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Glan Agua

Macroom Wastewater Treatment Plant Upgrade

Appropriate Assessment Screening Report

PROJECT NAME: Macroom Wastewater Treatment Plant Upgrade

REPORT NAME: Appropriate Assessment Screening

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Contents

List of Tables

List of Figures

List of Photos

1.0 INTRODUCTION

This report has been prepared by TOBIN Consulting Engineers (TOBIN) on behalf of Glan Agua. This report forms an Appropriate Assessment (AA) Screening Report for the proposed upgrade works at the existing Macroom Wastewater Treatment Plant (WwTP) in Macroom, Co. Cork.

Irish Water (IW) propose to upgrade the existing WwTP (hereafter referred to as Proposed Upgrade works) to cater for the future agglomeration load and to remediate to the existing flooding issues. The Proposed Upgrade works to the WwTP are required to ensure compliance with the existing Wastewater Discharge Licence (WWDL) no. D0126-01 granted by the Environmental Protection Agency (EPA) to IW in December 2012, which include for additional Ammonia and Phosphorous Emission Limit Values (ELVs). The existing WwTP is significantly overloaded and not fit-for purpose, resulting in failure to meet the requirements in recent years. Consequently, an upgrade of the treatment process is required.

The purpose of this Screening Report is to inform the Appropriate Assessment (AA) process, which is carried out by the competent authority. Appropriate Assessment is an assessment of whether a plan or project, alone and/or in-combination with other plans or projects, may have significant effects on a European site, collectively known as the Natura 2000 network, in view of the site's conservation objectives.

The project design has sought to, in as far as possible, avoid impacts on European sites. This report considers the final design. It determines if direct, indirect or in-combination effects could arise, or if there is uncertainty regarding potential effects.

1.1 STATEMENT OF COMPETENCE

This report was prepared by Sinead O Reilly (B.Sc., M.Res) Senior Ecologist with TOBIN and senior reviewed by Áine Sands (B.Sc.), Project Ecologist with TOBIN.

Sinead O Reilly is a Senior Ecologist with TOBIN Consulting Engineers. She holds an honors degree in Zoology from University College Dublin and Research Masters in Science in Freshwater Ecology from University of Glasgow. She is a qualified and experienced environmental consultant with twelve years' post-graduate experience in freshwater sciences and environmental consultancy in Ireland. Sinead has prepared and delivered annual research reports, research papers, Appropriate Assessments, Natura Impact Statements, invasive species reports, mammal survey reports and other relevant documents. Sinead has a strong technical background as a freshwater ecologist and has extensive field experience in all freshwater habitats across Ireland. Sinead has also undertaken Screening Reports and Natura Impact Statements for a number of Waste water Treatment Plants.

Áine has six years post-graduate experience in ecology and environmental consultancy. Áine has predominantly been involved in large public and private infrastructure projects where she has carried out numerous Screenings for Appropriate Assessments, Natura Impact Statements and Ecological Impact Assessments for the proposed developments. Áine has a strong understanding of National and European legislation associated with biodiversity and is cognisant of relevant rulings by the Court of Justice of the European Union (CJEU) associated with Appropriate Assessment. Áine also has experience with undertaking ecology surveys for protected habitats and species.

2.0 THE APPROPRIATE ASSESSMENT PROCESS

The AA process is an assessment of the potential for likely significant effects or negative effects of a plan or project, alone and/or in-combination with other plans or projects, on the conservation objectives of a European site(s). The Natura 2000 network is made up of European sites including Special Protection Areas (SPAs), established under the EU Birds Directive (2009/147/EC) (more generally referred to as the 'Birds Directive') and Special Areas of Conservation (SACs), established under the E.U. Habitats Directive (92/43/EEC) (more generally referred to as the 'Habitats Directive'). The Natura 2000 network helps provide for the protection and long-term survival of Europe's most valuable and threatened species and habitats.

The Screening Stage of the AA process identifies any likely significant effects upon European sites from the Proposed Upgrade works alone or in-combination with other projects or plans. A series of questions are asked during the Screening Stage of the AA process to determine:

- whether a plan or project can be excluded from AA requirements because it is directly connected with or necessary to the management of a European site; and
- whether the project or plan will have a potentially significant effect on a European site, either alone or in-combination with other projects or plans, in view of the site's conservation objectives or if residual uncertainty exists regarding potential impacts.

2.1 LEGISLATIVE CONTEXT

The European Communities (EC) Habitats Directive 92/43/EEC or "the Habitats Directive" and the Council Directive 2009/147/EC on the conservation of wild birds or "the Birds Directive" have been transposed into Irish law by EC (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011; hereafter referred to as the Birds and Habitats Regulations). The Birds Directive seeks to protect birds of special importance by the designation of SPAs. The Habitats Directive does the same for habitats and other species groups with SACs.

The requirement for an AA is outlined in Article 6(3) and further expanded upon in Article 6(4) of the Habitats Directive. Article 6(3) of the Habitats Directive requires 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(4) states of the Habitats Directive requires that:

> *'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.'*

This provision is transposed into Irish law by Part XAB of the Planning and Development Acts, 2010 (as amended). Section 177U(4) of the said Acts provides for screening for Appropriate Assessment as follows:

> *'The competent authority shall determine that an appropriate assessment of [...] a proposed development [...] is required if it cannot be excluded, on the basis of objective information, that the [...] proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.'*

Section 177U (5) provides as follows:

> *'The competent authority shall determine that an appropriate assessment of a [...] proposed development, [...], is not required if it can be excluded, on the basis of objective information, that the [...] proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.'*

The Court of Justice of the European Union (CJEU) has made a number of rulings in relation to Appropriate Assessment, regarding when it is required, its purpose, and the standards it should meet. Consideration has been given to the evolution in interpretation and application of directives and national legislation arising from jurisprudence of the European and Irish courts, in respect of Article 6 of the Habitats Directive.

An Appropriate Assessment should be based on best scientific knowledge and the competent authority should ensure that expertise such as ecological, geological, and hydrological are utilised, where relevant.

2.2 STAGES INVOLVED IN THE APPROPRIATE ASSESMENT PROCESS

There are potentially four stages in the AA process; derived from the "*Assessment of Plans and Projects Significantly affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*". The result of each stage determines whether a further stage in the process is required.

Stage 1: Screening / Test of Significance

This process identifies the likely significant effects upon a European site from a proposed project or plan. Its purpose is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project which is not directly connected with or necessary to the management of the site as a European site, individually or in-combination with other plans or projects is likely to have a significant effect upon the European site, in view of its conservation objectives. An AA is required if it cannot be excluded, on the basis of objective information, that the proposed upgrade, individually or in-combination with other plans or projects, will have a significant effect on a European site. It is not appropriate, at this screening stage, to take account of the measures intended to avoid or reduce harmful effects of a plan or project on European sites (as per clarification provided by the Court of Justice of the European Union [CJEU] in Case 323-17 People Over Wind and Peter Sweetman v Coillte). A project may be 'screened-in' if there is a possibility or uncertainty of possible effects upon the European site, requiring a Stage Two AA. If there is no evidence to suggest significant effects due to the proposed plan or development the project is 'screened-out' from further assessment.

Stage 2: Appropriate Assessment

In this stage, consideration is given if potential impact(s) of a project or plan could cause likely significantly effects to the integrity of surrounding European sites, either alone or in-combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. This stage of the assessment is carried out by the consenting authority and is informed by a NIS. A NIS is required where there is uncertainty as to whether or not an adverse effect arises, uncertainty of the effect itself, or a potential effect has been defined which requires further procedures/mitigation to remove uncertainty of a defined impact (i.e. significant effects cannot be excluded). Where there are adverse effects, an assessment of the potential mitigation to ameliorate those effects is required. If the assessment results in a negative conclusion, i.e. adverse effects on the integrity of a site cannot be excluded (by design or mitigation) or there is uncertainty as to whether an adverse impact arises, then the process must consider alternatives (Stage 3) or proceed to Stage 4.

Stage 3: Assessment of Alternatives

This stage of the potential process arises where adverse effects on the integrity of a European site cannot be excluded and examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European site. However, in circumstances where there will not be any adverse effects on any European site, the developer places no reliance upon this third stage of the process in the context of this application for planning permission for the proposed upgrade.

Stage 4: Assessment Where Adverse Effects Remain

This is the derogation process of Article 6(4), which examines whether there are imperative reasons of overriding public interest [IROPI] for allowing a project to proceed where adverse effects on the integrity of a European site have been predicted. Compensatory measures must be proposed and assessed as part of this stage and the EU Commission must be informed of the compensatory measures. Again, the developer places no reliance upon this stage of the process in the context of the application for planning permission for the proposed upgrade.

2.3 LEGISLATION AND GUIDANCE

This report has been carried out using the following guidance (and relevant case law):

- Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg (European Commission [EC] 2000)[1].
- Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg (EC, 2006)[2].
- 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)[3].
- Managing Natura 2000 Sites – The provisions of Article 6 of the 'Habitats Directive' 92/43/EEC. European Commission (EC, 2018)[4].

