PROJECT:

Castletroy Wastewater Treatment Plant Upgrade Project

DOCUMENT:

Scoping Report for Environmental Impact Assessment Report and Natura Impact Statement

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Glossary and Defined Terms

Acronym	Description
AA	Appropriate Assessment
AASR	Appropriate Assessment Screening Report
ABP	An Bord Pleanála
AGS	Aerobic Granular Sludge
AER	Annual Environmental Report
BOD	Biochemical Oxygen Demand
C	Carbon
CAFÉ	Clean Air for Europe Directive
DIN	Dissolved Inorganic Nitrogen
ECJ	European Court of Justice
EIAR	Environmental Impact Assessment Report
ELV	Emission Limit Value
EPA	Environmental Protection Agency
ESB	Electrical Supply Board
Estuary	Transitional area at the mouth of a river between freshwater and coastal waters.
EU	European Union
FOG	Fats Oils and Grease
FST	Final Settling Tank
GHG	Greenhouse Gas
HGV	Heavy Goods Vehicle
MRP	Molybdate Reactive Phosphate
IDA	Industrial Development Agency
IFAS	Integrated Fixed-Film Activated Sludge
N	Nitrogen
NDP	National Development Plan
NHA	National Heritage Area
NIS	Natura Impact Statement
NPF	National Planning Framework
NSO	National Strategic Outcomes
NSS	National Spatial Strategy
P	Phosphorous
PE	Population Equivalent - The amount of wastewater received at a treatment plant (and its design capacity) is measured in units known as population equivalent (or PE). The wastewater received from all sources, e.g. industrial, tourism, commercial, residential, etc., is converted into these units, with one unit of PE representing the wastewater treatment load typically generated by a single person.
PFT	Picket Fence Thickener
pNHA	Proposed National Heritage Area
QI	Qualifying Interest
RAS	Return Activated Sludge
RSES	Regional Spatial and Economic Strategy
SAC	Special Area of Conservation
SBR	Sequencing Batch Reactor

SEA	Strategic Environmental Assessment
SIA	Stable Isotope Analysis
SID	Strategic Infrastructure Development
Sludge	Solid by-products of wastewater
SPA	Special Protection Area
SS	Suspended Solids
UWWTD	Urban Wastewater Treatment Directive
WFD	Water Framework Directive
WWDA	Wastewater Discharge Authorisation
WwTP	Wastewater Treatment Plant
ZTV	Zone of Theoretical Visibility

Executive Summary

In January 2014, Irish Water assumed responsibility for the provision of public water services, which included the transfer of responsibility for the Castletroy Wastewater Treatment Plant (WwTP) from Limerick City and County Council.

Castletroy WwTP has been providing wastewater treatment to the area since the early 1990's. It serves the domestic populations of Castletroy, Annacotty, Mountshannon and Castleconnell, as well as the University of Limerick and local commercial and industrial sectors. Today, the plant is operating at its design capacity and needs to be upgraded to provide appropriate wastewater treatment that will allow continued social and economic development in the area.

The Castletroy WwTP Upgrade Project is an element of Irish Water's 2017-2021 Investment Plan, whereby 52 Wastewater 'Above Ground' (i.e., treatment) projects were identified nationally as requiring Consultancy appointments to facilitate improvement works. Limerick' includes Castletroy WwTP and Limerick (Bunlicky) WwTP and upgrade projects are progressing concurrently at both facilities. The resultant combined increase in treatment capacity will greatly benefit future infrastructural requirements of the Greater Limerick Area.

The upcoming planning application for the upgrade works at Castletroy WwTP will cater for the 10-year growth projections from 45,000 PE to 77,500 PE, which includes a future IDA load of 5,500 PE. There will be provision made in the infrastructural development of the plant (i.e. tank sizing and pipework) for the 25-year growth projections of 81,100PE. However, the increase in PE from the 10 to 25-year growth projection is considered Phase 2 expansion, and a future planning review will be required for the use of the additional capacity.

The proposed works will include a new stormwater storage tank, increased aeration capacity and increased sludge storage capacity. The project will ensure the WwTP continues to comply with Urban Waste Water Treatment Directive (UWWTD) and Environmental Protection Agency (EPA) Waste Water Discharge Authorisation (WWDA) requirements, while also providing appropriate future treatment capacity in accordance with Irish Water design guidelines. Furthermore, by modernising and improving the performance of the WwTP there will be positive effects on the quality of receiving water, which in turn will benefit EU Water Framework Directive (WFD) waterbody status, compliance with Surface Water Regulations and 92/43/EEC Habitats Directive.

J. B. Barry and Partners has now been commissioned by Irish Water to prepare an Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS), which are required as part of the planning application to An Bord Pleanála for the proposed development at Castletroy WwTP.

The EIA Directive (2014/52/EU) has been broadly transposed into Irish legislation under Schedule 5 of the Planning and Development Regulations 2001 – 2018. The regulations set out procedures to determine whether a project requires a mandatory EIA. The overriding consideration in determining whether a project should be subject to EIA is the likelihood of significant environmental effects. Initial 'Screening' has established that the Castletroy WwTP Upgrade project requires an EIAR.

The Scoping Report is a key element of the EIA process and signifies commencement of the development of an EIAR. 'Scoping' is the process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information. Following publication of the Scoping Report, there will be consultation with the public and key stakeholders to facilitate input from interested parties and to identify areas which may require further scrutiny during the preparation of the EIAR.

The objectives of the scoping process being undertaken for the project are to:

- Provide a description of the proposed development and to inform the public and key stakeholders;
- Identify the potential impacts and issues that are proposed to be the focus of the EIAR;
- Define the scope of the study for each of the EIAR topics and issues to be considered;
- Identify data and information available and additional surveys and investigations required;
- Define the methods and criteria to be used in predicting and evaluating impacts;
- Identify alternatives and mitigation measures to be considered as part of the project; and
- Determine the proposed content, structure, and format of the EIAR.

Irish Water is inviting comment and submissions from the public and interested parties on the issues to be considered in this element of the EIAR and the NIS, as part of a six-week consultation process. The aim of the public consultation is to ensure that the EIAR and the NIS address all issues of potential impact or concern, and that the assessments of the project are as comprehensive as possible.

The Figure below illustrates the project roadmap of the planning application. It will be updated ahead of each key stage of development or if there are any significant changes to the project programme.

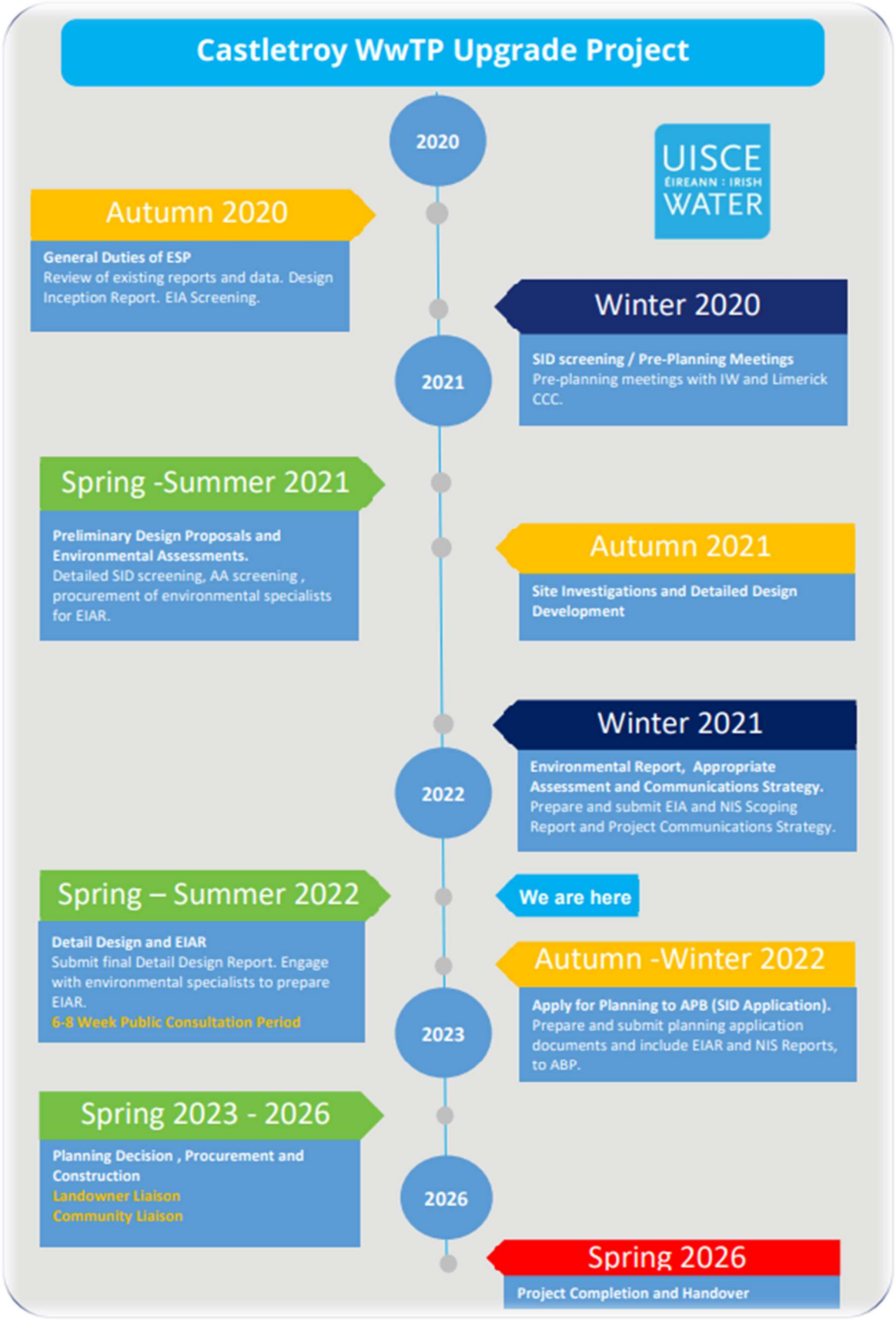


Figure: Project Roadmap

SECTION 1: Introduction

1.1 Purpose of this Report

J. B. Barry and Partners has been commissioned by Irish Water to carry out the Environmental Impact Assessment (EIA) process which requires the preparation of an EIAR and NIS. These reports will be submitted as part of the planning application to An Bord Pleanála for the Castletroy WwTP Upgrade Project, 'hereafter referred to as the proposed development'. This Scoping Report is a key element that signifies commencement of the detailed EIAR and NIS. 'Scoping' is the procedure of deciding what information should be contained in the detailed reports and what methods should be used to gather and assess that information. Following the publication of the Scoping Report, Irish Water will undertake a public consultation period to engage with the public and key stakeholders. The consultation process provides interested parties with the opportunity to engage with the project proposal, as well as enhancing the development of the EIAR and NIS. Public consultation is discussed in detail in section 3.4.

The objectives of the scoping process are to:

- Provide a description and background of the proposed scheme and to inform the public and key stakeholders;
- Define the scope of the study for each environmental topic and issues to be considered;
- Identify data and information available and additional surveys and investigations required;
- Define the methods and criteria to be used in predicting and evaluating impacts;
- Identify alternatives and mitigation measures to be considered as part of the project; and
- Determine the proposed content, structure, and format of the detailed reports.

The information in this report is based on:

- Information gathered during earlier stages of the project including the Constraints and Options stages;
- Existing environmental databases, reports and mapping; and
- Consultation with environmental specialists, project stakeholders and the public.

This report has been prepared with the assistance of specialist environmental sub-consultants, in accordance with the following guidelines:

- Department of Housing, Planning and Local Government (DoHPLG), Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, 2018;
- EPA, Guidelines on the information to be contained in Environmental Impact Assessment Report – Draft, 2017; and
- Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (The Habitats Directive).

1.2 Project Background

Castletroy is a Limerick suburb situated approximately 3km east of the City Centre. Castletroy WwTP is surrounded by the University of Limerick campus and the Lower River Shannon spans its northern boundary, figure 1-1. The drainage infrastructure and the WwTP were constructed in the early 1990's, and various improvement works have been carried out since then to meet the demands of an increasing population. Sources of wastewater loading to the WwTP are from the domestic population, the University of Limerick, commercial and industrial sectors, and imported sludges and leachates. The WwTP treats the wastewater with secondary biological and nutrient removal processes. Stormwater overflows and treated effluent are discharged from the plant into the Lower River Shannon which is designated both a

Special Area of Conservation (SAC) (Lower River Shannon) and a Special Protected Area (SPA) (River Shannon and River Fergus estuaries).

Figure 1-1: Castletroy WwTP and Discharge Point Locations

The provision of adequate water supply and wastewater treatment utilities is crucial to the continued expansion of Castletroy Agglomeration. The Castletroy WwTP facilities can cater for a Population Equivalent (PE) of 45,000 to meet the minimum Emission Limit Values (ELVs) as set out in the UWWTD, which include biochemical oxygen demand (BOD) 25mg/l and suspended solids (SS) 35 mg/l. The EPA WWDA also stipulates an ammonia ELV of 5mg/l, which limits the current design capacity to 35,000PE. This is adequate to cater for the existing loading to the plant, but it is certain that population growth and the expansion of industrial activity will begin to impact plant's treatment capabilities, which is also likely to have negative effects on the receiving environment. Furthermore, the maximum load permitted by existing licences for industrial discharges to the plant are not being fully utilised at present. Should this loading increase, the WwTP would be put under even further pressure.

The proposed development shall cater for future population growth and industrial development in the area. It will ensure the WwTP continues to comply with UWWTD and WWDA requirements, while providing appropriate future treatment capacity as per relevant Irish Water design guidelines. The initial upgrade works will cater for the 10-year growth projections from 45,000 PE to 77,500 PE including a future IDA load of 5,500 PE. There will also be provision made in the infrastructural development of the plant (tank sizing and pipework) for the 25-year growth projections of 81,100PE. Although the infrastructure will be in place , a planning review will be required before any uplift above 77,500PE can be instated. The proposed development will make provision for a new stormwater storage tank, increased aeration capacity and increased sludge storage capacity, details of which are outlined in section 1.7 of this report.

1.3 Investment Strategy

Irish Water's 2017-2021 Investment Plan presents a capital investment portfolio in water services infrastructure developed to address national strategic objectives as laid out in Irish Water's Water Service Strategic Plan. To assist the progression and development of the 2017-2021 Investment Plan, 52 Wastewater 'Above Ground' (i.e., treatment) projects were identified nationally as requiring Consultancy

appointments at this time to assist in progression of projects through the various Gates. IW bundled these into appropriate works packages and nine separate regions internally named 'Call Offs'.

In November 2017, J B Barry and Partners Limited (JBB) and T J O'Connor Limited (TJOC) in association with RHDHV were appointed by Irish Water (IW) as Consultants on Call Off 8 – Limerick, as outlined in Table 1-1.

Table 1-1: Call Off 8 – Limerick projects

Project Oracle No	Project Title	Indicative Project Description
10015054	Limerick (Bunlicky) WwTP	Upgrade: Inlet, primary, secondary, sludge
10016965	Castletroy WwTP*	Upgrade: Primary, secondary, sludge

Increasing the treatment capacity of the Castletroy plant, together with the proposed upgrade of Limerick (Bunlicky) WwTP, will facilitate the current and future infrastructural requirements of the Greater Limerick Area. This will ensure that as its population continues to grow and industrial needs continue to expand, wastewater generated in the region is appropriately treated in order to safeguard human health and to protect the environment.

1.4 Project Need

A Feasibility Study Report (FSR) was prepared in 2019 for Castletroy WwTP on behalf of Irish Water under the appointment for Gates 1 – 2, Concept Design. It conveys an accurate understanding of the existing WwTP and any potential shortfalls. It also presents design solutions that consider 'whole life' cost as well as compliance with UWWTD and WWDA requirements, and Irish Water design guidelines.

The FSR examines the current agglomeration loadings and proposed design PE in accordance with relevant Irish Water guidelines. The Castletroy WwTP domestic agglomeration serves Castletroy, Annacotty, Mountshannon and Castleconnell. Other sources of loading to the WwTP include the University of Limerick (institutional loading), local business and industry (commercial and industrial loading). Figure 1-2 displays the geographical lay out and catchment configuration.

