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21/06/2023

UÉ ref: LT0658

Dear Inspector,

Re: Enfield Reg. No. D0131-02 – Reg. 18(3)(b) Notice

In response to the regulation 18(3)(b) request for information notice dated 16th May 2023, please see below relevant information:

Update your NIS with mitigation measures for the prevention of unintended discharges from the waste water works.

The NIS has been updated to have regard for the preventative measures to minimise unintended discharges from the waste water works. The addition of the update does not therefore alter the original conclusions of the report.

Yours sincerely,

Sheelagh Flanagan

Sheelagh Flanagan
Wastewater Strategy

Enclosed:

Appendix 1: Natura Impact Statement

Appendix 1: Natura Impact Statement

Enfield WwTP Upgrade

Appendix C: Natura Impact Statement

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June 2023

Irish Water

Enfield WwTP Upgrade

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Contents

1. Introduction

1.1 Background

A Feasibility Study Report (FSR) was produced for Enfield Wastewater Treatment Plant (WwTP) as part of the 2017-2021 Investment Plan Wastewater Consultancy Services – Lot 4 project. The FSR sought to establish the current capacity of Enfield WwTP with respect to the Urban Wastewater Treatment Directive (UWWTD) and wastewater discharge licence (WWDL) and to identify options to upgrade the plant to meet future growth within the catchment.

Enfield WwTP is owned by Irish Water (IW) and is operated and maintained by Meath County Council (MCC). The WwTP receives flows from the settlements of Enfield (Co. Meath) and Johnstown Bridge (Co. Kildare). It also receives pre-treated flows from the Applegreen Service Station on the nearby M4 motorway. The location of the existing WwTP is shown in Figure 1.1. Enfield has been identified as a key growth town within the MCC Development Plan (2020 to 2026) and wastewater loads to the WwTP are predicted to increase in the future. The FSR recommended the upgrade of Enfield WwTP, increasing its capacity from approximately 3,500 population equivalent (PE) to 6,200 PE. The Proposed Development comprises:

- expansion of the WwTP with new infrastructure to increase its treatment capacity from 3,500PE to 6,200 PE;
- new Reed Beds to reduce WwTP operational costs and energy use;
- localised scour protection works to secure the long-term use of the existing site access road; and
- flood defence works to reduce the risk of flooding to the existing WwTP site.

IW appointed Jacobs Tobin as Engineering Consultants for the project. As part of this appointment Jacobs experienced practitioners were required to undertake an Appropriate Assessment (AA) of the proposed works at the WwTP. This report presents the findings of the AA for the proposed upgrade works at Enfield WwTP. As part of this appointment, Jacobs ecologists undertook a Screening for AA of the Proposed Development. The screening identified the potential for likely significant effects (LSEs) on one European site from the Proposed Development, therefore progression to AA was required to assess the potential for adverse effects on the integrity of the European site identified at screening. The scientific assessment in support of the AA is documented within this Natura Impact Statement (NIS) which contains the information required for the competent authority (in this instance MCC) to undertake an AA in respect of the Proposed Development.

A minor update to this report was provided in June 2023 in response to comments received during the Waste Water Discharge Authorisation process. These updates provide further detail but do not alter the original conclusions of the report,

Figure 1.1: Location of Proposed Development site (indicated by red cross) (Source: OpenStreet Map https://gis.epa.ie/EPAMaps/).

1.2 Legislative Context

The preparation of this NIS complies with the requirements of Article 6, and in particular, the provisions of Article 6(3), of the Birds and Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the "Habitats Directive"); and Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds ("the Wild Birds Directive"). The Habitats Directive has been transposed into Irish law by the Planning and Development Act, 2000 (as amended) and the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011).

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. In the 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. (EU Habitats Directive, Article 6-(3)).

European sites (which make up the Natura 2000 network) comprise Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). SACs are selected for the conservation of certain habitats listed on Annex I of the Directive (including priority habitats such as alluvial woodlands) and Annex II species such as Atlantic salmon (*Salmo salar*). SPAs are selected for the conservation of certain bird species listed on Annex I of the Birds Directive and their supporting habitats.

1.3 Purpose of this Report

This report provides information to support MCC, as the relevant Competent Authority, in undertaking AA of the Proposed Development, as required under the Habitats Regulations, 2011.

1.3.1 Structure of this Report

The structure of the report is as follows;

Section 1: Introduction and background to the proposed SDC and legislative context.

Section 2: Overview of the AA methodology including guidance and data used in compiling this report and the authors experience.

Section 3: Description of the proposed SDC and the baseline/receiving environment.

Section 4: Conclusion of Screening for Appropriate Assessment.

Section 5: Information informing the Appropriate Assessment including potential impacts, in-combination effects and mitigation measures, where required.

Section 6: Assessment of in-combination effects with other plans and projects.

Section 7: Conclusion in relation to adverse effects on site integrity.

Section 8: References.

This report is to be read in full, with no excerpts to be representative of the findings. This report has been prepared exclusively for MCC and no liability is accepted for any use or reliance on the report by third parties. This report has been prepared on the basis of the data made available at the time of writing. Where assumptions have been necessary, these are clearly outlined.

2. Methodology

2.1 Authors Qualification and Expertise

This NIS has been prepared by Suvi Harris Environmental Scientist at Jacobs and Iseult Cummins Ecologist and this report was checked/reviewed by Susie Coyle.

Dr Suvi Harris holds a BSc (Hons) in Botany from University College Dublin (UCD) and a PhD in Water Quality Risk Assessment from UCD. Suvi is a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Suvi is an experienced Environmental Scientist with over 7 years' experience in environmental consultancy. Suvi has undertaken and participated in a vast number of projects and scheme types during her environmental career and authored and reviewed numerous environmental reports (plan and project level AA, EcIA (Ecological Impact Assessment) etc.).

Iseult Cummins holds an MSc (Hons) in Applied Environmental Science from University College Dublin and a BA (Hons) in Zoology from Trinity College Dublin. She is a Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Iseult has a year and a half consultancy experience working on projects in Ireland and the UK. She has undertaken ecological assessments and surveys on a variety of projects (road schemes, water abstraction, water treatment works) involving survey and mitigation. She has contributed to NIS, EcIA and PEA (Preliminary Environmental Assessment) reports during her time at Jacobs Engineering Ltd.

Dr Susie Coyle is Associate Director for Ecology at Jacobs. She holds a BSc (Hons) in Aquatic Bioscience and a PhD in fish biodiversity from the University of Glasgow. Susie is a chartered full Member of the Royal Society of Biology (MRSB), a full Member of CIEEM (MCIEEM) and a full Member of the Institute of Fisheries Management (MIFI). Susie has thirteen years of consultancy experience and is an expert in aquatic ecology with over 15 years' experience of field surveys and environmental sampling techniques. Although primarily an aquatic ecologist she is proficient in survey techniques for terrestrial species such as otter and is a named agent on several protected species licences.

2.2 Appropriate Assessment Methodology

2.2.1 Overview

The appropriate assessment process is generally acknowledged to comprise four steps as follows:

- Screening for AA/Test of Significance — Identification of the likely impacts upon a European site from a project or plan, either alone or in-combination with other projects or plans and considers whether these impacts are likely to be significant.
- Appropriate Assessment — Determination of whether a plan or project could have adverse effects on the integrity of the European site, either alone or in-combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Where adverse effects are identified, mitigation measures to remove any potential adverse effects are proposed.
- Assessment of Alternative Solutions — Examination of alternative ways of achieving the objectives of the project or plan that avoid adverse effects on the integrity of the European site.
- Imperative Reasons of Overriding Public Interest (IROPI) – Assessment where no alternative solutions exist, and adverse effects remain. Assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

Following screening and where the potential for likely significant effects (LSEs) has been identified, the assessment is progressed to the next step, AA. This step considers whether a project or plan, either alone or in-combination with other projects or plans, could have adverse effects on (European) site integrity. The information collected (both field and desk based) and outlined in this NIS aimed to determine the potential for adverse effects on site integrity from the Proposed Development by:

- describing the project proposals and other plans or projects that may have a cumulative effect on any European sites; and
- giving an overview of the European sites identified at risk, including information on their conservation objectives and an understanding of current factors which either maintain or threaten those conservation objectives;
- assessing aspects of the project proposals which could undermine the conservation objectives and integrity of European sites; and
- providing specific mitigation measures that will be implemented ensure adverse effects on European sites can be excluded, where potential impacts are identified.

2.2.2 Guidance

The AA requirements of Article 6 of the Habitats Directive follow a sequential approach, which is outlined in the following guidance documents:

- AA of Plans and Projects in Ireland: Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2010);
- 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 (European Commission, 2002);
- Communication from the Commission on the Precautionary Principle (European Commission, 2000);
- 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 (European Commission, 2007);
- Marine Natura Impacts Statements in Irish Special Areas of Conservation. A working Document (Department of Arts, Heritage and the Gaeltacht, 2012); and
- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (European Commission, 2018).

The following circulars also outline the AA requirements:

- AA under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPW 1/10 and PSSP 2/10 (Department of Environment, Heritage and Local Government, 2010);
- AA of Land Use Plans. Circular Letter SEA 1/08 & NPWS 1/08 (Department of Environment, Heritage and Local Government, 2008a);
- Compliance Conditions in respect of Developments requiring (1) Environmental Impact Assessment (EIA); or (2) having potential impacts on Natura 2000 sites. Circular Letter PD 2/07 and NPWS 1/07;
- Guidance on Compliance with Regulation 23 of the Habitats Directive. Circular Letter NPWS 2/07 (Department of Environment, Heritage and Local Government, 2007); and
- Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments. Circular L8/08 Department of Environment, Heritage and Local Government (2008b).

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

- *'The term 'Favourable Conservation Status' is defined in Article 1(e) and 1(i) [of the 'Habitats' Directive 92/43/EEC] and refers to the conservation status of the species or habitat types of Community interest across their natural range within the EU*'.
- *'The 'integrity of the site' can be usefully 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*'.

- '*The significance of effects 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*.'

2.2.3 Consultation

Consultation was requested from Inland Fisheries Ireland (IFI) in July 2020.

2.2.4 Desktop Review and Field Surveys

Information used to inform the NIS was gathered during a number of site walkovers undertaken in June 2020, August 2019 and August 2018, as well as desktop studies. The site visits informed the overall environmental and ecological assessment. Habitats within the site were assessed for their potential to support rare, protected species and/or invasive species. The assessment of protected species and habitats and/or invasive species was undertaken in line with the following guidelines:

- CIEEM Guidelines for Preliminary Ecological Appraisal. Second Edition (CIEEM, 2017);
- A Guide to Habitats in Ireland. The Heritage Council (Fossitt, 2000); and
- National Roads Authority Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (TII, 2010).
- National Roads Authority Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (TII, 2009).

Desktop data gathered to inform the AA included maps, ecological reports/assessments and ecological and water quality data as follows:

- aerial imagery (ESRI);
- Google Earth and Bing aerial maps;
- mapping of European site boundaries available online at www.npws.ie;
- Environmental Protection Agency (EPA) maps (including data on water quality) https://gis.epa.ie/EPAMaps/
- protected species and habitat data from National Parks and Wildlife Services (NPWS) (available online at www.npws.ie);
- protected and invasive species data from the National Biodiversity Data Centre online at http://www.biodiversityireland.ie/;
- Invasive Species Report - Enfield WwTP Survey Findings and Recommendations (Jacobs Tobin, 2018a);
- Annual Environmental Report 2017 – Enfield D0131-01 (EPA, 2018);
- Annual Environmental Report 2018 – Enfield D0131-01 (EPA, 2020);
- other open source information available online regarding fisheries (e.g. www.salmonireland.com and www.fishingireland.info);
- 2017-2021 Investment Plan Wastewater Consultancy Services - Lot 4: Feasibility Study Report – Enfield WwTP (Jacobs Tobin, 2018b);
- 2017-2021 Investment Plan Wastewater Consultancy Services - Lot 4: Design Inception Report - Enfield WwTP (Jacobs Tobin, 2019a);
- 2017-2021 Investment Plan Wastewater Consultancy Services - Lot 4: SDRB Feasibility Study Report – Enfield WwTP (Jacobs Tobin, 2019b); and
- online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie including: the Natura 2000 network Data Form; Site Synopsis; Generic Conservation Objective data.

3. Description of the Proposed Development and Receiving Environment

3.1 Receiving Environment

The results of the desk-based review and site visit are presented in the following sections. Photographs of the site and surrounding environment are shown in Appendix B.

3.1.1 Site Description

Enfield WwTP is located on the south bank of the River Blackwater (Longwood) in Co. Meath. The existing WwTP site covers an area of 0.34ha and is predominantly hard standing with some areas of amenity grassland, trees and shrubs. The plant is bounded on all sides by a palisade fence, treeline and scrub. The River Blackwater flows along the northern boundary of the Plant. This reach of the Blackwater comprises steep, 4m high, vegetated banks and is managed under schemes implemented under the Arterial Drainage Act (1945). Enfield WwTP is accessed from the R402 *via* a private road under an existing Wayleave agreement.

The Proposed Development extends to lands located on the north bank of the River Blackwater. An existing drainage ditch (and tributary of the River Blackwater) crosses these lands, which is also managed under the Arterial Drainage Act (1945).

Further details on the site location are provided in Drawing 321060BK-EN-001 in Appendix A and Figure 3.1.

The WwTP currently receives flows from the settlement of Enfield (Co. Meath) and Johnstown Bridge (Co. Kildare) but also receives pre-treated flows from the Applegreen Service Stations on the nearby M4 motorway. The discharge from the Applegreen Service is under a Section 16 Licence.

The existing treatment process includes primary (screening and grit removal), secondary (convectional active sludge) and nutrient removal (chemical dosing for phosphorous (P) removal).

The current EPA Wastewater Discharge Licence (WWDL) for Enfield WwTP is D0131-01 (granted in 2009 and subsequently amended in 2014 under Regulation 33 of the Waste Water Discharge (Authorisation) Regulations 2007, as amended).

Since 2009, Enfield WwTP has only been fully compliant with the ELVs in its WWDL in 2014 and 2015 (See Section 1.2.2 of the Planning Report for further details on compliance). This came following the installation of Fine Bubble Diffuse Aeration, which enhance treatment provision.

The repeated exceedances of the ELVs are, for the most part, as a result of the WwTP operating at an organic load which has been above its design capacity since 2010. Irish Water therefore identified Enfield WwTP as a priority for improvement works and listed it in its 2017-2021 Investment Plan as a WwTP requiring an upgrade.

Hence, the proposed upgrades are required to meet the surface water directive regulations and EPA WWDL compliance.

