Annual Environmental Report

2023

Ballina

D0016-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2023 AER

This Annual Environmental Report has been prepared for D0016-01, Ballina, in Mayo 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)

- Ballina (Mayo) WWTP with a Plant Capacity PE of 25000, 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
TPEFF2200D0016SW001	Ballina (Mayo) WWTP	Treated	Non-Compliant	Total Nitrogen mg/l

1.4 LICENCE SPECIFIC REPORTING

Assessment / Report
Toxicity of Final Effluent

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 BALLINA (MAYO) WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - BALLINA (MAYO) 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
Total Nitrogen mg/l	11	73	30
BOD, 5 days with Inhibition (Carbonaceo mg/l	11	768	225
Suspended Solids mg/l	11	380	151
COD-Cr mg/l	11	1254	514
Total Phosphorus (as P) mg/l	3	5.62	4.44
Hydraulic Capacity	N/A	17136	2613

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 - TPEFF2200D0016SW001

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	11	N/A	N/A	25	Pass
Suspended Solids mg/l	35	87.5	N/A	11	N/A	N/A	5.50	Pass
BOD, 5 days with Inhibition (Carbonaceo mg/l	25	50	N/A	11	N/A	N/A	3.52	Pass
Total Nitrogen mg/l	15	18	N/A	11	1	1	9.49	Fail
Ammonia-Total (as N) mg/l	10	12	N/A	11	N/A	N/A	0.162	Pass
pH pH units	9	9	N/A	11	N/A	N/A	7.57	Pass
ortho-Phosphate (as P) - unspecified mg/l	5	6	N/A	11	N/A	N/A	0.949	Pass
E. Coli MPN/100ml	N/A	N/A	N/A	2	N/A	N/A	20726	

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)
Enterococci (Intestinal) cfu/100ml	N/A	N/A	N/A	2	N/A	N/A	1162	
Conductivity @20°C µS/cm	N/A	N/A	N/A	11	N/A	N/A	736	
Nitrite (as N) mg/l	N/A	N/A	N/A	11	N/A	N/A	0.130	
Nitrate (as N) mg/l	N/A	N/A	N/A	11	N/A	N/A	8.78	
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	11	N/A	N/A	1.07	
Faecal coliforms no./100mls	N/A	N/A	N/A	2	N/A	N/A	N/A	

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):

Refer to Incident Section of Report.

Significance of Results:

The WWTP is non compliant with the ELVs set in the Wastewater Discharge Licence. The impact on receiving waters is assessed further in Section 2.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF2200D0016SW001

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

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 coastal/transitional ambient monitoring results do not meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence for the following: Total Nitrogen mg/l.

The ambient monitoring results do not meet the required EQS at the upstream and the 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 deterioration in BOD mg/l, concentrations downstream of the effluent discharge is noted.

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 - BALLINA (MAYO) WWTP

2.1.4.1 Treatment Efficiency Report - Ballina (Mayo) 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)
TP	8961	3228	64
TN	73139	28735	61
cBOD	544505	10647	98
COD	1242482	75726	94
SS	363723	16662	95

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

2.1.4.2 Treatment Capacity Report Summary - Ballina (Mayo) 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.

Ballina (Mayo) WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	13620
DWF to the Treatment Plant (m^3/day)	4540
Current Hydraulic Loading - annual max (m^3/day)	17136

Ballina (Mayo) WWTP	
Average Hydraulic loading to the Treatment Plant (m^3/day)	2613
Organic Capacity (PE) - As Constructed	25000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	14527
Organic Capacity (PE) - Remaining	10473
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 - BALLINA (MAYO) 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)
Landfill Leachate (delivered by sewer network)	65286	Volume (m3)	795	7	Yes	No	Yes
Other	11168	Volume (m3)	135	1.1	Yes	No	No

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
2	Water Pollution	0	2

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)
Abatement Equipment offline	Screen maintenance issue	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2023	1
Number of Incidents reported to the EPA via EDEN in 2023	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 2023 (No. of events)	Total volume discharged in 2023 (m3)	Monitoring Status
SW2	125065,319275	Yes	Low Significance	Not Meeting Criteria	Unknown	Unknown	Monitored
SW003	124978,319144	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SW4	124617,318768	Yes	Low Significance	Not Meeting Criteria	Unknown	Unknown	Not Monitored
SW5	124676,318755	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SW6	123870,316709	Yes	Low Significance	Not Meeting Criteria	Unknown	Unknown	Not Monitored
SW7	123299,321077	Yes	Low Significance	Not Meeting Criteria	Unknown	Unknown	Not Monitored

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 (m3)	Monitoring Status
SW8	124599,318714	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SW9	124855,319021	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	124855,319021	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SW010	125420,319502	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SW006	124858,318960	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	170651,172867	Yes	Low Significance	Not Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	170277,173040	Yes	Low Significance	Not Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	124015,317622	Yes	Low Significance	Not Meeting Criteria	Unknown	Unknown	Monitored
TBC	-,-	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	TBC
TBC	-,-	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	TBC

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 (m3)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	
The SWO Assessment included the requirements of relevant of WWDL schedules?	Unknown
Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?	Unknown

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
D0016-SIP:01	Upgrade SWOs to comply with DoE criteria (SW2)	C	31/12/2011	Yes	Works Completed		
D0016-SIP:02	Upgrading of pumping station at Bachelor's Walk (SW2)	C	01/05/2009	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	Included in this AER
D0016-01-Toxicity of Final Effluent	Yes	Yes

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	N/A
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	Yes

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

Signed: Date: 04/03/2024

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
Appendix 7.2 - Toxicity of Final Effluent