An Asset Survey undertaken as part of the FSR highlighted 3 no. main issues in relation to the future operations and performance of the WwTP.

- Aging plant – Several items of equipment, key to the process, need refurbishment or replacement;
- The plant is hydraulically overloaded to meet EPA WWDA ELVs and significant quantities of flow are bypassing the plant and being sent directly to the outlet chamber with no treatment resulting in foul looking, odorous final effluent despite the good standard of treatment provided by the works; and
- There is no storm storage capacity on site or in the agglomeration. Excess stormwater during periods of heavy rainfall is discharged directly into the Lower River Shannon.

Additional key drivers for the expansion of the Castletroy WwTP are as follows;

- The committed industrial loading required (existing IPC Licences) to be accepted at Castletroy WwTP (Wastewater Discharge Licence Reg. No. D0019-01) is 35,987 PE. The main industrial contributor to the Castletroy agglomeration is Jonhson & Jonhson Vision Care (Ireland), under EPA Licence IE P0818-03;
- There is a requirement to meet a forecasted growth for domestic, commercial and institutional uses @ 3.28% growth over 10 years (2018-2028) as agreed by Irish Water;

- There is a requirement to provide 20% headroom on domestic , non-domestic and institutional loading, an additional 7,000PE;
- The need to cater for future IDA allocation of 5,500PE if required.
- To deliver on strategic national objectives. See section 2.2.

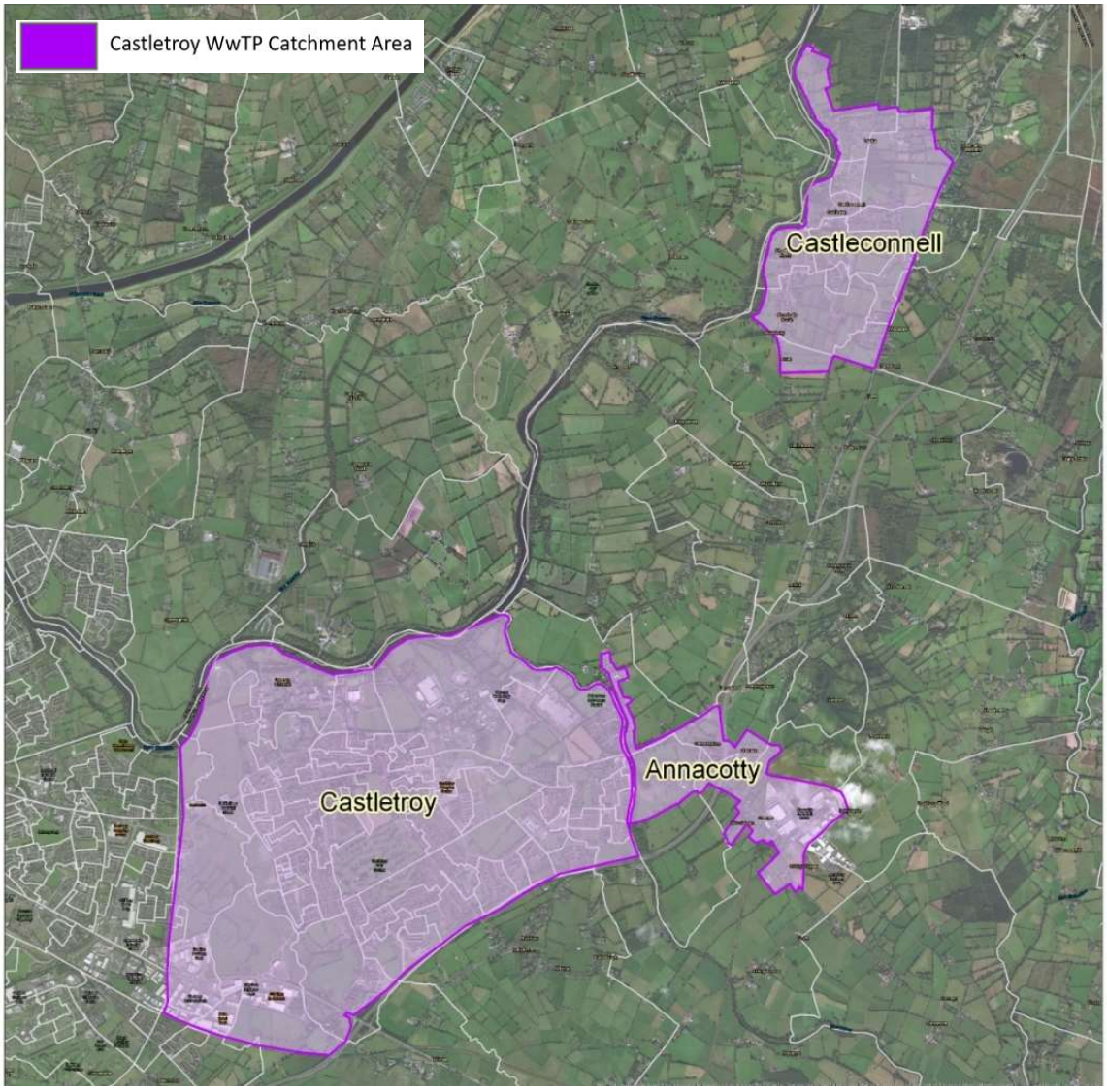


Figure 1-2: Castletroy Agglomeration Configuration

Population projections were also a factor in deciphering the need for, and quantifying the extent of, the proposed development. These were calculated based on recommendations from Irish Water Wastewater Asset Planning detailed in the Growth and Headroom Technical Guidance Note (TGN) - December 2017. Urban average annual percentage growth is projected at a rate of 3.28% for 10 years up to 2028 and a growth rate of 0.63% for the following 15 years up to the year 2042, and it is assumed that the non-domestic PE will grow at the same rate as the domestic PE. Existing, 10 year and 25-year agglomeration PE figures are listed in Table 1-2. As discussed previously in section 1.2, it has been noted there are existing industrial licensees with significant loading allowances who are currently discharging a fraction of the permitted volume. Given the 10-year design horizon loading, and existing industrial PE allowances, the WwTP will need an upgrade to civil infrastructure to continue to meet UWWTD and WWDA requirements.

Table 1-2: Existing and Projected (10 and 25 year) Castletroy WwTP Agglomeration PE Figures

Element	Agglomeration Loading (PE)		
	Existing	10 Year Growth Rate 3.23%	25 Year Growth Rate 0.63%
Domestic Population	15,517	21,427	23,544
Commercial Load	2,483	3,428	3,767
Institutional Population (UL)	3,412	5,096	5,599
Sub-Total (Non – Industrial)	21,412	29,951	32,910
Headroom – 20%	0	5,990	6,582
Industrial –Existing Licences	35,987	35,987	35,987
Industrial -Proposed IDA Load	5,500	5,500	5,500
Total Design Load (to nearest 500 PE)	**63,000**	**77,500**	**81,100**

1.5 The Surrounding Environment

Castletroy WwTP is situated on the banks of the Lower River Shannon. The Lower River Shannon is a large site that stretches along the Shannon valley from Killaloe to Loop Head/ Kerry Head, a distance of 120km. It is designated on ecological grounds as a Special Area of Conservation (SAC) and host to highly protected species including salmon, lamprey, otter and waterbirds. The applicable SAC is titled 'Lower River Shannon' ,Site Code: 002165, and contains habitats and species listed on Annexes I and II of the E.U. Habitats Directive. As discussed in detail in section 5 of this report, Appropriate Assessment Screening has been carried out under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). The Appropriate Assessment Screening Report (AASR) has concluded that Appropriate Assessment (AA) is required, and a NIS will be prepared in respect of the proposed development.

1.6 Description of the Existing WwTP

The existing Castletroy WwTP, shown in Figure 1-3, operates as a Secondary Extended Aeration Activated Sludge Plant with Tertiary P removal and consists of the following elements.

- Preliminary treatment - management of stormwater flows, removal of inorganic solids (grit and screenings);
- Primary treatment - removal of gross organic solids using Salsnes filter™ technology;
- Secondary treatment - removal of suspended and dissolved pollutants. Castletroy WwTP operates as a secondary extended aeration activated sludge system. It converts nitrogen from its 'ammoniacal' form into its 'nitrate' form and is required to protect aquatic species in the vicinity of the discharge location and its mixing zone;
- Nutrient removal - chemical P removal occurs in the final settling tanks (FSTs), otherwise referred to as 'tertiary treatment' in the AER.

- Sludge treatment – picket-fence thickening and sludge de-watering using a belt press before removal to offsite sludge processing.

The treatment process results in emissions from the plant, as follows:

- Final treated effluent and stormwater overflows are discharged at the same location point in the Lower River Shannon, which can be seen in Figure 1-1. The primary discharge point for treated effluent is named SW001, and discharge points for stormwater overflows are named SW004 and SW005.
- Outgoing treated effluent is monitored and released in accordance with WWDA licence D0019-01 issued by the EPA. Plant emissions must meet effluent ELVs. Licence compliance is recorded and made publicly available in the annual environmental reports (AERs), which can be accessed via the following link; https://www.water.ie/help/wastewater/compliance/annual-environmental-repo/
- Stormwater overflow (SWO) – excess flows arising from heavy rainfall events are discharged directly into the Lower River Shannon in accordance with section 4.13 of the WWDA licence D0019-01;
- Sludge – dewatered sludge is transported in cake form (>12% DS) and transported by lorry to Limerick (Bunlicky) Sludge Hub for processing.

Figure 1-3: Castletroy WwTP Existing Layout

1.7 Description of the Proposed Development

A number of load scenarios and treatment processes were examined in the FSR. As mentioned previously in section 1.4, they considered 'whole life' costs as well as the capability to comply with for UWWTD and WWDA requirements, and Irish Water design guidelines.

- Scenario A- interim upgrade existing Castletroy WWTP to meet current capacity +committed industrial load;
- Scenario B - upgrade existing Castletroy WwTP to meet 10-year growth projections;
- Scenario C- upgrade existing Castletroy WwTP to meet 25-year growth projections;
- Scenario D -scenario B + pump away 21,000 PE to Bunlicky WwTP for treatment;
- Scenario E - scenario C + pump away 11,000 PE to Bunlicky WwTP for treatment; and
- Scenario F - decommission Castletroy WwTP and pump all to Bunlicky WwTP for treatment.

The treatment processes examined and brought forward to assessment for the above load scenarios were as follows;

- Conventional Activated Sludge (CAS);
- Hybrid Activated Sludge (HYBACS);
- Integrated Fixed-Film Activated Sludge (IFAS);
- Nereda™ Process;
- Mixed Liquor Vacuum Degassing (MLVD); and
- Combination of treatment at Castletroy WwTP + pumping portion of flow & load to Bunlicky WwTP for treatment.

As outlined in section 1.2, the proposed development at Castletroy WwTP will cater for the projected 10-year design load of 77,500 PE as per scenario B, with allowance for future Phase 2 expansion to 81,100 PE as per scenario C. Based on the whole life cost assessment, the IFAS solution has been selected and is currently in the detailed design phase. The proposed site layout drawing 20701-JBB-00-XX-DR-Z-1204 is available in Appendix A.

The following works have been outlined at this initial stage but may be subject to change;

- **Preliminary treatment** - retain the existing inlet pump station, inlet screens and grit removal system;
- **Storm water storage** – installation of a new stormwater storage tank and returns pump station. This will reduce the frequency and volume of storm overflow events and stored stormwater can be returned to the treatment process when rainfall levels subside;
- **Primary treatment** – installation of new Salsnes filter™ units to replace existing Salsnes filter™ and lift pump station. Construction of a building to house the filters and control panels. Installation of new sludge holding/mixing tank to cater for liquid sludge discharged from the Salsnes filter™ which will reduce BOD and suspended solids load to the secondary treatment/aeration process;
- **Secondary treatment** – upgrade existing inlet pipework and return activated sludge system (RAS) to allow for new design flows. Installation of an integrated fixed-film activated sludge (IFAS) system to existing aeration tanks with lifting cranes for cleaning. This is a system of removable textile curtains that will increase the treatment capability of the aeration process;
- **Nutrient removal** - retain existing final settling tanks (FSTs) and replace existing chemical dosing system;
- **Sludge treatment** – repair existing picket fence thickeners (PFTs) and upgrade existing sludge dewatering equipment to provide for additional capacity; and
- **Final effluent** – following the proposed upgrade works, an EPA WWDA licence review will be required which could see amendments to existing ELVs. This will not impact plant operations and will not have a negative impact on receiving water quality. Also to note, there are no improvement works required for the discharge point or stormwater overflows.

Construction methodology will be developed as part of the detailed design in parallel with the EIA, and it will be included in the final EIAR. At this point it is known that excavation works and sheet piling due to poor ground conditions will be required. Environmental specialists were made aware of this ahead of developing the scoping chapters. They will also be updated with any relevant information regarding the construction phase as the design progresses.

SECTION 2: Planning and Legislative Context

The Planning Application will be prepared in line with relevant policy and legislation. This section provides a summary overview of key legislation and policy documents to be considered.

2.1 Strategic Infrastructure Development

The planning system in Ireland is governed primarily by the Planning and Development Act 2000 (as amended), and regulations made thereunder. The 'Planning Act' has been amended several times since its introduction. The Planning and Development (Strategic Infrastructure) Act 2006 made significant amendments to the Planning Act by changing the way applications for strategic infrastructure development (SID) are managed and determined within the planning system.

SID development is defined in the 7th Schedule of the Act. It is defined as any development that is of strategic economic or social importance to the state or a region. It includes development that contributes significantly to the fulfilment of the objectives of the National Spatial Strategy (NSS) or Regional Spatial and Economic Strategy (RESES) for an area, or which would have a significant effect on the area of more than one planning authority. 'Environmental Infrastructure' development falls under the 7th schedule of the Act. This type of development automatically requires an EIA to be carried out an includes works relating to wastewater treatment plants with a capacity greater than 10,000PE.

The Planning Act provides for applications for SID being made directly to An Bord Pleanála (ABP). Before the introduction of the SID provisions such applications were made to the local planning authority for a decision with a subsequent right of appeal to the Board. When lodged, an SID application (and its EIAR and NIS if applicable) is made available for inspection and purchase for a period of at least six weeks. Any person or body may make submissions to the Board within this period in relation to the implications of the proposed development for proper planning and sustainable development and for the likely effects on the environment of the proposed development. The Board may hold an oral hearing in relation to the development at its discretion. Before making its decision on the SID application the Board must consider all submissions and observations made to it.

Irish Water have entered pre-application discussions with ABP under Section 37B of the Act to determine whether the proposed development project for Castletroy will be classified as SID. The existing plant exceeds the 10,000PE threshold and the proposed development will provide for an uplift of 30,500PE. Therefore, it constitutes Environmental Infrastructure and requires an EIA. While the project is not specifically listed as a strategic priority in the NPF or RESES, it will facilitate delivery of strategic national objectives by supporting population growth in the defined Limerick City and Suburbs. The proposed development will more than double the treatment capacity of the plant, and in combination with the Limerick(Bunlicky) WwTP upgrade , it will be a prerequisite to achieving 50% population growth by 2024. Given the scale and impact of the development it is expected that it will be considered of strategic importance to the State and Region, and henceforth classed SID. All of the relevant information is with ABP, and a formal decision will be granted in due course.

2.2 Planning Policy Context

2.2.1 Project Ireland 2040 - National Planning Framework

The National Planning Framework (NPF) is the principal national planning policy document for the country, published in 2018. It fulfils the role previously occupied by the National Spatial Strategy guiding national, regional and local planning policies and investment decisions for the next two decades. In its own words, it represents a new strategy for delivering concentrated growth and calls for a major new policy emphasis on renewing and developing Ireland's principal cities Dublin, Cork, Limerick, Galway and Waterford. The NPF include4s am ambitious growth target for Limerick City and Suburbs for at least 50% to 2040 with an objective to enhance its significant potential to become a city of scale. A core element

of the strategy is and emphasis on Limerick becoming a regional driver and working in partnership with Galway and cork to work as a viable alternative to Dublin. The NPF identifies that "*it is necessary for Limerick to further strengthen its position as the principal focus within the Region and to continue to address the legacy of regional growth having occurred outside the City area*". The framework identifies some key future growth enablers to achieve this, which includes "*ensuring that water supply and waste water needs are met by new national projects to enhance Limerick's water supply and increase waste water treatment capacity.*" More generally, National Strategic Outcome 9 provides for sustainable management of water and environmental resources. This includes increased compliance with the requirements of the Urban Wastewater Directive (UWWD).

