Capacity	N/A	31090	10328

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 - TPEFF1500D0018SW001

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	48	N/A	N/A	19	Pass
Suspended Solids mg/l	35	87.5	N/A	48	N/A	N/A	5.98	Pass
BOD, 5 days with Inhibition (Carbonaceo mg/l	25	50	N/A	48	N/A	N/A	2.38	Pass
pH pH units	9	9	N/A	48	N/A	N/A	7.60	Pass
Ammonia-Total (as N) mg/l	3	3.6	N/A	48	N/A	N/A	0.115	Pass
Total Phosphorus (as P) mg/l	2	2.4	N/A	48	N/A	N/A	0.280	Pass

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)
ortho-Phosphate (as P) - unspecified mg/l	0.5	0.6	N/A	48	N/A	N/A	0.199	Pass
Total Oxidised Nitrogen (as N) mg/l	N/A	N/A	N/A	48	N/A	N/A	7.03	
Total Nitrogen mg/l	N/A	N/A	N/A	48	N/A	N/A	7.55	

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):

Not applicable

Significance of Results:

The WWTP is compliant with the ELV's set in the Wastewater Discharge Licence.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF1500D0018SW001

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	253230, 154517	RS15N011990	No	No	No	No	Good
Downstream	253387, 154460	RS15N011993	No	No	No	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	RS15N011990	1.50	RS15N011993	1.92	1.50	28.3
Ammonia-Total (as N) mg/l	RS15N011990	0.013	RS15N011993	0.011	0.065	-2.7
ortho-Phosphate (as P) - unspecified mg/l	RS15N011990	0.017	RS15N011993	0.024	0.035	21.4
Total Phosphorus (as P) mg/l	RS15N011990	0.050	RS15N011993	0.067	N/A	
Temperature °C	RS15N011990	14	RS15N011993	13	N/A	
Chloride mg/l	RS15N011990	24	RS15N011993	25.32	N/A	
Sulphate mg/l	RS15N011990	24	RS15N011993	26.57	N/A	
Nitrate (as N) mg/l	RS15N011990	3.21	RS15N011993	3.64	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
pH pH units	RS15N011990	8.23	RS15N011993	8.20	N/A	
Nitrite (as N) mg/l	RS15N011990	0.012	RS15N011993	0.074	N/A	
Dissolved Oxygen % O2	RS15N011990	106	RS15N011993	104	N/A	
Conductivity @20°C µS/cm	RS15N011990	437	RS15N011993	443	N/A	

Significance of Results:

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

The ambient monitoring results do not meet the required EQS at the downstream location for BOD. 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 ortho-Phosphate and BOD, concentrations downstream of the effluent discharge is noted. A deterioration in water quality has been identified, however it is not known if it is 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 - KILKENNY CITY AND ENVIRONS WWTP

2.1.4.1 Treatment Efficiency Report - Kilkenny City and Environs 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	396740	8018	98
TP	22910	941	96
TN	132820	25384	81
COD	1860529	62273	97
SS	1197583	20109	98

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

2.1.4.2 Treatment Capacity Report Summary - Kilkenny City and Environs 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.

