

# Irish Water Report

Appropriate Assessment Screening of the Cork Lower Harbour  
Discharge Licence Review (D0057-01)

March 2022

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# Introduction

Screening for Appropriate Assessment is required pursuant to Article 6(3) of Directive 92/43/EEC ('the Habitats Directive') and European Communities (Birds and Natural Habitats) Regulations 2011, as amended (the '2011 Regulations'). Where it cannot be excluded that a project, either alone or in combination with other projects or plans, would have a significant effect on a European site, then the project shall be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives.

An Appropriate Assessment ('AA') Screening is a required assessment to determine the likelihood of significant impacts, based on best scientific knowledge, of any plans or projects on European sites. A screening for AA determines whether a plan or project, either alone or in combination with other plans and projects, is likely to have significant effects on a European site, in view of its conservation objectives. The purpose of a Stage One screening exercise for AA is to determine whether it is necessary to carry out a Stage Two AA of the implications for a European site of a plan or project.

This report provides information to enable the competent authority (in this case, the Environmental Protection Agency (the 'EPA')) to conduct a Stage One AA Screening in respect of a request to review the primary discharge Emission Limit Values (ELVs) for the existing discharge from the new Shanbally Wastewater Treatment Plant ('WwTP'), Co. Cork, for the purposes of an application for Review of a Waste Water Discharge Licence under the European Union (Waste Water Discharge) Regulations 2007 to 2020. It appraises whether the proposed revision of ELVs, alone or in combination with other plans and projects, is likely to have significant effects on a European Site(s) in view of best scientific knowledge and the conservation objectives of the site(s). European Sites are those identified as sites of European Community importance designated as Special Areas of Conservation ('SAC') under the Habitats Directive or as Special Protection Areas ('SPA') under the Conservation of Wild Birds Directive (79/409/ECC) as codified by Directive 2009/147/EC (the 'Birds Directive').

## **The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Legislative Context**

The Habitats Directive provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. These are SACs designated under the Habitats Directive and SPAs designated under the Birds Directive. Article 7 of the Habitats Directive provides that a number of provisions including Article 6(3), are to apply to SPAs designated under the Birds Directive.

Articles 6(3) of the Habitats Directive states that:

*Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the*

*competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*

Article 6(3) provides for a two stage process. The first stage involves a screening for AA and the second stage arises where, having screened the application for the development, the competent authority determines that AA is required, in which case it must then carry out that. A competent authority does not have jurisdiction to grant development consent unless the AA is carried out correctly.

In relation to the assessments to be carried out under the Habitats Directive, Regulation 42 of the 2011 Regulations, as amended, require “a screening for *Appropriate Assessment of a... project for which an application for consent is received*”.

In the event that a public authority (in this case, the EPA) determines that an AA is required, then a Natura Impact Statement must be submitted and “a *public authority shall give consent for a... project, only after having determined that the... project shall not adversely affect the integrity of a European site*”. For the purposes of this AA Screening Report, it is assumed that Regulation 42 requires the EPA to carry out Stage One AA Screening and, if necessary, Stage Two AA, in respect of applications for Waste Water Discharge Licences (‘WWDLs’), reviews of WWDLs and applications for Technical Amendments to WWDLs.

## Methodology

### Guidance Followed

Both EU and national guidance exists in relation to Member States fulfilling their requirements under the EU Habitats Directive, with particular reference to Article 6(3) and 6(4) of that Directive. The methodology followed in relation to this AA Screening has had regard to the following guidance:

- Office of the Planning Regulator (OPR). *Appropriate Assessment Screening for Development Management*. OPR Practice Note PN01. (OPR, 2021).
- Note on *Appropriate Assessments for the purposes of the Waste Water Discharge (Authorisation) Regulations, 2007* (S.I. No. 684 of 2007). Environmental Protection Agency, (EPA, 2009).
- *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. Department of Environment, Heritage and Local Government, (DoEHLG, 2010).
- Circular L8/08 – *Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments*. Department of Environment, Heritage and Local Government, (DoEHLG, 2008).

- Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg, (EC, 2000).
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg, (EC, 2018).
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels (EC, 2001).
- Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission, Brussels (EC, 2021).
- Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg (EC, 2006).
- Marine Natura Impact Statements in Irish Special Areas of Conservation: A working document, National Parks and Wildlife Service, Dublin (NPWS, 2012).
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013).
- EPA Guidance for Irish Water on "Requests for Alterations to a Wastewater Discharge Licence or Certificate of Authorisation" (Revised March 2019).

## Requirements of Appropriate Assessment Screening

Pursuant to Regulation 42 of the 2011 Regulations, Screening for AA is a process which identifies whether a plan or project is directly connected to or necessary for the management of a European Site(s) and which assesses whether, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European Site(s). The Screening for AA must be carried out before consent for a plan or project is given, or a decision to undertake or adopt a plan or project is taken.

Arising from the interpretation provided in a number of judgments of the Court of Justice of the European Union as to the nature of the obligations in respect of Screening for AA, in essence, the output from this stage is that a Stage Two AA assessment must be carried out if, on a screening exercise, it is not possible to exclude the risk that a proposed development will have a likely significant effect on a European site.

## Steps in the Stage One AA Screening

In complying with the obligations under Article 6(3) and Regulation 42, and following the appropriate guidelines, this AA Screening has been structured as a stage by stage approach as follows:

- Description of the project/activity;
- Identification of European Sites within the Zone of Influence;
- Identification and description of impacts likely to result;
- Assessment of the likely significance of any effects on European Sites;
- Exclusion of sites where it can be objectively concluded that there will be no significant effects; and
- Screening conclusion.

This assessment was completed by Niamh Sweeney MSc (Res), an aquatic ecologist who has 12 years' experience in undertaking ecological surveys in terrestrial, freshwater and marine environments. In addition to ecological surveys, Ms. Sweeney's experience includes ecological assessment and the preparation of screening for AA reports, Natura Impact Statements and Ecological Impact Assessments for a wide range of developments and infrastructure projects.

The Screening for AA appraisal set out in this document was reviewed and approved by Dr Brian Deegan, who has a Masters Degree in Estuarine Ecology, a Doctorate (Ph.D.) in Freshwater Ecology and is a full member of the Chartered Institute of Ecology and Environmental Management. Dr. Deegan has over 19 years of experience in the field of Ecological and Environmental Assessments. This experience includes AA, Ecological Impact Assessment, Environmental Impact Assessment, Ecological Appraisals, Ecological Clerk of Works, Water Quality Assessments and Ecological Monitoring Programmes, for a wide range of both linear and site based infrastructure projects.

# AA Screening

## Management of the Site

The Shanbally WwTP is not directly connected with or necessary to the management of any site for nature conservation.

## Description of the Project

Shanbally WwTP is located in Co. Cork, south-east of Cork City. Shanbally WwTP is situated between the towns of Carrigaline and Ringaskiddy. The WwTP is located approximately 2.5km to the west of Ringaskiddy; south of the N28 road and north of the R613 road.