The purpose of the document is to create the conditions to successfully accommodate growth and positive change. The NPF includes a list of 'shared goals' across the country framed as 10 National Strategic Outcomes (NSO) which are set out in Figure 2-1 below. This includes NSO 9 related to 'Sustainable Management of Water, Waste and Other Environmental Resources'. Water Infrastructure is listed as a strategic investment priority in the NPF.

Figure 2-1: National Strategic Outcomes

2.2.2 Regional Spatial and Economic Strategy (RSES)

Under the Local Government Reform Act 2014, the Southern Regional Assembly developed a Regional Spatial and Economic Strategy (RSES) for the Southern Region. The primary aim of the RSES is to implement Project Ireland 2040 - the National Planning Framework, at the regional tier of Government and to support NPF policy for achieving balanced regional development. It is a strategic plan which identifies regional assets, opportunities and pressures and provides appropriate policy responses in the form of Regional Policy Objectives. It provides a framework for investment to better manage spatial planning and economic development throughout each region. The RSES aims to: "*Plan for compact growth, prioritise strategic infrastructure, and attract, build and retain talent and business capability*".

It includes an objective "*to strengthen the role of the Limerick Shannon Metropolitan Area as an international location of scale, and a compliment to Dublin and a primary driver of economic and population growth in the Southern Region*". Under Section 4 'National Enablers' of the Metropolitan Area

Strategic Plan, it outlines that the achievement of the vision is contingent on a number of key guiding principles including that waste water needs are met by increasing treatment capacity.

The RSES seeks the provision of infrastructure and services in a sustainable, planned and infrastructure led manner to ensure the sustainable management of water, waste and other environmental resources. This is supported through a number of dedicated Regional Policy Objectives (RPOs) relating to wastewater which include:

- Limerick Shannon MASP Policy Objective 1
- RPO 211 - Irish Water and Wastewater
- RPO 212 - Strategic Wastewater Treatment Facilities
- RPO 214 - Eliminating Untreated Discharges and Long-term Planning

2.2.3 Development and Local Area Plans

The study area for the proposed development occupies parts of the separate administrative areas of Limerick City and County Council, and to a lesser extent Clare County Council.

The Limerick City Development Plan 2010-2016 remains the statutory development plan for Limerick City pending the preparation of new plan for Limerick City and County. The vision of the current Plan is for Limerick City to continue to grow as the centre of economic, social and cultural development. This is informed by 3 'overall goals' for the city, with Goal 1 *"to promote and provide for the sustainable development of Limerick City enabling it to fulfil its role as a National Gateway City"*. The current Development Plan will be replaced next year by the emerging Limerick City and County Development Plan 2022-2028, the contents of which will need to be considered in the preparation of the subject application. The Clare County Development Plan 2017-2023, as varied and extended, sets out an overall strategy for the proper planning and sustainable development of the functional area of Clare County Council over its life. The vision for the area is shaped by key defined goals which includes Goal VII – to support *"strong economic growth and a high quality of life for all residents through the provision of efficient and robust physical infrastructure whilst having regard to environmental responsibilities and complying with European and National legislation".*

At a local level, the future planning of the Castletroy area is governed by the provisions of the Castletroy Local Area Plan 2019-2025 which establishes a framework for the planned, coordinated and sustainable development of the area. The Plan notes generally that the provision of adequate water supply and wastewater treatment utilities is crucial to the continued expansion of Castletroy.

2.3 Planning History

Based on a review of Limerick City and County Council's Planning Enquiry System, there is no record of previous planning history on the subject site. This was queried directly with the local planning authority who subsequently confirmed that they have no record/copy of the original planning file for the WwTP.

2.4 Water Framework Directive

In response to the increasing threat of pollution and the increasing demand from the public for cleaner rivers, lakes and beaches, the EU adopted the Water Framework Directive (WFD), 2000/60/EC. This Directive is unique in that it establishes a framework for the protection of all waters including rivers, lakes, estuaries, coastal waters and groundwater, and their dependent wildlife/habitats under one piece of environmental legislation. The WFD aims to:

- *Protect/enhance all waters (surface, ground and coastal waters);*
- *Achieve "good status" for all waters by December 2015 or, at the latest, by 2027;*
- *Manage water bodies based on river basins or catchments; and*

- *Involve the public in this process.*

The WFD is linked to, and cross-references, a number of other EU directives. These include Directives relating to the protection of biodiversity (Birds and Habitats Directives), directives related to specific uses of waters (drinking water, bathing waters and urban waste water directives) and to directives concerned with the regulation of activities undertaken in the environment (Industrial Emissions and Environmental Impact Assessment directives). More recent directives on topics such as Floods and the Marine Strategy Framework have significant linkages with the WFD which is also supplemented by the Priority Substances Directive and the Groundwater Directive. The Nitrates Directive forms an integral part of the Water Framework Directive and is one of the key instruments in the protection of waters against agricultural pressures. The Sustainable Use of Pesticides and the Sewage Sludge Directives also provide for the control of materials applied to land. The European Communities Environmental Objectives (Surface Waters) Regulations 2009, (S.I. No. 272 of 2009) are of particular interest as they implement further aspects of the WFD, in particular Directive 2008/105/EC on environmental quality standards in the field of water policy and Directive 2006/11/EC on pollution caused by certain dangerous substances discharged into the aquatic environment. The Regulations apply to all surface waters and provide, inter alia, for:

- The establishment of legally binding quality objectives for all surface waters and environmental quality standards for pollutants;
- The examination and, where appropriate, review of existing discharge authorisations by Public Authorities to ensure that the emission limits laid down in authorisations support compliance with the new water quality objectives/standards;
- The classification of surface water bodies by the EPA for the purposes of the Water Framework Directive;
- The establishment of inventories of priority substances by the EPA; and
- The drawing up of pollution reduction plans to reduce pollution by priority substances and to cease and/or phase out discharges, emissions or losses of priority hazardous substances.

The categorisation of waters is of significance in terms of the water quality standards which apply to them (see Section 5.4 for further information). The outfall point for effluent discharge from Castletroy WwTP is located in the Shannon River (Lower), European Code IE_SH_25S012600. This river reach is an 'Unassigned' waterbody and classed 'Not at risk' under the WFD water quality status. The Shannon Estuary begins approximately 3km downstream of the outfall point, which is a transitional waterbody with 'Good' Status.

2.5 Appropriate Assessment and Natura Impact Statement

The Birds and Habitats Directives of the European Union (EU) set out various procedures and obligations including the establishment of Special Protection Areas (SPA) and Special Area of Conservation (SAC) for the protection of specific habitats and species. Collectively, the SPAs and SACs established throughout the EU comprise a network known as Natura 2000. The Habitats Directive imposes a duty on Member States to consider the possible nature conservation implications of any project on the Natura 2000 site network before any decision is made to allow that project to proceed. These requirements have been included in the Planning and Development Act, 2000 as amended (see Section 2.1 above).

This assessment procedure is known as Appropriate Assessment and is similar to the EIA procedure. It is normally undertaken at planning consent stage by An Bord Pleanála. Appropriate Assessment Screening is caried out in the early project phases and determines whether a Natura Impact Statement (NIS) should be prepared. While there is significant overlap between the EIA and AA processes, it should be noted that the NIS and AA only consider and assess impacts on the Natura 2000 network and that AA is a separate legal consent process distinct from EIA.

Unlike an EIAR, the content of a NIS is not set out in legislation. Accordingly, and given the significant overlap in content, for the purposes of this scoping exercise only, issues affecting the Natura 2000 network will be considered in parallel with the EIAR issues in later sections.

AA screening was carried out in 2021 for the Castletroy site and it concluded that an Appropriate Assessment is required, and a Natura Impact Statement should be prepared in respect of the proposed development. The process is discussed further in section 5 of this report.

2.6 EIA Directive

EIA requirements derive from EU Directive 2014/52/EU. Known as the EIA Directive, it amends the previous directive (2011/92/EU) on the assessment of the effects of certain public and private projects on the environment. It is defined under Article 1(2)(g) as follows:

> *"Environmental impact assessment means a process consisting of:*
>
> *i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);*
> *ii) the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;*
> *iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;*
> *iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and*
> *v) the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a.'"*

2.7 National Legislative Framework for EIA

The EIA Directive(s) have been transposed into Irish legislation by the Planning and Development Acts 2000 to 2019 (the "Planning Acts") and the Planning and Development Regulations, 2001 - 2018. Section 172 of the Planning Acts sets out the statutory basis for the requirements for Environmental Impact Assessment. It provides as follows:

> "172.— (1) An Environmental Impact Assessment shall be carried out by the planning authority or the Board, as the case may be, in respect of an application for consent for proposed development where either—
>
> (a) the proposed development would be of a class specified in—
>
> *(i) Part 1 of Schedule 5 of the Planning and Development Regulations 2001, and either—*
> *such development would exceed any relevant quantity, area or other limit specified in that Part, or*
> *no quantity, area or other limit is specified in that Part in respect of the development concerned,*
>
> *or*
>
> *(ii) Part 2 of Schedule 5 of the Planning and Development Regulations 2001 and either—*
> *such development would exceed any relevant quantity, area or other limit specified in that Part, or*
> *no quantity, area or other limit is specified in that Part in respect of the development concerned,*

or
(b)

(i) the proposed development would be of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 but does not exceed the relevant quantity, area or other limit specified in that Part, and
(ii) the planning authority or the Board, as the case may be, determines that the proposed development would be likely to have significant effects on the environment."

The most recent 2014 EIA Directive has been transposed into Irish Legislation, through the European Union (Planning and Development) (Environmental Impact Assessment) Regulations (S.I. 296 of 2018). The partial enactment of these Regulations on the 1st September 2018 was accompanied by a circular letter issued by Department of Housing, Planning, Community and Local Government (dated 27th August 2018, PL 05/2018) to planning authorities and An Bord Pleanála.

2.8 Public Participation Directive

Under the Aarhus Convention, the general public has a right to participate effectively in decision-making in environmental matters. Public authorities should enable the public to comment on, for example proposals for projects affecting the environment, or plans and programmes relating to the environment. The outcome of the public participation process should be taken into consideration in the decision-making process. To facilitate this, information should be made available to help members of the public participate in the decision-making process and understand the reasons for it. The requirements under the directive have been transposed into Irish planning law and legislation governing other environmental licenses and consents.

SECTION 3: The EIA Process

3.1 Overview

EIA is the process of identifying, predicting, evaluating and mitigating the anticipated effects on the environment of a project before a decision is made whether or not to proceed with works. The steps in the EIA process are set out in national and EU legislation. Most large-scale infrastructure projects e.g., motorways and wastewater treatment plants, are subject to EIA as part of their planning consent process. Whether EIA applies to any specific project depends not only on the project's scale but also on the sensitivity of the receiving environment. Projects are generally 'Screened', early in their development, to determine whether an EIA is required . Infrastructure projects, where an EIA is required, usually fall under the provisions of the SID Act where the decision-making body is An Bord Pleanála (See Section 2.1).

The EIAR outlines the effects (if any) which the proposed development, could have on the environment following screening. The first step in the preparation of an EIAR is a 'Scoping' study. During this stage, the project proposer consults with statutory bodies, interested parties and the general public. The objective of the scoping exercise is to identify the environmental issues of concern which might arise during the construction and operation of the project, and which need to be addressed in the EIAR. The scoping and preparation of an EIAR are ongoing processes that ideally take place in parallel with the project design. It provides the best opportunity for considering design alternatives (where available) and for implementing measures to avoid, prevent, reduce, or if possible, offset any identified significant adverse effects on the environment. Figure 3-1 below is an extract taken from Figure 2.2, page 11 of the Draft EPA Guidelines 2017, that details the steps involved in the overall EIA and EIAR processes. The Castletroy WwTP Upgrade Project is currently at Step 2 – Scoping. The EIAR document will be prepared in accordance with the following guidelines.

- Department of Housing, Planning and Local Government (DoHPLG), Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, 2018; and
- EPA, Guidelines on the information to be contained in Environmental Impact Assessment Report – Draft, 2017.

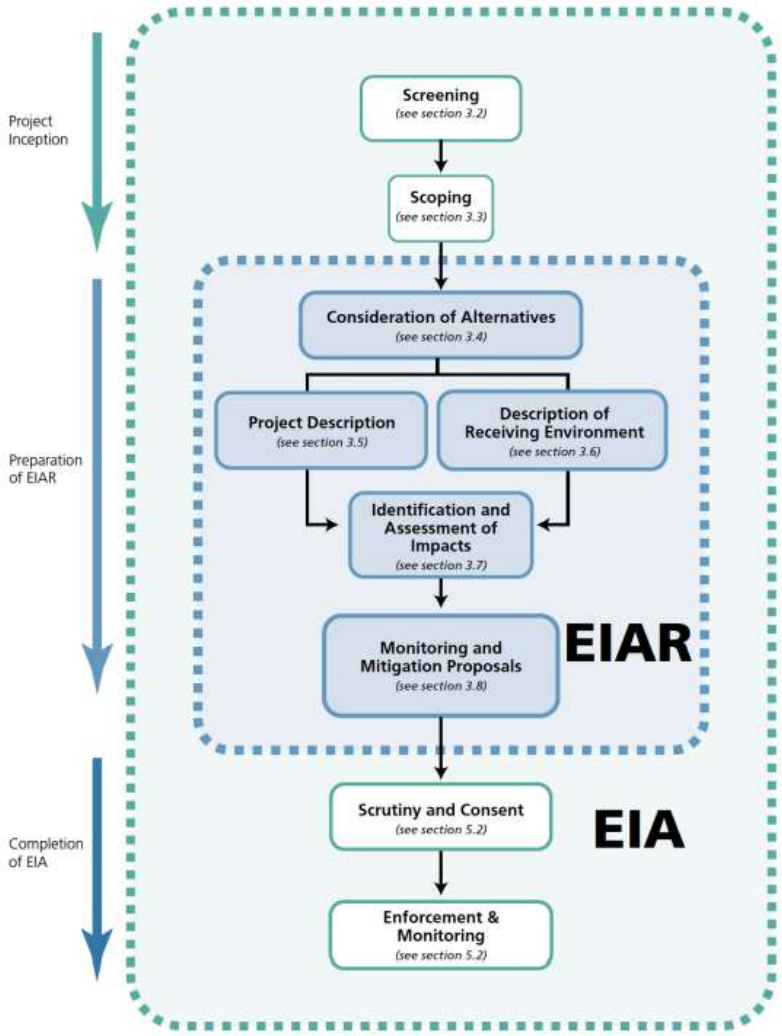


Figure 3-1: EIA Process

3.2 Screening

One of the earliest phases in planning a project is to determine whether the project should be subject to an EIA.

The first step is to determine whether the development falls within a class as set out in Schedule 5 of the Planning and Development Regulations 2001 – 2018. These regulations have broadly been transposed into Irish legislation from the EU Directive 2014/52/EU (EIA Directive) as amended.

The regulations set out two parts within Schedule 5 as per Annex I and Annex II of the EIA Directive. Part 1 developments require mandatory EIA, and Part 2 developments have national thresholds set, above which projects require mandatory EIA. If a development is considered within a class in Part 2 but does not exceed any given threshold(s), a process known as 'Screening' must be undertaken.

The overriding consideration in determining whether a project should be subject to EIA is the likelihood of significant environmental effects. Significant effects may arise by virtue of the type of project, the scale or extent of the project and the location of the project in relation to sensitive environments.

