



**Glan Agua**

**Macroom Wastewater Treatment Plant Upgrade**

**Natura Impact Statement**



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Galway Office Fairgreen House, Fairgreen Road, Galway, H91 AXK8, Ireland.  Tel: +353 (0)91 565 211	Dublin Office Block 10-4, Blanchardstown Corporate Park, Dublin 15, D15 X98N, Ireland.  Tel: +353 (0)1 803 0406	Castlebar Office Market Square, Castlebar, Mayo, F23 Y427, Ireland.  Tel: +353 (0)94 902 1401
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## 1.0 INTRODUCTION

This report has been prepared by TOBIN Consulting Engineers (TOBIN) on behalf of Glan Agua. This report forms a Natura Impact Statement (NIS) for proposed upgrade works at the Macroom Wastewater Treatment Plant (WwTP) which is located in Macroom, Co. Cork.

Irish Water (IW) propose to upgrade the existing WwTP (hereafter referred to as the proposed upgrade works) to cater for the future agglomeration load and to remediate 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 proposed upgrade is not directly connected with or necessary for the management of any European site and hence the requirements of Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act 2000, as amended, in respect of Appropriate Assessment (AA) are engaged.

An AA Screening Report was prepared, on behalf of Glan Agua, providing information to enable the competent authority to perform its statutory function to undertake a screening for AA in respect of the proposed upgrade. An AA is required where it cannot be objectively concluded that a project or plan, either alone or in-combination with other projects or plans, is not likely to have significant effects on a European site. The AA Screening Report concluded; in light of best scientific knowledge, in view of the conservation objectives for the relevant European sites and on the basis of objective information, the proposed upgrade, either individually or in-combination with other plans or projects, will have an indirect effect on the following European site: The Gearagh Special Areas of Conservation (SAC) (Site Code: 000108).

This Natura Impact Statement (NIS) has been prepared in accordance with the provisions of the above stated legislation, providing information to enable the competent authority to perform its statutory function to undertake AA in respect of the proposed upgrade. This NIS includes an examination and analysis of the best available scientific knowledge and data in the field to identify and assess the implications of the proposed upgrade for any European sites in view of the conservation objectives of those sites. It considers whether there are ex-situ implications for any European sites, for example from impacts which occur via downstream pathways at a remote but connected location, or from impacts on populations of ex-situ species located outside of European sites, or from impacts on ex-situ supporting habitats. It considers whether the proposed upgrade, by itself or in-combination with other plans or projects, would adversely affect the integrity of any European sites. In reaching a conclusion in this regard, consideration has been given to any mitigation measures necessary to avoid or reduce any potential adverse effects.

### 1.1 STATEMENT OF COMPETENCE

This NIS 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 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.

## 2.1 METHODOLOGY

### 2.1.1 *Appropriate Assessment Methodology*

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.

This report details Stage Two, preparation of a NIS, to assist the competent authority in carrying out its AA for the proposed upgrade.

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 Habitat’s Directive 92/43/EEC*” (EC, 2018), as follows:

- 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; and
- 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.

## **2.2 GUIDANCE AND APPROACH**

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



### 2.2.1 *European Commission Guidance*

- 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)<sup>1</sup>;
- Managing Natura 2000 Sites – The provisions of Article 6 of the 'Habitats Directive' 92/43/EEC. European Commission (EC, 2018)<sup>2</sup>.
- 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)<sup>3</sup>.
- Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg (European Commission [EC] 2000)<sup>4</sup>
- Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg (EC, 2006)<sup>5</sup>.
- Article 6 of the Habitats Directive – Rulings of the European Court of Justice (European Commission Final Draft September 2014).
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013)<sup>6</sup>.
- European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011).

### 2.2.2 *Irish Guidance*

- 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)<sup>7</sup>.
- Applications for Approval for Local Authority Developments made to An Bord Pleanála under 177AE of the Planning and Development Act, 2000, as amended (Appropriate Assessment) – Guidelines for Local Authorities (An Bord Pleanála 2013);
- Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government (DoEHLG, 2010)<sup>8</sup>.
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 & PSSP 2/10.
- Appropriate Assessment Screening for Development Management. Office of the Planning Regulator (OPR) Practice Note PN01 (OPR, 2021)<sup>9</sup>.

<sup>1</sup> 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.

<sup>2</sup> European Commission (2018)

[https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/Provisions\\_Art\\_6\\_nov\\_2018\\_en.pdf](https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/Provisions_Art_6_nov_2018_en.pdf)

<sup>3</sup> Guidance Document on Article 6 (4):

[https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance\\_art6\\_4\\_en.pdf](https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance_art6_4_en.pdf)

<sup>4</sup> Communication from the Commission on the Precautionary Principle: <https://op.europa.eu/en/publication-detail/-/publication/21676661-a79f-4153-b984-aeb28f07c80a/language-en>

<sup>5</sup> Nature and Biodiversity Cases: [https://friendsoftheirishenvironment.org/images/EULaw/ecj\\_rulings\\_en.pdf](https://friendsoftheirishenvironment.org/images/EULaw/ecj_rulings_en.pdf)

<sup>6</sup> Interpretation Manual:

[https://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int\\_Manual\\_EU28.pdf](https://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf)

<sup>7</sup> Circular L8/08: <https://www.npws.ie/sites/default/files/general/circular-L8-08.pdf>

<sup>8</sup> Appropriate Assessment of Plans and Projects:

[https://www.npws.ie/sites/default/files/publications/pdf/NPWS\\_2009\\_AA\\_Guidance.pdf](https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf)

<sup>9</sup> Appropriate Assessment Screening for Development Management: 9729-Office-of-the-Planning-Regulator-Appropriate-Assessment-Screening-booklet-15.pdf

## 2.3 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<sup>10</sup>
- 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<sup>11</sup> and National Biodiversity Data Centre (NBDC)<sup>12</sup> 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<sup>13</sup>.
- Information and data on water catchments from the River Basin Management Plan 2018-2021<sup>14</sup> and the Water Framework Directive (WFD) Ireland Database<sup>15</sup>.
- GIS Online mapping<sup>16</sup>.
- Environmental Protection Agency (EPA) Appropriate Assessment tool<sup>17</sup>;
- Information and data on water catchments from the River Basin Management Plan 2018-2021<sup>18</sup>; and
- Heritage map viewer<sup>19</sup>.

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 DESCRIPTION OF THE PROPOSED UPGRADE

### 3.1 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. The WwTP is situated approximately 20m from the south-west bank of the River Sullane (IE\_SW\_19S020480), which

<sup>10</sup> National Parks and Wildlife Service: <https://www.npws.ie/protected-sites>

<sup>11</sup> National Parks and Wildlife Service: <https://www.npws.ie/maps-and-data>

<sup>12</sup> National Biodiversity Data Centre (NBDC): <https://maps.biodiversityireland.ie/Map>

<sup>13</sup> <https://www.fisheriesireland.ie/Projects/habitats-directive-and-red-data-book-fish-species.html>

<sup>14</sup> <https://www.catchments.ie/guide-water-framework-directive/>

<sup>15</sup> Water Framework Directive (WFD) Ireland [www.wfdireland.ie](http://www.wfdireland.ie)

<sup>16</sup> <http://dcnr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228>

<sup>17</sup> EPA Appropriate Assessment tool: <https://gis.epa.ie/EPAMaps/AAGeoTool>

<sup>18</sup> EPA: [www.catchments.ie](http://www.catchments.ie)

<sup>19</sup> Data from the Heritage Map Viewer accessed through the heritage map viewer: <https://heritagemaps.ie/WebApps/HeritageMaps/index.html>

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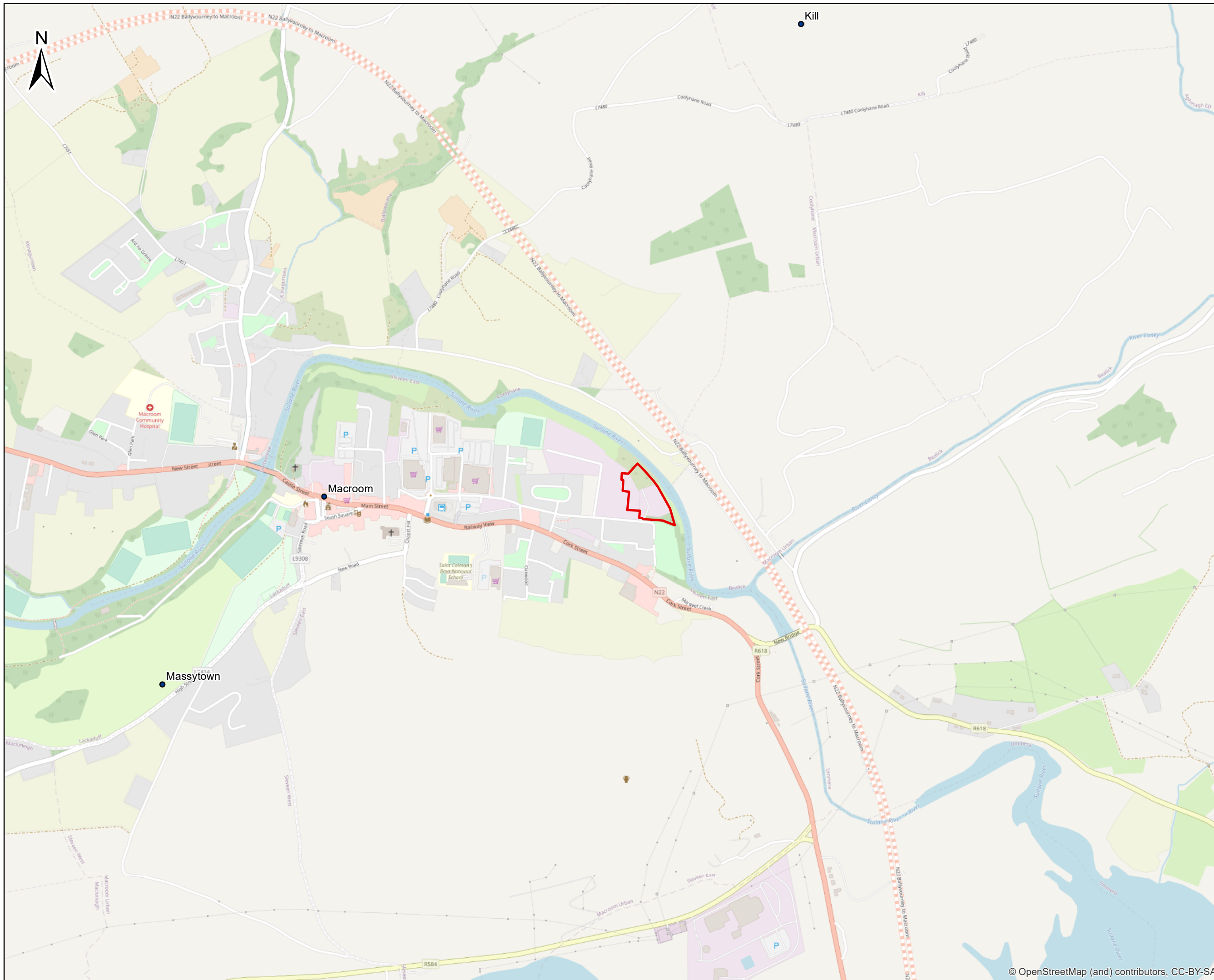
flows through the centre of the town and is a tributary of the River Lee. This section of the river is part of the WFD Subcatchment, Sullane\_SC\_010.

