Annual Environmental Report

2018

Swords

D0024-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 AER

This Annual Environmental Report has been prepared for D0024-01, Swords, 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 TREATMENT SUMMARY

The agglomeration is served by the following wastewater treatment plants:

- SWORDS WWTP with a Plant Capacity PE of 90,000
- TOBERBURR WWTP with a Plant Capacity PE of 500

The treatment process includes the following:

1.1.1 SWORDS WWTP

Treatment type	Yes / No	Details
Preliminary Treatment	No	Screening/Grit Removal
Primary Treatment	Yes	
Secondary Treatment	Yes	
Nutrient Removal	Yes	Chemical Dosing for Phosphorus Removal
Tertiary Treatment	Yes	UV Disinfection System and 10µm Disc Filter Screens

The Swords agglomeration is served by a recently expanded wastewater treatment plant with a Design PE of 90,000 (3 streams of 20k, 30k and 40k, respectively).

1.1.2 TOBERBURR WWTP

Currently there is a secondary discharge from the Toberburr Activated Sludge Treatment Plant. Toberburr is a Conventional Activated Sludge plant with an aeration tank, settlement tank and a sludge holding tank. It has a design PE of 500. The plant is currently operating effectively. The Toberburr plant will be replaced by a pumping station and associated rising mains and gravity sewers to divert all effluent to Swords WWTP for treatment. A DAP study will be completed in Q1 2020 and this will determine the capacity of the network to receive additional flows from Toberburr WWTP.

1.2 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
TPEFF0900D0024SW001	SWORDS WWTP	Primary	Compliant	N/A
TPEFF0900D0024SW002	TOBERBURR WWTP	Secondary	Complaint	N/A

1.3 LICENCE SPECIFIC REPORTING INCLUDED IN AER

Assessment / Report	Included in AER
There are no Licence Specific Reports included in this AER	N/A

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 SWORDS WWTP

2.1.1 INFLUENT MONITORING SUMMARY - SWORDS 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
Total Phosphorus (as P) mg/l	26	10.5	6.88
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	26	574	253.83
Total Nitrogen mg/l	26	69	43.89
Suspended Solids mg/l	26	721	420.42
COD-Cr mg/l	26	1,494	714.24
Hydraulic Capacity	N/A	39,158	13,669

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 - TPEFF0900D0024SW001

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)
COD-Cr mg/l	125	250	0	29	0	0	27.55	Pass
Suspended Solids mg/l	35	87.5	0	28	0	0	8.27	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	0	29	0	0	3.21	Pass
Total Nitrogen mg/l	15	18	0	28	2	0	10.74	Pass
Total Phosphorus (as P) mg/l	2	2.4	0	29	0	0	0.52	Pass
pH pH units	6 to 9	0	0	29	0	0	7.84	Pass
Nitrite (as N) mg/l	0	0	0	29	0	0	0.18	
Ammonia-Total (as N) mg/l	0	0	0	29	0	0	1.8	
Dissolved Inorganic Nitrogen (as N) mg/l	0	0	0	29	0	0	10.04	
Nitrate (as N) mg/l	0	0	0	29	0	0	8.05	

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)
Conductivity 20 C µS/cm	0	0	0	29	0	0	833.93	
Total Oxidised Nitrogen (as N) mg/l	0	0	0	29	0	0	8.24	
ortho-Phosphate (as P) - unspecified mg/l	0	0	0	29	0	0	0.27	

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 EFFLUENT MONITORING SUMMARY - TPEFF0900D0024SW002

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)
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	0	6	0	0	9.92	Pass
COD-Cr mg/l	125	250	0	6	0	0	63.81	Pass
Suspended Solids mg/l	35	87.5	0	6	0	0	10.25	Pass
pH pH units	6 to 9	0	0	6	0	0	8.06	Pass
Ammonia-Total (as N) mg/l	0	0	0	6	0	0	36.42	
ortho-Phosphate (as P) - unspecified mg/l	0	0	0	6	0	0	2.85	
Conductivity 20 C µS/cm	0	0	0	3	0	0	1,025.01	

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.

2.1.4 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.

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
Upstream	318960, 248006	TW09001008BM1008	No	No	No	No	Poor
Downstream	321268, 246845	TW09001008BM1003	Yes	No	No	Yes	Moderate
Downstream	320527, 247216	TW09001008BM1002	Yes	No	No	Yes	Moderate

The results for ambient results and / or additional monitoring data sets are included in the **Appendix 7.1.**

Significance of Results:

The WWTP discharge was compliant with the ELV's set in the wastewater discharge licence.

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.

It is reasonable to assume that the Swords WWTP final discharge and the Toberburr WWTP secondary discharge are not having a negative impact on the Balcarrick Beach, designated bathing water area or shellfish areas.

2.1.5 OPERATIONAL PERFORMANCE SUMMARY

2.1.5.1 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:

Swords WWTP

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
cBOD	1,542,273.24	14,570.20	99.06
COD	3,505,191.18	124,927.27	96.44
SS	2,063,226.93	44,140.31	97.86
TN	215,379.70	48,488.40	77.49
TP	33,748.59	2,362.50	93.00

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

Toberburr WWTP

There is no influent monitoring at the Toberburr WWTP.