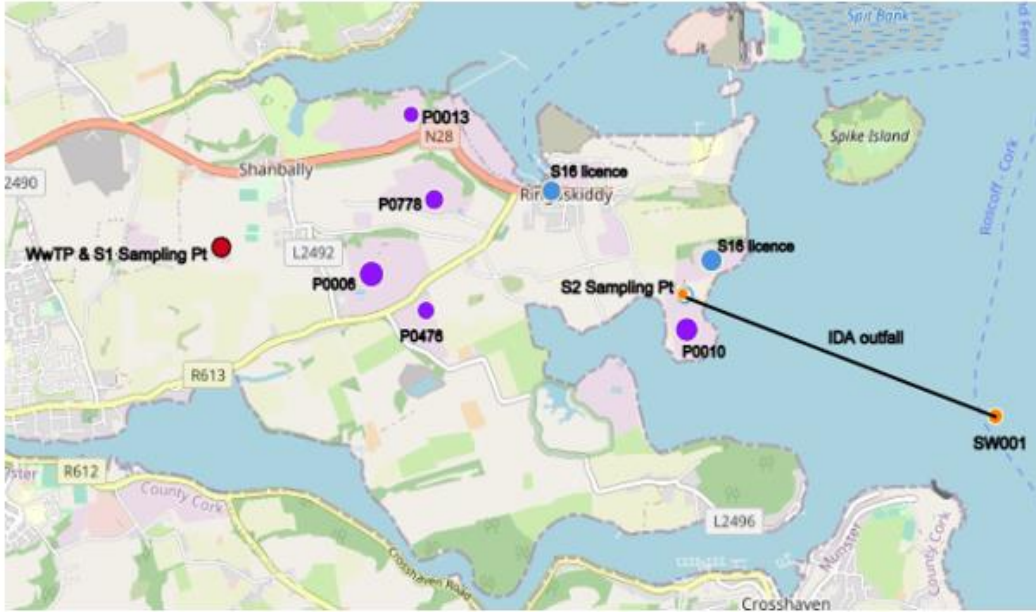
The new Shanbally WwTP commenced operation in December 2016 and is currently providing full treatment of wastewater from Carrigaline, Crosshaven and Shanbally, Cobh, Passage West/Monkstown (including Glenbrook) and Ringaskiddy (including Coolmore). This project ensures that wastewater from Carrigaline, Crosshaven, Shanbally, Cobh, Passage West/Monkstown (including Glenbrook) and Ringaskiddy (including Coolmore) is no longer discharging untreated into the Cork Harbour.

### Shanbally WwTP

The newly constructed Shanbally WwTP, providing secondary treatment with a design capacity of 65,000 PE (expandable to 80,000 PE), was completed in 2016. The current collected PE is 45,269. The treatment works consists of preliminary treatment and secondary treatment based on Nereda® Aerobic Granular Reactors technology prior to gravity discharge to the Cork Harbour near Dognose Bank via an existing IDA long sea outfall. The innovative Nereda® technology at the plant means that less sludge is produced, less chemicals are used and less land is needed than for conventional treatment plants. This gives a more environmentally and economically sustainable wastewater treatment solution. The technology is based on aerobic granulation and is a modification of the activated sludge process. Nereda® treats the wastewater with aerobic granular biomass: purifying bacteria that create compact granules with superb settling properties. Nereda® granules settle much faster than flocs of sludge, and can do so in the same tank in which the treatment process takes place.

Due to the location of the WwTP, effluent from the Shanbally WwTP is discharged to the 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, as shown in Figure 1.

Several large industrial companies operating under individual licences, discharge directly to this IDA outfall, downstream of the Shanbally WwTP discharge. Their flows are not, or will not be treated, at the Shanbally WwTP and are not considered to be part of the agglomeration load entering the Shanbally WwTP. For this reason, 2 sets of ELVs are proposed, one set for the treated effluent from the WwTP (Sampling pt S1) and another set for the combined discharge from the IDA outfall at Dognose Bank (SW001, sampling pt S2). See Figure 1 below indicating the locations of the industries discharging into the IDA outfall downstream of Shanbally WwTP, sampling locations, IDA outfall pipe and SW001 discharge location.



**Figure 1 – Sampling point ('pt') locations and industries connected to IDA outfall.**

The final effluent from the Shanbally WwTP has been designed to meet the quality standards for general components (BOD, COD and SS) specified in the Urban Waste Water Treatment Regulations 2001, as amended.

The proposed ELVs for the treated effluent from the WwTP are as per Table 1A. The proposed ELVs from the Primary Discharge (SW001 – IDA outfall) are detailed in Table 1B. The rationale for the proposed ELVs was informed and supported by environmental monitoring data and water quality modelling, the details of which are summarised in the sections below.

**Table 1A – Proposed ELVs from the WwTP.**

Parameter	Concentration (mg/l)
BOD <sub>5</sub>	25
COD	125
Total Suspended Solids	35
Dissolved Inorganic Nitrogen	45
pH	6-9

**Table 1B – Proposed ELVs from the IDA Outfall (primary discharge).**

Parameter	Concentration (mg/l)
BOD <sub>5</sub>	245
Dissolved Inorganic Nitrogen	95



There are 25 discharges from the Cork Lower Harbour agglomeration – the primary discharge from the Shanbally WwTP and a total of 24 no. overflows within the Cork Lower Harbour (including, Cobh, Passage West, Monkstown, Carrigaline, Ringaskiddy, Crosshaven and Shanbally catchments) agglomeration that will discharge periodically (weather dependent) into receiving waterbodies. Of the 24 no. overflows, 20 are Dual Function Overflows associated with pumping stations, 2 no. are a network Storm Water Overflows, 1 no. is a network Storm Water Overflow from a manhole in Carrigaline and 1 no. is a Dual Function Overflow from the WwTP Storm Tank to the IDA outfall. All SWOs meet the DoEHLG SWO criteria in “Procedures and Criteria in relation to Storm Water Overflows”, 1995.

The treated effluent from Shanbally WwTP is discharged by gravity to Cork Harbour near Dognose Bank (ca. 2.6km east of Lough Beg and at a depth of 30m) via an existing IDA outfall at NGR: 181358E, 062521N. It is estimated that there are approx. 1,300 dilutions available immediately in the proximity of the discharge point.

### **Effluent Monitoring Data**

The 2020 effluent data from sampling taken at the WwTP and at the current EPA licenced point, which includes for IPC/IED licences contributing to the discharge load between the WwTP and this official effluent sampling point, is presented in Table 2.0 and Table 3.0 together with the ELVs set in the discharge licence D0057-01.

**Table 2.0 - Effluent Monitoring Data at WwTP Sampling Point – SW001 (S1) 2020.**

Sample Date	BOD, 5 days with Inhibition (Carbonaceous BOD)	COD-Cr	pH	Suspended Solids	Total Nitrogen	Total Phosphorus (as P)
Existing Discharge Limits	25	125	6-9	35	28.5	-
08/01/20	4.10	36.00	7.60	3.00	22.37	3.62
21/01/20	2.10	10.50	7.60	1.25	17.91	3.26
06/02/20	4.10	28.00	7.50	1.25	27.43	6.71
19/02/20	3.20	23.00	7.40	4.00	13.39	4.25
04/03/20	1.90	22.00	7.70	1.25	10.70	5.59
19/03/20	2.40	39.00	7.30	3.00	19.20	5.70
07/05/20	2.50	52.00	7.30	7.00	11.67	2.68
13/05/20	3.70	78.00	7.50	12.00	28.89	4.31
27/05/20	7.60	58.00	7.30	11.00	15.70	6.77
10/06/20	4.10	64.00	7.20	7.00	13.65	4.89
17/06/20	1.60	44.00		3.00	9.19	8.11
24/06/20	15.00	10.50	7.30	27.00	27.53	11.68
08/07/20	1.50	23.00	7.40	4.00	8.84	4.01
22/07/20	2.40	10.50	7.30	1.25	7.80	7.43