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.

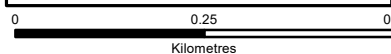
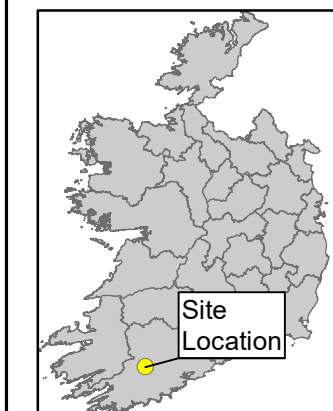
The site is low lying and the eastern area of the site in particular is prone to flooding from the River Sullane, which runs along the eastern site boundary. In extreme cases flooding has overtopped the oxidation ditch and clarifier, due to a combination of backing up in the process stream as well as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

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



**Legend**

— Site Boundary



- 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: S.Pezzetta      Checked: S.O'Reilly      Date: January 2022

Project Director: D.Grehan

**TOBIN**  
CONSULTING ENGINEERS  
Consulting, Civil and Structural Engineers,  
Block 10-4, Blanchardstown Corporate Park,  
Dublin 15, Ireland.  
tel: +353-(0)1-8030406  
fax: +353-(0)1-8030409  
e-mail: info@tobin.ie  
www.tobin.ie

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Figure 3-1      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<sup>3</sup>, 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<sup>3</sup> 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

discharge licence requirements in recent years. Consequently, an upgrade of the treatment process is required.

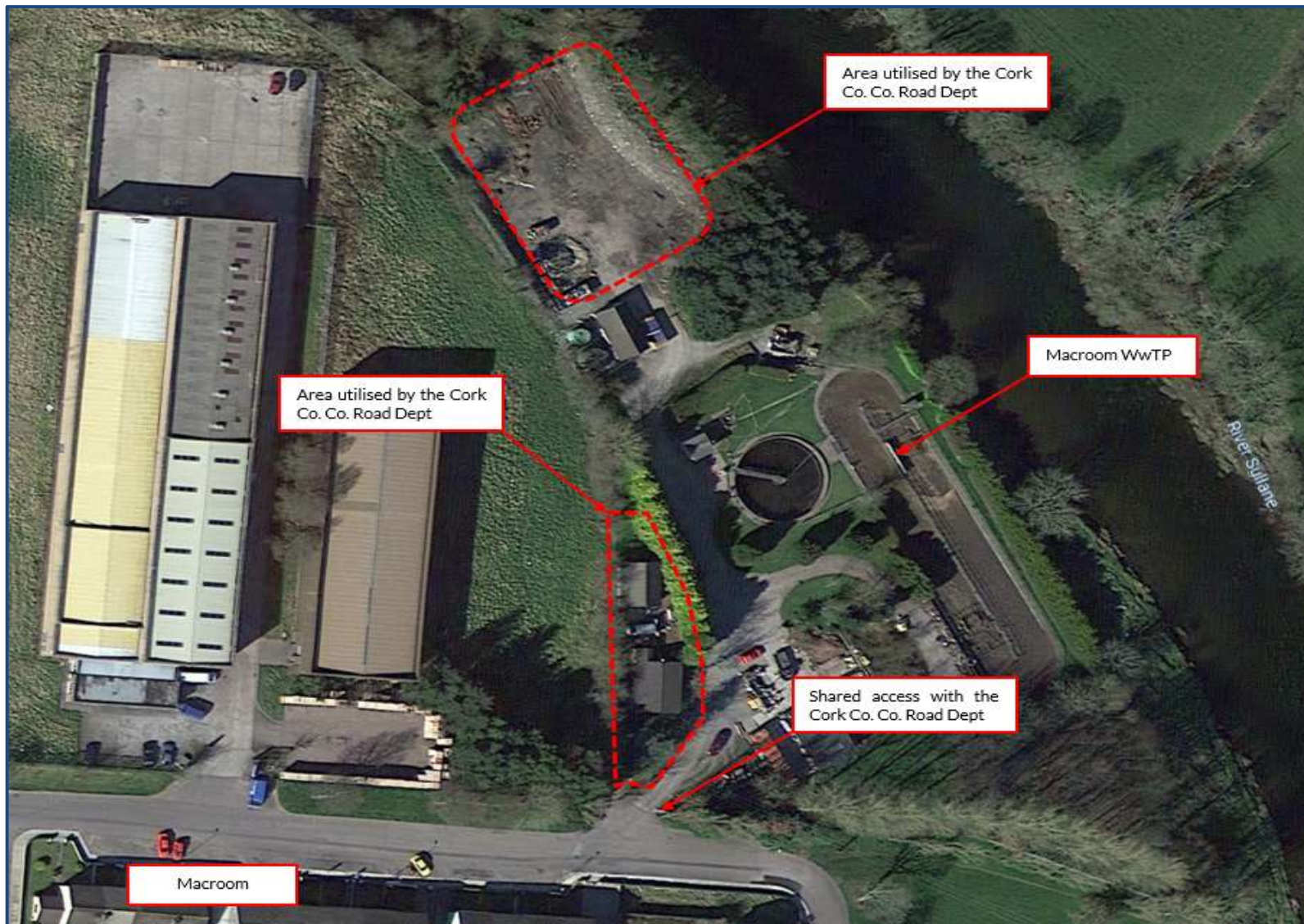
Additionally, the site suffers from flooding issues. At present, the site of the WwTP experiences localised flooding from the River Sullane at least twice a year. In order to mitigate the risk of flooding of the proposed development, it is proposed to construct a flood protection sheet-pile wall around 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. Refer to the proposed site layout drawing in Figure 3-3 of the report for details.

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 of 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.

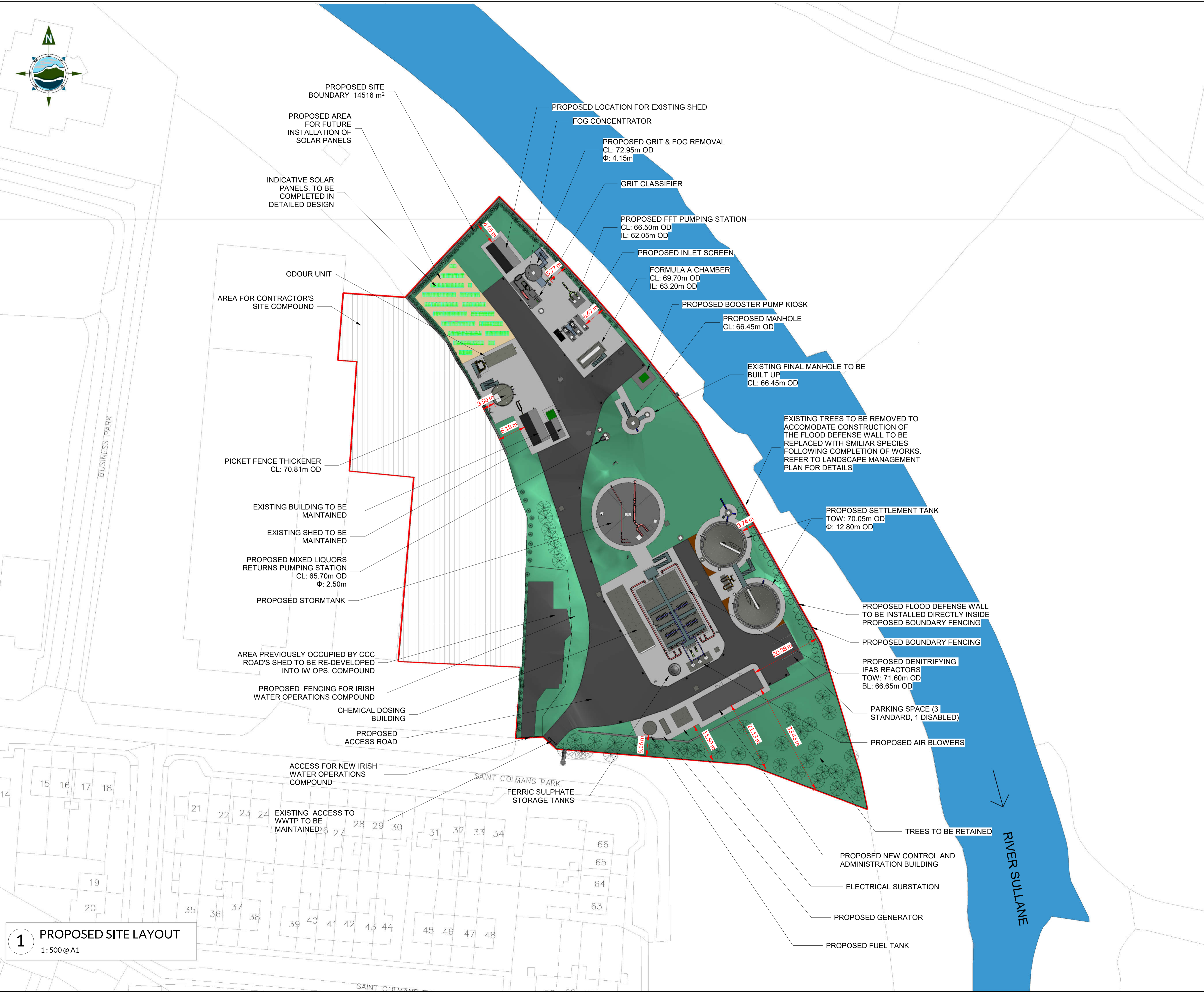
The Contractor shall be required to prepare a detailed Construction Environmental Management Plan, in line with ISO 14001 to address all construction activities to be carried out as part of the development prior to construction works commencing. An Outline Construction Environmental Management Plan has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



- 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 Main Head.

Ordnance Survey Sheet Number  
6329-D  
6374-B

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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**

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CLIENT

**IRISH WATER**  
Colville House,  
24-26 Talbot Street,  
Dublin 1,  
Tel. 1890 278 278 Web. www.water.ie

PROJECT

**MACROOM WASTEWATER  
TREATMENT PLANT UPGRADE**

CONSULTING ENGINEER

**TOBIN**  
CONSULTING ENGINEERS

**GLAN AGUA**  
MOTA-ENGLI GROUP

Glan Agua Ltd.,  
Railway House,  
Station Road,  
Loughrea,  
Co. Galway,  
IRELAND

Tel: +353 (0)909 630 301  
Fax: +353 (0)909 630 300  
e-mail: info@glanagua.com  
web: www.glanagua.com

TITLE

**MACROOM WWTP  
PROPOSED SITE LAYOUT**

SCALES	DRAWN	CHECKED	APPROVED
As indicated	JPL	NG	NG
	DATE	DATE	DATE
	JAN23	JAN23	JAN23
DRAWING No.	STATUS		REVISION
11218-TCE-MM-XX-DR-C-3102	S0	P06	

**1** PROPOSED SITE LAYOUT  
1:500@A1

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



## 3.4 DESCRIPTION OF THE EXISTING ENVIRONMENT

### 3.4.1 *Existing environment*

The findings 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. There are 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)<sup>20</sup>, however considering the proposed upgrade site occurs within an existing WwTP site with highly modified lands, coupled with the

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<sup>20</sup> 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)<sup>21</sup>.