[1] Communication from the Commission on the Precautionary Principle: https://op.europa.eu/en/publication-detail/-/publication/21676661-a79f-4153-b984-aeb28f07c80a/language-en
[2] Nature and Biodiversity Cases: https://friendsoftheirishenvironment.org/images/EULaw/ecj_rulings_en.pdf
[3] Circular L8/08: https://www.npws.ie/sites/default/files/general/circular-L8-08.pdf
[4] European Commission (2018)
https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/Provisions_Art_6_nov_2018_en.pdf

- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013)[5].
- Appropriate Assessment Screening for Development Management. Office of the Planning Regulator (OPR) Practice Note PN01 (OPR, 2021)[6].
- 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)[7].
- 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 (EC, 2021)[8];
- European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011).

This report has similarly been prepared with regard to relevant rulings by the Court of Justice of the European Union (CJEU), the High Court, and the Supreme Court.

Definitions of conservation status, integrity and significance used in this assessment are defined in accordance with '*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*' (EC, 2018):

- Favourable conservation status (FCS) can only be defined and achieved at the level of the natural range of a species or a habitat type. A broad conservation objective aiming at achieving FCS can therefore only be considered at an appropriate level, such as for example the national, biogeographical or European level. The conservation measures have to correspond to the ecological requirements of the natural habitat types in Annex I and of the species in Annex II present on the site. The ecological requirements of those natural habitat types and species involve all the ecological needs which are deemed necessary to ensure the conservation of the habitat types and species. They can only be defined on a case-by-case basis and using scientific knowledge;
- The integrity of a European site is defined as the coherent sum of the site's ecological structure, function, and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated.
- Significant effect should be determined in relation to the specific features and environmental conditions of the protected site concerned by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics.

[5] Interpretation Manual: https://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf
[6] Office of the Planning Regulator (OPR) (2021). Appropriate Assessment Screening for Development Management. OPR Practice Note PN01.
[7] Guidance Document on Article 6 (4): https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance_art6_4_en.pdf
[8] European Commission [EC] (2021). 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.

2.4 DESK STUDY AND INFORMATION SOURCES

The ecological desktop study completed for the proposed upgrade works comprised a review of the following key datasets and information sources:

- Identification of European sites within the Zone of Influence (ZoI) of the proposed upgrade area through the identification of potential pathways/links from the proposed upgrade area and European sites and/or supporting habitats.
- Review of the National Parks and Wildlife Service (NPWS) site synopsis, Natura 2000 data forms and Conservation Objectives for European sites identified through potential pathways from the proposed upgrade[9]
- NPWS datasets on Annex I habitats and Annex II species.
- Review of available literature and web data. This included a detailed review of the NPWS database of areas designated (and proposed) for nature conservation[10] and National Biodiversity Data Centre (NBDC)[11] websites and database including mapping and available reports for relevant sites and in particular Qualifying Interests and Special Conservation Interests described and their Conservation Objectives.
- Review of Inland Fisheries Ireland (IFI) research data. This included reviewing research studies carried out for the Habitats Directive and Red Data Book Fish species within the receiving environment[12].
- Information and data on water catchments from the River Basin Management Plan 2018-2021[13] and the Water Framework Directive (WFD) Ireland Database[14].
- GIS Online mapping[15].
- Environmental Protection Agency (EPA) Appropriate Assessment tool[16];
- Information and data on water catchments from the River Basin Management Plan 2018-2021[17]; and
- Heritage map viewer[18].

In addition, aerial photography (Google Maps, Bing Maps) and mapping (Ordnance Survey of Ireland, Geological Survey of Ireland) were used to identify non-designated habitats such as rivers, woodlands, and hedgerows of local ecological importance and invasive species.

3.0 SCREENING FOR APPROPRIATE ASSESMENT

This report comprises a Screening Assessment of the Proposed Upgrade works at Macroom WwTP. Potential impacts on European sites arising from the Proposed Upgrade works are considered hereunder.

[9] National Parks and Wildlife Service: https://www.npws.ie/protected-sites
[10] National Parks and Wildlife Service: https://www.npws.ie/maps-and-data
[11] National Biodiversity Data Centre (NBDC): https://maps.biodiversityireland.ie/Map
[12] https://www.fisheriesireland.ie/Projects/habitats-directive-and-red-data-book-fish-species.html
[13] https://www.catchments.ie/guide-water-framework-directive/
[14] Water Framework Directive (WFD) Ireland www.wfdireland.ie
[15] http://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228
[16] EPA Appropriate Assessment tool: https://gis.epa.ie/EPAMaps/AAGeoTool
[17] EPA: www.catchments.ie
[18] Data from the Heritage Map Viewer accessed through the heritage map viewer: https://heritagemaps.ie/WebApps/HeritageMaps/index.html

3.1 PROPOSED UPGRADE

3.1.1 *Site location*

The proposed upgrade works will be located at the existing WwTP in Macroom, which is located approximately 30km west of Cork City as shown in Figure 3-1.

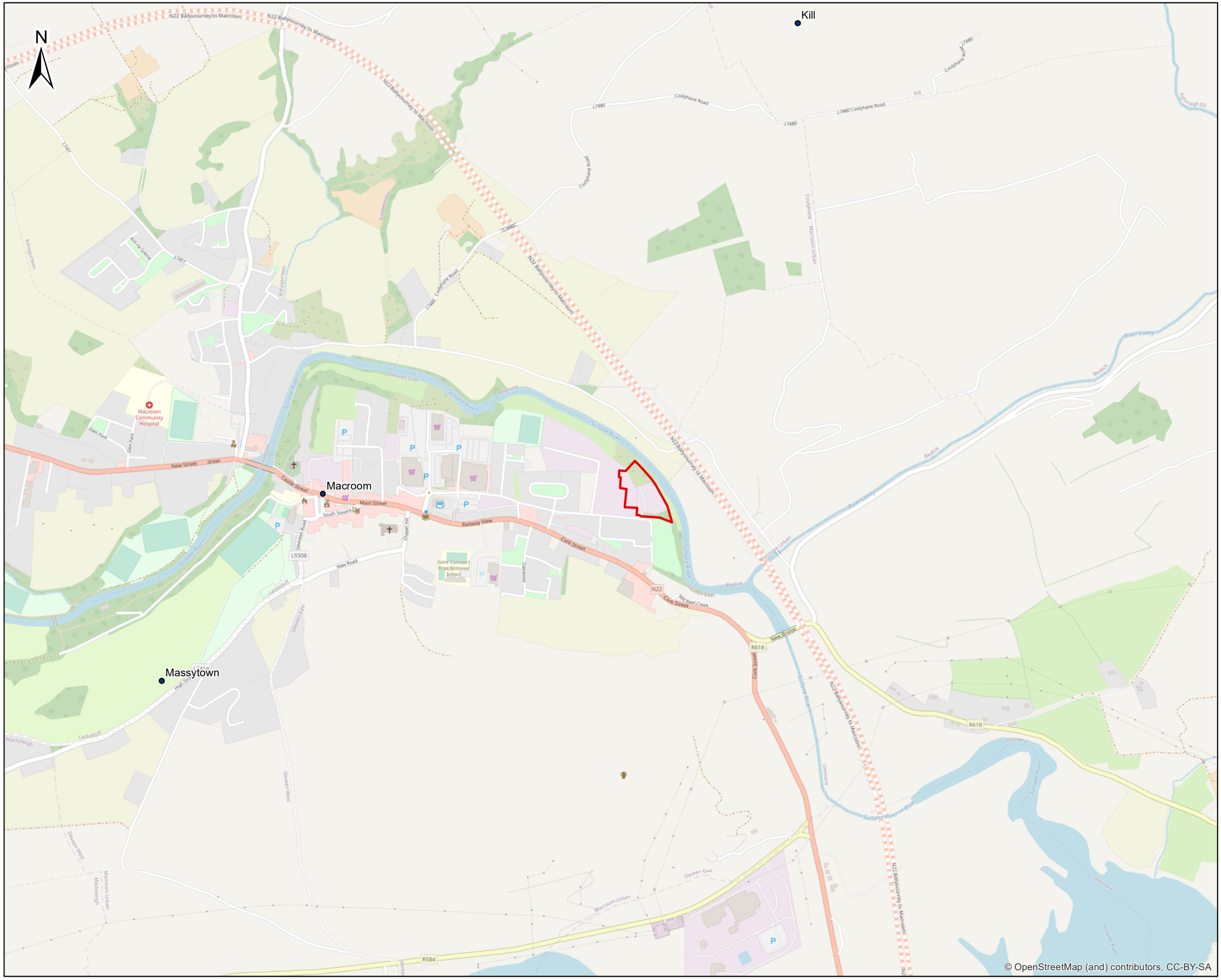
Macroom WwTP is situated on the north-east edge of the town of Macroom. The WwTP is situated approximately 20m from the south-west bank of the River Sullane (IE_SW_19S020480), which flows through the centre of the town and which is a tributary of the River Lee. This section of the river is part of the Water Framework Directive (WFD) Subcatchment Sullane_SC_010.

The River Sullane, which provides drinking water (and occasionally floods), joins the River Launa 1km east of the town, before joining the River Lee a further 1km east. It is also located 1.7km north of the Gearagh SAC (000108) and the Gearagh SPA (004109) to which the River Lee is part of.

The WwTP is accessed directly off the Saint Colman's Park residential development public road. The WwTP site comprises areas of amenity grassland, planted trees and a concrete access road. The area towards the back of the site, which is utilised by the Roads Dept. of Cork County Council, comprises a stoned surface (Clause 804 or similar material). The Roads Dept also utilise an area immediately inside the entrance gate consisting of 3 No. sheds & a container and following completion of the works, it is proposed that a portion of this area will be retained for use by the Roads Dept. Please refer to Figure 3-2 which provides an overview of the existing site layout.