29/07/20	2.00	61.00	7.20	4.00	32.40	6.03
05/08/20	1.90	57.00	7.20	4.00	7.58	6.10
19/08/20	1.60	34.00	7.40	3.00	19.24	7.59
02/09/20	2.60	40.00	7.40	3.00	19.29	3.89
16/09/20		46.00	7.60	1.25	21.50	5.69
01/10/20	2.30	39.00	7.50	1.25	14.40	6.60
14/10/20	7.70	49.00	7.20	5.00	15.60	5.76
04/11/20	3.30	38.00	7.40	5.00	6.60	3.10
25/11/20	7.20	52.00	7.30	8.00	17.00	3.45
10/12/20	3.40	32.00	7.60	22.00	15.70	5.20
16/12/20	5.20	57.00	7.80	15.00	8.30	1.58

**Table 3.0 - Effluent Monitoring Data at current EPA Licenced Sampling Point SW001(S2)  
- (includes IPC/IED licenced discharges) – 2020.**

Sample Date	Ammonia (as N) (mg/l)	BOD (mg/l)	COD (mg/l)	ortho-Phosphate (mg/l)	pH	TN (mg/l)	TP (mg/l)	TSS (mg/l)
Existing Discharge Limits		25	125		6 -9	28.5	-	35
08/01/2020	17.4	20.0	78.0	7.2	7.6	23.7	1.6	30.0
21/01/2020	14.7	10.0	35.0	2.8	7.7	20.1	2.9	19.0
06/02/2020	28.1	18.0	126.0	0.1	7.7	32.8	7.5	21.0
19/02/2020	10.1	10.0	90.0	5.8	7.5	15.3	6.6	16.0
04/03/2020	11.2	14.0	59.0	6.4	7.7	14.8	6.3	15.0
19/03/2020	11.2	74.0	126.0	1.9	7.7	18.8	2.6	70.0
07/05/2020	10.0	5.9	53.0	2.4	7.5	16.2	2.7	16.0
13/05/2020	9.4	57.0	258.0	4.7	7.5	19.8	5.5	156.0
27/05/2020	7.8		480.0	5.1	7.5	13.3	5.2	147.0
03/06/2020		82.0						
10/06/2020	6.2	35.0	116.0	4.1	7.4	12.9	4.6	58.0
17/06/2020	4.1	38.0	223.0	0.7	7.5	10.1	4.4	109.0
24/06/2020	13.7	52.0	300.0	8.4	7.6	23.4	9.8	122.0
08/07/2020	5.1	32.0	109.0	4.9	7.3	10.4	6.0	47.0
22/07/2020	3.4	57.0	192.0	0.9	9.5	31.1	3.9	145.0
29/07/2020	3.1	71.0	244.0	4.8	7.3	6.3	5.1	146.0
05/08/2020	1.2	9.0	69.0	2.6	7.6	5.1	3.0	24.0
19/08/2020	2.0	11.0	70.0	2.8	7.6	7.9	3.4	49.0
02/09/2020	0.2	4.3	29.0	3.8	7.5	9.5	4.5	23.0
16/09/2020	20.7	7.9	46.0	4.0	7.5	27.3	4.5	13.0

Sample Date	Ammonia (as N) (mg/l)	BOD (mg/l)	COD (mg/l)	ortho-Phosphate (mg/l)	pH	TN (mg/l)	TP (mg/l)	TSS (mg/l)
Existing Discharge Limits		25	125	-	6 -9	28.5	-	35
01/10/2020	4.1	10.0	67.0	6.3	7.5	9.3	6.8	17.0
14/10/2020	5.3	12.0	62.0	3.4	7.4	12.5	3.9	28.0
04/11/2020	0.6	15.0	102.0	2.2	8.0	8.3	2.6	79.0
11/11/2020	11.3	63.0	212.0	4.6	7.6	25.3	5.4	131.0
25/11/2020	15.1	15.0	66.0	0.7	7.6	20.7	2.1	29.0

The Primary Discharge from SW001 (S2) was non-compliant with the existing ELVs set in the wastewater discharge licence at the sampling point downstream of the treatment plant. There were non-compliances with the ELVs in relation to BOD (mg/l), COD (mg/l) and TSS (mg/l). The non-compliances were due to the IPC/IED licences contributing to the discharge between the Shanbally WwTP and the official sampling point, which have resulted in non-compliances.

In relation to the final treated wastewater compliance samples from the Shanbally WwTP, the samples were compliant with the proposed ELV limits on all occasions in 2020 (45mg/l DIN)

According to the 2020 WWDL Annual Environmental Report, the discharge from the Shanbally WwTP is not having an impact on the water quality of the receiving environment and does not have an observable negative impact on the Water Framework Directive status.

### Brief Description of the Receiving Environment – Cork Harbour

Cork Harbour (approximately 28 km<sup>2</sup> in area) is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas, Owenboy and Owennacurra. Cork Harbour comprises the main intertidal areas of the North Channel, the Douglas Estuary, inner Lough Mahon, Monkstown Creek, Lough Beg, the Owenboy Estuary, Whitegate Bay and the Rostellan inlet.

The north-eastern part of Cork Harbour, the North Great Island Channel, comprises the intertidal areas between Fota Island and Little Island, and also the estuary of the Dungourney and Owennacurra Rivers as far as Midleton. The North Great Island Channel is designated as a SAC. Owing to the sheltered conditions, the intertidal sediments in the Great Island Channel predominantly comprise fine muds and sand flats. Atlantic salt meadows are also present within the area. These estuarine habitats and associated wet grassland areas regularly support approximately 50% of the wintering waterfowl of Cork Harbour (NPWS, 2019).

Many of the intertidal areas of the wider Cork Harbour area are encompassed within the Cork Harbour SPA, which hosts several internationally and nationally important wetland sites and various breeding waterbirds, and provides important feeding areas for waders. Owing to the sheltered conditions of the intertidal areas within the wider Cork Harbour area, salt marshes provide high tide roosts for waterbirds. Otherwise, birds roost on stony shorelines and in some

areas, fields adjacent to the shore. The wetland sites host internationally important numbers of wintering and spring staging waterbirds, several Annex I bird species (E.U. Birds Directive), including Whooper Swan, Golden Plover, Bar-tailed Godwit, Ruff and Common Tern and the internationally important species, Black-tailed Godwit and Redshank. Cork Harbour is one of only a few Irish wetlands to regularly hold over 20,000 waterfowl. Existing threats to the conservation status of the Cork Harbour SPA include extensive areas of estuarine habitat which have been reclaimed since about the 1950s for industrial, port-related and road projects, and further reclamation remains a threat. As Cork Harbour is adjacent to a major urban centre and a major industrial centre, water quality is variable, with the estuary of the River Lee and parts of the Inner Harbour being somewhat eutrophic. However, the polluted conditions may not be having significant impacts on the bird populations. Oil pollution from shipping in Cork Harbour is considered a general threat (NPWS, 2015; NPWS, 2020).

