Annual Environmental Report

2023

Swords

D0024-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2023 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 ANNUAL STATEMENT OF MEASURES

A summary of any improvements undertaken is provided where applicable.

There were no capital works, significant changes or operational changes undertaken in 2023.

1.2 TREATMENT SUMMARY

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

- Toberburr WWTP with a Plant Capacity PE of 500, the treatment type is 2 - Secondary treatment .
- Swords WWTP with a Plant Capacity PE of 70000, the treatment type is 3NP - Tertiary N&P removal .

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
TPEFF0900D0024SW002	Toberburr	Combined	Non-Compliant	N/A

Discharge Point Reference	Treatment Plant	Discharge Type	Compliance Status	Parameters failing if relevant
TPEFF0900D0024SW001	Swords WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l Suspended Solids mg/l Total Nitrogen 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 TOBERBURR WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - TOBERBURR 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
There is no Influent data for the Toberburr WWTP.			

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 greater than the peak Treatment Plant Capacity. The annual maximum hydraulic loading is greater 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 - TOBERBURR WWTP

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	7	N/A	N/A	31	Pass
Suspended Solids mg/l	35	87.5	N/A	7	N/A	N/A	8.01	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	7	N/A	N/A	3.99	Pass
pH pH units	6	9	N/A	7	N/A	N/A	7.55	Pass
ortho-Phosphate (as P) - unspecified mg/l	N/A	N/A	N/A	7	N/A	N/A	2.20	
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	7	N/A	N/A	2.55	
Total Oxidised Nitrogen (as N) mg/l	N/A	N/A	N/A	7	N/A	N/A	2.13	
Nitrate (as N) mg/l	N/A	N/A	N/A	7	N/A	N/A	2.05	
Nitrite (as N) mg/l	N/A	N/A	N/A	7	N/A	N/A	0.081	

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)
Dissolved Inorganic Nitrogen (as N) mg/l	N/A	N/A	N/A	7	N/A	N/A	6.24	
Ammonia-Total (as N) mg/l	N/A	N/A	N/A	7	N/A	N/A	4.11	
Conductivity @20°C µS/cm	N/A	N/A	N/A	7	N/A	N/A	705	
Total Nitrogen mg/l	N/A	N/A	N/A	7	N/A	N/A	7.28	

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):

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– TOBERBURR WWTP DISCHARGE

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
There is no Ambient data included for the Toberburr WWTP.							

Significance of Results:

Based on effluent compliance however it is not considered that the Toberburr WWTP is having an observable negative impact on the water quality downstream or on Water Framework Directive status.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - TOBERBURR WWTP

2.1.4.1 Treatment Efficiency Report - TOBERBURR 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)
There is no Influent data for the Toberburr WWTP and therefore the % efficiency of the treatment process cannot be calculated.			

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

2.1.4.2 Treatment Capacity Report Summary - TOBERBURR 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.

TOBERBURR WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	N/A
DWF to the Treatment Plant (m^3/day)	N/A
Current Hydraulic Loading - annual max (m^3/day)	468
Average Hydraulic loading to the Treatment Plant (m^3/day)	113
Organic Capacity (PE) - As Constructed	500
Organic Capacity (PE) - Collected Load (peak week)[Note1]	607
Organic Capacity (PE) - Remaining	0

TOBERBURR WWTP	
Will the capacity be exceeded in the next three years? (Yes/No)	Yes

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 - TOBERBURR WWTP

'Other inputs' to the waste water treatment plant are summarised in the 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 Toberburr WWTP Plant included in the AER.							

2.2 SWORDS WWTP - TREATED DISCHARGE

2.2.1 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
Suspended Solids mg/l	26	638	300
Total Phosphorus (as P) mg/l	26	13	7.16
pH pH units	26	8.40	7.75
Ammonia-Total (as N) mg/l	26	71	36
ortho-Phosphate (as P) - unspecified mg/l	26	8.84	4.45
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	23	381	243
COD-Cr mg/l	26	1077	594
Total Nitrogen mg/l	26	101	52
Hydraulic Capacity	N/A	34588	15426

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'.

