Annual Environmental Report

2024

Dundalk

D0053-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2024 AER

This Annual Environmental Report has been prepared for D0053-01, Dundalk, in Louth 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 2024.

1.2 TREATMENT SUMMARY

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

- Dundalk WWTP with a Plant Capacity PE of 71000, 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
TPEFF2100D0053SW001	Dundalk WWTP	Treated	Non-Compliant	Total Nitrogen mg/l Total Phosphorus (as P) 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 DUNDALK WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - DUNDALK 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 Nitrogen mg/l	25	58	21
Suspended Solids mg/l	25	980	193
Total Phosphorus (as P) mg/l	25	23	4.74
BOD, 5 days with Inhibition (Carbonaceous) mg/l	25	339	100
COD-Cr mg/l	25	1350	375
Hydraulic Capacity	N/A	46782	23599

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’.

2.1.2 EFFLUENT MONITORING SUMMARY - TPEFF2100D0053SW001

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	25	N/A	N/A	32	Pass
Suspended Solids mg/l	35	87.5	N/A	25	3	N/A	19	Pass
BOD, 5 days with Inhibition (Carbonaceous) mg/l	25	50	N/A	25	N/A	N/A	3.34	Pass
Total Nitrogen mg/l	10	12	N/A	25	3	3	6.26	Fail
pH pH units	6	9	N/A	25	N/A	N/A	7.35	Pass
Total Phosphorus (as P) mg/l	1	1.2	N/A	25	3	2	0.598	Fail
ortho-Phosphate (as P) - unspecified mg/l	N/A	N/A	N/A	25	N/A	N/A	0.117	
Conductivity @20°C µS/cm	N/A	N/A	N/A	25	N/A	N/A	2603	

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	25	N/A	N/A	5.13	
Ammonia-Total (as N) mg/l	N/A	N/A	N/A	25	N/A	N/A	2.34	

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):

Inadequate Operational/Training Procedures.

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.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF2100D0053SW001

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
Upstream (CN030)	307227.17, 307718.49	TW21006031CN3003	No	No	No	Yes	Poor
Downstream (CN040)	308206.9, 307908.33	TW21006031CN3004	No	No	No	Yes	Poor
Downstream (CN110)	308745.37, 307876.19	TW21006030CN2004	No	No	No	Yes	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 WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence for the following: Total Nitrogen mg/l, Total Phosphorus (as P) mg/l.

The coastal/transitional ambient monitoring results do not meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

A deterioration in water quality has been identified (see Appendix 7.1) however it is not known if it or is not caused directly by the WWTP.

Based on the above, and the effluent compliance results, the discharge from the wastewater treatment plant may be having an observable negative impact on the water quality and the WFD status of the Castletown Estuary and Inner Dundalk Bay.

Shellfish Water – Dundalk Bay

The assessments completed (*i.e.*, Stage 1 – Desktop Study, Stage 2 – Scoping Assessment Report and Stage 3 – Site Survey Report of the Disinfection Programme), showed that in Dundalk Bay, the microbiological results of shellfish flesh of species collected within Dundalk Bay Shellfish Waters are good, but that on occasion levels may be above the Class B standard. Dundalk WwTP may contribute to the high microbiological level on the shellfish flesh; therefore, it concluded that further assessment is required. Progression to Stage 4 – Detailed Assessment of the Discharge has been agreed.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - DUNDALK WWTP

2.1.4.1 Treatment Efficiency Report - Dundalk 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	1610468	151133	91
TN	178558	49317	72
COD	3118141	255596	92
cBOD	833587	26281	97
TP	39440	4710	88

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

2.1.4.2 Treatment Capacity Report Summary - Dundalk 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.

Dundalk WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	56706
DWF to the Treatment Plant (m^3/day)	18902
Current Hydraulic Loading - annual max (m^3/day)	46782
Average Hydraulic loading to the Treatment Plant (m^3/day)	23599
Organic Capacity (PE) - As Constructed	71000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	58124
Organic Capacity (PE) - Remaining	12876
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 - DUNDALK 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)
Domestic /Septic Tank Sludge	26911.66	Volume (m^3)	327.69	0.31	Yes	Yes	Yes
Industrial / Commercial Sludge	1459.03	Weight (Tonnes)	17.77	0.02	Yes	Yes	Yes
Other	1487.55	Weight (Tonnes)	18.11	0.02	Yes	Yes	Yes

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 2024.			

