

# Annual Environmental Report

2018



Shanganagh

D0038-01

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# 1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 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 are included as an appendix to the AER as follows:

## 1.1 Licence specific reporting included in AER

Assessment / Report	Included in AER
<b>There is no Licence Specific Reports included in the AER.</b>	

## 1.2 Treatment Type

The agglomeration is served by a wastewater treatment plant Shanganagh WWTP with a Plant Capacity PE of 186000. The treatment process includes the following:

### 1.2.1 Shanganagh WWTP

Treatment type	Yes / No	Details
<b>Preliminary Treatment</b>	No	
<b>Primary Treatment</b>	Yes	Settlement
<b>Secondary Treatment</b>	Yes	Traditional Activated Sludge
<b>Nutrient Removal</b>	No	
<b>Tertiary Treatment</b>	No	

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 2.2 Discharges from the agglomeration.

### 1.3 ELV Overview

#### 1.3.1 Shanganagh WWTP

Compliance Status	
Were all parameters compliant for Shanganagh WWTP treatment plant	Yes
Where non compliant see Table 2.2.1 for details of parameters	

### 1.4 Sludge Removal

The amount of sludge removed from the wastewater treatment plant is shown below along with the transported destination of the sludge from the treatment plant.

Treatment Plant	Sludge type	Quantity	Unit	% Dry Solids	Destination
Shanganagh WWTP	Dried Sludge	300	Weight (Tonnes)	92	Carrollstown Estate Trim
Shanganagh WWTP	Cake Sludge	860	Weight (Tonnes)	22	Carrollstown Estate Trim

#### Annual Statement of Measures

The Drainage Area Plan (DAP) for the Shanganagh-Bray agglomeration commenced in Q4 2017 and is due to be completed by end of 2019. 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. The DAP will encompass both Storm Water Overflow and network assessments and will therefore comprehensively address the need to carry out separate Storm Water Overflow or Sewer Integrity Assessments at this time.

## 2 MONITORING REPORTS SUMMARY

### 2.1 Summary report on monthly influent monitoring

A summary of influent monitoring for the treatment plant is presented in below. This monitoring is primarily undertaken in order to determine the overall efficiency of the plant in removing pollutants from the raw wastewater.

#### 2.1.1 Influent Monitoring Summary - Shanganagh WWTP

Parameters	Number of Samples	Annual Max	Annual Mean
<b>BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l</b>	35	476	165.12
<b>COD-Cr mg/l</b>	35	1066	395
<b>Suspended Solids mg/l</b>	35	559	219.62
<b>Total Phosphorus (as P) mg/l</b>	35	15.9	7.24
<b>Total Nitrogen mg/l</b>	35	66.4	36.27
<b>Hydraulic Capacity</b>		92,946	35,556

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 3.5 if applicable.

#### Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity as detailed further in Section 3.2. The annual maximum hydraulic loading is less than the peak Treatment Plant Capacity as detailed further in Section 3.2. 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.

## 2.2 Discharges from the agglomeration

### 2.2.1 Effluent Monitoring Summary - Shanganagh WWTP

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included <sup>Note 1</sup>	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	0	0	0	34	0	0	6.7	N/A
pH pH units	6 to 9	0	0	34	0	0	7.53	Pass
Conductivity 20 C $\mu$ S/cm	0	0	0	34	0	0	915.27	N/A
COD-Cr mg/l	125	250	0	34	0	0	37.25	Pass
Dissolved Inorganic Nitrogen (as N) mg/l	0	0	0	34	0	0	26.95	N/A
Total Oxidised Nitrogen (as N) mg/l	0	0	0	34	0	0	6.94	N/A
Total Nitrogen mg/l	0	0	0	31	0	0	29.15	N/A
Total Phosphorus (as P) mg/l	0	0	0	34	0	0	1.91	N/A
Fats, Oils & Greases mg/l	0	0	0	5	0	0	0	N/A
Suspended Solids	35	87.5	0	34	2	0	13.49	Pass

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included <sup>Note 1</sup>	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)
mg/l								
<b>BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l</b>	25	50	0	34	1	0	7.45	Pass
<b>Nitrite (as N) mg/l</b>	0	0	0	34	0	0	0.24	N/A
<b>Ammonia-Total (as N) mg/l</b>	0	0	0	34	0	0	20.01	N/A

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.

### 2.3 Ambient monitoring summary

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.

### 2.3.1 Ambient Monitoring Report Summary - Shanganagh WWTP

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	Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Status
Downstream	327734, 223280	TPEFF1000D0038SW001	Yes	No	No	No	High

### 2.3.2 Ambient Monitoring Parameter Summary - Shanganagh WWTP

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 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.

### 3 OPERATIONAL REPORTS SUMMARY

#### 3.1 Treatment Efficiency Report

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:

##### 3.1.1 Treatment Efficiency Report Summary - Shanganagh WWTP

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
<b>cBOD</b>	2,055,607	95,079	95
<b>TP</b>	87,508	23,628	73
<b>TN</b>	438,618	354,787	19
<b>COD</b>	4,776,748	461,539	90
<b>SS</b>	2,655,866	183,274	93

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

### 3.2 Treatment Capacity Report Summary

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 <sup>3</sup> /day) - As Constructed	108000
DWF to the Treatment Plant (m <sup>3</sup> /day)	36000
Current Hydraulic Loading - annual max (m <sup>3</sup> /day)	92946
Average Hydraulic loading to the Treatment Plant (m <sup>3</sup> /day)	35556
Organic Capacity (PE) - As Constructed	186000
Organic Capacity (PE) - Collected Load (peak week)	126035
Organic Capacity (PE) - Remaining	59965
Will the capacity be exceeded in the next three years? (Yes/No)	No

