Annual Environmental Report

2021

Bandon

D0136-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0136-01, Bandon, in Cork 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)

- BANDON WWTP with a Plant Capacity PE of 20000, 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
TPEFF0500D0136SW001	BANDON 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 BANDON WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - BANDON 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
Suspended Solids mg/l	12	2400	454
COD-Cr mg/l	12	3100	778
BOD, 5 days with Inhibition (Carbonaceo mg/l	12	735	261
Hydraulic Capacity	N/A	7472	3613

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 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 - TPEFF0500D0136SW001

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	27	Pass
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	5.98	Pass
BOD, 5 days with Inhibition (Carbonaceo mg/l	25	50	N/A	12	N/A	N/A	3.37	Pass
pH pH units	9.00	9.00	N/A	12	N/A	N/A	7.38	Pass
Ammonia-Total (as N) mg/l	3.00	3.60	N/A	12	N/A	N/A	0.997	Pass
ortho-Phosphate (as P) - unspecified mg/l	3.00	3.60	N/A	12	1	N/A	1.47	Pass
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	12	N/A	N/A	1.62	
Total Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	8.16	

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 TPEFF0500D0136SW001

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	150362, 55674	RS20B020800	No	Yes	No	No	Moderate
Downstream	151648, 56935	RS20B020850	No	Yes	No	No	Moderate
Downstream	149042, 55038	RS20B020780	No	Yes	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	RS20B020800	0.884	RS20B020780	1.40	1.50	34.5
BOD - 5 days (Total) mg/l	RS20B020800	0.884	RS20B020850	1.67	1.50	52.2
Ammonia-Total (as N) mg/l	RS20B020800	0.019	RS20B020850	0.023	0.065	6.5
Ammonia-Total (as N) mg/l	RS20B020800	0.019	RS20B020780	0.023	0.065	5.8
ortho-Phosphate (as P) - unspecified mg/l	RS20B020800	0.026	RS20B020850	0.025	0.035	-4
ortho-Phosphate (as P) - unspecified mg/l	RS20B020800	0.026	RS20B020780	0.022	0.035	-13.5
Nitrate (as N) mg/l	RS20B020800	2.12	RS20B020780	N/A	N/A	
Nitrite (as N) µg/l	RS20B020800	5.11	RS20B020780	N/A	N/A	
Chloride mg/l	RS20B020800	28	RS20B020850	N/A	N/A	
Dissolved Oxygen % Saturation	RS20B020800	101	RS20B020850	109	N/A	
Conductivity @25°C µS/cm	RS20B020800	245	RS20B020850	N/A	N/A	
Temperature °C	RS20B020800	13	RS20B020780	12	N/A	

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Total Oxidised Nitrogen (as N) mg/l	RS20B020800	2.14	RS20B020780	N/A	N/A	
True Colour mg/litre Pt Co	RS20B020800	25	RS20B020780	N/A	N/A	
Total Hardness (as CaCO3) mg/l	RS20B020800	60	RS20B020850	N/A	N/A	
Nitrite (as N) µg/l	RS20B020800	5.11	RS20B020850	N/A	N/A	
Chloride mg/l	RS20B020800	28	RS20B020780	N/A	N/A	
Conductivity @25°C µS/cm	RS20B020800	245	RS20B020780	N/A	N/A	
Alkalinity-total (as CaCO3) mg/l	RS20B020800	53	RS20B020850	N/A	N/A	
Dissolved Oxygen % Saturation	RS20B020800	101	RS20B020780	105	N/A	
Dissolved Oxygen mg/l	RS20B020800	11	RS20B020780	N/A	N/A	
Alkalinity-total (as CaCO3) mg/l	RS20B020800	53	RS20B020780	N/A	N/A	
Dissolved Oxygen mg/l	RS20B020800	11	RS20B020850	N/A	N/A	
Nitrate (as N) mg/l	RS20B020800	2.12	RS20B020850	N/A	N/A	

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	RS20B020800	60	RS20B020780	N/A	N/A	
pH pH units	RS20B020800	7.80	RS20B020850	7.90	N/A	
pH pH units	RS20B020800	7.80	RS20B020780	7.83	N/A	
Total Oxidised Nitrogen (as N) mg/l	RS20B020800	2.14	RS20B020850	N/A	N/A	
Temperature °C	RS20B020800	13	RS20B020850	12	N/A	
True Colour mg/litre Pt Co	RS20B020800	25	RS20B020850	N/A	N/A	

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 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, 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.

The discharge from the wastewater treatment plant does not have an observable impact on the designated shellfish water quality.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - BANDON WWTP

2.1.4.1 Treatment Efficiency Report - BANDON 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	N/A	9609	N/A
cBOD	343644	3966	99
SS	596630	7046	99
COD	1023069	31571	97
TP	N/A	1914	N/A

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

2.1.4.2 Treatment Capacity Report Summary - BANDON 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.

BANDON WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	13500
DWF to the Treatment Plant (m^3/day)	4500
Current Hydraulic Loading - annual max (m^3/day)	7472

BANDON WWTP	
Average Hydraulic loading to the Treatment Plant (m³/day)	3613
Organic Capacity (PE) - As Constructed	20000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	9744
Organic Capacity (PE) - Remaining	10256
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 - BANDON 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
1	Discharge to waters	0	1

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

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Adverse Weather	1	No	Yes
Uncontrolled release	EO caused by ragging or blocking	1	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	5
Number of Incidents reported to the EPA via EDEN in 2021	5
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 (m3)	Monitoring Status
TBC	145152, 54669	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	149046, 54721	No	Unknown	Unknown	Unknown	Unknown	Not monitored
SW002	150368, 55690	Yes	Medium	Not Meeting	Unknown	Unknown	Not monitored
SW003	150077, 55316	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW004	149316, 55103	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
SW005	149265, 55150	Yes	Low	Unknown	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 2021 (No. of events)	Total volume discharged in 2021 (m3)	Monitoring Status
SW006	149552, 55172	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW007	149096, 55045	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW008	149738, 55164	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW009	149281, 55040	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW010	149250, 55069	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW011	149929, 55254	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW012	149297, 54974	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW013	149116, 54830	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW014	148826, 54484	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW015	148562, 54290	Yes	Medium	Not Meeting	Unknown	Unknown	Not 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 SWOs in the agglomeration in the year (m3)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	No
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
D0136-SIP:01	Provide nutrient removal to meet ELVs specified in Schedule A	C	31/12/2015	No	Works Completed		
D0136-SIP:02	Upgrade the WWTP to comply with ELVs specified in Schedule A	C	31/12/2015	No	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	Year included in AER	Included in this AER
Drinking Water Abstraction Point Risk Assessment	Yes	2015	No
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	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: 24/05/2022

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

There are no Appendices included