Annual Environmental Report

2018

Kilkenny City and Environs

D0018-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 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 are included as an appendix to the AER as follows:

1.1 Licence specific reporting included in AER

Assessment / Report	Included in AER
There is no Licence Specific Reports included in the AER.	

1.2 Treatment Type

The agglomeration is served by a wastewater treatment plant KILKENNY CITY AND ENVIRONS WWTP with a Plant Capacity PE of 77000. The treatment process includes the following:

1.2.1 KILKENNY CITY AND ENVIRONS WWTP

Treatment type	Yes / No	Details
Preliminary Treatment	Yes	Screens
Primary Treatment	No	
Secondary Treatment	Yes	Extended Aeration
Nutrient Removal	Yes	Ferric Dosing
Tertiary Treatment	No	

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 2.2 Discharges from the agglomeration.

1.3 ELV Overview

1.3.1 KILKENNY CITY AND ENVIRONS WWTP

Compliance Status	
Were all parameters compliant for KILKENNY CITY AND ENVIRONS WWTP treatment plant	No
Where noncompliant see table 2.2.1 for details of parameters	

1.4 Sludge Removal

The amount of sludge removed from the wastewater treatment plant is shown below along with the transported destination of the sludge from the treatment plant.

Treatment Plant	Sludge type	Quantity	Unit	% Dry Solids	Destination
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	1024.3	Weight (Tonnes)	17	Anaerobic Digestion
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	452.48	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	105.12	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	85.17	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	119.96	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	47.18	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	451.36	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	729.85	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	202.6	Weight (Tonnes)	17	Farm

Treatment Plant	Sludge type	Quantity	Unit	% Dry Solids	Destination
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	368.38	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	196.16	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	789.58	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	272.98	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	676.52	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	412.28	Weight (Tonnes)	17	Farm
KILKENNY CITY AND ENVIRONS WWTP	Cake Sludge	582.02	Weight (Tonnes)	17	Farm

Annual Statement of Measures

Grit removal system being installed at the inlet works. Works commenced Novemeber 2018 and ongoing.

2 MONITORING REPORTS SUMMARY

2.1 Summary report on monthly influent monitoring

A summary of influent monitoring for the treatment plant is presented in below. This monitoring is primarily undertaken in order to determine the overall efficiency of the plant in removing pollutants from the raw wastewater.

2.1.1 Influent Monitoring Summary - KILKENNY CITY AND ENVIRONS WWTP

Parameters	Number of Samples	Annual Max	Annual Mean
COD-Cr mg/l	364	1005	470.87
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	46	312	180.83
Total Nitrogen mg/l	200	64	36.77
Suspended Solids mg/l	364	1493	332.16
Total Phosphorus (as P) mg/l	240	13.1	5.91
Hydraulic Capacity	0	18790	9925

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 3.5 if applicable

Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity as detailed further in Section 3.2. The annual maximum hydraulic loading is less than the peak Treatment Plant Capacity as detailed further in Section 3.2. 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.

2.2 Discharges from the agglomeration

2.2.1 Effluent Monitoring Summary - KILKENNY CITY AND ENVIRONS WWTP

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedences	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Ammonia-Total (as NH4) mg/l	3	3.6	0	243	0	0	0.19	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	0	46	0	0	3.16	Pass
Total Nitrogen mg/l	0	0	0	200	0	0	4.55	Pass
Total Oxidised Nitrogen (as N) mg/l	0	0	0	48	0	0	3.3	Pass
ortho-Phosphate (as P) - unspecified mg/l	0.5	0.6	0	238	1	1	0.22	Fail
Total Phosphorus (as P) mg/l	2	2.4	0	237	0	0	0.3	Pass

Notes:
1– This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied
2 - For parameters where a mean ELV applies

Cause of Exceedance(s):

ELV breach - Orthophosphate 0.541mg/l 24/05/2018 & 0.8 mg/l on the 23/05/2018. Ferric pump was blocked again leading to an issue with the ferric dosing. Dosing will be increased until levels reduce at final effluent. ELV breach - Ammonium 4.21mg/l on 23/05/2018. Issue with rags around the sensors in aeration tank 2 – rags are now removed and sensors are working correctly.

Significance of Results:

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

2.3 Ambient monitoring summary

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.