The proposed development falls within the definition of Environmental Infrastructure in the 7th Schedule of the Planning and Development Act 200(as amended) and exceeds the threshold of 10,000PE prior to any upgrade works. Therefore, it is automatically 'screened in' for an EIA.

3.3 Scoping

The scoping study is a key element of the EIA process and signifies commencement of the development of an EIAR. 'Scoping' is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information. It is defined in the EC Guidance as:

"determining the content and extent of the matters which should be covered in the environmental information to be submitted in the EIAR"

As an early-stage tool scoping will provide relevant information on the following issues which will need to be addressed in the preparation of the EIAR:

- Likely significant impacts of the project, its construction and operation;
- Scope of the study required for each of EIAR topic;
- Data and information available and additional surveys and investigations required;
- Methods and criteria to be used in predicting and evaluating impacts;
- Alternatives and mitigation measures to be considered as part of the project;
- Content, structure, and format of the EIAR;
- Legal requirements; and any additional
- Consultation requirements.

Scoping ensures that potential environmental impacts are identified at an early stage in the design process, thereby minimising the need for subsequent design amendments and that environmental protection and sustainability are key factors in the project design. It is not the purpose of this Scoping Document to undertake detailed measurement, calculation or assessment of likely impacts. The assessment and mitigation of impacts will be carried out by the competent experts and the project team during the parallel process of designing the development and preparing the EIAR. It should be noted that scoping does not end when the current scoping stage is complete but is a continuing ongoing activity, particularly when new issues or information emerges.

3.4 Consultation

With the publication of this Scoping Document, Irish Water will commence a non-statutory consultation period with the public, interested parties, and prescribed bodies for the proposed development. Prescribed bodies and stakeholders have been identified as part of a Stakeholder Audit outlined in section 3.4.1.

There will be one round of non-statutory (public) consultation (6–8 weeks in duration), held in summer 2022, dates to be confirmed. Initiation of the consultation period will be marked with the launch of a project web page. Information will be published such as a project overview, works requirements, project benefits and relevant reports. Following this, IW will invite public participation by way of an online information event. Design details and environmental elements of the project will be presented, followed by a questions and answers session with the project team. Details of the information event will be advertised in local and regional newspapers and social media. There will also be an email address where stakeholders and interested parties can submit queries for the duration of the 6-8 week period. All submissions (responses, comments, and recommendations) will be logged and compiled in a Consultation Report. The report will be acknowledged in the EIA and will inform the final scope of the EIAR. Both reports will be submitted with the planning application and examined under statutory consultation , in respect of a final planning decision.

A number of communications tools and channels will be utilised including:

- A Frequently Asked Questions (FAQ) document.
- Project page on the Irish Water website.

- Media advertisements through regional newspaper.
- Press release to regional newspapers.

3.4.1 Terms of Reference of the Consultation

Irish Water is posing the following questions for consideration on the Scoping Report for the EIAR and NIS. Respondents can use these for direction or make their own submission on the Scoping Report.

- The proposed methodology for the assessment of environmental impacts is set out in the Scoping Report of the EIAR and NIS. Are there any other factors that you think should be considered in assessing the environmental impact of the project?

- Are there any environmental issues that should be considered in the preparation of the EIAR that have not been included in the Scoping Report?
- Are there any additional or alternative methodologies that should be used to assess environmental impacts?
- Are there any other projects in the locality that should be considered in the EIAR that may have cumulative (or 'in-combination') impacts with the Castletroy WwTP Upgrade project?

3.4.2 Stakeholder Audit

A Stakeholder Audit has been carried out to identify key stakeholders and prescribed bodies. These are statutory and non-statutory bodies whom applicants are obliged to notify under the Planning and Development Regulations in respect of applying for a proposed development. A review of key messaging and the approach employed for communicating with each stakeholder group will be carried out at specified stages throughout the project. Table 3-1 provides a non-exhaustive list of stakeholders and prescribed bodies will be included in the consultation process. This table will be maintained and updated throughout the project.

Table 3-1: Stakeholders and Prescribed Bodies

Internal and Immediate	
IW Asset Delivery	Local Authority PM
Regional Lead	LCCC WW Operations
IW Capital Projects	University of Limerick
IW WW Operations	IW Shared Services
Environmental Authorities	
EPA	Shannon River Basin District Authorities
OPW	NPWS
WFD Competent Authority	Inland Fisheries Ireland
Minister for Agriculture, Food and the Marine	Department of Communications, Climate Action and Environment
Other State & Semi-State Bodies	
Food Safety Authority of Ireland (FSAI)	Birdwatch Ireland
Bord Iascaigh Mhara (BIM)	County Developments Boards
An Taisce	Fáilte Ireland
The Heritage Council	National Parks and Wildlife Service
Transport Infrastructure Ireland	An Bord Pleanála
IDA	
Other interested Parties	

Landowners	Local pressure groups.
Local Business interests	Major Industries
Community groups including amenity users	Major Developments

3.4.3 General Public and Interested Parties

Irish Water will engage with the general public and interested parties throughout the focussed period of public consultation. A number of channels will be used to publicise the consultation including a newspaper advertisement, engagement with the media, an electronic mail-out to identified project stakeholders and online through the Irish Water website and social media channels.

To facilitate participation in the consultation, Irish Water is holding a public information event where the project team will be available to meet with the public and all interested stakeholders. The information event will provide an opportunity for stakeholders to have their say on the project and to get further information about the EIAR and NIS.

All feedback submitted during this non-statutory public consultation period will be recorded by the project team and published in the project's Stage 3 Consultation Report. The consultation report will be made available on the project website for public viewing and download.

All submissions received as part of the consultation will be reviewed by the project team and the competent experts will prepare their individual sections of the EIAR taking into consideration any issues raised in the feedback provided during the consultation period.

3.4.4 Making a submission

Irish Water is inviting submissions from the public and interested parties on the issues and methodologies to be considered as part of the EIAR and NIS development. All submissions received on the Scoping Report will be considered by the project team as part of the EIAR and NIS process.

Submissions can be made by email to castletroywwtp@water.ie

3.5 Consideration of Alternatives

As detailed in the EIA Directive – Annex IV, Article 2 of Directive 2014/52/EU the main alternatives to the proposed development considered by the proposer, i.e. Irish Water, must be presented in the EIAR. The following is contained in the EIA Directive regarding the consideration of alternatives to be included in the EIAR:

"A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

The presentation and consideration of the various reasonable alternatives investigated by the applicant is an important requirement of the EIA process. These indicate the main reasons for choosing the project that is being submitted for consent describing how environmental considerations were considered when selecting between those alternatives.

In the context of the Castletroy WwTP it should be noted that the upgrade design was informed by a detailed Feasibility Study Report (FSR). The report was developed by JB Barry and Partners to inform Irish Water of the most cost-effective solutions available, that would also ensure compliance with the requirements of the Urban Waste Water Treatment Directive and Waste Water Discharge Authorisation

(as specified by Irish Water for each project). These solutions also ensure the provision of appropriate treatment capacity , as per relevant Irish Water polices.

Alternatives can take various forms, all of which will be examined. At the highest level, alternatives may consider different locations or layouts. At the more detailed level, alternatives tend to merge into mitigation measures where specific design options are taken, or construction methods adopted, to avoid, reduce or offset environmental impacts. Many broad types of alternatives can be considered:

- "Do nothing" option
- Alternative locations
- Alternative layouts
- Alternative designs
- Alternative storage methodologies and
- Alternative mitigation measures

SECTION 4: Proposed Scope of the EIAR

4.1 Scoping Categories

The EIAR will follow the guidelines contained in the EPA publication "Guidelines on information to be contained in Environmental Impact Assessment Report, Draft, May 2017". The scoping of an EIAR is concerned with identifying those aspects of the environment where there is an interaction, either direct or indirect, positive or negative, with the project and as a consequence there are potential effects, which need to be assessed.

The aspects of the environment to be considered are as follows:

- Population and Human Health;
- Biodiversity;
- Water Quality;
- Land and Soils and Hydrogeology;
- Air Quality/Odour and Climate;
- Noise and Vibration;
- Air and Noise;
- Traffic and Transport;
- Archaeology and Cultural Heritage;
- Waste Management;
- Material Assets;
- Landscape and Visual Amenity;
- Major Accidents and Natural Disasters; and
- Cumulative effects.

This section of the document considers each of the above environmental factors in turn and:

- Receiving Environment;
- Potential Impacts;
- Data and Surveys;
- Assessment Methodology; and
- Mitigation.

4.2 Population and Human Health

4.2.1 Receiving Environment

The likely impacts on human beings will be addressed in this section of the EIAR, including land use, economic activity, employment, settlement patterns, social patterns, and human health (considered with reference to other headings such as air quality and climate, noise and vibration, and water).

Located in the Electoral Division of Ballysimon, the subject site is approximately 3km east of Limerick City. The area is largely urban in nature and has experienced significant population and employment growth over the last 20 years owing to the presence of the University of Limerick Campus, and the 156-hectare National Technology Park at Plassey.

4.2.2 Potential Impacts

Need for Scheme

The existing plant is aging, with several items of equipment key to the treatment process in need of refurbishment or replacement. The plant is at its design capacity limitation and does not include storm

storage. The WwTP needs to be upgraded to reflect modern requirements and better cater for existing committed and future loads. If the proposed development does not proceed, water quality may be impacted and future working and resident populations will be uncatered for. As such, there are health, economic and social impacts arising from the 'do-nothing' scenario.

Users of the River Shannon

The waters of the River Shannon adjacent to the WwTP include leisure users related to boat, rowing, canoe and swimming clubs and activities, many of which are based out of the University of Limerick Boat House. The potential for these uses to be impacted during the construction phase will be reviewed. In the absence of a construction methodology for the works in question at this point, the extent of any such impacts is an unknown.

Economic Activity

During the construction stage of the proposed scheme potential negative impacts and disturbance to the community are likely to occur from construction, increases in ambient noise and dust levels, and possible traffic impacts. There will also be some potential positive benefits for local businesses.

During the operational phase, economic and social activity in the local and wider areas should be positively impacted by the proposed scheme.

Employment

The jobs associated with the construction and operational phases will be assessed and presented in the EIAR. It is anticipated that employment opportunities will arise during the construction phase. Jobs will be created on the construction site and indirectly through suppliers

An increase in wastewater treatment capacity during the operational phase will directly support future employment growth in the area.

Settlement Patterns

Settlement patterns are likely to be positively impacted for the area by the ability to implement the Limerick Development Plan, Castletroy Local Area Plan, support strategies, policies, and initiatives.

Social Patterns

Social patterns are likely to be positively impacted by the project. There are no anticipated impacts arising from the project, however, an assessment will be carried out as part of the EIAR.

Human Health

An assessment will be undertaken on potential risks or nuisances that may be caused to human beings during the construction and operational phases. The findings of the aforementioned air quality, water quality, traffic, noise, and vibration assessments will be reviewed and considered as part of this assessment.

4.2.3 Assessment Methodology

A desktop study will be carried out to establish the baseline associated with economic activity, employment opportunities, settlement, and social patterns. Noise, vibration, and dust generation during construction will be assessed in the air quality and noise and vibration chapters. Positive impacts and the improvement to quality of life due to the scheme will be discussed in the EIAR.

4.2.4 Mitigation Measures

It has been determined that there are likely to be potential impacts on population and human health during both the construction and operational phases of the scheme. Therefore, these aspects will be considered further in the EIAR, and any subsequent mitigation measures will be identified.

4.3 Biodiversity

4.3.1 Receiving Environment

Castletroy WwTP is located on the south bank of the Lower River Shannon, which is designated under the Lower River Shannon SAC, as shown below in Figure 4-1. The River Shannon and River Fergus Estuaries SPA is located 3.8km over land and c. 8.2km hydrologically downstream of the WwTP. The Fergus Estuary and Inner Shannon, North Shore pNHA, and Inner Shannon Estuary, South Shore pNHA are located approx. 7km downstream of the WwTP. The potential for impacts on these designated sites and their relevant Qualifying Interests/ Special Conservation Interests will be assessed.

An ecological multidisciplinary walkover survey was conducted at the site in July 2020. The following habitats were recorded at the site:

WwTP buildings, infrastructure, and paved roads categorised as Buildings and artificial surfaces (BL3) (J.A. Fosset, 2000) Hard standing areas of infrastructure categorised as Spoil and bare ground (ED2) and Recolonising bare ground (ED3).

The site boundaries comprise a fence with an outer Treeline (WL2). Other areas within the WwTP boundary comprise Amenity grassland (GA2) and Scattered trees and parkland (WD5). Unmanaged areas close to the boundary to the north and northeast are categorised as Dry meadows and grassy verges (GS2), Wet grassland (GS4) and Scrub (WS1), dominated by spear thistle (Cirsium vulgare). A Drainage ditch (FW4) surrounds the entire site, within boundary fencing to the south and west, and adjacent to but outside of the northern and eastern boundary fencing.

The built-up areas comprise approx. 1.4 ha of the site, while grassland areas comprise approx. 1ha (0.5ha of amenity grassland and 0.5ha of wet grassland/dry meadows and grassy verges and scrub).

As described in section 1.5, the Third Schedule invasive species, Giant Hogweed (Heracleum mantegazzianum) and Himalayan Balsam (Impatiens glandulifera) are present on the site, with most growth found around the peripheries.

A badger sett, consisting of at least two entrances, is present on the southern boundary of the site. This sett was deemed active during 2020 surveys.

The WwTP is located on the south bank of the Lower River Shannon SAC, which is designated for the presence of otter and other qualifying interests. It is likely that the section of the Shannon adjacent to the WwTP is used by otter. There is potential for the presence of otter breeding sites along the riverbank. The river is also designated for the presence of QI species Atlantic Salmon, River Lamprey, Sea Lamprey, Brook Lamprey and Freshwater Pearl Mussel.

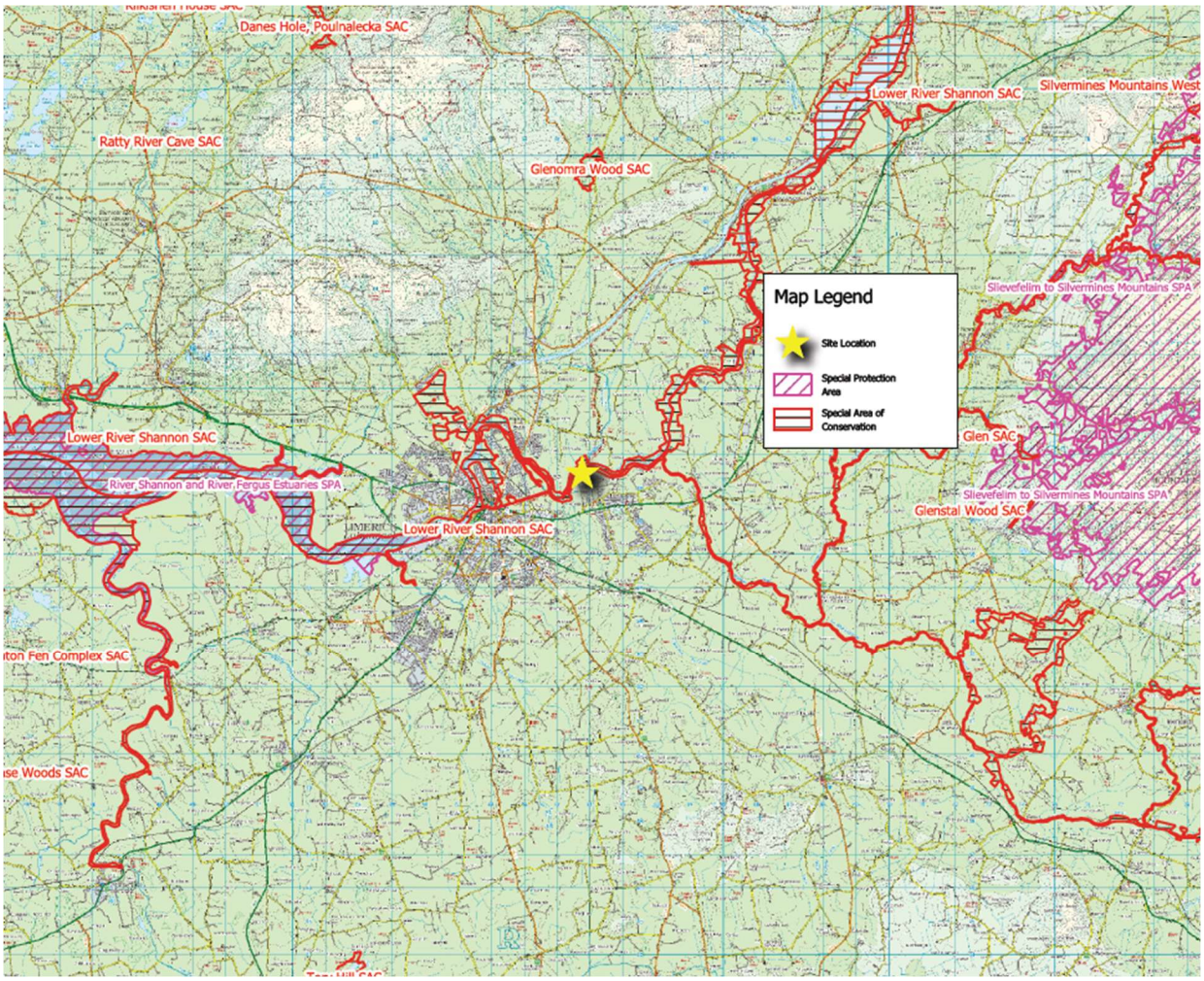


Figure 4-1: Special Protection Areas and Special Areas of Conservation in relation to proposed site

4.3.2 Potential Impacts

The potential impacts to biodiversity identified at this stage are summarised as follows:

During construction

Deterioration of water quality

Water quality is discussed in section 4.4. The potential for impact on water quality during construction, resulting in impacts on all downstream aquatic fauna and habitats, including QIs of Lower River Shannon SAC and SCI habitats and species of River Shannon and River Fergus Estuaries SPA exists, as well as general biodiversity of the area.

