Annual Environmental Report

2021

Kilmacthomas

D0275-01

CONTENTS

7.1 AMBIENT MONITORING SUMMARY

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0275-01, Kilmacthomas, in Waterford 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.

No Capital or Improvement Works identified

1.2 TREATMENT SUMMARY

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

- Kilmacthomas with a Plant Capacity PE of 2110, 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
TPEFF3100D0275SW001	Kilmacthomas	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 KILMACTHOMAS - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - KILMACTHOMAS

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	12	413	200
Total Phosphorus (as P) mg/l	12	9.11	4.44
ortho-Phosphate (as P) - unspecified mg/l	12	4.80	2.57
Ammonia-Total (as N) mg/l	12	56	24
pH pH units	12	7.33	6.92
BOD, 5 days with Inhibition (Carbonaceo mg/l	12	310	152
COD-Cr mg/l	12	881	397
Hydraulic Capacity	N/A	8527	1203

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 greater 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 - TPEFF3100D0275SW002

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	13	N/A	N/A	12	Pass
Suspended Solids mg/l	35	88	N/A	13	N/A	N/A	5.56	Pass
BOD, 5 days with Inhibition (Carbonaceo mg/l	25	50	N/A	13	N/A	N/A	2.00	Pass
pH pH units	9.00	9.00	N/A	13	N/A	N/A	6.98	Pass
Ammonia-Total (as N) mg/l	5.00	6.00	N/A	13	N/A	N/A	0.245	Pass
ortho-Phosphate (as P) - unspecified mg/l	2.00	2.40	N/A	13	N/A	N/A	0.489	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)
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	13	N/A	N/A	0.643	
Faecal coliforms no./100mls	N/A	N/A	N/A	6	N/A	N/A	2398	
Total Oxidised Nitrogen (as N) mg/l	N/A	N/A	N/A	13	N/A	N/A	3.74	
Total Nitrogen mg/l	N/A	N/A	N/A	8	N/A	N/A	4.65	

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 TPEFF3100D0275SW002

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	239406, 106142	RS17M010180	No	Yes	Yes	No	Moderate
Downstream	239724, 105581	RS17M010200	No	Yes	Yes	No	Moderate

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
ortho-Phosphate (as P) - unspecified mg/l	RS17M010180	0.034	RS17M010200	0.026	0.035	-0.6
Ammonia-Total (as N) mg/l	RS17M010180	0.007	RS17M010200	0.018	0.065	16
pH pH units	RS17M010180	7.63	RS17M010200	7.44	N/A	
Total Oxidised Nitrogen (as N) mg/l	RS17M010180	3.20	RS17M010200	2.67	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
Nitrate (as N) mg/l	RS17M010180	3.20	RS17M010200	2.65	N/A	
Dissolved Oxygen % O2	RS17M010180	103	RS17M010200	100	N/A	
Total Nitrogen mg/l	RS17M010180	4.20	RS17M010200	3.70	N/A	
Dissolved Oxygen mg/l	RS17M010180	11	RS17M010200	11	N/A	
BOD, 5 days with Inhibition (Carbonaceo mg/l	RS17M010180	0.707	RS17M010200	1.00	1.5	19

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 monitoring location. 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 - KILMACTHOMAS

2.1.4.1 Treatment Efficiency Report - Kilmacthomas

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	53377	572	99
COD	139725	3527	97
SS	70435	1589	98
TP	1563	184	88
TN	N/A	1486	N/A

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

2.1.4.2 Treatment Capacity Report Summary - Kilmacthomas

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.

Kilmacthomas	
Peak Hydraulic Capacity (m^3/day) - As Constructed	1424
DWF to the Treatment Plant (m^3/day)	475
Current Hydraulic Loading - annual max (m^3/day)	8527
Average Hydraulic loading to the Treatment Plant (m^3/day)	1203
Organic Capacity (PE) - As Constructed	2110
Organic Capacity (PE) - Collected Load (peak week)[Note1]	1194
Organic Capacity (PE) - Remaining	916
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 - KILMACTHOMAS

'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)
Abatement Equipment offline	Other	1	No	No
Trigger Level Reached	SWO exceptional rainfall and overflow expected	1	Yes	Yes
Trigger Level Reached	SWO exceptional rainfall and overflow expected	1	Yes	No