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)<sup>22</sup> 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,

<sup>21</sup> Fossitt, 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.

<sup>22</sup> Fossitt, 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.



European Communities (Birds and Natural Habitats) Regulations (2011). Species of the 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)<sup>23</sup> guidelines. A further survey was undertaken on the 13th of January 2022 which repeated the aforementioned 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.

In addition, invasive non-native species were recorded within the site during the walkover survey. Species of the 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.

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.

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<sup>23</sup> 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 appropriately 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.

## ***3.5.1 Operational Phase Impacts***

### ***3.5.1.1 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.

### ***3.5.1.2 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)<sup>24</sup>. 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 Zol (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 Zol 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 Zol 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 Zol 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 Zol 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 Zol 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 Zol for varying species:

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

<sup>24</sup> [https://www.npws.ie/sites/default/files/publications/pdf/NPWS\\_2009\\_AA\\_Guidance.pdf](https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf)

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

- Cutts *et al.* (2013)<sup>25</sup> 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 Zol for noise/disturbance was therefore established as the proposed upgrade site plus a 300m buffer.

### 3.7 IDENTIFICATION OF RELEVANT EUROPEAN SITES

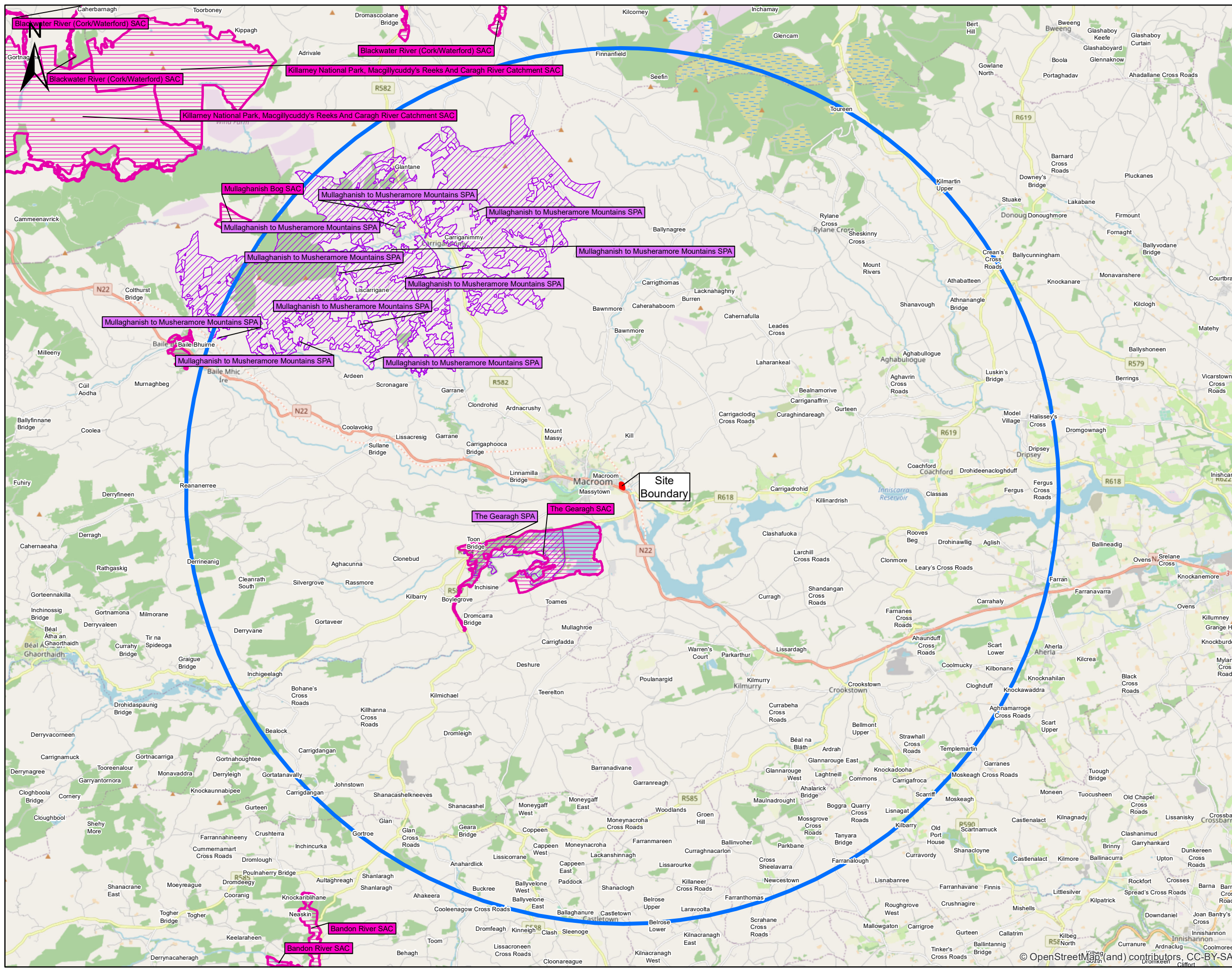
As mentioned above, the source-pathway-receptor conceptual model was used to identify a list of 'relevant' European sites (i.e. those which could be potentially affected by the proposed upgrade) which are illustrated on Figure 3-5.

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

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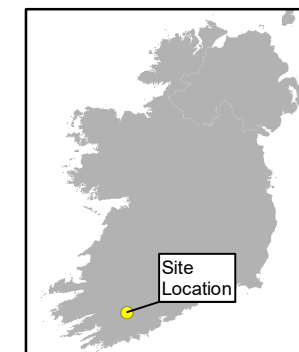
<sup>25</sup> Hull.Cutts, N., Hemingway, K. and Spencer, J. (2013). Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning & Construction Projects [Version 3.2]. Institute of Estuarine & Coastal Studies (IECS) University of Hull.

*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

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

Client: **Glan Agua**

Project: **Macroom WWTP Project**

Title: **Figure 3 - 5 European Site Map**

Scale @ A3: **1 : 25000**

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

Project Director: **Noel Gibbons**

**TOBIN**  
CONSULTING ENGINEERS  
Consulting, Civil and Structural Engineers,  
Block 10-3, Blanchardstown Corporate Park,  
Dublin 15, Ireland.  
tel: +353-(0)1-8030406  
fax: +353-(0)1-8030409  
e-mail: info@tobin.ie  
www.tobin.ie

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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
<p><b>The Gearagh SAC [IE000108]<sup>26</sup></b></p> <p>Distance: Proposed upgrade site is located 2.5km north east of the SAC site boundary</p>	<ul style="list-style-type: none"> <li>• Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]</li> <li>• Rivers with muddy banks with <i>Chenopodion rubri</i> p.p. and <i>Bidenton</i> p.p. vegetation [3270]</li> <li>• Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</li> <li>• Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</li> <li>• Otter (<i>Lutra lutra</i>) [1355]</li> </ul>	<p>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.</p> <p>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.</p> <p>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.</p> <p>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</p>	<p><b>Yes</b> – 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.</p>

<sup>26</sup> 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
		<p>which has the potential to be indirectly disturbed by the proposed upgrade<sup>27</sup>.</p> <p>Thus, there is potential for indirect disturbance impacts to otter breeding, commuting, and or foraging along the River Sullane within the Zol of the proposed upgrade.</p> <p>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.</p>	
<p><b>St. Gobnet's Wood SAC [IE000106]<sup>28</sup></b></p> <p><b>Distance:</b> Proposed upgrade site is located 15km south of the SAC site boundary.</p>	<ul style="list-style-type: none"> <li>Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]</li> </ul>	<p>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 Zol for direct habitat impacts or dust effects.</p> <p>Following the source-pathway-receptor model, the proposed upgrade is not linked to this SAC. There is no hydrological or hydrogeological connectivity (surface water or groundwater) between the proposed upgrade site and this SAC.</p>	<p>No potential pathway exists.</p> <p>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.</p>

<sup>27</sup> NRA (2008) Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes.

<sup>28</sup> 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
<p><b>The Gearagh SPA [004109]<sup>29</sup></b></p> <p><b>Distance :</b> Proposed upgrade site is located 2.5km east of the SAC site boundary.</p>	<ul style="list-style-type: none"> <li>• Mallard (<i>Anas platyrhynchos</i>) [A053]</li> <li>• Coot (<i>Fulica atra</i>) [A125]</li> <li>• Teal (<i>Anas crecca</i>) [A052]</li> <li>• Wigeon (<i>Anas penelope</i>) [A050]</li> <li>• Wetland and Waterbirds [A999]</li> </ul>	<p>This SPA lies approximately 2.5km to the west of the proposed upgrade in a separate subcatchment.</p> <p>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.</p>	<p>No potential pathway exists.</p> <p>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.</p>
<p><b>Mullaghanish to Musheramore Mountains SPA [004162]<sup>30</sup></b></p> <p><b>Distance:</b> Proposed upgrade site is located 6.8km north east of the SPA site boundary.</p>	<ul style="list-style-type: none"> <li>• Hen Harrier (<i>Circus cyaneus</i>) [A082]</li> </ul>	<p>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)<sup>31</sup>, 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.</p>	<p>No potential pathway exists.</p> <p>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.</p>

<sup>29</sup> NPWS 2012 Site Synopsis: The Gearagh SPA [IE004109] <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004109.pdf>

<sup>30</sup> NPWS 2012 Site Synopsis: Mullaghanish to Musheramore Mountains SPA [004162] <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004162.pdf>

<sup>31</sup> 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
<p><b>Cork Harbour SPA [004030]</b><sup>32</sup>  <b>Distance:</b>  Proposed upgrade site is located 35km west of the SPA site boundary.</p>	<ul style="list-style-type: none"> <li>• Little Grebe (<i>Tachybaptus ruficollis</i>) [A004]</li> <li>• Great Crested Grebe (<i>Podiceps cristatus</i>) [A005]</li> <li>• Cormorant (<i>Phalacrocorax carbo</i>) [A017]</li> <li>• Grey Heron (<i>Ardea cinerea</i>) [A028]</li> <li>• Shelduck (<i>Tadorna tadorna</i>) [A048]</li> <li>• Wigeon (<i>Anas penelope</i>) [A050]</li> <li>• Teal (<i>Anas crecca</i>) [A052]</li> <li>• Pintail (<i>Anas acuta</i>) [A054]</li> <li>• Shoveler (<i>Anas clypeata</i>) [A056]</li> <li>• Red-breasted Merganser (<i>Mergus serrator</i>) [A069]</li> <li>• Oystercatcher (<i>Haematopus ostralegus</i>) [A130]</li> <li>• Golden Plover (<i>Pluvialis apricaria</i>) [A140]</li> </ul>	<p>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).</p>	<p>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.</p>
<p><b>Great Island Channel SAC [001058]</b><sup>33</sup></p>	<ul style="list-style-type: none"> <li>• Tidal Mudflats and Sandflats [1140]</li> </ul>	<p>This SAC lies approximately 45km east of the proposed upgrade works and therefore, due to the distance, it occurs beyond the Zol for direct</p>	<p>No – The SAC is hydrologically connected to the proposed upgrade, however considering the</p>

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

<sup>33</sup> <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
<p><b>Distance:</b> Proposed upgrade site is located 45km west of the SAC site boundary.</p>	<ul style="list-style-type: none"> <li>Atlantic Salt Meadows [1330]</li> </ul>	<p>or indirect impacts on these qualifying interest habitats.</p>	<p>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.</p>

### 3.8 SCREENING OUTCOME

The AA screening process considered potential significant effects which may arise during the construction and operational phases of the proposed upgrade. The screening assessment determined that, in view of best scientific knowledge and in the absence of mitigation measures, potential likely significant effects from the proposed upgrade cannot be ruled out for the Gearagh SAC in view of the sites conservation objectives.

