Annual Environmental Report

2019

Shanganagh

D0038-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2019 AER

This Annual Environmental Report has been prepared for D0038-01, 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.

The Drainage Area Plan (DAP) for the Shanganagh-Bray agglomeration is due to be completed in 2020. The DAP is an investigation covering hydraulic, environmental, structural, service and operational failure mechanisms within a drainage area. The purpose of the DAP is to use an integrated, risk based approach to assess network performance and to identify and prioritise any interventions needed to ensure compliance with environmental and service objectives.

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	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 - 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
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	35	532	183.17
Suspended Solids mg/l	35	702	254.66
Total Nitrogen mg/l	35	66.1	36.28
COD-Cr mg/l	35	853	417.14
Total Phosphorus (as P) mg/l	35	12.9	6.85
Hydraulic Capacity	N/A	100407	35074

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)
Nitrate (as N) mg/l	N/A	N/A	N/A	34	N/A	N/A	5.27	
Temperature °C	N/A	N/A	N/A	1	N/A	N/A	4	
COD-Cr mg/l	125	250	N/A	35	N/A	N/A	31.83	Pass
Nitrite (as N) mg/l	N/A	N/A	N/A	34	N/A	N/A	0.23	
Total Oxidised Nitrogen (as N) mg/l	N/A	N/A	N/A	34	N/A	N/A	5.49	
Fats, Oils & Greases mg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
ortho-Phosphate (as P) - unspecified mg/l	N/A	N/A	N/A	1	N/A	N/A	4.79	
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	35	N/A	N/A	5.84	Pass
Ammonia-Total (as N) mg/l	N/A	N/A	N/A	34	N/A	N/A	22.04	
Total Phosphorus	N/A	N/A	N/A	35	N/A	N/A	1.93	

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)
(as P) mg/l								
Conductivity 20 C µS/cm	N/A	N/A	N/A	35	N/A	N/A	883.91	
Dissolved Inorganic Nitrogen (as N) mg/l	N/A	N/A	N/A	34	N/A	N/A	27.53	
Suspended Solids mg/l	35	87.5	N/A	34	N/A	N/A	15.96	Pass
Total Nitrogen mg/l	N/A	N/A	N/A	30	N/A	N/A	30.18	
pH pH units	6-9	6-9	N/A	34	N/A	N/A	7.56	Pass

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

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)
COD	5519059	435556	92
TP	90623	26408	71
SS	3369358	211959	94
TN	479943	404215	16
cBOD	2423442	79961	97

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)	100407

Shanganagh WWTP	
Average Hydraulic loading to the Treatment Plant (m³/day)	35074
Organic Capacity (PE) - As Constructed	186000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	127618
Organic Capacity (PE) - Remaining	58382
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 is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
17	Blocked Sewer	0	17

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)
Other	SWO exceptional rainfall and overflow expected	1	No	Yes
Uncontrolled release	Blocked Sewer	1	No	Yes
Spillage	EO caused by power failure	1	No	Yes

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Other	SWO exceptional rainfall and overflow expected	1	Yes	No
Uncontrolled release	Adverse Weather	1	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2019	5
Number of Incidents reported to the EPA via EDEN in 2019	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	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 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
SW002	326088, 223330	Yes	Low	Meeting	Unknown	Unknown	Monitored
SW003	322644, 226837	Yes	Low	Not yet assessed	Unknown	Unknown	Not Monitored
SW004	321686, 225600	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW005	321686, 225600	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW006	321686, 225600	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW007	321686, 225600	Yes	Low	Meeting	Unknown	Unknown	Monitored
SW008	321686,	Yes	Low	Meeting	Unknown	Unknown	Not