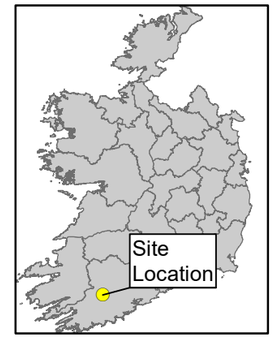
The site is low lying and the eastern area of the site in particular is prone to flooding from the River Sullane, which runs along the eastern site boundary. In extreme cases flooding has overtopped the oxidation ditch and clarifier, due to a combination of backing up in the process stream as well as fluvial flooding from the river.

Figure 3-1: Site Location Map of the Proposed WwTP Plant Upgrade



Legend

Site Boundary



0 0.25 0.5

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NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Issue	Date	Description	By	Chkd.
D01	25/01/2022	Draft issue	S.P	S.O'R

Client:

Glan Agua

Project:

Macroom WWTP Project

Title:

Figure 3-1: Site Location Map

Scale @ A3: 1:10,000

Prepared by:	Checked:	Date:
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Project Director: D.Grehan

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Figure 3-1

Draft: D01

3.2 DESCRIPTION OF THE EXISTING WWTP

The existing Macroom WwTP has a design capacity believed to be in the region of 5,230 Population Equivalent (PE). The existing Macroom Sewerage Scheme consists mainly of a combined collection network. Flows from the east of the catchment gravitate directly to the existing Macroom WwTP while flows from the west gravitate to Masseytown where they are pumped east to a high point, from which they gravitate to the WwTP. Four pumping stations in the network also service residential developments. There are no emergency or storm overflows at the pumping stations.

The WwTP is accessed directly off the Saint Colman's Park residential development public road. The existing WwTP includes the following treatment stages:

- Storm flow separation chamber using high level weir, with storm flows flowing directing to the Sullane River outfall;
- Preliminary treatment, consisting in a single 6mm automatic screen with a high-level bypass and 30mm manually raked screen downstream of the fine screen;
- Secondary treatment, consisting in the following:
    - Biological treatment: 1,240m^3, 1.5m deep, single oxidation ditch fitted with 3no. vortex aerators and 1no. original surface aerator;
    - Secondary settlement: single 15.2m diameter settlement tank with half bridge scraper;
- Ferric sulphate IBC dosing chemical at the outlet of the inlet works, currently not operational;
- Sludge treatment
    - 26.5m^3 sludge holding/thickening tank;
    - Sludge dewatering provided by a single screw press with a capacity of 650kg/d and ancillary polymer make-up unit.

Following treatment, secondary treated effluent from the WwTP is discharged by gravity to the River Sullane (which borders the WwTP site) through a 20m long outfall.

The layout of the existing Macroom WwTP can be seen in Figure 3-2.

The ELVs which are set out in WWDL D0126-01 are listed in Table 3-1 below.

Table 3-1: The Emission Limit Values (ELVs)

Parameter	Unit	ELV
pH	pH units	6 – 9
Biological Oxygen Demand (cBOD)	mg/l	15
Chemical Oxygen Demand (COD)	mg/l	125
Ammonia (as N)	mg/l	2
Orthophosphate (as P)	mg/l	1
Suspended Solids	mg/l	25

In its current design capacity, the WwTP is unable to achieve the above ELVs. The existing WwTP is significantly overloaded and not fit-for purpose, resulting in failure to meet the requirements in recent years. Consequently, an upgrade of the treatment process is required.

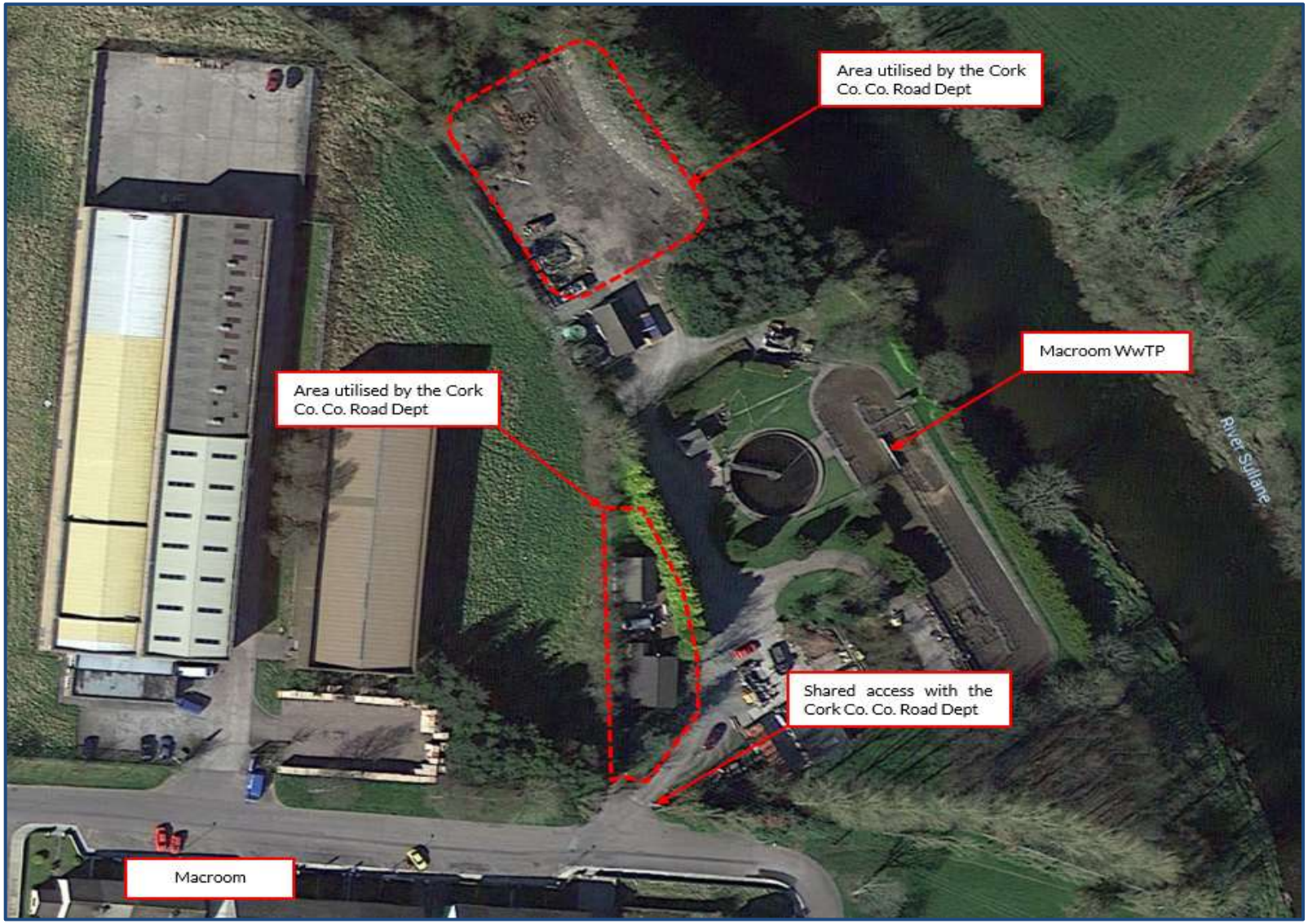
Additionally, the site suffers from flooding issues. At present, the site of the WwTP experiences localised flooding from the River Sullane at least twice a year. In order to mitigate the risk of flooding of the proposed development, it is proposed to construct a flood protection sheet-pile wall around the perimeter of the site.

As such, the purpose of the proposed upgrade works are therefore to upgrade the existing WwTP to cater for the future agglomeration load, to ensure compliance with WWDL D0126-01, and to remediate to the existing flooding issues.

The primary legislative and regulatory drivers for the delivery of this project are as follows:

- Urban Waste Water Treatment Regulations, 2001
- Wastewater Discharge Regulations, 2007
- Environmental Objectives (Surface Waters) Regulations, 2009

Figure 3-2: Site Layout of the Existing Macroom WwTP



3.3 DESCRIPTION OF THE PROPOSED UPGRADE WORKS

The proposed upgrade works at the existing Macroom WwTP are necessary to achieve the required treatment capacity and target ELV's. As referenced previously, the existing WwTP has a design capacity in the region of 5,230 PE. As part of the upgrade works, it is proposed to increase the capacity of the WwTP to cater for the 10 & 25 year design projections as follows:

- Phase 1 (10-year Design Projection): 7,700 PE
- Phase 2 (25-year Design Projection): 8,300 PE

A Waste Assimilative Capacity Assessment Report was carried out which, based on the above referenced design projections, determined that the River Sullane has sufficient assimilative capacity to accommodate the discharge from the upgraded WwTP.

The proposed site layout and design of the WwTP is shown in Figure 3-3 and Figure 3-4 below. The proposed upgrade works will include the following infrastructure:

- Preliminary treatment:
  - Upgrade and replacement of the existing storm water overflow (SWO) immediately upstream of the inlet works with new screened SWO;
  - Decommissioning of the existing preliminary treatment works including the screen;
  - Construction of a new inlet works and screening system;
  - Construction of a new grit removal system;
  - Construction of a new full flow to treatment (FFT) pumping station; and
  - Construction of a new stormwater storage tank equipped with storm water pumps.