### 3.3 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
30	Blocked Sewer	0	30

### 3.4 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.

#### 3.4.1 Summary of Incidents

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Other	1	No	Yes
Other	Plant or equipment breakdown at WWTP	1	No	Yes

#### 3.4.2 Summary of Overall Incidents

Question	Answer
Number of Incidents in 2018	2
Number of Incidents reported to the EPA via EDEN in 2018	2
Explanation of any discrepancies between the two numbers above	N/A

### 3.5 Sludge / Other inputs to the 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)
<b>There is no Sludge and Other Input data for the Treatment Plant included in the AER.</b>							

## 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:

**No Appendix Included.**

#### 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 2018 (No. of events)	Total volume discharged in 2018 (m <sup>3</sup> )	Monitoring Status
SW002	321228, 225548	Yes	Low	Not Meeting			Not Monitored
SW003	321239, 225569	Yes	Low	Not Meeting			Not Monitored
SW004	321378, 225602	Yes	Low	Not Meeting			Not Monitored
SW005	321413, 225610	Yes	Low	Not Meeting			Not Monitored
SW006	321602, 225682	Yes	Low	Not Meeting			Not Monitored
SW007	322047, 225536	Yes	Low	Not Meeting			Not Monitored
SW008	322141, 225513	Yes	Low	Not Meeting			Not Monitored

<b>SW009</b>	322645, 225545	Yes	Low	Not Meeting			Not Monitored
<b>SW010</b>	323607, 225496	Yes	Medium	Meeting			Not Monitored
<b>SW011</b>	325251, 223481	Yes	Medium	Not Meeting			Not Monitored
<b>SW012</b>	322644, 226838	Yes	Low	Not Meeting			Not Monitored

#### 4.1.2 Inspection Summary Report

<b>SWO Summary</b>	
<b>How much sewage was discharged via SWOs in the agglomeration in the year (m<sup>3</sup>)?</b>	Not Monitored
<b>Is each SWO identified as non meeting DoEHLG Guidance included in the Programme of Improvements?</b>	Yes
<b>The SWO Assessment included the requirements of relevant of WWDL schedules?</b>	No
<b>Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?</b>	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 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)	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
Upgrading of sewer network to ensure SWO's comply with DoEHLG criteria	C		No	Not Started		The improvement programme will be reviewed by IW to assess the works required to comply with the licence condition on a prioritised basis.
WW sewer network improvements	C		No	Not Started		The improvement programme will be reviewed by IW to assess the works required to comply with the licence condition on a prioritised basis.
WWTP upgrade and ancillary works	C	29/04/2011	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	Improvement Source	Expected Completion Date	Comments
<b>There are no Improvements Programme for this Agglomeration.</b>				

#### 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.

5.a Licence Specific Reports Summary Table

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	

## 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	Condition 1.8 of both licences (D0038-01 and D0005-01) state that the licensee should “seek a licence review at least six months in advance of the completion of the Bray Transfer pipeline to the upgraded Shanganagh Waste Water Treatment Plant”
Is there a need to request/advise the EPA of any modifications to the existing WWDL?	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: 19/03/2019

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,

Eleanor Roche

Acting Head of Environmental Regulation.

## 7 APPENDIX

### Appendix

#### Appendix 7.1 - Ambient Monitoring Summary

Shanganagh - Ambient Monitoring

Sampling Point	Date	Ammonia µg/l as N	BOD Saline mg/l	Bottom Oxygen % Sat.	Bottom Temp °C	Colour (Visual)	DIN µg/l	E. coli MPN/100ml	Enterococci CFU/100ml	Faecal Coliforms MPN/100ml	Oxygen at 0 m depth % Sat.	pH pH	Pheophytin A mg/m <sup>3</sup>	Salinity (mean) PSU	Surface Temp °C	TON µg/l as N	Total Coliforms MPN/100ml	Total Nitrogen Saline µg/l as N
(40616) ASW-1 (Shanganagh STW Receiving Water) 5km due east off SW1 Harbour. Composite Sample.	20-06-18	<10	<1	101.2	13.5	Normal	< 50	<10	<1	<10	107.4	8	0.9	35.76	13.9	<40	30	59
(40621) ASW-2 (Shanganagh STW Receiving Water) 2.5km NE from Dalkey Island. Composite Sample.	20-06-18	<10	1	102.7	13.9	Normal	< 50	<10	<1	10	104.9	8.2	0.4	35.12	14.3	<40	10	91

**Killiney Beach Bathing Water Monitoring Results 2018:**

Date	E-Coli (cfu/100ml)	Intestinal Enterococci (cfu/100ml)	EPA Classification Standard
10/09/2018	41	47	Excellent
27/08/2018	41	2	Excellent
23/08/2018	<10	8	Excellent
22/08/2018	10	3	Excellent
13/08/2018	<10	5	Excellent
09/08/2018	<10	<1	Excellent
25/07/2018	<10	6	Excellent
24/07/2018	<10	2	Excellent
12/07/2018	<10	2	Excellent
11/07/2018	10	<1	Excellent
26/06/2018	<10	2	Excellent
25/06/2018	10	<1	Excellent
12/06/2018	10	36	Excellent
11/06/2018	119	450	Poor
28/05/2018	<10	<1	Excellent
10/09/2018	41	47	Excellent
27/08/2018	41	2	Excellent
23/08/2018	<10	8	Excellent
22/08/2018	10	3	Excellent
13/08/2018	<10	5	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*

**Comment on the Bathing Water Monitoring results:**

Killiney is classified as achieving Good Water Quality in 2018 based on the assessment of bacteriological results for the period 2015 to 2018. Killiney also had a Good Water Quality rating in 2017 and 2016 and achieved an Excellent Water Quality rating in 2015.