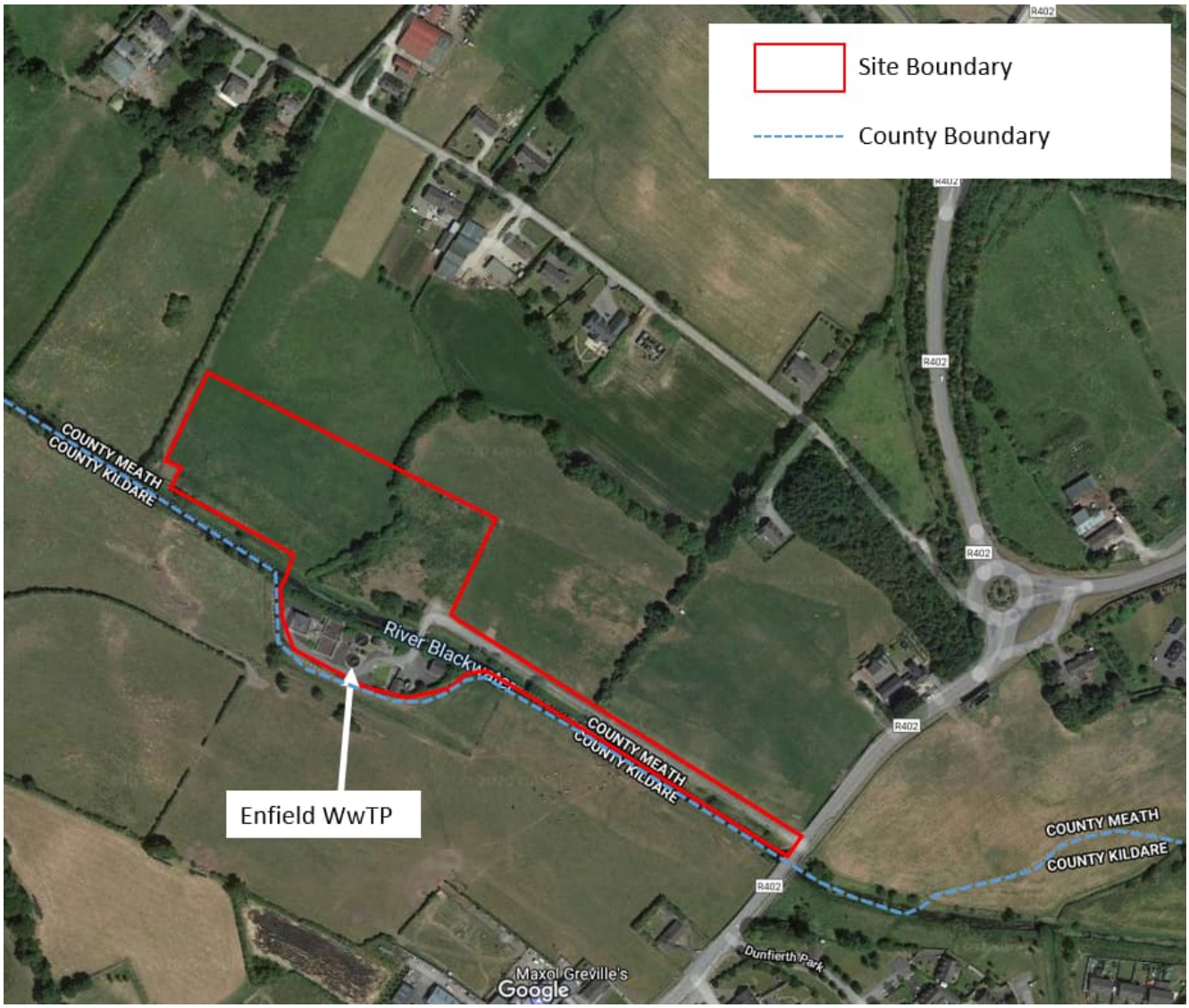

Figure 3.1: Enfield WwTP and Proposed Development redline boundary (including access road and lands to be developed).

3.1.2 Desktop Assessment

The current discharge outfall from the existing WwTP is located immediately adjacent to the site into the River Blackwater (Longwood) (Photograph 2, Appendix B). The River Blackwater (Longwood) is a tributary of the River Boyne (approximately 15km downstream). The River Boyne is one of Irelands larger river catchments and is part of the River Boyne and River Blackwater Special Area of Conservation (SAC) designated for the Annex I habitats alkaline fens and alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* and Annex II species including Atlantic salmon (*Salmo salar*), otter (*Lutra lutra*) and river lamprey (*Lampetra fluviatilis*). The River Boyne and River Blackwater SAC is located primarily in Meath and Westmeath, but also drains smaller areas of Cavan and Louth. The designation covers the freshwater element of the River Boyne as far as the Boyne Aqueduct, the River Blackwater as far as Lough Ramor and the Boyne tributaries including the Deel, Stoneyford and Tremblestown rivers. Agriculture presents the most significant pressure in the Boyne Catchment. Issues are predominately due to phosphorus loss to surface waters from direct discharges; runoff from yards, roadways or other compacted surfaces, or runoff from poorly draining soils (EPA Catchment Unit Eden Portal 2020). Other pressures are due to channelisation, peat extraction and discharges from WwTPs.

Article 17 spatial data was reviewed which records the nearest recorded location of alkaline fen habitat approximately 9km from the site, while the nearest location of alluvial forest is over 14km from the site (NPWS, 2019b). Article 17 data was reviewed for lamprey, otter and salmon. No data of relevance was found for these species, excluding otter. Article 17 data showed that the nearest record of otter was approximately 3.5km away.

A search of the NBDC did not identify any records for Qualifying Interest (QI) species within the site boundary. However, there were several records of otter (*Lutra lutra*) and kingfisher (*Alcedo atthis*) within 2km of the Proposed Project. Otter are a QI species of the River Boyne and River Blackwater SAC, kingfisher are the QI species of the River Boyne and River Blackwater SPA, which are both located approximately 14km downstream of the Proposed Development. The Boyne catchment supports a strong population of otter according to the 2010/2011 national otter survey of Ireland (Reid *et al*., 2013). As per the Unpublished Report of the distribution and abundance of Kingfisher in Ireland (Cummins *et al*., 2010), the Boyne River System was estimated to support approximately twenty kingfisher territories.

An assessment of juvenile lamprey in the Boyne catchment was undertaken in 2005 (O'Connor, 2006). The aim of these surveys was to establish the abundance, distribution, age structure and main nursery sites of lamprey species in the River Boyne catchment. A total of five sites were investigated on the River Blackwater (Longwood) including its tributary the Coolree River (also known as Fear English River). The closest site Lb2 was located in Enfield and was upstream of the WwTP (Figure 3.2). The area of the river at the time of surveying was described as heavily drained/channelised, however despite this the channel had recovered well and had scoured a new sub - channel with islands and backwaters. This provided ideal habitat for trout and a good microhabitat for lamprey. Lampreys were present at a density of 3.1 per m². It was concluded that the only likely species of lamprey occurring in the River Blackwater (Longwood) catchment was brook lamprey (*Lampetra planeri*). Furthermore, although the lampreys were present the species was at an unsatisfactory conservation status level; similar to other tributaries of the Boyne. The survey concluded that lamprey populations are currently threatened by pollution and drainage maintenance in this watercourse (O'Connor, 2006).

Personal communication with IFI (July 2020) noted that the River Blackwater Enfield contains stocks of Atlantic Salmon, Brown Trout, eels and lamprey.

Figure 3.2: Lamprey survey location (O'Connor, 2006) 300m upstream of Enfield WwTP

3.1.3 Field Data

Photographs 1 - 10 provided in Appendix B show the existing WwTP and surrounding environment. Habitats and fauna recorded during field surveys within the site and immediate area are discussed below.

Field Camera Results

Field cameras were deployed at two locations on site over the course of one week in June 2020. Both cameras were placed along the hedgerow/ditch at the proposed watercourse crossing location; one facing the hedgerow and one within the ditch in close proximity to a proposed culvert location associated with an access road over the ditch. This footage was reviewed, and no QI species were noted. Footage showed activity of fox (*Vulpes Vulpes*) along the hedgerow.

Terrestrial Habitats

Habitats and flora within the Proposed Development site were classified using the Heritage Council's *Guide to Habitats in Ireland* (Fossitt, 2000). The WwTP was predominantly hard standing with some areas of amenity grassland, trees and shrubs. The plant was bounded on all sides by a metal fence and treeline comprised of willow (*Salix spp.*) and alder (*Alnus glutinosa*) with a scrub understorey dominated by laurel (*Prunus laurocerasus*) and dogwood (*Cornus sanguina*). The River Blackwater (Longwood) is located immediately north of the plant and is bounded by steep (4m) vegetated banks dominated by common long grasses and common broad-leaved herbs (Photographs 1-2). Occasional willow and alder were located along the riverbank. The eastern corner of the site (Figure 3.1) was dominated by dense rank grassland, with scrub hedgerow along the ditch at the proposed crossing location dominated by hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*) and ivy (*Hedera helix*) (Photograph 4). Several mammal holes were recorded within the hedgerow, along with feeding debris and faeces of fox and rabbit (*Oryctolagus cuniculus*) (Photograph 5). Field cameras were deployed.

ed at this location as per Section 3.1.3.1. The field to the west of this hedgerow comprised of improved agricultural grassland grazed by livestock (Photograph 7). Further west additional signs of mammals were noted, including several mammal holes (rabbit), tracks and badger (*Meles meles*) faeces (Photograph 8).

Aquatic Environment

Waterbodies in the vicinity of the WwTP are shown in Figure 3.3. The River Blackwater (Longwood) flows along the northern boundary of the WwTP site and is a tributary of the River Boyne and River Blackwater SAC. The river is approximately 3m wide, relatively deep (1m) and was moderately flowing at the time of surveying. A steep (4m) vegetated bank bounds either side of the river. It was noted at the outfall from the WwTP the river was heavily vegetated (Photograph 3). The River Blackwater (Longwood) flows north west before veering north towards the River Boyne 15km downstream.

A review of the EPA interactive mapper[1] for River Waterbody WFD status (2013-2018) indicated the River Blackwater, immediately adjacent to the WwTP (the Blackwater (Longwood)_030 water body) has *Unassigned* status. The Blackwater (Longwood)_020 (upstream) and Blackwater (Longwood)_040 (downstream) water bodies are classed as *Moderate.* The Blackwater (Longwood) Sub-basin is categorised as *At Risk* along its entirety. As mentioned above, the river flows downstream into the River Boyne, which is classified Good Quality at the point of confluence just north of the R161 road. *At risk* waterbodies are those that are at high risk of failing targets under the WFD.

The EPA Q Value Assessment of the River Blackwater (Longwood 07B02) most recent survey was conducted in September 2018. The Assessment stated the following: "*The dominance of pollution tolerant and paucity of pollution sensitive macroinvertebrate taxa indicated unsatisfactory ecological conditions at all sites surveyed on the Blackwater (Longwood) River in 2018. Enriched conditions were evident with enhanced algal growth noted at all sites and siltation evident at Johnstown (0100).*" Station 0100 (Br at Johnstown) is approximately 300m upstream of the current WwTP treated effluent discharge location. Water quality in this location was assigned Q3-4. The nearest downstream monitoring location (approximately 7.5km), Station0300 (BR ESE of Longwood), was also assigned Q3-4 in 2018.

[1] https://gis.epa.ie/EPAMaps/ (Accessed January 2020)

Qualifying Interest Species or Habitats

No QI habitats were recorded on site during field surveys in 2020.

Several silted areas were noted which would support juvenile brook lampreys (the only species of lamprey recorded in this watercourse according to O'Connor (2006). Otter spraint and a possible couch (otter resting place) were recorded in close proximity to a proposed culvert associated with an access road over the ditch (Photograph 6). Field cameras were deployed at this location as per Section 3.1.3.1 however no footage of otter was recorded. There were no other QI aquatic species or habitats recorded during the site walkover within or around the perimeter of the WwTP. The River Blackwater (Longwood) and the ditch which will be crossed by the proposed works, which were deemed suitable to support otter. Kingfisher territories can extend up to 5km, however given that the SPA is approximately 9km overland and over 14km downstream there is no potential for kingfisher associated with the SPA to be present at this location. Additionally, habitat at this ditch was deemed unsuitable to support kingfisher due to a lack of suitable substrate for burrowing and dense vegetation along the banks of the ditch.

Invasive Species

Searches using the NBDC website identified two historical records of species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011) within 2km of the Proposed Development, as follows:

- Japanese knotweed (*Fallopia japonica*); and
- American Mink (*Neovison vison*).

American mink was seen during the site survey in June 2020 along the banks of the River Blackwater downstream of the WwTP. No other invasive species was recorded during the survey.

3.2 Description of the Proposed Development

3.2.1 Current Treatment Process

Enfield WwTP was constructed in 2001. It is now owned by IW and is operated and maintained by MCC. The treatment plant receives flows from the settlements of Enfield (Co. Meath) and Johnstown Bridge (Co. Kildare). The WwTP also currently receives a significant volume of wastewater from the nearby M4 Applegreen Motorway Service Stations. This wastewater is pre-treated before being pumped to Enfield WwTP. The discharge from the M4 Motorway Service Stations is the subject of a Kildare County Council Section 16 Licence.

The existing WwTP site covers an area of 0.34ha and is predominantly hard standing with some areas of amenity grassland, trees and shrubs. The plant is bounded on all sides by a palisade fence, treeline and scrub. The River Blackwater (Longwood) flows along the northern boundary of the Plant. The WwTP was originally designed to cater for a population equivalent (PE) of 3,500 but is currently operating over its design load at 4,600PE. The existing treatment process includes primary (screening and grit removal), secondary (convectional active sludge) and nutrient removal (chemical dosing for phosphorous removal).

3.2.2 Proposed Development

Summary

The Proposed Development includes the installation, testing and commissioning of mechanical, electrical, instrumentation, control and automation equipment and civil upgrades to increase the treatment capacity of Enfield WwTP from 3,500PE to 6,200PE. Enfield WwTP currently exports sludge for treatment; the Proposed Development includes Reed Beds to dry all of treated sludge produced on the site and the construction of sludge import facilities, although this will be a minor portion of sludge being dried on site. It is predicted that this will reduce the amount of current tankers leaving the WwTP with dewatered sludge. The main elements of the Proposed Development are:

- 2 No. approximately 60m long transfer pipelines beneath the bed of the River Blackwater between the new and existing treatment infrastructure;
- 2 No. 18.3m (approximate, external) diameter reinforced concrete Final Settlement Tanks[2], with a sidewall depth of 3m, a total operating volume of approximately 1,300m^3. The tanks are founded on a reinforced concrete base and include associated connecting pipework;
- 1 No. approximately 7m high by approximately 5.1m diameter Waste Activated Sludge (WAS) Holding Tank with an approximate initial operational volume of 90m^3 and headroom to allow for future adaptation to a 20-year design horizon;
- Sludge import facilities to receive a maximum of 3,000tonnes (wet) of liquid sludge imports per annum. The import facilities consist of a reception area, mechanical import screen and bunding for spillage containment;
- Construction of various pump sumps and the installation of duty/standby pumps to transfer flows between the new and existing treatment infrastructure;
- 11 No. new reed beds measuring 20m (long) by 15m (wide) by 2.0m (high). The reed beds are formed from cohesive earth embankments and pre-cast retaining walls with associated feed and return piped networks;
- 2m by 1.5m box culvert across the existing ditch to provide access to the reed beds including associated reinforced concrete headwalls and internal mammal ledge,
- New tarmac and gravel access roads;
- New site surface water drainage pipework, sustainable drainage attenuation and manholes;
- New outfall to the River Blackwater for treated effluent and attenuated surface water runoff;
- Landscaping and reinstatement including tree and hedge planting and the installation of a new approximately 2.4m high wire mesh boundary fence with lockable access gates;
- Local flood defence measures around the existing WwTP site comprising new kerbs and approximately 0.4m high reinforced concrete flood walls; and
- Decommissioning of existing clarifiers[2] and belt press and removal of the picket fence thickener.