The conclusion of the AA Screening was as follows:

*“Following an evaluation of the relevant information, including details of the Proposed Upgrade works 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.”*

A Stage 2 (Appropriate Assessment) is therefore required and has been undertaken in Section 4.0 to 6.0 of this report.

### 4.0 NATURA IMPACT STATEMENT

This NIS has been prepared in accordance with the provisions of the above stated legislation, providing information to enable the competent authority to perform its statutory function to undertake AA in respect of the proposed upgrade. This NIS includes an examination and analysis of the best available scientific knowledge and data in the field to identify and assess the implications of the proposed upgrade for any European sites in view of the conservation objectives of those sites. It considers whether there are ex-situ implications for any European sites, for example from impacts which occur via downstream pathways at a remote but connected location, or from impacts on populations of ex-situ species located outside of European sites, or from impacts on ex-situ supporting habitats. It considers whether the proposed upgrade, by itself or in-combination with other plans or projects, would adversely affect the integrity of any European sites. In reaching a conclusion in this regard, consideration has been given to any mitigation measures necessary to avoid or reduce any potential adverse effects.

## 4.1 DESCRIPTION OF EUROPEAN SITES WITHIN THE ZOI AND ASSESSMENT OF POTENTIAL EFFECTS

### 4.1.1 *The Gearagh SAC (000108) - Qualifying Interests and Conservation Objectives*

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.

The Gearagh SAC is located approximately 2.5km (straight line measurement) south west of the proposed upgrade within the WFD Sub catchment Lee (Cork)\_SC\_020. It is indirectly connected to the proposed upgrade via the River Sullane, which is adjacent to the proposed upgrade and which may provide supporting habitat to otter, a qualifying interest species of this SAC. Signs of otter were recorded along the River Sullane approximately 55m from the proposed upgrade site. The overall aim of the Habitats Directive is to maintain or restore the favorable conservation status of habitats and species of community interest. In the case of the Gearagh SAC, detailed conservation objectives have been published (NPWS 2015)<sup>34</sup>. The conservation objectives of each qualifying interest habitat and species for the Gearagh SAC are presented as a selection of attributes against which targets are set (NPWS 2015). These attributes, in relation to each of the qualifying interests, have been considered with regards the potential impacts associated with the proposed upgrade works.

This SAC is designated for four Annex I habitats and one Annex II species. Their conservation objectives are listed in Table 4-1 below as per NPWS (2015).

The Gearagh has been designated as a SAC based on the fact that it contains an Annex I habitat of water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation [3260], Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0], and rivers with muddy banks with *Chenopodion rubri p.p.* and *Bidention p.p.* vegetation.

The reservoir is also designated as an SAC due to the presence of otter, a species listed on Annex II of the EU Habitats Directive (NPWS, 2015) and a priority habitat alluvial woodland.

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<sup>34</sup> NPWS (2015). Site Synopsis: The Gearagh SAC 000108 <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000108.pdf>

Table 4-1: Qualifying Interests, Conservation Objectives and Extent of Habitats for The Gearagh SAC

Qualifying Interests (* indicates Priority Annex I Habitats)	Conservation Objectives	Extent of Habitats
Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]	To maintain the favourable conservation condition of Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation in The Gearagh SAC	A review of the site's conservation objectives report <sup>35</sup> indicates that this Annex I habitat occurs along the north west of the SAC within The Gearagh Nature Reserve. Therefore it can be assumed that the closest point of this habitat is ca. 3.2km south-west (straight-line measurement) from the proposed upgrade site. This Annex I habitat is not hydrologically connected to the proposed upgrade site.
Rivers with muddy banks with <i>Chenopodion rubri p.p.</i> and <i>Bidention p.p.</i> vegetation [3270]	To maintain the favourable conservation condition of Rivers with muddy banks with <i>Chenopodion rubri p.p.</i> and <i>Bidention p.p.</i> vegetation in The Gearagh SAC	A review of the site's conservation objectives report indicates that this Annex I habitat occurs along the north east of the SAC. Therefore it can be assumed that the closest point of this habitat is the boundary of the SAC which is located ca. 2.5km south-west (straight-line measurement) from the proposed upgrade site. This Annex I habitat is not hydrologically connected to the proposed upgrade site.
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	To maintain the favourable conservation condition of Old sessile oak woods with Ilex and Blechnum in the British Isles in The Gearagh SAC	A review of the site's conservation objectives report indicates that this Annex I habitat (ca. 10.4ha) occurs along the north west boundary of the site approximately 3km west. Old sessile oak woods are terrestrial habitats located above the high tide line. Thus there is no hydrological connectivity between the proposed upgrade site and this Annex I habitat.
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0]	To maintain the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> )* in The Gearagh SAC	A review of the site's conservation objectives report <sup>35</sup> indicates that this Annex I habitat predominantly occurs throughout the site (ca. 101.2ha) and is located approximately 2.5km south-west of the proposed upgrade site. This Annex I habitat is a terrestrial habitat located above the high tide line. Thus there is no

<sup>35</sup> [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO000108.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000108.pdf)



Qualifying Interests (* indicates Priority Annex I Habitats)	Conservation Objectives	Extent of Habitats
		hydrological connectivity between the proposed upgrade site and this Annex I habitat.
Otter ( <i>Lutra lutra</i> ) [1355]	To maintain the favourable conservation condition of Otter in The Gearagh SAC	A review of the site's conservation objectives report indicates that this Annex II species distribution range is currently at 93% of SAC. The boundary of the SAC is located at the closest point, ca. 2.5km south-west (straight-line measurement) from the proposed upgrade site. The territories of otters can stretch for several kilometres. Therefore, it can be assumed that this species may utilise the habitats along the River Sullane, in close proximity to the proposed upgrade.

#### **4.1.2 Potential Direct and Indirect Effects on the SAC**

The proposed upgrade site occurs 2.5km north east of the Gearagh SAC as described in Section 4.1.1 above. Stage 2 Appropriate Assessment requires the assessment of potential significant effects of the proposed project in view of the conservation objectives for the site. There is a potential source » pathway » receptor chain, which could impact on a conservation objective within the zone of influence of the proposed works.

Otter may be sensitive to potential impacts from the proposed project, considering their potential occurrence upstream or downstream (and proximate) to the lands. The potential for significant effects on this qualifying interest taking account the conservation objectives for the site are discussed further in Section 4.1.3 below.

This evaluation takes account of the baseline environmental conditions of the proposed works site and the sensitivity of animals and habitat to any potential change which could reasonably arise in the local context, upstream and downstream work elements and nature of maintenance requirements, the potential for significant effects on this qualifying interest can not be excluded.

Potential significant impacts on habitats and species of conservation importance for the European site screened in during Stage 1 are examined, analysed and evaluated in this section. The types of impact identified, e.g. direct and indirect impacts, short and long-term impacts, operational phase impacts etc. arising from the Project are assessed in light of the COs set out for the QIs of the European site.

There is no potential for direct impacts on The Gearagh SAC as the proposed upgrade works are not located within or adjacent to this or any other European site. However, the proposed upgrade works is hydrologically linked to The Gearagh SAC via qualifying interest species. Whilst applying the precautionary principle, the construction and operation phases associated with the proposed upgrade works have the potential to give rise to significant indirect effects on this qualifying interest species of the Gearagh SAC.

In assessing the potential upgrade project, the following general types of potential impacts arising from the works have been considered with regards to the screening for impact, in the absence of mitigation measures, on the conservation objectives of The Gearagh SAC:

- Direct loss or damage of habitat or species;
- Water quality impacts/Release of suspended solids / nutrients / pollutants;
- Disturbance of species during both the construction and operational phase;
- Physical disturbance of habitats (and loss of wood vegetation cover);
- Spread of invasive species within a European Site as a result of upgrading; and
- Noise and Visual Disturbance.

The potential associated effects caused to otter during the construction and operational phases of the proposed upgrade are discussed hereunder.

##### **4.1.2.1 Otter**

Ireland is a strong-hold for the otter owing to plentiful aquatic prey and safe refuges. Found along clean rivers and lakes, the otter is an opportunistic predator with a broad and varied diet (fish, crayfish, frogs, and infrequently, birds and mammals are taken). Favourable Conservation

Status target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid *et al.*, 2013)<sup>36</sup>.

The site-specific conservation objective for 1355 is to maintain the favourable conservation condition.

Specific attributes and targets are:

- No significant decline in distribution, extent of terrestrial and freshwater habitats and couching sites and holts; and
- No significant decline in fish biomass available and no significant increase in barriers to connectivity.

Due to the distance from this SAC (2.5km), there is no potential for the disturbance of otter within the SAC boundary. However, there is potential that otter from this SAC may commute along the River Sullane. Considering the type of development and the proximity of this European site to the proposed upgrade works, it is determined that a pathway exists for potential indirect impacts which could give rise to likely significant effects on this designated site.

### 4.1.3 *Indirect Effects*

#### 4.1.3.1 *Construction Phase*

##### 4.1.3.1.1 Direct loss or damage of habitat or species:

Physical disturbance of habitats (including disturbance to habitats) can arise from vibrations and removal of soils. This can result in a direct loss of habitat from bankside areas and maintenance access corridors, direct mortalities or the displacement of otter. This may be directly impacting habitat by releasing sediment, debris, and/or nutrients causing changes to water quality in the Sullane River. This may cause temporary damage to fish habitat by decrease in water quality. Obtaining access to works areas can also cause physical disturbance to habitats through removal of woody vegetation, creating access tracks and the tracking of machinery.

It can also indirectly impact on species through machines tracking along the bankside, reducing vegetation as a food source or reducing cover for otter. An active otter holt was recorded twice (55m north) during the walk over surveys. Due to the musty smell and freshly flattened vegetation at the entrance of the holt, it was deemed to be active. This active holt indicates there is suitable habitat for resting, foraging and commuting along the banks of the Sullane River. However there is no potential loss of breeding or resting places, couch or holt sites for otter within the immediate vicinity of the works.

The proposed works will not result in the temporary loss of any habitat that may support otter. Access to works will not occur along the bankside, inside the river bank, or in accessing the works area.