The wider Cork Harbour area comprises three waterbodies<sup>1</sup>; the transitional Lough Mahon waterbody (IE\_SW\_060\_0750), which includes the lower stretches of the River Lee, Harper's Island, the North Great Island Channel and Lough Mahon to Monkstown, and the two coastal waterbodies of Cork Harbour (IE\_SW\_060\_0000) and Outer Cork Harbour (IE\_SW\_050\_0000). The coastal Cork Harbour waterbody extends from Monkstown and south of Cobh Great Island and to Ram's Head/ Camden Fort and Carilse Fort on the west and east of the harbour respectively. The IDA outfall and discharge point at Dognose Bank is situated within the coastal Cork Harbour waterbody, on the eastern side of the harbour. The Outer Cork Harbour waterbody, which extends southwards from the Cork Harbour waterbody, stretches from Crosshaven Hill, Myrtleville and Robert's Cove along the western extent of the harbour and from White Bay, Roche's Point and Power Head along the eastern extent of the harbour and coastline.

Lough Mahon transitional waterbody has been assigned *Moderate* ecological status under the Water Framework Directive (WFD) 2013-2018 and *Good* chemical surface water status. Lough Mahon is categorised as being *At Risk* of not achieving its objectives under the WFD. It should be noted that the IDA outfall and discharge point are not located within the Lough Mahon transitional waterbody, and thus, Shanbally WwTP does not discharge to the Lough Mahon transitional waterbody.

The IDA outfall structure extends eastwards terminating at Dognose Bank, Ringaskiddy, on the eastern side of the mouth of the coastal Cork Harbour waterbody. This waterbody currently achieves *Moderate* ecological status (2013 – 2018) and *Good* chemical surface water status. The Cork Harbour waterbody is *At Risk* of not achieving its WFD objectives. The Outer Cork Harbour coastal waterbody is currently achieving *Good* ecological status (2013 – 2018) and is *Not At Risk* of achieving its WFD objectives (see Figure 2).

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<sup>1</sup> EPAMaps - <https://gis.epa.ie/EPAMaps/>



**Figure 2 - WFD 2013-2018 Status of the Waterbody (Source: EPAMaps).**

### **Ambient Monitoring Results**

The data, summarised in Table 4.0, 4.1 & 4.2, was collected using the same data as per the EPA's Trophic Status Assessment Scheme (TSAS) , which is required to satisfy the Urban Wastewater Treatment Directive requirements. The EPA used data from number of monitoring stations to generate the TSAS summary, using 3 year datasets up to 2020 from two Cork Harbour stations; LE380 & LE620, and three in Outer Cork Harbour; LE630, LE810 & LE820 (Figure 3).

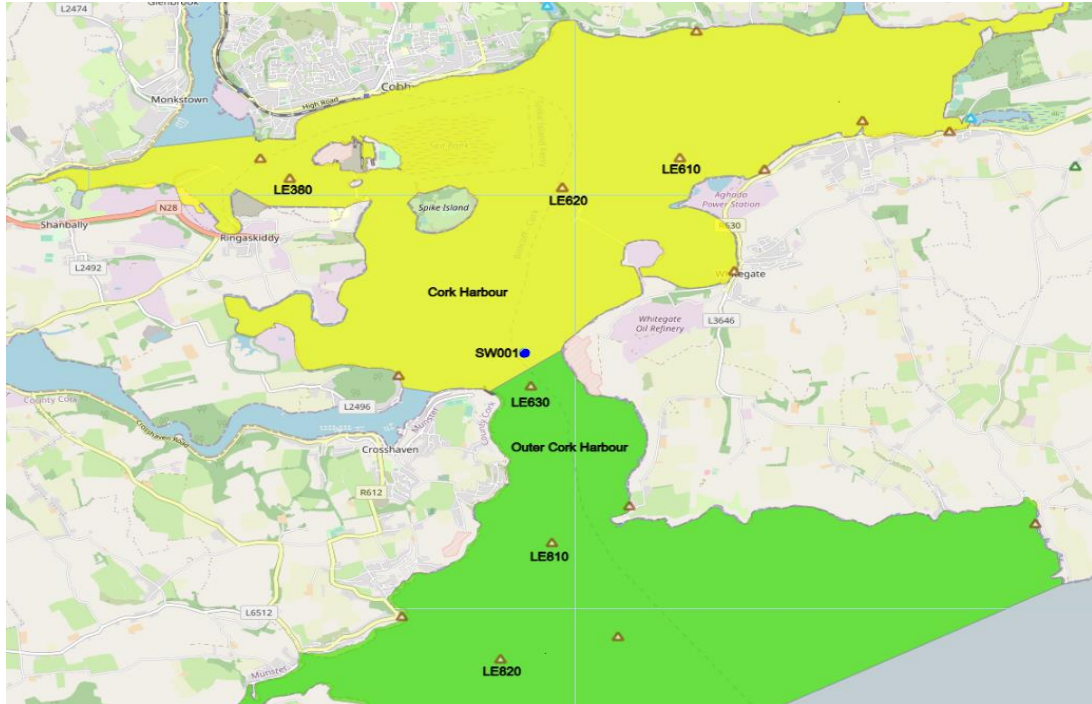


Figure 3 - EPA Monitoring Stations.

Table 4.0 TSAS Summary for Entire Waterbody for 2018-2020 period

	CORK HARBOUR			OUTER CORK HARBOUR		
	TSAS Threshold	Result	Pass/Fail	TSAS Threshold	Result	Pass/Fail
<b>Salinity (%)</b>	33.1 (Summer) 31.0 (Winter)			34 (Summer) 33.1 (Winter)		
<b>DIN- mg/l N (Summer median)</b>	0.378	0.056	PASS	0.314	0.041	PASS
<b>DIN- mg/l N (Winter median)</b>	0.506	0.421	PASS	0.378	0.223	PASS
<b>MRP (ug/l) (Summer median)</b>	42	2.50	PASS	41	2.50	PASS
<b>MRP (ug/l) (Winter median)</b>	44	26.0	PASS	42	16.0	PASS
<b>Chloro. Median</b>	10.6	3.65	PASS	10.3	1.40	PASS
<b>Chloro 90 percentile</b>	21.1	7.70	PASS	20.6	4.31	PASS
<b>DO%sat 5 percentile</b>	79	94.93	PASS	79	93.35	PASS
<b>DO%sat 95 percentile</b>	121	129.5	FAIL	121	120.3	PASS
<b>BOD</b>	4	3.35	PASS	4	2.14	PASS

Tables 4.1 - 2018-2020 EPA TSAS Ambient Monitoring Data at Stations LE 620 & LE380 (Cork Harbour)

	TSAS Threshold for Waterbody	LE620 – E-Spike Island (Cork Harbour)		LE380 - Cork Harbour Ringaskiddy	
Salinity (%)	33.1 (Summer) 31.0 (Winter)				
DIN- mg/l N (Summer median)	0.378	0.04	PASS	0.09	PASS
DIN- mg/l N (Winter median)	0.506	0.348	PASS	0.743	FAIL
MRP (ug/l) (Summer median)	42	2.50	PASS	5.35	PASS
MRP (ug/l) (Winter median)	44	21.5	PASS	29	PASS
Chloro. Median	10.6	2.90	PASS	3.90	PASS
Chloro 90 percentile	21.1	7.12	PASS	9.61	PASS
DO%sat 5 percentile	79	94.74	PASS	96.70	PASS
DO%sat 95 percentile	121	125.24	FAIL	131.54	FAIL