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)
Abatement equipment off-line	Plant or equipment breakdown at WWTP	No	No
Abatement equipment off-line	Plant or equipment breakdown at WWTP	No	Yes
Abatement equipment off-line	Plant or equipment breakdown at WWTP	No	No

Incident Type	Cause	Recurring (Y/N)	Closed (Y/N)
Abatement equipment off-line	Plant or equipment breakdown at WWTP	No	No
Abatement equipment off-line	Screen not operating	No	No
Abatement equipment off-line	Plant or equipment breakdown at WWTP	No	Yes
Breach of ELV	Inadequate Operational Procedures/Training	Yes	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2024	7
Number of Incidents reported to the EPA via EDEN in 2024	7
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 (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 2024 (No. of events)	Total volume discharged in 2024 (m^3)	Monitoring Status
SW011	306284, 307740	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SWO-1	308183, 307800	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SWO-3	305504, 307942	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SWO-5	304291, 308446	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SWO-6	303214, 309006	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SWO-7	304053, 306069	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 2024 (No. of events)	Total volume discharged in 2024 (m^3)	Monitoring Status
SWO-8	306263, 306860	Yes	Low Significance	Not Meeting Criteria	Unknown	Unknown	Not Monitored
SWO-9	307652, 307278	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	304348, 306476	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
TBC	303214, 309006	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored

The contents presented in this table include the most up to date information available at the time of writing. 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?	No
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
D0053-SIP:01	Installation of nutrient removal (nitrogen and phosphorus) processes at WWTP	C	31/12/2013	Yes	Works Completed		
D0053-SIP:02	SW8 - Installation of 1,500 m3 storm water balancing tank at Coe's Road Pumping Station	C	31/12/2020	No	At Planning Stage	31/12/2032	

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

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 Tables 4.2.1 and 4.2.2.

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
D0053-01-Priority Substances Assessment	Yes	No
D0053-01-Shellfish Impact 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: 26/04/2025

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

D0053-01 Dundalk Ambient Monitoring Data 2024

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
Castletown Estuary (Transitional Water) (CN030)	307227.17, 307718.49	TW21006031 CN3003	N	N	N	Y	Poor
Castletown Estuary (Transitional Water) (CN040)	308206.9, 307908.33	TW21006031 CN3004	N	N	N	Y	Poor
Dundalk Bay Inner (Transitional Waters) (CN110)	308745.37, 307876.19	TW21006030 CN2004	N	N	N	Y	Moderate

The results for the monitoring data sets are included below. This assessment is based on the 2022-2024 EPA TraC datasets.