##### 4.1.3.1.2 Physical disturbance of habitats (and loss of wood vegetation cover)

Physical disturbance of habitats can adversely impact on the species within the SAC, for example by removing cover for otter. Based on the results of the walk over survey, it determines

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<sup>36</sup> Reid, N.; Hayden, B.; Lundy, M.G.; Pietravalle, S.; McDonald, R.A.; Montgomery, W.I. (2013). National otter survey of Ireland 2010/12: Irish Wildlife Manual No. 76.

the status of otter is present directly within close proximity of the site and also recorded within the zone of interest indicating suitable habitat for foraging and commuting.

However, given that Upgrade activities are not been conducted within close range of the otter holt, therefore there is no potential for this disturbance (NRA (2008) guidelines). There is also no otter holts or resting locations within the immediate footprint of the site boundary.

#### 4.1.3.1.3 Noise and Visual Disturbance To Species

Disturbance of species can occur as a result of noise emissions and visual disturbance from machinery, machine drivers and other staff at the site of works. Sensitive species can be displaced from suitable habitat locations. It is considered relevant in relation to designated habitat types and the species which these habitats support.

Otter require lying up areas throughout their territory where they are secure from disturbance<sup>37</sup> and construction activities can create disturbance which could reduce the suitability of terrestrial and freshwater (river/lake) habitats for this species.

There were no sightings of otter or any adequate evidence of fresh otter spraint along the banks of the River Sullane. However, an active holt was recorded which indicates there is suitable habitat for resting, foraging and commuting along the banks of the River Sullane within close proximity to the proposed upgrade. There was also a recording of otter spraint (Grid W353725) recorded in May 2017 in the database Mammals of Ireland 2016-2025. This was located 500m downstream of the site, indicating otter are also present in the area surrounding the proposed upgrade site.

During the Construction Phase noise from construction activities and/or human presence may cause disturbance/displacement effects on otter foraging or commuting within the Zol. Construction activities associated with the proposed upgrade works could reduce the suitability of terrestrial and freshwater (river) habitats for this species through indirect disturbance.

There may be temporary avoidance by otter in the vicinity of the proposed works as a result of noise and activities associated with the upgrade works during working hours. However, it is unlikely that otter will be disturbed whilst feeding/commuting, as a result of noise and visual disturbance from works. Otters are generally crepuscular animals and are mainly active and foraging at night outside of the working day. Therefore the level of disturbance will be minimised given that the works will be undertaken during daylight hours. However, there is still a potential for indirect impacts on their habitat (resting, commuting or breeding) caused by indirect disturbance during the proposed construction works. Therefore, in the absence of mitigation, there is potential for disturbance/displacement effects via noise and visual disturbance impacts on otter commuting/resting/foraging along the River Sullane within the Zol of the proposed upgrade during the construction phase.

#### 4.1.3.1.4 Water quality impacts/Release of suspended solids / nutrients / pollutants

Potential water quality impacts include sediment runoff and pollution spillages, impacting on prey species and disturbance of species during the works. These potential instream impacts may

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<sup>37</sup> Kruuk, H. 2006: Otters - ecology, behaviour and conservation. Oxford University Press

result in changes to otter distribution and prey species composition in the vicinity of the proposed works.

Construction activities including site clearance, excavation activities, and the stockpiling of material have the potential to result in sediment laden runoff, if not appropriately managed and this could temporarily impact on water quality. A decline in water quality, resulting in a decrease in transparency as a result of the release of suspended solids, may indirectly affect otter.

There is potential accidental discharge of small quantities of silts and pollutants to enter the river while works are undertaken as soil will be disturbed within the proposed site. This could occur as a result of surface water runoff during periods of heavy rainfall reaching the river in wet or dry conditions.

Runoff can impact on surface water dependent habitats and species potentially within the area of works, indirectly through increased turbidity, and sedimentation. 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. This can then impact upon species within the river (i.e. otter) by reducing food availability through changed water quality.

There is potential for small quantities of silts and pollutants to enter the Sullane River during construction work as a result of surface water runoff during periods of heavy rainfall. If significant quantities of silts were to enter the river, it could cause siltation to potential gravel beds that are used by salmonids during spawning. It effectively reduces oxygen availability to any fish eggs within the gravel and cause mortality and impact on fish density within the river. This then will have a knock-on effect on prey availability for the otter on the river.

The pouring of concrete will be required to facilitate the foundation works associated with the WwTP. Surface water runoff can be contaminated by leaks and spills of fuel, oil or other construction material from construction vehicles/machinery if not properly managed.

The runoff of contaminated surface water can result in the degradation of water quality and impacts to aquatic fauna and flora, particularly if concrete is present.

Therefore, in the absence of mitigation, there is potential for the impact via Water quality impacts to the otter holt and to the otter commuting/resting/foraging along the river from within the proposed upgrade area during the proposed construction works.

The target set by NPWS is to maintain the favourable conservation condition of this species. This includes no decline in fish biomass available which may be indirectly effected by the potential for increased run off of sediment or pollutants during this project. Potential impact on water quality is localised and temporary in nature. Pollution control measures as identified in the mitigation will ensure no potential impact on water quality, i.e. siltation from the proposed works. However, even if such an event did occur, scale and short duration of the project, it is deemed unlikely that there will be any negative impact of significance on this species. The food resources of otter are unlikely to be impacted by a reduction in water quality due to the accidental release of or spillage of silt during works.

#### **4.1.4 Operation Phase**

No operational works will occur outside the proposed upgrade site boundary. As mentioned above in Section 3.3, a Waste Assimilative Capacity Assessment Report was carried out which determined that the River Sullane has sufficient assimilative capacity to accommodate the discharge from the upgraded WwTP. Therefore, no direct effects during the operational phase

are anticipated. There will be no direct negative impact on the water quality in the River Sullane as a result of the upgraded WwTP. Therefore, there will be no direct or indirect effects on food sources or suitable habitats for otter within or along the banks of the River Sullane. It is predicted there will not be an increase in workers on site during the operational phase in comparison to the current situation.

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## 5.0 ASSESSMENT OF ADVERSE EFFECTS ON SITE INTEGRITY

It has been determined, 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 as follows:

- Disturbance from noise and presence of machinery and personnel during construction; and
- Potential release of suspended solids / nutrients / pollutants during construction.

An assessment of the potential for significant adverse effects on the integrity of The Gearagh SAC is presented hereunder.

### 5.1 CONSERVATION OBJECTIVES OF THE GEARAGH SAC

The concept of favourable conservation status is central to the Habitats Directive. Annex I habitats, Annex II species, and habitats of Annex II species (of the Habitats Directive), as well as the Birds Directive Annex I species, must be maintained at or restored to favourable conservation status. In summary, it is required that the range and areas of the listed habitats, and the range and population of the listed species, should be at least maintained at their status at the time of designation. Site-specific conservation objectives were set by the NPWS for each European site aim to define favourable conservation conditions for particular habitats/species of the site.

In 2019, individual qualifying interests were given an overall assessment of conservation status rating at national level, based on the four main parameters for habitats and species (Range, Area or Population, Structure & Functions or Habitat for the species and Future Prospects)<sup>38</sup>. The status of each qualifying interest has been considered in the assessment of potential for significant adverse effects which are listed in Table 5-1.

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<sup>38</sup>NPWS (2019) The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland. [https://www.npws.ie/sites/default/files/publications/pdf/NPWS\\_2019\\_Vol1\\_Summary\\_Article17.pdf](https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol1_Summary_Article17.pdf)

*Table 5-1: Evaluation of Potential Adverse Effects on the Conservation Objectives of the Gearagh SAC as a Result of the Proposed Upgrade*

Attributes	Measures	Target	Potential for Adverse Effects on Site Integrity
<b>Otter</b>			
<b>Conservation Objective:</b> <i>To maintain the favourable conservation condition of otter in the Gearagh SAC (NPWS, 2015)</i>			
Distribution	Percentage positive survey sites	No significant decline	<b>Yes</b> - The proposed construction works have the potential to result in the disturbance of otter and degradation of their feeding resources outside the SAC. Disturbance and changes to the species feeding resources could affect the distribution of otter outside the SAC. <b>A change or decline in the distribution of otter would constitute an adverse effect on the integrity of the site.</b>
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 23.7ha along river banks/lake shoreline/around ponds and 62.3ha of wet woodland, giving a total of 86.0ha	The proposed upgrade occurs outside the SAC boundary. There is no potential for the loss of terrestrial habitat for otter within the SAC. There is no potential for adverse effects. However, the presence of a holt 55m upstream indicates there is suitable habitat for resting and/or breeding habitat along the banks of the River Sullane which is 20m away from the site. The proposed works will not result in the temporary loss of any habitat. Access to works will not occur along the bankside, inside the river bank, or in accessing the works area. There will be no permanent loss of habitat as a result of the works.
Extent of freshwater (river) habitat	Kilometre	No significant decline. Length mapped and calculated as 10.6km	The proposed upgrade occurs outside the SAC boundary. There is no potential for the loss of freshwater habitat for otter within the SAC. The proposed works will not result in the temporary loss of any habitat. Access to works will not occur along the bankside, inside the river bank, or in accessing the works area. There will be no permanent loss of habitat as a result of the works.
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 129.5ha	The proposed upgrade occurs outside the SAC boundary. There is no potential for the loss of freshwater habitat (lake) for otter within the SAC. There is no potential for adverse effects.
Couching sites and holts	Number	No significant decline	Based on the results of the walk over survey of the site, there is no otter holts or resting locations within the immediate footprint of the



			<p>site boundary. There is no direct potential loss of breeding or resting places, couch or holt sites for otter within the footprint of the works. Although otter have not been recorded directly within the site, evidence of an otter holt was identified on the right hand bank of the River Sullane, 55m upstream of the site boundary (Grid reference W 34884 73082).</p> <p>Given that upgrade activities are not been conducted within close range of the otter holt, physical disturbance is consequently unlikely to occur and therefore there is no potential for the disturbance of this otter holt (NRA (2008) guidelines). There will be no permeant loss of habitat as a result of the works. The proposed works will not result in the loss or decline in couching sites or holts; therefore, there is no potential for adverse effects.</p>
Fish biomass available	Kilograms	No significant decline	<p>A potential degradation in water quality within the River Sullane could affect the availability of fish biomass to otter. A significant pollution event from the works area could result in a decline in available feeding resources for otter. A significant decline in fish biomass available for otter would <b>constitute an adverse effect on the integrity of the site.</b></p>
Barriers to Connectivity	Number	No significant increase	<p>The proposed construction works will not result in any barrier to connectivity in any waterbody within the SAC. There is no potential for adverse effects.</p>

## 5.2 SUMMARY OF QUALIFYING INTERESTS WITH POTENTIAL ADVERSE EFFECTS

In summary, the assessment of the potential for adverse effects on the qualifying interests of The Gearagh SAC, using the source-receptor-pathway model, identified one qualifying interests at risk of potential adverse effects associated with the proposed upgrade works (Table 4-1) in the absence of any mitigation measures. This qualifying interest is otter. Evidence of Otter was recorded within close proximity to the proposed works area within the Zol. An otter holt was found identified during both field surveys approximately 55m north-east of the WwTP site boundary on the bank of the River Sullane.

This indicates there is suitable habitat for foraging and commuting nearby. The otter is semi aquatic species and is linked to the proposed upgrade via air and water. It is therefore at risk from potential disturbance due to construction activities from within the proposed upgrade area.

