Section D.2: Assessment of Impact on Receiving Waters

Attachment D.2.1: Impact Assessment Report

Attachment D.2.2: CLH Water Quality Modelling Report

Attachment D.2.4: Priority Substance Assessment Report

Attachment D.2.5: Map 25 Designated Areas

Attachment D.2.6: Map 26 European Sites

Attachment D.2.7: Ambient monitoring data and EPA TSAS report

Attachment D.2.8: Outfall Longitudinal Section

Appendix D.2.1: Impact Assessment Report

1. Introduction

This Report provides a summary of the Impact Assessments prepared to determine the impact of the discharges from the Cork Lower Harbour agglomeration (D0057) on the receiving waterbody, Cork Harbour (as well as tidally connected waterbodies including Outer Cork Harbour, Lough Mahon and North Channel Great Island) and associated designations, and also addresses the criteria as outlined in **Section D.2** of the EPA guidance document.

The following agglomerations are to be amalgamated into one, which will be served by the Shanbally WwTP:

- D0054-1 Cobh
- D0057-01 Crosshaven, Carrigaline, Ringaskiddy
- D0129-01 Passage/Monkstown
- D0436-01 Ringaskiddy Village

The treated wastewater from the associated Shanbally WwTP is discharged into Cork Harbour, using an existing IDA owned long sea outfall, at Dognose Bank. The IDA outfall termination point at Dognose Bank is located within Cork Harbour, south-east of Ringaskiddy and West of Carlisle Fort.

Several large industrial companies operating under individual licences, discharge treated industrial wastewater directly to this IDA outfall, downstream of the Shanbally WwTP discharge. Their flows are not treated at the Shanbally WwTP and are not considered to be part of the collected load entering the Shanbally WwTP. For this reason, 2 sets of EQVs are proposed, one set for the treated wastewater from the WwTP (SW100) and another set for the combined discharge from the IDA outfall at Dognose Bank (SW001).

2. Water Environment

The Primary discharge (SW001) from this IDA outfall is to the coastal waters of Cork Harbour, WFD Code IE_SW_060_0000. The WFD status (2013-2018) of the coastal water body in the vicinity of the discharge is classified as having 'moderate' (Cork Harbour) or 'good' (Outer Cork Harbour) water quality status. Cork Harbour WFD Risk Status is at Risk under Cycle 3 of the WFD.

The WFD status for Cork Harbour changed from Good (2010-2015) to Moderate (2013-2018) due to DO failure in 2018. The Cork Harbour waterbody trends for Ortho-P, DIN & Chlorophyll for 2013-2018 are Downwards (*i.e.*, decreasing concentrations). The table below shows the WFD quality status for the receiving waterbody (Cork Harbour) along with other waterbodies in the Overall Cork Harbour System for 2013-2018.

Waterbody Name	WFD Code	Waterbody Type	WFD Status (2013-2018)
Cork Harbour	IW_SW_060_0000	Coastal	Moderate
Outer Cork Harbour	IE_SW_050_0000	Coastal	Good

Lough Mahon	IE_SW_060_0750	Transitional	Moderate
North Channel Great Island	IE_SW_060_0300	Transitional	Moderate
Owenboy Estuary	IE_SW_060_1200	Transitional	Unassigned
Owenacurra Estuary	IE_SW_060_0400	Transitional	Moderate

Cobh Agglomeration (D0054-01) was identified as a significant pressure on Cork Harbour under draft WFD Cycle 3 . In Sept 2021 collected loads from Cobh were connected to the Shanbally treatment plant. The Crosshaven-Carrigaline- Ringaskiddy agglomeration, now known as Cork Lower Harbour agglomeration (D0057) is not considered a significant pressure.

The ambient monitoring results are based on 2018-2020 EPA TSAS report. The EPA, as part of the TraC monitoring programme, conduct sampling at various locations in Cork Harbour.

	CORK HARBOUR			**OUTER CORK HARBOUR**		
	TSAS Threshold	**Result**	**Pass/Fail**	**TSAS Threshold**	**Result**	**Pass/Fail**
Salinity (%)	33.1 (Summer) 31.0 (Winter)			34 (Summer) 33.1 (Winter)		
DIN- mg/l N (Summer median)	0.378	0.056	PASS	0.314	0.041	PASS
DIN- mg/l N (Winter median)	0.506	0.421	PASS	0.378	0.223	PASS
MRP (ug/l) (Summer median)	42	2.50	PASS	41	2.50	PASS
MRP (ug/l) (Winter median)	44	26.0	PASS	42	16.0	PASS
Chloro. Median	10.6	3.65	PASS	10.3	1.40	PASS
Chloro 90 percentile	21.1	7.70	PASS	20.6	4.31	PASS
DO%sat 5 percentile	79	94.93	PASS	79	93.35	PASS

	CORK HARBOUR			OUTER CORK HARBOUR		
	TSAS Threshold	**Result**	**Pass/Fail**	**TSAS Threshold**	**Result**	**Pass/Fail**
DO%sat 95 percentile	121	129.5	FAIL	121	120.3	PASS
BOD	4	3.35	PASS	4	2.14	PASS

The 2018-2020 TSAS data indicates that the concentrations of dissolved inorganic nitrogen (DIN) were below the salinity based thresholds for Good status set by the European Communities Objectives (Surface Waters) Regulations, 2009, as amended. The median DIN winter concentration for the whole waterbody was below the threshold for Cork Harbour (0.421mg/l Vs 0.506mg/l) and Outer Cork Harbour (0.223mg/l Vs 0.378mg/l). As the primary discharge point is into a coastal waterbody, the EQS thresholds relating to BOD and MRP do not apply as they are only applicable to freshwater and transitional waterbodies.

3. Appropriate Assessment Screening

An Appropriate Assessment (AA) screening of the operational discharges from the Shanbally WwTP was prepared to inform this WWDL review process (see **Attachment D.2.2**). It assessed whether the discharge activity (*i.e.*, Primary Discharge & SWOs), alone or in combination with other plans and projects, are likely to have significant effects on a European Site(s) in view of best scientific knowledge and the conservation objectives of the site(s).

The nearest hydrologically connected designated site is Cork Harbour SPA. The nearest subsite of this SPA (i.e., Lough Beg) is located ca. 1.6 km from the discharge location. The nearest SAC is the Great Channel Island SAC (ca. 8 km from the discharge location) which stretches from Little Island to Midleton, with its southern boundary being formed by Great Island and is located ca. 8 km from the primary discharge location. Both Cork Harbour SPA and Great Channel Island SAC are within the potential zone of influence of Shanbally WwTP and the IDA outfall.

The wastewater primary discharge location or SWO discharge locations are not within the boundaries of any SAC or SPA; therefore, no direct impacts will occur through, for example, loss or modification of habitat areas, or the fragmentation of habitats. Similarly, there will be no significant disturbance to key habitats or species.

The Great Island Channel SAC is the only SAC within the potential zone of influence of the proposed activity. This SAC is located within the north-eastern extent of the Lough Mahon transitional waterbody. Given that the IDA outfall discharge will not impact the nutrient levels, and hence the trophic status, of Lough Mahon or North Channel Great Island, in which the SAC is situated, this will ensure that the integrity of the Great Island Channel SAC is not adversely impacted.

The resultant treated wastewater discharges from Shanbally WwTP and the IDA outfall at the proposed ELVs do not have the potential to impact the relevant qualifying interests identified, and therefore will not affect the conservation objectives of the Great Island Channel SAC, Cork Harbour SPA, Ballycotton Bay SPA, Ballymacoda SPA, Sovereign Islands SPA and Old Head of Kinsale SPA. Thus, likely significant effects on the qualifying interests of European sites are not anticipated.

The immediate WFD receiving waterbody is Cork Harbour, which is a coastal waterbody. The mixing zone for all parameters (Regulatory & Non-Regulatory), other than E.Coli, was not discernible, in other words the combined treated wastewater from the IDA outfall has mixed to a concentration lower than the target/ EQS threshold before reaching the surface, so there is effectively no mixing zone. This is primarily because the location of the IDA outfall benefits from high natural dilution and dispersion due to the relatively strong tidal currents and deep water (25 to 30m).

Aquatic sites beyond the receiving and adjoining waterbodies, due to the magnitude of dilution and dispersion present in outer coastal waters, have no potential to support connectivity. Likewise, terrestrial sites which do not interact with the receiving and adjoining waterbodies have no potential to support connectivity.

Thus, due to the assessment of the mixing zones for relevant parameters, the proposed emission limit values of 245 mg/l BOD and 95 mg/l DIN for the combined treated wastewater from the IDA outfall are compatible with the achievement of WFD objectives for the receiving waters.

On the basis of the information set out, and documentation referenced in the AA Screening Report **(Attachment D.2.2)**, it can be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the proposed activity, individually or in combination with other plans and projects, would be likely to have a significant effect on all other European sites. As a result, it is submitted that a Stage Two Appropriate Assessment is not required.

4. Marine Modelling Assessment Summary

The treated wastewater from the Shanbally WwTP, through the primary discharge outfall at Dognose Point SW001 (the IDA outfall), was modelled using a calibrated numerical model of Cork Harbour, covering the defined WFD waterbodies of Lough Mahon, Cork Harbour and Outer Cork Harbour & North Channel Great Island as shown in Figure 1. The model was used to evaluate the concentration of BOD, DIN, total ammonia, unionised ammonia, phosphate (as Molybdate Reactive Phosphorus (MRP)), *E.Coli* (EC) and Intestinal Enterococci (IE) within the immediate receiving water of Cork Harbour, as well as tidally connected waterbodies including Lough Mahon and North Channel Great Island. As the primary discharge point is into a coastal waterbody, the Ecological Quality Standard (EQS) thresholds relating to BOD, MRP and Total Ammonia do not apply as they are only applicable to freshwater and/or transitional waterbodies. For information purposes the modelling assessment also included an assessment of BOD and MRP impacts. Ammonia and unionised ammonia mixing plumes were also assessed to consider any possible eco-toxicological effects.

Figure 1 - Location of the IDA outfall (Primary Discharge) and WFD waterbodies.

The mixing zone for all parameters (Regulatory & Non-Regulatory), other than *E.Coli*, was not discernible, in other words the combined treated wastewater from the IDA outfall has mixed to a concentration lower than the target/ EQS threshold before reaching the surface, so there is effectively no mixing zone. This is primarily because the location of the IDA outfall benefits from high natural dilution and dispersion due to the relatively strong tidal currents and deep water (25 to 30m).

Thus, due to the assessment of the mixing zones for relevant parameters, the proposed emission limit values of 245 mg/l BOD and 95 mg/l DIN for the combined treated wastewater from the IDA outfall are compatible with the achievement of WFD objectives for the receiving waters.

Particle tracking was also undertaken to investigate the tidal excursion of flows discharged from the IDA outfall, as mass balance calculations showed that the Shanbally WwTP contributes a small but identifiable percentage of the total load of DIN to the overall harbour system, however this does not mean that the load is distributed throughout the harbour.

The particle tracks demonstrate that releases on the ebb tide travel outside the estuary, whilst releases on the flood tide travel into the estuary. However, the distance travelled into the estuary is limited to the Cork Harbour waterbody for the vast majority of tidal conditions. There is virtually no hydraulic connectivity between the combined discharge from the IDA outfall and the Lough Mahon waterbody or the North Channel Great Island. The exception to this is when discharges coincide with low water. For some intermediate tides there is limited tidal excursion from the IDA outfall to just inside the Lough Mahon boundary and similarly for some spring tides to Rostellan. For both cases, the connectivity exists only for short periods of time before the tide turns to take the water back out of these waterbodies.

Considering the specific tidal conditions required for discharges from the Shanbally WwTP to reach Lough Mahon and Rostellan, which occur for approximately 5% of the time, and given the strong effects of dilution and dispersion due to the favourable mixing conditions, there is extremely limited

scope for the transfer of nutrient loads from the combined treated wastewater from the IDA outfall to the Lough Mahon waterbody or the North Channel Great Island.

To further quantify any potential impact a detailed source apportionment exercise was undertaken using the numerical model. Three loading scenarios were considered for this exercise. The first scenario was the treated wastewater from Shanbally WwTP based on the existing treatment (DIN = 28.5mg/L) with proposed 80,000PE loading. The second was a hypothetical scenario with additional 3N treatment to reduce the concentration of ammonia, nitrate and nitrite in the effluent to comply with a theoretical Total Nitrogen ELV of 15mg/l at 80,000PE loading. This scenario was undertaken in response to the EPA position that 3N treatment may be required at Shanbally WwTP due to potential impacts on trophic status in Lough Mahon and the Great Island North Channel. The final scenario is treatment to comply with a proposed 45mg/L DIN ELV at 80,000PE loading from the WwTP.

The source apportionment analysis for winter DIN demonstrated that the Shanbally WwTP (at the proposed 45mg/l DIN) would have a negligible effect on overall DIN concentrations in Lough Mahon, owing to the relatively minor contributions made by the Shanbally WwTP in comparison to other sources, the limiting effects of tidal excursion and the favourable dilution and mixing conditions out the IDA outfall. Changes in modelled concentration are below limit of detection levels at the boundary of Lough Mahon. The relative DIN contributions from the Shanbally WwTP are shown to be less than 1% at all monitoring stations in Lough Mahon. Furthermore, the assessment demonstrates that the influence of the treated wastewater from the WwTP reduces with increasing distance from the IDA outfall.

The findings of the modelling assessment demonstrate that more stringent removal of nutrients (nitrogen) at the Shanbally WwTP to comply with a hypothetical UWWTD Article 5 TN standard of 15mg/L at 80,000PE loading would have no perceptible impact on the existing level of eutrophication in Lough Mahon or North Channel Great Island. Thus, the findings of the modelling assessment demonstrate that a 45mg/L DIN ELV from the WwTP at 80,000PE loadings is compatible with the achievement of WFD objectives for the receiving waters and would have no perceptible impact on the levels of eutrophication in Lough Mahon or North Channel Great Island.

The summarised findings and key conclusions of the modelling assessment were as follows:

1. The treated wastewater from Shanbally WwTP contributes approximately 1% of the BOD annually to the whole Cork Harbour system. During summer it contributes ca. 15% of the DIN and during winter ca. 5% of the DIN to the whole Cork Harbour system. These findings are in line with previous modelling studies undertaken by Irish Water[1].
2. Evaluation of the mixing zones for all parameters determined that for all parameters the regulatory EQS is met at the surface and there is no discernible mixing zone due to the favourable mixing conditions at the IDA outfall.
3. For unionised ammonia, the modelled 95%ile concentrations were below 0.021mg/l following vertical mixing. This is due to the fact that the location of the IDA outfall benefits from high natural dilution and dispersion due to the relatively strong tidal currents and deep water (25 to 30m).

[1] McGarrigle (2017). An Assessment of Nitrogen and Phosphorus Discharges from Shanbally Waste Water Treatment Plant to Cork Harbour.

4. Particle tracking demonstrated the discharge from the IDA outfall reaches the southern boundary of the Lough Mahon waterbody for very short periods of time, limited to discharges at low water under certain tidal conditions. These conditions occur ca. 5% of the time.
5. The findings of the modelling assessment demonstrate that the proposed ELVs at the Shanbally WwTP and the combined concentrations at the end of the IDA outfall pipe at Dognose Bank are compatible with the achievement of WFD objectives for the receiving waters.
6. The provision of more stringent removal of nitrogen from the Shanbally WwTP would have no perceptible effect on the level of eutrophication in Lough Mahon or the North Channel Great Island.
7. A 45mg/L DIN ELV is compatible with the achievement of WFD objectives of receiving waters and would have no perceptible effect on the level of eutrophication in Lough Mahon or North Channel Great Island.
8. The modelling assessment has demonstrated that the combined discharge will meet all interim and regulatory bacterial water quality targets and that the combined discharge is compatible with the achievement of WFD objectives for the Designated Shellfish Waters in both Rostellan and the North Channel and the Designated Bathing Waters at Fountainstown Beach.

5. Priority Substance Assessment

A desk top study Priority Assessment has been prepared to inform this WWDL review. This assessment is based only on loads to the WWTP and was carried out in line with the Guidance on the Screening for Priority Substances for Waste Water Discharge Licences, issued by the EPA.

Estimated data from the PRTR reporting tool was used to inform this desktop assessment. The assessment considered the primary discharge relevant to Environmental Quality Standards (EQS) for priority substances in surface waters, as set out in the European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended (now S.I No. 77 of 2019).

It was concluded that none of the substances listed in the Specific Pollutants, Priority and Priority Hazardous Substances as outlined in the Surface Water Regulations, are likely to be present in the WwTP discharge at concentrations above the specified standards as per European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended (now S.I No. 77 of 2019).

This Report is contained in **Attachment D.2.4: Priority Substance Assessment**.

6. Shellfish Waters

There are 4 designated shellfisheries in Cork Harbour; the Cork Great Island North Channel; Rostellan West, Rostellan North, Rostellan South. Rostellan West is the nearest shellfish area to the primary discharge point, ca. 5.5 km north east of the primary discharge point.

There are no bacterial environmental quality standards for water quality set for the protection of Designated Shellfish Waters in Ireland. In the absence of a regulatory standard, Irish Water has applied an interim 95%ile E.Coli target of 500cfu/100ml (equivalent to Good Bathing Water Quality) to determine potential impacts from any primary wastewater discharge on Designated Shellfish Waters.

Following recent engagement with both EPA and Marine Institute, Irish Water is also currently piloting an interim geomean E.Coli target of 110 cfu/100ml for the protection of Designated Shellfish Waters.

For the purposes of this application, Designated Shellfish Waters at Rostellan and in the North Channel have been assessed against both interim targets. The modelling assessment report **(Attachment D.2.1)** has demonstrated that the combined discharge will meet all interim and regulatory bacterial water quality targets and that the combined discharge is compatible with the achievement of WFD objectives for the Designated Shellfish Waters in both Rostellan and the North Channel.

7. Bathing Waters

Fountainstown Beach is the only designated bathing beach within greater Cork Harbour and is located ca. 5.25 km south west of the primary discharge outfall. It has been classified as having "Excellent" water quality for the year 2020.

The Bathing Water Regulation's set out bacterial water quality standards which must be met at the boundary of Designated Bathing Waters. As the Designated Bathing Water at Fountainstown Beach is currently at Excellent Bathing Water Status, the regulations require the achievement of a 95%ile E.Coli standard of 250 cfu/100ml and a 95%ile Intestinal Enterococci standard of 100 cfu/100ml to ensure Excellent Bathing Water Quality is maintained.

The modelling assessment report **(Attachment D.2.1)** has demonstrated that the combined discharge will meet all interim and regulatory bacterial water quality targets and that the combined discharge is compatible with the achievement of WFD objectives for the Designated Bathing Waters at Fountainstown Beach.

8. Combined Approach

The Waste Water Discharge Authorisation under the European Union (Waste Water Discharge) Regulations 2007 to 2020, specify that a 'combined approach' in relation to licensing of waste water works must be taken, whereby the emission limits for the discharge are established on the basis of the stricter of either or both, the limits and controls required under the Urban Waste Water Treatment Regulations, 2001, as amended, and the limits determined under statute or Directive for the purpose of achieving the environmental objectives established for surface waters, groundwater or protected areas for the water body into which the discharge is made.

Irish Water has proposed two sets of Emission Limit Values, based on evidence and to comply with Urban Wastewater Treatment Regulations, 2001 and Environmental Objectives Surface Water Regulations 2009.

The proposed effluent standards from the new WwTP (SW100) and the ELVs proposed from of IDA outfall (primary discharge SW001), which have consideration for the combined industrial and treated municipal wastewater discharges, give effect to the principle of the Combined Approach as defined in Waste Water Discharge (Authorisation) Regulations, 2007 to 2020 in that the treated urban wastewater discharges ELVs from the WwTP will accommodate the requirements of the Urban Waste Water Regulations and the Water Framework Directive (WFD) e.g. the relevant status/designations of

the receiving waterbody, while the ELVs for the combined discharge from the IDA outfall will accommodate the requirements of WFD.

9. Compliance with Relevant National or EU Legislation

As per **Attachment B.6.1**, the Shanbally WwTW has been designed to ensure that the emissions from the agglomeration will comply with, and will not result in the contravention of, EU Legislation and National Regulations.

The current WFD Ecological Status of Cork Harbour is Moderate and Chemical Status of Cork Harbour is Good. Regarding in-combination impacts and associated effects, it is envisaged that the improvement in the effluent discharges from the proposed Cork Lower Harbour Project, will have a positive impact on Cork Harbour in terms of assisting it achieve Good WFD Status for this coastal waterbody. Any improvement in the aquatic environment will have a beneficial impact on the water dependent qualifying features of the Cork Harbour SPA, Great Island Channel SAC and all other European sites within the zone of influence of the proposed activity.

10. Cumulative and In Combination Effects

The Appropriate Assessment Screening Report addresses combination effects. Refer to **Attachments D.2.2**.

11. Mixing zone or transitional areas of exceedance

The mixing zone is defined as the area around the primary discharge point within which the concentration is above the regulatory EQS threshold for each parameter.

The mixing zone for all parameters (Regulatory & Non-Regulatory) other than E.Coli is not discernible, in other words the combined treated wastewater from the IDA outfall has mixed to a concentration lower than the target/EQS threshold before reaching the surface, so there is effectively no mixing zone. This is primarily because the location of the IDA Outfall benefits from high natural dilution and dispersion due to the relatively strong tidal currents and deep water (25 to 30m).