- Secondary treatment:
  - Decommissioning of the existing oxidation ditch;
  - Construction of a new flow splitting chamber;
  - Construction of 2 No new integrated fixed-film activated sludge (IFAS) reactor tanks (Aeration Tanks);
  - Decommissioning of the existing final settlement tank;
  - Construction of 2 No. new final settlement tanks;
  - Construction of both return & waste activated sludge (RAS/WAS) pumping stations,
  - Installation of a lime batching & dosing facility, and;
  - Installation of ferric sulphate dosing system including bunded chemical storage tank.

- Sludge management system:
  - Decommission existing sludge holding tank;
  - Construction of a new sludge picket fence thickener (PFT);
  - Construction of an odour control system;
  - Installation of a new polymer make-up system, to be located within the existing building which is to be retained;
  - Decommissioning of the existing dewatering equipment within the existing building; and
  - Installation of a new sludge dewatering equipment/system (to be installed within the existing building, which is to be retained).

- Outfall:
  - Construction of a new final water sampling manhole on the existing outfall pipeline, within the WwTP site;
  - Discharge of final effluent through the existing outfall to the River Sullane.

- Ancillary works:
  - Construction of a solar PV panel installation capable of a maximum power generation of 42.32kWp
  - Construction of a new sheetpile flood protection wall. This wall is to be constructed within the site boundary to a level of 300mm above the 0.1% Annual Exceedance Probability (AEP) (1-in-1000 year) flood level.
  - New standby energy generator & bunded fuel tank.
  - Relocation of the existing shed from the southern side of the WwTP site to the northern side of the WwTP site;
  - Demolition of existing sheds adjacent to the site entrance to create a designated area with a separate site entrance to be used by Cork County Council Roads Department;
  - Construction of a new control and administration building, and;
  - Construction of new surface water drainage system with oil interceptor and attenuation system, in accordance with Sustainable Drainage Systems (SuDS)
  - Site landscaping and finishes.

3.3.1 *Proposed Construction Phase Activities*

The proposed construction works are to commence in Q2 of 2023 for a duration of 18 months. Works will mainly consist of:

- Site clearance;
- Establishment of site offices, welfare facilities & compound area;
  - It is proposed that the temporary contractors compound area shall be provided within an area under the ownership of Cork County Council adjacent to the WwTP site. A letter of consent has been provided from Cork County Council in relation to this area, and this letter is included with the supporting documentation as part of this application.
- Construction of flood protection wall to the site to mitigate flooding risks.
  - It is proposed that construction of the flood wall shall be one of the first construction tasks undertaken, to mitigate the potential for flooding events during the construction period.
- Decommissioning & demolition of existing tanks & structures (Note, decommissioning & demolition of existing tanks & structures will be carried out in sequence during the construction stage following the commissioning of the new infrastructure);
  - The existing WwTP shall remain operational during construction works and until such time as the Proposed Upgrade is operational.
- Excavations for tanks;
- Pouring of concrete bases;
- Installation of precast tanks;
- Laying of process pipework, ducting and services;
- Reinstatement to the site including internal access driveways and landscaping;
- Surface water drainage (including oil interceptor, attenuation tank); and
- New security fence and gate, 2.4m high;
- Monitoring of noise levels using standard noise meters

The Works extents within which the Contractor shall construct the WwTP upgrade include the existing WwTP site access road off St Colman's Park Road as well as the pipeline route between the WwTP and outfall to River Sullane. The proposed site layout can be seen in Figure 3-3 of this report.

The maximum depth of excavations shall be circa 7.5m below the existing ground level (the proposed storm water holding tank shall be installed with a finished floor level circa 7m below ground level).

Concrete will be poured on site as there are some reinforced concrete (RC) bases required, such as for the IFAS, final settlement tanks & storm water holding tank.

There are no bankside/instream works required on the site.

It is envisaged that removal of vegetation and trees within the site will be required in order to facilitate the works. A landscape management plan has been prepared which includes details of the reinstatement of vegetation, removed as part pf the works. The landscape management plan has been included as part of the Planning Drawing submission.

The proposed works will generate construction waste. Construction waste will include a range of materials such as: hardcore, stone, gravel and concrete, plastics and lubricating oils. Operational waste will also include materials such as normal domestic waste and lubrication and cooling oils from the servicing equipment. Although every effort will be made to recycle and re-use of materials on site, some waste will require to be disposed of off site. The Contractor will be required to prepare a Construction & Demolition Waste Management Plan and any waste produced as part of the development will be dealt with in accordance with the relevant waste management legislation & guidance. Any waste removed from the site will be collected by a Contractor with a valid Waste Collection Permit & will be disposed of to a suitable licenced facility. An Outline Construction & Demolition Waste Management Plan has been prepared and appended to this Planning Application.

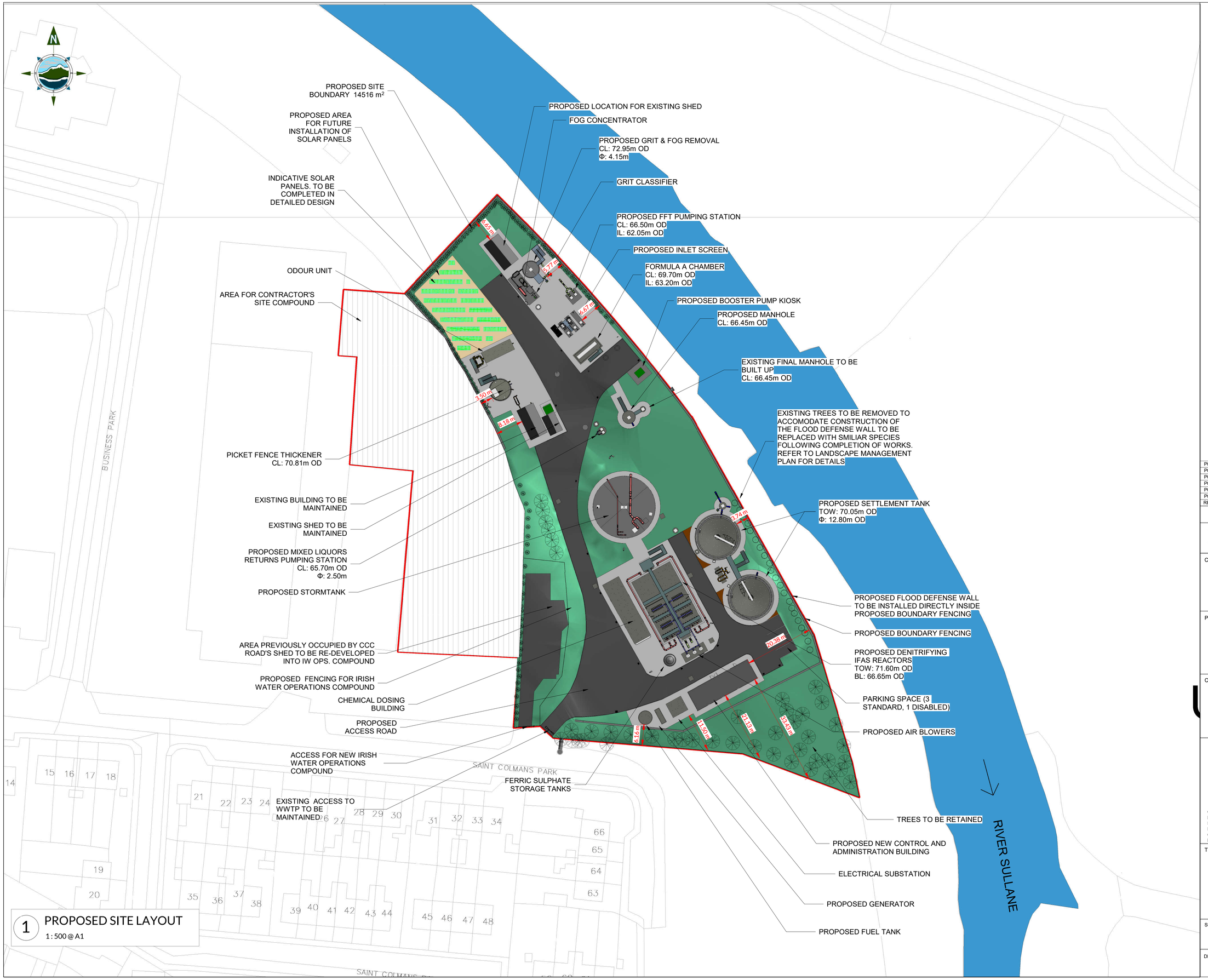
The Contractor shall be required to prepare a detailed Construction Environmental Management Plan, in line with ISO 14001 to address all construction activities to be carried out as part of the development prior to construction works commencing. An Outline Construction Environmental Management Plan has been prepared and appended to this Planning Application.

3.3.2 *Proposed Operational Phase*

Once construction works are complete, the WwTP will continue to be regulated by the EPA under WWDL D0126-01 but on the basis the completion of the upgrade works set out in this report, any non compliance issues previously experienced at the WwTP will be remediated.

Following the completion works, operational phase activities will be minimal and will include occasional maintenance works within the proposed upgrade site. These include maintenance and calibration of equipment, delivery of necessary chemicals, removal of sludge from site and replacement of faulty or damaged structures and related hardware as required.