Taking into consideration the precautionary principle, there is potential for indirect effects on the European site, the Gearagh SAC, as a result of the proposed upgrade works from possible disturbance/displacement effects during the construction phase.

Potential adverse effects for this qualifying interest otter could not be ruled out, mainly due to data records and field survey evidence of their presence within close proximity to the proposed upgrade and therefore the pre-cautionary principle was applied.

## 6.0 PROTECTIVE MITIGATION MEASURES

The aim of the following proposed protective mitigation measures is to avoid/reduce the potential for significant adverse effects on European sites as a result of the proposed upgrade, alone and/or in-combination with other plans or projects.

### 6.1 CONSTRUCTION PHASE MITIGATION

During the construction phase of the development the following measures are proposed to reduce the magnitude of the potential effects to environmental receptors within the vicinity and downstream of the proposed upgrade, protecting the integrity of the nearby European site.

#### 6.1.1 *Supervision and Monitoring*

During the Construction Phase, environmental monitoring will take place by a clerk of works/site engineer to confirm that the following mitigation measures are implemented fully and are having the intended effect. The Site Engineer/Site Manager/Clerk of works will commence their supervisory role prior to any works commencing on site, including the review and provision of advice on method statements, in preparation of works.

They will be responsible for ensuring all mitigation measures, including any additional planning conditions are fully implemented and monitored during construction works. The mitigation measures, once correctly applied, will avoid or reduce the magnitude of potential impacts on the aquatic environment downstream of the proposed upgrade site.

#### 6.1.2 *Pre-construction Otter Surveys*

A pre-construction otter survey will be undertaken by an experienced ecologist along the River Sullane prior to the commencement of any works. This will be carried out in order to identify any changes in otter activity or holt locations from the original baseline surveys and to ensure the prescribed mitigation measures remain adequate<sup>39</sup>.

Pre-construction surveys will be conducted no more than 10-12 months in advance of construction which is scheduled for Q3 2022. If the current otter holt or any new holts are identified within the Zol during pre-construction surveys, and are found to be or have become active, then exclusion procedures will be undertaken under a derogation licence from the NPWS.

To ensure the welfare of otters, they must be evacuated from any holts present prior to any construction works commencing. There are no seasonal restrictions with regards the exclusion of otters from disused, or currently inactive, holts within the landtake of the proposed upgrade. Confirming that a holt is active/inactive will usually require a period of monitoring. This is carried out over five or more days using methods of either with a trail camera, sticks or with sand pads to identify footprints in order to confirm activity at the holt. Where a holt has been verified as inactive, and to prevent their reoccupation, the entrances will be lightly blocked with vegetation and a light application of soil (soft blocking). If the entrances remain undisturbed for five days, the holt will then be destroyed immediately using a mechanical digger, under the supervision of the holder of an NPWS derogation.

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<sup>39</sup> <https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Otters-prior-to-the-Construction-of-National-Road-Schemes.pdf>

### **6.1.3 Construction Environmental Management Plan**

It is standard practice for the requirement and the preparation of a detailed Construction Environmental Management Plan (CEMP), including a waste management plan, by the Main Contractor, prior to commencement of construction. This will detail all the processes and procedures which will be undertaken as part of the construction of the project including project specific details relating to all environmental mitigation measures discussed in this report.

### **6.1.4 Disturbance /Displacement Mitigation Measures**

The level of visual disturbance on otter will be minimised by the works given that the works will be undertaken during daylight hours when otter are less active. Construction noise will be kept to a minimum in accordance with British Standard BS 5228 1:2009 'Code of Practice for Noise and Vibration Control on Construction and Open Sites –Part 1: Noise'. The contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and will comply with the best practice outlined in BS 5228 and the NRA guidelines 'Good practice Guideline for the Treatment of Noise during the Planning of National Road Schemes'<sup>40</sup>. Noise levels will be monitored using standard noise meters.

All temporary lighting associated with the construction works will be placed strategically by the Contractor following consultation with the appointed clerk of works. This will ensure that illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay. No lighting will be directed towards the River Sullane.

### **6.1.5 Management and Excavations of Silt**

As part of general good practice measures to avoid or reduce the release of suspended solids into surface water run-off, the following mitigation measures are prescribed to ensure the prevention of water quality degradation due to the runoff of construction pollution during the construction works :

- An area for stockpiling excavated material will be identified close to the western boundary of the site and at a minimum of 50m distance away from the River Sullane. This area will be located where surface water percolates freely into ground water. The amount of excavated material is expected to be small but stockpiling of large volumes of loose soil material onsite shall not be permitted, and surplus material will be removed from the site.
- Dewatering of excavations will be avoided where possible. If required, this will be achieved by pumping excess water to be into temporary Silt Settlement Tanks. More than one temporary settlement tank will be set up to increase the capacity of the water being settled. These will be located within the construction site, as shown in Figure 3-4 **Figure 3-4**, where the water will be retained for a sufficient length of time to allow particles to settle.
- Silt de-watering bags shall be used when water is being discharged. Silt bags will be fitted to the outlet pipes after passing through the settlement tanks where the treated water will be discharged primarily to existing manholes on site. These silt bags will be checked daily. Spare silt bags will be kept onsite which can be fitted if any silt bags are becoming full and slowing down the treatment of the water. These will be monitored twice daily or more regularly if site conditions change.

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<sup>40</sup> National Roads Authority (NRA) (2014). Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes.

- Alternatively, prior to the construction of the flood defence wall, the settled water will be discharged primarily through existing green vegetative areas which will further capture any remaining run-off silt prior to entering any water courses. There will be at least two layers of silt fencing located downstream of the vegetative areas to capture any remaining silt. This will slow down the flow of pumped water and allows any silt to settle or be captured. In some instances (as a mitigation measure) the water will discharge into existing manholes which will direct that water back into the treatment works.
- The Settlement tanks will be monitored at least twice daily and discharged when water is within the prescribed water quality limits (i.e.  $\leq 25\text{mg/L TSS}$ ) in accordance with the Freshwater Fish Directive [2006/44/EC] and Salmonid Waters Regulations [1988]).
- Site management will monitor works in conjunction with a designated groundworker. Over pumping works and discharge water quality will be monitored by designated site workers, supervised by site management. Samples will be sent to labs for quality and record purposes. Results can usually be completed within 24-48 hours. The main inspection checks will be visual which is the best and quickest determinant for water quality, and when combined with the lab results it will provide a better overall picture of the water quality being discharged. Any adjustments to the settlement pathway will be made if needed to ensure quality of water is kept within the prescribed limits.
- Excavation works will not be carried out during or following heavy rainfall i.e. if there is a yellow weather warning in place or 5mm in a 1-hour period. Excavations will be covered during heavy rainfall to avoid the creation of surface water with high concentrations of suspended solids that would require dewatering. During lighter rain periods, the time period over which excavations are left open will be reduced insofar as is reasonably practicable.
- Silt fences will be constructed using a permeable filter fabric (Hy-Tex Terrastop Premium silt fence or similar) and not a mesh. Silt fencing will be installed as per the manufacturer's guidelines and shall be maintained until vegetation on the disturbed ground has been re-established. The fencing will be installed along the northeaster boundary of the site. Once installed, the silt fences shall be inspected daily during construction and hourly during heavy rainfall.

### **6.1.6 Management of Potential Pollutants**

In the absence of a significant source of pollutant, a minor spill can be addressed effectively and efficiently on site using existing best practice pollution control procedures. In addition, when surface pollutants are released to soil, hydrocarbons undergo biological, physical, and chemical alterations including biodegradation and retardation.

- Temporary construction compound and welfare facilities will be located a minimum of 50m from the River Sullane or any watercourse.
- The availability of spill kits on site to be deployed in the event of an accidental spillage, and appropriate training for operators in their use;
- Documented Incident Response Procedures for environmental incidents;
- All works must comply with the guidance set out in the guidance document entitled: "Control of Water Pollution from Construction Sites. Guidance for Consultants and Contractors (C532) (CIRIA, 2001)";
- No material will be stockpiled within 50m of the River Sullane or any drainage ditch.
- A spill method statement will be drawn up which all personnel must adhere to and receive training in;

- Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of all construction vehicles and in specific areas around the site i.e. next to a chemical store. All machine operators and site staff will be fully trained in the use of this equipment;
- All machinery will be regularly maintained and checked for leaks. Services will not be undertaken within 50m of a surface water conduit. Servicing must be undertaken on level, hard surfaced designated areas where possible.
- Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles / equipment will take place in designated hard surface, bunded areas within the construction compound or off site only. If it is not possible to bring machinery to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Refuelling will only occur within the construction compound or off site.
- All concrete will be mixed off site and poured in place at site. All concrete works will be scheduled during dry weather conditions only to reduce the elevated risk of runoff.
- All concrete browsers will be washed down at a dedicated concrete washout off site. Concrete washings must not be disposed of onsite to any surface or ground water feature. All washings will be removed offsite and treated at a licensed facility. No chemicals that are deleterious to aquatic organisms are to be used in cleaning works. All raw, uncured waste concrete must be cured at a same designated location within the construction compound or off site.
- All waste will be removed from the site and disposed of by an approved waste contractor in accordance with prevailing waste management regulations.
- On completion of the works, all apparatus, plant, tools, offices, sheds, surplus materials, rubbish and temporary erections or works of any kind will be removed from the site.

### **6.1.7 Good Practice Biosecurity in Site Management**

In order to comply with Regulations 49 and 50 of the European Communities (Birds and Natural Habitat) Regulations (2011), the appointed Contractor will ensure biosecurity measures are implemented throughout the construction phase to ensure the introduction and translocation of invasive species is prevented. An Invasive Species Management Plan ISMP has been prepared and is included in Appendix A of this report.

As a precautionary measure, the following procedures along with all measures outlined in the ISMP, will be followed during construction works to avoid/reduce the risk of the introduction/spread of alien invasive species:

- Prior to arrival on site, the contractor's vehicles and equipment must be thoroughly cleaned. High-pressure steam cleaning, with water > 60 degrees C, is recommended for vehicles and equipment where reasonably feasible. If it is not possible to steam clean the equipment, a normal power hose must be used. Vehicles and machinery must be cleaned using stiff-haired brush paying special attention to any areas that might retain seeds such as wheel tyre threads and wheel arches. After cleaning, visually inspect the equipment to ensure that all adherent material and debris has been removed.
- All equipment (including footwear) that has come in contact with water or soils will be visually inspected for evidence of attached plant or animal material, or adherent mud or debris. This should be done before entering and leaving the site. Any attached or adherent material will be removed before entering or leaving the site.
- All contractors will be required to sign a prepared form detailing the nature of the cleaning process carried out and the date on which this was conducted.

- All materials entering site must be checked to ensure their sources are free of invasive species, particularly soil and plant material. All machinery entering site must be cleaned and checked for invasive species prior to arrival onsite.

## 6.2 OPERATION PHASE MITIGATION

Relevant mitigation, as detailed above for the Construction Phase, must also be followed during the Operational Phase of the proposed upgrade. All maintenance works must align with the guidance set out in the guidance documents entitled: '*Control of Water Pollution from Construction Sites. Guidance for consultants and contractors (C532)*' (CIRIA, 2001) and '*Good practice Guideline for the Treatment of Noise during the Planning of National Road Schemes*' (NRA, 2014)<sup>41</sup>.