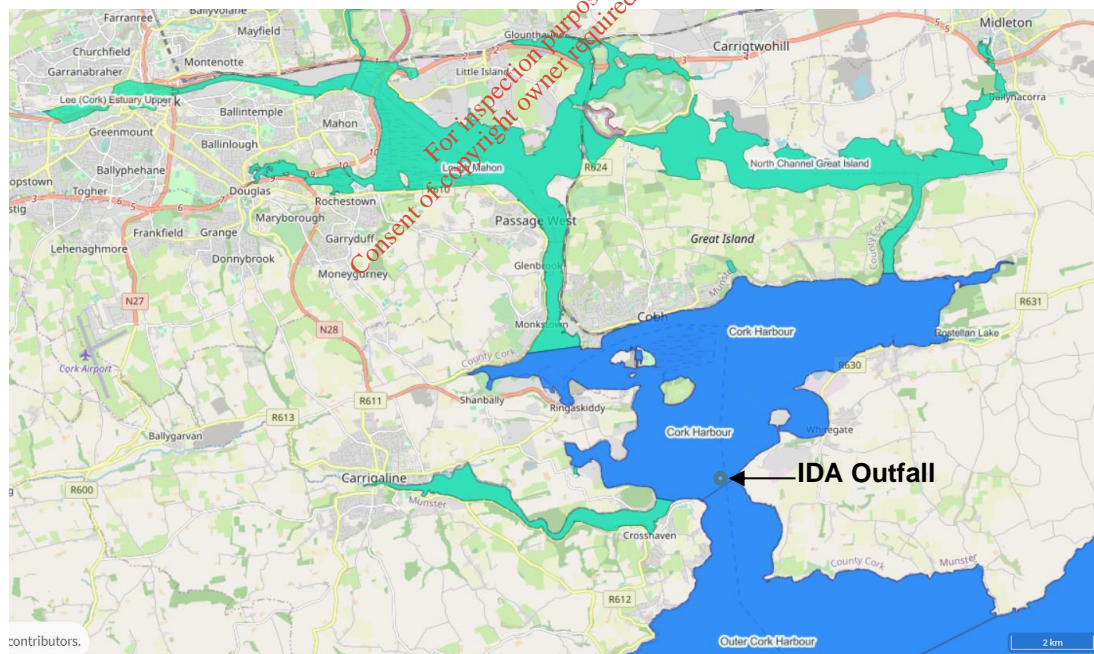
Table 4.2 - 2018-2020 EPA TSAS Ambient Monitoring Data at Stations LE630 and LE810 (Outer Cork Harbour)

	TSAS Threshold for Waterbody	LE630 - Outer Cork Harbour – adjacent to Carlisle Fort		LE810 – Roches Point - Outer Cork Harbour	
Salinity (%)	34 (Summer) 33.1 (Winter)				
DIN- mg/l N (Summer median)	0.314	0.04	PASS	0.05	PASS
DIN- mg/l N (Winter median)	0.378	0.254	PASS	0.213	PASS
MRP (ug/l) (Summer median)	41	2.50	PASS	2.5	PASS
MRP (ug/l) (Winter median)	42	21	PASS	16	PASS
Chloro. Median	10.3	1.90	PASS	1.15	PASS
Chloro 90 percentile	20.6	5.39	PASS	4.64	PASS
DO%sat 5 percentile	79	93.39	PASS	95.95	PASS
DO%sat 95 percentile	121	120.95	PASS	118.93	PASS

The 2018-2020 TSAS data (see Table 4.0-4.2 above) indicates that the concentrations of dissolved inorganic nitrogen (DIN) at each of the stations (including LE820) as shown in Figure 3, were below the salinity based thresholds for *Good* status set by the European Communities Objectives (Surface Waters) Regulations, 2009, apart from Winter DIN at LE380 Ringaskiddy monitoring station. However, the median DIN winter concentration for the whole waterbody was below the threshold (0.421mg/l Vs 0.506mg/l)

### Water Quality Modelling

Water Quality modelling was carried out to inform the WWDL review application. The treated effluent 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, as shown in Figure 4. 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. As the primary discharge point is into a coastal waterbody, the Ecological Quality Standard (EQS) thresholds relating to BOD and MRP do not apply as they are only applicable to freshwater and 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 4 - Location of the IDA outfall (Primary Discharge) and WFD waterbodies.**

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 of the defined waterbodies within the wider Cork Harbour area. The immediate WFD receiving waterbody is

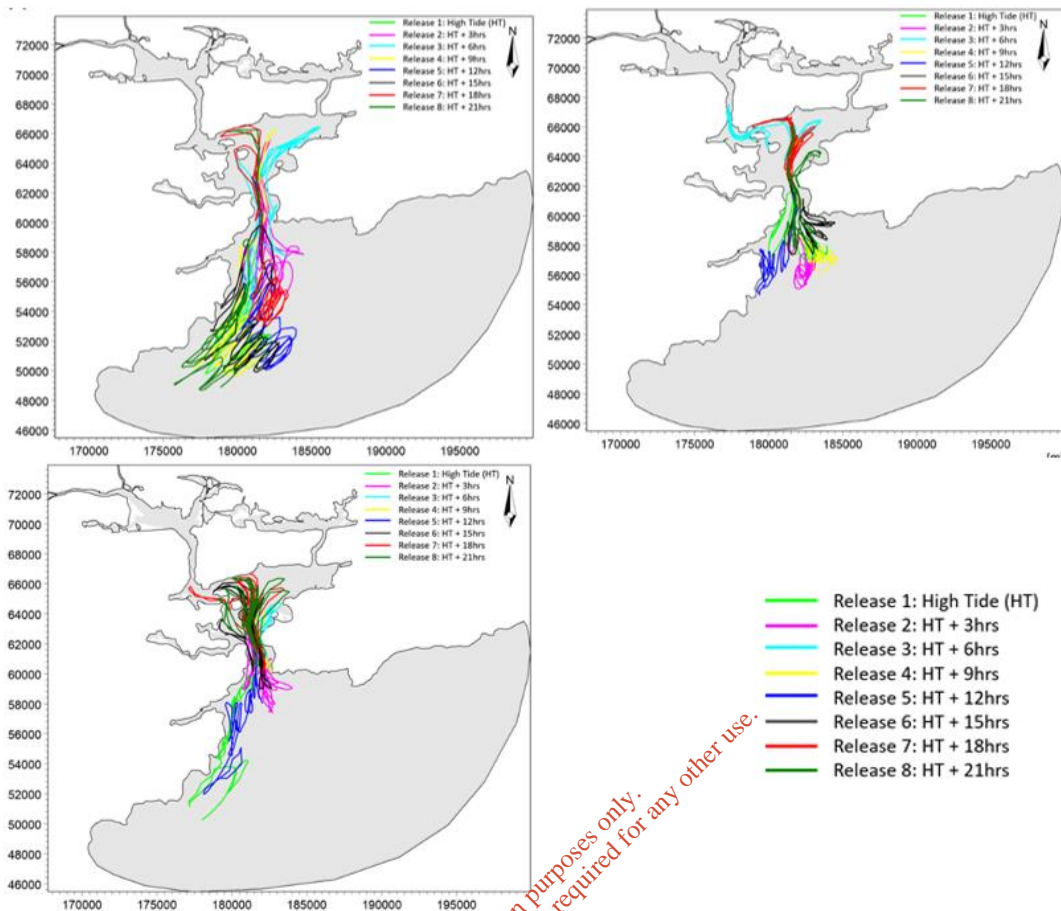


Cork Harbour, which is a coastal waterbody. The mixing zone for all parameters (Regulatory & Non-Regulatory), other than *E.Coli*, was not discernible, in other words the combined treated effluent from the IDA outfall has mixed to a concentration lower than the target/ EQS threshold before reaching the 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).

