Annual Environmental Report

2020

Shanganagh

D0038-02

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2020 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 was no major capital or operational changes undertaken in 2020.

1.2 TREATMENT SUMMARY

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

- Shanganagh WWTP - 2020 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 - 2020	Treated	Compliant	N/A

1.4 LICENCE SPECIFIC REPORTING INCLUDED IN AER

Assessment / Report	Included in AER
There are no Licence Specific Reports included in the AER.	

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 SHANGANAGH WWTP - 2020 - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - SHANGANAGH WWTP - 2020

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 BOD) mg/l	33	477.00	175.19
COD-Cr mg/l	35	1494.00	419.70
Total Nitrogen mg/l	35	85.30	40.77
Suspended Solids mg/l	35	678	239.56
Total Phosphorus (as P) mg/l	35	24.90	7.67
Hydraulic Capacity	N/A	85360	36603

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 - 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 with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Chemical Oxygen Demand mg/l	125	250	N/A	35	N/A	N/A	34.67	Pass
Suspended Solids mg/l	35	87.5	N/A	35	N/A	N/A	8.29	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	33	N/A	N/A	5.06	Pass
pH pH units	6-9	6-9	N/A	35	N/A	N/A	7.56	Pass
Conductivity 20 C µS/cm	N/A	N/A	N/A	35	N/A	N/A	920.58	
Nitrite (as N) mg/l	N/A	N/A	N/A	35	N/A	N/A	0.22	
Total Phosphorus mg/l	N/A	N/A	N/A	35	N/A	N/A	1.89	
Total Nitrogen mg/l	N/A	N/A	N/A	34	N/A	N/A	34.74	
Ammonia-Total (as N) mg/l	N/A	N/A	N/A	35	N/A	N/A	26.85	
Nitrate (as N) mg/l	N/A	N/A	N/A	35	N/A	N/A	5.86	

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 with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Total Oxidised Nitrogen (as N) mg/l	N/A	N/A	N/A	35	N/A	N/A	6.08	
Fats, Oils & Greases mg/l	N/A	N/A	N/A	3	N/A	N/A	10.00	
Temperature °C	N/A	N/A	N/A	1	N/A	N/A	4.00	

Notes:
1 – This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied

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 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 Status
(40616) ASW-1(Shanganagh STW Receiving Water) 5km due east off SW1 Harbour	334200 223264	Outside the ERBD Zone	Yes	No	No	No	Unassigned
(40621) ASW-2(Shanganagh STW Receiving Water) 2.5km NE from Dalkey Island	330000, 223400	Outside the ERBD Zone	Yes	No	No	No	Unassigned

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.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - SHANGANAGH WWTP - 2020

2.1.4.1 Treatment Efficiency Report - Shanganagh WWTP - 2020

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	2504444	73029	97
COD	5956641	497267	92
SS	3399957	118920	97
TN	578681	499734	14
TP	108793	27081	75

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 - 2020

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 - 2020	
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)	85360
Average Hydraulic loading to the Treatment Plant (m^3/day)	36603
Organic Capacity (PE) - As Constructed	186000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	129335
Organic Capacity (PE) - Remaining	56665
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 - 2020

'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 is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
1	Blocked Sewer	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)
Uncontrolled release	SWO exceptional rainfall and overflow expected	1	Yes	No
Uncontrolled release	Blocked Sewer	1	No	Yes
Uncontrolled release	Plant or equipment breakdown at WWTP	1	No	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2020	3
Number of Incidents reported to the EPA via EDEN in 2020	3
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	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2020 (No. of events)	Total volume discharged in 2020 (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	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2020 (No. of events)	Total volume discharged in 2020 (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	Meeting	Unknown	Unknown	Not Monitored
TBC	321686, 225600	No	Low	Not Meeting	Unknown	Unknown	Not Monitored
TBC	321628, 225563	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	326953, 219125	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	326756, 219125	No	Medium	Not Meeting	Unknown	Unknown	Not Monitored
TBC	327476, 218076	No	Medium	Meeting	Unknown	Unknown	Not Monitored

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2020 (No. of events)	Total volume discharged in 2020 (m^3)	Monitoring Status
TBC	320524, 227692	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	326078, 224651	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	326028, 217647	No	High	Not Meeting	Unknown	Unknown	Not Monitored
TBC	326755, 219736	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	328220, 220111	No	Low	Meeting	Unknown	Unknown	Monitored
TBC	327040, 219331	No	Low	Meeting	Unknown	Unknown	Monitored
TBC	324656, 215072	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	324543, 216844	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	327548, 223736	No	Low	Meeting	Unknown	43600	Monitored
TBC	325056, 220697	No	Low	Meeting	Unknown	Unknown	Not Monitored

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2020 (No. of events)	Total volume discharged in 2020 (m^3)	Monitoring Status
TBC	326751, 219194	No	Medium	Not Meeting	Unknown	Unknown	Monitored

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m^3)?	Unknown
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?	Yes

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 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	Work ongoing on-site	31/12/2021	
D0038-SIP:02	WW sewer network improvements	C	31/12/2020	No	Work ongoing on-site	31/12/2021	
D0038-SIP:03	WWTP upgrade and ancillary works	C	30/04/2011	Yes	Works Completed		

A summary of the status of any improvements identified by under Condition 5.2 is included below.

4.2.2 IMPROVEMENT PROGRAMME SUMMARY

Improvement Identifier	Improvement Description / or any Operational Improvements	Improvement Source	Expected Completion Date	Comments
There are no Improvements Programme for this Agglomeration.				