Disturbance/mortality of badger

The badger sett within the site is likely to be an active sett. In the absence of mitigation, there is potential to cause disturbance of badger during construction activities. There is also potential for tunnel collapse and mortality of badger as a result of construction works.

Disturbance of otter

Due to the proximity of the site to the River Shannon, there is potential for disturbance of QI species otter, including potential breeding otter, during construction activities on the site.

Spread of invasive species
In the absence of mitigation, there is potential for further spreading of the existing invasive species on the site (Giant Hogweed and Himalayan Balsam) during construction activities, as a result of vegetation clearance, tracking machinery, excavations and removal of soil. The invasive species may be spread within the site or to additional sites elsewhere through dispersal of seeds or movement of contaminated soil. Seeds of both species are capable of remaining viable within the soil seed bank for some time.

Habitat loss
A potential impact to biodiversity was identified via habitat loss during construction. Where there is a need for the removal of trees to accommodate works, there is a potential for net habitat loss and faunal habitat loss or disturbance.

During operation

Water quality

The potential for impacts on water quality during operation of the development will be considered. The potential for impacts on downstream habitats and species as a result of same will be considered. It is anticipated that there will be a positive impact on water quality during operation as a result of the proposed development.

Invasive species
In the absence of mitigation and an Invasive Species Management Plan, there is potential for continued spread of Giant Hogweed and Himalayan Balsam within the WwTP and the wider area during operation of the site. If properly managed during construction with an eradication plan, during operation this risk should be gone or diminished. However, at this stage this risk cannot be definitively ruled out.

4.3.3 Data and Surveys

No instream works or bankside works are proposed for the development. Therefore, it was not considered necessary to carry out surveys of aquatic species and habitats. The following surveys are proposed:

Desk studies

A desktop review will be undertaken of records of biodiversity within the site. This will include a review of records available from the National Parks and Wildlife Service (NPWS) including Article 17 Reports, NPWS Article 17 Metadata and GIS Database Files (2019), Site-Specific Conservation Objectives, published reports, and shapefile data (GIS) for designated sites, protected species, and Annex I habitats. There will also be a review of records of fauna and flora in the area from the National Biodiversity Data Centre, and water quality/fisheries data available from the EPA, Water Framework Directive data and Inland Fisheries Ireland. A review of available data and information on the development site will also be undertaken.

Multidisciplinary walkover survey

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological baseline conditions are those existing in the absence of proposed activities (CIEEM, 2018). Surveys of vegetation will be completed within the optimum period for vegetation surveys/habitat mapping, i.e. April to September. Habitats will be classified in accordance with the Heritage Council's 'Guide to Habitats in Ireland' (J.A.Fosset, 2000). Habitat mapping will be undertaken with regard to guidance set out in 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2011). The multi-disciplinary survey will include identification of any protected flora and fauna within/adjacent to the site in line with NRA *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna* on National Road Schemes (NRA, 2009). Further details on badger and otter surveys are found below.

During the multidisciplinary walkover survey, the trees within the proposed development site boundary will be assessed for their suitability for bats according to Collins, J. (ed.) (2016) which provides a grading protocol for roosting habitats and for commuting and foraging areas. Suitability categories are divided into *High, Moderate, Low* and *Negligible*.

Invasive species survey

Giant Hogweed and Himalayan Balsam, which are listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015), have previously been identified on the site. A follow-up invasive species survey of the site will be carried out within the optimal time of year for vegetation surveys (April- September). The wastewater treatment works site will be systematically walked and surveyed for the presence of invasive plant species. Special attention will be paid to the riverbank where accessible, drainage ditches and disturbed ground. A GPS coordinate will be taken for all invasive plants encountered and these will be digitized on a detailed map using GIS. An up-to-date Invasive Species Management Plan will be provided which will provide details of the current status of invasive species within the site, as well as the appropriate method for treatment of invasives during and post-construction.

Badger survey

As there is a known badger sett within the site, a follow-up badger survey will be carried out by searching for signs of badger, including additional sett entrances, prints, latrines, foraging signs or sightings, within and adjacent to the WwTP site boundary Setts will be classified as per the convention set out in NRA (2009) (i.e. main, annexe, subsidiary, outlier). The badger survey will be conducted adhering to best practice guidance (NRA, 2009) and will follow the 'Guidelines for the Treatment of Badger Prior to the Construction of National Roads Schemes' (NRA, 2006a) and CIEEM best practice competencies for species surveys (CIEEM, 2013).

Otter survey

Otter surveys will be conducted as per NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes) and will involve a search for all otter signs e.g. spraints, scat, prints, slides, trails, couches and holts. In addition to the width of the rivers/watercourses, a 10m riparian buffer should be considered to comprise part of the otter habitat (NPWS 2009). The survey will follow the guidance as set out in NRA (2008) 'Guidelines for the Treatment of Otters Prior to the Construction of National Roads Schemes' and CIEEM best practice competencies for species surveys (CIEEM, 2013). The river bank will be surveyed 150m upstream and downstream of the WwTP.

4.3.4 Assessment Methodologies

The assessment methodology will be based primarily upon the National Road Authority (NRA) (now named Transport Infrastructure Ireland) Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev 2 (NRA, 2009). Although these survey methodologies relate to road schemes, these standard guidelines are recognised survey methodologies that ensure good practice regardless of the development type. As per the Irish Water Biodiversity Action Plan, no net loss of biodiversity must be achieved and quantified. The methodology for assessment and quantification of biodiversity net loss/gain will be as per CIEEM and CIRIA most recent guidelines as listed below. Irish Water's guidelines on invasive species and landscape treatment will be consulted and implemented as required. In addition, the following guidelines will be consulted in the preparation of the Biodiversity Chapter to provide the scope, structure and content of the assessment:

- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater and Coastal (CIEEM, 2018).
- Draft Revised guidelines on the information to be contained in Environmental Impact Statements (EPA, 2017).

- Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment. Department of the Environment, Community and Local Government DoEHLG (2013).
- Guidelines for assessment of Ecological Impacts of National Road Schemes, (NRA, 2009).
- Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2009).
- Environmental Assessment and Construction Guidelines (NRA, 2006).
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (Environmental Protection Agency (EPA), 2003).
- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002).
- European Commission Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Environmental Protection Agency (EPA) '*Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*' (August 2017).
- Biodiversity Net Gain. Good Practice Principles for Development. A Practical Guide (CIEEM/CIRIA 1019).
- Irish Water Biodiversity Action Plan (2021).
- Irish Water Landscape Treatment Guidelines (2018).
- Irish Water Invasive Species Management Guidelines.

In addition to the above, the following legislation applies with respect to habitats, fauna and water quality in Ireland and has been considered in the preparation of this report:

- The International Convention on Wetlands of International Importance especially Waterfowl Habitat (Concluded at Ramsar, Iran on 2 February 1971)
- S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009 and S.I. No. 722 of 2003 European Communities (Water Policy) Regulations 2003 which give further effect to EU Water Framework Directive (2000/60/EC).

The following legislation applies with respect to non-native species:

- Regulation 49 and 50 of European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011).

Determining importance of ecological receptors

Ecological evaluation follows a methodology that is set out in Chapter 3 of the 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009). The habitats and species within and adjacent to the works site will be evaluated in accordance with the criteria developed by the NRA (2009b), which classifies sites in terms of their ecological importance, *i.e. 'international importance'*, '*national importance'*, '*county importance'*, '*local importance (higher value)*' or '*local importance (lower value)*'.

Any ecological receptors that are determined to be of Local Importance (Higher Value), County, National or International importance following the criteria set out in NRA (2009) are considered to be Key Ecological Receptors (KERs) for the purposes of ecological impact assessment if there is a pathway for effects thereon. Any receptors that are determined to be of Local Importance (Lower Value) are not considered to be Key Ecological Receptors.

Characterisation of impacts

The proposed development will result in a number of impacts. The ecological effects of these impacts will be characterised as per the CIEEM 'Guidelines for Ecological Impact Assessment in the UK and Ireland (2018). The headings under which the impacts are characterised follow those listed in the guidance document and are applied where relevant. A summary of the impact characteristics to be considered in the assessment is provided below:

- **Positive or Negative.** Assessment of whether the proposed development result in a positive or negative effect on the ecological receptor.
- **Extent.** Description of the spatial area over which the effect has the potential to occur.
- **Magnitude** to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.
- **Duration** is defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species.
- **Frequency and Timing.** This relates to the number of times that an impact occurs and its frequency. A small-scale impact can have a significant effect if it is repeated on numerous occasions over a long period.
- **Reversibility.** This is a consideration of whether an effect is reversible within a 'reasonable' timescale. What is considered to be a reasonable timescale can vary between receptors and is justified where appropriate in the impact assessment section of this report.

Determining the significance of effects

The ecological significance of the effects of the proposed development will be determined following the precautionary principle and in accordance with the methodology set out in Section 5 of CIEEM (2018).

For the purpose of EIA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local (CIEEM, 2018).

When determining significance, consideration is given to whether:

- Any processes or key characteristics of key ecological receptors will be removed or changed;
- There will be an effect on the nature, extent, structure and function of important ecological features;
- There is an effect on the average population size and viability of ecologically important species; and
- There is an effect on the conservation status of important ecological habitats and species.

The EPA draft guidelines on information to be included in Environmental Impact Statements (EPA, 2017) and the *Guidelines for assessment of Ecological Impacts of National Road Schemes*, (NRA, 2009) will also be considered when determining significance. The terminology used in the determination of significance will follow the suggested language set out in the Draft EPA Guidelines (2017).

In addition, as per TII (NRA, 2009) and CIEEM (2019) best practice guidelines, the following key elements will also be examined when determining the significance of effects:

- The likely effects on 'integrity' should be used as a measure to determine whether an impact on a site is likely to be significant (NRA, 2009).
- A 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives (CIEEM, 2019).

4.3.5 Mitigation Measures

During construction

Disturbance of badger

Due to the presence of the badger sett onsite at the southern boundary, works will have to be carried out in line with *'Guidelines for the Treatment of Badger Prior to the Construction of National Roads Schemes'* (NRA, 2006a).

This guidance document stipulates the following:

- In general, a survey of setts within 50m of the scheme (150m where piling or blasting will be undertaken) is required no more than 10-12 months in advance of construction.
- Badger sett tunnel systems can extend up to c. 20m from sett entrances. Therefore, no heavy machinery should be used within 30m of badger setts.
- Lighter machinery (generally wheeled vehicles) should not be used within 20m of a sett entrance.
- Light work, such as digging by hand or scrub clearance should not take place within 10m of sett entrances.
- During the breeding season (December to June inclusive), none of the above works should be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts.
- Following consultation with the NPWS and badger experts, works closer to active setts may take place during the breeding season provided appropriate mitigation measures are in place, e.g. sett screening, restricted working hours, etc.

If the badger sett is deemed to be active, a buffer of 50m around the sett will apply during the breeding season December to June (inclusive), wherein no works may take place. This buffer will have to fenced or roped off with clear signage indicating that no access by machinery is allowed. This buffer may be reduced to 30m outside of the badger breeding season.

If works are required within the specified buffer distances and cannot be avoided, consultation with the NPWS will be required in order to obtain recommendations on mitigation, or possible badger exclusion. Works close to badger setts may only be carried out in consultation with the NPWS and under supervision of an ecologist.

Disturbance of otter

If an otter holt is found within 150m of the development site, works will need to be carried out in line with NRA (2008) *'Guidelines for the Treatment of Otters Prior to the Construction of National Roads Schemes'.* Derogation licences from the NPWS are required for any works likely to cause disturbance (e.g. piling and blasting) to active breeding holts (when present within c.150m of a development).

- A pre-construction survey should be conducted no more than 10-12 months in advance of construction. This will ensure that there will be sufficient time to comply with all licensing requirements and that the necessary actions can be undertaken to protect otter populations prior to the commencement of construction
- No works should be undertaken within 150m of any holts at which breeding females or cubs are present. Following consultation with NPWS, works closer to such breeding holts may take place - provided appropriate mitigation measures are in place, e.g. screening and/or restricted working hours on site.
- 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.

Biosecurity

Mitigations will be required with regard to the invasive species identified onsite: Himalayan balsam and Giant Hogweed. The following mitigations will apply:

- A minimum buffer of 5m will apply from all identified areas of invasive species wherein access will be prohibited. This buffer will need to be fenced or roped off with clear signage.

- If excavations/works are required within this buffer, a licence will need to be obtained from the NPWS for the excavation and removal of plants and contaminated soils, to a designated and licenced waste facility. These works will need to occur on the supervision of an ecologist.
- Any material imported to the site should be screened for invasive species by a suitably qualified ecologist before transportation to the site.
- All machinery should be thoroughly cleaned down prior to arriving on the site and prior to leaving the site to avoid the potential spread of invasive species from elsewhere.

Habitat loss

- Vegetation to be removed should be done so in line with the provisions of the Wildlife Act, outside of the bird nesting season.
- Trees to be removed which are identified as having Moderate-High suitability to support roosting bats should be inspected for bats before felling.

During operation

Biosecurity

An Invasive Species Management Plan should be devised in order to set out a regime for control and eventual eradication of invasive species on the site during operation of the WwTP.

4.4 Water

4.4.1 Receiving Environment

The study area is located within the Shannon River Basin District at the junction of the Lower River Shannon and the mouth of the Blackwater River (Clare). The Lower River Shannon flows from Lough Derg and at the Parteen Weir it branches into the Old River Shannon channel and the Ardnacrusha headrace. The hills north of Limerick City are drained by the Blackwater (Clare) River which flows under the Ardnacrusha head race before joining the Old Shannon upstream of Limerick Dock, in the region of the study area.

The outfall point from the WwTP is approximately 3km upstream of Limerick Dock where the River Shannon transitions into the Shannon Estuary that extends to the Atlantic Ocean. The principal surface water bodies within the study area are the Lower River Shannon, the River Blackwater, Limerick Dock, Mulkear River and the River Groody. Figure 4-2 displays the point where the river becomes transitional water, and the location of the proposed development in relation to the various waterbodies.