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 effluent from the IDA outfall are compatible with the achievement of WFD objectives for the receiving waters.

Particle tracking was 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. A summary of the tracks for particles released every three hours over a spring and a neap tide are shown in Figure 5.



**Figure 5 - 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, 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 effluent 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. The exercise was focussed on Winter DIN, as DIN was the contaminant of concern for the Shanbally WwTP as previously identified by the Trophic Status Assessment Scheme<sup>2</sup>. The source apportionment data was analysed to provide information on the source of Winter DIN in Lough Mahon and the North Channel Great Island areas.

Three loading scenarios were considered for the source apportionment exercise. The first scenario was the effluent 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

<sup>2</sup> EPA (2016). Review of nutrient sensitive areas (freshwater and marine) as required by the Urban Waste Water Treatment Directive (91/271/EEC).

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 is not capable of having any perceptible impact on the trophic status of the Lough Mahon waterbody or the North Channel Great Island, with modelled median contributions from the Shanbally WwTP being at or below the limit of detection levels for DIN at WFD monitoring points. This is as 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 and the relatively minor contribution of Winter DIN load in the context of the overall harbour.

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 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.

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

1. The 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<sup>3</sup>.
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).
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.

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<sup>3</sup> McGarrigle (2017). An Assessment of Nitrogen and Phosphorus Discharges from Shanbally Waste Water Treatment Plant to Cork Harbour.

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.

## **European Sites within the potential zone of influence of the Shanbally WwTP and IDA outfall discharge**

As the Shanbally WwTP discharges into a coastal waterbody via the IDA outfall, in the first instance, all European Sites which could potentially interact with this waterbody, or immediately adjoining waterbodies, are considered for source-pathway-receptor connectivity in order to establish the potential zone of influence of the discharges. This zone of influence encompasses European sites within any potential dilution/dispersion zone or those with mobile species for which any potential ex-situ effects must be considered. These sites are presented below in Table 5.0.

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.

Of the sites presented in Table 5.0, 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 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.

Considering the source-pathway-receptor model, qualifying interests that are mobile in nature of the Ballycotton Bay SPA, Ballymacoda SPA, Sovereign Islands SPA and Old Head of Kinsale SPA are potentially within the zone on influence of the Shanbally WwTP and IDA outflow. The potential impacts that could arise for the qualifying interests and likely significant effects that could result are considered further below.

Ballymacoda (Clonpriest and Pillmore) SAC, while hydrologically connected via coastal waters, is designated for habitats such as estuaries, mudflats and sandflats, estuarine vegetation colonising mud and sandflats, and salt meadows within estuarine areas of the Womanagh River and the western area of Youghal Bay. The SAC is not designated for any

mobile qualifying species. Due to the nature of the hydrological connectivity across extensive open coastal water, there is no realistic pathway for effects between the Shanbally WwTP and IDA outfall and the qualifying habitats of Ballymacoda (Clonpriest and Pillmore) SAC.

**Table 5.0 - European Sites considered in defining the potential zone of influence.**

Site Code	Site Name	Qualifying Interests	Distance and Pathway
001058	Great Island Channel SAC	<ul style="list-style-type: none"> <li>Mudflats and sandflats not covered by seawater at low tide [1140]</li> <li>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</li> </ul>	Ca. 8km north of the IDA outfall and situated within the North Great Island Channel within the transitional Lough Mahon waterbody. Connectivity is via transitional and coastal waters.
004030	Cork Harbour SPA	<ul style="list-style-type: none"> <li>Little Grebe (<i>Tachybaptus ruficollis</i>) [A004]</li> <li>Great Crested Grebe (<i>Podiceps cristatus</i>) [A005]</li> <li>Cormorant (<i>Phalacrocorax carbo</i>) [A017]</li> <li>Grey Heron (<i>Ardea cinerea</i>) [A028]</li> <li>Shelduck (<i>Tadorna tadorna</i>) [A048]</li> <li>Wigeon (<i>Anas penelope</i>) [A050]</li> <li>Teal (<i>Anas crecca</i>) [A052]</li> <li>Pintail (<i>Anas acuta</i>) [A054]</li> <li>Shoveler (<i>Anas clypeata</i>) [A056]</li> <li>Red-breasted Merganser (<i>Mergus serrator</i>) [A069]</li> <li>Oystercatcher (<i>Haematopus ostralegus</i>) [A130]</li> <li>Golden Plover (<i>Pluvialis apricaria</i>) [A140]</li> <li>Grey Plover (<i>Pluvialis squatarola</i>) [A141]</li> <li>Lapwing (<i>Vanellus vanellus</i>) [A142]</li> <li>Dunlin (<i>Calidris alpina</i>) [A149]</li> <li>Black-tailed Godwit (<i>Limosa limosa</i>) [A156]</li> <li>Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]</li> <li>Curlew (<i>Numenius arquata</i>) [A160]</li> <li>Redshank (<i>Tringa totanus</i>) [A162]</li> <li>Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]</li> <li>Common Gull (<i>Larus canus</i>) [A182]</li> <li>Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]</li> </ul>	The closest area of the SPA (Lough Beg) is located ca. 1.6km to the west of the IDA outfall. Lough Beg lies within the coastal Cork Harbour waterbody. Connectivity is via transitional and coastal waters.

Site Code	Site Name	Qualifying Interests	Distance and Pathway
		<ul style="list-style-type: none"> <li>• Common Tern (<i>Sterna hirundo</i>) [A193]</li> <li>• Wetland and Waterbirds [A999]</li> </ul>	
004022	Ballycotton Bay SPA	<ul style="list-style-type: none"> <li>• Teal (<i>Anas crecca</i>) [A052]</li> <li>• Ringed Plover (<i>Charadrius hiaticula</i>) [A137]</li> <li>• Golden Plover (<i>Pluvialis apricaria</i>) [A140]</li> <li>• Grey Plover (<i>Pluvialis squatarola</i>) [A141]</li> <li>• Lapwing (<i>Vanellus vanellus</i>) [A142]</li> <li>• Black-tailed Godwit (<i>Limosa limosa</i>) [A156]</li> <li>• Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]</li> <li>• Curlew (<i>Numenius arquata</i>) [A160]</li> <li>• Turnstone (<i>Arenaria interpres</i>) [A169]</li> <li>• Common Gull (<i>Larus canus</i>) [A182]</li> <li>• Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]</li> <li>• Wetland and Waterbirds [A999]</li> </ul>	Ca. 17km east of the IDA outfall. Connectivity is via coastal waters along the Co. Cork coastline.
000077	Ballymacoda (Clonpriest & Pillmore) SAC	<ul style="list-style-type: none"> <li>• Estuaries [1130]</li> <li>• Mudflats and sandflats not covered by seawater at low tide [1140]</li> <li>• Salicornia and other annuals colonising mud and sand [1310]</li> <li>• Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330]</li> <li>• Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</li> </ul>	Ca. 25km east of the IDA outfall. Connectivity is via coastal waters along the Co. Cork coastline.
004023	Ballymacoda SPA	<ul style="list-style-type: none"> <li>• Wigeon (<i>Anas penelope</i>) [A050]</li> <li>• Teal (<i>Anas crecca</i>) [A052]</li> <li>• Ringed Plover (<i>Charadrius hiaticula</i>) [A137]</li> <li>• Golden Plover (<i>Pluvialis apricaria</i>) [A140]</li> <li>• Grey Plover (<i>Pluvialis squatarola</i>) [A141]</li> <li>• Lapwing (<i>Vanellus vanellus</i>) [A142]</li> <li>• Sanderling (<i>Calidris alba</i>) [A144]</li> <li>• Dunlin (<i>Calidris alpina</i>) [A149]</li> <li>• Black-tailed Godwit (<i>Limosa limosa</i>) [A156]</li> <li>• Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]</li> </ul>	Ca. 26km east of the IDA outfall. Connectivity is via coastal waters along the Co. Cork coastline.