The only parameter with a discernible mixing plume on the surface is E.Coli for which the bacteria are dispersed within a few 100m of the discharge. (Note this is not a mixing zone, as no regulatory standard for bacteria is applicable in the immediate vicinity of the discharge)

This further demonstrates that the proposed emission limit values of 245 mg/l BOD and 95 mg/l DIN for the combined treated wastewater from the IDA outfall are compatible with the achievement of WFD objectives for the receiving waters.

12. Dilutions and retention times for lakes

Not applicable. No discharges to lakes.

13. The impact of the discharges on any environmental media other than those into which the emissions are to be made

Not applicable. No other relevant media into which the emissions are to be made.

14. Groundwater Details

Not applicable. No discharge to ground waters.

15. High Status Waterbodies

No High Status waterbodies are downstream of the operational discharges.

16. Fresh Water Pearl Mussels

Not applicable. No Fresh Water Pearl Mussels within the region of the primary discharge point

17. For waste water treatment plants with coastal discharges, provide evidence that the end of the discharge pipe is below the mean spring tide low water line

Refer to **Attachment D.2.8** – IDA outfall Longsection which demonstrates that SW001 Outfall is below the mean spring tide low water line.

Title: Cork Lower Harbour Water Qaulity Modelling Report

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1. Introduction

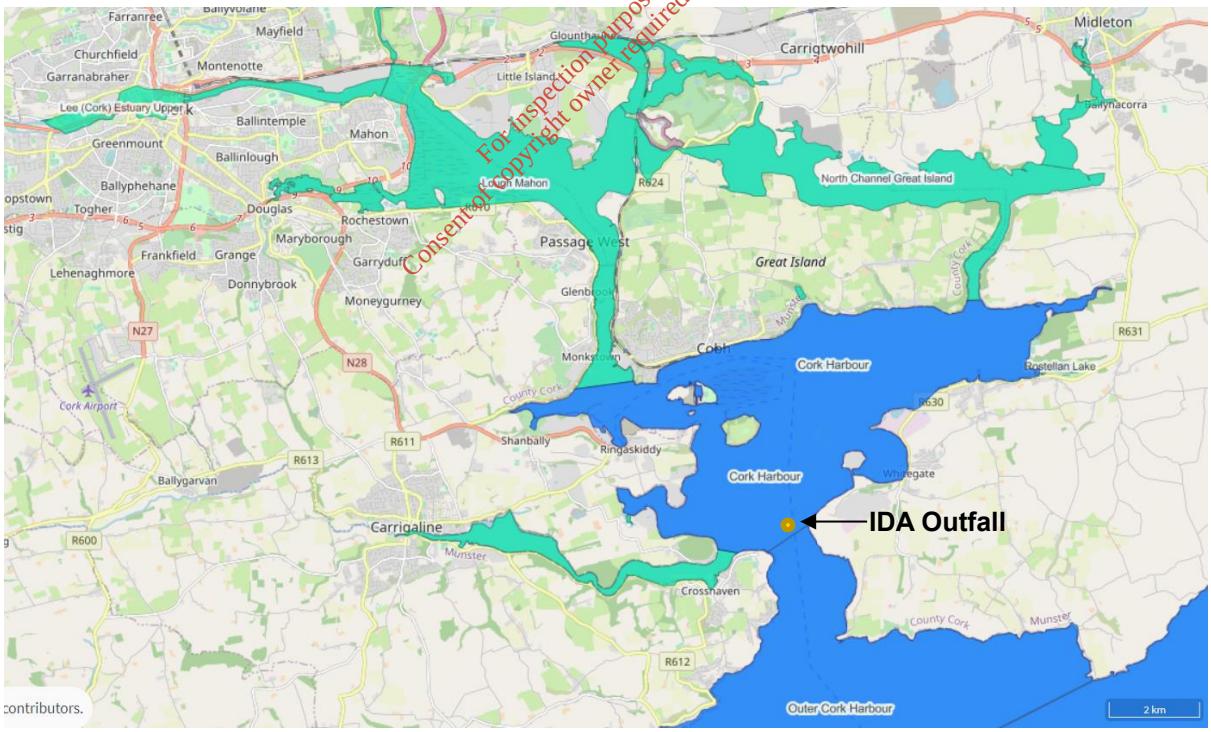
The treated effluent from the Shanbally WwTP through the primary discharge outfall at Dognose Point SW001 (herein referred to as the IDA Outfall) was modelled using a calibrated numerical model of Cork Harbour, covering the defined WFD waterbodies as shown in Figure 1.1.

The model simulated the primary discharges from all Irish Water agglomerations, fluvial discharges from significant rivers and other licensed industrial discharges for summer and winter seasons. The results were used to evaluate the likely impact, if any, of the combined discharge from the IDA Outfall, including both the treated effluent from the Shanbally WwTP and the treated licensed industrial effluent, on the water quality of Cork Harbour and the wider receiving waters.

This assessment included an assessment of any potential effects on Protected Areas, including Designated Shellfish Waters and Nutrient Sensitive Waters. In order to identify the potential impacts, mixing zones were delineated and source apportionment undertaken to quantify the relative contributions of individual sources.

The model was used to evaluate the concentration of BOD, DIN, total ammonia, unionised ammonia, phosphate (as MRP), *E.Coli* (EC) and Intestinal Enterococci (IE) within the immediate receiving water of Cork Harbour as well as tidally connected waterbodies including Lough Mahon and North Channel Great Island.

Figure 1.1. Location of the IDA outfall (Primary Discharge) and WFD waterbodies.



2. Proposed ELVs for Shanbally WwTP and IDA Outfall

The proposed ELVs for the Shanbally WwTP and the IDA outfall are summarised in Table 2-1. The proposed IDA outfall ELVs are based on the existing industrial discharge licenses

as determined previously by the EPA, combined with the proposed discharge from the Shanbally WwTP.

Further information on other modelled sources, including licensed industrial discharges is provided in Section 4 of this document.

Table 2-1. Summary of the proposed ELVs for Shanbally WwTP and combined discharge from the IDA Outfall.

Parameter	SW001 (S1) Shanbally WwTP	SW001 (S2) IDA Outfall
BOD (mg/l)	25	245
DIN (mg/l)	45	95
COD (mg/l)	125	NA
Suspended Solids (mg/l)	35	NA

3. Mass Balance Calculation

As part of a Tiered Assessment into the potential trophic status impacts, each of the rivers and identified licensed discharges were reviewed to identify the discharge flow rate and concentration from each source, including the Shanbally WwTP contribution to the combined discharge from the IDA outfall. The resulting data was compiled to form a mass balance calculation for the summer and winter seasons, and to provide a high-level source apportionment to contextualise the relevant inputs which drive eutrophication.

This assessment is based on PE loading of 80,000 and Proposed ELVs at Shanbally WwTP.

This exercise has been carried out on the overall Cork Harbour system including inputs to the various estuaries, Lough Mahon, North Channel Great Island, Cork Harbour and Outer Cork Harbour collectively. For the purposes of this assessment the effects of tidal flushing are not considered.

Industrial discharges have been assessed based on maximum permitted loadings. Riverine inputs are based on values used in the numerical model which were based on seasonal analyses of EPA WFD Monitoring Data.

A summary of the findings from the mass balance calculation is shown in Table 3-1.

Table 3-1. Summary of daily mass balance calculation for summer and winter conditions.

Source	Discharge (m^3/sec)	BOD	DIN
Summer loading (kg/day)		**14,577**	**6,580**
Rivers @ Q95 flows	7.44	11%	10%
Non-IDA Industries	0.17	15%	5%
Other WwTPs*1	1.63	25%	42%
IDA outfall*2	0.34	49%	42%
Shanbally WwTP as % of IDA Outfall load		2.1%	36.6%
Shanbally WwTP as % of overall summer harbour loads		**1.05%**	**15.4%**
Winter loading (kg/day)		**16,528**	**17,952**
Rivers @ Mean Flows	67.06	21%	67%
Non-IDA Industries	0.170	13%	2%
Other WwTPs*1	1.63	22%	15%
IDA outfall*2	0.34	43%	15%
Shanbally WwTP as % of IDA Outfall load		2.1%	36.6%
Shanbally WwTP as % of overall winter harbour loads		**0.9%**	**5.6%**

*1: Excluding the Shanbally WwTP.

*2: Including the Shanbally WwTP @ 80,000PE at Proposed EWs with Average discharge flow (1.25DWF).

4. Numerical Model set-up and calibration

Model Development

The numerical model of Cork Harbour was developed in accordance with the Irish Water Technical Standard[1]. The model was developed as part of the Whitegate-Aghada project using MIKE21 and used the best available bathymetry data, including survey data from spring 2018. The resulting bathymetry is shown in Figure 4.1.

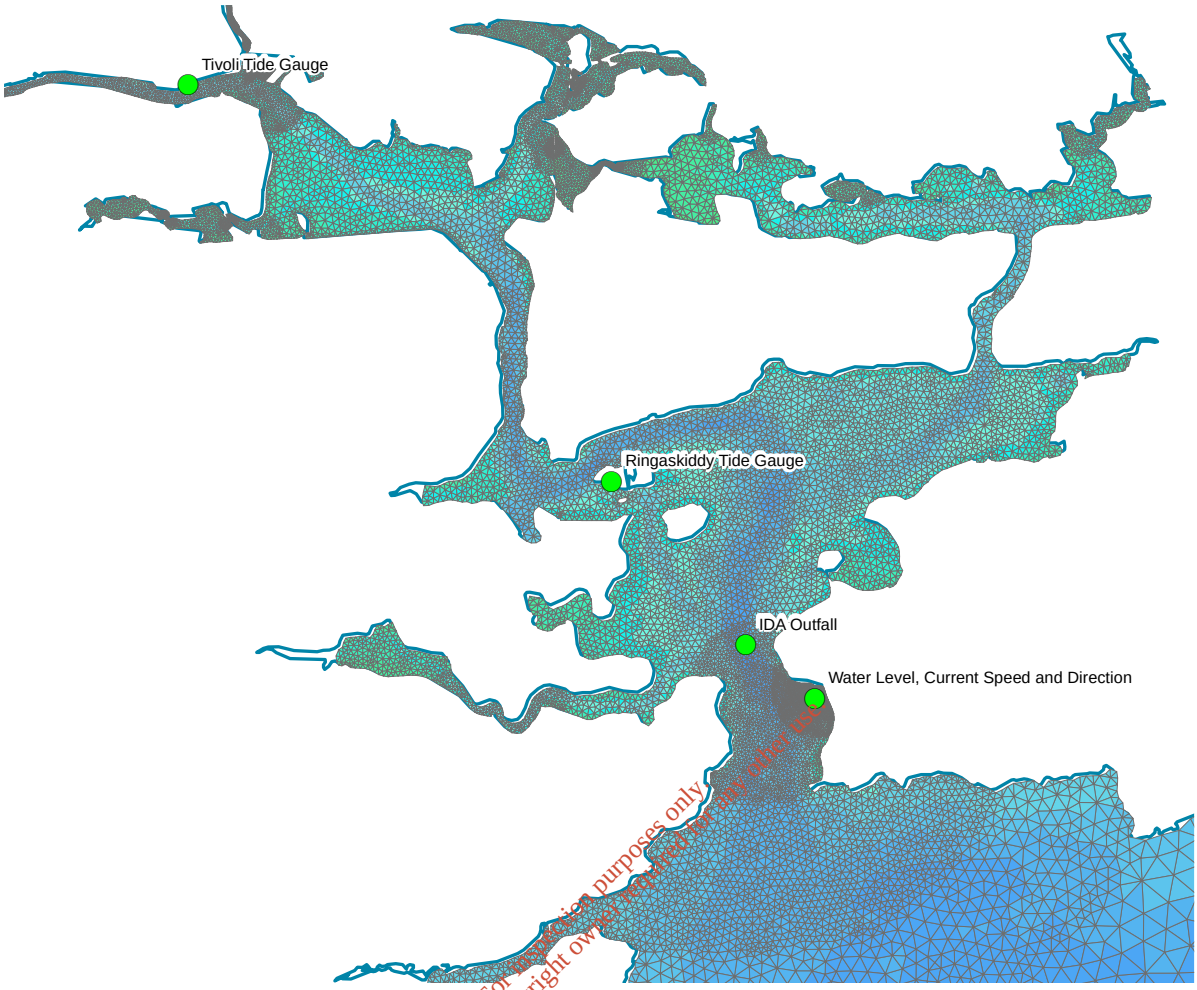
Water levels and current speed and direction were measured for a neap tide (8th April 2018) and a spring tide (29th April 2018) at the proposed new Whitegate-Aghada discharge location in White Bay. Additionally, drogues were deployed throughout the tidal cycle within the bay.

Tidal levels were obtained from the Port of Cork for two stations: Tivoli and Ringaskiddy.

The model was calibrated against water levels at three locations (Tivoli, Ringaskiddy and White Bay) and current speed and direction at White Bay. An example of the water level calibration for a neap tide is shown in Figure 4.3. Validation of the model was undertaken by comparing the model with drogue tracks and the current speed and direction measurements at the outfall location.

[1] The project started prior to the issue of the technical standard in March 2020. The project has however adhered to the draft standard applicable at the start of the project and model outputs been updated to comply with the requirements of the current standard (Irish Water, 2020, "Technical Standards: Marine Modelling", IW-TEC-100-015).

Figure 4.1. Model bathymetry showing the mesh (top) and bed levels (bottom).



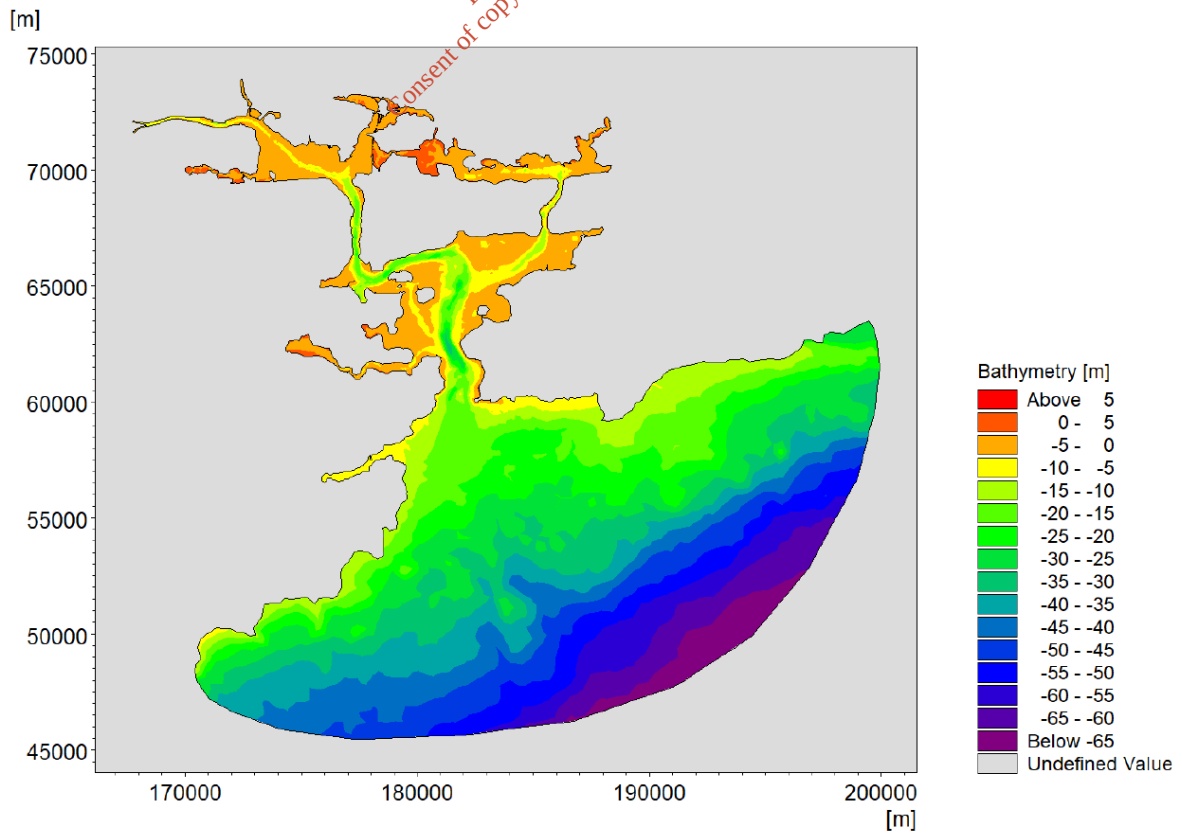


Figure 4.2. Model sources and receptors.

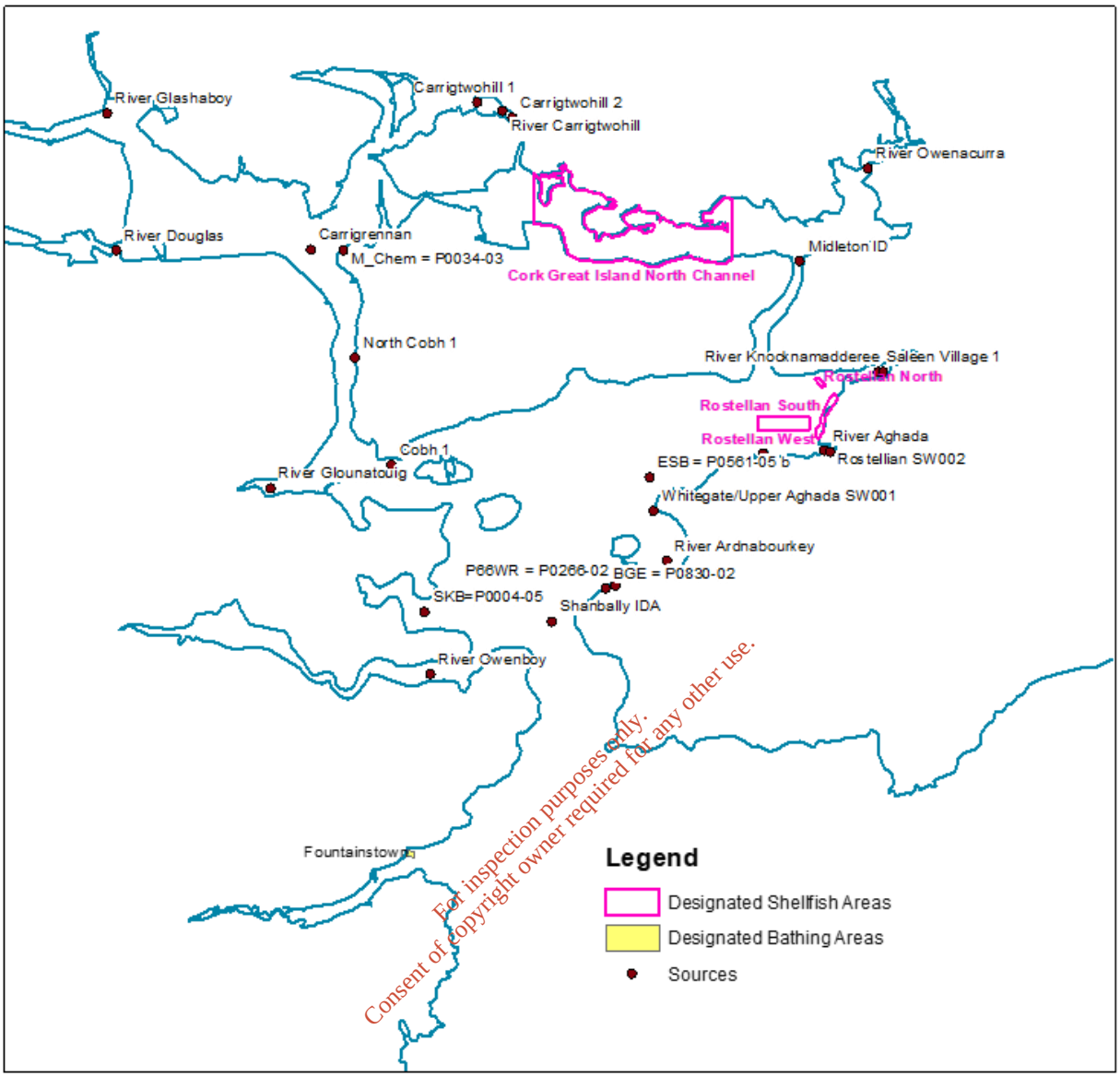
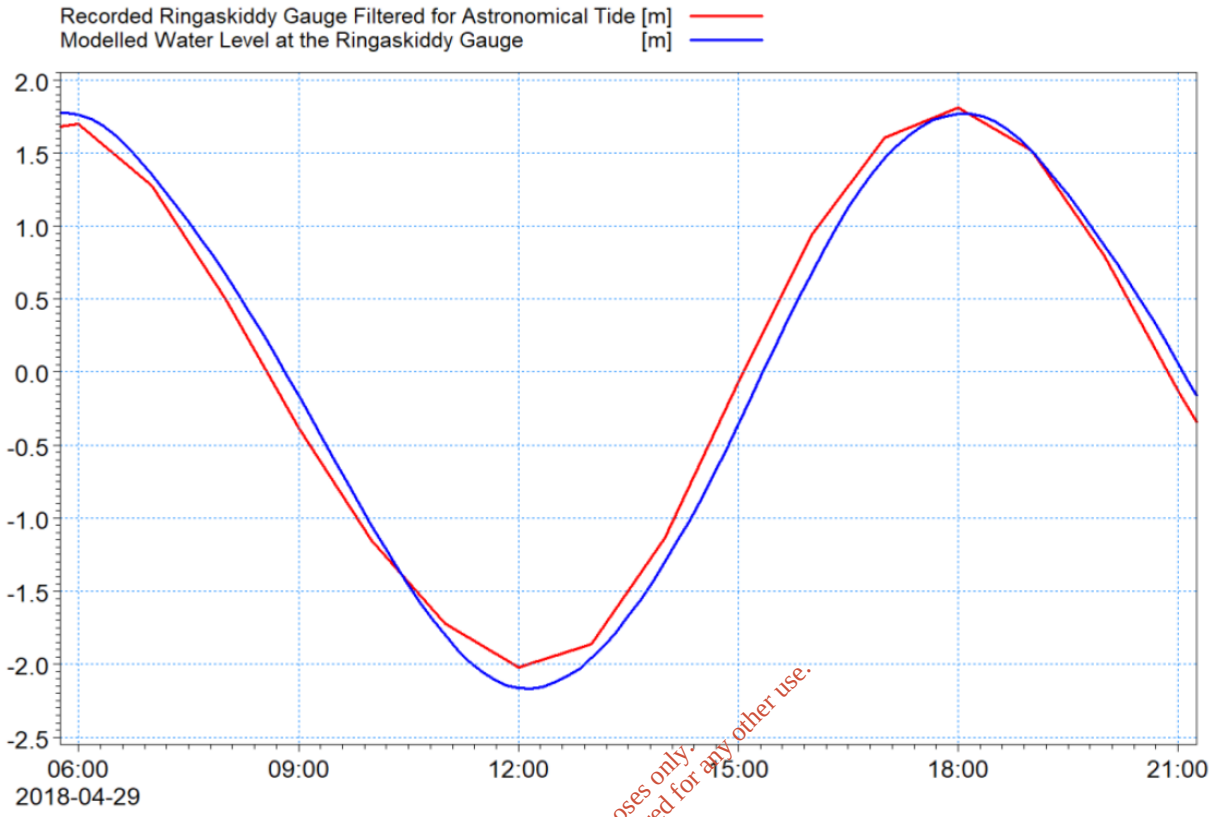


Figure 4.3. Example of water level calibration showing good agreement between the model and observed data.