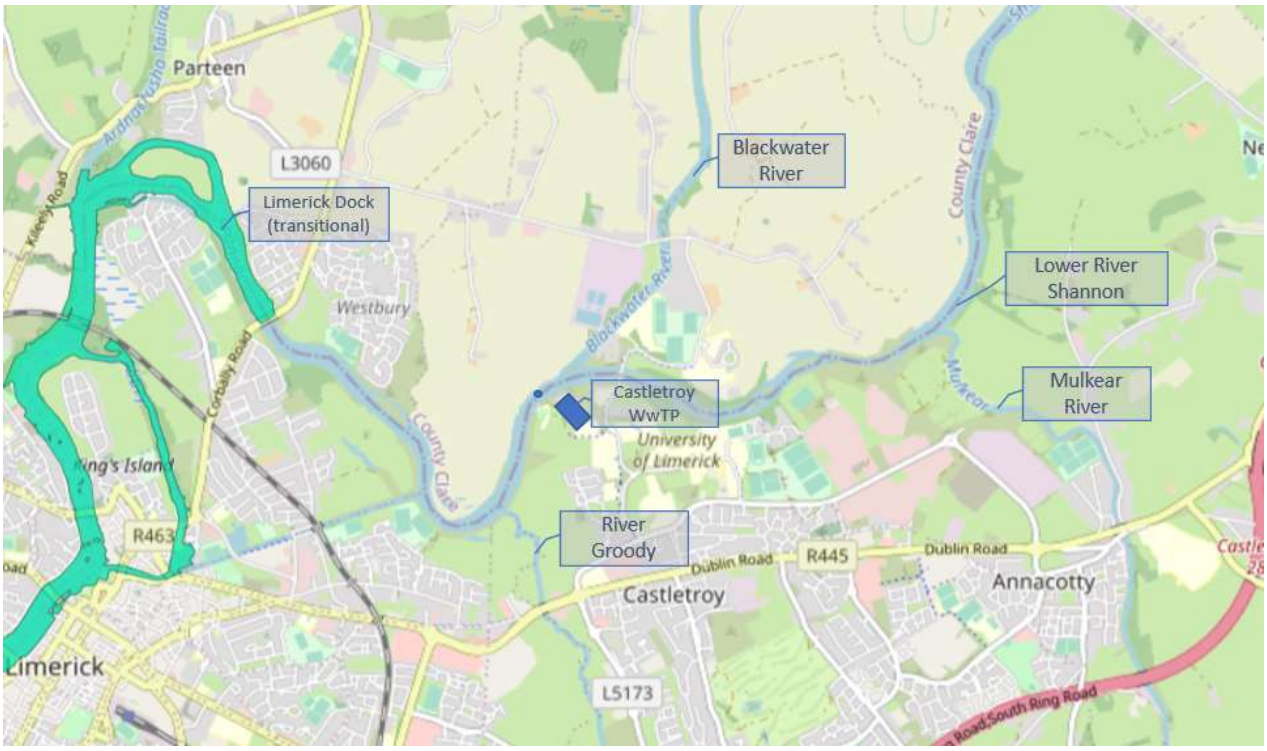


Figure 4-2: Location of WwTP in relation to surrounding waterbodies

The study area is designated on ecological grounds as a Special Area of Conservation (SAC); applicable SAC is titled 'Lower River Shannon' with Site Code: 002165. It is a large site that encompasses the lower reaches of the River Shannon extending from just south of Lough Derg at its eastern end to a line drawn from Loop Head to Kerry Head at the west. There are reaches of six main rivers in the Lower River Shannon SAC: The River Shannon (between Killaloe and Limerick), the Cloon, the Fergus, the Mulkear, the Maigue and the Feale. The site is selected for 14 habitats listed in Annex I of the Habitats Directive and seven species in Annex II. The Shannon reach is considered an area of particularly high conservation value as it is influenced by the tide and the catchment is dominated by Carboniferous limestone geology.

The Water Framework Directive (WFD) status of the Shannon, Blackwater and Mulkear rivers is "Unassigned". Each was assigned a risk score (2008) of 1a, (at significant risk of failing objectives of the WFD) due to the effect of human activities. The WFD status of Limerick Dock is "Good" and described as "unpolluted/slightly polluted". Latest river Q values represent near real time river ecology monitoring results. Values for the three rivers in the study area are as follows;

- Shannon – 3-4/Moderate
- Mulkear – 4-5/High
- Blackwater – 4/Good
- Groody – 3/Moderate

A Stage 2 flood risk assessment was undertaken as part of the planning process. It identified that a portion of the existing site lies within Flood Zone A, where the probability of flooding is highest, with a chance greater than 1% AEP or a return period of 1 in 100 years. Historic flooding has also been recorded at the site, including most recently in 2009, when unprecedented torrential rainfall caused the River Shannon to burst its banks.

It should be noted that impacts on groundwater and hydrogeology will be assessed in the Land and Soils chapter 4.5.

4.4.2 Potential Impacts

The construction phase of the development poses a potential negative impact on the water quality of the River Shannon in terms of water run off associated with construction activities. This is due to the proximity of the site to the River Shannon and the presence of an onsite drainage ditch. This bears significance for the Lower River Shannon SAC, River Fergus Estuaries SPA and downstream pNHAs.

The construction stage of the proposed development includes excavations at depths of up to 6 m, with additional piling of structures for structural support. As a consequence, there may be some pumping of water found in excavations, which will be discharged into the site drainage network, and will ultimately be discharged to the receiving environment. The extent of any interaction with the surface water environment is thus comparable to general construction activities.

Potential impacts from the proposed development on water quality in the construction phase may include;

- Mobilisation of nutrients and suspended solids during the construction phase may impact aquatic habitats and species;
- Deterioration the water quality of surface waters due to contaminated runoff from the site or accidental spillages and fugitive emissions; and/or
- Spread of alien invasive species present within the study area.

The proposed development will change the existing final effluent discharge which will have potential impacts in the operational period in the following respects:

- The volume of treated discharge will increase;
- The plant will be operating within its PE capacity limitations and therefore the final quality of the final effluent will be improved;
- Flow rates during heavy rainfall events will be regulated; and
- There will be less untreated stormwater pumped into the river as the storm tank will retain stormwater until such a time it can be pumped into the treatment process.

4.4.3 Data and Surveys

The primary objective of the assessment is to determine the appropriate final effluent quality standards compatible with the local environmental objectives. Potential Impacts during the construction phase will also be investigated in the detailed assessment. The data necessary to carry out the assessment will comprise:

- Sampling for baseline water quality upstream and downstream of the WwTP discharge points SW002& SW003 in the River Shannon (subject to further assessment);
- Current water quality, based on available data gathered by statutory monitoring bodies;
- Current final effluent quality, based on available data gathered by the existing facility;
- Future final effluent quality, based on the detailed design which complies with discharge standards set out in the current Wastewater Discharge Authorisation; and
- An inspection of the construction methodology.

4.4.4 Assessment Methodology

The assessment of the potential impact arising from the changes to the final effluent discharge from the WwTP, will be assessed by reference to the following:

- The current water quality of the receiving waters relative to their environmental objectives,
- including recreational uses;
- The impact of the current final effluent discharge on the receiving waters, including any impact arising from the plant being overloaded;
- The impact of the future final effluent discharge on the receiving waters at maximum plant loading;

- A DAP model will provide information to quantify overflow events following the installation of the new storm tank; and
- It will be assessed whether a sustainable drainage system (SuDS) approach is required to manage additional storm water runoff resulting from the proposed development.

4.4.5 Mitigation Measures

Where significant impacts are identified, recommended mitigation measures to reduce/remedy the impacts will be described. Mitigation measures during the construction and operational phases will be provided in the EIAR. A monitoring programme to assess the effectiveness of the mitigation measures will be developed during the project. The residual impacts and cumulative impacts with other developments will be assessed.

Standard construction mitigation measures include the production of environmental management plans and the adoption of measures, including the bunding of any fuels or chemicals, to prevent spillages into excavations or the drainage network. In addition, the management of suspended solids present in water pumped from excavations, is also a standard construction activity, using settling basins and interceptors. With correct mitigation measures in place, it is expected impact on surface water during the construction phase of the project will be minimal.

The range of mitigation measures required in order to protect water quality during construction is likely to include at least the following.

- Excavation depths to be kept to a minimum specified amount;
- Appropriate and licenced waste disposal;
- Erection of a silt fence around the perimeter of the site, within the inside perimeter of the drainage ditch, to protect from any potential sediment laden surface water run-off;
- Appointment of an environmental officer to monitor the functionality of the silt fence. The environmental officer will also be responsible for overseeing that all mitigation measures are adhered to;
- Cessation of works in the event of silt fence failure;
- If excavations require pumping out, pumped waters to be collected in a tanker and disposed off site to a designated waste facility, no discharge to the River Shannon; and
- Maintenance and inspection of plant, and competent personnel to supervise and carry out refuelling, at a minimum distance of 50m away from the watercourse.

4.5 Land & Soils

4.5.1 Receiving Environment

This chapter of the EIAR, as per the 2017 EIAR Guidelines, will address the likely significant impacts on land [e.g., land take], soil [e.g., organic matter, erosion, compaction and sealing], agricultural capability, geology, and hydrogeology during the construction and operation of the proposed development. It should be noted that land use and land take will be addressed in the chapter on Material Assets.

As outlined previously, Castletroy WwTP is located to the south of the River Shannon and east of Limerick City.

The GSI maps indicate that the site is underlain by Undifferentiated Visean Limestone. The nearest karst feature identified on the mapping is 8.5km from the proposed works. There are no geological heritage sites near the proposed works. The underlying soils comprise of estuarine silts and clays, gravels derived from limestones are identified as being outside the site boundary

A site investigation report has indicated that the site is underlain by topsoil overlying made ground which ranges from 1.7m to 2.5m bgl which is overlying very soft to soft peat & silt to depths of 4.5 to 5.0m. This is underlain by loose to medium dense gravels with limestone rock at 10.4 to 11m bgl. The majority of the groundwater strikes were encountered in the gravels.

The site-specific information available indicates the vulnerability of the underlying aquifer is "low". New infrastructure which would be constructed both in existing buildings and tanks and within green areas of the existing site are defined as 'Low Vulnerability'. There is no evidence of contaminated soils or unsuitable soils that will require removal.

4.5.2 Potential Impacts

There are no discharges to or abstractions from groundwater as part of the proposed operation.

Potential impacts associated with the construction and operation of the proposed development are as follows.

- The excavation of potentially contaminated underlying ground and how it will be handled and disposed or recovered (no evidence of contaminated soils);
- Surplus soil arising from earthworks and how it will be handled and disposed or recovered;
- Installation of sheet piles;
- Risk of contaminating soils during construction activities;
- Impact on the quality of sediments over the operational life of the scheme.
- Contamination of the underlying aquifer due to accidental spillages and fugitive emissions.
- Potential sterilising of future extractable mineral reserves.
- The EPA radon mapping shows that the site is not located in high radon area. In addition, there are no significant radiation sources associated with the project.

At this stage, there are no significant impacts anticipated on the land, soils and hydrogeological environments at the proposed site.

4.5.3 Data and Surveys

There are no recorded significant groundwater users within 1 km of the proposed development site. However, a well survey will be undertaken to confirm this. A site investigation programme involving drilling of exploratory holes has been carried out. The information gathered from this will augment the currently available subsoil information going forward in the detailed assessment. Records of composition of made ground on the site and Groundwater flow direction will be examined and additional ground investigations undertaken to determine the waste acceptance classifications (WAC) of spoil arising.

4.5.4 Assessment Methodologies

The methodology for assessment of the impacts on the soil and geology will be undertaken in accordance with the recommendations in Geology in Environmental Impact Statements – A Guide from the Institute of Geologists of Ireland (2002).

Potentially contaminated land will be characterised, and any other potential risks will be identified.

The impacts on groundwater will be assessed using the source - pathway - receptor model. A Conceptual Site Model will be prepared for the site to assess the likelihood of an impact on groundwater during construction from the site investigations and boreholes and from the presence of any hazardous materials and during operation of the scheme. The interaction between water/groundwater and water dependant habitats and species will be explored.

The volumes of excavated material will be calculated and the potential options for re-use of the material will be assessed. Requirements and recommendations will be indicated for the disposal or recovery of

wastes. Excavated material shall be disposed in compliance with Waste Management Acts and Regulations. Waste sludge will be transported to Limerick(Bunlicky) Sludge Hub and its effect will be assessed under the Bunlicky EIA process.

4.5.5 Mitigation Measures

Where impacts are identified, mitigation measures will be proposed. The competent experts shall assess the impacts and together with the engineering design team develop detailed mitigation measures.

4.6 Air Quality and Odour

The purpose of this section of the EIA Scoping Report is to describe the scope of work and methods to be applied in the identification and assessment of air quality and odour impacts associated with the proposed development. A high-level overview of the baseline conditions will be undertaken, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed development on air quality and odour as part of the Environmental Impact Assessment process.

4.6.1 Receiving Environment

In assessing potential impacts a key factor will be identifying and categorising the local receptors, which can be broadly grouped as follows:

- Residential areas – categorised by proximity and direction;
- Conservation and recreational areas; and
- Commercial/industrial/institutional areas – categorised by proximity, direction and nature of activity.

The sensitivity of the different categories of receptors is relevant to the significance of any likely impacts. Residential areas, such as Dromore Student Village, are examples of receptors which would be sensitive to impacts during daytime and night-time. Other receptors may not be as sensitive during night-time periods i.e., the UL Boat House or main university campus.

The Construction Phase study area is focused on potential impacts generally due to dust. These impacts usually occur within 500m of the dust generating activity as dust particles fall out of suspension in the air. Dust impacts during the Construction Phase due to material handling activities, including excavation and backfill, on site may typically emit dust. Deposition typically occurs in close proximity to each site and therefore the study area is limited to a 500m radius from any dust generating activities.

The study area with respect to impacts from air quality emissions from construction vehicle and HGV movements is limited to sensitive receptors less than 200m from road links which are affected by significant changes in volume (i.e. above 5%). This study area is the same for designated areas of conservation (either Irish or European designation) with respect to ecology as the potential to impact is highest within 200m of the proposed development and when significant changes in AADT (>5%) occur.

The study area with respect to potential odour impacts from the operation of the proposed development is limited to sensitive receptors within 1,000m of the site boundary.

Planning and policy context

In order to reduce the risk to health from poor air quality, National and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set. The assessment of air quality will be conducted with consideration of the relevant legislation and guidance including:

- Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC);
- European Union Directive on air quality assessment and management (96/62/EC) and the associated "daughter Directives", which set the Limit Values;
- Air Quality Standards Regulations 2011 (S.I. 180 of 2011), which incorporates European Commission Directive 2008/50/EC which has set limit values for the pollutants SO2, NO2, PM10, benzene and CO;
- Air Pollution Act 1987;
- 2030 Climate and Energy Policy Framework;
- Institute of Air Quality Management. Land-Use Planning & Development Control: Planning For Air Quality (January 2017)
- Institute of Air Quality Management.. Guidance on the Assessment of Dust from Demolition and Construction (2014);
- Institute of Air Quality Management. Guidance on the assessment of odour for planning (July 2018);
- Institute of Air Quality Management. A guide to the assessment of air quality impacts on designated nature conservation sites (May 2020);
- Environmental Protection Agency (EPA) Office of Environmental Enforcement (OEE) Air Guidance Note 5 (AG5) Odour Impact Assessment Guidance for EPA Licensed Sites;
- Environmental Protection Agency (EPA) Office of Environmental Enforcement (OEE) Air Guidance Note 9 (AG9) ;
- Environmental Protection Agency (EPA) Office of Environmental Enforcement (OEE) Air Guidance Note 4 (AG4) Air Dispersion Modelling from Industrial Installations Guidance Note; and
- Local Authority air quality and planning guidance.

4.6.2 Potential impacts

Potential Construction Phase Impacts

During the Construction Phase there is potential for an impact on air quality from the following sources:

- Potential for construction dust emissions and nuisance dust. This will potentially be caused by activities such as excavation, soil movement, soil storage and backfilling, and would be exacerbated by winds and dry weather. Dust tends to be deposited within 500m of the generation site, and therefore sensitive receptors which fall within this distance of construction activities would be most at risk; and
- Emissions from Heavy Goods Vehicles (HGVs) and on-site construction plant and equipment which may give rise to emissions including; particulates (PM10 and PM2.5), benzene, nitrogen oxides (NOx) and carbon monoxide (CO).