2.3.1 Ambient Monitoring Report Summary - KILKENNY CITY AND ENVIRONS WWTP

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	Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Status
Upstream	253230, 154517	TPEFF1500D0018SW001	No	No	No	No	Good
Downstream	253387, 154460	TPEFF1500D0018SW001	No	No	No	No	Good

2.3.2 Ambient Monitoring Parameter Summary - KILKENNY CITY AND ENVIRONS WWTP

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
Nitrate (as N) mg/l	RS15N011990	3.04	RS15N011993	2.95		
COD-Cr mg/l	RS15N011990	15	RS15N011993	17		
Chloride mg/l	RS15N011990	23.98	RS15N011993	26.28		
Temperature °C	RS15N011990	13.7	RS15N011993	13.78		

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Total Nitrogen mg/l	RS15N011990	2.44	RS15N011993	2.18		
Dissolved Oxygen % O2	RS15N011990	100.55	RS15N011993	99.93		
Sulphate mg/l	RS15N011990	23.98	RS15N011993	25.5		
BOD - 5 days (Total) mg/l	RS15N011990	1.5	RS15N011993	1.35	2.6	-5.8
Ammonia-Total (as N) mg/l	RS15N011990	0.03	RS15N011993	0.03	0.14	0.4
Conductivity 20 C µS/cm	RS15N011990	479.48	RS15N011993	492.4		
ortho-Phosphate (as P) - unspecified mg/l	RS15N011990	0.02	RS15N011993	0.04	0.08	21.7
Suspended Solids mg/l	RS15N011990	1	RS15N011993	1		
pH pH units	RS15N011990	8.17	RS15N011993	8.17		
Nitrite (as N) mg/l	RS15N011990	0.01	RS15N011993	0.01		

Significance of Results:

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence.

The parameters which exceeded the EQS and may be causing an are: None.

Any other know impacts: No

3 OPERATIONAL REPORTS SUMMARY

3.1 Treatment Efficiency Report

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:

3.1.1 Treatment Efficiency Report Summary - KILKENNY CITY AND ENVIRONS WWTP

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)	Comment
COD	1697960.34	78320.45	95.39	
SS	1197778.64	18849.93	98.43	
TP	21281.22	1124.78	94.71	
cBOD	680357.79	13045.12	98.08	
TN	135474.6	17287.18	87.24	

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

3.2 Treatment Capacity Report Summary

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 (m3/day) - As Constructed	50904

KILKENNY CITY AND ENVIRONS WWTP	
DWF to the Treatment Plant (m3/day)	16968
Current Hydraulic Loading - annual max (m3/day)	18790
Average Hydraulic loading to the Treatment Plant (m3/day)	9925
Organic Capacity (PE) - As Constructed	77000
Organic Capacity (PE) - Collected Load (peak week)	38849
Organic Capacity (PE) - Remaining	38151
Will the capacity be exceeded in the next three years? (Yes/No)	No

3.3 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
47	Blocked Sewer	0	47

3.4 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.

3.4.1 Summary of Incidents

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Non-compliance	Dosing Pump Failure	1	No	No
Uncontrolled release	Other	1	No	Yes

3.4.2 Summary of Overall Incidents

Question	Answer
Number of Incidents in 2018	2
Number of Incidents reported to the EPA via EDEN in 2018	2
Explanation of any discrepancies between the two numbers above	N/A

3.5 Sludge / Other inputs to the 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)?[3]	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP?[2](Y/N)
Industrial / Commercial Sludge	265.45	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1387.27	Volume (m3)		5	Yes	Yes	Yes

Input type	Quantity	Unit	P.E.	% of load to WWTP	Included in Influent Monitoring (Y/N)?[3]	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP?[2](Y/N)
Industrial / Commercial Sludge	620.9	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	3646.36	Volume (m3)		5	Yes	Yes	Yes
Industrial / Commercial Sludge	1819.09	Volume (m3)		5	Yes	Yes	No
Industrial / Commercial Sludge	475.45	Volume (m3)		5	Yes	Yes	No
Industrial / Commercial Sludge	81.81	Volume (m3)		5	Yes	Yes	No
Industrial / Commercial Sludge	292.27	Volume (m3)		5	Yes	Yes	No
Industrial / Commercial Sludge	40.9	Volume (m3)		5	Yes	Yes	No
Industrial / Commercial Sludge	616.81	Volume (m3)		5	Yes	Yes	No

