Annual Environmental Report

2020

Kilkenny City and Environs

D0018-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2020 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.

Aeration tank energy saving measure implemented in 2020.

1.2 TREATMENT SUMMARY

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

- KILKENNY CITY AND ENVIRONS WWTP - 2020 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 - 2020	Treated	Compliant	N/A

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 KILKENNY CITY AND ENVIRONS WWTP - 2020 - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - KILKENNY CITY AND ENVIRONS 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 Nitrogen mg/l	42	52.6	36.33
Total Phosphorus (as P) mg/l	42	583	21.26
Suspended Solids mg/l	42	543	305.35
COD-Cr mg/l	42	812	492.46
BOD, 5 days with Inhibition (Carbonaceo mg/l	42	174	115.69
Hydraulic Capacity	N/A	19206	9653

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 tretament 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 with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	42	N/A	N/A	21.2	Pass
Suspended Solids mg/l	35	87.5	N/A	42	N/A	N/A	6.08	Pass
BOD, 5 days with Inhibition (Carbonaceo mg/l	25	50	N/A	42	N/A	N/A	2.68	Pass
pH pH units	9	9	N/A	42	N/A	N/A	7.73	Pass
Ammonia-Total (as N) mg/l	3	3.6	N/A	42	N/A	N/A	0.25	Pass
Total Phosphorus (as P) mg/l	2	2.4	N/A	42	N/A	N/A	0.29	Pass
ortho-Phosphate (as P) - unspecified mg/l	0.5	0.6	N/A	42	N/A	N/A	0.2	Pass
Total Nitrogen mg/l	N/A	N/A	N/A	42	N/A	N/A	6.61	

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)
Total Oxidised Nitrogen (as N) mg/l	N/A	N/A	N/A	42	N/A	N/A	5.75	

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):

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 Status
Upstream	253230, 154517	RS15N011990	No	No	No	No	Good

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	River Station Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Status
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	RS15N011993	1.1	1.5	6.7
Ammonia-Total (as N) mg/l	RS15N011990	0.022	RS15N011993	0.021	0.065	-2.1
ortho-Phosphate (as P) - unspecified mg/l	RS15N011990	0.015	RS15N011993	0.027	0.035	35.2
Nitrate (as N) mg/l	RS15N011990	1.4	RS15N011993	1.347		
Conductivity @20°C µS/cm	RS15N011990	425.667	RS15N011993	420		
Temperature °C	RS15N011990	14.633	RS15N011993	13.567		
Dissolved Oxygen % O2	RS15N011990	99.533	RS15N011993	97.2		
Chloride mg/l	RS15N011990	22.833	RS15N011993	25.8		
Nitrite (as N) mg/l	RS15N011990	0.007	RS15N011993	0.007		
pH pH units	RS15N011990	8.22	RS15N011993	8.28		

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Sulphate mg/l	RS15N011990	23.1	RS15N011993	25.567		

Significance of Results:

The WWTP discharge was 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.

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 - 2020

2.1.4.1 Treatment Efficiency Report - KILKENNY CITY AND ENVIRONS 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)
cBOD	394256	9636	98
COD	1678205	76370	95
TN	123793	23805	81
TP	72457	1030	99

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
SS	1040552	21904	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 - 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.

KILKENNY CITY AND ENVIRONS WWTP - 2020	
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)	19206
Average Hydraulic loading to the Treatment Plant (m^3/day)	9653
Organic Capacity (PE) - As Constructed	77000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	34919
Organic Capacity (PE) - Remaining	42081
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 - 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)
Industrial / Commercial Sludge	362	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1053	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	795	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	4812	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1718	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	814	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	44	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	55	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	123	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1292	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	439	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	273	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	350	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1059	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1530	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1383	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	1963	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1843	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1485	Volume (m3)		5	Yes	Yes	Yes
Landfill Leachate (delivered by tanker)	2155	Volume (m3)		1	Yes	Yes	Yes
Domestic /Septic Tank Sludge	618	Volume (m3)		1	Yes	Yes	Yes
Domestic /Septic Tank Sludge	299	Volume (m3)		1	Yes	Yes	Yes
Waterworks Sludge	10780	Volume (m3)		1	Yes	Yes	Yes

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
2	Blocked Sewer	0	2

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)
Uncontrolled release	Blocked Sewer	1	No	Yes
Uncontrolled release	Blocked Sewer	1	No	Yes
Uncontrolled release	Blocked Sewer	1	No	Yes

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	EO caused by pump failure	1	No	Yes
Breach of ELV	WWTP biological sludge issue	1	Yes	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2020	5
Number of Incidents reported to the EPA via EDEN in 2020	5
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
SW022	155883, 251359	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW001	251361, 155883	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW002	251753, 155369	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW003	250714, 156076	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW004	251305, 155889	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW005	250789, 155825	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not 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
SW006	250707, 156213	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW007	250714, 156076	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW008	250420, 156252	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW009	250626, 156455	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW010	250641, 156425	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW011	251745, 155402	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW012	249897, 155073	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW013	249887, 156112	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW014	250212, 156127	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW015	250223, 156136	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not 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
SW016	250437, 156798	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW017	250449, 156788	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW018	250011, 158103	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW019	249503, 155873	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW021	250363, 325971	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW020	250754, 156070	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	250629, 156450	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	250714, 156076	No	Unknown	Not yet Assessed	Unknown	Unknown	Unknown
TBC	250789, 155825	No	Unknown	Not yet Assessed	Unknown	Unknown	Unknown
TBC	250789, 155825	No	Unknown	Not yet Assessed	Unknown	Unknown	Unknown

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
TBC	250754, 156070	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	249967, 154863	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	250466, 158554	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	251807, 155463	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	249639, 154695	No	Unknown	Not yet Assessed	Unknown	Unknown	Unknown
TBC	250221, 156118	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	251756, 155216	No	Unknown	Not yet Assessed	Unknown	Unknown	Unknown
TBC	250561, 156614	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	250481, 156641	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	250148, 156114	No	Unknown	Not yet Assessed	Unknown	Unknown	Unknown

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
TBC	253244, 154520	No	Unknown	Not yet Assessed	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?	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?	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
D0018-SIP:01	Phosphorous reduction (ferric dosing)	C	31/12/2013	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
Priority Substances Assessment	Yes	2015	No	

5.1 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2015

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?	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: 24/03/2021

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