Annual Environmental Report

2021

Blessington

D0063-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0063-01, Blessington, in Wicklow 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.

The Blessington WWTP upgrade project comprises an upgrade to the plant to accommodate future loads, to 9,000 p.e., and ensure that the ELV for Ammonia can be met. An Bord Pleanála granted consent for the WwTP on the 26th February 2019. The proposed upgrade works are being carried out under Irish Waters 2020 – 2024 Investment Plan (Revenue Cycle 3). Construction works commenced in Q4 2021. It is currently programmed for the upgrade works to be completed in Q1 2023.

1.2 TREATMENT SUMMARY

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

- BLESSINGTON WWTP with a Plant Capacity PE of 6000, 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
TPEFF3400D0063SW001	BLESSINGTON WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l Suspended Solids mg/l

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 BLESSINGTON WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - BLESSINGTON 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
BOD, 5 days with Inhibition (Carbonaceous) mg/l	12	475	247
COD-Cr mg/l	12	1078	511.61
Suspended Solids mg/l	12	454	284.45
Total Phosphorus (as P) mg/l	12	11	6.37
Total Nitrogen mg/l	12	89	49
Hydraulic Capacity	N/A	3644	1009

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 - TPEFF3400D0063SW001

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	53	Pass
Suspended Solids mg/l	30	75	N/A	12	2	1	76	Fail
BOD, 5 days with Inhibition (Carbonaceous) mg/l	20	40	N/A	12	N/A	N/A	7.82	Pass
pH pH units	6.00	9.00	N/A	12	N/A	N/A	7.48	Pass
Ammonia-Total (as N) mg/l	5.00	6.00	N/A	12	5	5	4.62	Fail
ortho-Phosphate (as P) - unspecified mg/l	1.00	1.20	N/A	12	N/A	N/A	0.409	Pass
Total Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	17	
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.679	
Conductivity @20°C µS/cm	N/A	N/A	N/A	12	N/A	N/A	959	

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):

The WwTP is currently overloaded & not designed for nutrient removal.

Significance of Results:

The WWTP is non compliant with the ELV's 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 TPEFF3400D0063SW001

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	294714, 208463	RS09L010370	No	No	No	No	Moderate
Downstream	294165, 208292	RS09L010390	No	No	No	No	Moderate

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 not compliant with the ELV's set in the wastewater discharge licence for the following: Suspended Solids mg/l, Ammonia-Total (as N) mg/l.

The ambient monitoring results do not meet the required EQS at the upstream and 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 & Ammonia concentrations downstream of the effluent discharge is noted.

A deterioration in water quality has been identified, however it is not known if it or is not caused by the WWTP.

Blessington agglomeration has been identified as a significant pressure on the downstream At Risk Golden Falls lake in the Cycle 3 Draft Liffey and Dublin Bay Catchment Report (HA 09).

Other causes of deterioration in water quality in the area are unknown.

The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status. The WFD status is Moderate both upstream and downstream of the WWTP.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - BLESSINGTON WWTP

2.1.4.1 Treatment Efficiency Report - BLESSINGTON 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)
cBOD	100275	2918	97
TP	2584	253	90

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
COD	207543	19763	90
SS	115392	28177	76
TN	19895	6164	69

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

2.1.4.2 Treatment Capacity Report Summary - BLESSINGTON 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.

BLESSINGTON WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	4050
DWF to the Treatment Plant (m^3/day)	1350
Current Hydraulic Loading - annual max (m^3/day)	3644
Average Hydraulic loading to the Treatment Plant (m^3/day)	1009.27
Organic Capacity (PE) - As Constructed	6000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	6641
Organic Capacity (PE) - Remaining	0
Will the capacity be exceeded in the next three years? (Yes/No)	Yes *

** The Blessington WWTP upgrade project comprises an upgrade to the plant to accommodate future loads, to 9,000 p.e., and ensure that the ELV for Ammonia can be met. An Bord Pleanála granted consent for the WwTP on the 26th February 2019. The proposed upgrade works are being carried out under Irish Waters 2020 – 2024 Investment Plan (Revenue Cycle 3). Construction works commenced in Q4 2021. It is currently programmed for the upgrade works to be completed in Q1 2023.*

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 - BLESSINGTON 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)
Breach of ELV	WWTP not designed for N removal	1	Yes	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	0
Number of Incidents reported to the EPA via EDEN in 2021	0
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	Total volume discharged in 2021 (m^3)	Monitoring Status
There are no Storm Water Overflows in this Agglomeration.						

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
There are no Specified Improvement Programmes for this Agglomeration.							

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	2012	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?	Yes
List reason e.g., additional SWO identified	Increase in collected loading
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?	Yes
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: 22/02/2022

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

Blessington 2021 Ambient Monitoring Summary

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish National Grid Reference (Easting, Northing)	EPA Feature Coding Tool code	Receiving Waters Designation (Yes/No)			
			Bathing Water	Drinking Water	FWPM	Shellfish
Upstream Monitoring Point	294714, 208463	RS09L010370	No	No	No	No
Downstream Monitoring Point	294165, 208292	RS09L010390	No	No	No	No

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Current WFD Status	cBOD (Mean mgl/l)	o-Phosphate (as P) (Mean mg/l)	Ammonia (as N) (mean mg/l)
Upstream Monitoring Point	Moderate	1.940	0.0163	0.0232
Downstream Monitoring Point	Moderate	2.123	0.0151	0.0249
Difference		*0.183*	*-0.0012*	*0.0017*
EQS		1.500	0.035	0.065
% of EQS		12.183%	-3.367%	2.564%

