



ATTACHMENT D.2.2:

AA SCREENING REPORT

DECEMBER 2023

Uisce Éireann

Report

AA Screening as part of the Coachford Waste Water Discharge
Licence Review
December 2023



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Introduction

This report provides information to enable the EPA, as the competent authority, to conduct an Appropriate Assessment (AA) Screening Determination in respect of the Coachford agglomerations proposed operational discharges, for the purposes of the European Union (Waste Water Discharge) Regulations 2007 to 2020. It considers whether the proposed operational discharges from the Coachford agglomeration, alone or in combination with other plans and projects, could adversely affect the integrity of 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 (SACs) under Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the "Habitats Directive") or as Special Protection Areas (SPAs) under the Conservation of Wild Birds Directive (79/409/ECC) as codified by Directive 2009/147/EC (the "Birds Directive").

This report takes account of the guidance for AA published by the Environmental Protection Agency's (EPA) '*Note on Appropriate Assessments for the purposes of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007)*' (EPA, 2009), the OPR guidance on Appropriate Assessment Screening for Development Management, OPR Practice Note PN01 (OPR, 2021) and the Department of the Environment, Heritage and Local Government's guidelines '*Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities*' (DoEHLG, 2009), together with subsequent case law.

This assessment was completed by Kate Harrington MSc MCIEEM, an Ecologist who has 20 years' experience in undertaking ecological surveys and assessments in Ireland and abroad. Ms Harrington's experience includes the preparation of AA Screening, NIS, Ecological Impact Assessments, biodiversity studies and water quality studies for a range of infrastructure projects. She has extensive experience of reviewing and undertaking ecological assessments for Uisce Éireann (UÉ) projects and activities as well as developing guidance documents and advising consultant engineers and ecologists regarding best practice. She currently works as a freelance ecologist and is pursuing a PhD in woodland ecology.

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.

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect European sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment (AA):

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(4) states:

If, in spite of a negative assessment of the implications for the [Natura 2000] site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Article 7 of the Habitats Directive provides that the provisions of Article 6(3) and 6(4) (among other provisions) are to apply to SPAs designated under the Birds Directive.

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 AA. A competent authority does not have jurisdiction to grant development consent unless the AA provisions are correctly applied.

The Habitats and Birds Directives are transposed in Ireland under the European Communities (Birds and Natural Habitats) Regulations 2011, as amended (2011 Regulations). In relation to the assessments to be carried out under the Habitats Directive, the provisions of Regulation 42 of the 2011 Regulations require “a screening for AA of a... project for which an application for consent is received”. Following that screening, if the relevant public authority determines that an AA is required, then a Natura Impact Statement [NIS] 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”.

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 NIS 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).
- Guidance document on Article 6(4) of the ‘Habitats Directive’ 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission. Office for Official Publications of the European Communities, Luxembourg, (EC, 2007).
- Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg (EC, 2006).

- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013).
- Marine Natura Impact Statements in Irish Special Areas of Conservation: A working document, National Parks and Wildlife Service, Dublin (NPWS, 2012).
- EPA Guidance for Uisce Éireann 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 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.

Consultation

The EPA, as the competent authority, will seek NPWS advice as may be required in reaching their decision on a WwTP discharge. The NPWS can only communicate with the applicant (*i.e.*, Uisce Éireann) on request from the competent authority, when the formal application process to the competent authority has already commenced.

Desk Study

The sources of available desktop information used to inform the assessment included:

- The National Parks and Wildlife Service (NPWS) natural heritage database (www.npws.ie) was consulted for designated sites of nature conservation interest in the study area;
- The National Biodiversity Data Centre (NBDC) species database (<http://www.biodiversityireland.ie/>) and BSBI database <https://database.bsbi.org/> were consulted to obtain species records in the study area;
- The Environmental Protection Agency mapping system (<https://gis.epa.ie/EPAMaps/>), and www.catchments.ie website for data related to water quality;
- The Inland Fisheries Ireland (IFI) website and www.wdfish.ie website for fisheries data;
- Ordnance Survey Ireland mapping and aerial photography from <https://webapps.geohive.ie/mapviewer/index.html>;
- Geological Survey Ireland (GSI) data and maps <https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228>; and
- Information on the conservation status of birds in Ireland from Birds of Conservation Concern in Ireland <https://birdwatchireland.ie/birds-of-conservation-concern-in-ireland/>.

Field Study

A site survey was carried out by the author on March 7th 2022. The WwTP site and Inniscarra Reservoir (Lake Waterbody) were visited with the aim of identifying the aquatic habitats in the receiving waters, and determining what qualifying interests occur, or have the potential to occur, within the zone of influence of the discharges. Habitats were classified with reference to The Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000)¹ and the Annex I interpretation manual². Searches for protected species followed NRA (2009)³ guidance.

¹ <https://www.npws.ie/sites/default/files/publications/pdf/A%20Guide%20to%20Habitats%20in%20Ireland%20-%20Fossitt.pdf>

² Interpretation Manual of European Union Habitats – EUR28
https://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf

³ NRA (2009) Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes <https://www.tii.ie/technical-services/environment/planning/Ecological-Surveying-Techniques-for-Protected-Flora-and-Fauna-during-the-Planning-of-National-Road-Schemes.pdf>

AA Screening

Description of the Project/Activity

Coachford is a village approximately 22 km from Cork City and 12 km from Macroom. It is located North of the River Lee on the R618. The Coachford agglomeration was upgraded in 2021 to comply with WWDL requirements, with the provision of a new Waste Water Treatment Plant (WwTP) to provide secondary treatment with P removal. The primary discharge (SW001) is to the Inniscarra reservoir at 145231E, 072297N located ca. 800m northeast of the R619 Inniscarra reservoir bridge crossing (Rooves bridge). There are no discharges to the Knockanowen stream which flows adjacent to the WwTP site before joining the Inniscarra reservoir *via* the lower reaches of the Dripsey river. Discharge and monitoring locations are shown on **Figure 1.0**.