Ambient Monitoring Summary

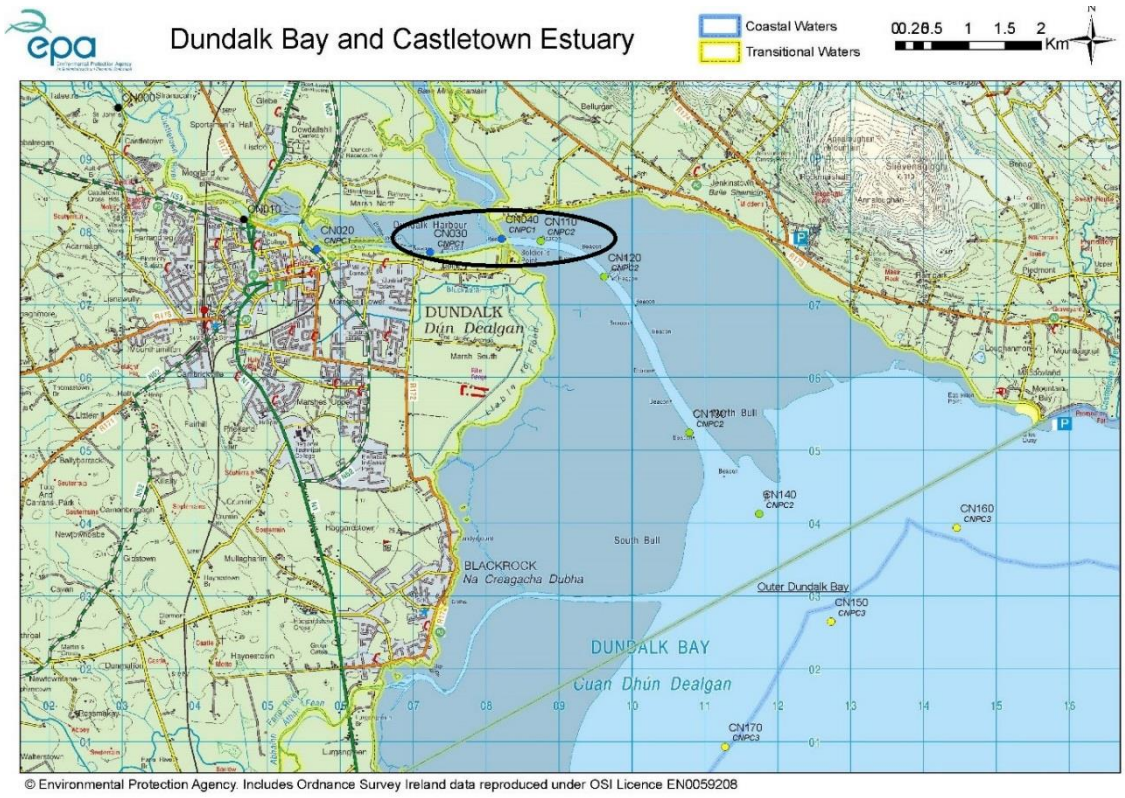

Figure 1: Location of the three transitional water sampling stations in the Castletown Estuary (CN030 and CB040) and Inner Dundalk Bay (CN110)

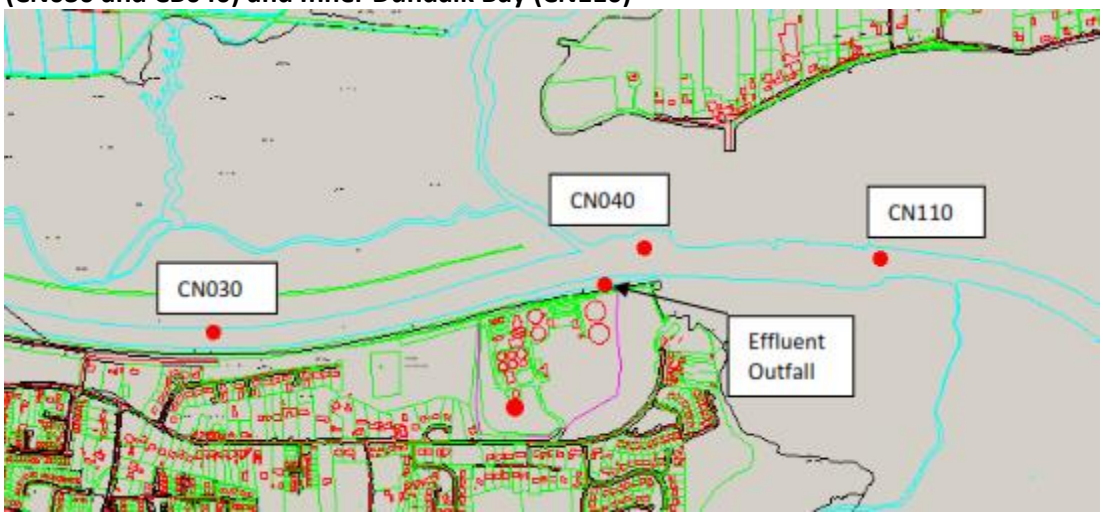

Figure 2: Location of the three transitional water sampling stations in the Castletown Estuary (CN030 and CB040) and Inner Dundalk Bay (CN110) in relation to the effluent outfall.

