

Annual Environmental Report

2021



Kildare

D0178-01

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7.1 AMBIENT MONITORING SUMMARY

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0178-01, Kildare, in Kildare 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.

1.2 TREATMENT SUMMARY

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

- KILDARE TOWN WWTP with a Plant Capacity PE of 28000, 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
TPEFF1400D0178SW001	KILDARE TOWN WWTP	Treated – Primary	Non-Compliant	Ammonia-Total (as N) mg/l
TPEFF1400D0178SW003	KILDARE TOWN WWTP	Treated - Secondary	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 KILDARE TOWN WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - KILDARE TOWN 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
BOD, 5 days with Inhibition (Carbonaceous) mg/l	36	390	197
pH pH units	12	7.82	7.42
COD-Cr mg/l	36	1001	621.31
Suspended Solids mg/l	36	570	275.47
ortho-Phosphate (as P) - unspecified mg/l	12	6.35	4.94
Total Nitrogen mg/l	12	74	54
Total Phosphorus (as P) mg/l	35	65	9.39
Ammonia-Total (as N) mg/l	35	431	56
Hydraulic Capacity	N/A	5261	2176

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 (A) EFFLUENT MONITORING SUMMARY - TPEFF3900D0178SW001

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	36	N/A	N/A	30	Pass
BOD, 5 days with Inhibition (Carbonaceous) mg/l	25	50	N/A	36	N/A	N/A	2.86	Pass
Suspended Solids mg/l	25	62	N/A	36	N/A	N/A	6.27	Pass
pH pH units	6.00	9.00	N/A	12	N/A	N/A	7.18	Pass
Total Phosphorus (as P) mg/l	2.00	2.40	N/A	36	N/A	N/A	0.275	Pass
Ammonia-Total (as N) mg/l	2.00	2.40	N/A	36	1	1	0.434	Fail
ortho-Phosphate (as P) - unspecified mg/l	0.500	0.600	N/A	12	1	N/A	0.094	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 Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	16	
Conductivity @20°C µS/cm	N/A	N/A	N/A	12	N/A	N/A	918	

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 (INC1020815).

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.

2.1.2 (B) EFFLUENT MONITORING SUMMARY - TPEFF3900D0178SW003

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	12	N/A	N/A	15.1	Pass
BOD, 5 days with Inhibition (Carbonaceous) mg/l	25	50	N/A	12	N/A	N/A	1.1	Pass
Suspended Solids mg/l	25	62.5	N/A	12	N/A	N/A	1	Pass
pH pH units	6	9	N/A	12	N/A	N/A	7.32	Pass
Total Phosphorus (as P) mg/l	2	2.4	N/A	12	N/A	N/A	0.1	Pass
Ammonia-Total (as N) mg/l	0.4	0.8	N/A	12	N/A	N/A	0.05	Pass
ortho-Phosphate (as P) - unspecified mg/l	0.25	0.5	N/A	12	N/A	N/A	0.05	Pass

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 secondary discharge (SW003) is compliant with the ELV's set in the Wastewater Discharge Licence.

2.1.3 (A) AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF3900D0178SW001

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	263312, 205758	RS14B011260	No	No	No	No	Good
Downstream	263419, 205468	RS14B011310	No	No	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 (SW001) was not compliant with the ELV's set in the wastewater discharge licence for the following: Ammonia-Total (as N) mg/l.

The ambient monitoring results do not meet the required EQS at the upstream and downstream monitoring locations. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

Based on ambient monitoring results a very slight deterioration in Ortho-P concentration 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 the very slight 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 (B) AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF3900D0178SW003

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	273451, 210890	RS14T020100	No	No	No	No	Good
Downstream	273420, 210441	RS14T020200	No	No	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 secondary discharge (SW003) was compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results do not meet the required EQS at the upstream and downstream monitoring locations. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

Other causes of the very slight 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.

2.1.5 OPERATIONAL PERFORMANCE SUMMARY - KILDARE TOWN WWTP

2.1.5.1 Treatment Efficiency Report - KILDARE TOWN 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	152103	2207	99
TP	7010	212	97
COD	479857	22935	95
SS	212755	4848	98
TN	39189	11636	70

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

2.1.5.2 Treatment Capacity Report Summary - KILDARE TOWN 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.

KILDARE TOWN WWTP	
Peak Hydraulic Capacity (m ³ /day) - As Constructed	9450
DWF to the Treatment Plant (m ³ /day)	3150
Current Hydraulic Loading - annual max (m ³ /day)	5261
Average Hydraulic loading to the Treatment Plant (m ³ /day)	2176
Organic Capacity (PE) - As Constructed	28000
Organic Capacity (PE) - Collected Load (peak week) ^{Note1}	10875
Organic Capacity (PE) - Remaining	17125
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.

