Annual Environmental Report

2023

Kilmeague

D0233-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2023 AER

This Annual Environmental Report has been prepared for D0233-01, Kilmeague, 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.

The site has been chosen as a project trial site for the CRU Water Services Innovation funded Aerobic Granular Sludge research project. This research project proposes to validate if and how AGS grown within dedicated Irish Water AGS WWTPs can be used in non-AGS WWTPs to improve treatment performance.

1.2 TREATMENT SUMMARY

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

- Kilmeague WWTP with a Plant Capacity PE of 1400, the treatment type is 2 - Secondary treatment.

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
TPEFF1400D0233SW001	Kilmeague 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 KILMEAGUE WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - KILMEAGUE 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	11	328	226
Suspended Solids mg/l	11	1194	521
Total Nitrogen mg/l	11	134	74
pH pH units	11	8.37	7.79
COD-Cr mg/l	11	1038	691
ortho-Phosphate (as P) - unspecified mg/l	11	6.20	3.50
Ammonia-Total (as N) mg/l	11	98	47
Total Phosphorus (as P) mg/l	11	15	7.68
Hydraulic Capacity	N/A	540	154

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 - TPEFF1400D0233SW001

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)
Suspended Solids mg/l	20	50	N/A	12	N/A	N/A	11	Pass
BOD, 5 days with Inhibition (Carbonaceo mg/l	10	20	N/A	12	N/A	N/A	5.33	Pass
pH pH units	6	9	N/A	12	N/A	N/A	7.52	Pass
ortho-Phosphate (as P) - unspecified mg/l	N/A	N/A	N/A	12	N/A	N/A	1.05	
Total Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	22	
COD-Cr mg/l	N/A	N/A	N/A	12	N/A	N/A	47	

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	12	N/A	N/A	1.71	
Ammonia-Total (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	17	

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 TPEFF1400D0233SW001

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	277536, 222227	RS09L011050	No	No	No	No	N/A
Downstream	277460, 222298	RS09L011050	No	No	No	No	Good *

Note: Ambient monitoring in 2023 was carried out both upstream and downstream in accordance with Technical Amendment B.4 of the discharge licence. Upstream flows are non-existent during periods of dry weather/summer months.

** Refers to downstream LIFFEY_090 waterbody*

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 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 or downstream monitoring location. 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 BOD, Ortho-P and Ammonia 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.

The Kilmeague agglomeration is not identified as a significant pressure in the 3rd Cycle Draft Liffey and Dublin Bay Catchment Report (HA 09).

It is noted that improved drainage downstream of the discharge is required to encourage flow velocity in the ditch and avoid stagnant pooling of water.

Based on the Good WFD status of the downstream LIFFEY_090 waterbody, the discharge from the wastewater treatment plant appears not to be having an observable negative impact on the downstream Water Framework Directive status.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - KILMEAGUE WWTP

2.1.4.1 Treatment Efficiency Report - Kilmeague 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)
TN	3806	1464	62
COD	35590	3078	91
SS	26848	697	97
cBOD	11620	348	97
TP	396	112	72

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

2.1.4.2 Treatment Capacity Report Summary - Kilmeague 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.

Kilmeague WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	483
DWF to the Treatment Plant (m^3/day)	161
Current Hydraulic Loading - annual max (m^3/day)	540
Average Hydraulic loading to the Treatment Plant (m^3/day)	154
Organic Capacity (PE) - As Constructed	1400
Organic Capacity (PE) - Collected Load (peak week)[Note1]	1390
Organic Capacity (PE) - Remaining	10
Will the capacity be exceeded in the next three years? (Yes/No)	Yes

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 - KILMEAGUE WWTP

'Other inputs' to the waste water treatment plant are summarised in the 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 2023.			

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	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Emergency overflow caused by ragging or blocking	No	Yes
Uncontrolled release	SWO exceptional rainfall and overflow expected	No	Yes
Uncontrolled release	SWO exceptional rainfall and overflow expected	No	Yes

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

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2023	4
Number of Incidents reported to the EPA via EDEN in 2023	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 2023 (No. of events)	Total volume discharged in 2023 (m^3)	Monitoring Status
SW001	277496, 222276	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SW002	277495, 222274	Yes	Low Significance	Not Meeting Criteria	Unknown	708	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 wastewater discharge by metered SWOs during the year (m^3)?	708
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	Yes
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?	Yes

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
D0233-SIP:01	Manhole at entrance to WWTP to be discontinued or converted to SWO	A	30/06/2019	Yes	Works Completed		
D0233-SIP:02	Relocate the primary discharge point as agreed in Condition 4.18	C	31/12/2014	Yes	Not Started		
D0233-SIP:03	The Primary Discharge Point (SW1-P)	A	31/12/2014	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
D0233-SIP:04	Upgrade the WWTP to provide adequate hydraulic and biological treatment	C	31/12/2014	Yes	Works Completed		

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
	capacity as agreed in Condition 4.18						
D0233-SIP:05	Upgrading of Storm Water Overflows to comply with the criteria outlined in the DoECLG "Procedures and Criteria in relation to Storm Water Overflows, 1995"	C	31/12/2013	Yes	Not Started		

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

N/A

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	Included in this AER
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?	N/A
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: 28/02/2024

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

Head of Environmental Regulation.

