Annual Environmental Report

2019

Lismore

D0176-01

CONTENTS

7.1 AMBIENT MONITORING SUMMARY

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2019 AER

This Annual Environmental Report has been prepared for D0176-01, Lismore, 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.

None identified or planned for the next three years.

1.2 TREATMENT SUMMARY

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

- Lismore WWTP with a Plant Capacity PE of 3000, 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
TPEFF3100D0176SW001	Lismore WWTP	Treated	Compliant	N/A

1.4 LICENCE SPECIFIC REPORTING INCLUDED IN AER

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

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 LISMORE WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - LISMORE 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
COD-Cr mg/l	12	658	228.33
Suspended Solids mg/l	12	317	82.61
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	371	124.88
Total Phosphorus (as P) mg/l	12	10.3	3.97
Total Nitrogen mg/l	12	77.2	36.2
Hydraulic Capacity	N/A	1726	711

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’. 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.

2.1.2 EFFLUENT MONITORING SUMMARY - TPEFF3100D0176SW001

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)
COD-Cr mg/l	125	250	N/A	12	N/A	N/A	11.02	Pass
Suspended Solids mg/l	35	87.5	N/A	12	1	N/A	3.89	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	20	40	N/A	12	N/A	N/A	1.4	Pass
pH pH units	9	9	N/A	12	N/A	N/A	7.66	Pass
Ammonia-Total (as N) mg/l	5	6	N/A	12	N/A	N/A	0.26	Pass
ortho-Phosphate (as P) - unspecified mg/l	3	3.6	N/A	12	N/A	N/A	0.37	Pass
Total Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	13.99	
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.69	

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.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF3100D0176SW001

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 Status
Upstream	204807, 98767	RS18B022600	No	No	No	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
BOD - 5 days (Total) mg/l	RS18B022600	1.2	RS18B022700	1.4	1.5	13.3
Ammonia-Total (as N) mg/l	RS18B022600	0.03	RS18B022700	0.024	0.065	-9.5

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	RS18B022600	0.03	RS18B022700	0.031	0.035	2.5
Magnesium - unspecified mg/l	RS18B022600	4.55	RS18B022700			
Lead - unspecified µg/l	RS18B022600	0.26	RS18B022700			
Chromium - unspecified µg/l	RS18B022600	1	RS18B022700			
Dissolved Oxygen % Saturation	RS18B022600	99.25	RS18B022700	99.8		
Manganese - unspecified µg/l	RS18B022600	19	RS18B022700			
Dissolved Organic Carbon mg/l	RS18B022600	5.45	RS18B022700			
Dissolved Oxygen mg/l	RS18B022600	10.925	RS18B022700	10.96		
Boron - unspecified µg/l	RS18B022600	14	RS18B022700			
Aluminium - unspecified µg/l	RS18B022600	145	RS18B022700			
Copper - unspecified µg/l	RS18B022600	1.5	RS18B022700			
True Colour mg/litre Pt Co	RS18B022600	40.625	RS18B022700	38.2		

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Total Hardness (as CaCO3) mg/l	RS18B022600	128.125	RS18B022700	92.2		
Potassium - unspecified mg/l	RS18B022600	2	RS18B022700			
Sodium - unspecified mg/l	RS18B022600	9.7	RS18B022700			
Suspended Solids mg/l	RS18B022600	6.5	RS18B022700	9.5		
Nitrite (as N) µg/l	RS18B022600	9.265	RS18B022700	12.1		
Barium - unspecified µg/l	RS18B022600	12.5	RS18B022700			
Chloride mg/l	RS18B022600	24.275	RS18B022700	21.14		
Alkalinity-total (as CaCO3) mg/l	RS18B022600	105.75	RS18B022700	69.2		
Calcium - unspecified mg/l	RS18B022600	30.5	RS18B022700			
Cadmium - unspecified µg/l	RS18B022600	0.03	RS18B022700			
Conductivity @25°C µS/cm	RS18B022600	321.625	RS18B022700	243		
Iron - unspecified µg/l	RS18B022600	290	RS18B022700			