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 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
	225600						Monitored
SW009	322071, 225515	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW010	322399, 225484	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW011	323354, 225881	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW012	323613, 225495	Yes	Medium	Meeting	Unknown	Unknown	Monitored
SW013	325251, 223481	Yes	Medium	Meeting	Unknown	Unknown	Monitored
SW014	321686, 225600	Yes	Not Yet Assessed	Not yet assessed	Unknown	Unknown	Not Monitored
SW015	321628, 225563	Yes	Not Yet Assessed	Not yet assessed	Unknown	Unknown	Not Monitored
SW016	326755, 219736	Yes	Not Yet Assessed	Not yet assessed	Unknown	Unknown	Not Monitored
SW018	326078, 224651	Yes	Not Yet Assessed	Not yet assessed	Unknown	Unknown	Not Monitored
SW019	328220, 220111	Yes	Low	Meeting	Unknown	Unknown	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 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
SW020	327040, 219331	Yes	Low	Meeting	Unknown	Unknown	Monitored
SW022	324656, 215072	Yes	Not Yet Assessed	Not Yet Assessed	Unknown	Unknown	Not Monitored
SW023	324543, 216844	Yes	Not Yet Assessed	Not Yet Assessed	Unknown	Unknown	Not Monitored
SW024	327548, 223736	Yes	Low	Not Yet Assessed	Unknown	Unknown	Monitored
SW026	320524, 227692	Yes	Not Yet Assessed	Not Yet Assessed	Unknown	Unknown	Not Monitored
SW027	325056, 220697	Yes	Not Yet Assessed	Not Yet Assessed	Unknown	Unknown	Not Monitored
SW029	326953, 219125	Yes	Not Yet Assessed	Not Yet Assessed	Unknown	Unknown	Not Monitored
SW030	327476, 218076	Yes	Not Yet Assessed	Not Yet Assessed	Unknown	Unknown	Not Monitored
SW031	326028, 217647	Yes	Not Yet Assessed	Not Yet Assessed	Unknown	Unknown	Not Monitored
SW032	326751, 219194	Yes	Not Yet Assessed	Not Yet Assessed	Unknown	Unknown	Not Monitored

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?	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?	N/A

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	At Planning Stage	31/12/2020	Drainage Area Plan (DAP) Investigation Study to be completed – Completion date refers to DAP.

D0038-SIP:02	WW sewer network improvements	C	31/12/2020	No	At Planning Stage	31/12/2020	Drainage Area Plan (DAP) Investigation Study to be completed – Completion date refers to DAP.
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
Toxicity of Final Effluent	Yes	2017	No	

5.1 TOXICITY OF FINAL EFFLUENT

The Toxicity of Final Effluent Report has been included in the AER 2017.

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

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

Date: 07/04/2020

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

2019 Ambient Monitoring

Sampling Point	Irish Grid Reference	Sampled Date	Ammonia µg/l as N	B.O.D. Sa mg/l	Bottom O % Sat.	Bottom T °C	Colour (Vi	DIN µg/l	E. coli MPN/100	Enterococci CFU/100ml	Enterococci (Confirmed) CFU/100ml	Faecal Coliforms MPN/100m	Oxygen a % Sat.	pH pH	Salinity (mean) PSU	Surface Temperature °C	TON µg/l as N	Total Coliforms MPN/100m	Total Nitrogen Saline µg/l as N
(40616) ASW-1(Shanganagh STW Receiving Water) 5km due east off SW1 Harbour. Composite Sample	334200, 223264	12/06/2019	31	<1	101.5	12.5	Normal	31	<10		2	<10	101.9	8.2	34.3	12.5	<40	<10	52
(40621) ASW-2(Shanganagh STW Receiving Water) 2.5km NE from Dalkey Island. Composite Sample	330000, 223400	12/06/2019	28	<1	101.3	12.3	Normal	28	<10	<1		<10	101.7	8.2	34.23	12.6	<40	<10	55

Killiney Beach Bathing Water Monitoring Results 2018:

Date	E-Coli (cfu/100ml)	Intestinal Enterococci (cfu/100ml)	EPA Classification Standard
11/09/2019	10	7	Excellent
10/09/2019	<10	74	Excellent
09/09/2019	<10	<1	Excellent
02/09/2019	<10	1	Excellent
27/08/2019	41	2	Excellent
19/08/2019	<10	<1	Excellent
14/08/2019	<10	8	Excellent
13/08/2019	20	5	Excellent
29/07/2019	20	5	Excellent
15/07/2019	<10	2	Excellent
03/07/2019	10	2	Excellent
02/07/2019	<10	<1	Excellent
17/06/2019	<10	5	Excellent
12/06/2019	<10	1	Excellent
11/06/2019	<10	3	Excellent
04/06/2019	183	340	Poor
29/05/2019	41	16	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