WwTP

The WwTP has a 30-year design capacity of 1,600 p.e. and a 10-year design capacity of 1,400 p.e. As of 2022, the collected load of the agglomeration (peak week) was 665 p.e.

The new WwTP provides secondary treatment with P removal and consists of the following key infrastructure elements:

- Inlet Pumping Station & SWO Chamber
- Inlet works
- Storm tank (120m³)
- 2. primary settlement tanks
- 2 no. primary settling tanks
- 4 no. RBC units
- 2 no. final settling tanks

The primary discharge flows are continuously monitored by a V notch hydrostatic flow meter at the new WwTP.

The WwTP design is based on Rotating Biological Contactor technology which can treat the incoming influent to the required standard as outlined in the table below.

Table 1.0: Proposed Effluent Standards (as per D0427-01)

Parameter	Design Standards
COD	125mg/l
BOD	25mg/l
Total Suspended Solids	25mg/l
Total Ammonia (as N)	6.5mg/l
Total Phosphorous (as P)	1.2mg/l
pH	6-9 (pH Units)

Primary Discharge (SW001)

The treated effluent from the new WwTP is conveyed *via* a new ca. 1.1km gravity outfall pipe to a backdrop manhole at OF17A which diverts flows from the new outfall pipeline to an existing manhole on the existing outfall pipeline. This existing outfall pipeline then acts as the main outfall, with the effluent discharge point (SW001) at NGR 145231E, 72297N (as per D0427-01).

The primary discharge flows are continuously monitored by a V notch hydrostatic flow meter at the new WwTP.

Overflows

There are 3 no. overflows arising from the Coachford WwTP (SW005, SW006 & SW007) as tabled below.

Table 2.0: Overflows relating to WWDL Review

Overflow	Asset	Type	Overflow Co-ordinates
SW005	WwTP	SWO	145257E, 072497N
SW006	WwTP	SWO & EO	145231E, 072297N
SW007	WwTP	SWO	145231E, 072297N

SW006 is a Dual Function Overflow associated with the new inlet Pumping Station (*i.e.*, an overflow which can act as a Storm Water Overflow (SWO) or as an Emergency Overflow (EO) depending on the event). During a storm event where flows are greater than Formula A, water overflows from the inlet Pumping Station *via* a 6mm mechanical overflow screen and discharges to the Inniscarra Reservoir, *via* the primary discharge outfall pipe (refer to configuration of primary discharge outfall pipe above), at NGR 145231E, 072297N. In the event of an emergency (*i.e.*, prolonged power failure or pump failure), water will overflow from the inlet Pumping Station *via* the inlet SWO chamber and discharge to the Inniscarra Reservoir *via* SW006.

There is a high-level overflow located on the storm tank at the WwTP. The storm water tank starts to fill when flows greater than 3DWF are pumped forward from the inlet Pumping Station. All influent pumped forward undergoes preliminary treatment *via* the Inlet Works. The storm water tank has a capacity of 120m³ which provides for up to 2 hours retention time. In the event of a prolonged storm event, water will continue to fill the storm tank until the capacity of the tank is exceeded. Once the capacity is exceeded, water will overflow from the storm tank and discharge to the Inniscarra Reservoir (SW007), *via* the primary discharge outfall pipe, at NGR 145231E, 072297N.

The SWO, SW005, will only be triggered during a storm event when the hydraulic capacity of the existing component of the primary discharge outfall pipe is overloaded. The design capacity of the existing primary outfall is estimated to be 175 l/s. The primary discharge outfall pipe has capacity for the flows through the WwTP provided that SW006 has not been activated. If SW006 is activated *i.e.*, when flows are greater than Formula A, and if flows are greater than the design capacity of the existing outfall, then the excess flows will discharge *via* the new outfall headwall structure located at the edge of reservoir (SW005 - NGR 145257E, 072497N), and ca. 200m from the primary discharge outfall.

The 3 no. SWOs will operate in compliance with the definition of ‘Storm Water Overflow’ as per Regulation 3 of the Waste Water Discharge (Authorisation) Regulations, 2007, as amended and the criteria as set out in the DoEHLG ‘Procedures and Criteria in Relation to Storm Water Overflows’, 1995.

A number of measures are in place to prevent unintended discharges to the receiving water, and they include the following:

- Provision of 120m³ of storm storage provided at the WwTP.
- All alarms are linked to level measurement to alert to any spillage and are linked to SCADA with alarms sent to operators in the result of an emergency event.
- Uninterruptible Power Supply (UPS) backup for telemetry/plant controllers.
- Storm Water Overflows are screened to 6mm.
- Upon activation, the overflow volumes are recorded *via* flow meters. Daily Flow Reports from the WwTP are received by the Control Room *via* SCADA.
- In the event of an emergency, a call out alarm system is in place in order to alert the contractor.
- A mobile standby generator will be provided at the WwTP, along with a connection point in the event of an interruption to the plants power supply.