Based on the above and the effluent compliance results, the discharge from the wastewater treatment plant may be having an observable negative impact on the water quality of the Castletown Estuary and Inner Dundalk Bay.

The discharge from the wastewater treatment plant may be contributing to the WFD status of the Castletown Estuary and Inner Dundalk Bay.

Dundalk Shellfish Waters are located *ca*. 3.5km south of the primary discharge. The Shellfish Assessments completed Stage 1 – Desktop Study; Stage 2 – Scoping assessment report and Stage 3 – Site Survey Report of the disinfection programme, showed that in Dundalk Bay, the microbiological results of shellfish flesh of species collected within Dundalk Bay Shellfish Waters are good, but that on occasion levels may be above the Class B standard. Dundalk WwTP may contribute to the high microbiological level on the shellfish flesh, therefore it concluded that further assessment is required. Progression to Stage 4 – Detailed Assessment of the Discharge has been agreed.

It is important to have an understanding of the physical oceanographic processes that regulate the dispersion of both marine and fresh waters in Dundalk Bay. Sea water circulation in Dundalk Bay is driven primarily by tidal forcing: the flooding tide rises from the south and fills the bay from the southeast at Dunany Point. The tide flows in a clockwise direction flowing eastwards by Giles Quay and then heads north past Carlingford Lough. The ebbing tide follows the reverse order to this flow pattern. This pattern can be altered by both wind direction and fresh water inflow rates of the main rivers into the bay e.g. the Castletown, Fane and Glyde Rivers. Strong Easterly winds will increase surface flows and keep the freshwater close to the shore while strong Westerly winds will reduce flow rates but force fresh water in an Easterly direction. The outfall from the Dundalk Waste Water Treatment Plant (WWTP) is located in the Castletown River and dilution and dispersion of the effluent into the sea will depend on the stage of the tide, tidal height, freshwater flows and wind speed and direction. Summers river flows are typically less than Winter flows and the spatial extent of the plume (and therefore the distribution of bacteria and nutrients) will therefore be smaller in Summer months. Specifically, in relation to bacteria, Summer conditions are also less favourable to bacteria in that suspended solids (to which bacteria can attach) loadings are lower and because of this, water transparency levels are better thereby allowing ultraviolet (UV) rays to penetrate deeper into the water column. Bacteria are very sensitive to UV rays and are killed by even small dosages. It is apparent therefore that during later Spring through to late Summer/early Autumn, water chemistry in the eastern part of Dundalk Bay is unlikely to be affected by water from the WWTP. As most of the conditions during the remaining part of the year are more suitable for water from the WWTP to affect a greater area of Dundalk Bay. The only condition that will be less suitable during this part of the year is the fact that there is more freshwater being delivered to the coast thereby increasing the dilution factor. Clearly Stations (EPA CODE) CN030 and CN040 are much more under the influence of the Castletown River rather than a marine influence – this only applies during flood tide periods. However, the opposite is the case for CN110 which may be only seasonally affected by the Castletown River.