In conjunction with these recommendations the following must be complied with:

- Spill-kits and hydrocarbon absorbent packs will be stored on site, as applicable;
- All impermeable roof surfaces will be drained by siphonic roof drainage system and collected via access junctions (AJs) and storm drainage network. Surface water run-off from the development will be attenuated prior to controlled discharge to the existing storm drains;
- Stormwater run-off will be attenuated onsite. It will pass through a petrol interceptor before entering a soak pit, which will minimise the risk of pollutants entering watercourses during heavy rainfall or storm events;
- No chemicals that are deleterious to aquatic organisms are to be used in cleaning works;
- All chemicals stored onsite (i.e. Polyelectrolyte, Ferric Sulphate) will be stored in a bunded container to 110% capacity;
- All new car parking areas will be constructed using macadam surface and will be collected via gullies, drainage channels and discharged into a storm collection network. Surface water run-off from the external impermeable areas will be attenuated prior to controlled discharge to the existing storm drains; and
- The treated effluent will have to comply with the ELVs set in the CoA for the plant.

### 6.2.1 Mitigation Effectiveness

The Site Manager/clerk of works/site engineer/ will prepare and deliver site induction and training to all personnel prior to the commencement of works and will be responsible for ensuring all mitigation measures, including any additional planning conditions, are fully implemented and monitored during construction works.

During the operational phase, a designated person onsite will be assigned to ensure environmental procedures are undertaken to a high standard within the site, with regular audits and reviews. The mitigation measures, once correctly applied will avoid/reduce the magnitude of potential impact on the aquatic environment upstream and downstream of the proposed upgrade site, thereby ensuring avoidance of significant adverse effects on the integrity of the Gearagh SAC.

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<sup>41</sup> National Roads Authority (NRA) (2014). Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes.

## 7.0 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.”*

It is therefore required that the potential impacts of the proposed upgrade works are considered in-combination with any other relevant plans or projects in the region. The purpose of this is to identify at this early stage any possible cumulative effects on the Natura 2000 Network 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.

In-combination effects with other developments in the area are possible. A review of Cork County Council planning portals 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.

### **Cork County Council County Development Plan 2014-2020**

Cork County Council has a series of Municipal District Local Area Plans. 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.

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.



## 8.0 CONCLUSION

This NIS has been prepared following the Department of the Environment, Heritage and Local Government guidance '*Appropriate Assessment of Plans and Projects in Ireland, guidance for Planning Authorities*<sup>42</sup>. The function of this report is to assist the competent authority with undertaking an Appropriate Assessment in accordance with the Habitats Directive, Part XAB of the Planning and Development Act 2000 and case law.

The assessment considers whether the proposed upgrade, alone or in-combination with other projects or plans, will result in significant adverse effects on the integrity of The Gearagh SAC, and includes any mitigation measures necessary to avoid or reduce the risk of negative effects.

In absence of mitigation, the potential risks to The Gearagh SAC is disturbance to otter during the construction works. However, following the application of the detailed mitigation measures outlined in Section 6.1, potential adverse effects will be avoided or reduced. Consequently, it is determined that there will be no risk of significant adverse effects on the qualifying interests, habitats and species, or on overall site integrity, nor in the attainment of their specific conservation objectives for The Gearagh SAC. The potential for reduction in water quality from the release of suspended solids, pollutants and/or untreated wastewater into the surface water system and entering the River Sullane, will also be avoided or reduced following the application of the detailed mitigation measures.

Following an analysis and evaluation of the relevant information including, in particular, the nature of the proposed upgrade, characteristics of the qualifying interests, the potential link between the proposed upgrade and The Gearagh SAC, no significant adverse effect on the integrity of the European site during development and operation of the proposed upgrade at the Macroon WwTP is anticipated alone or in-combination with any other plans or projects.

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<sup>42</sup>Appropriate Assessment of Plans and Projects in Ireland (2009). Guidance for Planning Authorities. ([https://www.npws.ie/sites/default/files/publications/pdf/NPWS\\_2009\\_AA\\_Guidance.pdf](https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf))

## Appendix A - Invasive Species Report

This Appendix is available as an additional report.

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**Glan Agua**

**Macroom Wastewater Treatment Plant Upgrade**

**Invasive Species Report**



**PROJECT NAME: Macroom Wastewater Treatment Plant Upgrade**

**REPORT NAME: Natura Impact Statement Report**

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Galway Office Fairgreen House, Fairgreen Road, Galway, H91 AXK8, Ireland.  Tel: +353 (0)91 565 211	Dublin Office Block 10-4, Blanchardstown Corporate Park, Dublin 15, D15 X98N, Ireland.  Tel: +353 (0)1 803 0406	Castlebar Office Market Square, Castlebar, Mayo, F23 Y427, Ireland.  Tel: +353 (0)94 902 1401
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Revision	Description	Author:	Date	Reviewed By:	Date	Authorised by:	Date
P01	Draft for Internal Review	SOR	15/03/2021	ÁS	30/03/2021		
P02	Second Review	SOR	31/03/2021	ÁS	25/02/2021	NG	08/04/2021
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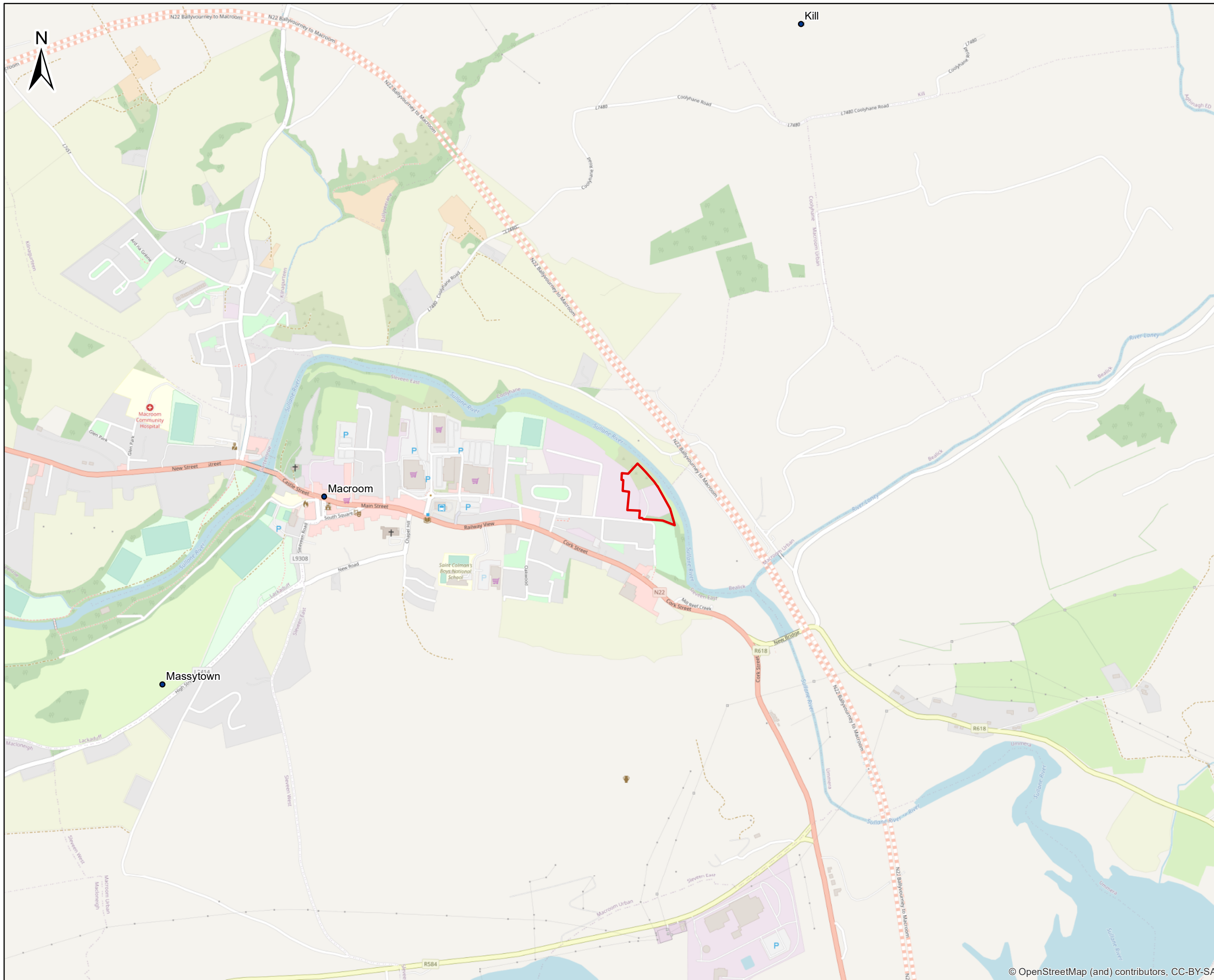
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## 1.0 INTRODUCTION

The proposed upgrade works will be located at the existing Waste Water Treatment Plant (WwTP) in Macroom, which is located approximately 30km west of Cork City as shown in Figure 1-1. 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. There is also an area with the site where garden waste is disposed of including dead or dying garden plants. 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.

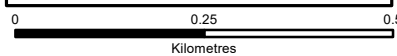
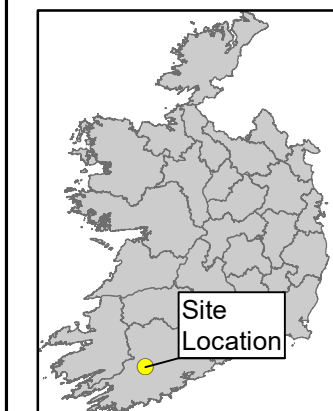
Irish Water propose to upgrade the existing WwTP (hereafter referred to as the Proposed Upgrade works) to cater for the future agglomeration load and to remediate the existing flooding issues. The Proposed Upgrade works to the WwTP are required to ensure compliance with the existing Wastewater Discharge Licence (WWDL) no. D0126-01 granted by the Environmental Protection Agency (EPA) to Irish Water (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 area was surveyed in detail on March 24<sup>th</sup> 2021, to identify and verify the presence of non-native species of High and Medium risk including those listed in the Third Schedule of S.I. No. 477 of 2011, EC (Birds and Natural Habitats) Regulations 2011. Where non-native invasive species were identified, the distribution of the species within the site was mapped (see Figure 5-1).



**Legend**

— Site Boundary



- 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: S.Pezzetta      Checked: S.O'Reilly      Date: January 2022

Project Director: D.Grehan

**TOBIN**  
CONSULTING ENGINEERS  
Consulting, Civil and Structural Engineers,  
Block 10-4, Blanchardstown Corporate Park,  
Dublin 15, Ireland.  
tel: +353-(0)1-8030406  
fax: +353-(0)1-8030409  
e-mail: info@tobin.ie  
www.tobin.ie

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Figure 1-1      Draft: D01

## 2.0 LEGISLATIVE BACKGROUND

The key aim of the invasive species survey was to identify species of High and Medium risk including those listed on the Third Schedule, Part 1, of the European Communities (Birds and Natural Habitats) Regulations 2011, S.I. No. 477/2011 (commonly referred to as the Birds and Habitats Regulations), which may occur in the vicinity of the proposed development.