Figure 3-3: Proposed Upgrade Works Design of the WwTP



1 PROPOSED SITE LAYOUT
1 : 500 @ A1

LEGEND:

- SITE BOUNDARY
- PROPOSED AREA FOR FUTURE INSTALLATION OF SOLAR PANELS
- PROPOSED FOOTPATH/HARDSTANDING AREA
- PROPOSED ACCESS ROAD
- AREA FOR CONTRACTOR'S SITE COMPOUND
- GRASS AREA

Dimensions in metres.
All levels shown relate to Ordnance Survey Datum at Malin Head.

Ordnance Survey Sheet Number
6329-D
6374-B

REV	DATE	DESCRIPTION	DRW	CHK	APP
P06	01/02/23	RFI RESPONSE ISSUE	JPL	KG	NG
P05	22/03/22	ISSUED FOR REVIEW	JR	KG	NG
P04	02/03/22	ISSUED FOR REVIEW	JR	KG	NG
P03	17/02/22	ISSUED FOR REVIEW	JR	KG	NG
P02	04/02/22	ISSUED FOR REVIEW	JR	KG	NG
P01	19/01/22	ISSUED FOR REVIEW	JR	KG	NG

PLANNING STAGE

CLIENT

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PROJECT

MACROOM WASTEWATER TREATMENT PLANT UPGRADE

CONSULTING ENGINEER

TOBIN CONSULTING ENGINEERS

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TITLE

MACROOM WWTP

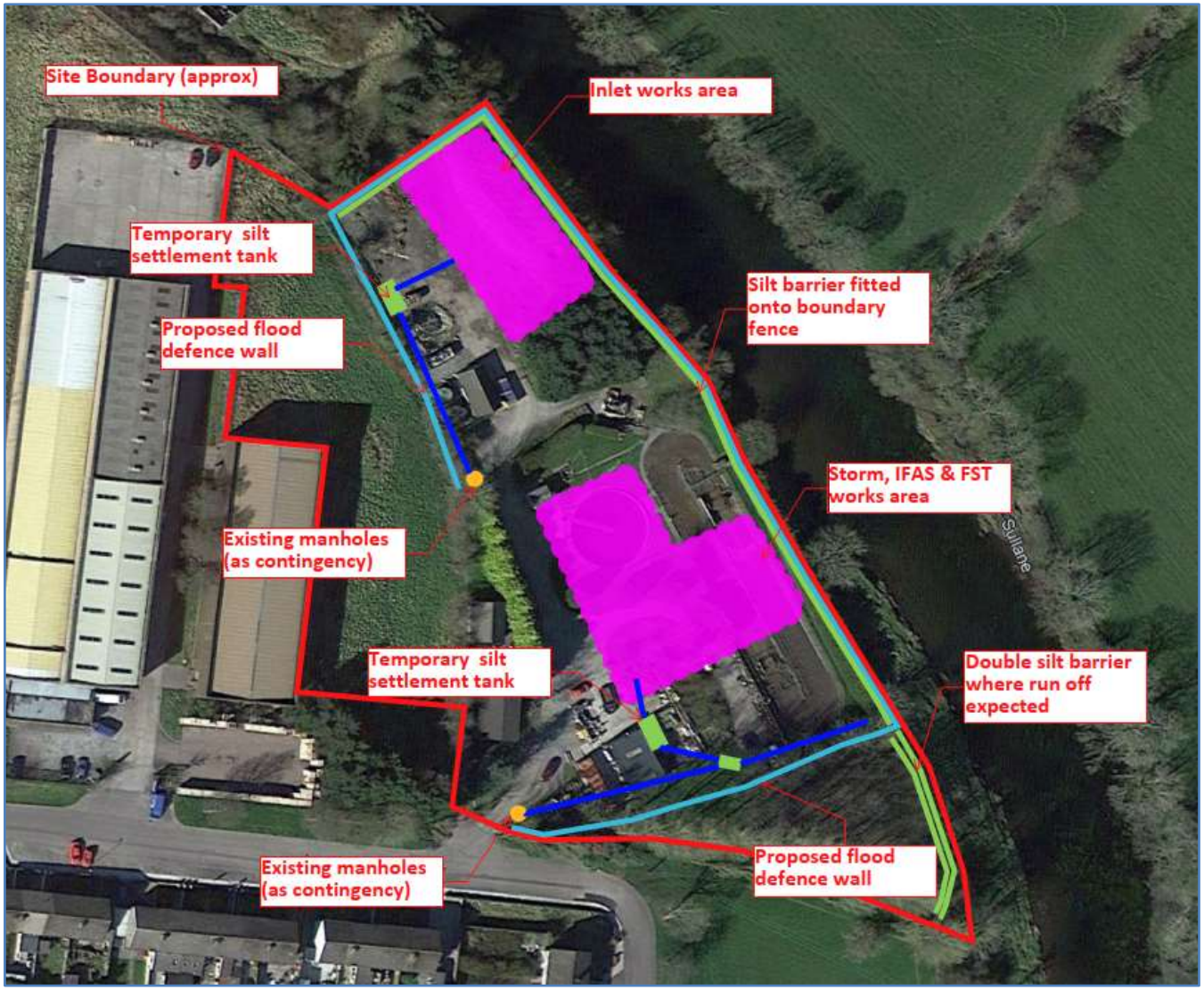
PROPOSED SITE LAYOUT

SCALES	DRAWN	CHECKED	APPROVED
As indicated	JPL	NG	NG
	DATE JAN'23	DATE JAN'23	DATE JAN'23

DRAWING No. 11218-TCE-MM-XX-DR-C-3102

STATUS S0 REVISION P06

Figure 3-4: Proposed Site Layout for Dewatering and Silt Removal



3.4 DESCRIPTION OF THE EXISTING ENVIRONMENT

3.4.1 *Existing environment*

The finding of the desktop assessment and field surveys are summarised hereunder.

As mentioned, the proposed upgrade site is located 20m from the River Sullane, which runs along the eastern boundary of the existing Macroom WwTP. The River Sullane flows east through Ballyvourney and Macroom into Carrigadrohid Reservoir, County Cork.

The nearest European sites are the Gearagh SAC (000108) and the Gearagh SPA (004109) located 1.8km and 2.5km southwest of the development site. These European sites are within part of the Lee catchment. The River Sullane is a tributary of the River Lee, however, the River Sullane does not form part of these European sites or any other candidate site (SAC, SPA) at the point of discharge; therefore, there is no direct hydrological connection, as shown in Figure 3-5.

The River Sullane, upstream and downstream of the proposed upgrade site, has a recent assigned ecological status "Good" under the Water Framework Directive (WFD) reaching a Q4 value in 2020. The status changes to "High" at the next EPA station which is located 675m downstream; however, this is a pre WFD status which was recorded in 1990.

The proposed upgrade site is comprised of one plot of land which is also utilised by the Roads Dept. of Cork County Council at the front of the site and also the back of the site. The WwTP is located within the centre of the site.

3.4.2 *Desktop Assessment*

A search of the NBDC database was carried out for species protected under the EU Habitat Directive and for species listed under the Third Schedule of the Birds and Natural Habitats Regulations (2011) within the 100m grid squares W348730, W349729, W349728, W348728 and W348729 which encompass the entirety of the proposed upgrade site. The is no records of any species present within these grid squares. A recording of an Annex II species was recorded within the footprint of the proposed upgrade site. A recording of otter spraint (Grid W353725) was recorded in May 2017 in the database Mammals of Ireland 2016-2025. This was located 500m downstream of the site, indicating otter are likely to commute/forage within the area present within the footprint of the site.

3.4.3 *Field Surveys*

A TOBIN ecologist carried out an ecological multi-disciplinary walkover survey of the site on the 25th January 2021 in order to identify the key ecological features of the site including, habitats, flora and fauna. The ecological surveys that were carried out are relevant to the consideration of the potential for the proposed development to affect the conservation objectives of the European sites in the vicinity of the proposed development, namely: habitat/botanical survey and otter survey, all of which described hereunder. The ecological field survey was undertaken outside the optimal survey season (Smith *et al.*, 2011)[19], however considering the proposed upgrade site occurs within an existing WwTP site with highly modified lands, coupled with the

[19] Smith, G. F., O'Donoghue, P., O'Hora, K., & Delaney, E. (2011). Best practice guidance for habitat survey and mapping. The Heritage Council: Ireland.

robust desktop assessment which was carried out, it is considered that a sufficient assessment to inform this AA Screening was undertaken.

3.4.3.1 Habitat, Flora and Fauna

Habitat and botanical surveys were carried out within the proposed development site on the 4th and 5th May 2022, following methodology outlined by 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2011) and 'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes' (NRA, 2008)[20].

Within the proposed upgrade area, a variety of habitats exist which will be directly impacted; removed or fragmented by the development. The main habitats within the development area were identified and classified according to Fossitt (2000)[21] with reference made to the 'Interpretation Manual of EU Habitats' (EC, 2013) as appropriate.

They included flowerbeds and boarders (BC4), amenity grassland (GA2), earth banks (BL2), hedgerows (WL1), scrub (WL1), ornamental/non-native shrub (WS3), spoil and bare ground (ED2), recolonising bare ground (ED3), refuse and other waste (ED5), depositing lowland rivers (FW2) and buildings and artificial surfaces (BL3) in the form of roads and parking areas surround the site.