D0053-01 Dundalk - 2022- 2024 TrAC Data

Water Body_Name	Station_No	Sample Label	Data Source	Date_Surveyed	Salinity	DO_saturation	DO_mgL	BOD	MRP (µg/l)	chl_a	DIN
Castletown Estuary	CN030	CN030S	EPA Data	28/07/2022	31.5	97.1	7.8	1.3	78		0.05
Castletown Estuary	CN030	CN030B	EPA Data	28/07/2022	31.7	97.2	7.8	1.4	41		0.029
Castletown Estuary	CN030	CN030SR	EPA Data	28/07/2022	31.2	99.7	8	2.5	83		0.031
Castletown Estuary	CN030	CN030BR	EPA Data	28/07/2022	31.8	97.2	7.8	2	58		0.029
Castletown Estuary	CN030	CN030B	EPA Data	24/08/2022	30.4	119	9.3	2.1	19		0.01
Castletown Estuary	CN030	CN030BR	EPA Data	24/08/2022	28.4	166	13.1	2.8	19		0.024
Castletown Estuary	CN030	CN030S	EPA Data	24/08/2022	19.5	135	11.2	2.5	51		0.48
Castletown Estuary	CN030	CN030SR	EPA Data	24/08/2022	22.1	141	11.4	2.4	48		0.297
Castletown Estuary	CN030	CN030BR	EPA Data	21/09/2022	28.4	144	12		7.9		0.047
Castletown Estuary	CN030	CN030S	EPA Data	21/09/2022	14.2	135	12.2		82		1.46
Castletown Estuary	CN030	CN030B	EPA Data	21/09/2022	28.4	140	11.6		22		0.069
Castletown Estuary	CN030	CN030SR	EPA Data	21/09/2022	11.6	133	12.2		89		2.02
Castletown Estuary	CN030	CN030B	EPA Data	28/02/2023	29.7	94	0.5	0.5	15		0.607
Castletown Estuary	CN030	CN030BR	EPA Data	28/02/2023			1.1	1.1	36		1.11
Castletown Estuary	CN030	CN030S	EPA Data	28/02/2023	7.9	95			57		2.53
Castletown Estuary	CN030	CN030SR	EPA Data	28/02/2023					110		2.58
Castletown Estuary	CN030	CN030B	EPA Data	15/06/2023	34	100	0.5	0.5	18		0.032
Castletown Estuary	CN030	CN030BR	EPA Data	15/06/2023	33.9	101	0.5	0.5	15		0.065
Castletown Estuary	CN030	CN030S	EPA Data	15/06/2023	33.7	101	0.5	0.5	18	4.2	0.125
Castletown Estuary	CN030	CN030SR	EPA Data	15/06/2023	33.6	103	0.5	0.5	16	5.5	0.041
Castletown Estuary	CN030	CN030B	EPA Data	30/08/2023	24.3	86	1.6	1.6	53		0.58
Castletown Estuary	CN030	CN030BR	EPA Data	30/08/2023	31	103	1.6	1.6	24		0.083
Castletown Estuary	CN030	CN030S	EPA Data	30/08/2023	23	83	1.1	1.1	70	6.6	0.7
Castletown Estuary	CN030	CN030SR	EPA Data	30/08/2023	28.7	105	1.1	1.1	28	16	0.162
Castletown Estuary	CN030	CN030B	EPA Data	10/06/2024	31.7	110	1.3	1.3	24		0.01
Castletown Estuary	CN030	CN030S	EPA Data	10/06/2024	26.4	124	1.1	1.1	25	5.9	0.26
Castletown Estuary	CN030	CN030BR	EPA Data	10/07/2024	31.8	98			20		0.043
Castletown Estuary	CN030	CN030SR	EPA Data	10/07/2024	31.8	98	0.5	0.5	24	4.4	0.148
Castletown Estuary	CN030	CN030B	EPA Data	16/09/2024	36.8	100			30	30	0.045
Castletown Estuary	CN030	CN030BR	EPA Data	16/09/2024	28.5	96			77	30	0.54
Castletown Estuary	CN030	CN030S	EPA Data	16/09/2024	35.9	104			42	7.7	0.153
Castletown Estuary	CN030	CN030SR	EPA Data	16/09/2024	23.7	96	1.6	1.6	92	7.7	0.84
Castletown Estuary	CN030	CN030S	EPA Data	13/11/2024	12.3	98	0.5	0.5	84	1.5	1.27
	MEDIAN				**29.7**	**101.0**	**1.6**	**1.3**	**36.0**	**6.6**	**0.1**
	95%ile				**34.95**	**142.5**		**2.5**			
	5%ile				**11.95**	**90**					
	90%ile									**30**	

	Salinity Based Threshold	CN030 Result	
Salinity =	**29.7**		
DIN-	0.569	0.148	Pass
MRP-	46	36	Pass
Chloro. Median	11.4	6.6	Pass
Chloro 90 percentile	22.8	**30**	Fail
DO%sat 5 percentile	77	90	Pass
DO%sat 95 percentile	123	**142.5**	Fail
BOD	4	2.50	Pass