2.1.5.2 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.

SWORDS WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	60,750
DWF to the Treatment Plant (m^3/day)	20,250
Current Hydraulic Loading - annual max (m^3/day)	39,158
Average Hydraulic loading to the Treatment Plant (m^3/day)	13,669
Organic Capacity (PE) - As Constructed	90,000
Organic Capacity (PE) - Collected Load (peak week)	57,544
Organic Capacity (PE) - Remaining	32,456
Will the capacity be exceeded in the next three years? (Yes/No)	No

2.1.6 SLUDGE / OTHER INPUTS

'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 Swords Treatment Plant included in the AER.							

2.1.7 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
SWORDS WWTP	Cake Sludge	752.26	Weight (Tonnes)	24.6	Carrollstown, Barrockstown and Bellewstown, Co. Meath by Enva Ltd.
SWORDS WWTP	Cake Sludge	2562.77	Weight (Tonnes)	23	Templemoyne and Galmoystown by SEDE Ireland Ltd.

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	1	16

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	Inadequate Operational Procedures	1	No	Yes
Other	Plant or equipment breakdown at WWTP	1	No	Yes
Other	Plant or equipment breakdown at WWTP	1	No	Yes
Other	Other	1	No	Yes

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Other	Other	1	No	Yes
Other	Plant or equipment breakdown at WWTP	1	No	Yes
Other	Plant or equipment breakdown at WWTP	1	No	Yes
Other	Plant or equipment breakdown at WWTP	1	No	Yes **
Other	Plant or equipment breakdown at WWTP	1	No	No
Non-compliance *	WWTP biological sludge issue	1	No	Yes
Uncontrolled release	Plant or equipment breakdown at WWTP	1	No	Yes
Non-compliance *	Plant or equipment breakdown at WWTP	1	No	No

** This incident relates to an Operational sample (INCI015437 & INCI015603)*

*** Closed on 21/02/2019 (INC1014828)*

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2018	12
Number of Incidents reported to the EPA via EDEN in 2018	12
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 2018 (No. of events)	Total volume discharged in 2018 (m^3)	Monitoring Status
SW017	318046, 246421	Yes	Unknown	Not yet Assessed			Not Monitored
SW019	318332, 247431	Yes	Unknown	Not yet Assessed			Not Monitored
SW025	319294, 247778	Yes	Unknown	Not yet Assessed			Not Monitored
SWO20	318181, 246937	Yes	Unknown	Not yet Assessed			Not Monitored

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m^3)?	Not Monitored
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	Yes

SWO Summary	
The SWO Assessment included the requirements of relevant of WWDL schedules?	No
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 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
D0024-SIP:01	Installation of enhanced nutrient reduction measure(s) at WWTP, as required, to meet the emission limit values	C	31/12/2021	No	Works Completed		
D0024-SIP:02	Replacement of Toberburr WWTP with a pumping station and construction of rising mains and gravity sewers to divert all effluent	C	31/12/2015	Yes	Not Started		The improvement programme will be reviewed by IW to assess the works required to comply with the licence

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
	to Swords WWTP for treatment						condition on a prioritised basis. A DAP study will be completed in Q1 2020 and this will determine the capacity of the network to receive additional flows from Toberburr WWTP.
D0024-SIP:03	SW002 (1) Toberburr Activated Sludge Treatment Plant to be discontinued	A	31/12/2015	Yes	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.
D0024-SIP:04	Upgrade of WWTP to cater for 90,000 p.e. with enhanced nutrient reduction, UV disinfection system, new storm water holding tank and ancillary works	C	31/12/2015	Yes	Works Completed		

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
D0024-SIP:05	Upgrading of Storm Water Overflows to comply with the criteria outlined in the DoECLG "Procedures and Criteria in relation to Storm Water Overflows" (1995)	C	31/12/2015	Yes	At Planning Stage	20/01/2020	DAP study will be completed in Q1 2020. This will identify any SWO upgrades required.

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
There is 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.

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
Priority Substances Assessment	Yes	2014	No	N/A

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?	No
List reason e.g. additional SWO identified	N/A
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?	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: 15/04/2019

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

Swords Ambient Monitoring Data

Ambient Monitoring Report Summary Table

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 monitoring point - BM020- Balheary Bridge	318960E, 248006N	TW09001008BM1008	n/a	n/a	n/a	n/a	Poor
BM130-Seatown East	320527E, 247216N	TW09001008BM1002	Y	N	N	Y	Moderate
BM140 Barrack Bridge	321268E, 246845N	TW09001008BM1003	Y	N	N	Y	Moderate
Balcarrick Beach, Donabate	325151E, 249004N	None	Y	N	N	Y	Good (Coastal Water Quality Status 2010 - 2015)