Non-Wastewater Inputs

Fluvial inputs from the Lee, Glashaboy, Douglas, Owenacurra, Aghada, Owenboy, Ardnabourkey, Knocknamadderee, Carrigtwohill and Glounatouig Rivers were included in the model as shown in Figure 4-2.

Seasonal flow inputs to the model were determined using suitable hydrological estimation techniques using gauged data and donor gauge transposition as appropriate. Mean flows were used for winter simulations and 95%ile lows flows were used for summer simulations. Seasonal riverine input concentrations were determined from EPA WFD Monitoring Data from 2016-2020.

Licensed industrial loads were included in the modelling exercise, including discharges both within the IDA Outfall pipe (Table 4-1) and those discharging directly to the harbour system (Table 4-2). These inputs were modelled at maximum permitted loadings.

Table 4-1. Modelled industrial discharges (via IDA Outfall)

	Novartis P0006-04	Hov_Pfiz P0010-04	Pfizer P0013-05	Recordati P0476-02	Centocor_ Janss P0778-02	Du Puy WP S 14-04	Du Puy WP S 09-13 bis
Discharge (m^3/sec)	0.01042	0.02083	0.03356	0.00116	0.00926	0.00116	0.00116
BOD (mg/l)	250	2,000	888	300	40	667	667
DIN (mg/l)	70	100	500	100	50	75	35

Table 4-2. Modelled industrial discharges (direct to receiving waters).

	SKB P0004-05	ESB P0561-05 b	P66WR P0266-02	BGE P0830-02	M_Chem P0034-03
BOD (mg/l)	300	0	150	20	20
DIN (mg/l)	25	10	25	5	15

5. Mixing zones

5.1 Approach

The model was used to investigate the dispersion of the combined treated effluent plume from the IDA Outfall and identify the size of the mixing zones for each relevant parameter and to establish the relative contribution of the treated effluent to the water quality in the Nutrient Sensitive Areas and Designated Shellfish Waters in the vicinity of the discharge.

The mixing zone is defined as the area around the primary discharge point within which the concentration is above the regulatory EQS threshold for each parameter.

The immediate WFD receiving water is Cork Harbour which is a coastal waterbody. The applicable environmental quality standard (EQS) is DIN and is calculated on a seasonal, salinity adjusted basis as prescribed in the Surface Water Regulations (As Amended).

Based on 2018-2020 EPA monitoring data the median DIN EQS thresholds for Cork Harbour have been calculated as:

- Winter DIN 0.506mg/L (based on median winter salinity of 31.0psu)
- Summer DIN 0.378mg/L (based on median summer salinity of 33.1psu)

As the primary discharge point is into a coastal waterbody, the EQS thresholds relating to BOD and MRP do not apply as they are only applicable to freshwater and transitional waterbodies. However, for information purposes the modelling assessment included an assessment of BOD and MRP impacts.

Furthermore, Irish Water have also assessed the ammonia and unionised ammonia mixing plumes to consider any possible eco-toxicological effects.

Regarding Protected Areas, the Bathing Water Regulation's set out bacterial water quality standards which must be met at the boundary of Designated Bathing Waters. As the Designated Bathing Water at Fountainstown Beach is currently at Excellent Bathing Water Status, the regulations require the achievement of a 95%ile *E.Coli* standard of 250 cfu/100ml and a 95%ile Intestinal Enterococci standard of 100 cfu/100ml to ensure Excellent Bathing Water Quality is maintained.

There are no bacterial environmental quality standards for water quality set for the protection of Designated Shellfish Waters in Ireland. In the absence of a regulatory standard, Irish Water has applied an interim 95%ile *E.Coli* target of 500cfu/100ml (equivalent to Good Bathing Water Quality) to determine potential impacts from any primary wastewater discharge on Designated Shellfish Waters. Following recent engagement with both EPA and Marine Institute, Irish Water is also currently piloting an interim geomean *E.Coli* target of 110 cfu/100ml for the protection of Designated Shellfish Waters.

For the purposes of this study, Designated Shellfish Waters at Rostellan and in the North Channel have been assessed against both interim targets.

5.2 Results

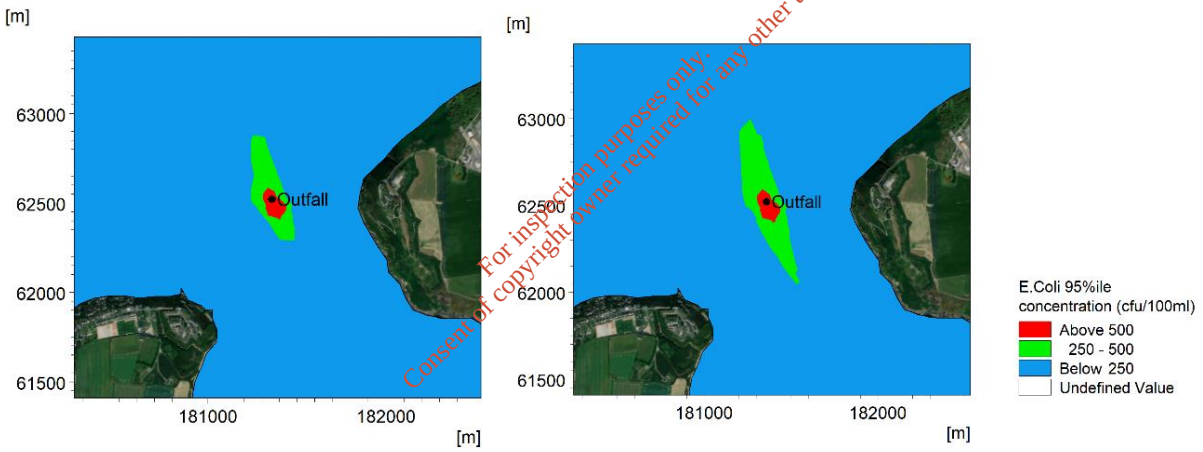
The mixing zone for all parameters (Regulatory & Non-Regulatory) other than *E.Coli* is not discernible, in other words the combined treated effluent from the IDA outfall has mixed to a concentration lower than the target/EQS threshold before reaching the surface, so there is effectively no mixing zone. This is primarily because the location of the IDA Outfall benefits from high natural dilution and dispersion due to the relatively strong tidal currents and deep water (25 to 30m).

The mixing plume for *E.Coli*, and the absolute concentration of *E. Coli* are shown in Figure 5.1 (only the red area exceeds the bathing water quality threshold, the green area is below the threshold). There are no Designated Shellfish Waters or Designated Bathing Waters within the area shown on the plots as the nearest receptors (Fountainstown Beach and Rostellan Shellfish Waters) are further away from the IDA Outfall and outside the mixing plume.

The figure shows that the mixing plume width is only 100m, significantly less than 25% of the estuary width (approximately 1.2km) and limited to approximately 200m in length up and downstream of the outfall.

Note this is not a mixing zone, as no regulatory standard for bacteria is applicable in the immediate vicinity of the discharge.

Figure 5.1. Example mixing plume plots for *E.Coli* for summer (left) and winter (right)



5.3 Conclusion

The mixing zones of all parameters have been assessed and it has been determined that the effect of the combined discharge from the IDA Outfall at the proposed ELVs in Table 2-1 does not present a risk to sensitive receptors within the harbour.

The only parameter with a discernible mixing plume on the surface is *E.Coli* for which the bacteria are dispersed within a few 100m of the discharge.

The proposed emission limit values of 245 mg/l BOD and 95 mg/l DIN for the combined treated effluent from the IDA outfall are compatible with the achievement of WFD objectives for the receiving waters.

6. Particle tracking

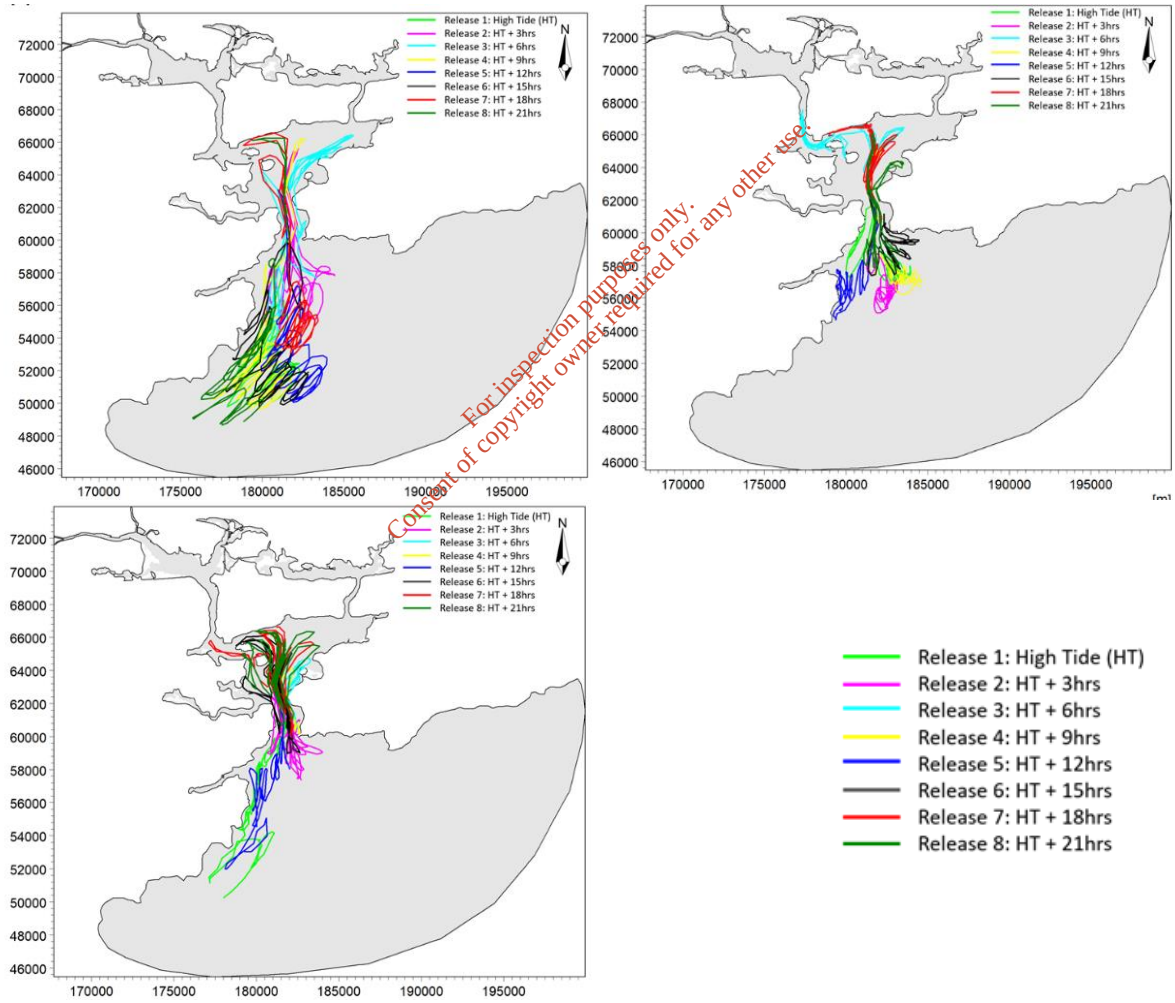
The mass balance calculation in Section 3 has shown that the Shanbally WwTP contributes a small but identifiable percentage of the total load of DIN to the overall harbour system, however this does not mean that the load is distributed throughout the harbour. Particle

tracking has been undertaken to investigate the tidal excursion of flows discharged from the IDA outfall.

The particle tracks demonstrate that releases on the ebb tide travel outside the estuary, whilst releases on the flood tide travel into the estuary. However, the distance travelled into the estuary is limited to the Cork Harbour waterbody for the vast majority of tidal conditions. There is virtually no hydraulic connectivity between the combined discharge from the IDA Outfall and Lough Mahon or the North Channel Great Island. The exception to this is when discharges coincide with low water. For some intermediate tides there is limited tidal excursion from the IDA outfall to just inside the Lough Mahon boundary and similarly for some spring tides to the Rostellan shellfisheries. For both cases the connectivity exists only for short periods of time before the tide turns to take the water back out of these waterbodies.

A summary of the tracks for particles released every three hours over a spring and a neap tide are shown in Figure 6.1.

Figure 6.1. Summary of the particle tracks for a spring tide (top left), intermediate tide (top right) and neap tide (bottom left).



Considering the specific tidal conditions required for discharges from the Shanbally WwTP to reach Lough Mahon and Rostellan occur for approximately 5% of the time, and given the strong effects of dilution and dispersion due to the favourable mixing conditions, there is extremely limited scope for the transfer of nutrient loads from the combined treated effluent from the IDA Outfall to Lough Mahon or the North Channel Great Island.

7. Source Apportionment

7.1 Approach

To further quantify any potential impact a detailed source apportionment exercise was undertaken using the numerical model and the results of this are presented below.

The model was used to quantify the load at each receptor point within model and attribute the relative contribution to each load source. The locations of the sources and receptors are shown in **Error! Reference source not found.**Figure 4.2 and Figure 7.1**Error! Reference source not found.** respectively.

This was carried out by modelling each source individually for the same time period and using the principle of superposition to sum the resultant concentrations.

The exercise is focussed on Winter DIN as the TSAS contaminant of concern for the Shanbally WwTP as previously identified by the EPA[2] .

The source apportionment data has been analysed to provide information on the source of Winter DIN in Lough Mahon and North Channel Great Island areas.

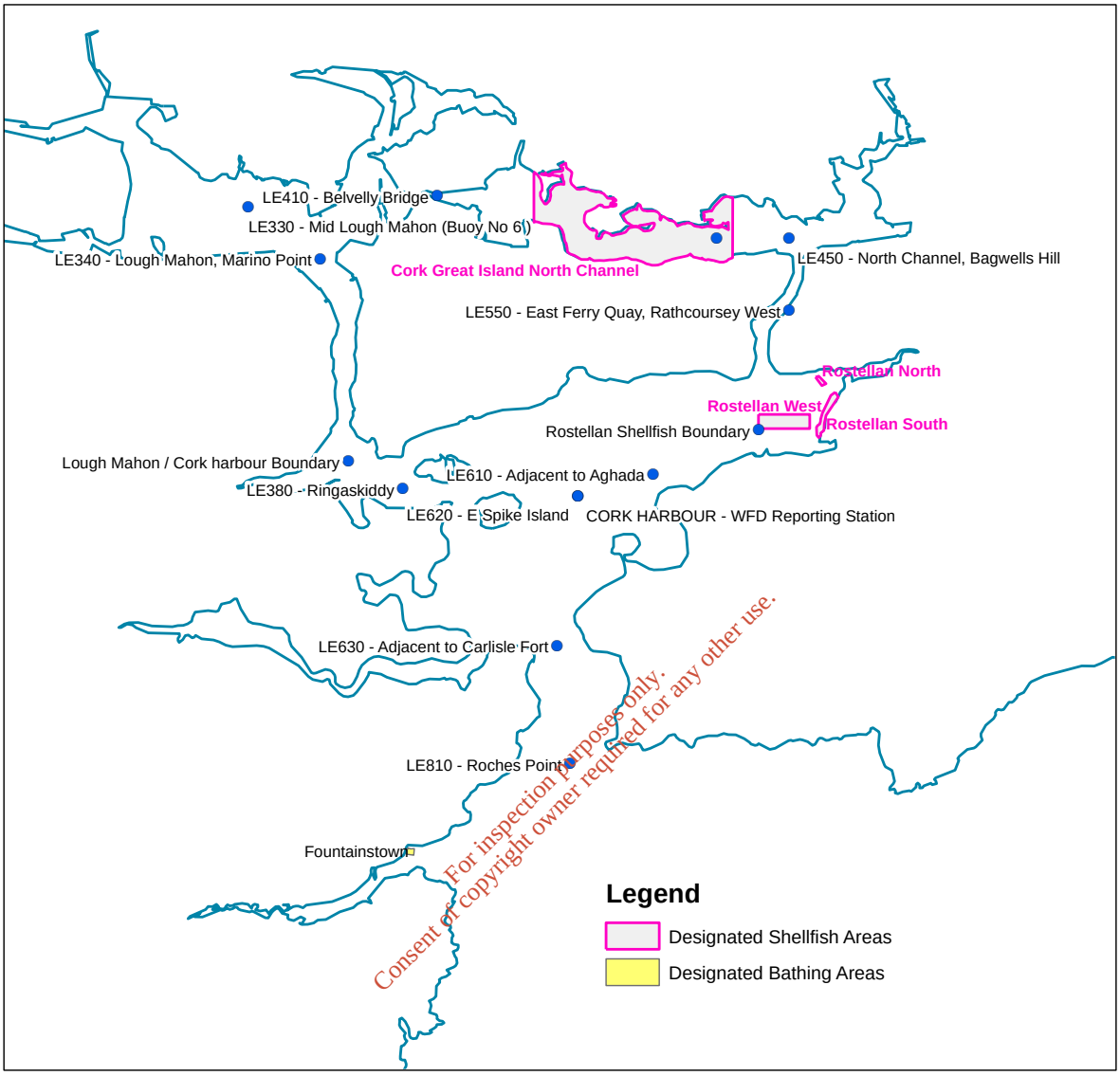
Three loading scenarios were considered for source apportionment exercise. The first is the effluent from Shanbally WwTP based on the existing treatment (DIN = 28.5mg/L) with proposed 80 000PE loading.

The second is a hypothetical scenario with additional 3N treatment to reduce the concentration of ammonia, nitrate and nitrite in the effluent to comply with a theoretical Total Nitrogen ELV of 15mg/l at 80,000PE loading. This scenario has been undertaken in response to the EPA position that 3N treatment may be required at Shanbally WwTP due to potential impacts on Trophic Status in Lough Mahon and Great Island North Channel.

The final scenario modelled was a proposed revision to 45mg/L DIN ELV at 80,000PE loading.

[2] EPA, 2016, “Review of nutrient sensitive areas (freshwater and marine) as required by the Urban Waste Water Treatment Directive (91/271/EEC)”.

Figure 7.1. Locations of receptors points for source apportionment also showing the locations of designated bathing waters (Fountainstown) and Designated Shellfish Waters (pink outline).



7.2 Scenario 1 – Existing Treatment levels @ 80,000PE

7.2.1 Winter DIN at locations in Lough Mahon

The source apportionment analysis for the first DIN scenario in Lough Mahon is shown in Table 7-1.

The source apportionment confirms that at the current treatment level (28.5mg/L) at 80,000PE loading the Shanbally WwTP discharge would be responsible for ca. 0.6% of the modelled concentration at the Lough Mahon/Cork Harbour Boundary. The contributions from the Shanbally WwTP are at, or below, limit of detection levels. At LE330 Mid Lough Mahon no contribution is modelled. This is consistent with the findings of the particle tracking which show that discharges from the IDA outfall rarely reach Lough Mahon.

The relative contribution reduces with increasing distance from the IDA outfall as demonstrated in Table 7-1

Table 7-1. Scenario 1 Winter DIN Contributions to Lough Mahon.

	Lough Mahon Boundary	LE 340 Lough Mahon, Marino Point	LE330 Mid Lough Mahon (Buoy No.6)
Modelled Median Concentration [mg/l]	0.5742	1.0284	1.289
Modelled contribution from Shanbally WwTP [mg/l]	0.0033	0.0007	0.000
% load contribution at each monitoring point from Shanbally WwTP	0.58%	0.06%	0 %

7.2.2 Winter DIN in North Channel Great Island

The source apportionment analysis for the first DIN scenario in the North Channel Great Island waterbody is shown in Table 7-2. This exercise demonstrates that Shanbally WwTP would contribute a very small proportion of the DIN in the North Channel Great Island waterbody with less than 0.52% of the total Winter DIN load coming from Shanbally WwTP under 80,000PE loading conditions. The absolute contributions from the Shanbally WwTP are at, or below, limit of detection levels.