Input type	Quantity	Unit	P.E.	% of load to WWTP	Included in Influent Monitoring (Y/N)?[3]	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP?[2](Y/N)
Industrial / Commercial Sludge	479.09	Volume (m3)		5	Yes	Yes	No
Industrial / Commercial Sludge	177.27	Volume (m3)		5	Yes	Yes	No
Industrial / Commercial Sludge	227.72	Volume (m3)		5	Yes	Yes	No
Industrial / Commercial Sludge	951.81	Volume (m3)		5	Yes	Yes	No
Industrial / Commercial Sludge	821.81	Volume (m3)		5	Yes	Yes	No
Industrial / Commercial Sludge	340.9	Volume (m3)		5	Yes	Yes	No
Industrial / Commercial Sludge	2311.81	Volume (m3)		5	Yes	Yes	No
Industrial / Commercial Sludge	1715.45	Volume (m3)		5	Yes	Yes	No

Input type	Quantity	Unit	P.E.	% of load to WWTP	Included in Influent Monitoring (Y/N)?[3]	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP?[2](Y/N)
Industrial / Commercial Sludge	2951.36	Volume (m3)		5	Yes	Yes	No
Landfill Leachate (delivered by tanker)	1009.09	Volume (m3)		1	Yes	Yes	No
Landfill Leachate (delivered by tanker)	1152.27	Volume (m3)		1	Yes	Yes	No
Domestic /Septic Tank Sludge	342.27	Volume (m3)		1	Yes	Yes	No
Industrial / Commercial Sludge	1265	Volume (m3)		1	Yes	Yes	No
Waterworks Sludge	1802.07	Volume (m3)		1	Yes	Yes	No

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:

No Appendix Included

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 2018 (No. of events)	Total volume discharged in 2018 (m3)	Monitoring Status
SW10	250659, 156390	Yes	High	Not Meeting			Not Monitored
SW11	251756, 155427	Yes	High	Not Meeting			Not Monitored
SW12	249904, 155074	Yes	High	Not Meeting			Not Monitored
SW13	250148, 156118	Yes	High	Not Meeting			Not Monitored
SW14	250211, 156111	Yes	High	Not Meeting			Not Monitored
SW15	250225, 156121	Yes	High	Not Meeting			Not Monitored
SW16	250448, 156787	Yes	High	Not Meeting			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 2018 (No. of events)	Total volume discharged in 2018 (m3)	Monitoring Status
SW17	250481, 156639	Yes	High	Not Meeting			Not Monitored
SW18	250017, 158103	Yes	High	Not Meeting			Not Monitored
SW19	249500, 155879	Yes	High	Not Meeting			Not Monitored
SW2	251753, 155369	Yes	High	Not Meeting			Not Monitored
SW20	250762, 156052	Yes	High	Not Meeting			Not Monitored
SW21	251785, 155228	Yes	High	Not Meeting			Not Monitored
SW22	251359, 155883	Yes	High	Not Meeting			Not Monitored
SW3	250701, 156123	Yes	High	Not Meeting			Not Monitored
SW4	251284, 155868	Yes	High	Not Meeting			Not Monitored
SW5	250789, 155830	Yes	High	Not Meeting			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 2018 (No. of events)	Total volume discharged in 2018 (m3)	Monitoring Status
SW6	250707, 156228	Yes	High	Not Meeting			Not Monitored
SW7	250714, 1560776	Yes	High	Not Meeting			Not Monitored
SW8	250427, 156242	Yes	High	Not Meeting			Not Monitored
SW9	250628, 156452	Yes	High	Not Meeting			Not Monitored

4.1.2 Inspection Summary Report

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	
Is each SWO identified as non 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 / charges 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 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)	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
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	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 (e.g. Appendix X).
There is no Licence Specific Report Required in this AER Annual Review.				

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 modifications to the existing WWDL?	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	No

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

Signed: Date: 27/03/2019

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 ,

Eleanor Roche

Acting Head of Environmental Regulation.

7 APPENDIX

In the appendix include all the detailed or site specific reports that are relevant to the AER. Reports omitted from previous AERs should also be appended here.

There are no Appendices included