In addition to upgrades to increase the plant's capacity, works are proposed along part of the riverbank along the side of the existing site access which has failed due to scour. It is proposed to repair this section of the riverbank and install scour protection works to ensure that the site access road is not impacted. This will also include 1 No. approximately 100m long and 1.1m high timber fence.

Installation Methods for Specific Elements of the Proposed Development

Installation methods are provided here for the various elements of the Proposed Development. Key drawings relating to activities of particular relevance to the NIS are provided in Appendix A of this report and listed in Table 3.1. The remaining drawings for the Proposed Development are provided in Appendix A of the Planning Report.

Table 3.1 NIS Appendix A Drawings

Drawing Number	Title	Contents
321060BK-EN-001	Proposed WWTP Upgrade Location Plan	Site Location Plan (1:2500 Scale)
321060BK-PL-001	Proposed WWTP Upgrade Site Layout	Proposed Site Layout for New Works (1:500 Scale)
321060BK-PL-001A	Proposed WWTP Upgrade Site Layout	Proposed Site Layout for New Works (1:500 Scale)
321060BK-PL-007	Proposed WWTP Upgrade Sludge Drying Reed Bed Composition Detail	Reed Bed Composition detail
321060BK-PL-015	Enfield WWTP Upgrade Channel Protection Works	Location and Detail of Scour Protection Works

[2] 'Final Settlement Tanks' and 'Clarifiers' are both terms referring to the same type of structures, fulfilling the same functions.

Drawing Number	Title	Contents
321060BK-PL-017	Upper Stream Diversion and Crossing with Box Culvert Installation	Proposed ditch diversion and new culvert crossing detail
321060BK-PL-018	Proposed WWTP Upgrade Outfall	New Site Outfall and Drainage Detail

Transfer Pipelines

- The proposed transfer pipelines will cross the River Blackwater just downstream of the existing site access bridge. This reach of the Blackwater is managed under the Arterial Drainage Act (1945). Both pipelines will therefore be installed 1m below the bed of the river to ensure they do not impact on future management activities along the river.
- The transfer pipes will be installed by directional drilling with the proposed construction methodology comprising:
  - excavation of thrust and reception pits on opposite sides of the river. excavated spoil to be stockpiled on site;
  - directional drilling equipment to be lowered and pipelines installed by directional drilling;
  - thrust and reception pits made good with excavated fill; and
  - relevant control equipment and pumps installed in manholes for future connection.

Final Settlement Tanks (located on the proposed site for development)

Construction of the final settlement tanks will comprise the following key elements:

- topsoil to be stripped and stockpiled onsite.;
- underlying soil to be excavated to formation level. Soils to be stockpiled onsite;
- sludge feed and drainage pipework and other ancillary services to be laid;
- foundation slab poured and tanks constructed; and
- handrailing and inspection platforms installed.

WAS Holding Tank (located on the proposed site for development)

The construction sequence for the WAS Holding tank will be similar to that for the Final Settlement Tanks.

Reed Beds (located on the proposed site for development)

The reed beds will be formed above existing ground levels to ensure they are above the predicted flood level and reduce the risk of an interface with groundwater. The following construction methodology is proposed:

- the works area will have topsoil stripped and stockpiled onsite to required formation level using mechanical excavator. Maximum excavation level 150mm below minimum existing ground level;
- site to be compacted as required by geotechnical specification i.e. using lambs foot roller or another mechanical compactor. Localised soft spots to be infilled with granular fill;
- required foundation level and toe drainage to be laid;
- embankment fill to be laid and compacted in suitable layers as required by the geotechnical specification, using suitable fill to required design height;
- pre-cast sections placed and secured;
- EDPM liner placed, secured and tested to ensure it is watertight;
- reed bed feed, drainage pipes and manholes constructed;
- reed bed gravels and compost placed, and the reeds planted; and

- embankment to be finished with a gravel track along its crest and seeded topsoil on its side slopes.

Ditch Diversion & Culvert (located on the proposed site for development)

To reduce the health, safety and environmental risk associated with construction of the culvert it is proposed to build the culvert offline from the existing ditch and then divert the existing ditch. The diversion will consist of a trapezoidal form channel to correspond to the existing ditch channel profile. The section of the existing ditch which is diverted will be infilled using locally won fill.

The envisaged construction methodology is as follows:

- topsoil to be stripped and stockpiled onsite;
- underlying soils to be excavated to required bed level. Underlying soils to be stockpiled separately from topsoil;
- excavation at culvert location to allow for foundation/bedding material;
- foundation/bedding material to be laid e.g. concrete blinding on granular fill bed;
- pre-cast concrete culvert section to be installed using mechanical lifting equipment;
- pre-cast or cast in-situ headwalls to be installed;
- suitable ditch bed material laid on culvert invert;
- downstream end of diversion to be connected into existing ditch;
- upstream end of ditch diversion to be connected to existing stream; and
- soil and topsoil stockpile used to backfill former line of stream.

Scour Protection Works

Scour Protection Works comprise placement of scour blankets and gabion basket to secure the toe of the bank prior to placing cohesive fill to repair the bank. The works will be finished with seeded topsoil.

The method of construction will comprise:

- a working area will be established along the existing site access road. An excavator tracking along the access road will then trim the bank and its toe above the “normal” water level to form a flat platform to receive the gabion baskets. Material which is removed from the bank/toe will be stockpiled along the landward edge of the access road or at an appropriate location with the main site compound;
- a permeable geotextile will be placed on the flat berm above the normal water level. This is to protect the existing exposed surface and allow vegetation to establish to guard against further scour;
- a line of gabion baskets will then be placed along the toe of the bank and filled with local stone from the machine working from the access road. The purpose of the gabion baskets is to secure the bank toe and to retain fill that is placed on the bank as part of the repair;
- once the gabion baskets are filled, an excavator working from the road will place and compact cohesive fill to repair the channel bank; and
- a geotextile will be placed over the newly placed fill. An excavator, working from the road will then place topsoil over the geotextile. The topsoil will be seeded.

New Treated Effluent Outfall to River Blackwater

A new outfall to the River Blackwater is proposed on the northern bank of the river, between the existing bridge and the point of outfall from the on-site ditch to the river. No working in the river is required, the headwall will be set above typical water levels to allow free discharge.

The method of construction will comprise:

- cutting locally into the bank to receive the headwall;
- placing the headwall; and

- connecting up pipework.

3.2.3 Programme and Timing of Works

The Proposed Development is programmed to start in Q4 of 2023 and will be 18 months' duration.

3.2.4 Effluent Quality and Waste Assimilative Capacity

Water quality can be affected by discharges from WwTP. The level of impact depends on the volume of the discharge and the ability of the receiving water to assimilate the effluent loading without affecting water quality. Receiving water quality can be adversely affected if the WwTP does not have adequate capacity to treat the wastewater or where the receiving watercourse does not have sufficient flow to provide dilution of the discharge to meet the WFD water quality standards.

A Waste Assimilative Capacity (WAC) assessment was completed for Enfield WwTP as part of the JT Enfield WwTP Feasibility Study Report in accordance with the Irish Water Technical Guidance Note *"Waste Water Discharge Authorisation (WWDA) Emission Limit Values (ELV) Assessment Technical Guidance Note"*.

This WAC assessment (Table 3.2) applied the EPA notionally clean river approach. A WAC assessment was also completed using mean recorded background concentrations from the 2019 Enfield WwTP AER. Details of this WAC assessment are summarised in Table 3.3. For both WAC scenario assessments, the predicted downstream concentrations of BOD, Ortho-P and Ammonia all meet the Required Standards set out in the European Union (Surface Water) Regulations 2009 (as Amended) (the Surface Water Regulations).

The existing WwTP incorporates measures to prevent unintended discharges, which will remain in place for the Proposed Development. These measures include the following and are monitored by the on-site caretaker:

- an accident prevention procedure;
- an emergency response plan and procedure;
- alarms and telemetry on the WwTP;
- standby pumps on all pumpsets with alarms on all pumps;
- standby equipment and provisions in the event of interruption of the power supply including a portable generator or equipment with automatic switchover; and
- a storm water overflow tank with storage capacity of 260m^3.

The capacity of the existing infrastructure and provisions for measures to prevent unintended discharges are sufficient to accommodate the proposed development.

Table 3.2: Enfield WWTP Treated Effluent WAC Assessment (Notional Clean River Approach).

Proposed WwTP PE	Water Quality Parameter	Notional Clean River Background Concentration (mg/l)	Required Surface Water Regulation Standard Concentration (mg/l)	Predicted Downstream Concentration (mg/l)	% Assimilative Capacity Used
6,200 PE	BOD	0.26	2.6	1.41	54%
	Ortho-P (as P)	0.005	0.075	0.03	45%
	Ammonia	0.008	0.14	0.08	55%

Table 3.3: Enfield WWTP Treated Effluent WAC Assessment (Measured Mean Background Concentration Approach).

Proposed WwTP PE	Water Quality Parameter	Mean Measured Background Concentration (mg/l)	Required Surface Water Regulation Standard Concentration (mg/l)	Predicted Downstream Concentration (mg/l)	% Assimilative Capacity Used
6,200 PE	BOD	1.37	2.6	2.46	94%
	Ortho-P (as P)	0.04	0.075	0.067	89%
	Ammonia	0.08	0.14	0.14	100%

4. Summary of Screening for Appropriate Assessment

4.1 Screening for AA

This section details a summary of the first test for Appropriate Assessment: Screening. The Screening process identifies the likely impacts upon a European site from a project (or plan), either alone or in-combination with other projects or plans and considers whether these impacts are likely to be significant. If the risk of a Likely Significant Effect cannot be discounted, an Appropriate Assessment of the project is required at stage 2 of the AA process.

European sites in the vicinity of the Proposed Development are shown in Figure 3.3, Appendix C, and comprise the following:

- River Boyne and River Blackwater SAC: designated for alkaline fens, alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*), river lamprey (*Lampetra fluviatilis*), Atlantic salmon (*Salmo salar*) and otter (*Lutra lutra*). Given that there is a direct hydrological link to this site there is potential for LSEs to species outside of the SAC boundary.
- River Boyne and River Blackwater SPA: designated for kingfisher. Kingfisher territories can extend up to 5km, however the SPA is approximately 9km overland and over 14km downstream therefore, there is no potential for kingfisher associated with the SPA to be present at this location. Additionally, habitats within the Proposed Development site are not suitable to support QI species for which this site is designated.
- Ballynafagh Lake SAC: designated for alkaline fen habitat and terrestrial QI species. The SAC is located over 12km from the proposed development site. There is no hydrological link to this site and habitats within the Proposed Development site are not suitable to support QI species for which this site is designated.
- Ballynafagh Bog SAC: designated for various bog habitats. The SAC is located approximately 12.6km from the Proposed Development site. There is no hydrological link to this site and therefore no potential pathway for impact to this site.
- The Long Derries, Edenderry SAC: designated for grassland habitat. The SAC is located approximately 12.6km from the Proposed Development site. There is no hydrological link to this site and therefore no potential pathway for impact to this site.
- Mount Hevey Bog SAC: designated for various bog habitats. The SAC is located approximately 14km from the Proposed Development site. There is no hydrological link to this site and therefore no potential pathway for impact to this site.

Based on the description of the Proposed Development outlined in Section 3 it was considered that there was potential for Likely Significant Effects on one European site, River Boyne and River Blackwater SAC.

Given the works outlined as part of the Proposed Development and the QI for which these sites are designated, no potential effect pathways with potential for LSEs were identified for any sites except the River Boyne and River Blackwater SAC.

Details on this European site, the qualifying interest species/habitats and the potential LSEs are provided in Table 4.1. The screening for AA concluded that in the absence of more detailed information and the application of mitigation measures, there was potential for Likely Significant Effects (LSEs) on the River Boyne and River Blackwater SAC from the Proposed Development, either alone or in combination with other projects or plans.

Table 4.1: European Site with the Potential for LSEs from the Proposed Development

European site name and code	Distance of site from projects	Conservation Objectives and Qualifying Interests (*=priority habitat).	Pathway	Potential for Likely Significant Effects (LSEs)
River Boyne and River Blackwater SAC (002299)	8.75km overland (14.25km downstream).	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected: Annex I habitats: Alkaline Fens Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) Annex II species: Salmon Otter River lamprey	No effect pathway identified to the QI Annex I Habitats Alkaline Fens or Alluvial Forests. The Proposed Development is located immediately along the River Blackwater (Longwood) which is a tributary of the River Boyne and therefore hydrologically connected to the SAC. Given the proximity of the Proposed Development to the River Blackwater (hydrological link, *via* surface water run-off during construction, or any other pollutants including drilling fluids) the potential for effects from a pollution event (e.g. changes in water quality/sediment smothering spawning gravels) on aquatic QI species including changes in water quality/fish abundance and the potential for an indirect effect on otter (reduced prey/food source) were assessed further. Due to the fact that otter's territory can extend to up to 20km and the Proposed Development could result in trapping/mortality, habitat loss/fragmentation (culverting) direct effects on otter were assessed further.	There is no potential for LSEs to the Annex I Habitats Alkaline Fens or Alluvial Forests. These habitats were not recorded on site during field surveys in 2020. Alkaline fen habitat is highly dependent on groundwater levels and flows however there are no proposed changes to groundwater levels or flows from the Proposed Development. Additionally, given the distance of 9km to the nearest record of this habitat (NPWS, 2019b) no LSE to this habitat is considered. The nearest record of alluvial forest habitat is over 14km from the Proposed Development (NPWS, 2019b). This habitat type is considered sensitive to Changes in surface water flows and flooding regime (arterial drainage, abstractions, barriers etc.). These are not proposed as part of these works therefore no LSE to this habitat is considered. There is potential for LSEs to the Annex II species Salmon and/or River lamprey. Recent personal communication with IFI noted the presence of salmon, trout, eel and lamprey within the River Blackwater (Longwood). Historical surveys (undertaken by O'Connor (2006)) also indicated that brook lamprey inhabit the upper reaches of the catchment, while brook and river lamprey were present in the lower reaches. As such, there is potential for LSEs to these species. There is potential for LSEs to otter during the construction phase of the Proposed Development. No potential for LSEs during operation are considered, the upgrade will improve the current efficiency and capacity of the WwTP and based on the WAC assessment (Section 3.2) the receiving water will comply with standards set out in the Surface Water Regulations. The existing WwTP has measures incorporated to prevent unintended discharges, which will remain in place for the Proposed Development.