The vegetation on site consists mainly of species indicative of Grassy Verges, Scrub and hedgerow habitat. Species recorded included; Bramble (*Rubus fruticosus agg.*), Hogweed (*Heracleum sphondylium*), Yorkshire fog (*Holcus lanatus*), Cow parsley (*Anthriscus sylvestris*), Silverweed (*Argentina anserina*), Vetch (*Vicia spp*), Meadow buttercup (*Ranunculus acris*), Dock (*Rumex spp*), Nettle (*Urtica dioica*), White Clover (*Triflioum repens*), Soft rush (*Juncus effuses*), Daisy (*Bellis perennis*), Common Chickweed (*Stellaria media*), Herb Robert (*Geranium robertianum*), Hart's Tongue (*Asplenium scolopendrium*), Gorse (*Ulex europaeus*), Ribwort Plantain (*Plantago lanceolata*), *Brachythecium* species, Lady-fern (*Athyrium filix-femina*), Meadowsweet (*Filipendula ulmaria*),

The hedgerows surrounding the perimeter were dominated by Hawthorn (*Crataegus monogyna*), Ash (*Fraxinus excelsior*) and Privet (*Ligustrum*). The ground layer of the hedgerows along the site boundary fence is dominated by Bramble, Ivy (*Hedera helix*), Great Willowherb (*Epilobium hirsutum*), Male fern (*Dryopteris filix-mas*), Meadowsweet, Hedge bindweed (*Calystegia sepium*), Meadow buttercup and Tufted Vetch (*Vicia cracca*).

To the north-east of the site was a small plantation of mature conifer trees approximately 15m foot in height. The ground layer of this plantation was predominantly Ivy and Bramble. Along the entrance to the site is a line of mature poplar trees (*Populus*) which were approximately 6m in height. These were also mixed with eight to ten mature Ash trees.

No Annex I habitats were recorded within or in the immediate vicinity of the site during the desktop study or field survey.

The proposed development site was surveyed for protected flora and fauna and any evidence of EU Habitats Directive Annex I habitats. The proposed development site was also searched for evidence of invasive plant species listed in Part 1 of the Third Schedule of S.I No. 477 of 2011, European Communities (Birds and Natural Habitats) Regulations (2011). Species of the

[20] Fossit, J. A. (2000). A Guide To Habitats In Ireland, Kilkenny: The Heritage Council. Williams, H., M. et. al. (2001). Control of water pollution from construction sites. London. CIRIA.
[21]

butterfly bush (*Buddleja davidii*) were recorded present at the north of the site in an area of scrub. Four stands were recorded. This is inside of the boundary line of the proposed upgrade works.

Otter

A protected non-volant mammal survey (including otter) was conducted within the proposed upgrade area and along the access tracks, culverts and areas where suitable habitat for these species occurred. The survey area included the proposed upgrade area as well as a 150m buffer around the development site (where accessible) and 150m upstream and downstream along the bank of the River Sullane along the boundary of the site to check for signs of protected fauna, including Otter (Lutra lutra) in accordance with 'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes' NRA (2008)[22] guidelines. A further survey was undertaken on the 13th of January 2022 which repeated the afore mentioned methodology to survey for otter along the banks of the River Sullane.

An active otter holt was identified on the right hand bank of the River Sullane, 55m upstream of the site boundary (Grid reference W 34884 73082) shown in Photo 3-1. No other Annex II species were recorded during the multi-disciplinary walkover survey. During the second otter survey carried out on the 13th of January 2022, this otter holt was still present and active. No further otter holts were discovered.

No other Annex II species were recorded during the multi-disciplinary walkover survey. No invasive species listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015) were recorded within the proposed upgrade site during the field survey.

The habitats directly within the proposed upgrade area are considered to be unsuitable for protected species such as otter or wintering waterbirds. However due to the historic record of otter and the suitability habitat within the study area, there is potential that otter may commute, rest or forage along the River Sullane which is in close proximity to the proposed upgrade site, at least on occasion.

[22] Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes 2009. https://www.tii.ie/technical-services/environment/planning/Ecological-Surveying-Techniques-for Protected-Flora-and-Fauna-during-the-Planning-of-National-Road-Schemes.pdf

Photo 3-1: Entrance to Active Otter Holt on the Bank of the River Sullane

3.5 OVERVIEW OF POTENTIAL IMPACTS

The proposed upgrade site is not located within or directly adjacent to any designated European site. Therefore, there will be no direct impact on any European sites as a result of the proposed upgrade works.

There are several elements associated with the proposed upgrade works that may give rise to indirect impacts that have the potential to result in likely significant effects during the construction and operational phase. The significance of these impacts depends on the scale of the impact as well as the ecological condition and the sensitivities of the qualifying interests/special conservation interests.

Elements of the proposed upgrade works that may give rise to impacts which have been considered within regards to potential effects on European sites are as follows:

- Loss of habitat as a result of the proposed infrastructure;
- Release of sediment and pollutants which may be discharged into surface water, particularly during high rainfall events;
- Movement of vehicles and machinery associated with construction works and the potential for spillages of oils, fuels or other pollutants which could be transported to the surface water system during rainfall events;
- Transportation, pouring of concrete onsite and washing of concrete lorry flume – risk for entry into surface water;
- Increased silt loading which may stunt aquatic plant growth, limit dissolved oxygen capacity and overall reduce the ecological quality of watercourses, with the most critical period associated with low flow conditions;
- The introduction or spread of invasive alien species due to construction works;
- Disturbance to fauna (e.g. through noise from construction activity and/or human presence) resulting in the displacement of affected species; and
- Accidental mortality of wildlife from construction machinery.

3.5.1 *Construction Phase Impacts*

Potential construction phase impacts associated with the proposed upgrade are discussed hereunder.

3.5.1.1 Loss of Habitat

Habitats within the Site boundary which will be lost include amenity grassland, hedgerows and treelines. No Annex I habitats were recorded within the area of habitat proposed to be removed. Trees at the boundary will be removed however these will be replaced after construction.

3.5.1.2 Runoff of Sediment and/or Construction Pollution

Site clearance, excavation activities and the stockpiling of material have the potential to result in sediment laden runoff if not appropriately managed. Such runoff could result in the sedimentation of the River Sullane which is located, at the closest point, approximately 60m south of the proposed construction works area. Excavation works will also be undertaken within and in close proximity to a River. The runoff of sediment could result in increased suspended solids into nearby watercourses. Increased silt loading in watercourses can stunt aquatic plant growth, limit dissolved oxygen capacity and overall reduce the ecological quality of watercourses, with the most critical period associated with low flow conditions.

Surface water runoff could be contaminated by leaks and spills of fuel, oil or other construction material from construction vehicles/machinery, if not properly managed. The pouring of concrete will be required during the proposed construction works. The runoff of contaminated surface water could result in the degradation of water quality and impacts to aquatic fauna and flora, particularly if concrete is present.

The potential for fluvial flooding within the proposed upgrade site increases the risk of runoff of sediment and construction pollution into the River Sullane, if not appropriate managed.

3.5.1.3 Noise and Disturbance

The proposed construction works will result in an increase in noise levels during the works due to the presence of construction vehicles and machinery. The construction works will also result in an increase in personnel and traffic movement to and from the site. No rock breaking or blasting will be undertaken during the construction works.

The total number of construction staff on-site will vary during the construction phase of the works but are expected to peak at approximately 50 persons. Normal working hours during the construction period are expected to be Monday to Friday 08.00 to 18.00 hours (inclusive) and Saturdays (excluding Bank/Public Holidays) 08.00 to 14.00 (inclusive).

A temporary increase in noise levels within the site may result in disturbance to wildlife within the immediate vicinity of the site.

It is likely that construction lighting will be required during the construction works. Fugitive lighting could deter movement of species in the area.

3.5.2 Operational Phase Impacts

3.5.2.1 Noise and Disturbance

During the operational phase, the proposed upgrade will function as it is now and will not result in an increase in noise levels or disturbance within the immediate vicinity. There will be required maintenance and calibration of equipment, delivery of necessary chemicals, removal of sludge from site and replacement of faulty or damaged structures and related hardware as required. The human activity within the area is likely to have imperceptible impacts on the surrounding environment.

3.5.2.2 Pollution

There are no known watercourses within the site connecting the proposed upgrade works to the River Sullane; however, surface water runoff from the site likely drains to the River Sullane. Furthermore, wastewater from the existing wastewater treatment plant is being discharged directly into the River Sullane.

The delivery of necessary chemicals and the removal of sludge from site will be required. There is potential for accidental leaks and spills of fuel, oil, sludge or chemicals from delivery vehicles or operating equipment, if not properly managed. This could cause surface water runoff to become contaminated.

These potential impacts are associated with the construction, and to a lesser extent with the operational phase of the proposed upgrade works.

3.6 DETERMINING THE LIKELY ZONE OF INFLUENCE

Guidance in AA of plans and projects in Ireland notes that a distance of 15km is recommended for the identification of relevant European sites (DEHLG, 2010)[23]. For some projects the distance could be much less than 15km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in-combination effects.

Using the source-pathway-receptor model, an examination of the potential effects of the proposed upgrade was undertaken (alone and / or in-combination) to identify what European sites, and which of their qualifying interests or special conservation interest species were potentially at risk. This was required to determine the ZoI (refer to Figure 3-5) for the proposed upgrade. This conceptual model is a standard tool in environmental assessment. In order for an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no likelihood for the effect to occur. In the context of the proposed upgrade, the model comprises:

- Source (s) – potential impacts from the proposed upgrade, e.g. the runoff of sediment;
- Pathway (s) – hydrological, physical or ecological connectivity to a European site; and
- Receptor (s) – qualifying interests and/or special conservation interests of the European sites.