Site Code	Site Name	Qualifying Interests	Distance and Pathway
		<ul style="list-style-type: none"> <li>• Curlew (<i>Numenius arquata</i>) [A160]</li> <li>• Redshank (<i>Tringa totanus</i>) [A162]</li> <li>• Turnstone (<i>Arenaria interpres</i>) [A169]</li> <li>• Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]</li> <li>• Common Gull (<i>Larus canus</i>) [A182]</li> <li>• Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]</li> <li>• Wetland and Waterbirds [A999]</li> </ul>	
004124	Sovereign Islands SPA	<ul style="list-style-type: none"> <li>• Cormorant (<i>Phalacrocorax carbo</i>) [A017]</li> </ul>	Ca. 19km south-west of the IDA outfall, off the coastline of Co. Cork. Connectivity is via coastal waters along the Co. Cork coastline.
004021	Old Head of Kinsale SPA	<ul style="list-style-type: none"> <li>• Kittiwake (<i>Rissa tridactyla</i>) [A188]</li> <li>• Guillemot (<i>Uria aalge</i>) [A199]</li> </ul>	Ca. 28km south-west of the IDA outfall. Connectivity is via coastal waters along the Co. Cork coastline.

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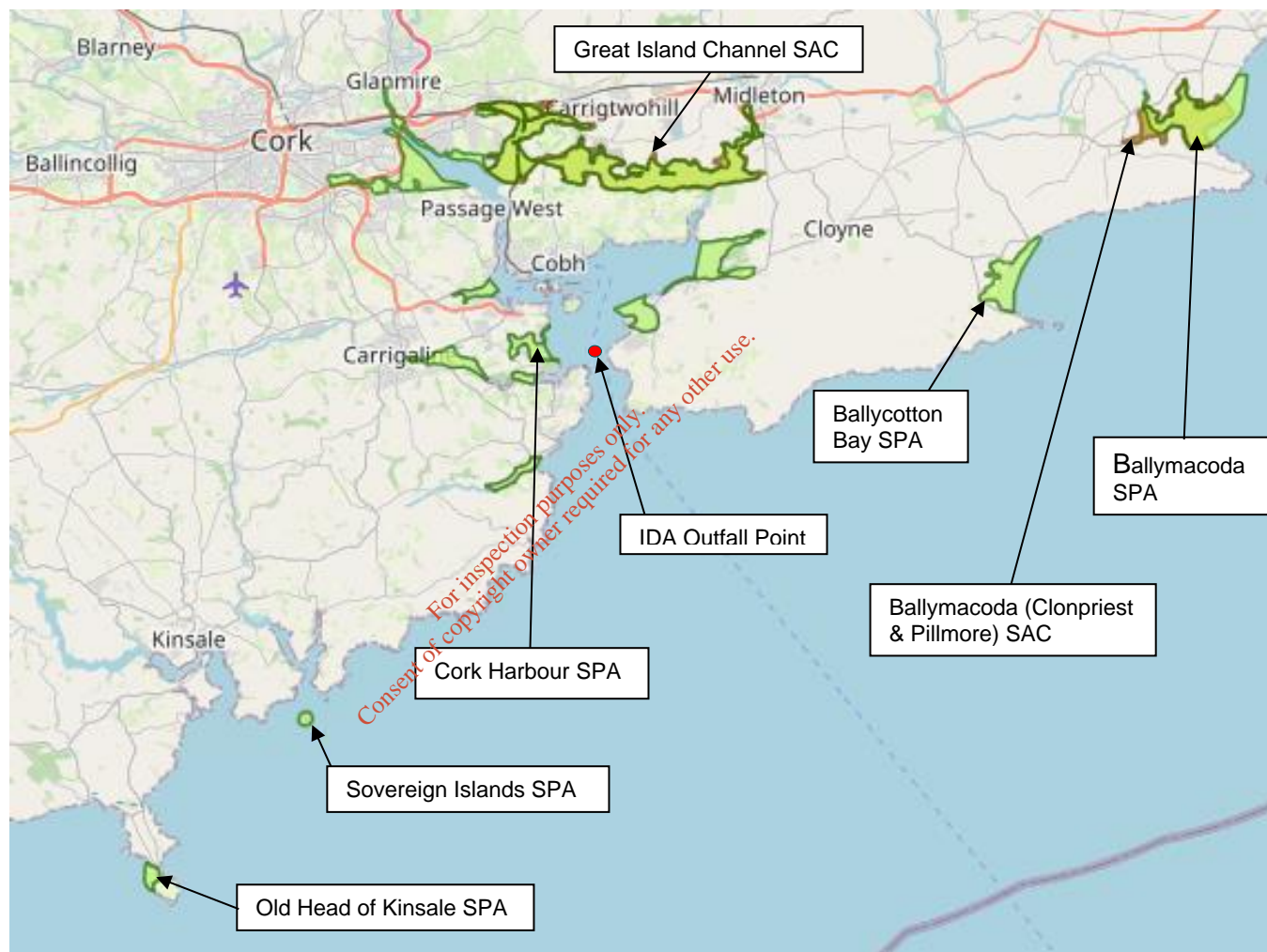


Figure 3 - European Sites within the potential zone of influence of the IDA Primary Discharge Point.



## Identification and Description of Potential Impacts

The discharge of wastewater from WwTPs can lead to organic and nutrient enrichment (eutrophication) of receiving waters, with consequent impacts on physico-chemical constituents of the waters, for example dissolved oxygen, and their biological communities. Elevated nutrient input from wastewater effluent into marine environments can lead to an altered nutrient balance, increased primary productivity, and the potential for algal blooms. Such impacts have the potential to affect the qualifying interests of European sites directly, indirectly or cumulatively with other activities, projects or plans.

The final effluent from the Shanbally WwTP has been designed to meet the quality standards for general components (BOD, COD and SS) specified in the Urban Waste Water Treatment Regulations 2001, as amended. Several large industries, operating under individual licences, discharge directly to the IDA outfall pipe, downstream of the Shanbally WwTP, and hence the proposal for two sets of ELVs; one set for the treated effluent from Shanbally WwTP and a second set of ELVs for the combined discharge from the IDA outfall at Dognose Bank.