2.2.2 EFFLUENT MONITORING SUMMARY – SWORDS WWTP

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	80	160	N/A	29	N/A	N/A	35	Pass
Total Nitrogen mg/l	10	12	N/A	29	23	21	14	Fail
Suspended Solids mg/l	10	25	N/A	29	10	1	11	Fail
Total Oxidised Nitrogen (as N) mg/l	10	12	N/A	29	4	N/A	8.32	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	10	20	N/A	26	2	N/A	4.70	Pass
pH pH units	6	9	N/A	29	N/A	N/A	7.68	Pass
Total Phosphorus (as P) mg/l	1	1.2	N/A	29	N/A	N/A	0.387	Pass

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)
ortho-Phosphate (as P) - unspecified mg/l	0.3	0.6	N/A	29	N/A	N/A	0.078	Pass
Ammonia-Total (as N) mg/l	0.2	0.4	N/A	29	28	28	4.96	Fail
Conductivity @20°C µS/cm	N/A	N/A	N/A	29	N/A	N/A	901	
Nitrite (as N) mg/l	N/A	N/A	N/A	29	N/A	N/A	0.606	
Dissolved Inorganic Nitrogen (as N) mg/l	N/A	N/A	N/A	29	N/A	N/A	13	
Nitrate (as N) mg/l	N/A	N/A	N/A	29	N/A	N/A	7.72	

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 Upgrade required to meet ELVs.

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.

2.2.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF0900D0024SW003

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	Station Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Ecological Status
Upstream	318960, 248006	TW09001008BM1008	No	No	No	No	Moderate
Downstream (BM130 - Seatown East)	320527, 247216	TW09001008BM1002	Yes	No	No	No	Moderate
Downstream (BM140 - Barrack Br)	321268, 246845	TW09001008BM1003	Yes	No	No	No	Moderate

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 Swords WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results do not meet the required EQS at the upstream and the downstream monitoring locations. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

Based on ambient monitoring results a deterioration in BOD, Ammonia and Chlorophyll a concentrations downstream of the effluent discharge is noted.

A deterioration in water quality has been identified, however it is not known if it or is not caused by the WWTP.

The discharge from the wastewater treatment plant does not have an observable impact on the bathing water quality.

The discharges from the wastewater treatment plants do not have an observable negative impact on the Water Framework Directive status.

2.2.4 OPERATIONAL PERFORMANCE SUMMARY - SWORDS WWTP

2.2.4.1 Treatment Efficiency Report - Swords 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	1673157	57672	97
TN	290750	74350	74
COD	3313309	183272	94
cBOD	1397698	25404	98
TP	39925	2038	95

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

2.2.4.2 Treatment Capacity Report Summary - Swords 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.

Swords WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	60750
DWF to the Treatment Plant (m^3/day)	20250
Current Hydraulic Loading - annual max (m^3/day)	34588
Average Hydraulic loading to the Treatment Plant (m^3/day)	15426
Organic Capacity (PE) - As Constructed	70000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	60105
Organic Capacity (PE) - Remaining	9895
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.

2.2.5 SLUDGE / OTHER INPUTS - SWORDS WWTP

'Other inputs' to the waste water treatment plant are summarised in the 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)
Domestic /Septic Tank Sludge	28	Volume (m^3)	0.34	0.0005	Yes	Yes	No

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
There were no relevant environmental complaints in 2023.			

