Annual Environmental Report

2018

UISCE ÉIREANN : IRISH WATER

Lower Liffey Valley Regional Sewerage Scheme -

D0004-02

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 AER

This Annual Environmental Report has been prepared for D0004-02, Lower Liffey Valley Regional Sewerage Scheme, in Kildare 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 Lower Liffey Valley Regional Sewerage Scheme WWTP Leixlip with a Plant Capacity PE of 150,000. The treatment process includes the following:

1.2.1 Lower Liffey Valley Regional Sewerage Scheme WWTP Leixlip

Treatment type	Yes / No	Details
Preliminary Treatment	Yes	Screening and grit removal
Primary Treatment	Yes	Primary settlement tanks
Secondary Treatment	Yes	Diffused air activated sludge
Nutrient Removal	Yes	Phosphorous - chemical, Nitrogen - biological
Tertiary Treatment	Yes	Sand filtration

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 Lower Liffey Valley Regional Sewerage Scheme WWTP Leixlip

Compliance Status	
Were all parameters compliant for Lower Liffey Valley Regional Sewerage Scheme WWTP Leixlip treatment plant	Yes
Where non compliant 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
Lower Liffey Valley Regional Sewerage Scheme WWTP Leixlip	Cake Sludge	7653.76	Weight (Tonnes)	21	Sewage Sludge Handling Facility, Osberstown, Naas

Annual Statement of Measures

There were no major capital or operational changes undertaken.

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 - Lower Liffey Valley Regional Sewerage Scheme WWTP Leixlip

Parameters	Number of Samples	Annual Max	Annual Mean
Total Phosphorus (as P) mg/l	23	6.09	3.52
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	22	840	271.26
COD-Cr mg/l	23	1458	486.55
Suspended Solids mg/l	23	1036	244.39
Total Nitrogen mg/l	23	63	45.02
Hydraulic Capacity		51669	30131

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 treatment 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 - Lower Liffey Valley Regional Sewerage Scheme WWTP Leixlip

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	0	0	0	24	0	0	13.85	N/A
True Colour PtCo Units	0	0	0	14	0	0	27.49	N/A
COD-Cr mg/l	125	250	0	28	0	0	18.98	Pass
Appearance (on Sampling) Descriptive	0	0	0	102	0	0	0	N/A
Nitrite (as N) mg/l	0	0	0	28	0	0	0.84	N/A
ortho-Phosphate (as P) - unspecified mg/l	0	0	0	28	0	0	0.13	N/A
Total Nitrogen mg/l	0	0	0	28	0	0	16.08	N/A
Total Phosphorus (as P) mg/l	2	2.4	0	27	0	0	0.2	Pass
Nitrate (as N) mg/l	0	0	0	28	0	0	13.65	N/A

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)
Fluoride mg/l	160	192	0	28	0	0	2.19	Pass
Suspended Solids mg/l	35	87.5	0	28	0	0	3.01	Pass
Fats, Oils & Greases mg/l	0	0	0	3	0	0	2.8	N/A
pH pH units	6 to 9	0	0	118	0	0	7.21	Pass
Ammonia-Total (as N) mg/l	0	0	0	28	0	0	0.26	N/A
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	5	10	0	26	0	0	1.7	Pass

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.

2.3 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 - Lower Liffey Valley Regional Sewerage Scheme WWTP Leixlip

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	301516, 235804	TPEFF1400D0004SW001	No	No	No	No	Unassigned
Downstream	302295, 235190	TPEFF1400D0004SW001	No	No	No	No	Unassigned

2.3.2 Ambient Monitoring Parameter Summary - Lower Liffey Valley Regional Sewerage Scheme WWTP Leixlip

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
Total Nitrogen mg/l	RS09L011940	2.01	RS09L012040	3.1		
ortho-Phosphate (as P) - unspecified mg/l	RS09L011940	0.052	RS09L012040	0.064	0.075	16.7
BOD - 5 days (Total) mg/l	RS09L011940	1.27	RS09L012040	1.2	2.6	-2.6
pH pH units	RS09L011940	7.87	RS09L012040	7.86		

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Dissolved Oxygen % Saturation	RS09L011940	92.61	RS09L012040	93.14		
Total Phosphorus (as P) mg/l	RS09L011940	0.12	RS09L012040	0.15		
Dissolved Oxygen mg/l	RS09L011940	9.75	RS09L012040	9.02		
Nitrate (as N) mg/l	RS09L011940	2.07	RS09L012040	3.05		
Ammonia-Total (as N) mg/l	RS09L011940	0.097	RS09L012040	0.122	0.14	17.3
Suspended Solids mg/l	RS09L011940	3.4	RS09L012040	3.33		
True Colour PtCo Units	RS09L011940	41.63	RS09L012040	38.96		
COD-Cr mg/l	RS09L011940	14.15	RS09L012040	18.77		
Nitrite (as N) mg/l	RS09L011940	0.09	RS09L012040	0.03		
Total Oxidised Nitrogen (as N) mg/l	RS09L011940	2.28	RS09L012040	3.04		
Temperature °C	RS09L011940	12.03	RS09L012040	12.83		
Fluoride mg/l	RS09L011940	0.18	RS09L012040	0.45		

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.