The CIEEM defines the ZoI of a project as the area(s) over which ecological features may be affected by the biophysical changes caused by the proposed project/ upgrade and associated activities.

In order to establish the ZoI of the proposed upgrade works, the likely key biophysical changes associated with the works were determined having regard to the project characteristics set out in Section 3.3 of this report. The ZoI of the proposed upgrade is described hereunder.

Impacts associated with the loss of habitats will be confined to within the proposed upgrade site boundary. The ZoI was therefore defined as all lands within the Planning Application Boundary.

With regards potential habitat degradation effects associated with the release of sediment and other pollutants to surface water, the ZoI of the proposed upgrade is considered to include receiving waterbodies adjacent to or downstream of the proposed upgrade site during the construction phase. The distance downstream is associated with the current biological condition of the accepting waterbody and its capacity to accept and assimilate sediment and other pollutants.

Noise from the construction activity has the potential to cause disturbance to resting, foraging and commuting qualifying and special conservation interest species. Individual species will elicit differing behavioural responses to disturbance at different distances from the source of disturbance. Below is a summary of the documented ZoI for varying species:

- Transport Infrastructure Ireland (formally the National Roads Authority) has produced a series of best practice planning and construction guidelines[13] for the treatment of certain protected mammal species (i.e. otter), which indicate that

[23] https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf

disturbance to terrestrial mammals would likely not extend beyond 150m for the type of works proposed.

- Cutts *et al.* (2013)[24] notes that different types of disturbance stimuli are characterised by different avifaunal reactions, however as a general rule of thumb, a distance of 300m can be used to represent the maximum likely disturbance distance for waterfowl.

The ZoI for noise/disturbance was therefore established as the proposed upgrade site plus a 300m buffer.

3.7 IDENTIFICATION OF RELEVANT EUROPEAN SITES

As mentioned above, the source-pathway-receptor conceptual model was used to identify a list of 'relevant' European sites (i.e. those which could be potentially affected by the proposed upgrade) which are illustrated on Figure 3-5.

This conceptual model is a standard tool in environmental assessment. For an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no likelihood for the effect to occur. In the context of the proposed works, the model comprises:

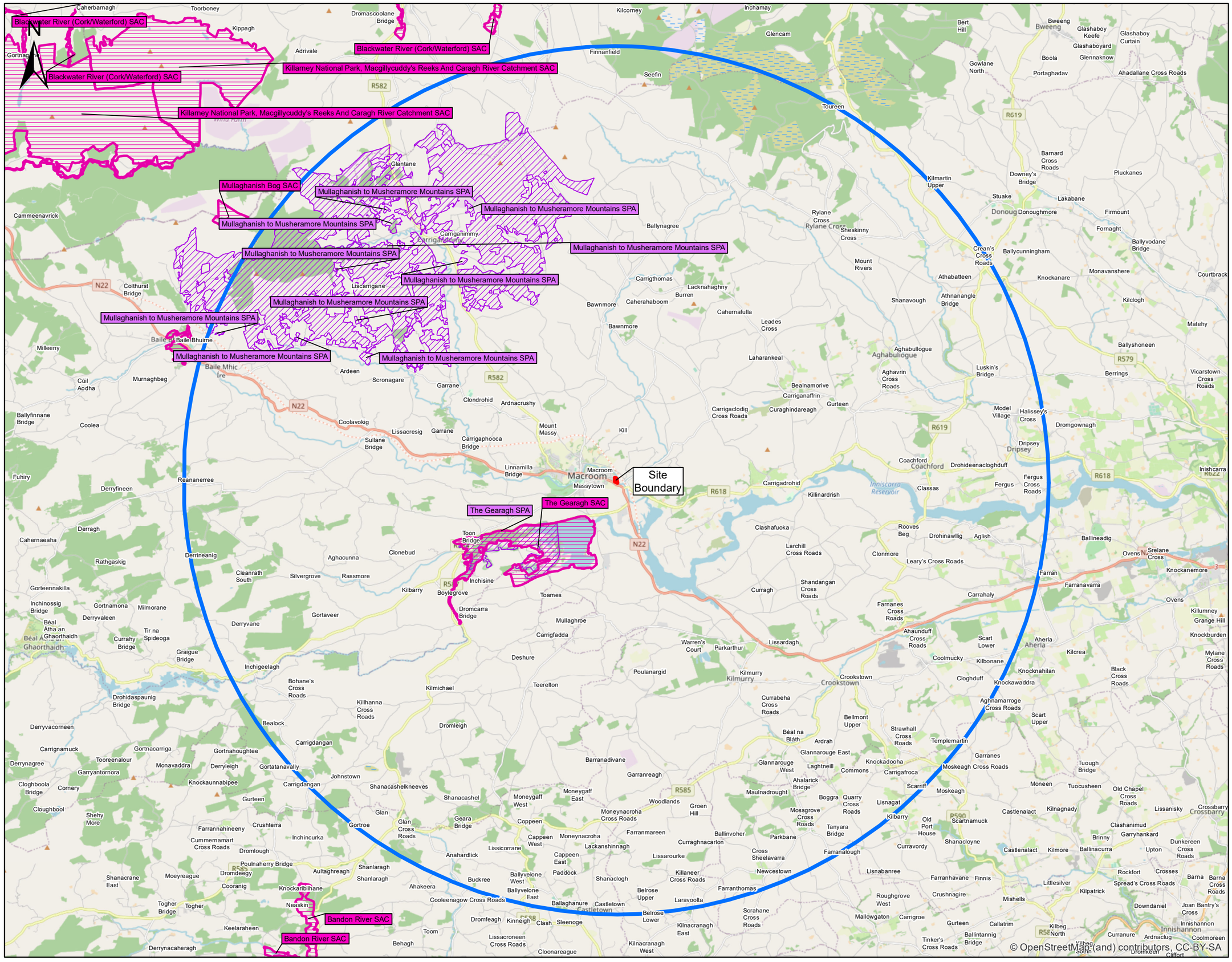
- Source (s) – e.g. sediment run-off from proposed works.
- Pathway (s) – e.g. drains and streams connecting to a European site.
- Receptor (s) – Qualifying habitats and species of European sites.

Four European sites (two SAC's and two SPA's) were identified within a 15km buffer of the Proposed Upgrade works and are shown in Figure 3-5 below.

The identification of potential source-pathway-receptor links for likely significant effects on these European sites is outlined in Table 3-2.

[24] Hull.Cutts, N., Hemingway, K. and Spencer, J. (2013). Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning & Construction Projects [Version 3.2]. Institute of Estuarine & Coastal Studies (IECS) University of Hull.

Figure 3-5: European Sites Within 15km Radius of the Proposed Upgrade Site



Legend

- 15km Buffer from Site Boundary
- Site Boundary
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

X	DD-MM-YY	XXXXXXXXXXXXX	X.X.	X.X.
Issue	Date	Description	By	Chkd.

Client: Glan Agua

Project: Macroom WWTP Project

Title: Figure 3 - 5 European Site Map

Scale @ A3: 1 : 25000

Prepared by:	Checked:	Date:
J. McGee	S. O'Reilly	Jan 2021

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Drawing No.: 0000-0000

Issue: X

Table 3-2: European Sites and Assessment of Likely Significant Effects from the Proposed Upgrade

European Site	Qualifying Interest/ Special Conservation Interests	Source-Pathway-Receptor Link	Possibility of Likely Significant Effects
The Gearagh SAC [IE000108][25] Distance: Proposed upgrade site is located 2.5km north east of the SAC site boundary	• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] • Rivers with muddy banks with *Chenopodion 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] • Otter (*Lutra lutra*) [1355]	The proposed upgrade is in a separate sub catchment 2.5km north of the SAC. Therefore, there is no potential for direct or indirect impacts to qualifying interest habitats. Due to the distance to the SAC (2.5km), there is no potential for the disturbance of otter within the SAC boundary. However, the territories of otters can stretch for several kilometres; therefore, it can be assumed that the otter population from this SAC may commute/forage along the River Sullane. The River Sullane is adjacent to the proposed upgrade and is hydrologically connected to the proposed upgrade via surface water runoff. Therefore, in the absence of protective mitigation, there is a potential for indirect negative impacts on feeding grounds of otter via surface water runoff and increased sediment or pollution. Construction works will result in an increase of noise. Increase of noise can impact otter and their resting and breeding sites. An active otter holt was recorded 55m north of the site boundary	**Yes** – the proposed upgrade has the potential to result in disturbance to qualifying interest species. There is potential that the proposed upgrade would result in indirect impacts to qualifying interest species.

[25] NPWS 2015 Site Synopsis: The Gearagh SAC [IE000108] https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000108.pdf

European Site	Qualifying Interest/ Special Conservation Interests	Source-Pathway-Receptor Link	Possibility of Likely Significant Effects
		which has the potential to be indirectly disturbed by the proposed upgrade[26]. Thus, there is potential for indirect disurbance impacts to otter breeding, commuting, and or foraging along the River Sullane within the ZoI of the proposed upgrade. Considering the type of development and the proximity of this European site to the proposed upgrade, it is determined that a pathway exists for potential impacts which could give rise to likely significant effects.	
St. Gobnet's Wood SAC [IE000106][27] **Distance:** Proposed upgrade site is located 15km south of the SAC site boundary.	• Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	There is no potential for direct and indirect impacts to qualifying interest species and habitats. This SAC lies approximately 15km to the north of the proposed upgrade and thus occurs outside the ZoI for direct habitat impacts or dust effects. Following the source-pathway-receptor model, the proposed upgrade is not linked to this SAC. There is no hydrologial or hydrogeological connectivity (surface water or groundwater) between the proposed upgrade site and this SAC.	No potential pathway exists. Considering the type of development and the proximity of this European site to the proposed upgrade, it is determined that no pathway exists for potential impacts which could give rise to likely significant effects on this designated site.