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	SWO exceptional rainfall and overflow expected	1	Yes	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	4
Number of Incidents reported to the EPA via EDEN in 2021	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 (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 2021 (No. of events)	Total volume discharged in 2021 (m3)	Monitoring Status
SW002	239527, 105779	Yes	Low	Meeting	Unknown	6812	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 SWOs in the agglomeration in the year (m3)?	6812
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
D0275-SIP:01	SW1 (Primary discharge point until provision of secondary WWTP)	A	31/10/2014	Yes	Works Completed		
D0275-SIP:02	SW2 - Provision of Storm Water Overflows to comply with the criteria outlined in the DoEHLG "Procedures and Criteria in relation to Storm Water Overflows, 1995".	C	31/10/2014	Yes	Works Completed		
D0275-SIP:03	Waste Water treatment plant and ancillary works	C	31/10/2014	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
Drinking Water Abstraction Point Risk Assessment	Yes	2012	No
Pearl Mussel Report	Yes	2011	No
Small Stream Risk Score Assessment	Yes	2016	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
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	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	N/A

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

Signed: Date: 07/04/2022

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

Ambient Monitoring Summary

Annual ambient monitoring results [undertaken by WCCC] show that the discharge from the WWTP is having a low impact on the receiving waters and does not affect the EQS status of the River Mahon.

Table 1 Ambient Monitoring Results SW1u [RS17M010180]

Parameter	SW0u	SW0u	SW0u	SW0u	SW0u	SW0u	EQS (River Water Body)
Date	16-Feb-2021	20-Apr-2021	9-June-2021	15-June-2021	20-July-2021	26-Aug-2021	-
pH	7.27	7.39	-	7.63	-	-	6.0 < pH <9.0
DO%	101	107	-	103	-	-	120% > 95%ile > 80%
Temp	8.6	9.5	-	0	-	-	
BOD	0.5	2	-	0.5	-	-	High Status ≤1.3 Good Status ≤1.5
Orthophosphate (as P)	0.02	0.04	-	0.034	-	-	High Status ≤0.025 Good Status ≤0.035
Total Nitrogen (as N)	3.6	3.2	-	4.2	-	-	Not specified
Total Ammonia (as N)	0.02	0.005	-	0.005	-	-	High Status ≤0.040 Good Status ≤0.065

Table 2 Ambient Monitoring Results SW1d [RS17M010200]

Parameter	SW0d	SW0d	SW0d	SW0d	SW0d	SW0d	EQS (River Water Body)
Date	16-Feb-2021	20-Apr-2021	9-June-2021	15-June-2021	20-July-2021	26-Aug-2021	-
pH	7.3	7.72	-	7.96	-	-	6.0 < pH <9.0
DO%	101	109	-	100	-	-	120% > 95%ile > 80%
Temp	8.6	9.6	-	13.7	-	-	
BOD	0.5	1	-	1	-	-	High Status ≤1.3 Good Status ≤1.5
Orthophosphate (as P)	0.02	0.04	-	0.047	-	-	High Status ≤0.025 Good Status ≤0.035
Total Nitrogen (as N)	3.7	2.3	-	3.7	-	-	Not specified
Total Ammonia (as N)	0.01	0.02	-	0.005	-	-	High Status ≤0.040 Good Status ≤0.065

Table 3 Ambient Monitoring Results Up and Down Stream Annual Average Comparison						
Parameter	**pH**	**DO%**	**BOD**	**Orthophosphate (as P)**	**Total Nitrogen (as N)**	**Total Ammonia (as N)**
SW1u **[Annual Average]**	7.43	103.67	1.00	0.031	3.67	0.01
SW1d **[Annual Average]**	7.66	103.33	0.83	0.036	3.23	0.01
Difference between SW1u & SW2d	0.23	-0.33	-0.17	0.004	-0.43	0.00
EQS (River Water Body)	**6.0 < pH <9.0**	**120% > 95%ile > 80%**	**High Status ≤1.3** **Good Status ≤1.5**	**High Status ≤0.025** **Good Status ≤0.035**	**Not specified**	**High Status ≤0.040** **Good Status ≤0.065**