Water Body_Name	Station_No	Sample Label	Data Source	Date_Surveyed	Salinity	DO_saturation	DO_mgL	BOD	MRP (µg/l)	chl_a	DIN
Castletown Estuary	CN040	CN040S	EPA Data	28/07/2022	32	98.9	7.9	1.5	43		0.032
Castletown Estuary	CN040	CN040B	EPA Data	28/07/2022	32.2	99.9	8	1.6	65		0.031
Castletown Estuary	CN040	CN040SR	EPA Data	28/07/2022	31.6	103	8.3	0.5	56		0.035
Castletown Estuary	CN040	CN040BR	EPA Data	28/07/2022	32.1	99.7	8	1.2	50		0.031
Castletown Estuary	CN040	CN040S	EPA Data	24/08/2022	28.9	125	9.8	2.2	6.3		0.125
Castletown Estuary	CN040	CN040B	EPA Data	24/08/2022	31.2	114	8.9	2.2	14		0.01
Castletown Estuary	CN040	CN040SR	EPA Data	24/08/2022	25.2	149	11.8	2.6	23		0.045
Castletown Estuary	CN040	CN040BR	EPA Data	24/08/2022	29.3	123	9.6	2.7	15		0.01
Castletown Estuary	CN040	CN040BR	EPA Data	21/09/2022	20.5	142	12.2		29		0.033
Castletown Estuary	CN040	CN040S	EPA Data	21/09/2022	26.5	147	12.3		45		0.846
Castletown Estuary	CN040	CN040B	EPA Data	21/09/2022	29.8	126	10.3		16		0.045
Castletown Estuary	CN040	CN040SR	EPA Data	21/09/2022	28.3	148	12.3		55		0.971
Castletown Estuary	CN040	CN040B	EPA Data	28/02/2023	29.6	96		0.5	20	5.1	0.775
Castletown Estuary	CN040	CN040BR	EPA Data	28/02/2023				0.5	14	0.64	0.67
Castletown Estuary	CN040	CN040S	EPA Data	28/02/2023	9	94			58		2.53
Castletown Estuary	CN040	CN040SR	EPA Data	28/02/2023					41		1.73
Castletown Estuary	CN040	CN040B	EPA Data	15/06/2023	34.1	102		0.5	19	2.8	0.01
Castletown Estuary	CN040	CN040BR	EPA Data	15/06/2023	34	102		0.5	16	4.9	0.015
Castletown Estuary	CN040	CN040S	EPA Data	15/06/2023	33.9	100		0.5	16	2.4	0.027
Castletown Estuary	CN040	CN040SR	EPA Data	15/06/2023	34	102		0.5	15	4.9	0.01
Castletown Estuary	CN040	CN040B	EPA Data	30/08/2023	27.5	90		2.5	35	4.1	0.239
Castletown Estuary	CN040	CN040BR	EPA Data	30/08/2023	31.8	108		1.3	16	6.3	0.052
Castletown Estuary	CN040	CN040S	EPA Data	30/08/2023	25.5	86		2	55	8	0.42
Castletown Estuary	CN040	CN040SR	EPA Data	30/08/2023	29.9	108		0.5	32	16	0.222
Castletown Estuary	CN040	CN040B	EPA Data	10/06/2024	31.7	108		0.5	26	8.2	0.016
Castletown Estuary	CN040	CN040S	EPA Data	10/06/2024	28.6	118		0.5	17	6.6	0.125
Castletown Estuary	CN040	CN040B	EPA Data	10/07/2024	30.2	96		0.5	20	7.2	0.049
Castletown Estuary	CN040	CN040BR	EPA Data	10/07/2024	32.6	99		0.5	10	1.5	0.028
Castletown Estuary	CN040	CN040S	EPA Data	10/07/2024	29.1	96			26	13	0.098
Castletown Estuary	CN040	CN040SR	EPA Data	10/07/2024	32.2	99		0.5	10	3.1	0.028
Castletown Estuary	CN040	CN040B	EPA Data	16/09/2024	38.2	105			19	11	0.019
Castletown Estuary	CN040	CN040S	EPA Data	16/09/2024	38.1	107			21	22	0.016
Castletown Estuary	CN040	CN040S	EPA Data	13/11/2024	16.8	93		0.5	80	1.4	1.16
	MEDIAN				**30.2**	**102**	**9.7**	**0.5**	**21**	**5.1**	**0.045**
	95%ile				**36.1**	**147.5**		**2.585**			
	5%ile				**18.65**	**91.5**					
	90%ile									**13.6**	

