Annual Environmental Report

2021

Balbriggan

D0023-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0023-01, Balbriggan, in Dublin 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.

Works at Loughshinny Pumping Station which commenced in September 2020 were completed in 2021.

1.2 TREATMENT SUMMARY

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

- Barnageeragh WWTP with a Plant Capacity PE of 70000, 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
TPEFF0900D0023SW001	Barnageeragh 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 BARNAGEERAGH WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - BARNAGEERAGH 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
Ammonia-Total (as N) mg/l	50	60	41
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	47	700	378
ortho-Phosphate (as P) - unspecified mg/l	50	6.94	4.26
COD-Cr mg/l	50	1484	958.39
Suspended Solids mg/l	50	906	570.78
Total Nitrogen mg/l	50	83	61
pH pH units	50	8.10	7.75
Total Phosphorus (as P) mg/l	50	18	9.95
Hydraulic Capacity	N/A	21867	8951

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 - TPEFF0900D0023SW002

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	50	N/A	N/A	33	Pass
Suspended Solids mg/l	35	87.5	N/A	50	N/A	N/A	4.78	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	47	N/A	N/A	2.30	Pass
pH pH units	6.00	9.00	N/A	50	N/A	N/A	7.59	Pass
PCB 101 µg/l	N/A	N/A	N/A	2	N/A	N/A	0.001	
Conductivity @20°C µS/cm	N/A	N/A	N/A	50	N/A	N/A	842	
Total Nitrogen mg/l	N/A	N/A	N/A	50	N/A	N/A	10	

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)
Dissolved Inorganic Nitrogen (as N) mg/l	N/A	N/A	N/A	50	N/A	N/A	8.51	
Colour Hazen	N/A	N/A	N/A	4	N/A	N/A	38	
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	50	N/A	N/A	3.39	
Salinity PSU	N/A	N/A	N/A	12	N/A	N/A	0.282	
Total Oxidised Nitrogen (as N) mg/l	N/A	N/A	N/A	50	N/A	N/A	7.11	
PCB 153 µg/l	N/A	N/A	N/A	2	N/A	N/A	0.001	
PCB 180 µg/l	N/A	N/A	N/A	2	N/A	N/A	0.002	
Nitrite (as N) mg/l	N/A	N/A	N/A	50	N/A	N/A	0.281	
Nitrate (as N) mg/l	N/A	N/A	N/A	50	N/A	N/A	6.84	
Ammonia-Total (as N) mg/l	N/A	N/A	N/A	50	N/A	N/A	1.40	
Enterococci (Intestinal) no./100mls	N/A	N/A	N/A	3	N/A	N/A	0.347	

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)
E. Coli no./100mls	N/A	N/A	N/A	35	N/A	N/A	1268	
ortho-Phosphate (as P) - unspecified mg/l	N/A	N/A	N/A	50	N/A	N/A	2.95	
Coliform Bacteria (Total) no./100mls	N/A	N/A	N/A	35	N/A	N/A	3474	
PCB 118 µg/l	N/A	N/A	N/A	2	N/A	N/A	0.002	
PCB 28 µg/l	N/A	N/A	N/A	2	N/A	N/A	0.001	
PCB 138 µg/l	N/A	N/A	N/A	2	N/A	N/A	0.001	
PCB 52 µg/l	N/A	N/A	N/A	2	N/A	N/A	0.001	

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 TPEFF0900D0023SW002

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
Downstream	324602, 263044	CW09001003DB7004	No	No	No	Yes	High
Downstream	321806, 265565	CW09001003DB7005	Yes	No	No	Yes	High

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 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.

The discharge from the wastewater treatment plant does have an observable impact on the coastal or bathing water quality.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - BARNAGEERAGH WWTP

2.1.4.1 Treatment Efficiency Report - Barnageeragh 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	199584	36177	82
SS	1870050	17270	99
cBOD	1332979	8370	99
TP	32600	12239	62
COD	3139980	120644	96

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

2.1.4.2 Treatment Capacity Report Summary - Barnageeragh 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.

Barnageeragh WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	48300
DWF to the Treatment Plant (m^3/day)	16100
Current Hydraulic Loading - annual max (m^3/day)	21867

Barnageeragh WWTP	
Average Hydraulic loading to the Treatment Plant (m^3/day)	8951
Organic Capacity (PE) - As Constructed	70000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	41950
Organic Capacity (PE) - Remaining	28050
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 - BARNAGEERAGH 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
There were no relevant environmental complaints in 2021.			