4.2 Assessment of Likely Significant Effects

As the Proposed Development is hydrologically connected to the River Boyne and River Blackwater SAC, impacts could potentially occur as a result of:

- changes in water quality as a result of a pollution event from spillages, sedimentation/silt run off and fuel/oil leaks during construction/operation indirectly affecting the QI species, otter, river lamprey and salmon, of the site; and
- changes in noise level, site use (i.e. agriculture to construction) during construction works and/operation resulting in disturbance/habitat fragmentation directly affecting the QI, otter, of the site.

It was therefore recommended that an AA of the Proposed Development be undertaken. The assessment is required to determine if the Proposed Development could have adverse effects on the integrity of the River Boyne and River Blackwater SAC either alone or in-combination with other plans or projects, in light of the site's structure and function and its conservation objectives.

4.2.1 Potential In-combination Effects

AA Screening must identify all aspects of the project which would have LSEs on a European site, either alone or in-combination with other aspects of the same project, and/or with other plans or projects. The potential for in-combination impacts is also dealt with in this NIS, Section 6.0.

5. Information for Appropriate Assessment

The potential for significant effects arising from the Proposed Development on the integrity of the River Boyne and River Blackwater SAC, in light of the site's conservation objectives, are examined in Section 5.1 below.

5.1 River Boyne and River Blackwater SAC

5.1.1 Condition of Site and Management

As per the Natura 2000 Standard Data Form for the SAC[3] :

"*This site comprises most of the freshwater element of the River Boyne from upriver of the Boyne Aqueduct at Drogheda, the Blackwater River as far as Lough Ramor and the principal Boyne tributaries, notably the Deel, Stoneyford and Tremblestown rivers. This system drains a considerable area of County Meath and Westmeath and smaller areas of Cavan and Louth. The underlying geology is Carboniferous Limestone for the most part with areas of Upper, Lower and Middle well represented. In the vicinity of Kells Silurian Quartzite is present while close to Trim are Carboniferous Shales and Sandstones. The rivers flow through a landscape dominated by intensive agriculture, mostly of improved grassland but also cereals. Much of the river channels were subject to arterial drainage schemes in the past. Natural flood-plains now exist along only limited stretches of river, though often there is a fringe of reed swamp, freshwater marsh, wet grassland or deciduous wet woodland. Along some parts, notably between Drogheda and Slane, are stands of tall, mature mixed woodland. Substantial areas of improved grassland and arable land are included in site for water quality reasons. There are many medium to large sized towns adjacent to but not within the site*."

"*The main channel of the [River] Boyne contains a good example of alluvial woodland of the Salicetum albo-fragilis type which has developed on three alluvium islands. Alkaline fen vegetation is well represented at Lough Shesk, where there is a very fine example of habitat succession from open water to raised bog. The River Boyne and its tributaries are one of Ireland's premier game fisheries and offers a wide range of angling, from fishing for spring salmon and grilse to sea trout fishing and extensive brown trout fishing. The site is one of the most important in eastern Ireland for [Atlantic salmon] Salmo salar and has very extensive spawning grounds. The site also has an important population of [river lamprey] Lampetra fluviatilis, though the distribution or abundance of this species is not well known. [Otter] Lutra lutra is widespread throughout the site. Some of the grassland areas along the Boyne and Blackwater are used by a nationally important winter flock of [Whooper swan] Cygnus cygnus. Several Red Data Book plants occur within the site, with round-leaved wintergreen Pyrola rotundifolia, [swamp meadow-grass] Poa palustris and [round-fruited rush] Juncus compressus. Also occurring are a number of Red Data Book animals, notably [badger] Meles meles, [pine marten] Martes martes and [common frog] Rana temporaria. The River Boyne is a designated Salmonid Water under the EU Freshwater Fish Directive*."

5.1.2 Conservation Status of Qualifying Interests of River Boyne and River Blackwater SAC

The conservation status of relevant QIs at national and site level, key conditions underpinning favourable conservation status, attributes and threats to key conditions are presented in Table 5.1. The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of annexed habitats and annexed species of community interest for which a site has been designated.

[3] https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF002299.pdf (accessed January 2020)

Table 5.1: **River Boyne and River Blackwater SAC - conservation status, key condition and threat to relevant QIs (NPWS 2020, NPWS 2019b)**

Relevant QI	National Conservation Status	Site-Level Status	Key conditions supporting favourable conservation status	Primary threats to key conditions	Mapping for QI in COs
Otter	Favourable, Unchanged	Good Conservation	Aquatic prey, safe refuges	Pollution, particularly organic pollution resulting in fish kills	No
River lamprey	Unknown	Good Conservation	Water quality, access to spawning and nursery habitat	Pollution Barriers to migration Hydrological changes	No
Salmon	Inadequate, Stable	Good Conservation	Water quality, access to spawning habitat	Pollution Hydromorphological changes	No

* Items in bold are of relevance to the Proposed Development

To determine how the project would affect the SAC's QIs, this assessment has focused on the effects that may possibly occur that could undermine the conservation objectives for the site. Table 5.2 shows the QI species and associated conservation objectives of relevance to the Proposed Development. Three QI species of the River Boyne and River Blackwater SAC are potentially exposed to risk from the Proposed Development; namely otter [1355], river lamprey [1099] and salmon [1106]. The Natura 2000 Standard Data Form for the SAC states that otter is widespread throughout the site. This site is important for both salmon and lamprey and the site level conservation status for both species is good, however the distribution of lamprey is not well known (NPWS, 2019a).

5.1.3 Conservation Objectives

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of annexed habitats and annexed species of community interest for which an SAC has been designated. To determine how the project would affect the SAC's qualifying interests (QIs), this assessment has focused on the effects that may possibly occur that could undermine the conservation objectives for the habitats and species.

Only generic conservation objectives (COs) are currently available for the River Boyne and Blackwater SAC (NPWS, 2020a). The overarching objective for the site is to:

- maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected

For those QI species potentially exposed to risk from the Proposed Development the favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and

- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Only generic conservation objectives are available for the River Boyne and River Blackwater SAC; however, detailed conservation objectives for these species are available for the River Barrow and River Nore SAC (NPWS, 2011) (Table 5.2). These site-specific conservation objectives (for otter, river lamprey and salmon) have been reviewed and applied here to ensure a comprehensive impact assessment.

Table 5.2: Site specific conservation objectives for otter, river lamprey and salmon from River Barrow and River Nore SAC (NPWS, 2011)*.

Qualifying Interest feature within the River Boyne and River Blackwater SAC	Attribute/Target	Potential to undermine conservation objectives
Otter	No significant decline in the distribution of otter	Yes. Given that habitat may be lost during ditch realignment there is potential for the distribution of otter to be impacted.
	No significant decline in the extent of habitat (terrestrial/marine/freshwater)	Yes. Potential for temporary loss of freshwater habitat during ditch realignment.
	No significant decline in the number of couching sites or holts	Yes. There is a possible couch in close proximity to the proposed works.
	No significant decline in the fish biomass available. Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks.	Yes. Pollution during construction activities could lead to a reduction in water quality impacting on fish populations.
River lamprey	Distribution: greater than 75% of main stem and major tributaries down to second order accessible from estuary	No. No instream works or barriers to migration within the main stem or major tributaries of the SAC.
	Population structure: At least three age/size groups of river/brook lamprey present	No. Given the nature and the scale of the project and that lamprey are present throughout the system there is no potential for the works to impact on population structure.
	Mean catchment juvenile density of brook/river lamprey at least 2/m²	Yes. A pollution event impacting on spawning or juvenile habitat downstream of the proposed works could impact on juvenile density at these locations.
	No decline in extent and distribution of spawning habitat	Yes. Although there is unlikely to be spawning habitat present at the proposed crossing location, lamprey habitats downstream could be impacted by a pollution event.
	Availability of juvenile habitat in more than 50% of sample sites	Yes. Although there is unlikely to be juvenile habitat present at the proposed crossing location, lamprey habitats downstream could be impacted by a pollution event.
Salmon	Distribution: 100% of river channels down to second order accessible from estuary	No. No instream works or barriers to migration within the SAC.

Qualifying Interest feature within the River Boyne and River Blackwater SAC	Attribute/Target	Potential to undermine conservation objectives
	Spawning: Conservation Limit (CL) for each system consistently exceeded	No. Habitat at the proposed works location is unsuitable for spawning and salmon are unlikely to be present due to barriers to migration. Additionally, spawning sites for salmon in the Boyne are generally confined to the tributaries. Any pollution event would have a hydrological connection to the main stem of the river only, therefore there is no potential for works to impact on the CL for the system.
	No decline in number and distribution of spawning redds due to anthropogenic causes	No. As above.
	Fry abundance: Maintain or exceed 0+ fry mean catchment - wide abundance threshold value.	No. Habitat at the proposed works location is unsuitable for fry and salmon are unlikely to be present due to barriers to migration
	No significant decline in out - migrating smolt abundance	No. No instream works, barriers to migration or impact to flows.
	Water quality of at least EPA Q4 at all sites	Yes. Pollution during construction activities could lead to a reduction in water quality.

**Note: This Natura 2000 site is not within the ZoI of this scheme, these site-specific conservation objectives are considered here for comprehensive impact assessment purposes*

5.1.4 Qualifying Interests potentially exposed to risk

Otter

Ireland is a European stronghold for otter. This species is widespread throughout the SAC site. Based on the main results from the article 17 report on Annex I habitats the species has been assigned a national conservation status of *favourable* and *unchanged* (NPWS, 2019b). The site level status is classed as of good conservation status (NPWS, 2020).

River Lamprey

The status of river lamprey nationally has been assessed as unknown given the challenges for sampling for adult river lamprey (NPWS, 2019b). The site level status is classed as of good conservation status although the distribution or abundance of this species is not well known (NPWS, 2020).

Salmon

The status of Atlantic salmon nationally has been assessed as inadequate (NPWS, 2019b). The River Boyne and River Blackwater SAC is one of the most important sites in eastern Ireland for salmon and has very extensive spawning grounds. The site level status is classed as of good conservation status (NPWS, 2020)

5.2 Appraisal of Potential Impacts on River Boyne and River Blackwater SAC

5.2.1 Otter

Potential impact - pollution event

- There is potential for impact to otter, a QI species of the River Boyne and River Blackwater SAC, from the Proposed Development. There is currently a direct hydrological link to the SAC, albeit 14 km, through the river network immediately adjacent to the Proposed Development. Although the SAC is 14 km downstream, otters are known to travel a distance of up to 20km, furthermore the NBDC hold recent records of otter within 2km of the Proposed Development. Otter spraint and a possible couch were noted along the ditch in close proximity to a proposed crossing location. However, monitoring over a week, detailed in Section 3.1.3, did not record any otter use of this potential resting place. This ditch was deemed suitable to support commuting and resting otter. No resting places for otter were recorded on the River Blackwater but the river supports commuting otter. Potential pathways for impacts would be through run off or a pollution event during construction and/or operation; disturbance/habitat fragmentation or habitat loss, as the ditch is being realigned (Appendix A) there is potential for a temporary loss of a section of the dich, thus reducing available habitat temporarily. Furthermore, otter are a mobile species and suitable habitat is available elsewhere and the site will be re-vegetated post construction.
- As per the 2019 Article 17 Report, Ireland remains a stronghold for the European otter. Otter have two basic requirements: aquatic prey and safe refuges to rest. Irish otter populations are known to inhabit river, lake and coastal areas. The main threat to otter includes pollution (particularly organic pollution) resulting in fish-kills and accidental deaths (RTA and fishing gear). Considering the widespread and adaptable nature of otter (Reid *et al.* 2013), habitat availability/quality is not considered to be a limiting factor of the species range.

All potential impacts from both construction and operation with respect to pollution are via the same hydrological pathway; transport of pollutants through the site surface water drainage/run-off pathway into the associated river/ditch and wastewater discharges.

- During the construction phase, and in the absence of mitigation, there is the potential for pollutants (oils, fuel, sediment run-off, etc.) to enter the watercourses through the existing surface water drainage system and run-off pathway which could impact on this QI, this could undermine the conservation objective targets for otter (i.e. permanent habitat area is stable or increasing, subject to natural processes) and could have a direct effect on the food sources of the species. Mitigation measures are therefore required to prevent and/or manage spills of pollutants and or sediment run-off during construction/operation of the Proposed Development. Diffuse and point-source pollution of freshwaters is likely to impact otters indirectly through changes to prey abundance.

Potential impact – disturbance and/or habitat loss/fragmentation

Given that signs of otter were noted during field surveys in 2020 near a proposed crossing point, there is potential for impact to otter through disturbance and/or habitat fragmentation during construction. Potential pathways for impacts would be from habitat fragmentation due to blocking of watercourses, disturbance due to noise and light pollution and/or trapping, mortality or injury due to excavations or equipment left uncovered.

During the construction phase, and in the absence of mitigation, there is the potential for impacts to otter that could undermine the conservation objective targets for this species. Mitigation measures are therefore required to prevent disturbance to otter or habitat fragmentation that could have an impact on the commuting or foraging habitat available to this species.

5.2.2 River Lamprey

Potential impact – pollution event

There is potential for impact to river lamprey, a QI species of the River Boyne and River Blackwater SAC, from the Proposed Development. There is currently a direct hydrological link to the SAC, albeit 14 km, through the river network immediately adjacent to the Proposed Development. Surveys undertaken by O'Connor (2006) indicated that brook lamprey were the only species of lamprey to inhabit the upper reaches of the catchment, however river lamprey are known to be present in the lower reaches. Potential pathways for impacts would be through run off or a pollution event during construction and/or operation that could impact on water quality further downstream where this species is present.

Good water quality and the availability of spawning habitat are important requirements for river lamprey. Pollution may impact lamprey directly through toxic effects or can impact populations by smothering spawning gravels and nursery silts (Maitland, 2003). Pollution events can also create a pollution belt that can act as a barrier to migration by preventing movement of lamprey up or downstream through that section of river (Maitland, 2003).

All potential impacts from both construction and operation with respect to pollution are via the same hydrological pathway; transport of pollutants through the site surface water drainage/run-off pathway into the associated river/ditch and wastewater discharges.

During the construction phase, and in the absence of mitigation, there is the potential for pollutants (oils, fuel, sediment run-off, etc.) to enter the watercourses through the existing surface water drainage system and run-off pathway which could impact on this QI, this could undermine the conservation objective targets for lamprey through direct toxic effects or smothering of spawning gravels. Mitigation measures are therefore required to prevent and/or manage spills of pollutants and or sediment run-off during construction/operation of the Proposed Development.

5.2.3 Salmon

Potential impact – pollution event

There is potential for the Proposed Development to undermine the conservation objectives for the site relating to salmon given that there is currently a direct hydrological link to the SAC, albeit 14 km, through the river network immediately adjacent to the Proposed Development. Salmon are likely restricted from the upper reaches of the catchment by barriers to migration however they are known to be present throughout the downstream reaches. Potential pathways for impacts would be through run off or a pollution event during construction and/or operation that could impact on water quality further downstream where this species is present.

Very good water quality is required at all stages of the salmon life cycle. The species is anadromous, hatching and spending juvenile life stages (fry and parr) in freshwater, migrating out to sea and returning to natal freshwater rivers to reproduce. Juveniles remain in freshwater for up to three years and are more sensitive than adults to water quality parameters as they are less mobile and dependent more so on specific habitats during development stages (Hendry & Cragg-Hine, 2003).