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 Uisce Éireann 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	Recurring (Y/N)	Closed (Y/N)
Breach of ELV	WWTP upgrade required to meet ELV	Yes	No
Uncontrolled release	Plant or equipment breakdown at WWTP	No	No
Spillage	Plant or equipment breakdown at WWTP	No	Yes

Incident Type	Cause	Recurring (Y/N)	Closed (Y/N)
Abatement equipment off-line	Plant or equipment breakdown at WWTP	No	Yes
Uncontrolled release	Emergency overflow caused by power failure	No	Yes
Uncontrolled release	Emergency overflow caused by power failure	No	Yes
Abatement equipment off-line	Plant or equipment breakdown at WWTP	No	Yes
Abatement equipment off-line	Plant or equipment breakdown at WWTP	No	Yes
Uncontrolled release	Plant or equipment breakdown at WWTP	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2023	9
Number of Incidents reported to the EPA via EDEN in 2023	9
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:

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 2023 (No. of events)	Total volume discharged in 2023 (m^3)	Monitoring Status
SW17	318046,246421	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SW25	319294,247772	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
SW19	317411,247127	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SW011	319278,247777	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	318083,246639	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	319292,247612	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	318909,248015	Yes	Low Significance	Meeting Criteria	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 2023 (No. of events)	Total volume discharged in 2023 (m^3)	Monitoring Status
TBC	319297,245571	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	320128,245433	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	317521,245643	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	319294, 247772	Yes	Low Significance	Not yet Assessed	Unknown	Unknown	Not Monitored

4.1.1 SWO IDENTIFICATION

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.

SWO Summary	
How much wastewater discharge by metered SWOs during the year (m^3)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	N/A
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
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 to Swords WWTP for treatment	C	31/12/2015	Yes	Not Started		Not required until future development connects
D0024-SIP:03	SW002 (1) Toberburr Activated Sludge Treatment Plant to be discontinued	A	31/12/2015	Yes	Not Started		Not required until future development connects
D0024-SIP:04	Upgrade of WWTP to cater for 90,000 p.e., with enhanced	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
	nutrient reduction, UV disinfection system, new storm water holding tank and ancillary works						
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	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

N/A

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	Included in this AER
Priority Substances Assessment	Yes	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?	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: 28/02/2024

This AER has been produced by Uisce Éireann's Environmental Information System (EIMS) and has been electronically signed off in that system for and on behalf of,

Eleanor Roche

Head of Environmental Regulation.

7 APPENDIX

Appendix
Appendix 7.1 - Ambient Monitoring Summary

Swords Ambient Monitoring Data 2023

Ambient Monitoring Report Summary Table

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	Moderate
Downstream (BM140 - Barrack Br)	321268, 246845	TW09001008BM1003	Yes	No	No	No	Moderate
Downstream (BM130 - Seatown East)	320527, 247216	TW09001008BM1002	Yes	No	No	No	Moderate

Ambient Monitoring Summary 2023

Station	Sample Date	Biochemical Oxygen Demand	Dissolved Oxygen % Saturation	pH	DIN	Chlorophyll	Temp	Total Phosphorus as P	Total Ammonia as N	Ortho-Phosphate as P	TON as N	Pheophytin a	Salinity
		mg/l	% Sat.	pH Unit	µg/l	mg/m3	Degrees Celsius	µg/l	µg/l	µg/l	µg/l	mg/m3	µS/cm
TW09001008BM1008	15/03/2023	1	102	8.2	3.851	2	7.8	105	97	84	3754	1.3	0.1
TW09001008BM1008	10/05/2023	1	104	8.3	1.884	4.7	14.1	81.4	<10	<10	1884	5	0.1
TW09001008BM1008	20/09/2023	2	97	8.2	3.725	3.3	16.3	179	26	120	3699	4.5	0.1