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 Table.

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 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	Reference to relevant section of 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
Is there a need to advise the EPA for consideration of a Technical Amendment / Review of the licence?	Yes
List reason e.g. additional SWO identified	Upgrade & Agglomeration change
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

** D0038-02 Final Decision was issued by the EPA on 11/02/2021.*

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

Date: 12/03/2021

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 2020 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
(40616) ASW-1(Shanganagh STW Receiving Water) 5km due east off SW1 Harbour	334200 223264	Outside the ERBD Zone	Yes	No	No	No	Unassigned
(40621) ASW-2(Shanganagh STW Receiving Water) 2.5km NE from Dalkey Island	330000, 223400	Outside the ERBD Zone	Yes	No	No	No	Unassigned

Sampling Point	Sampled Date	Received Date	Sample Number	Ammonia µg/l as N		B.O.D. Saline mg/l		Bottom Oxygen % Sat.	
(40616) ASW-1(Shanganagh STW Receiving Water) 5km due east off SW1 Harbour. Composite Sample	12/06/2019 09:35	12/06/2019 14:36	1585986	31	4-Jul-2019	<1	12-Jun-2019	101.5	28-Jun-2019
(40621) ASW-2(Shanganagh STW Receiving Water) 2.5km NE from Dalkey Island. Composite Sample	12/06/2019 09:49	12/06/2019 14:36	1585987	28	4-Jul-2019	<1	12-Jun-2019	101.3	28-Jun-2019

				Bottom Temperature °C		Colour (Visual)		DIN µg/l	
(40616) ASW-1(Shanganagh STW Receiving Water) 5km due east off SW1 Harbour. Composite Sample	12/06/2019 09:35	12/06/2019 14:36	1585986	12.5	28-Jun-2019	Normal	28-Jun-2019	31	4-Jul-2019
(40621) ASW-2(Shanganagh STW Receiving Water) 2.5km NE from Dalkey Island. Composite Sample	12/06/2019 09:49	12/06/2019 14:36	1585987	12.3	28-Jun-2019	Normal	28-Jun-2019	28	4-Jul-2019

				E. coli		Enterococci		Enterococci (Confirmed)	
				MPN/100ml		CFU/100ml		CFU/100ml	
(40616) ASW-1(Shanganagh STW Receiving Water) 5km due east off SW1 Harbour. Composite Sample	12/06/2019 09:35	12/06/2019 14:36	1585986	<10	12-Jun-2019			2	12-Jun-2019
(40621) ASW-2(Shanganagh STW Receiving Water) 2.5km NE from Dalkey Island. Composite Sample	12/06/2019 09:49	12/06/2019 14:36	1585987	<10	12-Jun-2019	<1	12-Jun-2019		

				Faecal Coliforms		Oxygen at 0 m depth		pH	
				MPN/100ml		% Sat.		pH	
(40616) ASW-1(Shanganagh STW Receiving Water) 5km due east off SW1 Harbour. Composite Sample	12/06/2019 09:35	12/06/2019 14:36	1585986	<10	12-Jun-2019	101.9	28-Jun-2019	8.2	12-Jun-2019
(40621) ASW-2(Shanganagh STW Receiving Water) 2.5km NE from Dalkey Island. Composite Sample	12/06/2019 09:49	12/06/2019 14:36	1585987	<10	12-Jun-2019	101.7	28-Jun-2019	8.2	12-Jun-2019

				Salinity (mean)		Surface Temperature		TON	
				PSU		°C		µg/l as N	
(40616) ASW-1(Shanganagh STW Receiving Water) 5km due east off SW1 Harbour. Composite Sample	12/06/2019 09:35	12/06/2019 14:36	1585986	34.30	28-Jun-2019	12.5	28-Jun-2019	<40	4-Jul-2019
(40621) ASW-2(Shanganagh STW Receiving Water) 2.5km NE from Dalkey Island. Composite Sample	12/06/2019 09:49	12/06/2019 14:36	1585987	34.23	28-Jun-2019	12.6	28-Jun-2019	<40	4-Jul-2019

				Total Coliforms		Total Nitrogen Saline	
				MPN/100ml		µg/l as N	
(40616) ASW-1(Shanganagh STW Receiving Water) 5km due east off SW1 Harbour. Composite Sample	12/06/2019 09:35	12/06/2019 14:36	1585986	<10	12-Jun-2019	52	12-Aug-2019
(40621) ASW-2(Shanganagh STW Receiving Water) 2.5km NE from Dalkey Island. Composite Sample	12/06/2019 09:49	12/06/2019 14:36	1585987	<10	12-Jun-2019	55	12-Aug-2019

Killiney Beach Bathing Water Monitoring Results 2020:

Date	E-Coli (cfu/100ml)	Intestinal Enterococci (cfu/100ml)	EPA Classification Standard
01/09/2020	<10	5	Excellent
26/08/2020	63	15	Excellent
17/08/2020	10	5	Excellent
12/08/2020	10	3	Excellent
04/08/2020	173	51	Excellent
28/07/2020	<10	8	Excellent
20/07/2020	<10	<1	Excellent
14/07/2020	<10	2	Excellent
06/07/2020	<10	5	Excellent
29/06/2020	<10	1	Excellent
22/06/2020	30	25	Excellent
15/06/2020	10	1	Excellent
08/06/2020	<10	1	Excellent
02/06/2020	<10	<1	Excellent
25/05/2020	<10	3	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