Annual Environmental Report

2021

Shanganagh

D0038-02

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0038-02, Shanganagh, 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.

There were no capital works, significant changes or operational improvements undertaken in 2021.

1.2 TREATMENT SUMMARY

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

- Shanganagh WWTP with a Plant Capacity PE of 186000, 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
TPEFF1000D0038SW001	Shanganagh WWTP	Treated	Non-Compliant	Dissolved Inorganic Nitrogen (as N) 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 SHANGANAGH WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - SHANGANAGH 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
pH pH units	37	7.80	7.45
ortho-Phosphate (as P) - unspecified mg/l	37	11	5.26
BOD, 5 days with Inhibition (Carbonaceous) mg/l	36	961	215
COD-Cr mg/l	37	2059	482.43
Suspended Solids mg/l	37	1433	281.87
Total Nitrogen mg/l	37	79	48
Ammonia-Total (as N) mg/l	37	60	35
Total Phosphorus (as P) mg/l	37	22	8.70
Hydraulic Capacity	N/A	84297	30525

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'.

2.1.2 EFFLUENT MONITORING SUMMARY - TPEFF1000D0038SW001

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	37	N/A	N/A	41	Pass
Dissolved Inorganic Nitrogen (as N) mg/l	45	54	N/A	37	10	N/A	38	Fail
Suspended Solids mg/l	35	87.5	N/A	37	N/A	N/A	8.72	Pass
BOD, 5 days with Inhibition (Carbonaceous) mg/l	25	50	N/A	36	N/A	N/A	6.33	Pass
pH pH units	6.00	9.00	N/A	37	N/A	N/A	7.57	Pass
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	37	N/A	N/A	1.95	
Fats, Oils & Greases mg/l	N/A	N/A	N/A	2	N/A	N/A	9.82	

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)
Ammonia-Total (as N) mg/l	N/A	N/A	N/A	37	N/A	N/A	29	
Total Oxidised Nitrogen (as N) mg/l	N/A	N/A	N/A	37	N/A	N/A	6.15	
Nitrite (as N) mg/l	N/A	N/A	N/A	37	N/A	N/A	0.266	
Conductivity @20°C µS/cm	N/A	N/A	N/A	37	N/A	N/A	942	
Nitrate (as N) mg/l	N/A	N/A	N/A	37	N/A	N/A	5.88	
Total Nitrogen mg/l	N/A	N/A	N/A	37	N/A	N/A	38	

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):

WWTP not designed for N removal (INC1021532)

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 TPEFF1000D0038SW001

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	327527, 224160	CW34001016DB6017	Yes	No	No	No	High
Downstream	327730, 222408	CW34001016DB6001	Yes	No	No	No	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 not compliant with the ELV's set in the wastewater discharge licence for the following: Dissolved Inorganic Nitrogen (as N) mg/l.

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 not have an observable impact on the bathing water quality.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - SHANGANAGH WWTP

2.1.4.1 Treatment Efficiency Report - Shanganagh 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	3081235	101120	97
cBOD	2274152	75916	97
COD	5273663	480087	91
TN	525879	445140	15
TP	95143	22624	76

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

2.1.4.2 Treatment Capacity Report Summary - Shanganagh 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.

Shanganagh WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	108000
DWF to the Treatment Plant (m^3/day)	36000
Current Hydraulic Loading - annual max (m^3/day)	84297

Shanganagh WWTP	
Average Hydraulic loading to the Treatment Plant (m^3/day)	30525
Organic Capacity (PE) - As Constructed	186000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	129008
Organic Capacity (PE) - Remaining	56992
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 - SHANGANAGH 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)
Abatement Equipment offline	Other	1	No	Yes
Breach of ELV	WWTP not designed for N removal	1	No	No
Uncontrolled release	SWO exceptional rainfall and overflow expected	1	Yes	Yes

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Plant or equipment breakdown at WWTP	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	322644, 226837	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	321686, 225600	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	321686, 225600	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	321686, 225600	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	321686, 225600	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	321686, 225600	No	Medium	Not 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
TBC	322071, 225515	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	322399, 225484	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	323354, 225881	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	323613, 225495	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	325252, 223481	No	Medium	Not Meeting	Unknown	Unknown	Not Monitored
TBC	325328, 223502	No	Low	Not Meeting	Unknown	Unknown	Not Monitored
TBC	321590, 225567	No	Low	Not Meeting	Unknown	Unknown	Not Monitored
TBC	320524, 227692	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	326078, 224651	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	327548, 223736	No	Low	Meeting	17	26098	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
TBC	325056, 220697	No	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.

Note: Long Sea Outfall from WwTP – 12 no. activation in 2021 (18650m^3), Short Sea Outfall – 5 no. no. activation in 2021 (7448m^3).

SWO Summary	
How much sewage was discharged via monitored SWOs in the agglomeration in the year (m^3)?	26,098
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
D0038-SIP:01	Upgrading of sewer network to ensure SWO's comply with DoEHLG criteria	C	31/12/2020	No	Not started	DAP assessment to being in 2022	
D0038-SIP:02	WW sewer network improvements	C	31/12/2020	No	Works Completed		
D0038-SIP:03	WWTP upgrade and ancillary works	C	30/04/2011	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	Year included in AER	Included in this AER
There is no Licence Specific Report Required in this AER Annual Review.			