2018 Ambient Monitoring Summary

Sampling Point Description	Sample Date	Ammonia µg/l as N	Chlorophyll a mg/m^3	DIN µg/l	DO % Sat.	pH pH	Pheophytin a mg/m^3	Phosphorus (React) µg/l SRP as P	Salinity PSU	Temp °C	TON µg/l as N	Total B.O.D. (Saline) mg/l	Total Nitrogen Saline µg/l as N	Total Phosphorus µg/l as P
BM020	19/07/2018	319	17.7	1836	106	8	17.8	251	1.9	20.2	1517	2	1875	297
BM020	25/10/2018	54	1.5	115	92	7.9	1.3	52	0.5	13.1	61	<1	1524	131
BM130	19/07/2018	292	4.5	859	98	8	6.5	143	28.5	19.7	567	2	895	151
BM130	25/10/2018	75	4.1	1306	94	7.9	1.2	113	30.5	12.2	1231	1	1779	-
BM140	19/07/2018	149	5	390	103	8.1	8.8	66	31	19.7	241	2	444	66
BM140	25/10/2018	466	1.5	688	101	7.9	3.2	45	30.7	11.5	222	<1	910	54

Bathing Water Results 2018

Balcarrick Beach

Date	Escherichia coli	Intestinal enterococci	Sample Quality Status
05/09/2018	20	2	Excellent
20/08/2018	20	23	Excellent
07/08/2018	10	1	Excellent
23/07/2018	20	43	Excellent
09/07/2018	<10	16	Excellent
25/06/2018	<10	<1	Excellent
11/06/2018	20	3	Excellent
06/06/2018	<10	<1	Excellent
23/05/2018	<10	1	Excellent

(Source: Beaches.ie)

In order to assess these results, the Bathing Water Quality Regulations, 2008 (S.I No 79 of 2008), was consulted. Balcarrick Beach achieved "*Excellent*" results in all cases for the 2018 Bathing Water season. Balcarrick Beach is classified as achieving Sufficient Water Quality in 2018 based on the assessment of bacteriological results for the period 2015 to 2018. Balcarrick Beach had a Sufficient Water Quality rating in 2017, a Good Water Quality rating in 2016 and achieved an Excellent Water Quality rating in 2015.

2018 FCC Bathing Water Monitoring Data

Location Sampling Point	Sampled Date and Date of Testing	E. coli MPN/100ml	Enterococci CFU/100ml	Floating Materials	Mineral Oil (visual)	pH	Phenols Olfactory	Salinity PSU	Surfactants	Visual Inspection
(49914) Balcarrick Beach	23/05/2018 07:20	<10	1	Absent	Absent	8.2	Absent	33.4	Absent	Normal
(49914) Balcarrick Beach	06/06/2018 05:20	<10	<1	Absent	Absent	8.2	Absent	33.8	Absent	Normal
(49914) Balcarrick Beach	11/06/2018 10:10	20	3	Absent	Absent	8.1	Absent	32.7	Absent	Normal
(49914) Balcarrick Beach	25/06/2018 11:20	<10	<1	Absent	Absent	8.2	Absent	33.9	Absent	Normal
(49914) Balcarrick Beach	09/07/2018 09:37	<10	16	Absent	Absent	8.2	Absent	34	Absent	Normal
(49914) Balcarrick Beach	23/07/2018 09:45	20	43	Absent	Absent	8.1	Absent	33.5	Absent	Normal
(49914) Balcarrick Beach	07/08/2018 09:01	10	1	Absent	Absent	8.1	Absent	33.9	Absent	Normal
(49914) Balcarrick Beach	20/08/2018 08:00	20	23	Absent	Absent	8.1	Absent	33.4	Absent	Normal
(49914) Balcarrick Beach	05/09/2018 08:30	20	2	Absent	Absent	8.1	Absent	34.4	Absent	Normal
(49915) Malahide Beach	23/05/2018 06:55	20	5	Absent	Absent	8.2	Absent	31.2	Absent	Normal
(49915) Malahide Beach	06/06/2018 04:56	98	86	Absent	Absent	8.2	Absent	33.7	Absent	Normal
(49915) Malahide Beach	11/06/2018 09:45	31	17	Absent	Absent	8.1	Absent	32.5	Absent	Normal
(49915) Malahide Beach	25/06/2018 11:50	<10	6	Absent	Absent	8.2	Absent	34	Absent	Normal
(49915) Malahide Beach	09/07/2018 09:07	243	42	Absent	Absent	8.1	Absent	33.3	Absent	Normal
(49915) Malahide Beach	23/07/2018 09:20	85	33	Absent	Absent	8.1	Absent	34.2	Absent	Normal
(49915) Malahide Beach	07/08/2018 09:05	228	69	Absent	Absent	8.1	Absent	32.9	Absent	Normal
(49915) Malahide Beach	20/08/2018 07:30	41	40	Absent	Absent	8	Absent	33.5	Absent	Normal
(49915) Malahide Beach	05/09/2018 07:55	120	20	Absent	Absent	8	Absent	33	Absent	Normal