7 APPENDIX

Appendix
Appendix 7.1 - Ambient Monitoring Summary

Kilmeague Ambient Monitoring Summary 2023

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish National Grid Reference (Easting, Northing)	EPA Feature Coding Tool code	Bathing Water	Drinking Water	FWPM	Shellfish	Current WFD Status	cBOD	o-Phosphate (as P)	Ammonia (as N)
Upstream Monitoring Point	277536E, 222227N	RS09L011050					N/A	1.483	0.051	0.141
Downstream Monitoring Point	277460E, 222298N	RS09L011050	No	No	No	No	Good*	5.233	0.699	8.549
Difference								*3.750*	*0.648*	*8.408*
EQS								1.500	0.035	0.065
% of EQS								250.00%	1850.68%	12934.98%

Note: Ambient monitoring in 2023 was carried out both upstream and downstream in accordance with Technical Amendment B Schedule B.4 of the discharge licence.

Upstream flows are non-existent during periods of dry weather/summer months.

** Refers to downstream LIFFEY_090 waterbody*

Kilmeague Ambient Monitoring Summary 2023

Upstream Results											
Station Name	Sample Date	Temperature	pH	BOD	COD	Suspended solids	Total Nitrogen	Total Phosphorus	Ammonia	Ortho-Phosphate	DO
		Degrees C	pH units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Upstream	18-Jan-2023		7.71	2.2	8.5	4.4	5.9	0.023	0.12	0.02	10.29
Upstream	16-Feb-2023	15.2	7.8	1	5.3	1.6	4.69	0.068	0.12	0.06	10.19
Upstream	23-Mar-2023	17.2	7.66	1	16.6	22.8	4.41	0.072	0.3	0.05	9.93
Upstream	21-Apr-2023	18.5	7.64	0.9	14.1	10	3.43	0.098	0.09	0.07	8.91
Upstream	24-May-2023	20.1	7.52	2.8	< 15	108.8	1.97	0.096	0.16	0.09	8.9
Upstream	27-Nov-2023	20.1	7.77	< 1	8.7	1.2	6.62	0.062	0.13	0.05	8.88
Upstream	6-Dec-2023	20.2	7.99	1	< 15	1.6	8.1	0.027	0.07	0.02	9.92
	Mean	**18.55**	**7.73**	**1.48**	**10.64**	**21.49**	**5.02**	**0.06**	**0.141**	**0.051**	**9.57**
	95%ile	**20.18**	**7.93**	**2.65**	**16.10**	**83.00**	**7.66**	**0.10**	**0.258**	**0.084**	**10.26**

Downstream Results											
Station Name	Sample Date	Temperature	pH	BOD	COD	Suspended solids	Total Nitrogen	Total Phosphorus	Ammonia	Ortho-Phosphate	DO
		Degrees C	pH units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Downstream	18-Jan-2023		7.48	6.3	42.5	13.2	17.7	0.43	15.6	0.24	8.14
Downstream	16-Feb-2023	13.9	7.69	4.5	10.2	2.4	3.3	0.171	1.02	0.13	10.53
Downstream	23-Mar-2023	16.2	7.38	4.1	20.8	5.2	7.77	0.772	2.72	0.64	8.55
Downstream	21-Apr-2023	17.1	7.35	4.8	58.7	28.4	16.8	1.85	10.14	1.35	6.3
Downstream	24-May-2023	18.4	7.35	6.9	54.5	35.6	26	1.66	25.3	1.24	8.35
Downstream	21-June-2023	20.2	7.18	6	58.9	2	21.2	1.16	22.5	0.54	7.04
Downstream	12-July-2023	20.2	7.26	8	35.9	8	17.6	1.79	14.9	1.09	9.56
Downstream	16-Aug-2023	20.1	7.53	6.7	46.8	12.4	10.2	1.69	5.83	1.26	8.74
Downstream	19-Sep-2023	13.4	7.63	4	30.5	2	3.78	0.212	0.83	0.15	8.98
Downstream	18-Oct-2023		8.02	0.8	< 15	2.4	4.42	0.15	1.12	0.12	8.85
Downstream	27-Nov-2023		7.78	2.5	19.4	2.8	6.69	0.793	1.24	0.6	8.06
Downstream	6-Dec-2023		7.92	8.2	31.4	10.4	8.96	1.42	1.39	1.03	9.24
	Mean	**17.44**	**7.55**	**5.23**	**35.02**	**10.40**	**12.04**	**1.01**	**8.549**	**0.699**	**8.53**
	95%ile	**20.20**	**7.97**	**8.09**	**58.79**	**31.64**	**23.36**	**1.82**	**23.760**	**1.301**	**10.00**

Note: Where the concentration in the result is less than the limit of detection (LOD), a value of LOD/sqrt(2) was used in calculating the mean and 95%ile concentrations.