Effluent data from the upgraded plant from 2021-2023 is presented in **Table 3.0** together with the ELVs. The monitoring data shows that the current discharge is compliant with the ELV's with the exception of single exceedances for Suspended Solids and Total Phosphorus shown in bold font.

Table 3.0: Effluent Monitoring Data at Coachford Primary Discharge 2021-2023

Date	Ammonia-Total (as N) mg/l	BOD mg/l	COD mg/l	pH pH Units	Suspended Solids mg/l	Total Phosphorus (as P) mg/l
ELV's	6.5mg/l	25mg/l	125mg/l	6-9	25mg/l	1.2mg/l
29/11/2021	0.2	3	<21	7.7	41	0.06
31/01/2022	0.2	3.9	21	7.7	8	0.16
07/04/2022	0.2	5.6	25	7.4	15	0.27
02/06/2022	0.5	5.4	41	7	5	2.19
28/07/2022	0.6	7.8	37	6.5	7	0.63
20/09/2022	0.2	2.7	<21	7.3	9	0.53
01/12/2022	0.189	1.5	<21	7.5	10	<0.05
31/01/2023	0.084	1.1	35	7.6	<2.5	<0.05
30/03/2023	0.112	2.3	<21	7.6	3	0.08
31/05/2023	0.4	5	36	7	6	0.5
10/08/2023	0.145	2.3	<21	7.4	6	0.18
05/10/2023	0.265	3.2	25	6.7	8	0.3

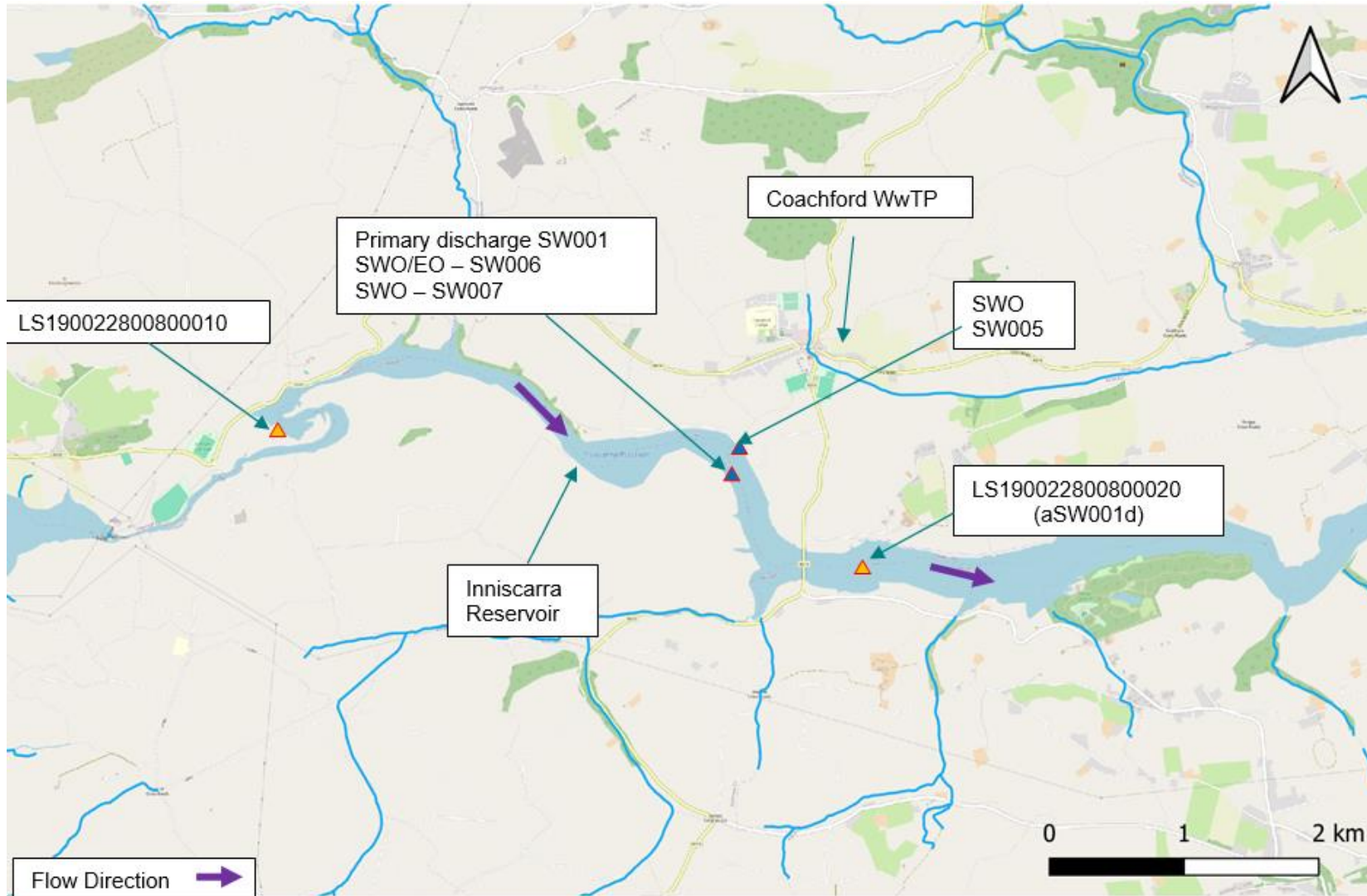


Figure 1.0 Coachford Agglomeration Discharges & Monitoring Locations

Description of the Receiving Environment and Monitoring Results

The primary discharge (SW001) enters Inniscarra Reservoir which is classed as a lake waterbody and identified as a Heavily Modified Waterbody (HMW) due to its use for power generation and for drinking water abstraction. The data on catchments.ie states that the waterbody achieves Good status with medium confidence based on monitoring data, while also identifying it as a HMW. Biological status or potential is good or high, and Supporting chemistry conditions are good or high. Hydromorphological conditions are given a Moderate value.