In order to minimise dust emissions during construction, a series of mitigation measures will be included in the EIAR and be implemented during the construction phase of the project, as required, such as speed restrictions on site, wheel washing and water misting. The appointed contractor will be required to comply with these measures. The mitigation measures will ensure no significant impact on sensitive receptors.

Potential Operational Phase Impacts

The majority of potential air quality impacts will occur during the Construction Phase. The Operational Phase will be assessed in terms of odour emissions from the existing and proposed WwTP sources for the specific Castletroy WwTP upgrade works and their potential to impact on local receptors. If required, mitigation measures will be proposed e.g. odour control units at the inlet works and sludge dewatering building.

4.6.3 Assessment methodology

It is proposed that an assessment of air quality and odour will be carried out in accordance with the following guidance and established best practice, and will be tailored accordingly based on professional judgement and local circumstance:

- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2017);
- Draft Advice Notes for Preparing Environmental Impact Statements (EPA 2015); and
- Transport Infrastructure Ireland, Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes (TII 2011).

In line with the above guidance, the assessment will cover potential impacts to air quality and odour and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

The air quality and odour assessment carried out on the proposed development will include the following elements:

- Review of standards and legislation;
- Identification of air quality issues relevant to the components of the proposed development;
- Review of background ambient air quality in the vicinity of the proposed development (relevant air quality baseline data will be obtained from the EPA);
- Assessment of potential air quality and odour impacts of plant and equipment processes;

The assessment will take account of sensitive receptors relevant to the proposed development. Sensitive receptors include locations where people spend significant periods of time, such as domestic properties. Sensitive receptors within the vicinity of the proposed development may include:

- Residential dwellings;
- Industrial or commercial uses sensitive to dust;
- Recreational areas and sports grounds;
- Schools and other educational establishments;
- Buildings of religious sensitivity;
- Designated ecological area of conservation (either Irish or European designation);
- Hospitals and nursing homes; and
- Offices or shops.

A series of mitigation measures to minimise any foreseen impacts for both the Construction Phase and Operational Phase of the proposed development will be proposed as required as part of the EIAR.

4.6.4 Data and Surveys

Desktop Study

A desktop review of available baseline air quality data within the study area will be undertaken. The following data sources will be referred to during the desktop air quality assessment:

- EPA – National Ambient Air Quality Monitoring Data Archive;
- EPA – Air Quality in Ireland 2019 Report and previous reports (1997 – 2018);
- National Parks and Wildlife Service Envision Maps;
- EPA– Integrated Pollution Control Licences; and
- Limerick City and County Council Development Plans.

Site Survey

Subjective Odour Surveys in accordance with the EPA guidance will be undertaken in proximity to the odour sources on site, at the site boundary and in proximity to the nearest residential properties. No air quality monitoring is proposed.

In order to assess the potential odour impact of the specific Castletroy WwTP upgrade works at the site boundary and the nearest receptors, dispersion modelling using the AERMOD model will be employed in accordance with established odour impact criteria. The assessment of odour emissions from the specific Castletroy WwTP upgrade works will be based on a worst-case approach and a database of odour emission concentrations from a range of typical WwTP sources will be used in the model.

Consultation

Consultation will be carried out as required throughout the EIA process. The following organisations will be consulted as needed:

- Environmental Protection Agency (EPA);
- National Parks and Wildlife Service (NPWS); and
- Limerick City and County Council.

4.6.5 Mitigation Measures

Following impact assessment, mitigation measures will be specified where required to reduce any significant impacts.

4.7 Noise and Vibration

The purpose of this section of the EIA Scoping Report is to describe the scope of work and methods to be applied in the identification and assessment of noise and vibration impacts associated with the proposed development. Baseline noise monitoring will be undertaken, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed development with respect to noise and vibration as part of the Environmental Assessment.

4.7.1 Receiving Environment

Potential noise and vibration impacts associated with the Castletroy WwTP upgrade works are predicted to be at their most significant close to the construction works boundary, but potential impacts may be observed at further removed locations. The general area surrounding the Castletroy WwTP upgrade works will be assessed in order to identify the receptors that have the potential to be impacted by noise emissions associated with the project works. Noise sensitive receptors which could potentially be adversely affected by the noise and vibration impacts of the Castletroy WwTP upgrade works will be considered. The study area will encompass the nearest sensitive receptors on each side of the Castletroy WwTP site.

Policy and Planning Context

The assessment of noise and vibration will be conducted under the relevant legislation and guidance including:

- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2017);
- Draft Advice Notes for Preparing Environmental Impact Statements (EPA 2015);
- World Health Organisation (WHO) Guidelines for Community Noise 1999;
- Protection of the Environment Act 2003, and associated Regulations;

- BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Noise';
- BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Vibration';
- Environmental Protection Agency Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (EPA 2016); and
- Local Authority (Limerick City and County Council) Noise and Vibration planning guidance.

4.7.2 Potential impacts

Potential Construction Phase Impacts

The principal Construction Phase noise and vibration impacts will be associated with excavations and the operation of machinery on the site. The actual noise level produced by construction work will vary depending on a number of factors including the type of plant in use, plant location, duration of operation, hours of operation and intervening topography. Vibration impacts are predicted to be low given the nature of the work to be undertaken.

Potential Operational Phase Impacts

It is anticipated that Operational Phase noise and vibration impacts will be low.

4.7.3 Assessment Methodology

It is proposed that an assessment of noise and vibration will be carried out in accordance with the following guidance and established best practice, and will be tailored accordingly based on professional judgement and local circumstance:

- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2017);
- Draft Advice Notes for Preparing Environmental Impact Statements (EPA 2015); and
- Environmental Protection Agency Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (EPA 2016);

In line with the above guidance, the assessment will cover potential impacts from noise and vibration and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the Castletroy WwTP upgrade works. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduced) these impacts; and
- Assessing the significance of any residual effects after mitigation.

The noise and vibration assessment to be carried out on the Castletroy WwTP upgrade works will include the following elements:

- Review of standards and legislation;
- Identification of noise and vibration issues relevant to the proposed development;
- Measurement of background noise levels in the vicinity of the Castletroy sites;
- Assessment of potential noise and vibration impacts from construction activities;
- Assessment of potential noise and vibration impacts from the Operational Phase of the proposed development.

The assessment will take account of Noise Sensitive Locations (NSL's) relevant to the Castletroy WwTP upgrade works. Sensitive receptors will comprise places where it would be reasonable to expect people to be exposed to local noise and vibrations. The EPA NG4 definition of an NSL will be used in the assessment, as reproduced below:

NSL – any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.

The complete list of noise and vibration sensitive receptors within the vicinity of the proposed development will be included and a series of mitigation measures to minimise any foreseen impacts for both the Construction Phase and Operational Phase of the proposed development will be proposed as required.

4.7.4 Data and Surveys

Desktop Study

As detailed below, it is proposed to carry out a baseline noise study in proximity to the nearest potentially affected Noise Sensitive Locations (NSL's) to support the environmental assessment.

Site Survey

A baseline noise survey will be undertaken over the course of daytime, evening and night-time periods to establish the existing noise climate in the vicinity of the site. The surveys will be undertaken at the site boundary and at the nearest noise sensitive locations to the Castletroy WwTP site. The survey will be undertaken in accordance with ISO 1996 "Description, Measurement and Assessment of Environmental Noise".

Construction noise levels will be predicted at the facades of the closest noise-sensitive locations to the site. All predictions will be conducted in accordance with the guidance contained in ISO 9613:1996: "Acoustics – Attenuation of sound outdoors – Part 2: General method of calculation". Source noise levels will be obtained from BS 5228: Part 1: 2009. It has been assumed that detailed predictions will be required in respect of no more than 5 noise-sensitive locations at the Castletroy WwTP site.

A series of detailed noise calculations will be conducted based on the proposed operation of the extended facility, taking into account, operational noise sources, hours of operation, site screening and distance attenuation and any other significant issues. This will be undertaken using CadnaA noise prediction software. Where necessary, practicable noise control and mitigation measures will be proposed.

The generation and propagation of vibration during both Construction and Operational Phases of the Castletroy WwTP upgrade works will be considered. Likely impacts will be considered and, where necessary, practicable vibration control measures will be proposed.

Consultation

It is considered that consultation on the noise and vibration impact assessment will be undertaken where necessary with the Local Authority, Limerick City and County Council, along with any interested stakeholders.

4.7.5 Mitigation Measures

Following impact assessment, mitigation measures will be specified where required to reduce any significant impacts.

4.8 Climate

4.8.1 Receiving Environment

Environmental impacts related to climate can consist of:

- The contribution by the project to climate change; and

- The vulnerability of the project to climate change effects.

The receiving environment thus consists of the general environment in respect of the climate change impacts, such as greenhouse gas (GHG) emissions, and the surrounding environment in respect of vulnerability issues, such as sea level rises.

4.8.2 Likely significant impacts

The areas to be examined for likely significant impacts, is the impact of the project construction and operation on climate change, together with the vulnerability of the site to sea level rises.

4.8.3 Data and Surveys

The data gathered for this assessment will consist of guidelines and literature produced by public and industry bodies for this purpose.

4.8.4 Assessment methodology

The assessment of the climate change impacts will be by reference to recognised tools, such as the EPA Carbon Calculator. The impact of the more intensive rainfall events likely to arise in the catchment because of climate change over the design life of Castletroy WwTP, which will be assessed relative to IPPC and OPW guidance.

4.9 Traffic and transport

4.9.1 Receiving Environment

The principal receptors in relation to traffic issues are considered to be:

- University of Limerick;
- Neighbouring Development and Businesses;and
- Nearby Houses Developments.

The traffic associated with the proposed extension will comprise operational traffic and construction traffic. The operational traffic consists of:

- Site Staff;
- Tankered Liquid Waste incoming to site;
- Sludge Removal off site; and
- Delivery vehicles.

It is not anticipated that there will any significant increase in operational traffic associated with staff movements as a result of the upgrade. There will be a small increase in the tankering of liquid waste and the removal of sludge as the volumes generated will increase slowly in proportion to the growth in demand.

The construction phase traffic will be "moderately" more significant but will be temporary in nature. Construction related traffic will be light in the context of current traffic levels in the area. The overall area experiences high peak traffic flows.

The traffic associated with the construction phase will consist of:

- Construction workers coming and going from site. This element will result in an increase in traffic at peak times; and
- Delivery of materials and equipment associated with construction (e.g., concrete pours, special deliveries) and the removal of spoil and construction waste which will be quite minor.

4.9.2 Potential Impacts

There is no significant change in traffic patterns predicted during the post construction operational phase and consequently no significant impact is anticipated resulting from the proposed construction and operation of the facility expansion as proposed.

4.9.3 Data and Surveys

New traffic counts will be undertaken at the various junctions from the site to the main national road network, i.e., where project traffic flows merge with background traffic.

4.9.4 Assessment Methodology

A traffic survey will be undertaken in line with EIAR Guidelines. Based on the survey results, a "competent expert'' Traffic specialist will undertake a traffic impact assessment in terms of the existing road network. The impact of the change in traffic volume and patterns will be assessed on the basis of the light/moderate increase in the traffic volume. An overall assessment will be made of both the temporary construction phase impacts and the long-term operational impacts.

4.9.5 Mitigation Measures

A Traffic Management Plan, including mitigation measures (e.g., restrictions during peak commuter hours) will be developed for the project's construction stage in consultation with the Roads and Traffic Department of Limerick City and County Council.

4.10 Archaeology and Cultural Heritage

4.10.1 Receiving Environment

The site is located at Dromroe townland in Castletroy, Co. Limerick (ITM 560696, 658505, Figure 4-2). It is zoned as Utility usage on the Castletroy Local Area Plan 2019-2025. There are no recorded monuments listed in the Record of Monuments and Places for Limerick County (1997) within the site or in its immediate environs. However, the site lies within the Castletroy Architectural Conservation Area and is adjacent to an area marked as 'Mill Race' on the Castletroy Local Area Plan 2019-2025. It is also in the vicinity of Plassy Mills and bridge, known as the Black Bridge, which was illustrated on the 1st Edition Ordnance Survey 6-inch map of 1839. Both are Protected Structures with RPS ID. 1600 and RPS ID. 1599. They are listed in the Limerick County Development Plan 2010-2016 and the Castletroy Local Area Plan 2019-2025 and recorded in the National Inventory of Architectural Heritage for Limerick County as NIAH Reg. No. 21900504 and NIAH Reg. No. 21900503 respectively. Furthermore, Protected Structure RPS ID.1600, Plassy Mills, includes associated complex of Millstreams, Lock and Sluices.

The site's location is within the River Shannon floodplain and suggests the site has the potential to contain previously unknown subsurface remains of archaeological significance. In addition, the environs of the site contain cultural heritage structures, including Recorded Monuments, Protected Structures, heritage structures listed in the National Inventory of Archaeological Heritage, and this stretch of the Shannon River might contain shipwrecks listed in the National Wreck Inventory.

Record of Monuments and Places (RMP) and Sites and Monuments Record (SMR)

The SMR lists all known archaeological sites and monuments in a county with accompanying maps locating these sites. All sites included in the RMP are protected under the National Monuments Acts (1930–2004). There are several monuments listed in the RMP and SMR in the environs of the study area. These include:

- Gilloge, Co. Clare, Enclosure CL063-015
- Newcastle, Co. Limerick, Bawn LI005-025001
- Reboge, Co. Limerick, Castle-unclassified LI005-024
- Newcastle, Co. Limerick, Church LI005-026001

- Newcastle, Co. Limerick, Graveyard LI005-026002
- Castletroy, Co. Limerick, Gateway LI006-017003
- Castletroy, Co. Limerick, Bawn LI006-017002
- Castletroy, Co. Limerick, Castle - tower houseLI006-017001

There is no RMP or SMR within the site or in the area adjacent to it.

Record of Protected Structures (RPS), National Inventory of Architectural Heritage (NIAH)

The *Limerick County Development Plan, 2010-2016,* contains a list of Protected Structures for the County and lists cultural heritage sites and historical, architectural, cultural, scientific, and/or artistic interests. These are protected by the *Local Government (Planning and Development) Act 1999* and the *Planning and Development Act 2000 (Part IV Architectural Heritage).* In addition, the Castletroy Local Area Plan 2019-2025 was also consulted as it contains an updated list of the above for the Castletroy area and the extent of the Castletroy Architectural Conservation Area. The National Inventory of Architectural Heritage (NIAH) is a state initiative. It contains a record and evaluation of the post-1700 architectural heritage of Ireland as an aid in the protection and conservation of the built heritage. It provides the basis for recommendations for inclusions of particular structures of the *Minister for Culture, Heritage and the Gaeltacht* to the planning authorities for the inclusion of specific structures in their Record of Protected Structures (RPS).

The site location relative to structural and archaeological features is shown below in Figure 4-2.