Station	Sample Date	Biochemical Oxygen Demand	Dissolved Oxygen % Saturation	pH	DIN	Chlorophyll	Temp	Total Phosphorus as P	Total Ammonia as N	Ortho-Phosphate as P	TON as N	Pheophytin a	Salinity
		mg/l	% Sat.	pH Unit	µg/l	mg/m3	Degrees Celsius	µg/l	µg/l	µg/l	µg/l	mg/m3	µS/cm
TW09001008BM1002	15/03/2023	2	91	7.9	3.363	4.6	7.7	99.6	359	81	3004	3.8	9.5
TW09001008BM1002	10/05/2023	2	96	8.1	0.072	2	15.2	33	<10	<10	72	9.3	31.5
TW09001008BM1002	20/09/2023	2	90	7.9	0.473	7.1	16.4	74.4	247	61	226	2.9	30.9

Station	Sample Date	Biochemical Oxygen Demand	Dissolved Oxygen % Saturation	pH	DIN	Chlorophyll	Temp	Total Phosphorus as P	Total Ammonia as N	Ortho-Phosphate as P	TON as N	Pheophytin a	Salinity
		mg/l	% Sat.	pH Unit	µg/l	mg/m3	Degrees Celsius	µg/l	µg/l	µg/l	µg/l	mg/m3	µS/cm
TW09001008BM1003	15/03/2023	1	98	8	1.361	7.9	7.8	52.2	130	36	1231	1.8	21.3
TW09001008BM1003	10/05/2023	3	110	8.3	0.232	15	15.4	55.6	10	<10	222	7.7	26
TW09001008BM1003	20/09/2023	1	98	7.9	1.103	4.9	4.9	77.8	195	56	908	2.2	23.9

Shore Monitoring Data – Samples Tested at DCC Central Lab

Donabate -Balcarriack Beach

Sampled Date	E. coli MPN/100ml	Enterococci CFU/100ml	Floating Materials	Mineral Oil (visual)	pH pH	Phenols_ Olfactory	Salinity PSU	Surfactants	Visual Inspection
30/05/2023 06:45	<10	<1	Absent	Absent	8.1	Absent	32.9	Absent	Normal
12/06/2023 08:35	31	10	Absent	Absent	8.1	Absent	33.5	Absent	Normal
27/06/2023 09:15	<10	3	Absent	Absent	8.1	Absent	33.7	Absent	Normal
11/07/2023 08:35	41	17	Absent	Absent	8.1	Absent	33.6	Absent	Normal
17/07/2023 10:30	122	15	Absent	Absent	8.1	Absent	33.7	Absent	Normal
31/07/2023 09:50	41	14	Absent	Absent	8.2	Absent	33	Absent	Normal
08/08/2023 07:45	10	6	Absent	Absent	8	Absent		Absent	Normal
28/08/2023 07:40	<10	2	Absent	Absent	8.1	Absent	32.7	Absent	Normal
11/09/2023 09:45	<10	8	Absent	Absent	8.1	Absent	33.4	Absent	Normal

Malahide Beach

Sampled Date	E. coli MPN/100ml	Enterococci CFU/100ml	Floating Materials	Mineral Oil (visual)	pH pH	Phenols_ Olfactory	Salinity PSU	Surfactants	Visual Inspection
30/05/2023 07:20	213	70	Absent	Absent	8.1	Absent	32.9	Absent	Normal
12/06/2023 08:05	<10	3	Absent	Absent	8.1	Absent	33.5	Absent	Normal
27/06/2023 08:30	10	5	Absent	Absent	8.1	Absent	33.6	Absent	Normal
11/07/2023 07:50	10	27	Absent	Absent	8.1	Absent	33.6	Absent	Normal
17/07/2023 09:50	<10	1	Absent	Absent	8	Absent	33.7	Absent	Normal
31/07/2023 09:20	10	11	Absent	Absent	8.1	Absent	33.7	Absent	Normal
09/08/2023 09:05	20	34	Absent	Absent	8.1	Absent		Absent	Normal
28/08/2023 08:10	173	22	Absent	Absent	8	Absent	33.3	Absent	Normal
11/09/2023 09:05	52	13	Absent	Absent	8	Absent	32.9	Absent	Normal