	Salinity Based Threshold	CN040 Result	
Salinity =	**30.2**		
DIN-	0.569	0.045	Pass
MRP-	46	21	Pass
Chloro. Median	11.4	5.1	Pass
Chloro 90 percentile	22.8	13.6	Pass
DO%sat 5 percentile	77	91.5	Pass
DO%sat 95 percentile	123	**147.5**	Fail
BOD	4	2.585	Pass

Water Body_Name	Station_No	Sample Label	Source	Date_Surveyed	Salinity	DO_saturation	DO_mgL	BOD	MRP (ug/l)	chl_a	DIN mg/l N
Inner Dundalk Bay	CN110	CN110S	EPA Data	28/07/2022	32.1	100	8		38		0.029
Inner Dundalk Bay	CN110	CN110B	EPA Data	28/07/2022	32.5	101	8.1		24		0.029
Inner Dundalk Bay	CN110	CN110SR	EPA Data	28/07/2022	31.9	102	8.2		50		0.027
Inner Dundalk Bay	CN110	CN110BR	EPA Data	28/07/2022	32	102	8.2		45		0.027
Inner Dundalk Bay	CN110	CN110S	EPA Data	24/08/2022	31	117	9.1	1.5	11		0.01
Inner Dundalk Bay	CN110	CN110B	EPA Data	24/08/2022	31.5	113	8.8	1.8	12		0.01
Inner Dundalk Bay	CN110	CN110SR	EPA Data	24/08/2022	26.6	158	12.4	2.6	19		0.01
Inner Dundalk Bay	CN110	CN110BR	EPA Data	24/08/2022	29.1	137	10.7	4.1	17		0.01
Inner Dundalk Bay	CN110	CN110B	EPA Data	21/09/2022	30.8	123	10		15		0.032
Inner Dundalk Bay	CN110	CN110S	EPA Data	21/09/2022	28.2	140	11.6		16		0.053
Inner Dundalk Bay	CN110	CN110SR	EPA Data	21/09/2022	18.4	143	12.5		46		0.791
Inner Dundalk Bay	CN110	CN110BR	EPA Data	21/09/2022	28.6	137	11.3		19		0.035
Inner Dundalk Bay	CN110	CN110B	EPA Data	28/02/2023	30.6	98			24		0.978
Inner Dundalk Bay	CN110	CN110BR	EPA Data	28/02/2023					5.5		0.441
Inner Dundalk Bay	CN110	CN110S	EPA Data	28/02/2023	14.5	95			57		2.06
Inner Dundalk Bay	CN110	CN110SR	EPA Data	28/02/2023					6		0.459
Inner Dundalk Bay	CN110	CN110B	EPA Data	15/06/2023	34.1	100			14		0.023
Inner Dundalk Bay	CN110	CN110BR	EPA Data	15/06/2023	33.9	102			16		0.063
Inner Dundalk Bay	CN110	CN110S	EPA Data	15/06/2023	34.1	100			13	2	0.01
Inner Dundalk Bay	CN110	CN110SR	EPA Data	15/06/2023	33.6	103			18	4.4	0.103
Inner Dundalk Bay	CN110	CN110B	EPA Data	30/08/2023	27.9	90			33		0.285
Inner Dundalk Bay	CN110	CN110BR	EPA Data	30/08/2023	32.4	110			5.3		0.044
Inner Dundalk Bay	CN110	CN110S	EPA Data	30/08/2023	27	87			49	5.6	0.52
Inner Dundalk Bay	CN110	CN110SR	EPA Data	30/08/2023	31	118			5.8	5.1	0.034
Inner Dundalk Bay	CN110	CN110B	EPA Data	10/06/2024	31.7	111			19		0.01
Inner Dundalk Bay	CN110	CN110S	EPA Data	10/06/2024	30.3	114			23	3	0.032
Inner Dundalk Bay	CN110	CN110B	EPA Data	10/07/2024	31.3	97			18		0.039
Inner Dundalk Bay	CN110	CN110DCR	EPA Data	10/07/2024	32.6	101			8.7	4.7	0.028
Inner Dundalk Bay	CN110	CN110S	EPA Data	10/07/2024	28.6	96			19	13	0.048
Inner Dundalk Bay	CN110	CN110B	EPA Data	16/09/2024	38.8	109			12	12	0.02
Inner Dundalk Bay	CN110	CN110BR	EPA Data	16/09/2024	27.4	107			65	20	0.413
Inner Dundalk Bay	CN110	CN110S	EPA Data	16/09/2024	38.6	110			14	12	0.016
Inner Dundalk Bay	CN110	CN110SR	EPA Data	16/09/2024	27.4	111			71	15	0.45
Inner Dundalk Bay	CN110	CN110S	EPA Data	13/11/2024	27.2	93			66	6.2	0.95
	MEDIAN				**31.00**	**105.00**	**9.55**	**2.20**	**18.50**	**5.90**	**0.03**
	95%ile				**36.125**	**141.350**		**3.875**			
	5%ile				**22.91**	**91.65**					
	90%ile									**14.80**	