Ballina Ambient Points

Ambient Monitoring Point from WWDL (or as agreed with EPA)	*Irish Grid Reference*	EPA Feature Coding Tool code	Receiving Waters Designation (Y/N)				WFD Status
			Bathing Water	Drinking Water	FWPM	Shellfish	
Upstream Monitoring Point	125292,319885	TW22005298MY1012	No	No	No	No	Moderate
Downstream Monitoring Point	125292, 320420	TW22005298MY1013	No	No	No	No	Moderate

Ambient Impact Assessment Table

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS (Mean)	% EQS
cBOD mg/l	TW22005298MY1012	10.87	TW22005298MY1013	10.72	1.5	-10%
Ammonia (as N) mg/l	TW22005298MY1012	0.02	TW22005298MY1013	0.02	0.065	0%

Ballina D0016-01 Ambient Monitoring Data

				Parameter	Calcium	Ammonia	Chloride	Conductivity	Enterococci	Faecal Coliforms	Fluoride	Iron	Magnesium	Nitrate	pH	Potassium	Sodium	Sulphate	Dissolved Oxygen	Biological Oxygen Demand	Dissolved Oxygen	Temperature	Total Nitrogen	Total Hardness	E Coli
Station	Station Reference	River Basin D	Sample Date		mg/l	mg/l N	mg/l	µS/cm	cfu/100mls	no./100mls	mg/l	µg/l	mg/l	mg/l N	pH units	mg/l	mg/l	mg/l	mg/l	mg/l	% Saturation	Degrees C	mg/l N	mg/l CaCO3	MPN/100mls
Ballina Upstream	TW22005298MY1012	Western	7-Mar-2023	-	76.664	<0.05	24.5	416.9			0.2	380	5.221	<1	8.2	1.627	13.146	23.2	11.34	1.8		8.7	<1	212.93009	
Ballina Downstream	TW22005298MY1013	Western	7-Mar-2023	-	80.47	<0.05	397	1660			0.2	320	30.189	<1	8.1	9.056	218.13	68.8	11.26	1.6		8.6	<1	325.25189	
Ballina Downstream	TW22005298MY1013	Western	22-Aug-2023	-	54.7	<0.02	26.1	304	76	411	<0.1	447	4.7	<0.25	8.2	1	10	34.3	10.23	<1	108.01	18	1.1	157	365
Ballina Upstream	TW22005298MY1012	Western	22-Aug-2023	-	55.4	<0.02	16.5	311	70	3873	<0.1	444	4.5	<0.25	7.9	1.1	10	8.8	10.47	<1	110.32	17.9	1	161	345
Ballina Downstream	TW22005298MY1013	Western	25-Oct-2023	-	46.1	<0.02	12.3		2	687	<0.1	330	3.2	0.46	7.9	1.4	7	6.3	10.67	<1	98	10.9	1.5	135	816
Ballina Upstream	TW22005298MY1012	Western	25-Oct-2023	-	45.7	<0.02	11.5		179	1203		328	2.8	0.57	7.9	1.4	7	7.5	10.8	<1	99.4	10.9	1.4	137	980

Toxicity Testing Report on behalf of MAYO COUNTY COUNCIL

Ballina WWTP

Sampling Date – 29 August 2023

Sample Details

A sample labelled “101911” was received by Enva. Southern Scientific Services lab reference 23-32258 / 101911

The sample was to be tested on the following species;

- 30-minute EC50 to *Vibrio Fischeri*
- 48 Hours LC50 to *Brachionus Plicatilis*

Methods

Method 1: ENVCM.136**:** Based on ISO 11348-3:2007 Determination of the inhibitory effect of water sample on the light emission of *Vibrio fischeri*.
ISO 11348 describes three methods for determining the inhibition of the luminescence emitted by the marine bacterium *Vibrio fischeri* (NRRL B11177). ISO 11348-3:2007 specifies a method using freeze dried bacteria.
This method is applicable to wastewater, fresh water (surface and ground water), sea and brackish water.

Method 2: ENVCM.137: Rotifer *Brachionus plicatilis*: Based on ASTM E1440-91.

This guide describes procedures for obtaining laboratory data concerning the acute toxicity of chemicals and aqueous effluents released into estuarine or marine waters. Acute toxicity is measured by exposing *Brachionus* newly hatched from cysts to a series of toxicant concentrations under controlled conditions.

The *Brachionus plicatilis* rotifer is specific to sea and brackish water.

Client Information

Contact Name	Ann Browne	**Address**	Mayo County Council

Certification Details

Certificate Number	190920232336083	**Enva Lab ID**	2336083
Date Received	4th September 2023	**Certificate Date**	19th September 2023
Order Number	N/A	**Test Date**	4th September 2023

Sample Information

Sampled By	Customer
Sampling Procedure	Unknown
Storage Conditions	Refrigerated
Temperature (°C)	26
pH (at 25°C)	7.2
Dissolved Oxygen (mg/L)	8.13
Dissolved Oxygen (% Saturation)	100.1
Conductivity (µs/cm at 25°C)	614

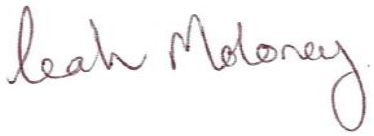
Aquatic Toxicity Test Results

Test Parameters	Concentration (% Vol./Vol.)	Toxic Units	95% Confidence Limits (% Vol./Vol.)	Method of Calculation
30 min EC50 to *Vibrio fischeri*	>100	**<1**	-	Microtox
48 LC50 to *Brachionus plicatilis*	52.13	**1.9**	46 - 56.6	Rotifer LC50 Calculation Programme

Conclusions

All tests performed were deemed to be valid as they met all of the criteria specified in the guidelines.

Reported By



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