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: 28/04/2022

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

Shanganagh 2021 Ambient Monitoring

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
Upstream	327527, 224160	CW34001016DB6017	Yes	No	No	No	High
Downstream	327730, 222408	CW34001016DB6001	Yes	No	No	No	High

Ambient Sampling Results 2021

Sampling Point	Sampled Date	Ammonia µg/l as N	B.O.D. mg/l	Colour (Visual)	DIN µg/l	Dissolved Oxygen % Sat.	E. coli MPN/100ml	Enterococci CFU/100ml	Enterococci CFU/100ml	Odour	pH pH	TON µg/l as N	Total Coliforms MPN/100ml
(40630) Receiving Water1 Shanganagh STW, Killiney Bay.	24/03/2021 08:50	80	<1	Normal	310	96	<20	<1		Normal	8	230	20
(40630) Receiving Water1 Shanganagh STW, Killiney Bay.	21/04/2021 09:20	16	<1	Normal	16	98	10	<1		Normal	8.2	<40	20
(40630) Receiving Water1 Shanganagh STW, Killiney Bay.	05/05/2021 08:16	<10	<1	Normal	< 50	102	<10		2	Normal	8.2	<40	41
(40630) Receiving Water1 Shanganagh STW, Killiney Bay.	23/06/2021 09:00	15	<1	Normal	15	102	<10		1	Normal	8.1	<40	52
(40630) Receiving Water1 Shanganagh STW, Killiney Bay.	21/07/2021 10:00	18	<1	Normal	101	100	<10		2	Normal	8.1	83	10
(40630) Receiving Water1 Shanganagh STW, Killiney Bay.	18/08/2021 07:45	30	<1	Normal	30	103	<10		2	Normal	8.1	<40	31
(40630) Receiving Water1 Shanganagh STW, Killiney Bay.	22/09/2021 10:15	28	<1	Normal	28	99	<10	<1		Normal	8	<40	<10
(40630) Receiving Water1 Shanganagh STW, Killiney Bay.	13/10/2021 12:01	26	<1	Normal	66	99	<10	<1		Normal	8.1	40	<10
(40630) Receiving Water1 Shanganagh STW, Killiney Bay.	17/11/2021 08:45	22	<1	Normal	141	96	<10	<1		Normal	8	119	10
(40630) Receiving Water1 Shanganagh STW, Killiney Bay.	15/12/2021 10:45	<10	<1	Normal	105	92	<10		1	Normal	8	105	52
(40632) Receiving Water2 Shanganagh STW, Killiney Bay.	24/03/2021 09:05	34	<1	Normal	258	96	<20	<1		Normal	8	224	60
(40632) Receiving Water2 Shanganagh STW, Killiney Bay.	21/04/2021 09:42	30	<1	Normal	30	99	52		13	Normal	8.2	<40	441
(40632) Receiving Water2 Shanganagh STW, Killiney Bay.	05/05/2021 08:22	31	<1	Normal	31	101	86		14	Normal	8.2	<40	548
(40632) Receiving Water2 Shanganagh STW, Killiney Bay.	23/06/2021 09:00	19	<1	Normal	2910	102	<10		6	Normal	8.1	2891	364
(40632) Receiving Water2 Shanganagh STW, Killiney Bay.	21/07/2021 10:00	20	<1	Normal	97	100	<10	<1		Normal	8.1	77	10
(40632) Receiving Water2 Shanganagh STW, Killiney Bay.	18/08/2021 07:52	26	<1	Normal	26	102	<10		26	Normal	8.1	<40	<10
(40632) Receiving Water2 Shanganagh STW, Killiney Bay.	22/09/2021 10:05	34	<1	Normal	34	98	<10	<1		Normal	8	<40	<10
(40632) Receiving Water2 Shanganagh STW, Killiney Bay.	13/10/2021 12:02	19	<1	Normal	19	99	<10		2	Normal	8	<40	10
(40632) Receiving Water2 Shanganagh STW, Killiney Bay.	17/11/2021 09:02	28	<1	Normal	145	98	10	<1		Normal	7.9	117	51
(40632) Receiving Water2 Shanganagh STW, Killiney Bay.	15/12/2021 11:10	37	<1	Normal	175	93	10		4	Normal	8	138	52

Killiney Beach Bathing Water Monitoring Results 2021:

Date	E-Coli (cfu/100ml)	Intestinal Enterococci (cfu/100ml)	EPA Classification Standard
06/09/2021	20	4	Excellent
01/09/2021	10	2	Excellent
25/08/2021	10	7	Excellent
17/08/2021	10	2	Excellent
09/08/2021	<10	<1	Excellent
02/08/2021	<10	1	Excellent
26/07/2021	<10	47	Excellent
19/07/2021	<10	20	Excellent
12/07/2021	10	12	Excellent
05/07/2021	<10	4	Excellent
28/06/2021	<10	2	Excellent
21/06/2021	10	5	Excellent
08/06/2021	<10	4	Excellent
03/06/2021	31	730	Poor
24/05/2021	<10	1	Excellent

EPA Bathing Water Classification for Individual Sample Results	Intestinal Enterococci (cfu/100ml)	E. coli (cfu/100ml)
Excellent Quality	</=100	</=250
Good Quality	101 - 200	251 - 500
Sufficient Quality	201 -250	501 - 1000
Poor Quality	>250	>1000

Source: Beaches.ie