Table 7-2. Scenario 1 Winter DIN Contributions to North Channel Great Island.

	LE 410 Belvelly Bridge (North Channel Great Island)	LE450 North Channel Bagwells Hill	LE440 North Channel, Red Shed	LE420 North Channel West	LE540 North Channel East
Modelled Median Concentration [mg/l]	1.0762	0.3151	0.3505	0.4433	0.4014
Modelled contribution from Shanbally WwTP [mg/l]	0.0003	0.0016	0.0008	0.0004	0.0006
% load contribution at each monitoring point from Shanbally WwTP	0.03%	0.52%	0.23%	0.1%	0.16%

7.3 Scenario 2 - Hypothetical 3N removal @ 80,000PE

The source apportionment has been re-run using revised discharge concentrations for the IDA outfall to account for a hypothetical 3N removal scenario.

A comparison of the modelled concentrations is presented in Table 7-3 which shows that the maximum improvement in the modelled concentration of Winter DIN as a result of 3N treatment at Shanbally WWTP is 0.0031mg/l which occurs at the boundary between Lough Mahon and Cork Harbour waterbodies. This modelled improvement is below the laboratory limit of detection for DIN.

Table 7-3. Comparison of Scenario 1 and Scenario 2 Modelled Winter DIN Concentrations

	Lough Mahon Boundary	LE 340 Lough Mahon, Marino Point	LE330 Mid Lough Mahon (Buoy No.6)	LE 410 Belvelly Bridge (North Channel Great Island)
Modelled Median Concentration (Existing Treatment)	0.5742	1.0284	1.289	1.0762
Modelled Median Concentration (3N Treatment)	0.5711	1.0278	1.289	1.0759
Absolute Improvement (mg/L)	0.0031	0.006	0	0.0003

7.4 Scenario 3 – Proposed 45mg/L DIN ELV @ 80,000PE

7.4.1 Winter DIN at locations in Lough Mahon

The source apportionment has been re-calculated using revised discharge concentrations for the IDA outfall to account for a proposed DIN ELV of 45mg/L at 80,000PE. The impact of this is set out below.

This loading scenario demonstrated that effect of this proposed increase in DIN ELV at Shanbally WwTP to 45mg/L would have a negligible effect on overall DIN concentrations in Lough Mahon, owing to the relatively minor contributions made by the Shanbally WwTP in comparison to other sources, the limiting effects of tidal excursion and the favourable dilution and mixing conditions out the IDA outfall.

Changes in modelled concentration are below limit of detection levels at the boundary of Lough Mahon.

The relative DIN contributions from Shanbally WwTP are shown below in Table 7-4 and are shown to be less than 1% at all monitoring stations in Lough Mahon. Furthermore, the table demonstrates that the influence of the treatment plant reduces with increasing distance from the IDA outfall.

Table 7-4. Scenario 3 Winter DIN Contributions to Lough Mahon.

	Lough Mahon Boundary	LE 340 Lough Mahon, Marino Point	LE330 Mid Lough Mahon (Buoy No.6)
Modelled Median Concentration [mg/l]	0.5741	1.0284	1.289
Modelled contribution from Shanbally WwTP [mg/l]	0.0045	0.0009	0.000
% load contribution at each monitoring point from Shanbally WwTP	0.79%	0.09%	0 %

7.4.2 Winter DIN in North Channel Great Island

The same analysis has been carried out to determine the impact of a 45mg/L DIN discharge at Shanbally WwTP.

This exercise demonstrates that Shanbally WwTP would contribute a very small proportion of the DIN in the North Channel Great Island waterbody with less than 0.7% of the total Winter DIN load coming from Shanbally WwTP at 80,000PE.

The absolute contributions from the Shanbally WwTP are at, or below, limit of detection levels as per Table 7-5.

Table 7-5. Scenario 3 Winter DIN Contributions to North Channel Great Island.

	LE 410 Belvelly Bridge (North Channel Great Island)	LE450 North Channel Bagwells Hill	LE440 North Channel, Red Shed	LE420 North Channel West	LE540 North Channel East
Modelled Median Concentration [mg/l]	1.0762	0.315	0.3505	0.4433	0.4014
Modelled contribution from Shanbally WwTP [mg/l]	0.0005	0.0022	0.0011	0.0006	0.0009
% load contribution at each monitoring point from Shanbally WwTP	0.044%	0.7%	0.31%	0.13%	0.22%

7.5 Conclusion

The source apportionment for winter DIN has demonstrated that the Shanbally WwTP is not capable of having any perceptible impact on the trophic status of Lough Mahon or North Channel Great Island waterbodies, with modelled median contributions from the Shanbally WwTP being at or below limit of detection levels for DIN at WFD monitoring points.

This is a result of the favourable dilution and dispersion characteristics of the IDA outfall location, and the very limited hydraulic connectivity between the IDA Outfall location and Lough Mahon/North Channel Great Island as demonstrated in Section 6 and the relatively

minor contribution of Winter DIN load in the context of the overall harbour as demonstrated in Section 3.

The findings of the modelling assessment demonstrate that more stringent removal of nutrients (nitrogen) at the Shanbally WwTP to comply with a hypothetical UWWTD Article 5 TN standard of 15mg/L at 80,000PE loading **would have no perceptible impact on the existing level of eutrophication in Lough Mahon or North Channel Great Island.**

The findings of the modelling assessment demonstrate that a 45mg/L DIN discharge at 80,000PE **is compatible with the achievement of WFD objectives for the receiving waters and would have no perceptible impact on the levels of eutrophication in Lough Mahon or North Channel Great Island.**

8. Conclusion

The potential impact of the effluent from the Shanbally WwTP discharged through the IDA outfall has been evaluated using a simple mass balance approach and a calibrated numerical model of the hydrodynamics and water quality of Cork Harbour.

The proposed ELV values for concentrations of BOD and DIN and the estimated discharge concentrations of total ammonia, unionised ammonia as MRP *E.Coli* and Intestinal Enterococci have been simulated to identify the dispersion of the effluent in the receiving waters.

Particle tracking has been undertaken to demonstrate the limited connectivity between the IDA Outfall and Nutrient Sensitive Waters.

The relative contribution of Winter DIN from the Shanbally WwTP to the nutrient sensitive waterbodies of Lough Mahon and North Channel Great Island has been determined through source apportionment assessments.

Key conclusions of the studies are:

1. The Shanbally WwTP at the proposed ELVs contributes approximately 1% of the BOD annually to the whole cork harbour system. During summer it contributes ca. 15% of the DIN and during winter ca. 5% of the DIN to the whole cork harbour system. These findings are in line with previous modelling studies undertaken by Irish Water[3]

2. Evaluation of the mixing zones for all parameters determined that for all parameters the regulatory EQS is met at the surface and there is no discernible mixing zone due to the favourable mixing conditions at the outfall.

3. For unionised ammonia, the modelled 95%ile concentrations were below 0.021mg/l following vertical mixing. This is due to the fact that the location of the IDA Outfall benefits from high natural dilution and dispersion due to the relatively strong tidal currents and deep water (25 to 30m).

4. Particle tracking demonstrated that the discharge from the IDA outfall reaches the southern boundary of Lough Mahon for very short periods of time limited to discharges at low water under certain tidal conditions. These conditions occur ca. 5% of the time.

5. The findings of the modelling assessment demonstrate that the proposed ELVs at the WwTP and the combined concentrations at the end of the IDA outfall pipe are compatible with the achievement of WFD objectives for the receiving waters.

[3] An Assessment of Nitrogen and Phosphorus Discharges from Shanbally Waste Water Treatment Plant to Cork Harbour, Martin McGarrigle, Limnos Consultancy, March 2017.

6. The provision of more stringent removal of nitrogen from the Shanbally WwTP would have no perceptible effect on the level of eutrophication in Lough Mahon or North Channel Great Island.

7. A 45mg/L DIN ELV is compatible with the achievement of WFD objectives of receiving waters and would have no perceptible effect on the level of eutrophication in Lough Mahon or North Channel Great Island.

8. The modelling assessment has demonstrated that the combined discharge will meet all interim and regulatory bacterial water quality targets and that the combined discharge is compatible with the achievement of WFD objectives for the Designated Shellfish Waters in both Rostellan and the North Channel and the Designated Bathing Waters at Fountainstown Beach.

Priority Substances Assessment

Agglomeration Name:	**Cork Lower Harbour**
Licence Register No.	**D0057-01**

Table of Contents

1 Introduction

The Cork Lower Harbour Main Drainage Project is a Project for the provision of collection systems and wastewater treatment facilities in the Cork Lower Harbour area. This Project includes transferring the collected wastewater from Cobh (D0054-01), Passage West/Monkstown (including Glenbrook) (D0129-01) and Ringaskiddy Village (including Shanbally and Coolmore) (D0436-01) to the Cork Lower Harbour agglomeration (D0057-01). The Project involves upgrading the existing sewerage network infrastructure together with the provision of a secondary Wastewater Treatment Plant (Cork Lower Harbour (LH) WwTP) (operational since December 2016) at a site located to the east of Carrigaline near the townland of Shanbally.

A review of the D0057-01 Crosshaven, Carrigaline, Ringaskiddy (now known as Cork Lower Harbour) licence is required in order to amalgamate the above-mentioned agglomerations into one agglomeration which will be served by the Shanbally WwTP (Shanbally WwTP). Once amalgamated into D0057-01, licences D0054-01, D0129-01 and D0436-01 can be revoked.

This report has been prepared for **D0057-01**, **Cork Lower Harbour** to inform the review application of the wastewater discharge licence for the revised agglomeration.

This desk top study has been undertaken to determine the necessity, if any, for further analysis of the discharge based on the *Guidance on the Screening for Priority Substances for Waste Water Discharge Licences*, issued by the EPA. Relevant inputs to the Shanbally WwTP and estimates of emissions from the discharge point have been taken into account in the preparation of this report.

Details of emissions data available for the discharge from the EPA PRTR electronic tool and the impact on the receiving water are included in Appendix 1. The Shanbally WwTP details were input into the electronic toolset *(i.e. >50,000 p.e., no saline intrusion, secondary treatment – other, no nutrient removal*) to generate wastewater emission estimates in the absence of measured data.

2 Desktop Study

2.1 Assessment of Analysis Required

A. Review of all industrial inputs into WWTP

A review of the GeoDirectory and all EPA licensed facilities was undertaken to determine the non-domestic discharge types which are being discharged to the Shanbally WwTP. The IW Technical Assessment Manual Sectoral Profile Data was reviewed to determine the potential dangerous substances which would be released to sewer from the identified industries. The unlicensed industrial or trade effluent discharges, leachate discharges and other imports are included in Table 2.1 below. "*Other Imports*" includes for any non-domestic imports to the WwTP. Table 2.2 below, lists the single EPA licenced non-domestic discharge which is treated at the Shanbally WwTP, P0064 – BioMarin International Ltd, contributing a measured PE of approximately 482. There are also 5 Section 16 licenced industries discharging to the Shanbally WwTP, contributing a total measured PE load of approx. 603 PE (max ca. 250PE from one S16 Facility). Due to the built-up nature of the study zone it is considered that the Priority Substances which are possibly being emitted to sewer have been well represented in this partial characterisation of the wastewater (Table 2.1).

Table 2.1 – List of Non-Domestic Discharge Types to WWTP and Details of Dangerous/Priority Substance

Type of Industry within the Agglomeration	Potential Source of Dangerous / Priority Substances (Yes / No)	Dangerous / Priority Substances Monitoring Undertaken (Yes / No)	List of Potential Dangerous Substances Based on Industry Type (Source: *Technical Assessment Manual - Sectoral Profile Data*)
Manufacture of food products and beverages	Yes	Unknown	Lead and its compounds Nickel and its compounds Cadmium and its compounds Mercury and its compounds Chromium (III) Copper Zinc
Production, processing and preserving of meat and meat products	Yes	Unknown	Naphthalene Trichloroethylene Cadmium and its compounds Hexachlorocylohexane (Lindane) Chromium (VI) Cypermethrin Toluene Xylenes (Total)
Manufacture of wood and wood products	Yes	Unknown	Fluoranthene Lead and its compounds Naphthalene Pentachlorophenol Trichlorobenzene (all isomers) Anthracene Cadmium and its compounds Endosulfan Hexachlorocylohexane (Lindane) Mercury and its compounds Pentachloro-benzene Polyaromatic Hydrocarbon (PAH) Tributyltin Arsenic

Type of Industry within the Agglomeration	Potential Source of Dangerous / Priority Substances (Yes / No)	Dangerous / Priority Substances Monitoring Undertaken (Yes / No)	List of Potential Dangerous Substances Based on Industry Type (Source: *Technical Assessment Manual - Sectoral Profile Data*)
			Chromium (III) Chromium (VI) Copper Phenol Toluene Xylenes (Total) Zinc
Sawmilling and planing of wood; impregnation of wood	Yes	Unknown	Pentachlorophenol Dieldrin Hexachlorocylohexane (Lindane) Polyaromatic Hydrocarbon (PAH) Arsenic Chromium (III) Cypermethrin Copper
Manufacture of chemicals and chemical products	Yes	Unknown	Alachlor Atrazine Benzene Chlorpyrifos 1,2-Dichloroethane Dichloromethane Di (2-ethylhexyl) phthalate (DEHP) Diuron Fluoranthene Isoproturon Lead and its compounds Naphthalene Nickel and its compounds Octylphenols Pentachlorophenol

Type of Industry within the Agglomeration	Potential Source of Dangerous / Priority Substances (Yes / No)	Dangerous / Priority Substances Monitoring Undertaken (Yes / No)	List of Potential Dangerous Substances Based on Industry Type (Source: *Technical Assessment Manual - Sectoral Profile Data*)
			(benzo-a-pyrene) Simazine Trichlorobenzene (all isomers) Trichloromethane Trifluarin Anthracene Pentabromodiphenlyether Cadmium and its compounds C10-13-Chloralkanes Hexachlorobenzene Hexachlorobutadiene Hexachlorocylohexane (Lindane) Mercury and its compounds Nonylphenols Polyaromatic Hydrocarbon (PAH) Arsenic Chromium (III) Copper Cyanide Dimethoate Fluoride Glyphosate Mecoprop Phenol Toluene Xylenes (Total) Zinc
Manufacture of machinery and equipment n.e.c.	Yes	Unknown	Dichloromethane Lead and its compounds Nickel and its compounds

Type of Industry within the Agglomeration	Potential Source of Dangerous / Priority Substances (Yes / No)	Dangerous / Priority Substances Monitoring Undertaken (Yes / No)	List of Potential Dangerous Substances Based on Industry Type (Source: *Technical Assessment Manual - Sectoral Profile Data*)
			Chromium (III) Copper Toluene Xylenes (Total) Zinc
Building and repairing of ships	Yes	Unknown	Benzene Lead and its compounds Nickel and its compounds Carbontetrachloride Tetrachloroethylene Cadmium and its compounds Mercury and its compounds Polyaromatic Hydrocarbon (PAH) Arsenic Chromium (VI) Copper Cyanide Xylenes (Total) Zinc
Construction	Yes	Unknown	Lead and its compounds Nickel and its compounds Mercury and its compounds Arsenic Chromium (III) Copper Zinc
Other supporting transport activities	Yes	Unknown	Benzene
Ship Activities	Yes	Unknown	Benzene Diuron

Type of Industry within the Agglomeration	Potential Source of Dangerous / Priority Substances (Yes / No)	Dangerous / Priority Substances Monitoring Undertaken (Yes / No)	List of Potential Dangerous Substances Based on Industry Type (Source: *Technical Assessment Manual - Sectoral Profile Data*)
			Fluoranthene Lead and its compounds Naphthalene Nickel and its compounds Anthracene Cadmium and its compounds Polyaromatic Hydrocarbon (PAH)
Schools and Universities	Yes	Unknown	Dichloromethane Lead and its compounds Nickel and its compounds Trichloromethane
Hospitals	Yes	Unknown	Dichloromethane
Sewage and refuse disposal, sanitation and similar activities	Yes	Unknown	Lead and its compounds Nickel and its compounds Dieldrin Cadmium and its compounds Mercury and its compounds Arsenic Chromium (VI) Copper Cyanide Fluoride Zinc
Launderettes and Dry Cleaners	Yes	Unknown	Di (2-ethylhexyl) phthalate (DEHP)
Hairdressers	Yes	Unknown	Nickel and its compounds Cadmium and its compounds
Dentist	Yes	Unknown	Octylphenols Mercury and its compounds

Type of Industry within the Agglomeration	Potential Source of Dangerous / Priority Substances (Yes / No)	Dangerous / Priority Substances Monitoring Undertaken (Yes / No)	List of Potential Dangerous Substances Based on Industry Type (Source: *Technical Assessment Manual - Sectoral Profile Data*)
Garages and filling stations	Yes	Unknown	Benzene Di (2-ethylhexyl) phthalate (DEHP) Lead and its compounds Naphthalene Nickel and its compounds Cadmium and its compounds Mercury and its compounds Chromium (III) Copper Toluene Xylenes (Total) Zinc

Table 2.2 – List of Licenced Non-Domestic Discharge Types to WWTP and Details of Dangerous/Priority Substance

Licensee Name / Landfill Name /Other Imports	Type of Industry	Type of Licence (IED / IPPC / Section 16 / Unlicensed)	Potential Source of Dangerous / Priority Substances (Yes / No)	Dangerous / Priority Substances Monitoring Undertaken (Yes / No)	List Anticipated Dangerous Substances or state if unknown
BioMarin International Ltd.	Biopharmaceutical	IED (P0864-01)	Yes	Unknown	Unknown
Good Fish Processing (Carrigaline) Ltd	Manufacture of food products and beverages	S16; WP(S)5/02	Yes	Unknown	Unknown
Carbon Chemicals	Chemical	S16; WP(S)2/95	Yes	Unknown	Unknown
Kerry Bio-Science	Biopharmaceutical	S16; WP(S)1/94	Yes	Unknown	Unknown
Nohoval Drinks Company	Manufacture of food products and beverages	S16; IW-DTS-802704-01	Yes	Unknown	Unknown

Licensee Name / Landfill Name /Other Imports	Type of Industry	Type of Licence (IED / IPPC / Section 16 / Unlicensed)	Potential Source of Dangerous / Priority Substances (Yes / No)	Dangerous / Priority Substances Monitoring Undertaken (Yes / No)	List Anticipated Dangerous Substances or state if unknown
Concentrate Company of Ireland (t/a Pepsico)	Manufacture of food products and beverages	S16; IW-DTS-839577-02	Yes	Unknown	Unknown

.

B. Discharge monitoring

There is no recent priority substances analysis of the primary discharge.

C. Downstream monitoring location's participation in relevant monitoring programme

There is no priority substances monitoring data for the downstream ambient monitoring location.

D. Participation in PRTR reporting

The emissions of specific organic compounds and metals (priority substances) have been estimated for the discharge utilising the EPA's urban WWTP calculation tool for PRTR reporting. It is noted from the EPA's report, An Inventory of Emissions to Waters in Ireland, that extensive assessment of emission factors was undertaken during 2011 / 2012 that focussed on the evaluation of inputs / output concentrations and removal efficiency using a variety of different sized plants and wastewater treatment options. This has led to the significant refinement of the electronic template toolkit used for WWTP assessment using the PRTR tool.

The estimated emission data relevant to the Cork Lower Harbour Agglomeration pertains to a WWTP of >50,000 p.e., with no saline intrusion, with primary and secondary treatment (other) and no nutrient removal. All parameters listed in Appendix 1 have emission data available for the discharge estimated from the PRTR reporting tool. The Total Halogenated Organic Compound Value from the PRTR reporting tool has been used to give a conservative estimate for Trichloromethane.

2.2 Review Outcome of Desktop Study

Following the desktop study, all parameters in Appendix 1 have been assessed to establish any potential impact on the receiving waters. A review of all non-domestic loads to the wastewater treatment plant is underway by Irish Water. A consultation process with the EPA is being undertaken by Irish Water to establish appropriate levels of monitoring for priority and dangerous substances nationally, taking into account the particular requirements of the Water Framework Directive. It is proposed that this review, in consultation with the EPA, will determine the scope of future Priority Substances monitoring at Irish Water WWTPs.

Priority substance concentrations in the primary discharge were available for all parameters based on the EPA PRTR toolkit. This desktop study is considered to provide partial characterisation of the wastewater.

3 Assessment of Significance and Recommendations

An assessment of the potential for impacts on receiving waters from priority substances in the primary discharge has been carried out. The assessment considers the primary discharge relevant to Environmental Quality Standards (EQS) for priority substances in surface waters, as set out in the European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019.

Based on the data from the PRTR reporting tool the following parameters were identified as potentially being higher than the required EQS in the final treated effluent from Shanbally WwTP:

- Toluene
- Fluoranthene

- Di(2-ethylhexyl)phthalate (DEHP)
- Phenols (as Total C)
- Lead
- Copper
- Zinc
- Cadmium

However, taking the dilution factor of the receiving Cork Lower Harbour into consideration (approx. 1,300 dilutions estimated to be available at the immediate discharge point (Source: EPA WWDL Application, 2007) impacts on the receiving waters are not anticipated (see Appendix 1).

The EPA has prepared a report on priority substances, *An Inventory of Emissions to Waters in Ireland.* This document states that Ireland appears to have relatively few problems associated with the presence of Priority / Priority Hazardous substances in its surface waters. It identifies that wastewater discharges are a potential source of metals in receiving waters with lead being the main metal identified as associated with wastewater discharges. However, metals exceedances, in particular those for cadmium, lead, and nickel are primarily associated with areas of historic mining activity. Similarly, PAHs have been identified in stormwater overflows, but the most significant source is considered to be rainfall.