All potential impacts from both construction and operation with respect to pollution are via the same hydrological pathway; transport of pollutants through the site surface water drainage/run-off pathway into the associated river/ditch and wastewater discharges.

During the construction phase, and in the absence of mitigation, there is the potential for pollutants (oils, fuel, sediment run-off, etc.) to enter the watercourses through the existing surface water drainage system and run-off pathway which could impact on this QI, this could undermine the conservation objective targets for salmon through direct toxic effects or smothering of spawning gravels. Mitigation measures are therefore required to

prevent and/or manage spills of pollutants and or sediment run-off during construction/operation of the Proposed Development.

5.3 Mitigation Measures

5.3.1 Pollution

Table 5.4 summarises the mitigation measures required to prevent pollution impacts to QI species. Construction activities are likely to result in increased sediments and suspended solids as well as potentially elevated levels of synthetic oils due to the operation of construction plant. There is potential for these pollutants to enter the sites surface water run off pathway to the local watercourses. Accidental pollution events via surface water are considered to also be an operation risk of the Proposed Development.

The WAC assessment detailed in Section 3.2.3 concluded that the predicted downstream effluent concentration will be in line with the Surface water Regulation concentrations (applying the notionally clean river approach). The site survey noted a clear input, evidenced by dense macrophyte growth at the outfall (strong odours were also evident on the survey day) (Photo 3 in Appendix B).

New site drains will be provided around the settlement tanks and an interceptor provided. In addition, surface water will pass through a swale/filter drain, prior to discharge. This will improve the current runoff quality.

The following measures are incorporated at the existing WwTP to prevent unintended discharges and will remain in place for the proposed development:

- an accident prevention procedure;
- an emergency response plan and procedure;
- alarms and telemetry on the WwTP;
- standby pumps on all pumpsets with alarms on all pumps;
- standby equipment and provisions in the event of interruption of the power supply including a portable generator or equipment with automatic switchover; and
- a storm water overflow tank with storage capacity of 260m^3.

The capacity of the existing infrastructure and provisions for measures to prevent unintended discharges are sufficient to accommodate the proposed development.

5.3.2 Disturbance and/or Habitat Fragmentation

To ensure there is no fragmentation of otter habitat (proposed crossing location, scour protection works) mitigation measures have been proposed in Table 5.4. Although it was confirmed that the potential otter resting place, in close proximity to the proposed crossing location, was not used by otter a pre-construction survey will be carried out to ensure no change to this baseline information.

AS the ditch will be re-aligned, habitat will be temporarily lost/fragmented. However, post construction the site will be re-vegetated with native species and a mammal pass/otter ledge will be installed in the culvert (Section 3.2.2). As such no operation effects are predicted.

With no night-time works, the effect would be minimal and temporary. The area is somewhat disturbed with traffic and people at the site and is considered somewhat disturbed already.

No disturbance effects are predicted during the operation phase of the Proposed Development, noise levels and site traffic are predicted to be the same or less than current levels. As such no, mitigation measures for the operation phase are required for disturbance and/or fragmentation.

5.3.3 Trapping, Injury and/or Mortality

Mitigation measures are presented in Table 5.4, in line with the TII (2008) Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes, to prevent otter getting trapped during construction, leading to possible injury or mortality.

Table 5.4: Mitigation measures

Potential Impact	Mitigation Measure
Pollution Impacts to QI Species Otter, River Lamprey and Salmon During Construction/Operation	▪ The contractor shall be obliged to ensure no deleterious discharges are released from then sites to the nearby waterbodies during construction. ▪ Measures set-out herein will be implemented to ensure that there will be no pollution of surface water during the Construction Phase of the Proposed Development. ▪ The measures will be incorporated into the contractor's Construction Environmental Management Plan (CEMP) and the CEMP will be developed in accordance with the following guidance documents: - Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (Inland Fisheries Ireland, 2016); - CIRIA C532: Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams *et al*., 2001); - CIRIA C692: Environmental Good Practice on Site (Audus et al., 2010); - BPGCS005, Oil Storage Guidelines; - Guidelines for the Crossing of Watercourses during the Construction of National Road schemes (TII, 2005); and - Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes (TII 2006). ▪ In line with personal communication with IFI (July 2020) the proposed works associated with the new outfall, box culvert and any other instream works (or works immediately adjacent to a watercourse where fish are present) will be between the months of July to September, as the River Blackwater is Salmonid river. ▪ For the prevention of silty water contamination: ▪ All site runoff and dewatering activities will be directed, via silt fences, cut-off ditches or similar, to a settlement tank prior to any discharge to surface waters or soakaways. Furthermore, the levels of suspended solids in any discharge, if deemed necessary, will not be greater than 25mg/l and flows will be controlled to levels appropriate to the receiving water (IFI, 2016); - temporary stockpiles will be located away from drains and watercourses. Stockpiles will not be located within 5m of a watercourse ▪ For the prevention of pollution during the ditch realignment and culverting: ▪ the new stream diversion will be constructed offline;

	▪ the culvert and headwalls will be pre-cast concrete to minimise any potential contamination from concrete washings during the first flush following connection to the existing stream; ▪ the downstream connection will be made first to avoid flushing suspended solids from the cut-through bank through to the existing ditch; ▪ a sediment mat / silt trap or similar will be at the downstream connection to the existing stream prior to the upstream connection being made.; ▪ diversion of water from the existing stream into the new channel will only take place during the period July to September or as agreed with the IFI. ▪ For the prevention of pollution during the installation of the new outfall and scour protection on the riverbank: ▪ No instream works are required at the location of the proposed outfall and all works will be undertaken from the bankside. Silt fencing will be installed at the side of the river bank (from the top of the bank to the bottom) along with coir matting to prevent wash-out of soil into the river as a result of vegetation stripping. ▪ As part of the mitigation a silt boom will be installed in the River Blackwater (Longwood) during the construction works associated with the new outfall. The silt boom will be installed in a semi-circular shape below the outfall location alongside the river bank and therefore will not obstruct fish passage along this watercourse. A pre-works check of the river will be undertaken at this location by an appropriately experienced ecologist to assess if supporting habitat exists for any species of conservation interest. Post silt boom instalment, electrofishing will be undertaken within the silt boom area if fish are present. Fish will then be removed and translocated upstream of the working area. ▪ For the scour protection works, the gabion baskets will be installed at the toe of the riverbank and backfilled behind; as a result, no sediments from the stripped bank will be able to enter the river. ▪ For the prevention of oil spills and pollution (general): ▪ Fuel tanks, drums and mobile bowsers (and any other equipment that contains oil and other fuels) will have a secondary containment, for example, double skinned tanks. All tanks, drums and mobile bowsers will be located in a sealed impervious bund with sufficient capacity to contain at least 25% of the total volume of the containers or 110% of the largest container, whichever is the greatest: ▪ storage areas will be covered, wherever possible, to prevent rainwater filling the bunded areas; ▪ fuel fill pipes will not extend beyond the bund wall and will have a lockable cap secured with a chain; ▪ where fuel is delivered through a pipe permanently attached to a tank or bowser: ▪ the pipe will be fitted with a manually operated pump or a valve at the delivery end which closes automatically when not in use;

	▪ the pump or valve will be fitted with a lock; ▪ the pipe will be fitted with a lockable valve at the end where it leaves the tank or bowser; ▪ the pipework will pass over and not through bund walls; ▪ tanks and bunds will be protected from vehicle impact damage; ▪ tanks will be labelled with contents; capacity information and hazard warnings; ▪ all valves, pumps and trigger guns will be turned off and locked when not in use. All caps on fill pipes will be locked when not in use; ▪ suitable precautions will be taken to prevent spillages from equipment containing small quantities of hazardous substances (for example, chainsaws and jerry cans); and ▪ vehicles and plant provided for use on the site will be in good working order to ensure optimum fuel efficiency and will be regularly inspected to ensure they are free from leaks.
Disturbance/Habitat Fragmentation Impacts to QI Species Otter During Construction	▪ The TII (2008) Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes will be adhered to. ▪ No blocking of watercourses to ensure watercourses are kept wetted, thereby allowing commuting otter to move freely. Ditch realignment to be completed off-line and reconnected on completion of realignment. ▪ The culvert will include a mammal pass. ▪ Any excavations will be covered at night to prevent otter from falling in or becoming trapped. ▪ Working at night will be prohibited. ▪ Any lights will be turned off after working hours or angled away from watercourses. ▪ A pre-construction survey will be carried out to ensure no change in the baseline information to ensure that mitigation measures remain relevant. This should be conducted no more than 10-12 months in advance of construction. Should there be a change in otter behaviour or new holts created a derogation licence from the NPWS may be required. Conditions will usually be attached to each derogation granted in respect of otters and operations at holts or in their vicinity. ▪ No works should be undertaken within 150m of any holts at which breeding females or cubs are present. Otter breeding may take place during any season so breeding activity at holts needs to be determined on a case by case basis. No wheeled or tracked vehicles (of any kind) should be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance should also not take place within 15m of such holts, except under licence.

	▪ Noise levels will not exceed permissible levels for construction works (70dB(A)) based on Guidelines for the Treatment of Noise and Vibration in National Road Schemes (TII, 2004). ▪ Post construction, the site will be revegetated.

6. In-combination Assessment

6.1 Introduction

The following planning and policy resources were assessed as part of the in-combination assessment of the Proposed Development:

- National Planning Application Database[4].
- Royal Canal Greenway
- Draft Meath County Development Plan 2020-2026
- MCC Town and Village Statement - Enfield

A review of the Meath and Kildare County Council Planning webpage indicates that in the last five years there have been over 1,000 applications for planning permission within Enfield and surrounding environs. A review of the National Planning Application Database (NPAD), identified thirteen planning applications in close proximity to the Proposed Development, one of which was deemed to have the potential for in-combination effects and therefore required further assessment, these are discussed in Section 6.2 below.

6.2 Plans or projects with the potential for in-combination effects

6.2.1 National Planning Application Database

A review of the NPAD identified thirteen planning applications within the vicinity of the Proposed Development (Planning Application References: 15274, 18915, 19407, 11769, 191275, 15694, 17985, 19493, 1556, 11278, 14284, TA191126 and TA180832). One planning application was deemed to have the potential for in-combination effects, as detailed below.

Planning Ref. 19493: conditional permission granted for ten dwellings consisting of: 1). Eight three-bedroom semi-detached dwellings; 2). One three-bedroom detached dwelling; 3). One four-bedroom detached dwelling with domestic garage; 4). Site infrastructure works including access road with associated footpaths, storm water collection drains and onsite attenuation and soakaway areas, foul sewer connection to existing public main and watermain infrastructure and E). New site entrance along with all associated site development, landscaping, boundary treatments and facilitating works.

The associated planning documents were reviewed and as per the observations submitted by Irish Water “no works will commence until such time as the proposed upgrade to Enfield WWTP has been commissioned”.

Royal Canal Greenway: The Royal Canal Greenway, is currently the longest proposed greenway in the country (146km). A portion of the proposed route is contained within Counties Meath and Kildare. There is currently no route detail available to review in relation to in-combination effects, depending on development stage and design it is possible that the route will be proximate to the proposed work and have the potential for in-combination effects. However, it is considered that the route will undergo AA and result in the required mitigation measures to protect any associated Natura sites and their QIs.

6.2.2 Draft Meath County Development Plan 2020-2026

The Proposed Development will have positive in combination effects with the following Policies/Objectives of the Draft Plan:

[4] https://housinggovie.maps.arcgis.com (Accessed January 2020)

- INF POL 11 To liaise and work in conjunction with Irish Water during the lifetime of the Plan in the provision, upgrading or extension of wastewater collection and treatment systems in the County to serve existing and planned future populations and enterprise in accordance with the requirements of the Core and Settlement Strategies.
- INF OBJ 11 To ensure that all development shall connect to the public foul sewer network where available within the County subject to sufficient capacity being available in the relevant wastewater treatment plant.
- INF POL 14 To co-operate with the EPA and other authorities in the continued implementation of the EU Water Framework Directive.
- INF POL 15 To continue efforts to improve water quality under the Local Government (Water Pollution) Act 1977, as amended and by implementing the measures outlined under the Nitrates Directive (91/676/EEC) and complying with the requirements of the European Communities Environment Objectives (Surface Waters) Regulations 2009 and other relevant regulations.
- INF OBJ 19 To ensure that developments permitted by the Council which involve discharge of wastewater to surface waters or groundwaters comply with the requirements of the EU Environmental Objectives (Surface Waters) Regulations and EU Environmental Objectives (Groundwater) Regulations.
- INF OBJ 22 To ensure flood relief measures are suitably designed to protect the conservation objectives of Natura 2000 sites, and to avoid direct or indirect impacts upon qualifying interests or Natura 2000 sites that would result in adverse effects on site integrity.
- INF OBJ 29 To strive to achieve 'good status' in all water bodies in compliance with the Water Framework Directive and to cooperate with the implementation of the National River Basin Management Plan 2018-202.

6.2.3 MCC Town and Village Statement – Enfield

The Proposed Development will support the overall goal of the Enfield statement which is: '*To make a positive contribution to the development of Enfield as a Small Town along the M4 Corridor through the provision of a well-defined and compact town centre area, the promotion of a range of land-uses to support the residential population of the town and its role as a 'service centre' to the surrounding local area and by recognising the importance of conserving and enhancing the quality of the town's built and natural environment, while catering for the needs of all sections of the local community*'.

The Proposed Development is also in compliance with the following Policies/Objectives:

- WWS POL 1 To endeavour to maintain and provide adequate potable water and wastewater treatment infrastructure that is sufficient to meet the development needs of the town within this Plan period. However, the Council acknowledges that there are significant constraints on the capacity of the existing infrastructure and may consider restricting development in circumstances where such infrastructure is inadequate.
- WWS POL 2 To expedite the provision of the new wastewater scheme and of an adequate water supply to allow development to proceed.

6.3 Conclusions of in-combination effects

The primary in-combination effect from the above projects is related to construction stage and possible pollution events. In light of the above information and the mitigation measures detailed here, the requirement for the projects to undergo AA and apply mitigation measures as required, no potential for in-combination effects to undermine the integrity of the SAC from the Proposed Development and other plans or projects is predicted.

7. Conclusion

This NIS examined the potential for changes in the baseline conditions as a result of the proposed development at Enfield WwTP against the conservation objectives for the River Boyne and River Blackwater SAC.

The NIS details mitigation measures which have been prescribed to ensure the proposed development will not result in adverse effects on Natura 2000 site integrity either alone or in-combination with other plans or projects.

Based on the best available scientific information and professional judgement, it is considered that with the mitigation measures detailed above, there will be no adverse effects on the integrity of the River Boyne and River Blackwater SAC, alone or in-combination with other plans or projects in light of the site's conservation objectives.