Coachford WwTP has not been listed as a significant pressure in At Risk waterbodies in the 2nd or draft 3rd cycle catchment assessment. According to the 3rd cycle catchment assessment⁴, the Inniscarra waterbody is 'At Risk' from 'unknown anthropogenic' pressures.

The Lee (Cork_090) waterbody, which is fed by the Inniscarra Reservoir, and located ca. 11km downstream of the operational discharges, is assigned Good WFD status.

The Inniscarra Reservoir intersects the Lee River which is a WFD Designated Salmonid Waters under S.I. No. 293/1988. A proposed effluent standard/ELV of 25 mg/l for Total Suspended Solids and Ammonia of 6.5mg/l have been set in keeping with the protection required under the Water Framework Directive for salmonid waters designated on the Register of Protected Areas.

The EPA monitor biological water quality at the following locations, which were all assigned a Q4 score indicating Good status conditions in 2023:

- RS19S020480 Ford u/s Laney R confl, River Sullane ca. 15km upstream
- RS19T020800 Toon Br u/s Lee R confl, River Lee ca. 19km upstream
- RS19L030600 Inishcarra Br, River Lee, ca.14km downstream

Ambient water chemistry monitoring is taken at LS190022800800020 (146156E, 71656N) ca. 1.3km downstream of the primary discharge location, and at LS190022800800010 (141856E and 72717N) ca. 3.7km upstream. Results from 2022-2023 (**Table 4.0**) were compared with the Environmental Quality Standards (EQS) specified in the Surface Waters Regulations 2009 (as amended). As it is classified as a lake waterbody, the lake EQS's apply, however as the waterbody is an impounded river, the river EQS's are also shown for information. Good or High status limits values for Ammonia are met upstream/west and downstream/east of the discharges for this time period. With regard to Total Phosphorus, there are exceedances of the Good status limit value both upstream/west and downstream/east of the agglomeration discharges.

⁴ <https://catchments.ie/wp-content/files/catchmentassessments/19%20Lee,%20Cork%20Harbour%20and%20Youghal%20Bay%20Catchment%20Summary%20WFD%20Cycle%203.pdf>

Table 4.0: Coachford WwTP Ambient Water Quality Monitoring Data 2022-2023

Sample Date	Ammonia mg/l N	BOD mg/l	DO %sat	ortho--P mg/l P	pH	Total P mg/l P	SS mg/l
EQS - River	95%ile: ≤0.14 (good) ≤0.090 (high) Mean: ≤0.065 (good) ≤0.040 (high)	95%ile: ≤2.6 (good) ≤2.2 (high)	95%ile EQS : 80- 120%	95%ile: ≤0.075 (good) ≤0.045 (high) Mean: ≤0.035 (good) ≤0.025 (high)	4.5< pH < 9.0		
EQS - Lake	95%ile: ≤0.14 (good) ≤0.090 (high) Mean: ≤0.065 (good) ≤0.040 (high)					Mean: ≤ 0.025 (good) ≤ 0.010 (high)	
Upstream							
12/01/2022	0.038	NS	95	0.019	7.6	0.025	NS
16/02/2022	0.043	NS	102	0.014	7.4	0.024	NS
03/03/2022	0.026	NS	96	0.01	7.5	0.03	NS
07/04/2022	<0.02	NS	101	<0.01	7.9	0.02	NS
05/05/2022	<0.02	NS	103	<0.01	7.8	0.027	NS
01/06/2022	<0.02	NS	95	<0.01	7.9	0.015	NS
14/07/2022	0.04	NS	101	<0.01	7.7	0.019	NS
04/08/2022	0.034	NS	101	<0.01	7.6	0.013	NS
29/09/2022	0.098	NS	97	<0.01	6.9	0.017	NS
06/10/2022	0.099	NS	102	<0.01	7.4	0.027	NS
17/11/2022	0.046	NS	100	0.016	7.1	0.03	NS
01/12/2022	0.047	NS	102	0.028	7	0.034	NS
13/04/2023	0.022	NS	101	<0.01	7.7	0.025	NS
11/07/2023	0.024	NS	100	<0.01	7.8	0.013	NS
21/08/2023	0.029	NS	101	<0.01	7.4	0.019	NS
10/10/2023	0.038	NS	101	0.013	7.2	0.034	NS
Downstream							
12/01/2022	0.041	NS	94	0.019	7.4	0.029	NS
16/02/2022	0.045	NS	102	0.013	7.5	0.025	NS
03/03/2022	0.031	NS	95	0.011	7.5	0.022	NS
09/03/2022	0.01	1.9	98.8	0.004	7.7	0.025	3
07/04/2022	NS	NS	101	0.005		0.017	NS
05/05/2022	0.025	NS	103	0.005	7.8	0.021	NS
18/05/2022	0.029	1.5	100.6	0.012	7.6	0.025	26
01/06/2022	0.01	NS	96	0.005	7.9	0.014	NS
14/07/2022	0.038	NS	100	0.005	7.9	0.015	NS
20/07/2022	0.057	1.5	103.9	0.005	7.8	0.025	3
04/08/2022	0.056	NS	100	0.005	7.5	0.023	NS
29/09/2022	0.11	NS	96	0.005	7.1	0.019	NS
06/10/2022	0.1	NS	92	0.005	7.3	0.019	NS
17/11/2022	0.047	NS	100	0.016	7.1	0.029	NS