Irish Water have agreed the scope of a sampling programme for priority and dangerous substances, taking into account the particular requirements of the Water Framework Directive. This allows a targeted monitoring programme based on the output of the desktop assessment.

Does the assessment use the Desk Top Study Method or Screening Analysis to determine if the discharge contains the parameters in Appendix 1 of the EPA guidance	Desk Top Study
Does the assessment include a review of licensed / authorised inputs to the works?	Yes
Does the assessment include a review of other (unauthorised) inputs to the works?	Yes
Does the report include an assessment of the significance of the results where a listed material is present in the discharge? (e.g. impact on the relevant EQS standard for the receiving water)	Yes
Does the assessment identify that priority substances may be impacting the receiving water?	Yes, however taking the dilution factor of the receiving Cork Lower Harbour into consideration impacts on the receiving waters are not anticipated.
Does the Improvement Programme for the agglomeration include the elimination / reduction of all priority substances identified as having an impact on receiving water quality?	N/A

Appendix 1 – Screening of Parameters for Priority Substances

AA: Annual Average
MAC: Maximum Allowable Concentration
EQS: Environmental Quality Standards
Dilution factor in receiving water: Approx. 1,300 dilutions estimated immediately in the proximity of the discharge point. (Source: EPA WWDLA, 2007)

No.	Compound	Group of compounds	AA-EQS Inland SW (µg/l)	AA-EQS Other SW (µg/l)	Measured /Estimated Conc. (µg/l)[1]	Data Source	Sample Date (if applicable)	Effluent Concentration above AA concentration (Yes/No)	Effluent Concentration above AA concentration after dilution (Yes/No)
1	Benzene	VOCs	10	8	0.166	PRTR Estimation Toolset	n/a	No	No
2	Carbon tetrachloride	VOCs	12	12	0.000	PRTR Estimation Toolset	n/a	No	No
3	1,2-Dichloroethane	VOCs	10	10	0.000	PRTR Estimation Toolset	n/a	No	No
4	Dichloromethane	VOCs	20	20	0.12	PRTR Estimation Toolset	n/a	No	No
5	Tetrachloroethylene	VOCs	10	10	0.000	PRTR Estimation Toolset	n/a	No	No
6	Trichloroethylene	VOCs	10	10	0.000	PRTR Estimation Toolset	n/a	No	No

No.	Compound	Group of compounds	AA-EQS Inland SW (µg/l)	AA-EQS Other SW (µg/l)	Measured /Estimated Conc. (µg/l)[1]	Data Source	Sample Date (if applicable)	Effluent Concentration above AA concentration (Yes/No)	Effluent Concentration above AA concentration after dilution (Yes/No)
7	Trichlorobenzenes	VOCs	0.4	0.4	0.000	PRTR Estimation Toolset	n/a	No	No
8	Trichloromethane	VOCs	2.5	2.5	0.000	PRTR Estimation Toolset	n/a	No	No
9	Xylenes (all isomers)	VOCs	10	10	1.588	PRTR Estimation Toolset	n/a	No	No
10	Ethyl Benzene	VOCs	n/a	n/a	0.1144	PRTR Estimation Toolset	n/a	No	No
11	Toluene	VOCs	10	10	13.923	PRTR Estimation Toolset	n/a	**Yes**	No
12	Naphthlene[1]	PAHs	2	2	0.1445	PRTR Estimation Toolset	n/a	No	No
13	Fluoranthene[1]	PAHs	0.0063	0.0063	0.0125	PRTR Estimation Toolset	n/a	**Yes**	No
14	Benzo[k]fluoranthene[2]	PAHs	MAC of 0.017	MAC of 0.017	0.002	PRTR Estimation Toolset	n/a	No	No

[1] The EQS for these substances shall take effect from 22 December 2015
[2] No indicative parameter is provided for this group of substances

No.	Compound	Group of compounds	AA-EQS Inland SW (µg/l)	AA-EQS Other SW (µg/l)	Measured /Estimated Conc. (µg/l)[1]	Data Source	Sample Date (if applicable)	Effluent Concentration above AA concentration (Yes/No)	Effluent Concentration above AA concentration after dilution (Yes/No)
15	Benzo[ghi]perylene[2]	PAHs	MAC of 8.2×10^{-3}	MAC of 8.2×10^{-4}	0.002	PRTR Estimation Toolset	n/a	No	No
16	Indeno[1,2,3-c,d]pyrene[2]	PAHs			0.002	PRTR Estimation Toolset	n/a	No	No
17	Benzo[b]fluoranthene[2]	PAHs	MAC of 0.017	MAC of 0.017	0.002	PRTR Estimation Toolset	n/a	No	No
18	Benzo[a]pyrene	PAHs	1.7×10^{-4}	1.7×10^{-4}	0.002	PRTR Estimation Toolset	n/a	No	No
19	Di(2-ethylhexyl)phthalate (DEHP)	Plasticiser	1.3	1.3	2.96	PRTR Estimation Toolset	n/a	**Yes**	No
20	Isodrin[3]	Pesticides	∑=0.01	∑=0.005	0.000	PRTR Estimation Toolset	n/a	No	No
21	Dieldrin[3]	Pesticides			0.000	PRTR Estimation Toolset	n/a	No	No
22	Diuron	Pesticides	0.2	0.2	0.000	PRTR Estimation Toolset	n/a	No	No

[3] ∑ of Aldrin, Dieldrin, Endrin and Isodrin.

No.	Compound	Group of compounds	AA-EQS Inland SW (µg/l)	AA-EQS Other SW (µg/l)	Measured /Estimated Conc. (µg/l)[1]	Data Source	Sample Date (if applicable)	Effluent Concentration above AA concentration (Yes/No)	Effluent Concentration above AA concentration after dilution (Yes/No)
23	Isoproturon	Pesticides	0.3	0.3	0.015	PRTR Estimation Toolset	n/a	No	No
24	Atrazine	Pesticides	0.6	0.6	0.0115	PRTR Estimation Toolset	n/a	No	No
25	Simazine	Pesticides	1	1	0.0139	PRTR Estimation Toolset	n/a	No	No
26	Glyphosate	Pesticides	60	-	0.394	PRTR Estimation Toolset	n/a	No	No
27	Mecoprop	Pesticides	n/a	n/a	0.119	PRTR Estimation Toolset	n/a	n/a	n/a
28	2,4-D	Pesticides	n/a	n/a	0.0355	PRTR Estimation Toolset	n/a	n/a	n/a
29	MCPA	Pesticides	n/a	n/a	0.01	PRTR Estimation Toolset	n/a	n/a	n/a
30	Linuron	Pesticides	0.7	0.7	0.000	PRTR Estimation Toolset	n/a	No	No
31	Dichlobenil	Pesticides	n/a	n/a	0.0024	PRTR Estimation Toolset	n/a	n/a	n/a

No.	Compound	Group of compounds	AA-EQS Inland SW (µg/l)	AA-EQS Other SW (µg/l)	Measured /Estimated Conc. (µg/l)[1]	Data Source	Sample Date (if applicable)	Effluent Concentration above AA concentration (Yes/No)	Effluent Concentration above AA concentration after dilution (Yes/No)
32	2,6-Dichlorobenzamide	Pesticides	n/a	n/a	0.06	PRTR Estimation Toolset	n/a	n/a	n/a
33	PCBs	PCBs	n/a	n/a	0.000	PRTR Estimation Toolset	n/a	n/a	n/a
34	Phenols (as Total C)	Phenols	8	8	80.866	PRTR Estimation Toolset	n/a	**Yes**	No
35	Lead	Metals	1.2	1.3	10.8	PRTR Estimation Toolset	n/a	**Yes**	No
36	Arsenic	Metals	25	20	1.179	PRTR Estimation Toolset	n/a	No	No
37	Copper	Metals	5 or 30[2]	5	5.56	PRTR Estimation Toolset	n/a	**Yes**	No
38	Zinc	Metals	8 or 50 or 100[3]	40	121.9	PRTR Estimation Toolset	n/a	**Yes**	No
39	Cadmium	Metals	0.08 or 0.09 or 0.15 or 0.25[4]	0.2	0.275	PRTR Estimation Toolset	n/a	**Yes**	No

No.	Compound	Group of compounds	AA-EQS Inland SW (µg/l)	AA-EQS Other SW (µg/l)	Measured /Estimated Conc. (µg/l)[1]	Data Source	Sample Date (if applicable)	Effluent Concentration above AA concentration (Yes/No)	Effluent Concentration above AA concentration after dilution (Yes/No)
40	Mercury	Metals	MAC of 0.07	MAC of 0.07	0.01	PRTR Estimation Toolset	n/a	No	No
41	Chromium VI	Metals	3.4	0.6	0.1	PRTR Estimation Toolset	n/a	No	No
42	Selenium	Metals	n/a	n/a	0.000	PRTR Estimation Toolset	n/a	n/a	n/a
43	Antimony	Metals	n/a	n/a	0.48	PRTR Estimation Toolset	n/a	n/a	n/a
44	Molybdenum	Metals	n/a	n/a	1.4	PRTR Estimation Toolset	n/a	n/a	n/a
45	Tin	Metals	n/a	n/a	0.000	PRTR Estimation Toolset	n/a	n/a	n/a
46	Barium	Metals	n/a	n/a	36.05	PRTR Estimation Toolset	n/a	n/a	n/a
47	Boron	Metals	n/a	n/a	89	PRTR Estimation Toolset	n/a	n/a	n/a
48	Cobalt	Metals	n/a	n/a	0.32	PRTR Estimation Toolset	n/a	n/a	n/a

No.	Compound	Group of compounds	AA-EQS Inland SW (µg/l)	AA-EQS Other SW (µg/l)	Measured /Estimated Conc. (µg/l)[1]	Data Source	Sample Date (if applicable)	Effluent Concentration above AA concentration (Yes/No)	Effluent Concentration above AA concentration after dilution (Yes/No)
49	Vanadium	Metals	n/a	n/a	5.2	PRTR Estimation Toolset	n/a	n/a	n/a
50	Nickel	Metals	4	8.6	3.6	PRTR Estimation Toolset	n/a	No	No
51	Fluoride	General	500	1,500	221	PRTR Estimation Toolset	n/a	No	No
52	Chloride	General	n/a	n/a	64800	PRTR Estimation Toolset	n/a	n/a	n/a
53	TOC	General	n/a	n/a	13102	PRTR Estimation Toolset	n/a	n/a	n/a
54	Cyanide	General	10	10	2.8	PRTR Estimation Toolset	n/a	No	No
	Conductivity	General	n/a	n/a		PRTR Estimation Toolset	n/a	n/a	n/a
	Hardness (mg/l $CaCO_3$)	General	n/a	n/a	291000	PRTR Estimation Toolset	n/a	n/a	n/a
	pH	General	n/a	n/a	7.4	IW	2020 average	n/a	n/a

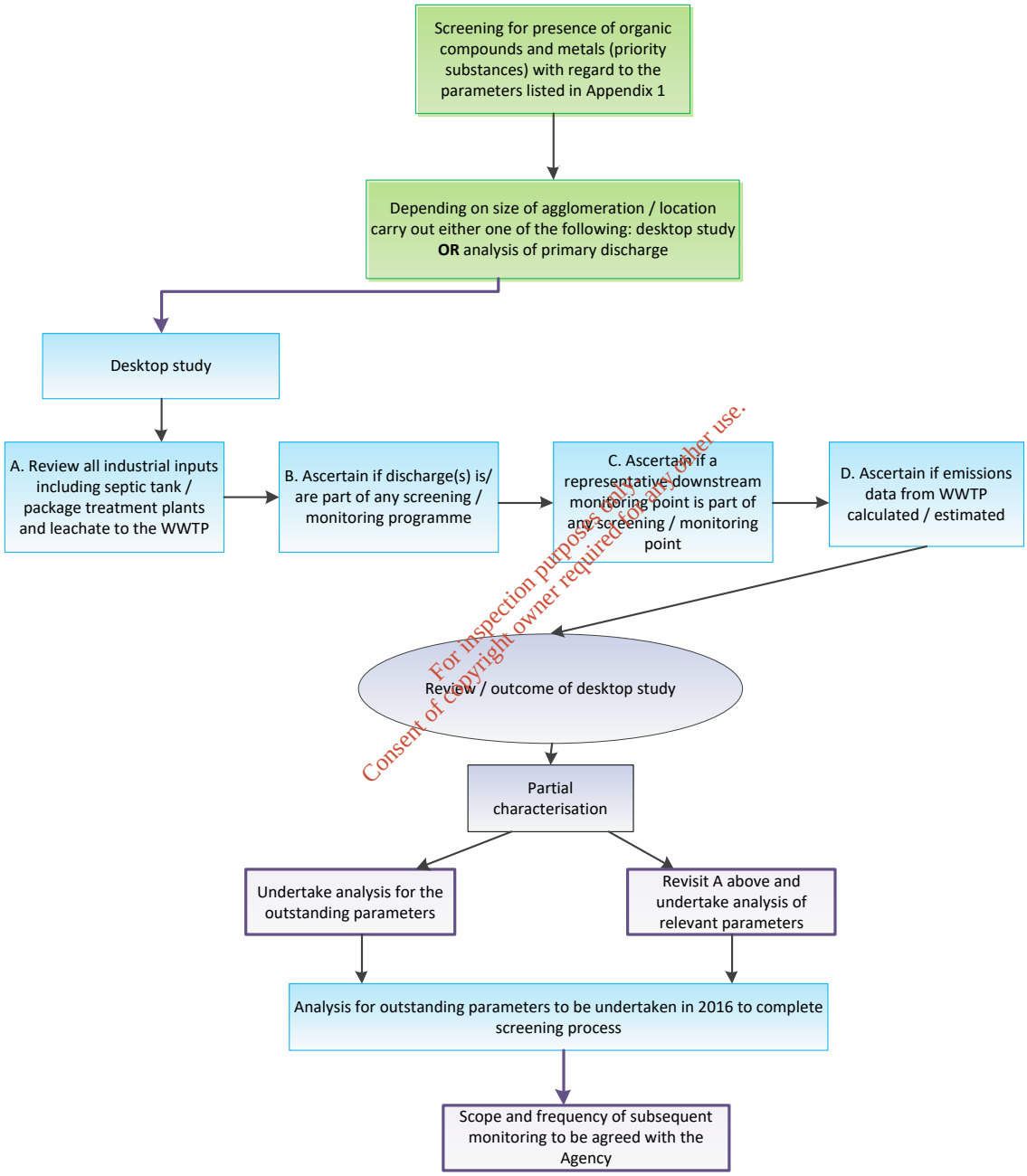
Notes:

1. Where measured values are available these should be used instead of estimated values from PRTR tool.
2. In the case of Copper, the value 5 applies where the water hardness measured in mg/l $CaCO_3$ is less than or equal to 100; the value 30 applies where the water hardness exceeds 100 mg/l $CaCO_3$. Estimated $CaCO_3$ value > 100 where no sampling data available (based on PRTR tool)
3. In the case of Zinc, the standard shall be 8 µg/l for water hardness with annual average values less than or equal to 10 mg/l $CaCO_3$, 50 µg/l for water hardness greater than 10 mg/l $CaCO_3$ and less than or equal to 100 mg/l $CaCO_3$ and 100 µg/l elsewhere. Estimated $CaCO_3$ value > 100 where no sampling data available
4. For Cadmium and its compounds the EQS values vary dependent upon the hardness of the water as specified in five class categories (Class 1: <40 mg $CaCO_3$/l, Class 2: 40 to <50 mg $CaCO_3$/l, Class 3: 50 to <100 mg $CaCO_3$/l, Class 4: 100 to <200 mg $CaCO_3$/l and Class 5: >200 mg $CaCO_3$/l)

Appendix 2 – Priority Substance Screening Flowchart

A flow chart for the screening of the presence of organic compounds and metals (Priority Substances) from WWTP is included below. This flowchart shows that appropriate screening has been demonstrated in line with the assessment undertaken in this report.

Partial Characterisation



Appendix 3 – Receiving Waters Priority Substance Data

No current data is available.

NOTES

LEGEND

- NUTRIENT SENSITIVE AREAS - COASTAL
- SHELLFISH AREAS
- pNHA
- FOUNTAINSTOWN BATHING WATER AREA

SIGNED :

PRINT NAME :

POSITION :

DATE :

FOR IRISH WATER

REV	DATE	DESCRIPTION	D	C	A

WASTE WATER DISCHARGE LICENCE TECHNICAL REVIEW

CLIENT

IRISH WATER
Colvill House,
24-26 Talbot Street,
Dublin 1.

PROJECT

CORK LOWER HARBOUR
WASTE WATER DISCHARGE
LICENCE TECHNICAL REVIEW

TITLE

DESIGNATIONS IN RELATION TO THE RECEIVIING WATER - CORK HARBOUR

SCALES	DRAWN	
1:50,000	D. Smithers	
	DATE	
	04.05.2018	
CAD REFERENCE	SECTION	DRAWING No.	REV
D.1 20506-DL-42	D.2	25	-

NOTES

LEGEND

- WASTEWATER TREATMENT PLANT LOCATION
- SPECIAL AREA OF CONSERVATION (S.A.C.)
- SPECIAL PROTECTION AREA (S.P.A.)
- PRIMARY DISCHARGE POINT
  SW001

SIGNED :

PRINT NAME :

POSITION :

DATE :

FOR IRISH WATER

REV	DATE	DESCRIPTION	D	C	A

WASTE WATER DISCHARGE LICENCE TECHNICAL REVIEW

CLIENT

IRISH WATER
Colvill House,
24-26 Talbot Street,
Dublin 1.

PROJECT

CORK LOWER HARBOUR
WASTE WATER DISCHARGE
LICENCE TECHNICAL REVIEW

TITLE

LOCATION OF
NATURA 2000 SITES

SCALES	DRAWN	
1:50,000	D. Smithers	
	DATE	
	04.05.2018	
CAD REFERENCE	SECTION	DRAWING No.	REV
D.2 20506-DL-43	D.2	26	-

EPA TSAS 2018-2020

SELECT WB HERE		NOTE ASSESSMENT IS BASED ON MOST RECENT 3-YEAR DATASET up to 2020											
Glashaboy Estuary	TSAS Status	Intermediate											
		n/a		EQS		EQS		EQS					
	WFD EQS Status	DIN	*conf*	MRP	*conf*	DO	*conf*	BOD	*conf*		Chl	*conf*	
TW	Moderate	Moderate	1%	Good	99%	High	100.0	moderate	51.3		High	100.0	
IE_SW_060_0800			0%		100%								

Median Salinity		TSAS Threshold	Concentration	Pass/Fail	TSAS Criteria	Score	Pass/Fail	Within 15%		% Exceedance			
0.1	Winter DIN	2.600	6.030	Fail	A Winter Nutrients	Fail	Potential	2.210	1	132		Summary Stats	Salinity
	Winter MRP	60.000	36.000	Pass				51.000		-40			‰
0.2	Summer DIN	2.6	4.606	Fail	A Summer Nutrients	Fail	Potential	2.21		77		MINIMUM	0.00
	Summer MRP	60	42.000	Pass				51		-30		MEDIAN	0.2
	Chloro. Median	15	2.450	Pass	B Chlorophyll/Algae	Pass	Pass	12.75	0	-84		MAXIMUM	24.8
	Chloro 90 percentile	30	10.670	Pass				25.5		-64		*No of samples*	24
	DO%sat 5 percentile	70	82.630	Pass	C DO	Pass	Pass	80.5	0	-18		05%ile / **90%ile**	19.0
	DO%sat 95 percentile	130	106.3	Pass				110.5		-18		**95%ile**	21.6
									1				
	BOD	4	4.284	Fail						7		Waterbody	New_WB
	Opportunistic algae	0.6		ND								Glashaboy Estuary	WDIN 6.0

SELECT WB HERE		NOTE ASSESSMENT IS BASED ON MOST RECENT 3-YEAR DATASET up to 2020											
Lough Mahon	TSAS Status	Eutrophic											
		n/a		EQS		EQS		EQS					
	WFD EQS Status	DIN	*conf*	MRP	*conf*	DO	*conf*	BOD	*conf*		Chl	*conf*	
TW	Moderate	Moderate	100%	Good	100%	Moderate	100.0	moderate	100.0		Moderate	97.1	
IE_SW_060_0750			15%		100%								

Median Salinity		TSAS Threshold	Concentration	Pass/Fail	TSAS Criteria	Score	Pass/Fail	Within 15%		% Exceedance			
25.9	Winter DIN	0.889	1.015	Fail	A Winter Nutrients	Fail	Potential	0.756	1	14		Summary Stats	
	Winter MRP	51.000	37.000	Pass				43.350		-27			
30.7	Summer DIN	0.569	0.239	Pass	A Summer Nutrients	Pass	Pass	0.48365		-58		MINIMUM	
	Summer MRP	46	15.000	Pass				39.1		-67		MEDIAN	
	Chloro. Median	11.4	6.950	Pass	B Chlorophyll/Algae	Fail	Potential	9.69	1	-39		MAXIMUM	
	Chloro 90 percentile	22.8	28.500	Fail				19.38		25		*No of samples*	
	DO%sat 5 percentile	77	92.120	Pass	C DO	Fail	Potential	88.55	1	-20		05%ile / **90%ile**	
	DO%sat 95 percentile	123	161.2	Fail				104.55		31		**95%ile**	
									3				
	BOD	4	6.682	Fail						67		Waterbody	New_WB
	Opportunistic algae	0.6		ND								Lough Mahon	