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Nickel - unspecified µg/l	RS18B022600	1.4	RS18B022700			
pH pH units	RS18B022600	7.863	RS18B022700	7.72		
Total Nitrogen mg/l	RS18B022600	3.343	RS18B022700			
Nitrate (as N) mg/l	RS18B022600	3.275	RS18B022700	3.32		
Temperature °C	RS18B022600	11.188	RS18B022700	11.64		
Uranium - unfiltered µg/l	RS18B022600	0.28	RS18B022700			
Total Phosphorus (as P) mg/l	RS18B022600	0.047	RS18B022700			
Zinc - unspecified µg/l	RS18B022600	4.65	RS18B022700			
Total Oxidised Nitrogen (as N) mg/l	RS18B022600	3.3	RS18B022700	3.32		

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. 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 - LISMORE WWTP

2.1.4.1 Treatment Efficiency Report - Lismore 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)
SS	20409	1087	95
cBOD	30850	390	99
COD	56407	3079	95
TP	980	192	80
TN	8944	3910	56

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

2.1.4.2 Treatment Capacity Report Summary - Lismore 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.

Lismore WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	2070
DWF to the Treatment Plant (m^3/day)	690
Current Hydraulic Loading - annual max (m^3/day)	1726

Lismore WWTP	
Average Hydraulic loading to the Treatment Plant (m^3/day)	711
Organic Capacity (PE) - As Constructed	3000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	2148
Organic Capacity (PE) - Remaining	852
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 - LISMORE 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 is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
18	Blocked Sewer	1	17

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)
Uncontrolled release	Blocked Sewer	1	No	Yes
Spillage	Blocked Sewer	1	No	Yes
Uncontrolled release	Inadequate Infrastructure	1	Yes	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2019	3
Number of Incidents reported to the EPA via EDEN in 2019	3
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	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 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
SW002	204855, 98755	Yes	Low	Meeting	Unknown	Unknown	Not Monitored

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	32890
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 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
D0176-SIP:01	Lismore Sewerage Scheme Waste Water Treatment Plant upgrade	C	31/03/2014	Yes	Works Completed		
D0176-SIP:02	Provision of storm water holding tank and upgrade of storm water overflow (associated with SW002) to comply with the DoECLG 'Procedures and Criteria in relation to Storm Water Overflows, 1995'.	C	31/03/2014	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 / or any Operational Improvements	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
Priority Substances Assessment	Yes	2014	No	

5.1 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2014

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 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	Change to Ambient monitoring locations: Downstream
Have these processes commenced?	No
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	Yes

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

Signed: Date: 12/03/2020

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

The Lismore WWTP discharges to River Blackwater adjacent to the plant.

The WWDL requires bi-monthly Ambient Monitoring of the Receiving Waters at:

- RS1 8B022600 – Lismore Bridge
- RS1 8B022700 – 2km d/s Lismore Bridge

These two locations form part of the EPA River Monitoring locations and therefore the EPA data has been used in this assessment.

Lismore Ambient Monitoring Bi Monthly

SW1u EPA: RS18B022600

]	LOCATION_CODE	code	Stn+Location	River	DATE_COLLECTED	pH	Dissolved Oxygen	BOD	Temperature	Ortho-Phosphate	Nitrate	Nitrite	Ammonia	Total Oxidised Nitrogen
							% sat	mg/l	oC	mg/l	mg/l	mg/l	mg/l	mg/l
	RS18B022600		Lismore Bridge	Blackwater	29-Jan-19	7.4	109.2	1.1	6.8	0.033	3.1	7.91	180	3.2
	RS18B022600		Lismore Bridge	Blackwater	12-Feb-19	7.7	116.8	1.3	8.3	0.027	4	10.3	110	4
	RS18B022600		Lismore Bridge	Blackwater	05-Mar-19	7.6	124.4	1.3	6.9	0.052	2.8	6.89		2.8
	RS18B022600		Lismore Bridge	Blackwater	09-Apr-19	8.3	112		10.1	0.017	3.8			3.8
	RS18B022600		Lismore Bridge	Blackwater	08-May-19	8	105	1.4	11.3	0.011	3.6	6.49		3.6
	RS18B022600		Lismore Bridge	Blackwater	11-Jun-19	8	98	1.1	13.8	0.03	3.2	13.2		3.3
	RS18B022600		Lismore Bridge	Blackwater	02-Jul-19	8.1	100.9		17.2	0.033	3.7	10.8		3.7
	RS18B022600		Lismore Bridge	Blackwater	20-Aug-19	7.8	101	1	15.1	0.038	2			2
					Average	7.9	108.4	1.2	11.2	0.0	3.3		145.0	3.3