A minor update to this report was provided in June 2023 in response to comments received during the Waste Water Discharge Authorisation process. These updates provided further detail on the existing measures which are incorporated at the existing WwTP. to prevent unintended discharges. The capacity of the existing infrastructure and provisions for existing measures to prevent unintended discharges are sufficient to accommodate the proposed development. The addition of the update does not therefore alter the original conclusions of the report,

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Appendix A. Drawings

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676286, 740177

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Newcastle, Enfield

River Blackwater

Proposed Site

Existing Wayleave

Enfield Wastewater Treatment Plant

Site Notice

JOHNSTOWN
(ED INNFIELD)

Johnstown House Hotel

Sports Ground

Johnstown Bridge

Dunfierth Park

Foot Bridge

River Blackwater

Bridgewell

Windmill Court

Church (Cath)

School

Hotel

Spring

Pond

Well

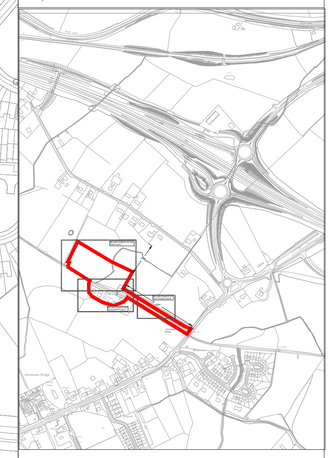
Sewage Plant

Tks

1:2500

50m 0 50m 100m 150m 200m 250m

Original Size
A1



Notes:

1. For land owner details see drawings 321060BK-LAN-001, 002 and 003

2. OS Tile Reference 3122-A

Rev	Description	Drawn	Chk'd	App'd.	Date
A	FOR PLANNING	AC	NS	NS	09.06.20

Jacobs TOBIN CONSULTING ENGINEERS

Jacobs Engineering,
Merrion House,
Merrion Road,
Dublin 4,

Call (01) 269 5666

UISCE ÉIREANN : IRISH WATER

Originated By	Drawn By	Checked By	Approved By
A.CONNOLLY	A.CONNOLLY	N.STOKES	N.STOKES
Date	Date	Date	Date
08.06.2020	08.06.2020	08.06.2020	09.06.2020

Scale
1:2500 @ A1

Project Title
CIP WASTEWATER LOT 4
ENFIELD WWTP

Drawing Title
PROPOSED WWTP UPGRADE
LOCATION PLAN

Drawing Status	FOR PLANNING	
Jacobs Tobin No.	321060BK	Client No.

Drawing No.
321060BK-EN-001

G:\JI\EWW\03 PROJECTS\Irish Water Framework\321060BK CIP Wastewater Lot 4\5 - Drawings\5.3 - Draft Drawings\5. G2 Detailed Design\Enfield\CAD\Active CAD files\Planning_Site_Boundary

FOR PLANNING

N

SEE 321060BK-PL-004 FOR SECTION E-E AND SECTION F-F

LANDSCAPE SCREENING SEE DRG LD.ENFLDWTP 1.0 FOR DETAIL

MINIMUM 4.5M WIDE GRAVEL ACCESS TRACKS BETWEEN BEDS

SEE 321060BK-PL-004 FOR SECTION G-G

FOR DETAILS OF SLUDGE DRYING REED BED ARRANGEMENT SEE DRG 321060BK-PL-003

PROPOSED 2.4m HIGH WELD MESH BOUNDARY FENCE SEE DRG 321060BK-PL-014 FOR DETAILS

300mm THICK RETAINING WALL SEE DRG 321060BK-PL-006 FOR DETAIL

300MM X 900MM FRENCH DRAIN

PROPOSED REED BED 20m x 15m

MINIMUM 5M WIDE ACCESS FOR LANDOWNER

REED BED BERM 2:1 SLOPE

NEW CULVERT ACROSS DITCH. WITH UPSTREAM AND DOWNSTREAM RC HEADWALLS SEE 321060BK-PL-017 FOR FURTHER DETAILS

NEW RC ACCESS STEPS WITH LOCKABLE ACCESS GATE

5.1M DIAMETER WAS BUFFER TANK AND SLUDGE IMPORT SCREEN SEE DRG 321060BK-PL-013 FOR DETAIL

SAMPLING LOCATION

SEE 321060BK-PL-002 FOR SECTION A-A

RC RETAINING WALL

RAS/SDRB FILTRATE RETURN CHAMBER, 3.5m x 5.5m, 3.4m depth SEE DRG 321060BK-PL-010 FOR FURTHER DETAILS

LOCAL ACCESS TURNING AREA (MINIMUM 10MX10M)

SEE 321060BK-PL-002 FOR SECTION C-C

300MM X 900MM FRENCH DRAIN

SEE 321060BK-PL-002 FOR SECTION D-D

SEE 321060BK-PL-002 FOR SECTION B-B

FLOW MONITOR WITHIN CHAMBER

PROPOSED 2 No. 18.3m Dia. FINAL SETTLEMENT TANKS SEE DRG 321060BK-PL-009 FOR DETAILS

EFFLUENT SAMPLING CHAMBER

NEW SITE ACCESS GATE TO IW SPECIFICATION SEE DRG 321060BK-PL-014 FOR DETAILS

SWALE AND FILTRATION TRENCH

FOR DETAILS OF PIPE CROSSING SEE DRG 321060BK-PL-002

EXISTING ROAD

NEW EFFLUENT OUTFALL, SEE 321060BK-PL-018 FOR DETAIL

FUTURE AERATION SPLIT

PROPOSED CLARIFIER FEED PUMP SUMP 4.2m x 4.2m

NEW RC ACCESS STEPS WITH LOCKABLE ACCESS GATE

EXISTING WASTEWATER TREATMENT PLANT

Sewage Plant

0 10 20 30 40 50 m

SCALE 1 : 500

Original Size A1

Legend:

Proposed Pipelines
- Proposed RAS/SDRB Filtrate Return
- Proposed Waste Activated Sludge
- Proposed Return Sludge Drawoff Line
- Proposed Mixed Liquor Settlement Tank Feed Line
- Proposed SDRB Filtrate Return Line
- Proposed Final Effluent Line
- Proposed Stomwater Pipe

Surface Features
- Site Boundary
- Proposed Site Boundary Fencing
- Proposed Structures
- Proposed Footpath
- Proposed Gravel Walkway
- Proposed Road
- Proposed Soakaway Trench
- Proposed Reed Bed Path
- Vegetation to be removed
- Diverted Stream/Ditch
- Existing Watercourse
- Existing Ditch to be infilled
- Grassed Embankment
- Existing Vegetation
- Proposed Landscape Screening See DRG LD. ENFLDWTP 1.0 For Detail
- × 71.83 Proposed Ground Level (mOD)
- × 69.44 Existing Ground Level (mOD)

1. All levels are meters above ordinance datum unless stated

Rev	Description	Drawn	Chk'd	App'd.	Date
B	FOR PLANNING	AC	NS	NS	24/06/20
A	ISSUED FOR PRE-PLANNING	CK	PW	NS	XX

UISCE ÉIREANN : IRISH WATER
IRISH WATER
COLVILL HOUSE,
TALBOT STREET,
DUBLIN 1,
IRELAND

Call 1890 278 278
Int: 00 353 1 707 2828

Jacobs TOBIN CONSULTING ENGINEERS

Originated By	Drawn By	Checked By	Approved By
A.STUBBS	A.STUBBS	C.KYNE	N.STOKES
Date	Date	Date	Date
31/05/19	20/06/19	XX	04/07/2019
Scale			
1:500 @ A1			

Project Title

CIP WASTEWATER
ENFIELD WWTP

Drawing Title

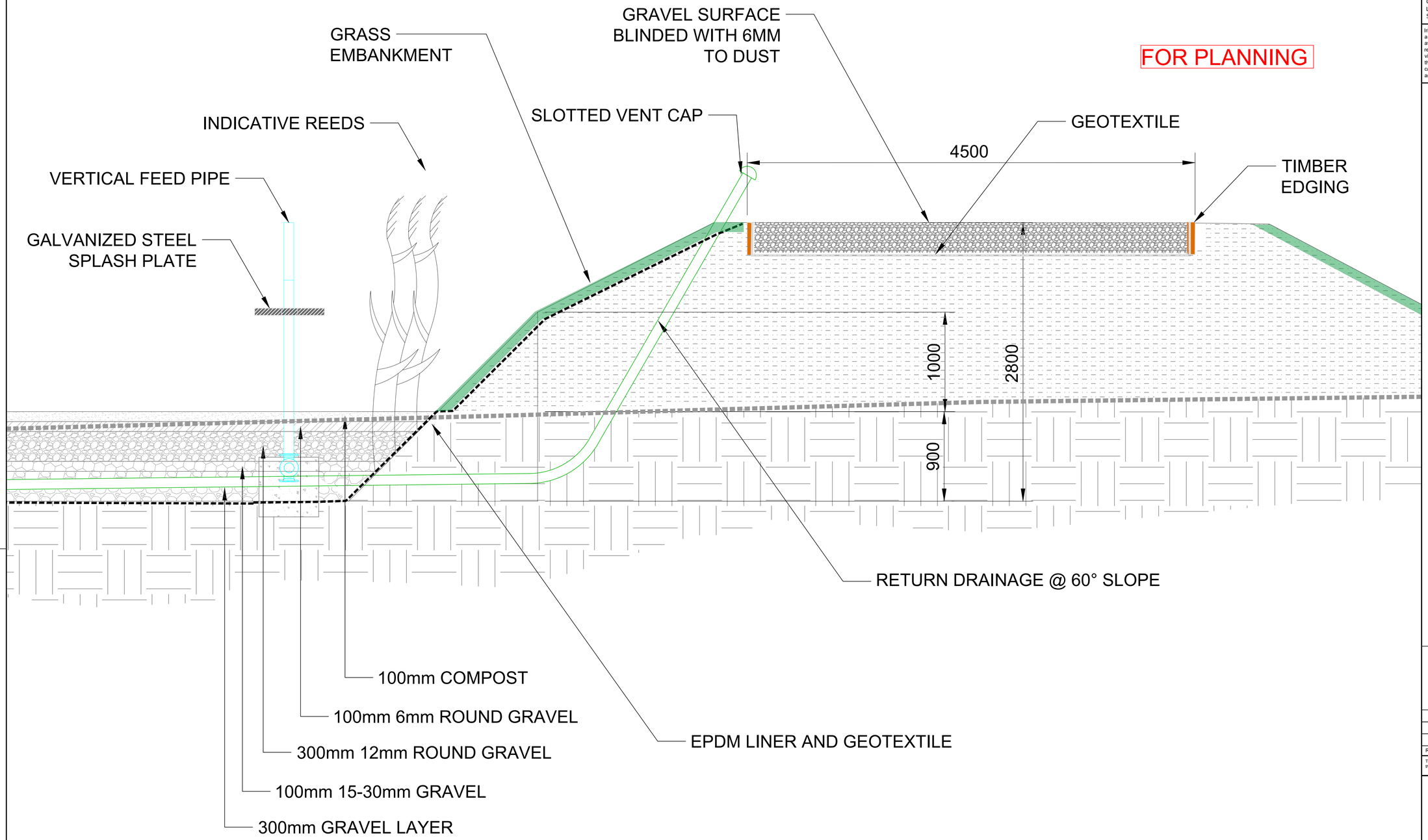
PROPOSED WWTP UPGRADE
SITE LAYOUT

Drawing Status	DRAFT FOR COMMENT	
Jacobs Tobin No.	321060BK	Client No.

Drawing No.

321060BK-PL-001

G:\JI\EWW\03 PROJECTS\Irish Water Framework\321060BK CIP Wastewater Lot 4\5 – Drawings\5.3 – Draft Drawings\5. G2 Detailed Design\Enfield\CAD\Active CAD files\Planning Comments\321060BK–PL–001



REED BED CONSTRUCTION AND COMPOSITION DETAIL

Scale 1 : 20

Original Size A1

Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland. It should not be relied upon in the event of excavations or other works being carried out in the vicinity of the network. The onus is on the parties carrying out the works to ensure the exact location of the network is identified prior to mechanical works being carried out. Service pipes are not generally shown but their presence should be anticipated. © Irish Water

Legend:

- Proposed Waste Activated Sludge
- Proposed SDRB Filtrate Return Line
- EPDM Liner and Geotextile
- Earth
- Gravel Surface Road
- Concrete Filtrate Chamber

Notes:

1. All dimensions are in millimeters.

Rev	Description	Drawn	Chk'd	App'd.	Date
C	FOR PLANNING	AC	CK	NS	18/06/20
B	DRAFT FOR COMMENT	AC	NS	NS	16/04/20
A	ISSUED FOR PRE-PLANNING	AS	CK	NS	11/07/19

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Jacobs TOBIN CONSULTING ENGINEERS

Originated By	Drawn By	Checked By	Approved By
A.STUBBS	A.CONNOLLY	C.KYNE	N.STOKES
Date 31/05/19	Date 12/06/20	Date 15/06/20	Date 18/06/20
Scale 1:20 @ A1			

Project Title
ENFIELD WWTP
CIP WASTEWATER LOT 4

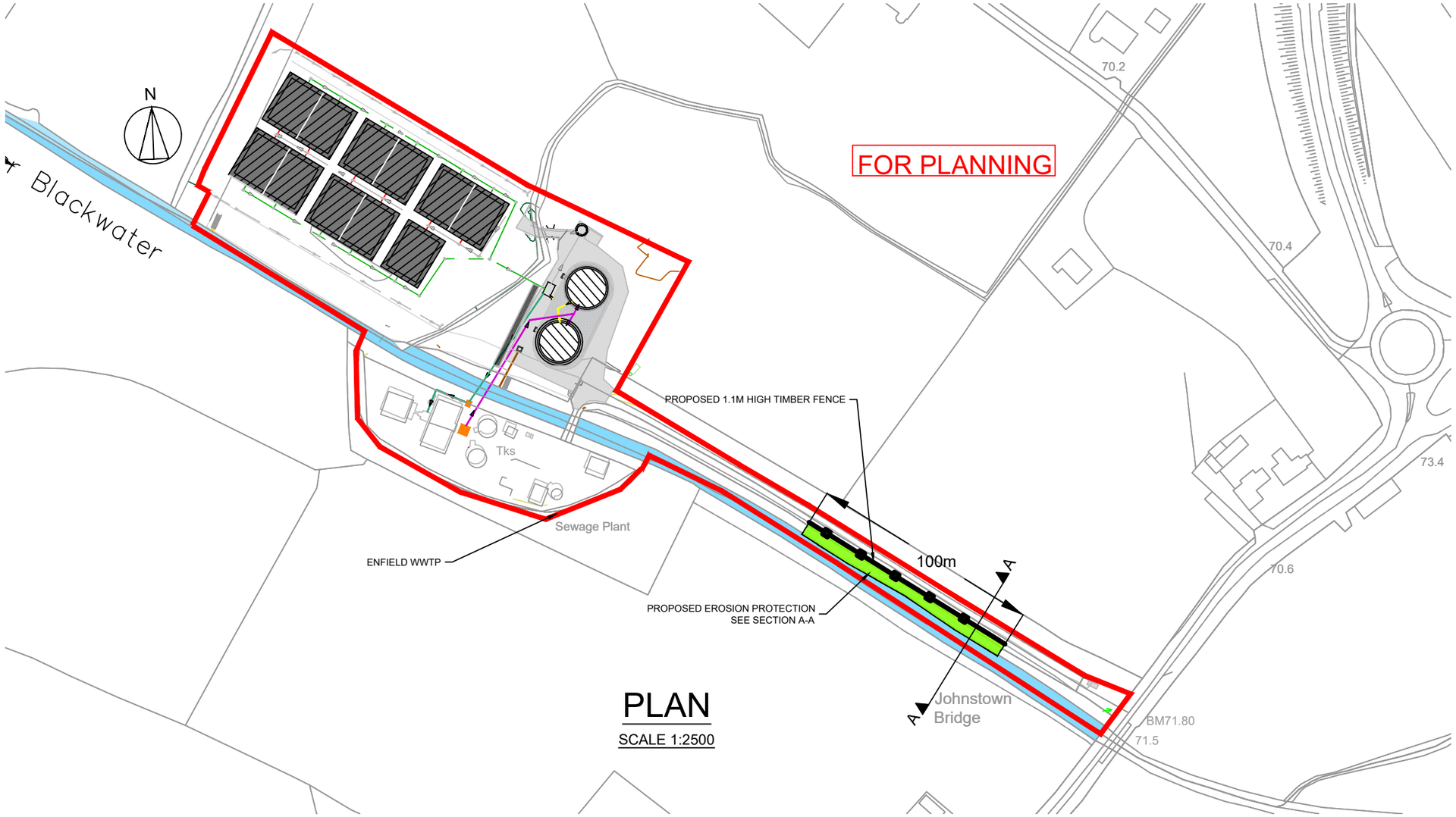
Drawing Title
PROPOSED WWTP UPGRADE
SLUDGE DRYING REED BEDS COMPOSITION DETAIL