The WFD status of the Cork Harbour coastal waterbody, which is the receiving waterbody of the IDA outfall primary discharge, is *Moderate* and the waterbody is *At Risk*. Lough Mahon transitional waterbody is also of *Moderate* WFD status and is categorised as *At Risk*. The Outer Cork Harbour waterbody is of *Good status* and is *Not At Risk*. Excess nutrients have been identified as the most prevalent issue in *At Risk* waterbodies within the Lee, Cork Harbour and Youghal Bay Catchment (EPA, 2021), and therefore the potential for effects, as a result of the Shanbally WwTP and IDA outfall primary discharge at the proposed ELVs, are considered below.

### Likely Significant Effects

The purpose of this section of the Screening is to examine the possibility of whether the Shanbally WwTP and IDA outfall primary discharge at the proposed ELVs, either individually or in combination with other plans and projects, is likely to result in significant effects to any European Site. It further considers the water dependent qualifying interests which may be sensitive to the potential impacts of the discharge, in the context of the nature and scale of the discharge.

The following Conservation Objectives and associated supporting documentation of the relevant European Sites were reviewed as part of this Screening Assessment:

- NPWS (2014a) Conservation Objectives: Great Island Channel SAC 001058. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014b) Great Island Channel SAC (Site Code 1058). Conservation Objectives Supporting Document – Marine Habitats. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014c). Conservation Objectives: Cork Harbour SPA 004030. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014d). Cork Harbour Special Protection Area (Site Code 4030). Conservation Objectives Supporting Document. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

The Shanbally WwTP discharge and IDA outfall combined discharge is not directly connected with or necessary to the management of the sites for nature conservation.

### **Direct, Indirect or Secondary Impacts**

The following are the key issues which are considered to be of importance in maintaining the integrity of the Cork Harbour SPA and the Great Island Channel SAC:

- Protection of water quality;
- Maintaining habitat area;
- Maintaining range, timing and intensity of use of wetland areas;
- Maintaining community distribution;
- Maintaining populations of species;
- No disturbance impacts.

The wastewater discharge location is 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.

As with any effluent discharge, the key impacts relate to impacts on water quality and the potential for subsequent knock-on adverse impacts on water dependent habitats and species. Water quality impacts can have indirect adverse impacts on population of species and habitats and community distribution and abundance. Effluent discharges may result in changes in nutrient levels, abundance, biomass and diversity of organisms and alteration of trophic interaction among species.

The Cork Lower Harbour Project will lead to an improvement on the current situation where untreated wastewater is being discharged *via* the IDA outfall and where untreated urban wastewater discharges from Cobh and Passage West/Monkstown are also being discharged into the Harbour. The removal of these untreated discharges will positively contribute to assisting Cork Harbour in achieving “Good” WFD Ecological Status.

The modelling assessment carried out in support of the licence review application (see Attachment D.1) demonstrates 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. Particle tracking determined that, given the strong effects of dilution and dispersion due to favourable mixing conditions, there is extremely limited scope for the transfer of nutrient loads from the combined treated effluent from the IDA outfall to the Lough Mahon waterbody or the North Channel Great Island. In addition, source apportionment analysis shows that 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.

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. In turn, this will assist in maintaining the favourable conservation condition of *Mudflats and sandflats not covered by seawater at low tide* in Great Island Channel SAC. The removal of untreated discharges into the harbour and the provision of secondary treatment will benefit the objective of restoring favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in the Great Island Channel SAC.

The SPAs within the potential zone of influence are designated for breeding and wintering waders and coastal birds, many of which rely on aquatic prey such as insects, worms, crustaceans, molluscs, bony fish and plants. These prey items can be found in the open water, within the fine sediments of inter-tidal areas and along shorelines. For any adverse effect on waterbirds, there would either have to be a very direct interaction with the discharge (e.g. discharging directly to an important feeding site or to breeding colonies), or the impacts to water quality would have to be sufficient in magnitude to result in severe eutrophication at a waterbody scale in order to cause an impact to their prey species. The location of the IDA outfall discharge point is located ca. 1.6km to the nearest sub-site of Cork Harbour SPA. The modelling assessment shows that for all parameters, the regulatory EQS is met at the water's surface and there is no discernible mixing zone due to the favourable mixing conditions at the IDA outfall at Dognose Bank. As stated above, the modelling shows 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. Thus, the proposed activity is not predicted to affect food resources available to bird species of Cork Harbour SPA, or any other SPA, and subsequently likely significant effects to the special conservation interests of any SPA are not anticipated.

The resultant 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.

## Cumulative or in combination Effects

As part of AA Screening, in addition to the project, other relevant projects and plans in the region must also be considered. This step aims to identify any possible significant effects on the European Sites from the project in combination or cumulative with other plans and projects.

Existing plans which have been examined include:

- Cork County Development Plan 2016-2022;
- River Basin Management Plan 2018-2021<sup>4</sup> and the 3<sup>rd</sup> Cycle 2022 – 2027, which is currently in draft;
- Ballincollig Carrigaline Municipal District Local Area Plan 2017;
- Cobh Local Area Plan 2017.

Information on water quality and pressures on [www.catchments.ie](http://www.catchments.ie) was also considered.

The above plans have been assessed in accordance with Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act, 2000, and are not envisaged to result in significant effects on the integrity of the Natura 2000 network.

It is cited in the Cobh Local Area Plan 2017 that “*The delivery of the Lower Harbour Sewerage Scheme which is presently under construction is crucial to achieving improvements in the water quality of the harbour*”. It is also cited in the Ballincollig Carrigaline Municipal District Local Area Plan 2017 that “*The delivery of the Lower Harbour Sewerage Scheme which is presently under construction is crucial to achieving improvements in water quality in the harbour*”.

This wastewater project, and specifically the removal of untreated effluent discharges to the lower harbour, the amalgamation of discharges and the provision of secondary treatment, means that the project will have a positive in-combination effect with the environmental objectives and policies of the above-mentioned Plans.

Cork County Council’s planning maps website was reviewed in order to identify projects that could potentially combine with this project to result in likely significant effects on European Sites. There have been over 49 applications in the past three years (from the date of writing this report) in the vicinity of Ringaskiddy alone. Cork County Council, as the Competent Authority, would have at a minimum screened each of these applications for Appropriate Assessment. It should also be noted that these applications will be served by the Shanbally WwTP, which has been operational since 2016 with a current PE of 45,269, design capacity of 65,000PE and expandable to 80,000PE. Based on this, no other projects have been identified as being likely to combine with this WwTP project to give rise to likely significant effects on European Sites.

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<sup>4</sup> River Basin Management Plan 2022 – 2027 (3<sup>rd</sup> Cycle) currently in draft.

In relation to future planning applications, Cork County Council or An Bord Pleanála, as the Competent Authorities, will screen each application for Appropriate Assessment. Any new applications will be examined and the requirement for Screening or Appropriate Assessment will be determined on a case by case basis to comply with the requirements of Article 6 of the Habitats Directive. Therefore, it is not considered that there will be any significant adverse in-combination effects with Shanbally WwTP discharge and any other development.

A number of IPC/IED Licence facilities along with EPA authorised wastewater discharges are currently operating under EPA licencing conditions to ensure that their individual and cumulative impacts are not negatively impacting on the objectives of the River Basin Management Plan. 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.

## Screening Conclusion

The likely impacts that will arise from the project have been examined in the context of a number of factors that could potentially affect the integrity of the Natura 2000 network. There is no likelihood of significant effects to any European Site with potential source-pathway-receptor connectivity to the project.

On the basis of the information set out, and documentation referenced in this AA Screening Report, 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.

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