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)
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	Yes
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	Yes
Uncontrolled release	EO caused by ragging or blocking	1	No	Yes

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	SWO exceptional rainfall and overflow expected	1	No	Yes
Uncontrolled release	Blocked Sewer	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 (m^3)	Monitoring Status
TBC	320095, 263070	No	Medium	Meeting	0	0	Monitored
TBC	320923, 263617	No	Low	Meeting	Unknown	Unknown	Not Monitored
SW003	321548, 263469	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW005	320439, 263829	Yes	High	Not Meeting	Unknown	Unknown	Not Monitored
SW007	325540, 261085	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
SW009	324015, 261090	Yes	Low	Meeting	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 (m^3)	Monitoring Status
SW010	320876, 260084	Yes	Low	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 monitored SWOs in the agglomeration in the year (m^3)?	0
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?	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
D0023-SIP:01	Balbriggan/Skerries Wastewater Treatment Scheme (Phase III) - Sewer Network Upgrade including infrastructure to direct WW from Loughshinny & Killalane to Barnageeragh WWTP	C	31/12/2010	Yes	Works Completed		
D0023-SIP:02	Balbriggan/Skerries Wastewater Treatment Scheme (Phase III) - Sewer Network Upgrade to improve primary discharge	C	31/12/2010	Yes	Works Completed		
D0023-SIP:03	Connection of Kelly's Bay P.S. to Barnageeragh WWTP. SW6 to cease or revert to SWO complying with DoE criteria.	C	31/12/2010	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
D0023-SIP:04	Discharge to cease: SW014 Killalane septic tank	A	31/12/2010	Yes	Works Completed		
D0023-SIP:05	Discharge to cease: SW006 Hoar's Rock, Skerries to cease or revert to a surface water overflow	A	31/12/2010	Yes	Works Completed		
D0023-SIP:06	Discharge to cease: SW015 Loughshinny septic tank	A	31/12/2010	Yes	Works Completed		
D0023-SIP:07	Upgrading of sewer network to ensure SWOs comply with DoE criteria	C	31/12/2020	No	Not started	DAP to begin in 2022	

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
Priority Substances Assessment	Yes	2013	No
Shellfish Impact 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: 22/04/2022

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

Appendix
Appendix 7.1 - Ambient monitoring summary

Balbriggan Ambient Monitoring Summary 2021

Ambient Monitoring Report Summary Table

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	EPA Feature Coding Tool code	Bathing Water	Drinking Water	FWPM	Shellfish	Current WFD Status
Marine Monitoring Point Northwestern Irish Sea – Balbriggan (CW09001003DB7005)	321806, 265565	DB800	No	No	No	Yes	High (Coastal Water Quality Status: 2013 - 2018)
Marine Monitoring Point Northwestern Irish Sea – Skerries (CW09001003DB7004)	325502 262244	DB780	No	No	No	Yes	High (Coastal Water Quality Status: 2013 - 2018)
Shore Monitoring Point Balbriggan North Beach	320385E 264052N		Yes	No	No	Yes	High (Coastal Water Quality Status: 2013 - 2018)
Shore Monitoring Point Skerries South Beach	325569E 260666N		Yes	No	No	Yes	High (Coastal Water Quality Status: 2013 - 2018)
Shore Monitoring Point Loughshinny Beach	327233E 256837N		Yes	No	No	Yes	High (Coastal Water Quality Status: 2013 - 2018)

2021 Ambient Monitoring Summary

Sampling Point Description	Date	Ammonia mg/l N	Biochemical Oxygen Demand mg/l	Dissolved Oxygen % Saturation % Sat.	pH pH units	Temperature - Surface Degrees C	Total Oxidised Nitrogen mg/l	Total Nitrogen mg/l	Chlorophyll_a mg/m^3	Ortho-P mg/L P	Salinity PSU	DIN mg/l N
DB780	27/05/2021	0.52	2.2	104.4	8.08	12.0	<0.50	0.55	6.17	<0.02	34.6	0.55
DB780	06/09/2021	0.41	2.0	95	7.8	17.9	< 0.50	< 0.50	< 4.00	< 0.02	34.50	<0.52
DB800	27/05/2021	0.62	<2	105.0	8.12	11.9	<0.50	0.76	<4.00	<0.02	34.3	0.76
DB800	06/09/2021	0.41	< 2	95.6	7.8	18.0	< 0.50	< 0.50	< 4.00	< 0.02	34.58	< 0.52

Bathing Water Results 2021

Balbriggan Front Beach

Date	E-Coli Result	Intestinal Enterococci Result	Water Sample Status
06/09/2021	20	5	Excellent
31/08/2021	<10	18	Excellent
17/08/2021	30	13	Excellent
03/08/2021	241	71	Excellent
19/07/2021	345	64	Good
05/07/2021	496	250	Sufficient
21/06/2021	10	5	Excellent
08/06/2021	10	4	Excellent
24/05/2021	98	5	Excellent

(Source: Beaches.ie)

Skerries South Beach

Date	E-Coli Result	Intestinal Enterococci Result	Water Sample Status
06/09/2021	10	5	Excellent
31/08/2021	20	2	Excellent
17/08/2021	30	12	Excellent
03/08/2021	31	94	Excellent
19/07/2021	1043	210	Poor
05/07/2021	121	24	Excellent
21/06/2021	20	31	Excellent
08/06/2021	96	20	Excellent
24/05/2021	20	15	Excellent

(Source: Beaches.ie)

Loughshinny Beach

Date	E-Coli Result	Intestinal Enterococci Result	Water Sample Status
06/09/2021	41	26	Excellent
31/08/2021	295	75	Good
17/08/2021	10	3	Excellent
03/08/2021	<10	<1	Excellent
19/07/2021	<10	5	Excellent
05/07/2021	<10	1	Excellent
21/06/2021	397	200	Good
08/06/2021	<10	3	Excellent
24/05/2021	<10	1	Excellent

(Source: Beaches.ie)