[26] NRA (2008) Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes.
[27] NPWS 2013 Site Synopsis: The Gearagh SAC [IE000106] https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000106.pdf

European Site	Qualifying Interest/ Special Conservation Interests	Source-Pathway-Receptor Link	Possibility of Likely Significant Effects
The Gearagh SPA [004109][28] **Distance :** Proposed upgrade site is located 2.5km east of the SAC site boundary.	• Mallard (*Anas platyrhynchos*) [A053] • Coot (*Fulica atra*) [A125] • Teal (*Anas crecca*) [A052] • Wigeon (*Anas penelope*) [A050] • Wetland and Waterbirds [A999]	This SPA lies approximately 2.5km to the west of the proposed upgrade in a separate subcatchment. This SPA is designated for four waterfowl species. Core foraging ranges have not been described for these special conservation interest species; however, these species are not identified as particularly vulnerable to the proposed upgrade due to their flight behaviour and/or habitat requirements. Therefore, there will not be any significant effects on the special conservation interest species of this SPA.	No potential pathway exists. Considering the type of development and the proximity of this European site to the proposed upgrade, it is determined that no pathway exists for potential impacts which could give rise to likely significant effects on this designated site.
Mullaghanish to Musheramore Mountains SPA [004162][29] **Distance:** Proposed upgrade site is located 6.8km north east of the SPA site boundary.	• Hen Harrier (*Circus cyaneus*) [A082]	This SPA lies approximately 6.8km south west of the proposed upgrade and is in a separate subcatchment. Hen Harriers will forage up to c. 2 km from a nest site, with a maximum foraging range of 10km (SNH 2016)[30], utilising open bog and moorland, young conifer plantations and hill farmland that is not too rank. The proposed upgrade is located in an urban setting 6.8km north and does not provide supporting habitat for this species. Therefore, there will not be any significant effects on this special conservation interest species or SPA.	No potential pathway exists. Considering the type of development and the proximity of this European site to the proposed upgrade, it is determined that no pathway exists for potential impacts which could give rise to likely significant effects on this designated site.

[28] NPWS 2012 Site Synopsis: The Gearagh SPA [IE004109] https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004109.pdf
[29] NPWS 2012 Site Synopsis: Mullaghanish to Musheramore Mountains SPA [004162] https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004162.pdf
[30] Scottish Natural Heritage (SNH) (2016). Assessing Connectivity with Special Protection Areas (SPAs). SNH Guidance. Scottish Natural Heritage, Version 3 – June 2016.

European Site	Qualifying Interest/ Special Conservation Interests	Source-Pathway-Receptor Link	Possibility of Likely Significant Effects
Cork Harbour SPA [004030][31] Distance: Proposed upgrade site is located 35km west of the SPA site boundary.	• Little Grebe (*Tachybaptus ruficollis*) [A004] • Great Crested Grebe (*Podiceps cristatus*) [A005] • Cormorant (*Phalacrocorax carbo*) [A017] • Grey Heron (*Ardea cinerea*) [A028] • Shelduck (*Tadorna tadorna)* [A048] • Wigeon (*Anas penelope*) [A050] • Teal (*Anas crecca*) [A052] • Pintail (*Anas acuta)* [A054] • Shoveler (*Anas clypeata*) [A056] • Red-breasted Merganser (*Mergus serrator*) [A069] • Oystercatcher (*Haematopus ostralegus*) [A130] • Golden Plover (*Pluvialis apricaria*) [A140]	This SPA lies approximately 35km east of the proposed upgrade works in a separate subcatchment. This SPA is designated for twelve waterfowl species. Considering the downstream distance between the proposed upgrade and this SPA, there is no potential for direct disturbance of these species. In addition, the proposed upgrade site occurs outside the core foraging range for these special conservation interest species (SNH 2016).	No – The SPA is hydrologically connected to the proposed upgrade, however considering the considerable downstream distance of the site (hydrological route ca. 45km), the potential assimilative capacity of the receiving watercourses coupled with the small scale and temporary nature of the proposed works, there is no potential for water quality impacts on this SPA. Thus there is no potential for likely significant effects to this SPA.
Great Island Channel SAC [001058][32]	• Tidal Mudflats and Sandflats [1140]	This SAC lies approximately 45km east of the proposed upgrade works and therefore, due to the distance, it occurs beyond the ZoI for direct	No – The SAC is hydrologically connected to the proposed upgrade, however considering the

[31] NPWS 2015 Site Synopsis: Cork Harbour SPA [IE004030] https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004030.pdf
[32] https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY001058.pdf

European Site	Qualifying Interest/ Special Conservation Interests	Source-Pathway-Receptor Link	Possibility of Likely Significant Effects
Distance: Proposed upgrade site is located 45km west of the SAC site boundary.	• Atlantic Salt Meadows [1330]	or indirect impacts on these qualifying interest habitats.	considerable downstream distance of the site (hydrological route ca. 45km), the potential assimilative capacity of the receiving watercourses coupled with the small scale and temporary nature of the proposed works, there is no potential for water quality impacts on this SAC. Thus there is no potential for likely significant effects to this SAC.

4.0 IDENTIFICATION OF LIKELY SIGNIFICANT EFFECTS

4.1 ASSESMENT FOR LIKELY SIGNIFICANT EFFECTS

Table 3.2 lists the European sites within 15km of the proposed development or which are hydrologically connected to the proposed development site. A source-pathway-receptor link was identified between the proposed development and one European site; the Gearagh SAC (bolded in Table 3-2). There is no potential for direct impacts as the Proposed Upgrade is not located within or adjacent to any European site. However, the construction and operation phases associated with the proposed upgrade works have the potential to give rise to significant indirect effects on the qualifying interest species of the Gearagh SAC via disturbance and water quality impacts during the proposed construction phase of the development.

4.2 ANALYSIS OF POTENTIAL IN-COMBINATION EFFECTS

Article 6(3) of the Habitats Directive requires that:

'Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives.'

As part of the AA screening process, it is therefore required that the potential impacts of the proposed development are considered in-combination with any other relevant plans or projects. Relevant projects and plans in the region must also be considered in addition to the Proposed Upgrade works. The purpose of this is to identify at this early stage any possible cumulative effects on the Natura 2000 Sites from the upgrade works, in-combination with other plans and projects.

The characteristics of existing, proposed, or other approved plans or projects, which may result in in-combination effects with the Proposed Upgrade and have likely significant effects on European site(s), were assessed.

All plans have the capacity to produce impacts, and generally do. While plans are drafted with specific aims and policies to achieve a specific objective, for example, the development of economic and transport infrastructure within a region, there may be impacts which will prove negative to another aspect of a region; specifically on Annex I habitats or Annex II species. On saying this, plans may have the capacity to introduce very positive objectives in the area of environmental protection.

Cork County Council County Development Plan 2014-2020

Cork County Council has a series of Municipal District Local Area Plans[33]. Within this, is Blarney Macroom Municipal District Local Area Plan. This Local Area Plan was subject to a Strategic Environmental Assessment (SEA) and a Habitats Directive Assessment (HDA). SEA Screening conclusion proposed further minor modifications to the Plan will have a neutral impact as it does not involve any new material and is partly a restatement of objective TM 3-1 (National Road Network) from the Cork County Development Plan 2014 which was also subject to its own environmental assessments.

[33] http://corklocalareaplans.com/

The screening of the Habitats Directive Assessment concluded that the Blarney Macroom MD Local Area Plan does not have the potential to give rise to significant negative impacts on any of the Natura 2000 sites listed within the document.
A review of Cork County Council planning portals[34] revealed small scale residential and rural developments (e.g. residential one-off housing and agriculturally based developments) in rural areas surrounding Macroom. These are not expected to have any in- combination effects with the Proposed Upgrade works. No large-scale commercial developments were noted in the area.

5.0 SCREENING ASSESSMENT CONCLUSION

To summarise, it has been determined that in the absence of appropriate mitigation, the proposed upgrade may have a likely significant effect on the qualifying interest species of The Gearagh SAC due to indirect effects associated with the proposed construction works which includes disturbance from noise and presence of machinery and personnel during construction and the potential release of suspended solids / nutrients / pollutants during construction.

The remaining three relevant European sites that were initially considered were found to be outside of the ZoI as they are located too far away and there is no hydrological links present for any significant effects to occur.

Following an evaluation of the relevant information, including details of the Proposed Upgrade and its relationship with European sites, it is not considered possible to rule out the potential for likely significant effects on the otter which is a Qualifying Interest of The Gearagh SAC based on the application of the precautionary principle and in the absence of mitigation.

It is therefore recommended that a NIS be prepared to assist the competent authority in undertaking an AA of the effects of the Proposed Upgrade alone or in-combination with other plans and projects on the integrity of The Gearagh SAC.

[34] http://maps.corkcoco.ie/planningenquiryv3/MainFrames.aspx

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