Sample Date	Ammonia mg/l N	BOD mg/l	DO %sat	ortho--P mg/l P	pH	Total P mg/l P	SS mg/l
EQS - River	95%ile: ≤0.14 (good) ≤0.090 (high) Mean: ≤0.065 (good) ≤0.040 (high)	95%ile: ≤2.6 (good) ≤2.2 (high)	95%ile EQS : 80- 120%	95%ile: ≤0.075 (good) ≤0.045 (high) Mean: ≤0.035 (good) ≤0.025 (high)	4.5< pH < 9.0		
EQS - Lake	95%ile: ≤0.14 (good) ≤0.090 (high) Mean: ≤0.065 (good) ≤0.040 (high)					Mean: ≤ 0.025 (good) ≤ 0.010 (high)	
23/11/2022	0.048	1.5	97.6	0.04	7.6	0.08	19
01/12/2022	0.038	NS	100	0.019	7	0.028	NS
15/03/2023	0.046	2.2	96.1	0.005	7.6	0.025	66
13/04/2023	0.024	NS	102	0.005	7.6	0.026	NS
24/05/2023	0.14	5	94.6	NS	7.4	0.09	4
11/07/2023	0.023	NS	100	0.005	7.8	0.021	NS
26/07/2023	0.03	NS	103.1	0.005	7.9	0.025	NS
21/08/2023	0.046	NS	101	0.005	7.4	0.027	NS
10/10/2023	0.033	NS	101	0.012	7.3	0.036	NS

Desktop Dispersion Modelling

A Water Quality Dispersion Modelling Report, which has been prepared by Dr. Zeinab Bedri (TU Dublin) on behalf of UÉ, presents the findings of a desktop modelling study conducted to determine the distance (m) downstream of the effluent discharge from the new Coachford WwTP where the relevant EQSs for Ammonia (as N) and Total Phosphorus (as P), as set out in the European Communities Environmental Objectives (Surface Water) Regulations, 2009, as amended (now S.I. No. 288 of 2022), will be met in Inniscarra Reservoir, using the proposed effluent standards/ELVs, and the WwTP 10-year design horizon p.e. of 1,400.

The model predictions indicate that the mean EQS for TP (Good Status) will be met under the proposed effluent standard/ELV of 1.2 mg/l for TP at a distance of 21m downstream of the discharge location. The predictions also indicate that the mean and 95th percentile EQS for Ammonia (Good Status) will be met under the proposed effluent standard/ELV for Ammonia of 6.5 mg/l at a distance of 45m and 247m respectively (under the scenario in which a notionally clean background concentration was adopted), and 303m and 477m (under the scenario in which an average background concentration was used). All predicted distances are well below the defined mixing zone of 662m indicating that the Water Framework Directive Objectives will be met under the proposed effluent standards/ELVs for TP and Ammonia.

The results also indicate that the plume footprint was less than 1% in most simulations. Also, the maximum predicted plume width was 35.4 m (approximately 13 % of the lake width in the vicinity of the discharge outfall).

The results also highlight the effect of the background concentrations on the assimilation of the effluent where a higher background concentration limits the dilution/assimilative capacity of the receiving water body.

In summary, the desktop dispersion model based on the proposed discharge effluent standards/ELVs at 1,400 p.e (10-year design horizon), using an average daily effluent discharge of 393.75 m³/d (1.25*DWF), shows that the receiving waterbody, Inniscarra Reservoir, has the capacity to accommodate the discharge from the WwTP without causing a breach in the relevant standards as outlined in National and European legislation. This includes ensuring compliance with the relevant standards set for the waterbody as a whole as set out in the European Communities Environmental Objectives (Surface Water) Regulations, 2009, as amended.

Refer to **Attachment D.2.3** for a copy of the Dispersion Modelling Report (December 2023).

Ecological Desktop & Field Survey

The ecological receptors of the discharge location and surrounding area are described below, informed by the desk study and site visit. In the context of this assessment, the survey focused on aquatic habitats and species, or those terrestrial species which may interact with the aquatic environment. Particular attention was paid to identifying habitats or species listed in the Habitats or Birds directives.

The primary discharge and overflow locations are within the monad W4572. Species lists were generated from the NBDC for this monad, and the downstream monad W4571. There are no records of aquatic/riparian protected or invasive species within W4572. Within W4571, there are records of the invasive species Nuttall's waterweed *Elodea nuttallii* (2017), Canadian waterweed *Elodea canadensis* (2008) and American mink *Mustela vison* (2010). There were also records of European otter *Lutra lutra* (2010). Further searches for aquatic/riparian invasive or protected species in the wider waterbody, and downstream were undertaken. Records of Japanese knotweed in the region are away from Inniscarra reservoir, with the closest record to the discharge locations being in Coachford village (2015). There are historic (1974) records of Giant hogweed downstream of Rooves bridge. Further to the record of otter above (at Rooves bridge), there are a few further records east and west in the reservoir. There are no records of freshwater crayfish in the lee catchment. At the hectad level (W47) a range of bird atlas records exist for a wide variety of protected wetland bird species including the Annex I species Kingfisher (2011), Little Egret (2011) and Whooper swan (1984).