The definition of invasive species as prescribed by the Convention on Biological Diversity (CBD)<sup>1</sup> is; “*species whose introduction and/or spread outside their natural past or present distribution threatens biological diversity*”. Invasive species are found in all taxonomic groups including animals, plants, fungi and microorganisms and can affect both terrestrial and aquatic ecosystems around the world. Invasive species can be classified as High Impact Species or Medium Impact Species<sup>2</sup>.

Ireland has ratified a number of treaties and conventions, including the Convention on Biological Diversity, under which Ireland is obligated to address issues on Biological Diversity, including invasive alien species. Through various pieces of legislation including the Wildlife Acts 1976 (as amended) and the Birds and Natural Habitats Regulations, Ireland sets out legal implications associated with invasive alien species.

Articles 49 and 50 of the Habitat Regulations details the legal requirements for the control of alien invasive species. Under Article 49 and 50 of these regulations, it is an offence to:

- Plant, disperse, allow or cause to disperse, or grow any plant listed in Part 1 of the Third Schedule (i.e. High Impact Species);
- Possess the plant or any component of the plant for sale, reproduction, propagation, transportation, distribution, introduction or release any plant listed in Part 1 of the Third Schedule;
- Import or transport any plant listed in Part 1 of the Third Schedule; and/or
- Possess any vector material (e.g. soil, plant material) for the purposes of breeding, sale, distribution, introduction or release as listed in Part 3 of the Third Schedule.

Note, licences may be granted for certain activities associated with invasive species.

### High Impact Species

These include species designated as high-risk species recorded in Ireland and those listed on the Third Schedule, Part 1 of the Birds and Habitats Regulations (2011)<sup>3</sup>.

### Medium Impact Species

Medium risk species include those that are amber listed by Invasive species Ireland and are identified as those species that, under the right ecological conditions, may have an impact on the conservation goals of a site or impact on a water body achieving good/high ecological status under the Water Framework Directive. Additionally, medium impact species include those that are assessed as having a risk score of between 14-17 in a risk prioritization study, undertaken for invasive and non-native species on the Island of Ireland<sup>4</sup>.

<sup>1</sup> Convention on Biological Diversity: Invasive Alien Species: <https://www.cbd.int/invasive/WhatarelAS.shtml>

<sup>2</sup> <http://www.biodiversityireland.ie/projects/invasive-species/species-lists/>

<sup>3</sup> <http://www.irishstatutebook.ie/eli/2011/si/477/made/en/print>

<sup>4</sup> Kelly, J., O’Flynn, C., & Maguire, C. (2013). Risk analysis and prioritisation for invasive and non-native species in Ireland and Northern Ireland. *Report prepared for the Northern Ireland Environment Agency and National Parks and Wildlife Service as part of Invasive Species Ireland.*



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## 3.0 DEVELOPMENT SITE

### 3.1 DESCRIPTION OF THE EXISTING ENVIRONMENT

An invasive species survey was undertaken by ecologist Jack Glennon of TOBIN on the 24th of March 2021 in order to assess the existing environment, identify if any invasive species are present on site and establish the distribution of these species within the site.

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.

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). They included flowerbeds and borders (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. No Annex I habitats were recorded within or in the immediate vicinity of the site.

## 4.0 SURVEY METHODS

No standard method exists for invasive plant species survey; and the survey was based on an ecological walkover survey approach, whereby all accessible areas of the survey site were walked by the surveyor in daylight hours, with a visual search for the target species undertaken.

Due to the mild early spring weather, identification of all invasive species was possible outside the optimal botanical survey season. For this reason, the survey was carried out a week before optimal botanical survey window. The timing of the invasive species survey during mid spring meant that the presence of Third Schedule species was not missed as the vegetative parts of the plants (growing above ground) can be absent during the colder months of the year, with the plant persisting, over winter, below ground as rhizomes or lying dormant in the seed bank.

Any non-native species of High and Medium risk including those listed in the Third Schedule were identified and their location recorded onsite. A distribution map containing the presence and extent of any Third Schedule species within the survey site was then created.

## 5.0 SURVEY RESULTS

No 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 and the IAS Regulations, were identified on site.



Within the site however, there was two mature stands of Butterfly bush (*Buddleja davidii*) identified. Butterfly bush stands were approximately 6m<sup>2</sup> in surface area and 3m in height (see Photo 5-1). The plants are located at one location within the scrub habitat (ITM 534865 573048). This is to the north of the site, and approximately 25m within the red boundary line as shown in Figure 5-1.

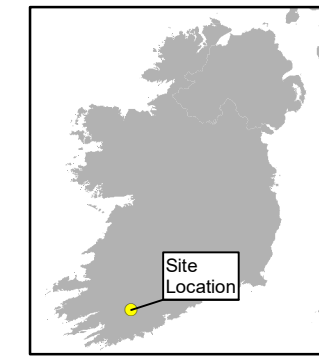
Butterfly bush is an Invasive non-native species (INNS) and is listed as Medium risk. It is a terrestrial species first introduced as a garden plant. It is native to China and preforms better in non-native lands. It is a highly invasive species that is now widespread and common in Ireland. Butterfly bush is widespread in urban areas and can be found on roadsides, footpaths, stone walls, buildings, grasslands, heath, scrubland, recently or regulated cultivated agricultural, horticultural or domestic habitat and waste ground. It has the ability to grow in very poor quality shallow soil and can tolerate drought and grow in very challenging conditions.

This plant is a deciduous shrub that can grow up to 5m tall and has long arching branches and lilac flowers in long pyramidal shapes. Butterfly bush flowers from May–August and has pink/mauve/lilac/yellow/white flowers which are strongly scented. This vigorous plant produces large quantities of very small lightweight seeds (up to 3 million per plant), which can be spread by wind, water, animals and human activity. The seeds are dust like particles allowing for easy dispersal. Seeds can remain viable in soil for several years. It displaces and outcompetes other species native plants for resources such as pollinators, light and space thus posing a threat to native species.



**Legend**

-  Butterfly Bush
-  Site Boundary



- NOTES**
1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
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Issue	Date	Description	By	Chkd.
A	30-03-2021	Final	SP	SO

Client: **Glan Agua**

Project: **Macroom WWTP Project**

Title: **Figure 5-1  
Location of Invasive Plants  
Within The Proposed Development Site**

Scale @ A3: **1 : 700**

Prepared by: S. Pezzetta      Checked: S. O'Reilly      Date: Mar 2021

Project Director: **Noel Gibbons**

**TOBIN**  
CONSULTING ENGINEERS  
Consulting, Civil and Structural Engineers,  
Block 10-3, Blanchardstown Corporate Park,  
Dublin 15, Ireland.  
tel: +353-(0)1-8030406  
fax: +353-(0)1-8030409  
e-mail: info@tobin.ie  
www.tobin.ie

Drawing No.: **Figure 5.1**      Issue: **X**

*Photo 5-1: Mature strand of Butterfly Bush in Scrub*



## 6.0 RECOMMENDATIONS

There is a possibility that this plant may be disturbed during the construction works as it is located within the boundary line of the site. As this species is not listed in Part 1 of the Third Schedule of S.I No. 477 of 2011, European Communities (Birds and Natural Habitats) Regulations 2011 and the IAS Regulations, there is no legal obligation to remove it from the site. However, Butterfly bush is a plant that favours disturbed grounds. To avoid the spread of this invasive species across the proposed development site, it is recommended that the species is removed prior to any works onsite.

The control or management of any Invasive Alien Plant Species (IAPS) should be undertaken in the four distinct phases outlined in GE-ENV-01104<sup>5</sup>. It is recommended that a suitably qualified ecologist or horticulturalist with sufficient training, experience and knowledge in the control of IAPS should be employed to assist in the planning and execution of control measures in relation to Butterfly bush.

As Butterfly bush is a plant that favours disturbed sites, physical removal of plants can provide ideal conditions for the germination of seeds that are present in the soil. For this reason, care needs to be taken to ensure that revegetation of the plant does not occur<sup>6</sup>.

### Physical control

Digging or pulling out plants is only practical with relatively minor infestations, at the initial stage of invasion, or where a site is to be excavated for development or road construction purposes.

To manually remove it, the following precautions during its removal must be taken;

- Care should be taken to remove all parts of Butterfly Bush to prevent branches re-rooting from cuttings and ensure material is disposed of in a manner to avoid this risk.
- When Butterfly bush plants are cut, regrowth from the stump can be very vigorous. Ensure the stump is fully removed.
- The plant should not be removed when it is in seed as there would be a risk of spreading seeds further.
- Where removal of mature plants is not immediately feasible, the flower heads should be removed in June before the plant goes to seed.
- Do not mow mature or young plants as they re-sprout with vigour.
- After uprooting, it is essential to plant the ground in order to prevent a flush of new seedling growth.

### Chemical control

Foliar application of herbicide is capable of providing control with young plants and small infestations but should be followed up at six-monthly intervals as regrowth is common. All pesticide users must be registered and have the appropriate training necessary to carry out the proposed method of control.

However, the use of chemical/herbicide treatment is not recommended here as the plants are fully mature. Also, the use of chemicals is not recommended here as the proposed development site is in close proximity of the River Sullane, which is located 35m west from the invasive plant.

<sup>5</sup> <https://www.tiipublications.ie/library/GE-ENV-01104-01.pdf>

<sup>6</sup> <https://www.tiipublications.ie/library/GE-ENV-01105-01.pdf>

[www.tobin.ie](http://www.tobin.ie)



TOBIN Consulting Engineers



@tobinengineers

**Galway**

Fairgreen House,  
Fairgreen Road,  
Galway,  
H91 AXK8,  
Ireland.  
Tel: +353 (0)91 565 211

**Dublin**

Block 10-4,  
Blanchardstown Corporate Park,  
Dublin 15,  
D15 X98N,  
Ireland.  
Tel: +353 (0)1 803 0406

**Castlebar**

Market Square,  
Castlebar,  
Mayo,  
F23 Y427,  
Ireland.  
Tel: +353 (0)94 902 1401

**London**

17 Bowling Green Lane  
Clerkenwell  
London,  
EC1R 0QB,  
United Kingdom.  
Tel: (+44) (0)203 915 6301



[www.tobin.ie](http://www.tobin.ie)



TOBIN Consulting Engineers



@tobinengineers

**Galway**

Fairgreen House,  
Fairgreen Road,  
Galway,  
H91 AXK8,  
Ireland.  
Tel: +353 (0)91 565 211

**Dublin**

Block 10-4,  
Blanchardstown Corporate Park,  
Dublin 15,  
D15 X98N,  
Ireland.  
Tel: +353 (0)1 803 0406

**Castlebar**

Market Square,  
Castlebar,  
Mayo,  
F23 Y427,  
Ireland.  
Tel: +353 (0)94 902 1401

**London**

17 Bowling Green Lane  
Clerkenwell  
London,  
EC1R 0QB,  
United Kingdom.  
Tel: (+44) (0)203 915 6301