Drawing Status	FOR PLANNING		
Jacobs Tobin No.	321060BK	Client No.	10015039

Drawing No.
321060BK-PL-007

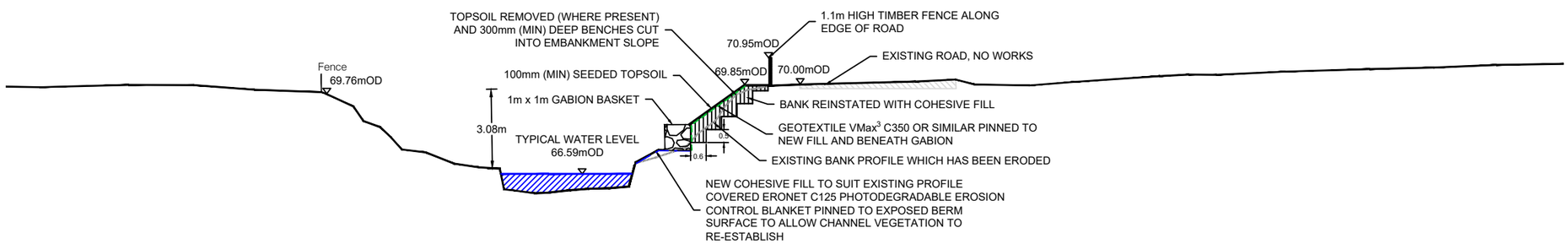
0 500 1000 1500 2000 mm
SCALE 1 : 20

G:\JI\EWW\03 PROJECTS\Irish Water Framework\321060BK CIP Wastewater Lot 4\5 – Drawings\5.3 – Draft Drawings\5. G2 Detailed Design\Enfield\CAD\Active CAD files\321060BK–PL–007



PLAN

SCALE 1:2500



SECTION A-A

SCALE 1:200

Original Size A3

Notes:

1. All dimensions are in meters unless otherwise stated.
2. All levels are meters above ordinance datum unless stated

Legend:

Erosion protection works (Section A-A)

Rev	Description	Drawn	Chk'd	App'd.	Date
B	FOR PLANNING	AC	NS	NS	20.02.20
A	COMMENT	CZ	CK	NS	26.06.19

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Jacobs TOBIN CONSULTING ENGINEERS

Originated By: C.Zucco	Date: 26.06.19
Drawn By: C.Zucco	Date: 20.05.19
Checked By: C.Kyne	Date: 04.07.19
Approved By: N.Stokes	Date: 11.07.19

Project Title: CIP WASTEWATER

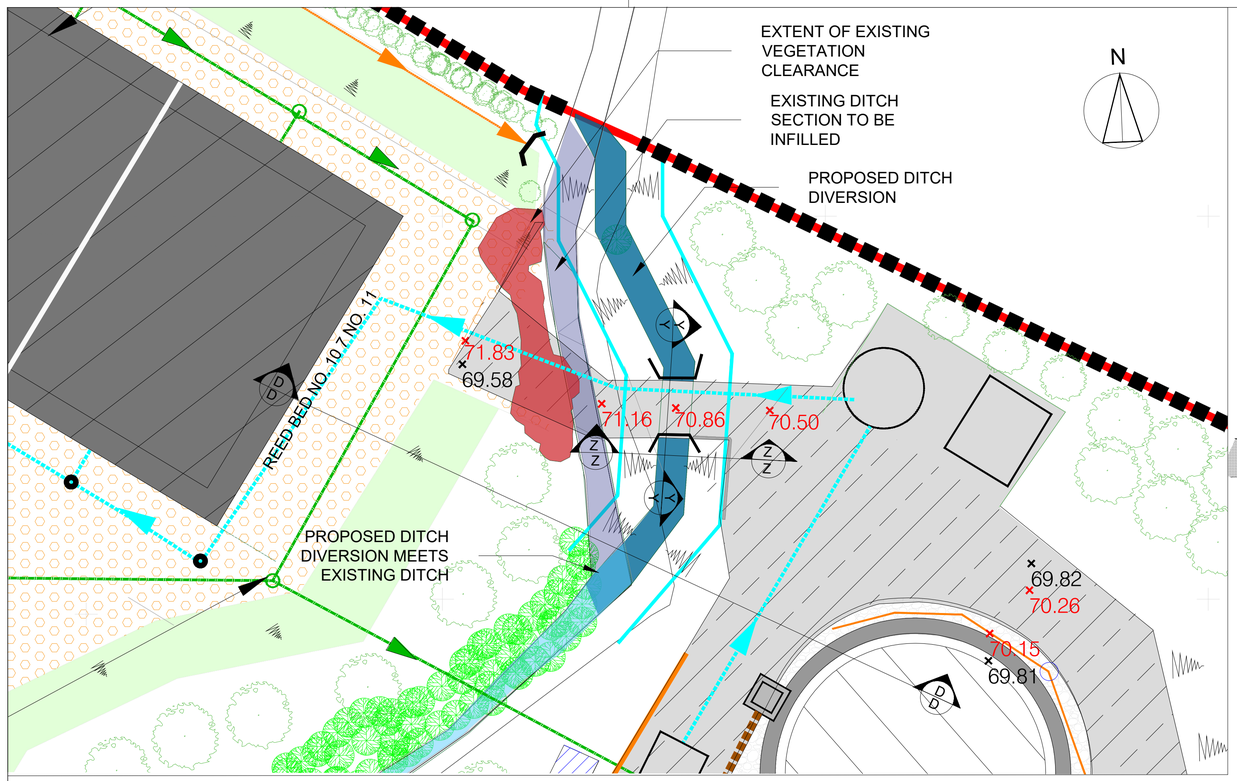
Drawing Title: ENFIELD WwTP UPGRADE
CHANNEL PROTECTION WORKS

Drawing Status: FOR PLANNING

Scale: AS SHOWN	DO NOT SCALE
Jacobs Tobin No.: 321060BK	Client No.: 10615039

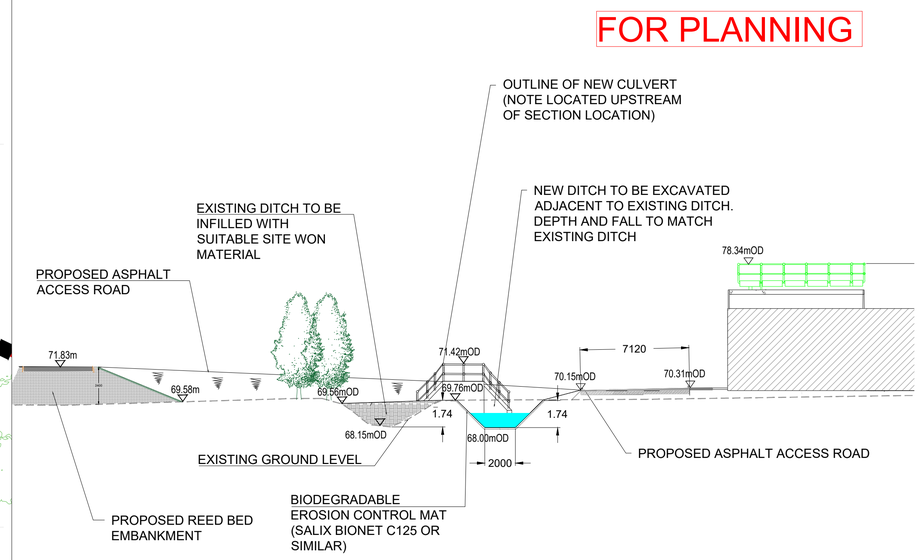
Drawing No.: 321060BK-PL-015

G:\J\IEWW\03 PROJECTS\Irish Water Framework\321060BK CIP Wastewater Lot 4\5 - Drawings\5.3 - Draft Drawings\5. G2 Detailed Design\Enfield\CAD\Active CAD files\321060BK-PL-015



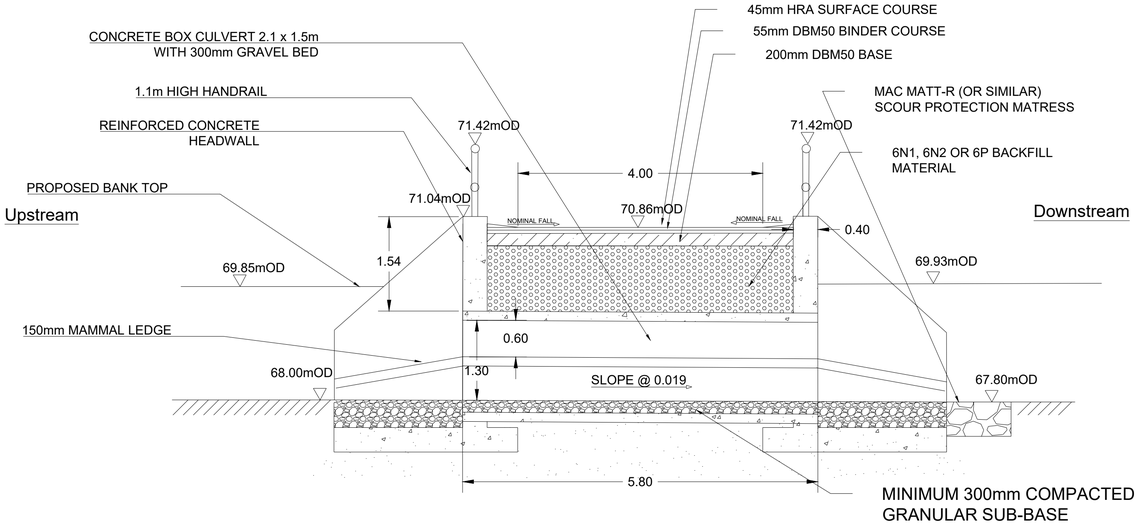
PLAN VIEW DETAIL ON PROPOSED - STREAM CROSSING

Scale 1:200



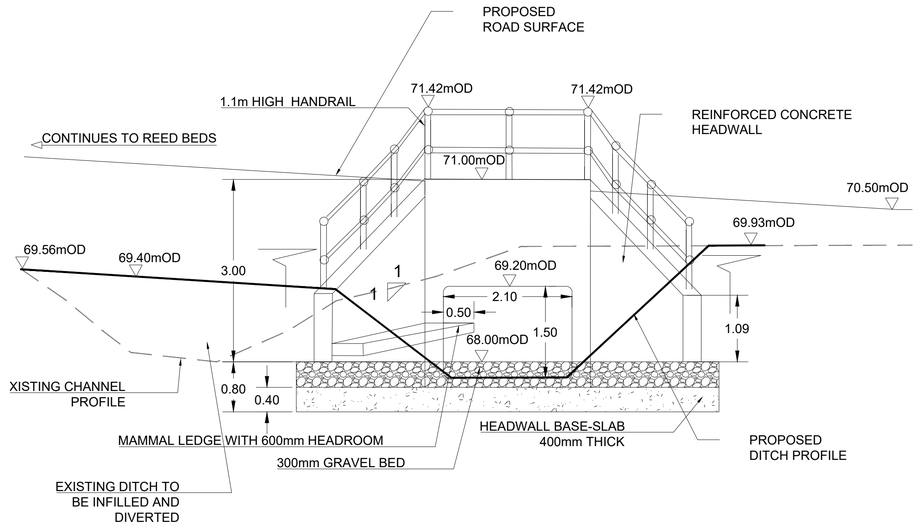
SECTION D D

Scale 1 : 200



DETAIL Y Y

Scale 1 : 50



DETAIL Z Z

Scale 1 : 50

Original Size A1

Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland. It should not be relied upon in the event of excavations or other works being carried out in the vicinity of the network. The onus is on the parties carrying out the works to ensure the exact location of the network is identified prior to mechanical works being carried out. Service pipes are not generally shown but their presence should be anticipated. © Irish Water

LEGEND

- Existing Bank Profile
- Proposed Road Level
- Proposed Bank Profile
- Gravel
- Concrete Slab
- Compacted Granular Sub-Base
- Existing Ditch to be Infilled
- Proposed Ditch Diversion

1. All levels are meters above ordinance datum unless stated

Rev	Description	Drawn	Chk'd	App'd.	Date
C	FOR PLANNING	AC	NS	NS	19/06/20
B	DRAFT FOR COMMENT	AC	NS	NS	16/04/20
A	ISSUED FOR PRE-PLANNING	CK	PW	NS	XX

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Jacobs TOBIN CONSULTING ENGINEERS

Originated By	Drawn By	Checked By	Approved By
T.PEARCE	A.CONNOLLY	N.STOKES	N.STOKES
Date	Date	Date	Date
06/01/20	30/01/20	31/01/20	31/01/2020

Scale: AS SHOWN

Project Title: CIP WASTEWATER ENFIELD WWTP

Drawing Title: UPPER STREAM DIVERSION AND CROSSING WITH BOX CULVERT INSTALLATION

Drawing Status: FOR PLANNING

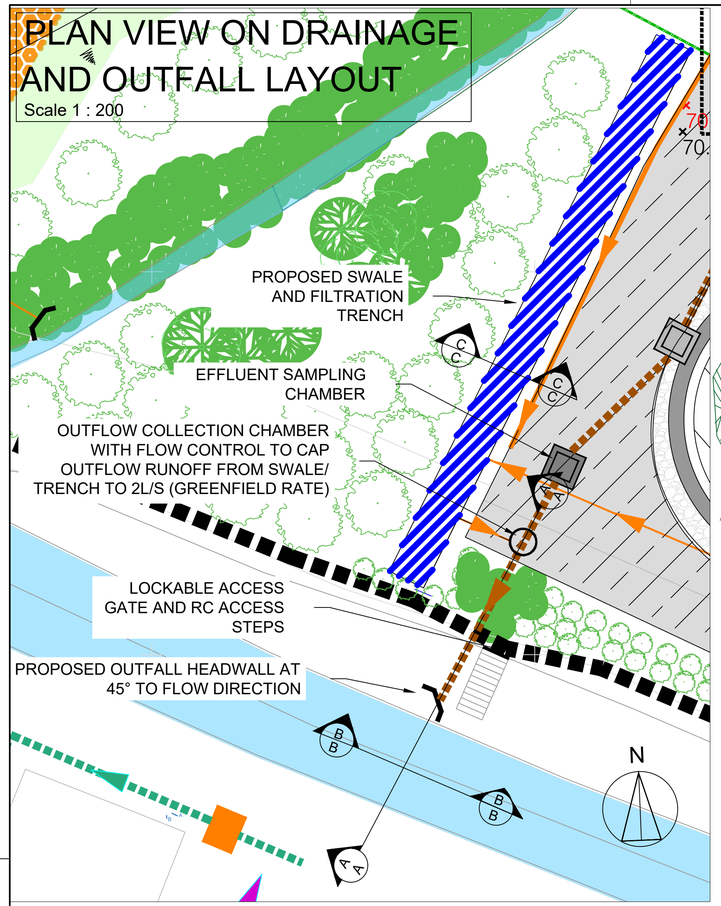
Jacobs Tobin No. 321060BK | Client No.