IFI undertook a fish stock survey of Inniscarra Reservoir in 2019 (Corcoran *et al*, 2020⁵). A total of eight fish species and one hybrid variety were recorded in Inniscarra Reservoir in September 2019. Perch and roach were the dominant species in terms of abundance (CPUE). While perch recorded the highest overall biomass, other "species" such as roach x bream hybrids, bream, brown trout, roach, and also recorded high biomasses. One carp was recorded in 2019, and while it was noted that this is the first capture of this species in a fish stock assessment, it was also highlighted that they are caught occasionally by anglers. Using the 'Fish in Lakes'

⁵ Corcoran, W., McLoone, P., Connor, L., Bateman, A., Cierpial, D., Coyne, J., Twomey, C., Rocks, K., Gordon, P., Lopez, S., Matson, R., O' Briain, R., and Kelly, F.L. (2020) Fish Stock Survey of Inniscarra Reservoir, September 2019. National Research Survey Programme, Inland Fisheries Ireland, 3044 Lake Drive, Citywest Business Campus, Dublin 24.

multimeric fish ecological classification tool, the Inniscarra Reservoir was assigned an ecological status of Good for 2019 based on the fish populations present. The reservoir was previously assigned Bad fish status in 2008 and Moderate fish status in 2015. IFI (2012)⁶ surveyed the Lee catchment for juvenile lamprey in 2011, finding juvenile lamprey throughout the catchment including upstream Inniscarra reservoir. Juvenile sea lamprey have not been reported from the reservoir since the 1950's (King & O'Gorman, 2018)⁷.

The area of lakeshore immediately adjacent to the discharges was not accessible, however as the discharge is sub-surface and centrally located in the channel, and given the large volume of water, it would not be anticipated that any discharge plume would be visible from shore, even if present. The area downstream around Rooves bridge was visited (**Photo 1**). The reservoir is suitable for use by duck species in particular, some of which may be associated with the populations of qualifying interests using the Gearagh SPA to the east, and Cork Harbour SPA to the west, which are linked by the River Lee system. The area is also suitable for use by foraging/commuting otter.



Photo 1 Inniscarra Reservoir at Rooves Bridge – downstream/east of discharges

European Sites within the potential zone of influence of the Operational Discharges

The Coachford agglomerations operational discharges enter the Inniscarra reservoir. All European Sites which could potentially interact with this waterbody, are considered for source-pathway-receptor connectivity in order to establish the potential zone of influence of the operational 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** and shown in **Figure 2.0**.

Terrestrial sites which do not interact with the receiving waterbody have no potential to support connectivity. Short-form habitat names follow NPWS (2019⁸).

⁶ IFI (2012) National Programme: Habitats Directive and Red Data book fish species. Executive report 2011. IFI Report Number: IFI/2012/1-4103

⁷ King, J & N. O'Gorman (2018) Initial observations on feeding juvenile sea lamprey (*Petromyzon marinus* L.) in Irish lakes. Biology and Environment: Vol 118B No. 2 . pp 112-120.

⁸ NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill

Table 5.0: European Sites considered in defining the potential Zone of Influence

Site Name & Code	Qualifying Interests	Pathway and Distance from Primary Discharge
Cork Harbour SPA (004030)	Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Grey Heron (<i>Ardea cinerea</i>) [A028] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Common Tern (<i>Sterna hirundo</i>) [A193] Wetland and Waterbirds [A999]	30.2km downstream via River Lee
Great Island Channel SAC (001058)	Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) [1330]	34.8km downstream via River Lee
The Gearagh SAC (000108)	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Rivers with muddy banks with Chenopodium rubri p.p. and Bidention p.p. vegetation [3270] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Lutra lutra (Otter) [1355]	15.6km upstream via River Lee (incl. Inniscarra and Carrigadrohid Reservoirs)
The Gearagh SPA (004109)	Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Mallard (<i>Anas platyrhynchos</i>) [A053] Coot (<i>Fulica atra</i>) [A125] Wetland and Waterbirds [A999]	16.9km upstream via River Lee (incl. Inniscarra and Carrigadrohid Reservoirs)

Considering the source-pathway-receptor model, there are potential pathways for impacts to downstream designations arising from the impacts of the discharges, as well as pathways for *ex-situ* effects to otter associated with The Gearagh SAC, and *ex-situ* bird species associated with Cork Harbour and The Gearagh SPA's. The potential impacts that could arise for the qualifying interests, and likely significant effects that could result, are considered further below.



Figure 2.0 European Sites

Identification & Description of Potential Impacts

Elevated nutrient input from wastewater effluent into aquatic environments can lead to an altered nutrient balance (eutrophication), 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.

Ambient water chemistry monitoring within Inniscarra Reservoir indicates that the Ammonia EQS is met for both lakes and rivers. Total phosphorus (lake EQS) is exceeded on occasions upstream and downstream of the discharges, however Orthophosphate (river EQS) meets the requirements for Good or High status. The WwTP is not identified as a pressure on the waterbody. The dispersion modelling presented above, which considers future loads, finds that the primary discharge will not impact upon water quality outside of the permissible mixing zone. The proposed effluent standards/ELV's are therefore appropriate to support the maintenance of Good WFD status in the reservoir waterbody and downstream river waterbodies along the River Lee.