SELECT WB HERE
North Channel Great Island

NOTE ASSESSMENT IS BASED ON MOST RECENT 3-YEAR DATASET up to 2020

TSAS Status **Intermediate**

	WFD EQS Status	DIN	conf	MRP	conf	DO	conf	BOD	conf	Chl	conf
		n/a		EQS		EQS		EQS			
TW	**Moderate**	**Moderate**	**100%**	**High**	**100%**	**Moderate**	**100.0**	**moderate**	**93.1**	**Good**	**100.0**
IE_SW_060_0300			15%		100%						

Median Salinity		TSAS Threshold	Concentration	Pass/Fail	TSAS Criteria	Score	Pass/Fail	Within 15%		% Exceedance	
28.9	Winter DIN	0.697	0.759	Fail	A Winter Nutrients	Fail	Potential	0.592	1	9	
	Winter MRP	48.000	26.000	Pass				40.800		-46	
32.5	Summer DIN	0.442	0.075	Pass	A Summer Nutrients	Pass	Pass	0.3757		-83	
	Summer MRP	43	10.000	Pass				36.55		-77	
	Chloro. Median	10.8	4.800	Pass	B Chlorophyll/Algae	Pass	Pass	9.18	0	-56	
	Chloro 90 percentile	21.7	15.000	Pass				18.445		-31	
	DO%sat 5 percentile	78	97.665	Pass	C DO	Fail	Potential	89.7	1	-25	
	DO%sat 95 percentile	122	148.8	Fail				103.7		22	
									2		
	BOD	4	5.900	Fail						48	
	Opportunistic algae	0.6		ND							

Summary Stats	
MINIMUM	
MEDIAN	
MAXIMUM	
No of samples	
05%ile / **90%ile**	
95%ile	
Waterbody	**New_WB**
North Channel Great Is	

SELECT WB HERE
Cork Harbour

NOTE ASSESSMENT IS BASED ON MOST RECENT 3-YEAR DATASET up to 2020

TSAS Status **Intermediate**

	WFD EQS Status	DIN	conf	MRP	conf	DO	conf	BOD	conf	Chl	conf
		EQS		n/a		EQS		n/a			
CW	**Moderate**	**Good**	**100%**	**High**	**100%**	**Moderate**	**100.0**	**Good**	**100.0**	**High**	**88.7**
IE_SW_060_0000			81%		100%						

Median Salinity		TSAS Threshold	Concentration	Pass/Fail	TSAS Criteria	Score	Pass/Fail	Within 15%		% Exceedance	
31.0	Winter DIN	0.506	0.421	Pass	A Winter Nutrients	Pass	Pass	0.430	0	-17	
	Winter MRP	44.000	26.000	Pass				37.400		-41	
33.1	Summer DIN	0.378	0.056	Pass	A Summer Nutrients	Pass	Pass	0.3213		-85	
	Summer MRP	42	2.500	Pass				35.7		-94	
	Chloro. Median	10.6	3.650	Pass	B Chlorophyll/Algae	Pass	Pass	9.01	0	-66	
	Chloro 90 percentile	21.1	7.700	Pass				17.935		-64	
	DO%sat 5 percentile	79	94.925	Pass	C DO	Fail	Potential	90.85	1	-20	
	DO%sat 95 percentile	121	129.5	Fail				102.85		7	
									1		
	BOD	4	3.345	Pass						-16	
	Opportunistic algae	0.6		ND							

Summary Stats	
MINIMUM	
MEDIAN	
MAXIMUM	
No of samples	
05%ile / **90%ile**	
95%ile	
Waterbody	**New_WB**
Cork Harbour	

SELECT WB HERE
Outer Cork Harbour

TSAS Status **Unpolluted**

NOTE ASSESSMENT IS BASED ON MOST RECENT 3-YEAR DATASET up to 2020

	WFD EQS Status	DIN	conf	MRP	conf	DO	conf	BOD	conf	Chl	conf
		EQS		n/a		EQS		n/a			
CW	Good	Good	100%	High	100%	Good	72.1	High	100.0	High	100.0
IE_SW_050_0000			100%		100%						

Median Salinity		TSAS Threshold	Concentration	Pass/Fail	TSAS Criteria	Score	Pass/Fail	Within 15%		% Exceedance		Summary Stats	Salinity
33.1	Winter DIN	0.378	0.223	Pass	A Winter Nutrients	Pass	Pass	0.321	0	-41			
	Winter MRP	42.000	16.000	Pass				35.700		-62			‰
34.0	Summer DIN	0.314	0.041	Pass	A Summer Nutrients	Pass	Pass	0.2669		-87		MINIMUM	32.45
	Summer MRP	41	2.500	Pass				34.85		-94		MEDIAN	34.0
	Chloro. Median	10.3	1.400	Pass	B Chlorophyll/Algae	Pass	Pass	8.755	0	-86		MAXIMUM	34.7
	Chloro 90 percentile	20.6	4.310	Pass				17.51		-79		*No of samples*	50
	DO%sat 5 percentile	79	93.345	Pass	C DO	Pass	Potential	90.85	0.25	-18		05%ile / **90%ile**	34.6
	DO%sat 95 percentile	121	120.3	Pass				102.85		-1		**95%ile**	34.6
									0.25				
	BOD	4	2.135	Pass						-47		Waterbody	New_WB	WDIN
	Opportunistic algae	0.6		ND								Outer Cork Harbour		0.2

SELECT WB HERE
Owenacurra Estuary

TSAS Status **Potentially Eutrophic**

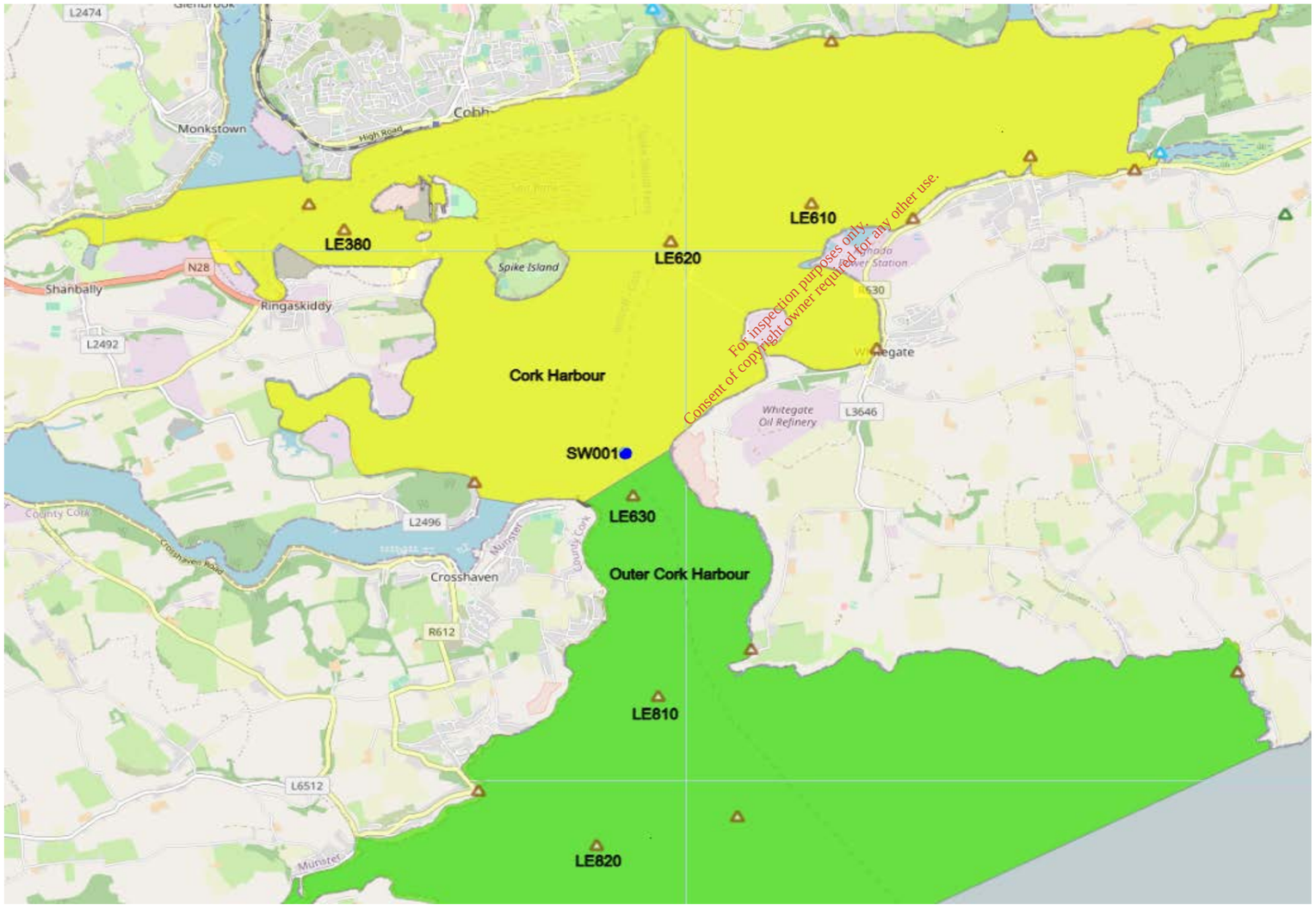
NOTE ASSESSMENT IS BASED ON MOST RECENT 3-YEAR DATASET up to 2020

	WFD EQS Status	DIN	conf	MRP	conf	DO	conf	BOD	conf	Chl	conf
		n/a		EQS		EQS		EQS			
TW	Moderate	Moderate	85%	High	100%	Moderate	100.0	moderate	100.0	Good	67.1
IE_SW_060_0400			5%		100%						

Median Salinity		TSAS Threshold	Concentration	Pass/Fail	TSAS Criteria	Score	Pass/Fail	Within 15%		% Exceedance		Summary Stats	
13.0	Winter DIN	1.753	3.299	Fail	A Winter Nutrients	Fail	Potential	1.490	1	**88**			
	Winter MRP	60.000	26.000	Pass				51.000		-57			
29.9	Summer DIN	0.633	0.323	Pass	A Summer Nutrients	Pass	Pass	0.53805		-49		MINIMUM	
	Summer MRP	47	20.500	Pass				39.95		-56		MEDIAN	
	Chloro. Median	11.7	7.300	Pass	B Chlorophyll/Algae	Pass	Potential	9.945	0.25	-38		MAXIMUM	
	Chloro 90 percentile	23.3	21.800	Pass				19.805		-6		*No of samples*	
	DO%sat 5 percentile	77	85.360	Pass	C DO	Fail	Potential	88.55	1	-11		05%ile / **90%ile**	
	DO%sat 95 percentile	123	157.5	Fail				104.55		**28**		**95%ile**	
									2.25				
	BOD	4	6.845	Fail						**71**		Waterbody	New_WB
	Opportunistic algae	0.6		ND								Owenacurra Estuary	

Monitoring Stations & Locations on EPA TraC programme

WB_Name	WB_Code	Station_No	Location	Monitoring	2018-2020 Data available	RBD	Dec_Lat	Dec_Long	CRM_Code
Cork Harbour	SW_060_0000	LE380	Ringaskiddy	SM	Yes	SWRBD	51.8378	-8.3126	IEMCCW05003150LE8001
Cork Harbour	SW_060_0000	LE610	Adjacent to Aghada	SM	No	SWRBD	51.8405	-8.2421	IEMCCW05003150LE8002
Cork Harbour	SW_060_0000	LE620	E Spike Island	SM	Yes	SWRBD	51.8366	-8.2633	IEMCCW05003150LE8003
Outer Cork Harbour	SW_050_0000	LE630	Adjacent to Carlisle Fort	OP	Yes	SWRBD	51.8105	-8.269	IEMCCW05003149LE9001
Outer Cork Harbour	SW_050_0000	LE810	Roches Point	OP	Yes	SWRBD	51.7899	-8.2652	IEMCCW05003149LE9002
Outer Cork Harbour	SW_050_0000	LE820	Myrtleville	OP	Yes	SWRBD	51.7746	-8.2745	IEMCCW05003149LE9003



Cork Harbour 2018-2020 TraC monitroing results

Station No	Sample Label	Survey Date	Salinity S ‰	pH	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	PO4 µg/l P	Chlorophyll a	DIN	DO mg/l	Season	Waterbody Name
LE620	LE620B	12/08/2020	33.53	8.1	104.2	0.5	0.005	0.03	14	1.6	0.035	8.6	Summer	Cork Harbour
LE620	LE620S	12/08/2020	31.45	8.2	124.8	1.2	0.005	0.019	14	3.8	0.024	9.6	Summer	Cork Harbour
LE380	LE380B	12/08/2020	33.01	8.1	106.9	1.1	0.005	0.04	19	4	0.045	8.8	Summer	Cork Harbour
LE380	LE380S	12/08/2020	30.9	8.2	129.9	1.3	0.033	0.028	16	6.7	0.061	10.4	Summer	Cork Harbour
LE380	LE380S	22/07/2020	32.38	8.3	129.4	3.2	0.005	0.026	11	7.3	0.031	10.5	Summer	Cork Harbour
LE620	LE620C	22/07/2020	33.72	8.2	112.7		0.005	0.015	2.5	4.8	0.02	9.4	Summer	Cork Harbour
LE620	LE620C	22/07/2020	33.1	8.2	127.7		0.005	0.015	2.5	4.8	0.02	10.3	Summer	Cork Harbour
LE380	LE380B	22/07/2020	32.51	8.3	127.9	3.4	0.005	0.023	10	6.1	0.028	10.4	Summer	Cork Harbour
LE620	LE620B	23/06/2020	33.59	8.1	105.5	0.5	0.051	0.058	11	2.8	0.109	8.9	Summer	Cork Harbour
LE620	LE620S	23/06/2020	33.01	8.1	98.5	0.5	0.061	0.065	13	3	0.126	8.1	Summer	Cork Harbour
LE380	LE380B	23/06/2020	32.19	8.1	97.1	0.5	0.098	0.11	19	3.5	0.208	8	Summer	Cork Harbour
LE380	LE380S	23/06/2020	32.29	8.1	101.4	0.5	0.13	0.098	14	2.3	0.228	8.4	Summer	Cork Harbour
LE620	LE620B	27/08/2019	33.87	8.1	99.8	0.5	0.005	0.036	5	1.4	0.041	8.1	Summer	Cork Harbour
LE620	LE620S	27/08/2019	33.12	8.2	108.8	1.7	0.017	0.035	9.1	5.5	0.052	8.8	Summer	Cork Harbour
LE380	LE380B	27/08/2019	33.14	8.1	105.1	0.5	0.03	0.04	2.5	2.9	0.07	8.6	Summer	Cork Harbour
LE380	LE380S	27/08/2019	30.5	8.2	118.9	1.9	0.11	0.046	8.2	5.6	0.156	9.7	Summer	Cork Harbour
LE380	LE380S	10/07/2019	32.2	8.4	140.8	3.6	0.005	0.074	2.5	31	0.079	11.1	Summer	Cork Harbour
LE380	LE380B	10/07/2019	33.2	8.4	128.3	3.3	0.027	0.072	2.5	15	0.099	10.1	Summer	Cork Harbour
LE620	LE620S	10/07/2019	33.64	8.3	121.6	1.9	0.005	0.06	2.5	8.1	0.065	9.7	Summer	Cork Harbour
LE620	LE620B	10/07/2019	33.78	8.3	118.6	2	0.005	0.036	2.5	6.7	0.041	9.6	Summer	Cork Harbour
LE380	LE380B	12/06/2019	33.78	8.1	109.6	0.5	0.014	0.035	2.5	4.5	0.049	9.5	Summer	Cork Harbour
LE380	LE380S	12/06/2019	31.73	8.1	114	1.4	0.14	0.069	2.5	3.6	0.209	9.4	Summer	Cork Harbour
LE620	LE620S	12/06/2019	34.22	8.1	108.2	1.1	0.005	0.022	2.5	0.5	0.027	9.4	Summer	Cork Harbour
LE620	LE620B	12/06/2019	34.48	8.1	104.5	0.5	0.005	0.023	2.5	3.6	0.028	9.1	Summer	Cork Harbour
LE620	LE620B	20/08/2018	34.57	7.9	92.7	0.5	0.036	0.035	9	0.5	0.071	7.4	Summer	Cork Harbour
LE620	LE620S	20/08/2018	34.39	8	95.1	0.5	0.024	0.036	9.4	0.5	0.06	7.8	Summer	Cork Harbour
LE380	LE380B	20/08/2018	32.98	8	94.4	0.5	0.035	0.065	14	1.5	0.1	7.5	Summer	Cork Harbour
LE380	LE380S	20/08/2018	32.98	8	97.2	0.5	0.066	0.13	20	3.8	0.196	7.7	Summer	Cork Harbour
LE380	LE380S	02/07/2018	32.84	8.2	125.3	1.1	0.02	0.03	2.5	3.7	0.05	9.5	Summer	Cork Harbour
LE380	LE380B	02/07/2018	33.18	8.2	109.3	1.5	0.02	0.06	2.5	6	0.08	8.3	Summer	Cork Harbour
LE620	LE620S	02/07/2018	33.44	8.2	121.7		0.03	0.01	2.5	28	0.04	9.2	Summer	Cork Harbour
LE620	LE620B	02/07/2018	34.5	8.2	107.1		0.02	0.02	2.5	2.4	0.04	8.2	Summer	Cork Harbour
LE380	LE380S	22/05/2018	29.64	8.2	114.5	0.5	0.19	0.05	2.5	1.1	0.24	10	Summer	Cork Harbour
LE380	LE380B	22/05/2018	32.88	8.2	111.7	0.5	0.06	0.03	2.5	1.5	0.09	9.8	Summer	Cork Harbour
LE620	LE620S	22/05/2018	33.61	8.2	106.4	0.5	0.02	0.02	2.5	0.5	0.04	9.3	Summer	Cork Harbour
LE620	LE620B	22/05/2018	33.82	8.1	106.3	0.5	0.01	0.01	2.5	0.5	0.02	9.3	Summer	Cork Harbour
LE380	LE380S	06/02/2020	23.32	7.9	93.5	1.5	0.93	0.18	41	1.3	1.11	9.5	Winter	Cork Harbour
LE620	LE620B	06/02/2020	33.09	8	94.5	0.5	0.22	0.062	28	1.1	0.282	8.7	Winter	Cork Harbour
LE620	LE620S	06/02/2020	31.2	8	95.2	0.5	0.39	0.072	27	1.6	0.462	9	Winter	Cork Harbour
LE380	LE380B	06/02/2020	32.7	8	93.7	0.5	0.25	0.065	27	1.1	0.315	8.7	Winter	Cork Harbour
LE620	LE620B	16/01/2019	33.94	8	96.4	0.5	0.16	0.18	17	0.5	0.34	8.6	Winter	Cork Harbour
LE380	LE380S	16/01/2019	29.05	7.9	95.9	0.5	0.91	0.65	33	0.5	1.56	9	Winter	Cork Harbour
LE620	LE620S	16/01/2019	33.48	7.9	96.8	0.5	0.16	0.22	14	0.5	0.38	8.7	Winter	Cork Harbour
LE380	LE380B	16/01/2019	32.9	7.9	95.7	0.5	0.35	0.44	25	0.5	0.79	8.7	Winter	Cork Harbour
LE620	LE620B	19/02/2018	30.81	8	97	0.5	0.16	0.033	25	1.3	0.193	9.3	Winter	Cork Harbour
LE620	LE620S	19/02/2018	28.81	8	96.3	0.5	0.3	0.055	18	1.2	0.355	9.4	Winter	Cork Harbour
LE380	LE380B	19/02/2018	26.74	8	94.9	0.5	0.56	0.12	31	2.1	0.68	9.4	Winter	Cork Harbour
LE380	LE380S	19/02/2018	24.18	7.9	94.4	0.5	0.61	0.085	25	1.4	0.695	9.6	Winter	Cork Harbour