Drawing No. 321060BK-PL-017

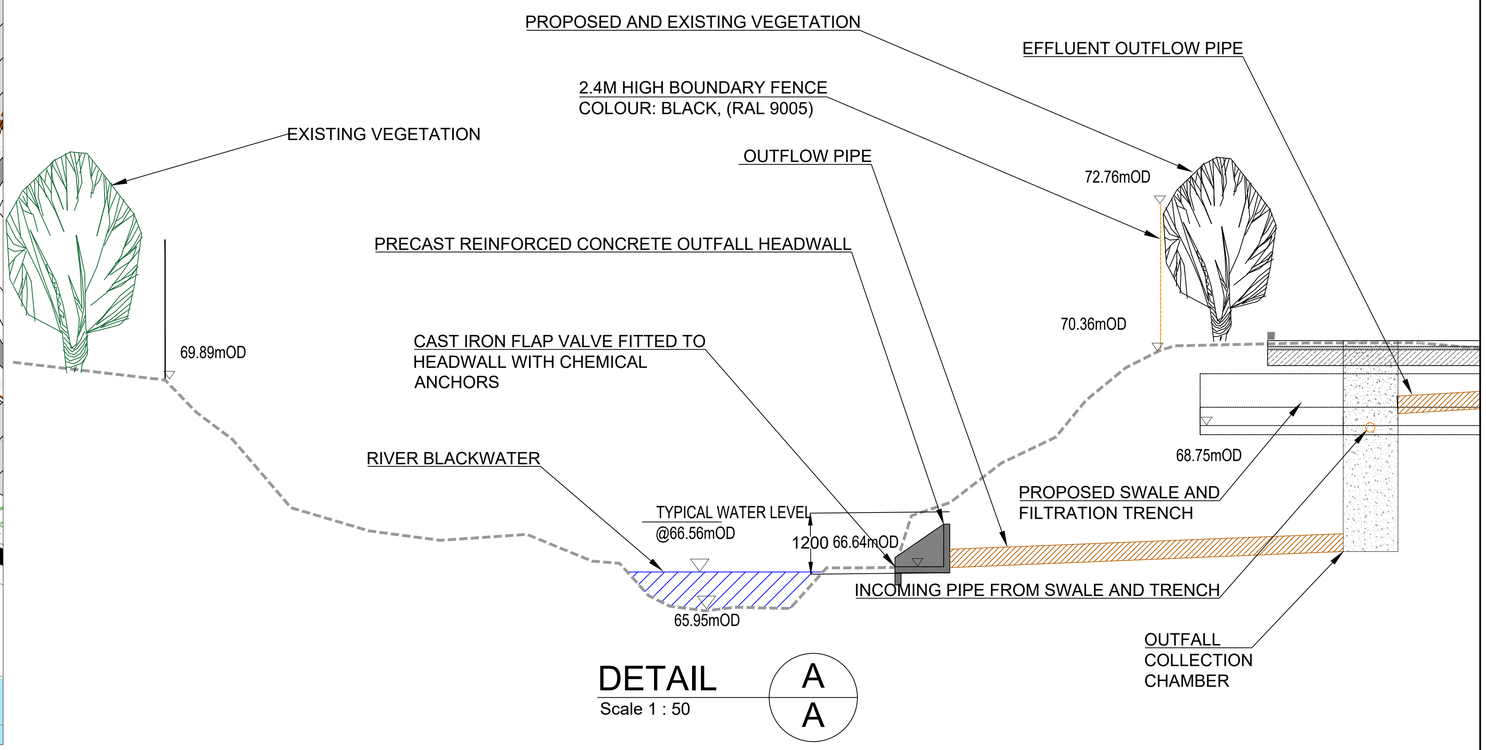
G:\JI\EWW\03 PROJECTS\Irish Water Framework\321060BK CIP Wastewater Lot 4\5 – Drawings\5.3 – Draft Drawings\5. G2 Detailed Design\Enfield\CAD\Active CAD files\321060BK–PL–017

PLAN VIEW ON DRAINAGE AND OUTFALL LAYOUT

Scale 1 : 200

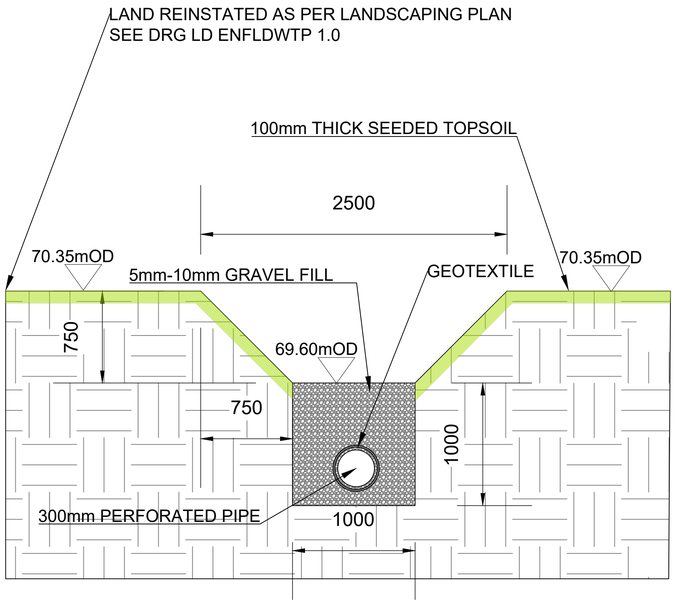


FOR PLANNING



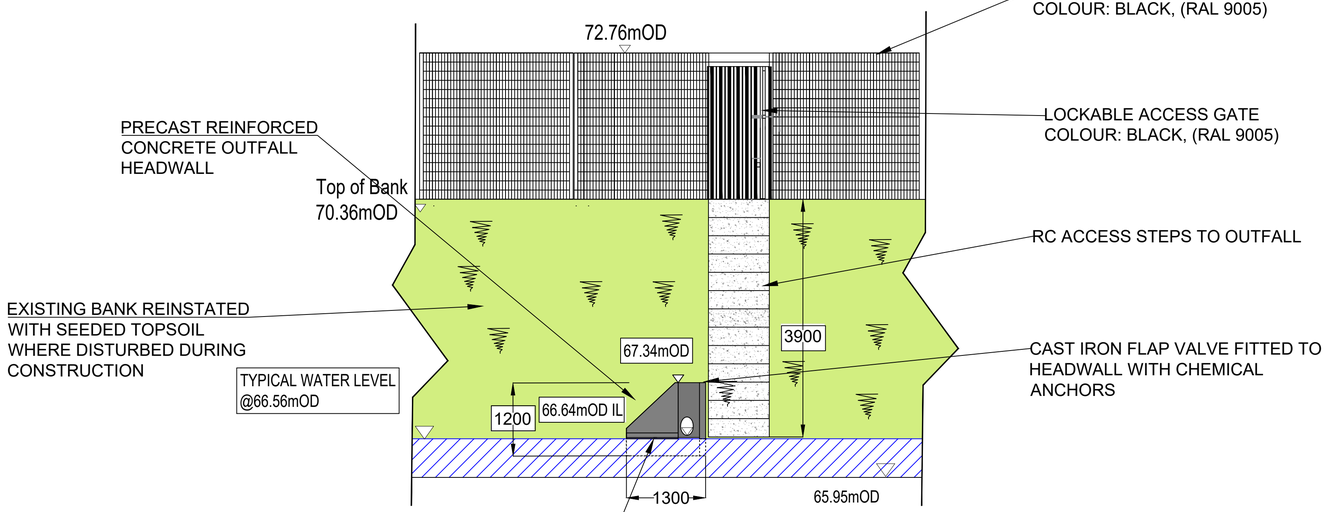
DETAIL A/A

Scale 1 : 50



DETAIL C/C

Scale 1 : 25



DETAIL B/B

Scale 1 : 50

0 1000 2000 3000 4000 5000mm

SCALE 1 : 50

Original Size A1

1. All levels are meters above ordinance datum unless stated

Rev	Description	Drawn	Chk'd	App'd.	Date
A	FOR PLANNING	AC	NS	NS	16/04/20

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Jacobs TOBIN CONSULTING ENGINEERS

Originated By	Drawn By	Checked By	Approved By
A.CONNOLLY	A.CONNOLLY	N.STOKES	N.STOKES
Date	Date	Date	Date
11/03/2020	11/03/2020	12/03/2020	12/03/2020

Scale: 1:50 @ A1

Project Title: CIP WASTEWATER ENFIELD WWTP

Drawing Title: PROPOSED WWTP UPGRADE OUTFALL

Drawing Status: FOR PLANNING

Jacobs Tobin No. 321060BK | Client No. 10015039

Drawing No. 321060BK-PL-018

G:\JI\EWW\03 PROJECTS\Irish Water Framework\321060BK CIP Wastewater Lot 4\5 – Drawings\5.3 – Draft Drawings\5. G2 Detailed Design\Enfield\CAD\Active CAD files\321060BK–PL–018

Appendix B. Photographs

Photo 1: Downstream from the bridge at the WwTP.

Photo 2: Erosion along the bank at the bridge.

Photo 3: Outfall from the WwTP and downstream of the outfall

Photo 4: Hedgerow at the location of the proposed watercourse crossing point

	
Photo 5: Mammal hole, likely fox. Signs of fox feeding debris outside.	Photo 6: Potential otter couch and spraint under large hawthorn tree adjacent to proposed crossing point.

	
Photo 7: Reed bed field	Photo 8: On opposite side of hedge boundary of reed bed field. Area of mammal tracks and holes, likely rabbit or otter. Badger faeces at the fence.

Appendix C. Any Other Information

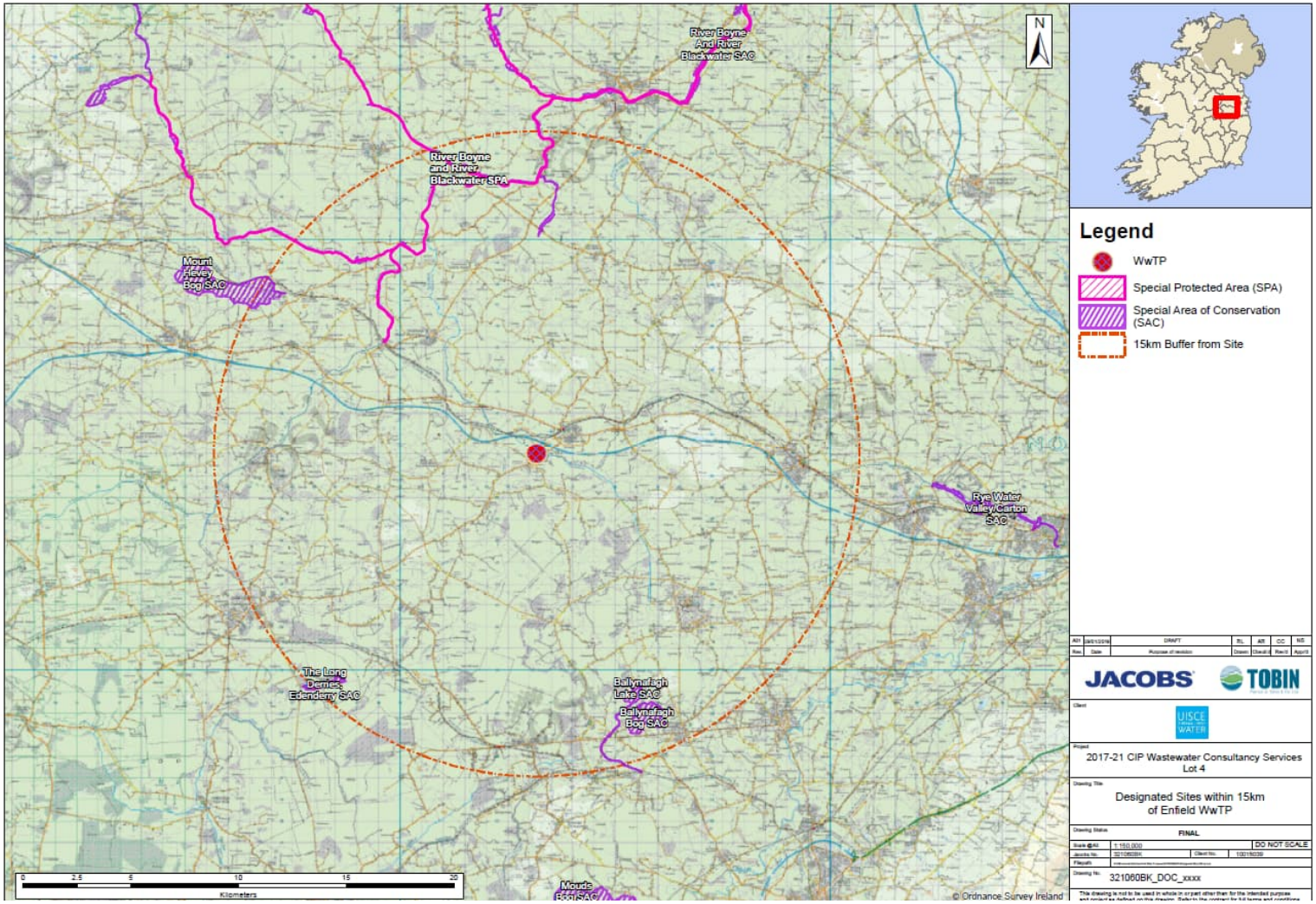

Figure 3.3: Natura 2000 sites within the vicinity of the Proposed Development