Compliant SWO's are a necessary part of sewerage networks and serve to prevent uncontrolled spillages arising within the agglomeration and to prevent the biological processes necessary to treat effluent being compromised by inundation with excess water. The principal consideration to take account of in the assessment of the impact of overflows for water quality is that overflows will only occur in the event of sustained rainfall. The initial flushing flow arising from the first 5 mm of rain in a rainfall event is contained in the foul sump initially and will not be passed through to the storm tanks unless the capacity of the foul pumps is exceeded. This initial surface runoff flow will have the highest level of pollutants as it will wash in debris from impermeable surfaces and may dislodge settled solids in the sewer network. Flows entering a storm tank will then pass through a 6 mm upward flow screen between the foul sump and storm sump. This will further retain a significant proportion of the organic matter, solids, and rags in the foul sump. Flows will then be retained in the storm tank providing an opportunity for suspended solids to settle out. As flow recedes, the storm tank contents are passed forward to the WwTP for treatment. If the storm tank reaches capacity a highly diluted screened effluent is discharged. It is not possible to fully retain all stormwater due to septicity that arises with storage and the inability of treatment plant biological processes to cater for large volumes of dilute wastewater. Diluted, settled, and screened effluent which could be discharged during storm conditions, will enter a waterbody which will have increased flows driven by sustained rainfall. In this context, the overflow discharge to the river will be diluted and dispersed effectively.

The likely significant effects (including *ex-situ*) to the qualifying interests of the European Sites that may directly or indirectly arise from the operational discharges are considered below.

Likely Significant Effects

The purpose of this section of the Screening is to examine the possibility whether the agglomeration discharges, either individually or in combination other plans and projects, are 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 discharges, in the context of the nature and scale of these discharges.

The Conservation Objectives and associated Supporting Documents of the relevant European Sites were reviewed as part of this Screening Assessment:

- NPWS (2014) Conservation Objectives: Great Island Channel SAC 001058. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014) Conservation Objectives: Cork Harbour SPA 004030. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- The discharges are not directly connected with or necessary to the management of any site for nature conservation.
- NPWS (2022) Conservation objectives for The Gearagh SPA [004109]. First Order Site specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.
- NPWS (2016) Conservation Objectives: The Gearagh SAC 000108. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

As future water quality conditions in Inniscarra Reservoir will not be impacted beyond a relatively small plume footprint relative to the overall lake area, the Good status conditions downstream of the reservoir will be maintained, and there is no likelihood of significant effects on the downstream designated habitats of Great Island Channel SAC, or the supporting wetland habitats of Cork Harbour SPA.

The overall conservation objective for otter is to maintain their current favourable conservation condition in The Gearagh SAC. Given their wide foraging ranges, *ex-situ* otter associated with the SAC may rely to some extent on fish stocks in the Inniscarra reservoir, however given the level of treatment and the compliance of the SWO's and the limited mixing zone for the primary discharge, the operation of the proposed discharges from the agglomeration would not have any direct impact on the diversity, abundance or biomass of fish species and no direct/indirect effects to otter are predicted.

Ex-situ qualifying duck species associated with The Gearagh SPA and Cork Harbour SPA could use the Inniscarra reservoir occasionally, as there is likely to be interchange between these SPA populations and the reservoir is between these two sites. The reservoir in the vicinity of the discharges however does not provide optimal habitat for large numbers these species due to the lack of shallow and semi-natural habitats. Furthermore, as for otter above, given the level of treatment and the compliance of the SWO's and the limited mixing zone for the primary discharge the operation of the proposed discharges from the agglomeration would not have any impact on the diversity, abundance, or biomass of foraging resources for these species and no direct/indirect effects to *ex-situ* qualifying interests are predicted.

Potential Cumulative or In-combination Effects

As part of AA Screening, in addition to the agglomeration discharges, other relevant projects and plans in the region must also be considered. This report aims to identify at this early stage any

likely significant effects on the European Sites from the existing discharges in-combination or cumulatively with other plans and projects.

Plans

Plans of relevance include Uisce Éireann's WSSP, the Wicklow County Development Plan, and the National River Basin Management Plan.

In 2015, Uisce Éireann published the **Water Services Strategic Plan**, a 25-year Plan which as well as detailing current and future challenges affecting water services, identifies priorities to be addressed in the medium term. Solutions in these priority areas are delivered through capital and other projects outlined in Uisce Éireann's Investment Plan, a multi annual plan covering a five-year horizon, currently 2020-2024. The Coachford Upgrade Project is listed on the current investment plan.