SW1d EPA

SAMPLE_NO	LOCATION_CODE	code	Stn+Location	River	DATE_COLLECTED	pH	Dissolved Oxygen	BOD	Temperature	Ortho-Phosphate	Nitrate	Nitrite	Ammonia	Total Oxidised Nitrogen
							% sat	mg/l	oC	mg/l	mg/l		mg/l	mg/l
	RS18B022700		2km d/s Lismore Br	Blackwater	12-Feb-19	7.5	120.2		8.9	0.023	4.5		-	4.5
	RS18B022700		2km d/s Lismore Br	Blackwater	09-Apr-19	8.2	122.6		9.3	0.019	4.1		-	4.1
	RS18B022700		2km d/s Lismore Br	Blackwater	11-Jun-19	7.9	98.9	1.7	13.4	0.028	3.1		0.027	3.1
	RS18B022700		2km d/s Lismore Br	Blackwater	20-Aug-19	7.8	107.1		14.3	0.034	2.4		-	2.4
					-	-	-	-	-	-	-		-	-
					-	-	-	-	-	-	-		-	-
														-
					Average	7.85	112.20	1.70	11.48	0.026	3.525		0.027	3.53

Figure 7.1.1 *– Lismore WWTP Ambient Monitoring Results 2019 [Source EPA]*

Table 7.1.2 Ambient Monitoring Results SW1u							
Parameter	**SW0u**	**SW0u**	**SW0u**	**SW0u**	**SW0u**	**SW0u**	**EQS (River Water**
Date	29/01/2019	12/02/2019	05/03/2019	09/04/2019	08/05/2019	11/06/2019	-
pH	7.4	7.7	7.6	8.3	8	8	**6.0 < pH <9.0**
DO%	109.2	116.8	124.4	112	105	98	**120% > 95%ile > 80%**
Temp	6.8	8.3	6.9	10.1	11.3	13.8	
BOD	1.1	1.3	1.3	0	*0.5*	1.1	**High Status ≤1.3** **Good Status ≤1.5**
Orthophos phate (as P)	0.033	0.027	0.052	0.017	0.011	0.03	**High Status ≤0.025** **Good Status ≤0.035**
Oxideised	3.2	4	2.8	3.8	3.6	3.3	**Not specified**
Total Ammonia (as N)	180	110	0	0	0	0	**High Status ≤0.040** **Good Status ≤0.065**

Table 7.1.3 Ambient Monitoring Results SW1d							
Parameter	**SW0d**	**SW0d**	**SW0d**	**SW0d**	**SW0d**	**SW0d**	**EQS (River Water Body)**
Date	12/02/2019	09/04/2019	11/06/2019	20/08/2019	-	-	-
pH	7.5	8.2	7.9	7.8	-	-	**6.0 < pH <9.0**
DO%	120.2	122.6	98.9	107.1	-	-	**120% > 95%ile > 80%**
Temp	8.9	9.3	13.4	14.3	-	-	
BOD	0	0	1.7	0	-	-	**High Status ≤1.3** **Good Status ≤1.5**
Orthophos phate (as P)	0.023	0.019	0.028	0.034	-	-	**High Status ≤0.025** **Good Status ≤0.035**
Oxideised	4.5	4.1	3.1	2.4	-	-	**Not specified**
Total Ammonia (as N)	-	-	0.027	-	-	-	**High Status ≤0.040** **Good Status ≤0.065**

Table 7.1.4 Ambient Monitoring Results Up and Down Stream Annual Average Comparison						
Parameter	**pH**	**DO%**	**BOD**	**Orthophosphate (as P)**	**Total Oxidised Nitrogen**	**Total Ammonia (as N)**
SW1u **[Annual Average]**	7.83	110.90	0.88	0.03	3.45	48.33
SW1d **[Annual Average]**	7.85	112.20	0.43	0.03	3.53	0.03
Difference between SW1u & SW2d	-0.02	-1.30	0.46	0.00	-0.07	48.31
EQS (River Water Body)	**6.0 < pH <9.0**	**120% > 95%ile > 80%**	**High Status ≤1.3**	**High Status ≤0.025**	**Not specified**	**High Status ≤0.040**
			Good Status ≤1.5	**Good Status ≤0.035**		**Good Status ≤0.065**

Figures 7.1.2 to 7.1.4 *– Lismore WWTP Ambient Monitoring – Comparison of Upstream and Downstream Results*