2021 Ambient Monitoring Data

Station	Sample Date	Ammonium NH_4-N	Biological Oxygen Demand	Chlorophyll	Dissolved Oxygen % Saturation	Dissolved Oxygen	Ortho-Phosphate P	pH	Total Phosphorus P	Total Nitrogen N
		mg/l	mg/l	mg/m^3	% Sat.	mg/l	mg/l	pH units	mg/l	mg/l
U/S Blessington WWTP	12-Jan-2021	0.04	< 2	< 4	103	12.9	< 0.02	7	< 0.02	0.85
U/S Blessington WWTP	12-Feb-2021	< 0.02	2.2	< 4	101	13.3	< 0.02	7.4	< 0.02	0.83
U/S Blessington WWTP	12-Mar-2021	0.04	2.4	< 4	98	11.9	< 0.02	7.4	< 0.02	1.3
U/S Blessington WWTP	16-Apr-2021	0.04	2	< 4	95	9.2	< 0.02	7.4	< 0.02	0.9
U/S Blessington WWTP	13-May-2021	< 0.02	2.1	< 4	105	10.9	< 0.02	7.1	< 0.02	1.05
U/S Blessington WWTP	8-June-2021	0.04	3.4	< 4	100	9.3	< 0.02	7.8	< 0.02	0.82
U/S Blessington WWTP	13-July-2021	0.02	< 2	6.6	96	9.5	< 0.02	7.3	< 0.02	0.66
U/S Blessington WWTP	11-Aug-2021	< 0.02	< 2	8.2	88	8.4	0.04	8.2	0.04	0.74
U/S Blessington WWTP	8-Sep-2021	< 0.02	2.7	5.7	99	9.2	< 0.02	7.2	0.03	0.9
U/S Blessington WWTP	15-Oct-2021	< 0.02	< 2	< 4	91	9.4	< 0.02	7.6	< 0.02	1.36
U/S Blessington WWTP	9-Nov-2021	< 0.02	< 2	5.6	104	11	< 0.02	8	< 0.02	0.77
U/S Blessington WWTP	8-Dec-2021	< 0.02	< 2	4.2	92	10.7	< 0.02	7.4	0.04	1.3
	Mean	**0.0232**	**1.9404**	**4.1749**	**97.6667**	**10.4750**	**0.0163**	**7.4833**	**0.0198**	**0.9567**
	95%ile	**0.0400**	**3.0150**	**7.3200**	**104.4500**	**13.0800**	**0.0258**	**8.0900**	**0.0400**	**1.3270**

Station	Sample Date	Ammonium NH_4-N	Biological Oxygen Demand	Chlorophyll	Dissolved Oxygen % Saturation	Dissolved Oxygen	Ortho-Phosphate P	pH	Total Phosphorus P	Total Nitrogen N
		mg/l	mg/l	mg/m^3	% Sat.	mg/l	mg/l	pH units	mg/l	mg/l
D/S Blessington WWTP	12-Jan-2021	0.04	3.1	< 4	99	12.7	0.02	6.8	< 0.02	0.79
D/S Blessington WWTP	12-Feb-2021	< 0.02	< 2	< 4	99	13	< 0.02	7.5	< 0.02	0.99
D/S Blessington WWTP	12-Mar-2021	0.03	< 2	< 4	97	11.9	< 0.02	7.3	< 0.02	1.2
D/S Blessington WWTP	16-Apr-2021	< 0.02	< 1	9.1	101	10	< 0.02	7.5	< 0.02	0.72
D/S Blessington WWTP	13-May-2021	< 0.02	2.5	8.9	109	11	< 0.02	7.2	< 0.02	0.84
D/S Blessington WWTP	8-June-2021	0.02	< 2	< 4	106	10.7	< 0.02	7.7	< 0.02	0.76
D/S Blessington WWTP	13-July-2021	< 0.02	2.5	8.2	97	9.6	< 0.02	7.1	< 0.02	0.72
D/S Blessington WWTP	11-Aug-2021	0.09	4.5	7.2	89	8.6	< 0.02	7.7	0.1	1.63
D/S Blessington WWTP	8-Sep-2021	< 0.02	2.9	5.1	98	9.3	< 0.02	7.2	0.03	0.84
D/S Blessington WWTP	15-Oct-2021	< 0.02	< 2	< 4	96	10.2	< 0.02	7.8	< 0.02	1.41
D/S Blessington WWTP	9-Nov-2021	0.02	2.2	4.2	106	11.3	0.02	7.7	< 0.02	0.79
D/S Blessington WWTP	8-Dec-2021	< 0.02	< 2	< 4	95	10.9	< 0.02	7.6	0.04	2.53
	Mean	**0.0249**	**2.1232**	**4.9726**	**99.3333**	**10.7667**	**0.0151**	**7.4250**	**0.0248**	**1.1017**
	95%ile	**0.0625**	**3.7300**	**8.9900**	**107.3500**	**12.8350**	**0.0200**	**7.7450**	**0.0670**	**2.0350**

Note: Where the concentration in the result is less than the limit of detection (LOD), a value of LOD/sqrt(2) was used in calculating the mean and 95%ile concentrations.