Outer Cork Harbour 2018-2020 TraC monitroing results

Station No	Sample Label	Survey Date	Salinity S ‰	pH	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	PO4 µg/l P	Chlorophyll a	DIN	Season
LE820	LE820C	12/08/2020	33.2	8.1	112.1	0.5	0.016	0.016	15	1.5	0.032	Summer
LE630	LE630B	12/08/2020	32.72	8	103.4		0.005	0.02	13	1.3	0.025	Summer
LE810	LE810C	12/08/2020	33.39	8.1	113.3	0.5	0.015	0.026	15	1.1	0.041	Summer
LE810	LE810C	12/08/2020	33.8	8.1	107.3	0.5	0.015	0.026	15	1.1	0.041	Summer
LE630	LE630S	12/08/2020	32.45	8.1	121.8		0.015	0.019	14	5.6	0.034	Summer
LE820	LE820C	12/08/2020	33.78	8.1	93.3	0.5	0.016	0.016	15	1.5	0.032	Summer
LE820	LE820C	22/07/2020	34.01	8.1	107.4	1.3	0.005	0.014	2.5	0.5	0.019	Summer
LE810	LE810C	22/07/2020	34.1	8.1	107.1	0.5	0.005	0.021	2.5	1	0.026	Summer
LE810	LE810C	22/07/2020	34.18	8.1	107.5	0.5	0.005	0.021	2.5	1	0.026	Summer
LE630	LE630C	22/07/2020	33.99	8.2	107	1.4	0.005	0.018	2.5	3.4	0.023	Summer
LE630	LE630C	22/07/2020	33.62	8.2	115.4	1.4	0.005	0.018	2.5	3.4	0.023	Summer
LE820	LE820C	22/07/2020	33.99	8.1	108.4	1.3	0.005	0.014	2.5	0.5	0.019	Summer
LE630	LE630C	23/06/2020	33.57	8.1	99.9	0.5	0.038	0.052	10	1.9	0.09	Summer
LE630	LE630C	23/06/2020	33.42	8.1	98.1	0.5	0.038	0.052	10	1.9	0.09	Summer
LE820	LE820C	27/08/2019	34.11	8.1	102.1	1.1	0.005	0.035	2.5	0.5	0.04	Summer
LE820	LE820C	27/08/2019	33.71	8.1	107.1	1.1	0.005	0.035	2.5	0.5	0.04	Summer
LE810	LE810C	27/08/2019	34.5	8.1	100.9		0.026	0.026	2.5	2	0.052	Summer
LE810	LE810C	27/08/2019	33.93	8.1	104.5		0.026	0.026	2.5	2	0.052	Summer
LE630	LE630S	27/08/2019	33.55	8.2	106.4		0.005	0.041	14	4.2	0.046	Summer
LE630	LE630B	27/08/2019	34.34	8.1	99.9		0.005	0.031	2.5	0.5	0.036	Summer
LE820	LE820C	10/07/2019	33.75	8.3	119.6		0.005	0.053	2.5	1.9	0.058	Summer
LE630	LE630S	10/07/2019	33.82	8.2	109.2	1.9	0.005	0.036	2.5	5.3	0.041	Summer
LE630	LE630B	10/07/2019	33.88	8.2	102.8	2.1	0.005	0.052	2.5	7.3	0.057	Summer
LE810	LE810C	10/07/2019	33.87	8.3	109	2.2	0.013	0.032	2.5	5.5	0.045	Summer
LE820	LE820C	10/07/2019	33.96	8.3	94.4		0.005	0.053	2.5	1.9	0.058	Summer
LE810	LE810C	10/07/2019	33.65	8.3	123.5	2.2	0.013	0.032	2.5	5.5	0.045	Summer
LE820	LE820C	12/06/2019	34.23	8	108.2		0.005	0.027	2.5	3.5	0.032	Summer
LE630	LE630S	12/06/2019	34.53	8.1	105.6		0.028	0.027	17	2.2	0.055	Summer
LE630	LE630B	12/06/2019	34.63	8.1	107.5		0.005	0.03	2.5	1.9	0.035	Summer
LE810	LE810C	12/06/2019	34.67	8.1	106.7	1.1	0.038	0.034	18	2	0.072	Summer
LE820	LE820C	12/06/2019	34.35	8	103.7		0.005	0.027	2.5	3.5	0.032	Summer
LE810	LE810C	12/06/2019	34.62	8.1	112.9	1.1	0.038	0.034	18	2	0.072	Summer
LE630	LE630B	20/08/2018	34.58	8	93.3	0.5	0.02	0.024	7.7	1.1	0.044	Summer
LE820	LE820C	20/08/2018	34.65	8	91.2	0.5	0.028	0.031	9.8	0.5	0.059	Summer
LE820	LE820C	20/08/2018	34.43	8	97.2	0.5	0.028	0.031	9.8	0.5	0.059	Summer
LE810	LE810C	20/08/2018	34.48	8	96.5	0.5	0.031	0.024	7.6	0.5	0.055	Summer
LE630	LE630S	20/08/2018	34.54	7.9	93.4	0.5	0.022	0.027	8.7	1.1	0.049	Summer
LE810	LE810C	20/08/2018	34.69	8	94.3	0.5	0.031	0.024	7.6	0.5	0.055	Summer
LE630	LE630S	02/07/2018	33.75	8.2	120.8	1.1	0.005	0.02	2.5	1.5	0.025	Summer
LE630	LE630B	02/07/2018	34.08	8.2	111.1	0.5	0.005	0.03	2.5	1	0.035	Summer
LE810	LE810C	02/07/2018	34.1	8.2	117.4	0.5	0.005	0.02	2.5	1.2	0.025	Summer
LE810	LE810C	02/07/2018	34.28	8.2	107	0.5	0.005	0.02	2.5	1.2	0.025	Summer
LE820	LE820C	02/07/2018	34.18	8.2	115.8	0.5	0.01	0.01	2.5	0.5	0.02	Summer
LE820	LE820C	02/07/2018	34.14	8.2	116.4	0.5	0.01	0.01	2.5	0.5	0.02	Summer
LE630	LE630S	22/05/2018	33.58	8.2	108.9		0.02	0.01	2.5	0.5	0.03	Summer
LE820	LE820C	22/05/2018	33.9	8.1	101.8		0.02	0.02	2.5	1.9	0.04	Summer
LE630	LE630B	22/05/2018	34.02	8.1	105		0.01	0.04	2.5	0.5	0.05	Summer
LE810	LE810C	22/05/2018	33.95	8.2	101.8	0.5	0.02	0.03	2.5	0.5	0.05	Summer
LE810	LE810C	22/05/2018	34.13	8.2	104.7	0.5	0.02	0.03	2.5	0.5	0.05	Summer
LE820	LE820C	22/05/2018	33.95	8.1	101.2		0.02	0.02	2.5	1.9	0.04	Summer
LE820	LE820C	06/02/2020	33.34	8	96.1	0.5	0.24	0.053	24	1.5	0.293	Winter
LE820	LE820C	06/02/2020	32.38	8	96.1	0.5	0.24	0.053	24	1.5	0.293	Winter
LE810	LE810C	06/02/2020	32.85	8	96.1	1.1	0.22	0.049	23	1.3	0.269	Winter
LE630	LE630B	06/02/2020	33.36	8	95.8		0.19	0.057	24	0.5	0.247	Winter
LE630	LE630S	06/02/2020	32.26	8	96.1		0.28	0.058	24	0.5	0.338	Winter
LE810	LE810C	06/02/2020	33.77	8	95.8	1.1	0.22	0.049	23	1.3	0.269	Winter
LE630	LE630S	16/01/2019	33.64	7.9	97.2	0.5	0.18	0.052	15	0.5	0.232	Winter
LE630	LE630B	16/01/2019	33.98	7.9	96.7	0.5	0.09	0.016	12	0.5	0.106	Winter
LE820	LE820C	16/01/2019	34.17	7.9	97.1	0.5	0.15	0.017	16	0.5	0.167	Winter
LE820	LE820C	16/01/2019	33.52	7.9	96.8	0.5	0.15	0.017	16	0.5	0.167	Winter
LE810	LE810C	16/01/2019	34.03	7.9	96.8	0.5	0.18	0.024	16	0.5	0.204	Winter
LE810	LE810C	16/01/2019	33.39	7.9	97.5	0.5	0.18	0.024	16	0.5	0.204	Winter
LE820	LE820C	19/02/2018	31.4	8	96.2		0.17	0.029	16	1.1	0.199	Winter
LE820	LE820C	19/02/2018	30.26	8	96.7		0.17	0.029	16	1.1	0.199	Winter
LE810	LE810C	19/02/2018	30.85	8	97.1	0.5	0.18	0.033	16	0.5	0.213	Winter
LE810	LE810C	19/02/2018	29.23	8	96.4	0.5	0.18	0.033	16	0.5	0.213	Winter
LE630	LE630B	19/02/2018	30.96	8	97.2		0.23	0.03	18	1.7	0.26	Winter
LE630	LE630S	19/02/2018	28.62	8	96.7		0.26	0.033	25	0.5	0.293	Winter

Cork Harbour 2021 Ambient Monitoring Results

WaterbodyName	WaterbodyCode	MonitoringStationCode	MonitoringStationName	MonitoringStationType	SampleDate	SampleMethod	ParameterName	ParameterUnitShortCode	Result	Limit Of Detection	ReportResult	ReportLimit
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	Ammonia-T	mg/l	0.017	0.01	0.017	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	Ammonia-T	mg/l	0.038	0.01	0.038	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	Ammonia-T	mg/l	0.017	0.01	0.017	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	Ammonia-T	mg/l	0.031	0.01	0.031	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	Ammonia-T	mg/l	0.042	0.01	0.042	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	Ammonia-T	mg/l	0.05	0.01	0.05	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	Ammonia-T	mg/l	0.048	0.01	0.048	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	Ammonia-T	mg/l	0.028	0.01	0.028	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	Ammonia-T	mg/l	0.081	0.01	0.081	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	Ammonia-T	mg/l	0.17	0.01	0.17	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	Ammonia-T	mg/l	0.087	0.01	0.087	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	Ammonia-T	mg/l	0.031	0.01	0.031	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	Ammonia-T	mg/l	0.031	0.01	0.031	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	BOD - 5 day	mg/l	0.5	1	0.5	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	BOD - 5 day	mg/l	0.5	1	0.5	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	BOD - 5 day	mg/l	0.5	1	0.5	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	BOD - 5 day	mg/l	0.5	1	0.5	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	BOD - 5 day	mg/l	0.5	1	0.5	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	BOD - 5 day	mg/l	0.5	1	0.5	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	BOD - 5 day	mg/l	1.2	1	1.2	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	BOD - 5 day	mg/l	0.5	1	0.5	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	BOD - 5 day	mg/l	0.5	1	0.5	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	BOD - 5 day	mg/l	0.5	1	0.5	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	Chlorophyl	Âµg/l	4.5	0.01	4.5	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	Chlorophyl	Âµg/l	0.35	0.01	0.35	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	Chlorophyl	Âµg/l	6.4	0.01	6.4	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	Chlorophyl	Âµg/l	3	0.01	3	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	Chlorophyl	Âµg/l	3	0.01	3	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	Depth	m	19.8		19.8	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	Depth	m	0.3		0.3	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	Depth	m	5.6		5.6	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	Depth	m	0.3		0.3	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	Depth	m	20.9		20.9	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	Depth	m	0.4		0.4	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	Depth	m	17		17	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	Depth	m	5.2		5.2	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	Depth	m	0		0	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	Depth	m	17		17	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	Dissolved C	% Saturatio	102	1	102	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	Dissolved C	% Saturatio	88	1	88	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	Dissolved C	% Saturatio	85	1	85	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	Dissolved C	% Saturatio	82	1	82	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	Dissolved C	% Saturatio	110	1	110	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	Dissolved C	% Saturatio	114	1	114	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	Dissolved C	% Saturatio	106	1	106	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	Dissolved C	% Saturatio	103	1	103	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	Dissolved C	% Saturatio	108	1	108	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	Dissolved C	% Saturatio	104	1	104	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	Dissolved C	% Saturatio	100	1	100	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	Dissolved C	% Saturatio	90	1	90	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	Chlorophyl	Âµg/l	1.4	0.01	1.4	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	Chlorophyl	Âµg/l	0.52	0.01	0.52	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	Chlorophyl	Âµg/l	0.31	0.01	0.31	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	Depth	m	0.3		0.3	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	Depth	m	0		0	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	Depth	m	0		0	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	ortho-Phos	mg/l	0.0025	0.005	0.0025	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	ortho-Phos	mg/l	0.0056	0.005	0.0056	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	ortho-Phos	mg/l	0.0025	0.005	0.0025	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	ortho-Phos	mg/l	0.0025	0.005	0.0025	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	ortho-Phos	mg/l	0.0051	0.005	0.0051	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	ortho-Phos	mg/l	0.0025	0.005	0.0025	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	ortho-Phos	mg/l	0.019	0.005	0.019	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	Dissolved C	% Saturatio	101	1	101	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	Dissolved C	% Saturatio	106	1	106	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	pH	pH units	8.1	2	8.1	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	pH	pH units	8.2	2	8.2	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	pH	pH units	8.2	2	8.2	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	pH	pH units	8.1	2	8.1	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	pH	pH units	8	2	8	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	pH	pH units	7.8	2	7.8	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	pH	pH units	7.9	2	7.9	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	pH	pH units	7.9	2	7.9	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	pH	pH units	8.2	2	8.2	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	pH	pH units	8.1	2	8.1	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	Pheophytin	Âµg/l	0.25	0.01	0.25	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	Pheophytin	Âµg/l	0.8	0.01	0.8	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	Salinity	PSU	35.4	0.1	35.4	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	Salinity	PSU	34	0.1	34	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	Salinity	PSU	30.6	0.1	30.6	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	Salinity	PSU	30.5	0.1	30.5	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	Salinity	PSU	32.7	0.1	32.7	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	Salinity	PSU	33.2	0.1	33.2	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	Salinity	PSU	16.8	0.1	16.8	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	Salinity	PSU	30.9	0.1	30.9	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	Salinity	PSU	29.5	0.1	29.5	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	ortho-Phos	mg/l	0.005	0.005	0.0025	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	ortho-Phos	mg/l	0.0025	0.005	0.0025	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	ortho-Phos	mg/l	0.03	0.005	0.03	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	ortho-Phos	mg/l	0.025	0.005	0.025	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	Pheophytin	Âµg/l	0.39	0.01	0.39	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	Salinity	PSU	32.8	0.1	32.8	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	Salinity	PSU	34.4	0.1	34.4	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	Salinity	PSU	35	0.1	35	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	Salinity	PSU	34.4	0.1	34.4	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	Salinity(Lab	0/oo	34.6	0.1	34.6	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	Salinity(Lab	0/oo	32.3	0.1	32.3	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	Salinity(Lab	0/oo	32	0.1	32	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	Salinity(Lab	0/oo	33.7	0.1	33.7	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	Silica (as Si	mg/l	0.12	0.1	0.12	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	Silica (as Si	mg/l	0.11	0.1	0.11	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	Silica (as Si	mg/l	0.12	0.1	0.12	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	pH	pH units	8.2	2	8.2	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	pH	pH units	8.2	2	8.2	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	StationDep	m	20	0.1	20	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	StationDep	m	17.5	0.1	17.5	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	StationDep	m	3.9	0.1	3.9	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	Temperatu	Â°C	15.2		15.2	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	Temperatu	Â°C	12.2		12.2	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	Temperatu	Â°C	12.2		12.2	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	Pheophytin	Âµg/l	0.72	0.01	0.72	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	Pheophytin	Âµg/l	0.82	0.01	0.82	0.01

Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	Pheophytin	Âµg/l	0.36	0.01	0.36	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	Pheophytin	Âµg/l	0.16	0.01	0.16	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	Pheophytin	Âµg/l	0.55	0.01	0.55	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	Salinity(Lab	0/oo	34.4	0.1	34.4	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	Salinity(Lab	0/oo	33.1	0.1	33.1	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	Salinity(Lab	0/oo	30.1	0.1	30.1	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	Silica (as Si	mg/l	0.14	0.1	0.14	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	Silica (as Si	mg/l	0.22	0.1	0.22	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	Silica (as Si	mg/l	0.16	0.1	0.16	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	Salinity	PSU	33.4	0.1	33.4	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	Salinity	PSU	30.5	0.1	30.5	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	Salinity	PSU	33.4	0.1	33.4	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	Silica (as Si	mg/l	2.2	0.1	2.2	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	Silica (as Si	mg/l	0.83	0.1	0.83	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	Silica (as Si	mg/l	0.43	0.1	0.43	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	StationDep	m	5.2	0.1	5.2	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	TOC (as NP	mg/l	4.6	2	4.6	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	TOC (as NP	mg/l	4	2	4	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	Temperatu	Â°C	13		13	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	Temperatu	Â°C	15.7		15.7	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	Temperatu	Â°C	15.1		15.1	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	Temperatu	Â°C	16.4		16.4	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	Salinity(Lab	0/oo	29.8	0.1	29.8	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	Salinity(Lab	0/oo	33.3	0.1	33.3	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	Salinity(Lab	0/oo	32.6	0.1	32.6	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	Salinity(Lab	0/oo	30.8	0.1	30.8	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	Salinity(Lab	0/oo	30.8	0.1	30.8	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	Salinity(Lab	0/oo	33.6	0.1	33.6	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	Salinity(Lab	0/oo	21.7	0.1	21.7	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	Salinity(Lab	0/oo	33.8	0.1	33.8	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	Silica (as Si	mg/l	0.23	0.1	0.23	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	Silica (as Si	mg/l	0.12	0.1	0.12	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	Silica (as Si	mg/l	0.05	0.1	0.05	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	Silica (as Si	mg/l	0.05	0.1	0.05	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	Silica (as Si	mg/l	0.21	0.1	0.21	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	Total Oxidi	mg/l	0.074	0.01	0.074	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	Total Oxidi	mg/l	0.14	0.01	0.14	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	StationDep	m	20	0.1	20	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	StationDep	m	5.2	0.1	5.2	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	StationDep	m	5.8	0.1	5.8	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	StationDep	m	5.8	0.1	5.8	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	StationDep	m	3	0.1	3	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	StationDep	m	17.5	0.1	17.5	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	StationDep	m	3.9	0.1	3.9	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	StationDep	m	17.5	0.1	17.5	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	Temperatu	Â°C	16.3		16.3	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	Temperatu	Â°C	16.1		16.1	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	Temperatu	Â°C	15.2		15.2	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	Temperatu	Â°C	11.6		11.6	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	Temperatu	Â°C	12.4		12.4	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	TOC (as NP	mg/l	2.3	2	2.3	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	TOC (as NP	mg/l	1	2	1	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	Transparen	m	3.5		3.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	Transparen	m	2.5		2.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	Transparen	m	2.5		2.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	Transparen	m	3.5		3.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	Transparen	m	1.8		1.8	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	TOC (as NP	mg/l	2.4	2	2.4	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	Total Oxidi	mg/l	0.12	0.01	0.12	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	Total Oxidi	mg/l	0.028	0.01	0.028	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	Total Oxidi	mg/l	0.088	0.01	0.088	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	Total Oxidi	mg/l	0.2	0.01	0.2	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	Total Oxidi	mg/l	0.063	0.01	0.063	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	Total Oxidi	mg/l	0.13	0.01	0.13	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	Total Oxidi	mg/l	0.04	0.01	0.04	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	Total Oxidi	mg/l	1.3	0.01	1.3	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	Total Oxidi	mg/l	0.38	0.01	0.38	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	Transparen	m	3.5		3.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	Transparen	m	2.5		2.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	Transparen	m	3.5		3.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	Transparen	m	1.8		1.8	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	Transparen	m	1.5		1.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	Transparen	m	1.5		1.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Surface	Transparen	m	2.5		2.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	Transparen	m	1.5		1.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	Transparen	m	1.5		1.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	Ammonia-T	mg/l	0.076	0.01	0.076	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	Ammonia-T	mg/l	0.044	0.01	0.044	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	Ammonia-T	mg/l	0.13	0.01	0.13	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	BOD - 5 da	mg/l	1.2	1	1.2	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Bottom	BOD - 5 da	mg/l	0.5	1	0.5	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	BOD - 5 da	mg/l	1	1	1	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	BOD - 5 da	mg/l	1.2	1	1.2	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	Depth	m	2.5		2.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	Depth	m	3.5		3.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	Depth	m	0		0	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	Dissolved C	% Saturatio	116	1	116	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	Dissolved C	% Saturatio	98	1	98	1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	ortho-Phos	mg/l	0.0025	0.005	0.0025	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	ortho-Phos	mg/l	0.0025	0.005	0.0025	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	30/06/2021	TRaC Surface	ortho-Phos	mg/l	0.0025	0.005	0.0025	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	ortho-Phos	mg/l	0.0025	0.005	0.0025	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	ortho-Phos	mg/l	0.04	0.005	0.04	0.005
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	pH	pH units	8.2	2	8.2	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	pH	pH units	8.2	2	8.2	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	pH	pH units	8.1	2	8.1	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	pH	pH units	8.2	2	8.2	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	pH	pH units	8.1	2	8.1	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Bottom	pH	pH units	7.9	2	7.9	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Surface	Salinity(Lab	0/oo	17.2	0.1	17.2	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	Silica (as Si	mg/l	0.16	0.1	0.16	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	Silica (as Si	mg/l	1.7	0.1	1.7	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	StationDep	m	21.1	0.1	21.1	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	StationDep	m	21.1	0.1	21.1	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	StationDep	m	3	0.1	3	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	02/11/2021	TRaC Surface	StationDep	m	17.5	0.1	17.5	0.1
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	Temperatu	Â°C	10.9		10.9	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	Temperatu	Â°C	11.6		11.6	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	Temperatu	Â°C	12.8		12.8	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Surface	Temperatu	Â°C	16.5		16.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Bottom	TOC (as NP	mg/l	2	2	2	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	23/08/2021	TRaC Bottom	TOC (as NP	mg/l	2.4	2	2.4	2
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Bottom	Total Oxidi	mg/l	0.017	0.01	0.017	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	18/05/2021	TRaC Surface	Total Oxidi	mg/l	0.07	0.01	0.07	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Bottom	Total Oxidi	mg/l	0.005	0.01	0.005	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	30/06/2021	TRaC Surface	Total Oxidi	mg/l	0.03	0.01	0.03	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	02/11/2021	TRaC Bottom	Total Oxidi	mg/l	0.83	0.01	0.83	0.01
Cork Harbour	IE_SW_060_0000	CW05003150LE8001	LE380 - Ringaskiddy	Surveillance	18/05/2021	TRaC Surface	Transparen	m	2.5		2.5	
Cork Harbour	IE_SW_060_0000	CW05003150LE8003	LE620 - E Spike Island	Surveillance	23/08/2021	TRaC Bottom	Transparen	m	2.5		2.5	