Where the ambient monitoring results meet the EQS this 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 negative impact on the water quality.

Based on the effluent compliance results, it is considered that the discharge from the WWTP has no observable negative impact on the Water Framework Directive status.

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 - Lower Liffey Valley Regional Sewerage Scheme WWTP Leixlip

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
SS	2854113.12	34047.32	98.81
TP	41060.91	2260.69	94.49
cBOD	3158528.89	18870.15	99.4
TN	525720.6	181833.22	65.41

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.

Lower Liffey Valley Regional Sewerage Scheme WWTP Leixlip	
Peak Hydraulic Capacity (m^3/day) - As Constructed	65405
DWF to the Treatment Plant (m^3/day)	48500
Current Hydraulic Loading - annual max (m^3/day)	51669
Average Hydraulic loading to the Treatment Plant (m^3/day)	30131
Organic Capacity (PE) - As Constructed	150000
Organic Capacity (PE) - Collected Load (peak week)	130829
Organic Capacity (PE) - Remaining	19171
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
32	Blocked Sewer	2	30

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)
Spillage	Other	1	No	Yes
Spillage	Other	1	No	Yes
Uncontrolled release	Plant or equipment breakdown at WWTP	1	No	No
Other	Plant or equipment maintenance at WWTP	1	No	Yes
Other	Plant or equipment breakdown at WWTP	1	No	Yes
Uncontrolled release	Inadequate Operational Procedures	1	No	Yes

3.4.2 Summary of Overall Incidents

Question	Answer
Number of Incidents in 2018	6
Number of Incidents reported to the EPA via EDEN in 2018	6
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)?	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP?(Y/N)
Domestic /Septic Tank Sludge	6772.55	Weight (Tonnes)	82466	0.15	Yes	Yes	Yes
Landfill Leachate (delivered by tanker)	23457.68	Weight (Tonnes)	285639	0.52	Yes	Yes	Yes
Waterworks Sludge	104.52	Weight (Tonnes)	1273	0	Yes	Yes	Yes

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 2018 (No. of events)	Total volume discharged in 2018 (m^3)	Monitoring Status
SW002	301546, 235839	Yes	Low	Meeting	0	0	Monitored
SW003	288868, 239585	Yes	Low	Meeting			Not Monitored
SW004	294412, 238713	Yes	Low	Meeting			Not Monitored
SW005	297173, 233844	Yes	Low	Not Meeting			Not Monitored
SW006	298219, 233796	Yes	Low	Meeting			Not Monitored
SW007	297585, 233309	Yes	Low	Not Meeting			Not Monitored
SW008	297584, 233306	Yes	Low	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 (m^3)	Monitoring Status
SW009	297379, 232911	Yes	Low	Meeting			Not Monitored
SW010	298650, 233375	Yes	Low	Meeting			Not Monitored
SW011	298649, 233370	Yes	Low	Meeting			Not Monitored
SW012	296936, 232433	Yes	Low	Meeting			Not Monitored
SW013	301155, 235871	Yes	Low	Not Meeting			Not Monitored
SW014	292834, 229614	Yes	Low	Meeting			Not Monitored
SW015	300413, 235863	Yes	Low	Not Meeting			Not Monitored
SW016	301653, 235836	Yes	Low	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 (m^3)?	Unknown - All SWOs Not Monitored

SWO Summary	
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?	No
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 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
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		No	Not Started		The improvement programme will be reviewed by IW to assess the works required to comply with the licence condition on a prioritised basis.
Waste Water capacity improvement works	C	07/05/2020	No	Works Completed		WWTW upgraded to 150,000pe capacity to meet Schedule A ELVs of license
Waste Water Treatment plant improvement and ancillary works to meet the requirements of Schedule A.1 and condition 3.4	C	31/12/2019	No	Works Completed		WWTW upgraded to 150,000pe capacity to meet Schedule A ELVs of license

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
D0004-IP:12	It is planned to provide remote access to five of the main pump stations in the agglomeration, this will enhance the ability to monitor and control the network.	Improved Operational Control	12/31/2018	Work complete in four of the stations; it was not possible to connect the fifth.
D0004-IP:13	Drainage Area Plan	Other	12/31/2022	A Drainage Area Plan is currently underway. Stage 1 has been completed and the Plan is currently in Stage 2 (surveying). Flow monitoring, manhole surveys and pumping station surveys are currently ongoing. The target date for Stage 4 completion is 2020. The DAP will encompass both Storm Water Overflow and network assessments and will therefore comprehensively address the need to carry out separate Storm Water Overflow or Sewer Integrity Assessments.

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	2014	No	
Toxicity/Leachate Management	Yes	2014	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
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?	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:

Date: 19/03/2019

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

There are no Appendices included