Kilkenny City and Environs WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	50904
DWF to the Treatment Plant (m^3/day)	16968
Current Hydraulic Loading - annual max (m^3/day)	31090
Average Hydraulic loading to the Treatment Plant (m^3/day)	10328
Organic Capacity (PE) - As Constructed	77000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	35112
Organic Capacity (PE) - Remaining	41888
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 - KILKENNY CITY AND ENVIRONS 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)
Industrial / Commercial Sludge	270	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1867	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	2083	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	5498	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	2803	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	373	Volume (m3)		5	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)
Industrial / Commercial Sludge	170	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1961	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	434	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	863	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	2790	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	820	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	3667	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1727	Volume (m3)		5	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)
Landfill Leachate (delivered by tanker)	2659	Volume (m3)		5	Yes	Yes	Yes
Waterworks Sludge	13241	Volume (m3)		5	Yes	Yes	Yes
Domestic /Septic Tank Sludge	469	Volume (m3)		5	Yes	Yes	Yes
Domestic /Septic Tank Sludge	171	Volume (m3)		5	Yes	Yes	Yes
Domestic /Septic Tank Sludge	1262	Volume (m3)		5	Yes	Yes	Yes
Domestic /Septic Tank Sludge	3831	Volume (m3)		5	Yes	Yes	Yes
Domestic /Septic Tank Sludge	109	Volume (m3)		5	Yes	Yes	Yes
Domestic /Septic Tank Sludge	245	Volume (m3)		5	Yes	Yes	Yes
Domestic /Septic Tank Sludge	327	Volume (m3)		5	Yes	Yes	Yes
Domestic /Septic Tank Sludge	500	Volume (m3)		5	Yes	Yes	Yes

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 2022.			

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 Uisce Éireann 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
Uncontrolled release	EO caused by ragging or blocking	1	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2022	2
Number of Incidents reported to the EPA via EDEN in 2022	2
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 2022 (No. of events)	Total volume discharged in 2022 (m3)	Monitoring Status
SW001	251361,155883	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SW002	251753,155369	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SW003	250714,156076	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW007	250714,156076	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW004	251305,155889	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW005	250789,155825	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored

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 2022 (No. of events)	Total volume discharged in 2022 (m3)	Monitoring Status
SW006	250707,156213	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW008	250420,156252	Yes	TBC	Not yet Assessed	Unknown	Unknown	Not Monitored
SW009	250626,156455	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW010	250641,156425	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW011	251745,155402	Yes	TBC	Not yet Assessed	Unknown	Unknown	Not Monitored
SW012	249897,155073	Yes	TBC	Not yet Assessed	Unknown	Unknown	Not Monitored
SW013	249887,156112	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW014	250212,156127	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW015	250223,156136	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW016	250437,156798	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored

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 2022 (No. of events)	Total volume discharged in 2022 (m3)	Monitoring Status
SW017	250449,156788	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW018	250011,158103	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW019	249503,155873	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW021	251775,155243	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	250629,156450	No	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SWO20	250754,156070	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	250714,156076	No	TBC	Not yet Assessed	Unknown	Unknown	TBC
TBC	250789,155825	No	Low Significance	Not yet Assessed	Unknown	Unknown	TBC
TBC	250789,155825	No	Low Significance	Not yet Assessed	Unknown	Unknown	TBC
TBC	250754,156070	No	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored

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 2022 (No. of events)	Total volume discharged in 2022 (m3)	Monitoring Status
TBC	249967,154863	No	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	250466,158554	No	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	251807,155463	No	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	249639,154695	No	TBC	Not yet Assessed	Unknown	Unknown	TBC
TBC	250221,156118	No	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	251756,155216	No	Low Significance	Not yet Assessed	Unknown	Unknown	TBC
TBC	250561,156614	No	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	250481,156641	No	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	250148,156114	No	Low Significance	Not yet Assessed	Unknown	Unknown	TBC
TBC	253244,154520	No	TBC	Not yet Assessed	Unknown	Unknown	TBC

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 2022 (No. of events)	Total volume discharged in 2022 (m3)	Monitoring Status
SW022	251359,155883	Yes	TBC	Not yet Assessed	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 monitored SWOs in the agglomeration in the year (m3)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	No
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 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
D0018-SIP:01	Phosphorous reduction (ferric dosing)	C	31/12/2013	Yes	Works Completed		

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
Priority Substances Assessment	Yes	2015	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
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 SWOs 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	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:

Signed: Date: 13/04/2023

This AER has been produced by Uisce Éireann's Environmental Information System (EIMS) and has been electronically signed off in that system for and on behalf of ,

Eleanor Roche

Acting Head of Environmental Regulation.

7 APPENDIX

There are no Appendices included