The **Cork County Development Plan 2022-2028** amalgamates the former municipal area regional plans into the main county plan. The plan has several relevant objectives and statements relating to wastewater:

- WM 11-1: EU Water Framework Directive and the River Basin Management Plan
 - f) Support the prioritisation of the provision of water services infrastructure in: 1. Metropolitan Cork, the Key Towns and Main Towns to complement the overall strategy for economic and population growth while ensuring appropriate protection of the environment. 2. All settlements where services are not meeting current needs, are failing to meet the requirements of the Urban Wastewater Treatment Directive, and where these deficiencies are – interfering with Councils ability to meet the requirements of the Water Framework Directive; or – having negative impacts on Natura 2000 sites; and
 - g) Development may only proceed where appropriate wastewater treatment is available which meets the requirements of environmental legislation, the Water Framework Directive and the requirements of the Habitats Directive
- Emission Limit Values (ELVs)
 - 11.5.12 In many instances, the Emission Limit Value standards set by the EPA when licensing treatment plants are significantly higher than the requirements of the Urban Wastewater Directive (UWWD). Some of these ELV standards cannot consistently be achieved even by relatively modern plants without significant upgrades. This is a national issue not unique to Cork but it occurs in several locations across the County.
 - 11.5.13 In assessing the capacity of a WWTP to cater for future development where an ELV issue pertains, the assessment has been based on the hydraulic and organic loadings of the treatment plant relative to its design capacity on the assumption that the ELV issue will be resolved in an approach that will be determined/ agreed at a national level between Uisce Éireann and the EPA.
 - Section 11.9.5 The assimilative capacity of the County's waterbodies is not infinite, and it is considered important, when assessing individual development proposals involving abstraction or dilution of discharges, that sufficient assimilative capacity is retained so as to allow for the continued growth of the

overall settlement and avoiding the unsustainable exploitation of the watercourse.

- The plan does not make any specific reference to the Coachford wastewater agglomeration, or further upgrades being required (Ref Table 11.3).

Information on the **River Basin Management Plan** (2018-2021), Draft River Basin Management Plan (2022-2027), and associated information on the catchments available on www.catchments.ie was reviewed:

- The RBMP sets out the measures that are necessary to protect and restore water quality in Ireland. The overall aim of the plan is to ensure that Ireland's natural waters are sustainably managed and that freshwater resources are protected so as to maintain and improve Ireland's water environment. The Draft 3rd cycle plan, identifies that based on 2013-2018 data, 53% of surface waters are in good or high ecological status while the remaining 47% are in unsatisfactory ecological status.
- Continued investment in wastewater infrastructure is highlighted as one of the key actions in the plans. The 3rd cycle plan does not identify the Inniscarra reservoir in the vicinity of the Coachford discharges as an Area For Action (AFA), though upstream and downstream areas of the reservoir are classified as AFA's. The catchment assessment⁹ indicates that 'unknown anthropogenic' pressures are impacting Inniscarra reservoir.
- There are other WwTPs on the Lee system including Ballyvoruney, Ballingearry, Macroom, Dripsey, Blarney, Killeens and Cloughduv and Ballincollig. Within the catchment only the Blarney_010 and Bride (Lee)_020 waterbodies are identified as being at-risk due to urban waste water pressures, with status improving to Good downstream prior to entering the main channel of the Lee in both cases.

The plan notes the following with regard to heavily modified waterbodies:

In heavily modified waterbodies the hydromorphological or physical character of the waterbody cannot be restored sufficiently to support Ecological Status, without impacting on the specified use. As a result, these water bodies are set an environmental objective of 'Good Ecological Potential', which allows for the fact that their hydromorphology has been modified to facilitate the specified use. However, heavily modified waterbodies are still expected to meet the required standards for all the other water quality elements, such as physicochemical conditions, nutrients, specified pollutants and chemicals. Measures are also required to mitigate the hydromorphological impacts to the greatest extent possible given the specified use.

While there are issues with Phosphorus in the reservoir, these also occur upstream of the discharges. On the basis of the modelling study, on a 'notionally clean' basis Coachford WwTP represents only a minor Phosphorus contribution to the waterbody, with a very limited plume-size predicted, and will therefore support the maintenance Good Ecological Potential in the reservoir and not contribute to cumulative/in-combination impacts on water quality.

The above plans have themselves been assessed in accordance with Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act, 2000 and the implementation of

⁹<https://catchments.ie/wp-content/files/catchmentassessments/19%20Lee,%20Cork%20Harbour%20and%20Youghal%20Bay%20Catchment%20Summary%20WFD%20Cycle%203.pdf>

those plans will not result in adverse effects to the integrity of any European site(s). The plans support the operation of compliant discharges from the Coachford agglomeration. The plans also support the prioritisation of actions to deal with significant pressures affecting the catchment. Hence considered cumulatively with the agglomeration discharges, there is no potential for negative cumulative effects on any qualifying interest.

Projects

Cork Co.Co. planning system was reviewed for any recent proposed or permitted projects that could lead to in-combination impacts with the Project.

Notable developments in the area include housing developments subject to permission extensions (Refs 224344 & 224349), a smaller housing development (Ref. 225397) and a new school development (Ref 234312). According, the planning reports for these developments, the planning authority determined AA was not required. Other recent permissions relate to minor single-housing, agricultural or business developments.

There are a range of single house developments in the area, which may seek connection to the sewerage network, that have been recently granted or are seeking planning consent. Uisce Éireann reviews available capacity for treatment prior to any connection to the Uisce Éireann network and therefore any local development connecting to the WwTP will be within the treatment capacity which meets WFD requirements. Hence considered cumulatively with the Project, there is no potential for negative cumulative effects on any qualifying interest.

Screening Conclusions

The likely impacts that will arise from the Coachford agglomeration discharges have been examined in the context of a number of factors that could potentially affect the integrity of the Natura 2000 network.

On the basis of the information set out, and documentation referenced in this AA Screening, the likelihood of significant effects to Cork Harbour SPA, Great Island Channel SAC, The Gearagh SAC and The Gearagh SPA, and any other European Sites, can be excluded, and a Stage Two Appropriate Assessment is not required.