2.1.6 SLUDGE / OTHER INPUTS - KILDARE TOWN 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	No. of times activated in 2021 (No. of events)	Total volume discharged in 2021 (m ³)	Monitoring Status
TBC	272422, 211261	No	Medium	Meeting	Unknown	Unknown	Not Monitored
SW002	273410, 210764	Yes	Medium	Meeting	0	0	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 (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?	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
D0178-SIP:01	Complete improvements to comply with ELVs specified in Schedule A.2: Secondary Waste Water discharge(s) & Monitoring. Implement, in accordance with Condition 5.4.2, either (a) an alternative secondary discharge point, or (b) an alternative means of managing the existing waste water discharge volume and quality during periods of low flow in the receiving water.	C	22/12/2019	Yes	Not Started		Capital works not funded in RC3. Capital works funding post 2024 will be contingent on the project being included in the 2025-2029 investment period.

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
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: 25/02/2022

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

Kildare Town Ambient Monitoring Summary 2021

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)				Current WFD Status	Mean (mg/l)		
			Bathing Water	Drinking Water	FWPM	Shellfish		cBOD	o-Phosphate (as P)	Ammonia (as N)
Upstream Monitoring Point	263312, 205758	RS14B011260	No	No	No	No	Good	1.609	0.0292	0.133
Downstream Monitoring Point	263419, 205468	RS14B011310	No	No	No	No	Good	1.574	0.0293	0.125
<i>Difference</i>								-0.036	0.0002	-0.008
EQS								1.500	0.035	0.065
% of EQS								-2.367%	0.436%	-12.727%

Kildare Town Ambient Monitoring Summary 2021

Upstream Results						
Date		Biological Oxygen Demand	Suspended Solids	Total Ammonia N	Ortho-Phosphate P	Total Phosphorus P
		mg/l	mg/l	mg/l	mg/l	mg/l
28-Jan-2021	U/S	< 2	< 2	0.165	0.054	0.104
25-Feb-2021	U/S	2	3	0.113	< 0.025	< 0.05
24-Mar-2021	U/S	< 2	< 5	< 1	0.028	< 2
22-Apr-2021	U/S	< 2	4	0.035	< 0.025	< 0.05
20-May-2021	U/S	< 2	2	0.03	< 0.025	< 0.05
22-June-2021	U/S	< 2	< 2	0.086	0.026	0.06
22-July-2021	U/S	< 2	4	0.224	< 0.025	< 0.05
17-Aug-2021	U/S	< 2	< 2	0.041	0.042	< 0.05
22-Sep-2021	U/S	2	2	0.03	0.03	0.05
26-Oct-2021	U/S	< 2	3	0.024	0.04	0.088
23-Nov-2021	U/S	2	9	0.01	0.03	0.06
21-Dec-2021	U/S	2	11			
Mean		1.609	3.815	0.133	0.029	0.178
95%ile		2.000	9.900	0.466	0.048	0.759

Downstream Results						
Date		Biological Oxygen Demand	Suspended Solids	Total Ammonia N	Ortho-Phosphate P	Total Phosphorus P
		mg/l	mg/l	mg/l	mg/l	mg/l
28-Jan-2021	D/S	< 2	< 2	0.096	< 0.025	< 0.05
25-Feb-2021	D/S	2	5	0.101	0.05	0.07
24-Mar-2021	D/S	< 2	< 5	< 1	< 0.025	< 2
22-Apr-2021	D/S	< 2	3	0.022	< 0.025	< 0.05
20-May-2021	D/S	< 2	< 2	0.032	< 0.025	< 0.05
22-June-2021	D/S	< 2	< 2	0.031	0.026	< 0.05
22-July-2021	D/S	< 2	< 2	0.087	< 0.025	< 0.05
17-Aug-2021	D/S	< 2	6	0.045	0.033	< 0.05
22-Sep-2021	D/S	2	5	0.03	0.03	0.05
26-Oct-2021	D/S	< 2	3	0.213	0.035	0.09
23-Nov-2021	D/S	2	5	0.01	0.06	0.5
21-Dec-2021	D/S		7			
Mean		1.574	3.599	0.125	0.029	0.212
95%ile		2.000	6.450	0.460	0.055	0.957