	Salinity Based Threshold	CN110 Result	
Salinity =	**31.0**		
DIN-	0.506	0.035	Pass
MRP-	44	19	Pass
Chloro. Median	11.1	5.9	Pass
Chloro 90 percentile	22.2	14.8	Pass
DO%sat 5 percentile	78	91.65	Pass
DO%sat 95 percentile	122	**141.35**	Fail
BOD	4	2.2	Pass

UÉ/LCC Ambient Monitoring Data 2024

		Ammonia N	Biological Oxygen Demand	Chlorophyll	Dissolved Inorganic Nitrogen DIN	Dissolved Oxygen % Saturation	Ortho-Phosphate P	pH	Salinity	Total Nitrogen N	Temperature
Station Reference	Sample Date	mg/l	mg/l	mg/m3	mg/l	% Sat.	mg/l	pH units	µS/cm	mg/l	°C
CN030	05/03/2024	0.037	5	7.53	2.34	100.1	0.02	7.6	0.5	4	7.1
CN030	04/06/2024	0.52	<1	25.06	4.62	80.1	<0.01	8.3	8.9	7	9
CN030	26/09/2024	0.38	2	12.75	4.51	68.5	0.03	7.9	29.6	8	9.8

		Ammonia N	Biological Oxygen Demand	Chlorophyll	Dissolved Inorganic Nitrogen DIN	Dissolved Oxygen % Saturation	Ortho-Phosphate P	pH	Salinity	Total Nitrogen N	Temperature
Station Reference	Sample Date	mg/l	mg/l	mg/m3	mg/l	% Sat.	mg/l	pH units	µS/cm	mg/l	°C
CN040	05/03/2024	0.077	6	10.15	2.38	100.9	0.02	8.3	0.5	4	7.1
CN040	04/06/2024	0.52	<1	10.87	1.12	75.5	<0.01	8.1	32	3	9.5
CN040	26/09/2024	0.46	3	12.36	5.17	70.4	0.03	7.7	29.6	7	11.6

		Ammonia N	Biological Oxygen Demand	Chlorophyll	Dissolved Inorganic Nitrogen DIN	Dissolved Oxygen % Saturation	Ortho-Phosphate P	pH	Salinity	Total Nitrogen N	Temperature
Station Reference	Sample Date	mg/l	mg/l	mg/m3	mg/l	% Sat.	mg/l	pH units	µS/cm	mg/l	°C
CN110	05/03/2024	0.045	5	7.16	2.35	101.7	0.02	8.2	0.5	4	7.2
CN110	04/06/2024	0.43	2	9.75	1.03	75.5	<0.01	8.1	32	5	9.2
CN110	26/09/2024	0.54	3	9.65	5.49	76.1	0.03	7.9	29.6	7	10.8