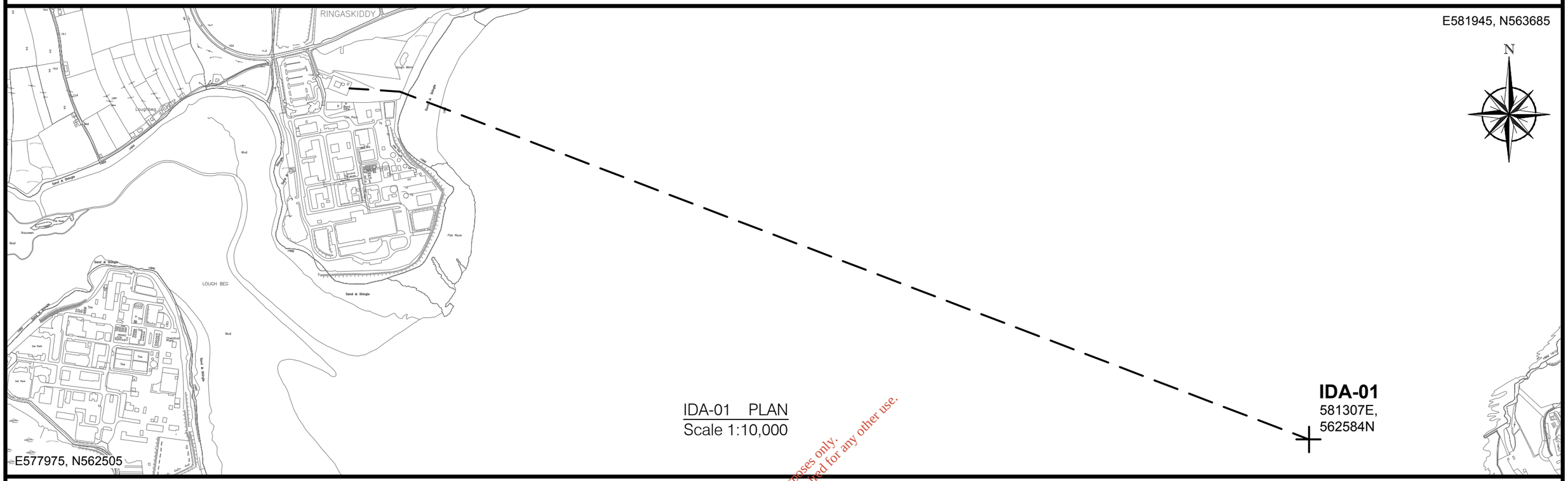
Outer Cork Harbour 2021 Ambient Monitoring results

MonitoringStationCode	MonitoringStationName	MonitoringStationType	SampleDate	SampleMethod	ParameterName	ParameterUnitShortCode	Result	LimitOfDetection	ReportResult
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	Ammonia-Tot	mg/l	0.01	0.01	0.01
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	Depth	m	17.3		17.3
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	Chlorophyll a	µg/l	6.6	0.01	6.6
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	pH	pH units	8.1	2	8.1
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	Pheophytin a	µg/l	0.76	0.01	0.76
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	Salinity	PSU	35.5	0.1	35.5
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	StationDepth	m	17.3	0.1	17.3
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	Salinity(Lab)	0/oo	34.3	0.1	34.3
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	Silica (as SiO2	mg/l	0.17	0.1	0.17
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	Temperature	°C	10.4		10.4
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	Dissolved Oxy	% Saturatio	94	1	94
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	ortho-Phosph	mg/l		0.005	0.0025
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	Total Oxidised	mg/l		0.01	0.005
CW05003149LE9003	LE820 - Myrtleville	Operational	18/05/2021 09:00	TRaC Depth Compo	Transparency	m	3.5		3.5
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	BOD - 5 days (	mg/l	0.5	1	0.5
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	Depth	m	19		19
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	Dissolved Oxy	% Saturatio	96	1	96
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	Pheophytin a	µg/l	0.31	0.01	0.31
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	Salinity	PSU	35.6	0.1	35.6
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	ortho-Phosph	mg/l	0.0025	0.005	0.0025
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	Suspended So	mg/l		4	2
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	pH	pH units	8.1	2	8.1
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	Temperature	°C	10.5		10.5
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	Silica (as SiO2	mg/l		0.1	0.05
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	StationDepth	m	19	0.1	19
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	TOC (as NPOC	mg/l		2	1
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	Total Oxidised	mg/l	0.005	0.01	0.005
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	True Colour	mg/litre Pt Co		5	2.5
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	Ammonia-Tot	mg/l	0.014	0.01	0.014
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	Chlorophyll a	µg/l	2.8	0.01	2.8
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	Salinity(Lab)	0/oo	35	0.1	35
CW05003149LE9002	LE810 - Roches Point	Operational	18/05/2021 09:15	TRaC Depth Compo	Transparency	m	5		5
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	Ammonia-Tot	mg/l	0.018	0.01	0.018
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	BOD - 5 days (	mg/l	0.5	1	0.5
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	Dissolved Oxy	% Saturatio	97	1	97
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	Chlorophyll a	µg/l	4.6	0.01	4.6
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	Depth	m	0.3		0.3
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	pH	pH units	8.1	2	8.1
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	Pheophytin a	µg/l	0.49	0.01	0.49
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	Depth	m	28		28
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	Salinity	PSU	35.5	0.1	35.5
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	ortho-Phosph	mg/l	0.0025	0.005	0.0025
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	ortho-Phosph	mg/l	0.0025	0.005	0.0025
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	StationDepth	m	28	0.1	28
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	StationDepth	m	28	0.1	28
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	Temperature	°C	10.6		10.6
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	Temperature	°C	12		12
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	pH	pH units	8.2	2	8.2
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	TOC (as NPOC	mg/l		2	1
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	TOC (as NPOC	mg/l		2	1
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	Salinity	PSU	34.3	0.1	34.3
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	Transparency	m	3		3
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	Silica (as SiO2	mg/l		0.1	0.05
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	Transparency	m	3		3
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	Ammonia-Tot	mg/l	0.012	0.01	0.012
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	BOD - 5 days (	mg/l	0.5	1	0.5
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	Dissolved Oxy	% Saturatio	111	1	111
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	Salinity(Lab)	0/oo	34.8	0.1	34.8
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	Salinity(Lab)	0/oo	34.3	0.1	34.3
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	Silica (as SiO2	mg/l	0.12	0.1	0.12
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Bottom	Total Oxidised	mg/l	0.013	0.01	0.013
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	18/05/2021 09:32	TRaC Surface	Total Oxidised	mg/l	0.005	0.01	0.005
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	BOD - 5 days (	mg/l	0.5	1	0.5
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	Depth	m	26.4		26.4
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	ortho-Phosph	mg/l	0.0025	0.005	0.0025
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	pH	pH units	8.2	2	8.2
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	Dissolved Oxy	% Saturatio	99	1	99
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	Temperature	°C	15.2		15.2
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	Total Oxidised	mg/l	0.005	0.01	0.005
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	Transparency	m	4		4
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	Silica (as SiO2	mg/l		0.1	0.05
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	StationDepth	m	26.7	0.1	26.7
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	Ammonia-Tot	mg/l	0.043	0.01	0.043
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	Salinity	PSU	35	0.1	35
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	Salinity(Lab)	0/oo	34.4	0.1	34.4
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:17	TRaC Bottom	TOC (as NPOC	mg/l		2	1
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	Chlorophyll a	µg/l	1.4	0.01	1.4
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	ortho-Phosph	mg/l	0.0059	0.005	0.0059
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	Depth	m	0.3		0.3
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	Silica (as SiO2	mg/l		0.1	0.05
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	Pheophytin a	µg/l	0.26	0.01	0.26
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	Salinity(Lab)	0/oo	33.9	0.1	33.9

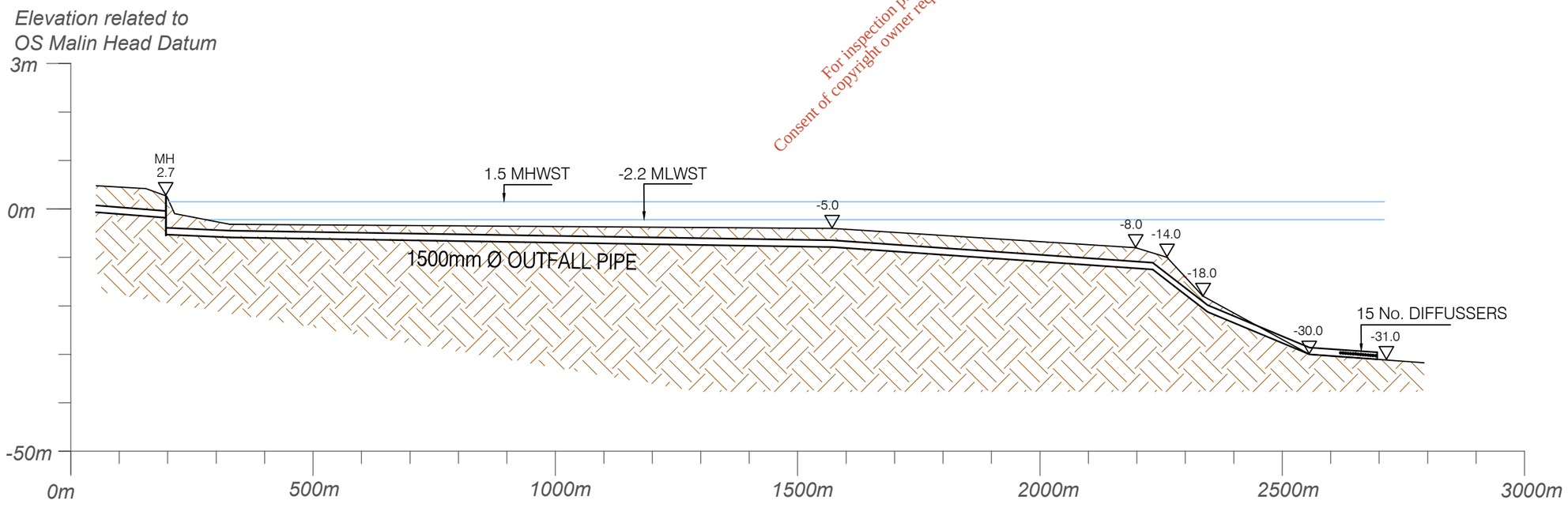
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	StationDepth	m	26.7	0.1	26.7
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	Temperature	°C	15.9		15.9
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	Total Oxidised	mg/l	0.013	0.01	0.013
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	Transparency	m	4		4
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	Ammonia-Tot	mg/l	0.045	0.01	0.045
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	Dissolved Oxy	% Saturatio	105	1	105
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	pH	pH units	8.2	2	8.2
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	30/06/2021 11:22	TRaC Surface	Salinity	PSU	34.5	0.1	34.5
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	Ammonia-Tot	mg/l	0.043	0.01	0.043
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	BOD - 5 days (	mg/l	0.5	1	0.5
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	Salinity	PSU	35	0.1	35
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	Dissolved Oxy	% Saturatio	98	1	98
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	ortho-Phosph	mg/l	0.0025	0.005	0.0025
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	StationDepth	m	19.2	0.1	19.2
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	Suspended So	mg/l		4	2
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	pH	pH units	8.2	2	8.2
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	True Colour	mg/litre Pt Co		5	2.5
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	Temperature	°C	15.2		15.2
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	TOC (as NPOC	mg/l		2	1
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	Total Oxidised	mg/l	0.005	0.01	0.005
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	Chlorophyll a	µg/l	0.93	0.01	0.93
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	Depth	m	19.1		19.1
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	Pheophytin a	µg/l	0.26	0.01	0.26
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	Salinity(Lab)	0/oo	34.3	0.1	34.3
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	Silica (as SiO2	mg/l	0.1	0.1	0.1
CW05003149LE9002	LE810 - Roches Point	Operational	30/06/2021 11:31	TRaC Depth Compo	Transparency	m	4		4
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	Ammonia-Tot	mg/l	0.045	0.01	0.045
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	Chlorophyll a	µg/l	1.7	0.01	1.7
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	Pheophytin a	µg/l	0.29	0.01	0.29
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	Depth	m	17.1		17.1
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	Salinity	PSU	35	0.1	35
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	ortho-Phosph	mg/l		0.005	0.0025
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	Temperature	°C	14.8		14.8
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	pH	pH units	8.2	2	8.2
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	Silica (as SiO2	mg/l		0.1	0.05
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	StationDepth	m	17.3	0.1	17.3
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	Total Oxidised	mg/l		0.01	0.005
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	Dissolved Oxy	% Saturatio	92	1	92
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	Salinity(Lab)	0/oo	34.3	0.1	34.3
CW05003149LE9003	LE820 - Myrtleville	Operational	30/06/2021 11:44	TRaC Depth Compo	Transparency	m	4		4
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	Ammonia-Tot	mg/l	0.029	0.01	0.029
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	Depth	m			
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	Dissolved Oxy	% Saturatio	97	1	97
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	pH	pH units	8	2	8
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	Salinity	PSU	33.8	0.1	33.8
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	Temperature	°C	14.8		14.8
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	TOC (as NPOC	mg/l		2	1
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	Salinity(Lab)	0/oo	33.6	0.1	33.6
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	Silica (as SiO2	mg/l	0.1	0.1	0.1
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	StationDepth	m	22.3	0.1	22.3
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	BOD - 5 days (	mg/l	0.5	1	0.5
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	ortho-Phosph	mg/l	0.0025	0.005	0.0025
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	Total Oxidised	mg/l	0.018	0.01	0.018
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:48	TRaC Bottom	Transparency	m	2.8		2.8
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	Ammonia-Tot	mg/l	0.068	0.01	0.068
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	BOD - 5 days (	mg/l	0.5	1	0.5
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	Depth	m	0		0
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	ortho-Phosph	mg/l	0.0025	0.005	0.0025
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	Dissolved Oxy	% Saturatio	105	1	105
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	pH	pH units	8	2	8
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	Salinity	PSU	32.8	0.1	32.8
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	Salinity(Lab)	0/oo	33.4	0.1	33.4
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	Silica (as SiO2	mg/l	0.11	0.1	0.11
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	Transparency	m	2.8		2.8
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	Chlorophyll a	µg/l	4.7	0.01	4.7
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	Pheophytin a	µg/l	0.18	0.01	0.18
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	StationDepth	m	22.3	0.1	22.3
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	Temperature	°C	15.6		15.6
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	TOC (as NPOC	mg/l		2	1
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	23/08/2021 11:52	TRaC Surface	Total Oxidised	mg/l	0.029	0.01	0.029
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	Chlorophyll a	µg/l	7.9	0.01	7.9
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	Depth	m	16		16
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	ortho-Phosph	mg/l	0.0025	0.005	0.0025
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	StationDepth	m	16.5	0.1	16.5
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	pH	pH units	8	2	8
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	Pheophytin a	µg/l	0.1	0.01	0.1
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	TOC (as NPOC	mg/l		2	1
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	Total Oxidised	mg/l	0.021	0.01	0.021
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	Salinity	PSU	33.1	0.1	33.1
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	Transparency	m	3		3
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	Suspended So	mg/l		4	2
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	Temperature	°C	15.6		15.6
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	True Colour	mg/litre Pt	101	5	101
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	Ammonia-Tot	mg/l	0.028	0.01	0.028
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	BOD - 5 days (	mg/l	0.5	1	0.5
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	Dissolved Oxy	% Saturatio	101	1	101
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	Salinity(Lab)	0/oo	33.8	0.1	33.8
CW05003149LE9002	LE810 - Roches Point	Operational	23/08/2021 12:06	TRaC Depth Compo	Silica (as SiO2	mg/l	0.1	0.1	0.1
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	Ammonia-Tot	mg/l	0.027	0.01	0.027

CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	Chlorophyll a	µg/l	3.6	0.01	3.6
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	Depth	m	13.5		13.5
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	pH	pH units	8	2	8
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	Salinity(Lab)	0/oo	34.1	0.1	34.1
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	ortho-Phosph	mg/l	0.014	0.005	0.014
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	Temperature	°C	15.4		15.4
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	Salinity	PSU	33.4	0.1	33.4
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	Total Oxidised	mg/l	0.016	0.01	0.016
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	Transparency	m	3.5		3.5
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	Dissolved Oxy	% Saturatio	100	1	100
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	Pheophytin a	µg/l	0.093	0.01	0.093
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	Silica (as SiO2	mg/l		0.1	0.05
CW05003149LE9003	LE820 - Myrtleville	Operational	23/08/2021 12:20	TRaC Depth Compo	StationDepth	m	14.2	0.1	14.2
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	Ammonia-Tot	mg/l	0.025	0.01	0.025
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	Ammonia-Tot	mg/l	0.017	0.01	0.017
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	BOD - 5 days (	mg/l	0.5	1	0.5
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	Dissolved Oxy	% Saturatio	77	1	77
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	Chlorophyll a	µg/l	0.28	0.01	0.28
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	ortho-Phosph	mg/l	0.019	0.005	0.019
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	Pheophytin a	µg/l	0.56	0.01	0.56
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	Pheophytin a	µg/l	0.56	0.01	0.56
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	Salinity	PSU	33.9	0.1	33.9
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	Dissolved Oxy	% Saturatio	81	1	81
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	StationDepth	m	27.5	0.1	27.5
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	TOC (as NPOC	mg/l		2	1
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	Salinity	PSU	32.8	0.1	32.8
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	Transparency	m	1.8		1.8
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	Transparency	m	1.8		1.8
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	Silica (as SiO2	mg/l	0.45	0.1	0.45
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	StationDepth	m	27.5	0.1	27.5
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	Temperature	°C	12.2		12.2
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	Temperature	°C	12.2		12.2
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	Total Oxidised	mg/l	0.16	0.01	0.16
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	BOD - 5 days (	mg/l	0.5	1	0.5
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	Depth	m	0		0
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	Depth	m			
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	ortho-Phosph	mg/l	0.017	0.005	0.017
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	pH	pH units	7.9	2	7.9
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	pH	pH units	7.9	2	7.9
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Surface	Salinity(Lab)	0/oo	33.8	0.1	33.8
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	Salinity(Lab)	0/oo	34.4	0.1	34.4
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	Silica (as SiO2	mg/l	0.37	0.1	0.37
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	TOC (as NPOC	mg/l		2	1
CW05003149LE9001	LE630 - Adjacent to Carlisle Fo	Operational	02/11/2021 12:13	TRaC Bottom	Total Oxidised	mg/l	0.12	0.01	0.12
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	BOD - 5 days (	mg/l	0.5	1	0.5
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	Depth	m	0		0
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	Dissolved Oxy	% Saturatio	87	1	87
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	ortho-Phosph	mg/l	0.016	0.005	0.016
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	pH	pH units	7.9	2	7.9
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	Salinity	PSU	31.4	0.1	31.4
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	Transparency	m	3		3
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	Salinity(Lab)	0/oo	33	0.1	33
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	Silica (as SiO2	mg/l	0.5	0.1	0.5
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	TOC (as NPOC	mg/l		2	1
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	True Colour	mg/litre Pt Co		5	2.5
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	Ammonia-Tot	mg/l	0.038	0.01	0.038
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	Chlorophyll a	µg/l	0.16	0.01	0.16
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	Pheophytin a	µg/l	0.26	0.01	0.26
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	StationDepth	m	17.1	0.1	17.1
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	Suspended So	mg/l		4	3.5
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	Temperature	°C	12.2		12.2
CW05003149LE9002	LE810 - Roches Point	Operational	02/11/2021 12:26	TRaC Depth Compo	Total Oxidised	mg/l	0.18	0.01	0.18
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	Ammonia-Tot	mg/l	0.056	0.01	0.056
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	Dissolved Oxy	% Saturatio	87	1	87
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	Chlorophyll a	µg/l	0.24	0.01	0.24
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	Salinity(Lab)	0/oo	31.9	0.1	31.9
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	ortho-Phosph	mg/l	0.025	0.005	0.025
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	pH	pH units	7.9	2	7.9
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	Pheophytin a	µg/l	0.48	0.01	0.48
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	Salinity	PSU	30.9	0.1	30.9
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	Transparency	m	2.5		2.5
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	Silica (as SiO2	mg/l	0.69	0.1	0.69
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	StationDepth	m	17.2	0.1	17.2
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	Temperature	°C	12.2		12.2
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	Total Oxidised	mg/l	0.25	0.01	0.25
CW05003149LE9003	LE820 - Myrtleville	Operational	02/11/2021 12:37	TRaC Depth Compo	Depth	m	0		0

I.D.A. OUTFALL, RINGASKIDDY - FORESHORE LICENCE MAP (File No. FS 006685)

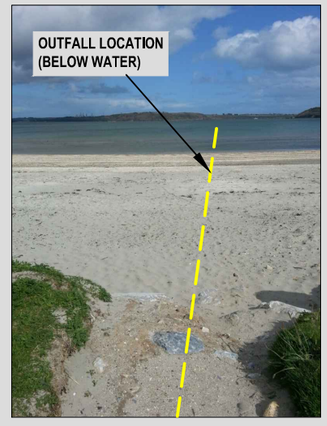


IDA-01 PLAN
Scale 1:10,000



IDA-01 LONG SECTION
Scale 1:10,000 Horz. 1:1000 Vert.

PHOTOGRAPH



Yours faithfully,

Shane Cosgrove
Chartered Engineer, Senior Project Manager
for NICHOLAS O'DWYER LTD.

REV	DATE	DESCRIPTION	D	C	A

NICHOLAS O'DWYER
Unit E4, Nutgrove Office Park, Nutgrove Avenue, Dublin 14
T +353 1 296 9000
F +353 1 296 9001
E dublin@nodwyer.com
W www.nodwyer.com

TITLE
IDA MAIN DISCHARGE OUTFALL
IDA-01
OUTFALL LONGSECTION

PRELIMINARY

SCALES	DRAWN	CHECKED	APPROVED
AS SHOWN	D.Smithers	S.Cosgrove	J.Power
	DATE 28.07.17	DATE 28.07.17	DATE 28.07.17

DRAWING No. 20506-FL-IDA-102
REV -