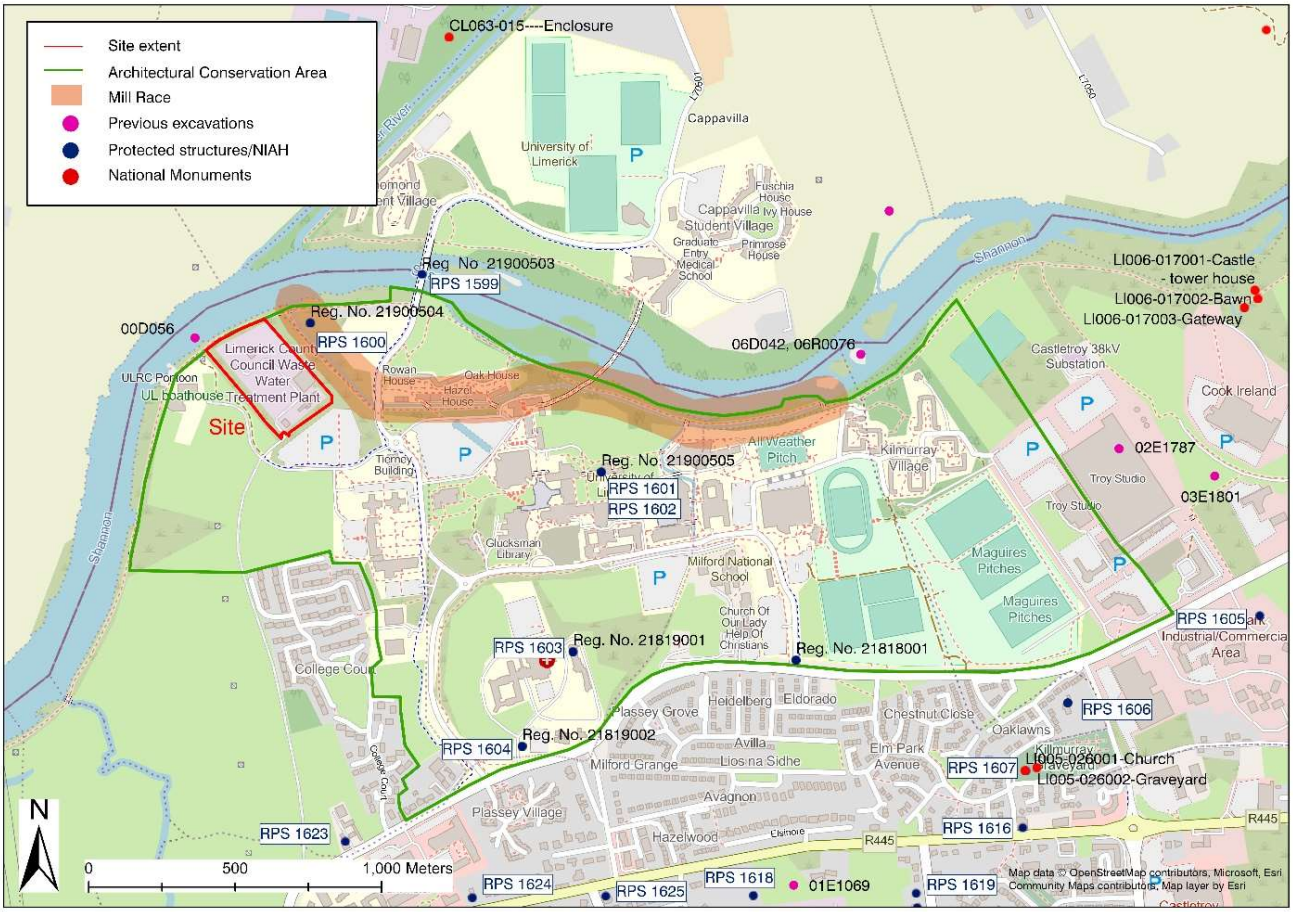


Figure 4-3: Location of the site, relative to structural and archaeological features

Listed below are Protected Structures and structures/sites listed within the National Inventory of Architectural Heritage located within the environs of the study area and within Castletroy Conservation Area:

- Plassey Mill, Sreelane, Co. Limerick; Extensive ruins of the former industrial site: Associated complex of millstreams, locks, sluices (RPS ID 1600; NIAH Reg. No. 21900504);
- Plassey Bridge, Garraun Co. Clare and Sreelane Co. Limerick; Bridge over the Shannon River, also known as Black Bridge (RPS ID 1599, NIAH Reg. No. 21900503);
- Plassey House, Sreelane, Co. Limerick; Country House (RPS ID. 1601; NIAH Reg. No. 21900505);
- Plassey House, Sreelane, Co. Limerick; Demesne walls/gates/railings (NIAH Reg. 21818001);
- Plassey Fountain, Sreelane, Co. Limerick; Originated in Italy (RPS ID. 1602);
- Milford House, Sreelane, Co. Limerick; Detached seven-bay three-storey over basement former country House built circa 1770 (RPS ID 1603; NIAH Reg. No. 21819001);and
- Milford House Gate Lodge, Sreelane, Co. Limerick; Detached three-bay single-storey former gate lodge, built c. 1870 (RPS ID 1604; NIAH Reg. No. 21819002).

Shipwrecks Inventory

The Shipwreck Archive consists of over 18,000 paper files relating to each wreck recorded in the Wreck Inventory of Ireland Database (WIID) with its known location. This data set does not define the level of legal protection that might be afforded any individual wreck under the provisions of the National Monuments (Amendment) Acts (1987 and 1994); however, all wrecks that are over 100 years old and wrecks subject to an underwater heritage order are protected by Section 3 of the National Monuments (Amendment) Act 1987.

While there are no wrecks listed specifically for Castletroy or Dromroe townland, a number of wrecks are listed generally for the River Shannon. In total, 39 shipwrecks are recorded. These are mainly registered as a boat, a smack or a steamship, and the list also includes a dredger, a schooner, a longboat and a sailing ship. The greatest number of ships were lost in Shannon in the 19th century, while the two earliest ships were lost in 1691 and 1772, whereas the dredger mentioned above was the only 20th-century loss.

The registered wrecks could lie anywhere in the watercourse from the Estuary up the river, including the stretch of the river in an area adjacent to the site. As the Shannon River was never comprehensively archaeologically assessed, it is possible that many wrecks, artefacts and longboats lie undocumented in the waterway. In addition, an Underwater Survey (00D056) that took place in the river to the northeast of the site revealed a ship's timber, likely washed down from further up the river, thereby attesting to the archaeological potential of the River Shannon.

The list of wrecks for the River Shannon will be included in the EIAR's chapter on archaeology.

National Museum of Ireland Topographical Files

The National Museum of Ireland Topographical Files is the national archive of all known antiquities recorded by the National Museum. The files contain objects reported from 1928, and the computerised database includes finds from the 1980s onwards.

No finds are registered for Dromroe townland or the townland of Castletroy. However, two Roman coins were found in the north part of Sreelane townland, near the river's south shore, c. 300 m east of the site.

Previous Archaeological Assessments

Excavation.ie is a database of Irish Excavation Reports and contains summary accounts of all the archaeological excavations carried out in Ireland since 1970.

There are no excavations listed within site on excavation.ie. The nearest assessment to the site took place in advance of the new bridge scheme at Plassey, to the east of the site. The Archaeological Diving Company carried out an underwater assessment and survey under licence 00D056. During the

assessment, a ship's timber measuring 1.9m long was found. The timber was an isolated find that was washed downstream. It was relocated downstream. While a number of investigations were carried out on the north side of the River Shannon in relation to the development of the University of Limerick campus (09E0550, 10E0132, 16E135, 15E870), these did not expose any archaeological features or structures.

Cartographical and aerial photography review

Historical maps and aerial photography/imagery are sources that can indicate areas of archaeological potential through features like curving field boundaries, crop marks and soil marks and can provide information regarding the nature and extent of recorded archaeological sites that have become denuded since the early 19th century. Historical maps are also helpful in identifying other features of cultural heritage significance.

The site is depicted on all the examined Ordnance Survey (OS) maps as a part of a large field adjacent to the River Shannon and within the northeast extent of Dromroe townland. In 1995 the site was used to construct a wastewater treatment plant, with additional clarifiers added sometime before 2010. The site remains unchanged since some groundworks and/or clearing took place in the northwest part of the site in 2018.

4.10.2 Potential Impacts

There are no known monuments (RMP or SMR) and no structures (RPS or NIAH) located within the site. The site was developed in the 1990s; however, the areas not disturbed by groundwork may have some archaeological potential. The site is also located within Castletroy Architectural Conservation Area as marked on the Castletroy Local Area Plan 2019-2025.

4.10.3 Data And Surveys

An Archaeological Assessment of the scheme is required in terms of cultural heritage. This will involve a desktop review of currently available data and field assessments of the site and surrounding areas. This will allow for identifying of likely significant impacts on archaeology, architectural and cultural heritage in the area.

4.10.4 Assessment Methodologies

The National Monuments Acts 1930-2014 and the Planning and Development Act 2000 (as amended) are the principal legislative instruments in protecting archaeological, architectural and cultural heritage in Ireland. The following sources will be reviewed/consulted, and the results will form the basis for the preparation of the Archaeology & Cultural Heritage Chapter:

- Relevant literature containing the historical and archaeological background of the area;
- An inventory of relevant monuments listed in the Record of Monuments and Places (RMP) and Sites and Monuments Record (SMR);
- An inventory of relevant structures listed in the Record of Protected Structures in the Limerick County Development Plan 2010-2016 (updated in the Castletroy Local Area Plan 2019-2025); as well as structures listed in the National Inventory of Architectural Heritage for County Limerick;
- An inventory of relevant wrecks and maritime features listed in the Shipwreck Archive and the Wreck Inventory of Ireland Database (WIID);
- An inventory of relevant finds listed in the Topographical Files of the National Museum of Ireland in the environs of the site;
- Historical maps, aerials and historical photographs;
- A field survey will be carried out; and
- Review of the previous archaeological excavations and investigations in the environs of the site.

4.10.5 Mitigation Measures

Due to the potential and permanent impact of the proposed works on cultural heritage, it is recommended that the following mitigation measures will be included in the final EIAR:

- Archaeological monitoring of the footprint of the proposed development to be carried out at the pre-construction phase;
- Should any features or deposits of archaeological significance be exposed during the monitoring, mitigation measured might include avoidance (preservation in situ); if this is not possible, excavation (preservation by record) will be required; and
- Additional further mitigation measures may be included following the completion of the Archaeological Assessment.

4.11 Material Assets

4.11.1 Receiving Environment

Material assets are resources that are valued and intrinsic to places. These may include archaeology and cultural heritage which are discussed in a separate section of the EIAR. Material assets may also include properties, utilities, and natural resources. This section will also address land take and land use.

4.11.2 Potential Impacts

- Mitigation by avoidance will be applied to utilities such as underground services and pipelines, the properties of GNI, ESBN or other utilities.
- The completed and upgraded Castletroy WwTP can be seen as a significant positive material asset for the local population, community and industrial sectors.

4.11.3 Data And Surveys

Consultation will take place with the relevant utilities to determine exact location, depth and specifics of underground cables and pipelines.

4.11.4 Assessment Methodologies

The assessment of material assets will include a desk-based exercise, to identify properties, utilities and resources that may be affected by the proposed scheme. It will also include consultation with the relevant parties.

4.11.5 Mitigation Measures

Management Plans including method statements shall be developed for excavations in proximity to underground utility cables and pipelines.

4.12 Landscape and Visual Impact (LVIA)

This scoping report chapter is the first part of a comprehensive LVIA part of an EIAR and aims to define the scope upon which a more detailed LVIA will be conducted. In the process, it identifies at a high level the known landscape and visual receptors affected by the proposed development. It also aims to identify any potential significant impacts on landscape character and visual amenity of these receptors to propose mitigation measures in future stages of the EIAR.

This chapter was undertaken through desk studies and use of terrain modelling by a qualified Landscape Architect and reviewed by a Chartered Landscape Architect. The initial identification of the study area was aided by the use of a Zone of Theoretical Visibility (ZTV).

The Landscape section accounts for landscape, cultural heritage and environmental designations that contribute to the landscape character and amenity within the site's context.

This report forms part of the planning application for the proposed development and should be read in conjunction with the following documents and drawings:

- Design statement, site layout, sections, elevations, views and plans prepared by JB Barry & Partners;
- Limerick County Development Plan 2010-2016;
- Draft Limerick Development Plan 2022-2028;
- Castletroy Local Area Plan 2019-2025; and
- Clare County Development Plan 2017-2023.

4.12.1 Receiving Environment

The proposed development site is enclosed by mature tall vegetation including deciduous and evergreen trees. The River Shannon (Lower River Shannon SAC) is directly to the north of the site with farmlands extending north of the opposite shore in Co Clare. To the south lies the University of Limerick's western carpark. To the west lies the Boat House of the University of Limerick's rowing club within the Groody Valley Green Wedge and open agricultural land. To the east, past a wooded area with a footpath leading to the Plassey Mill ruins, is the Dromroe student village surrounded by open and wooded spaces.
The proposed development is situated within the Shannon Integrated Coastal Management Zone (ICMZ) LCA. The Shannon dominates the landscape and attracts a number of visitors for recreational activities. The Shannon walkway runs along the south bank of the Shannon. Two bridges cross over the river to the northwest, with the nearest one, Plassey Bridge, being 81m away from the eastern site boundary. The Plassey Mill ruins (app. 60m east) provides an interesting feature to the users of the surrounding walking route network.

The site lies within the Castletroy - Dromore Architectural Conservation Area (ACA 9, LCCC, Draft Limerick Development Plan 2022-2028). This ACA focuses on the architectural styles on the University of Limerick and highlights amongst others the importance of the associated parklands, tree cover and vistas from the university's buildings. The relatively flat to gently undulating in locations landform along with the existing vegetation and sparsely inhabited environs allow for only few views to the site from the surrounding area. Existing infrastructure within the site is partly to fully screened. Further south are the residential areas of Dromroe and Newcastle that include a number of small green spaces. The residents of these area and users of the open spaces could be exposed to views during the construction phase.

The proposed development will potentially be viewed from a longer distance from the Cratloe Woods and Woodcock Hill (app. 9km northwest) and Slieve Felim Mountains (app. 11km east). Other expected receptors include visitors to the surrounding sport and recreational amenities and users of the footpath network surrounding the site, members of staff and students of the University of Limerick.

4.12.2 Potential Impacts

During the construction phase of the WwTP upgrades, the landscape may be impacted by the presence of heavy plant machinery, large construction equipment, construction compounds lighting site offices, hoarding and cranes. The enjoyment of the landscape area surrounding the site is expected to be reduced due to increased plant machinery traffic and construction activity related noise. Any impact arising from the construction stage is expected to be reversible and short-term in duration provided that the vegetation around the perimeter of the site remains.

During the operational stage, any impacts experienced during the construction stage are expected to be reduced in comparison.

The higher sensitivity of the area due to the Castletroy-Dromore ACA, the protected views within the ZTV and the adjacent Shannon walkway increases the potential of significant impacts to be observed, see Appendix A. Groody Valley Green Wedge should also be considered for any future uses as under Objective SCSI O21 it is being proposed to be one to the areas where suitable sites for the provision of new parks/ playgrounds are to be identified. The impact of the proposed development on the protected

longer distance views from the Cratloe Woods and Woodcock Hill and Slieve Felim Mountains should be assessed in more detail.

4.12.3 Data And Surveys

The LVIA will digital mapping data including DTMs, DSMs, OS maps and satellite data. It will include revising aerial photography, various publications and reports, together with visits to the site and environs of the proposed development. Any drawings including landscape proposals will be taken into consideration to assess the residual impacts.

Any available photomontages and visualisations that will be developed from various viewpoints in the surrounding areas will be included in the LVIA for this EIAR.

A desktop-based study of the proposals and site sensitivities has been agreed to be adequate at this stage. Therefore, no site visit was carried out to assess the views from any identified receptors.

An indicative study area has been defined following a desktop study of the area, the use of the ZTV and Google Street View. The ZTV was generated using publicly available DTM and DSM data that cover an approximate 20km corridor (10km offset from centreline). The elevated protected views lie outside the currently available range of DTMs and DSMs.

The calculation of the ZTV is based on the assumption that the highest proposed element post construction will be 4m in height.

An assumption has been made that the proposed development will require no removal of the existing vegetation surrounding the site. An arboriculture survey would be required to determine this.

4.12.4 Assessment Methodologies

The scoping is based on the recommendations in the Guidelines for Landscape and Visual Impact Assessment (GLVIA) as published by the Landscape Institute (UK) and the Institute of Environmental Management and Assessment (3rd Edition, 2013). It will also consider the Guidelines on the information to be contained in Environmental Impact Statements and "Advice Notes on Current Practice in the preparation of Environmental Impact Statements.

The scoping considers designations including protected vistas and views within the Limerick County Development Plan 2010 – 2016, Draft LCDP 2022-2028.

The landscape and visual impact assessment examines the potential effects of the proposed construction works on visual amenity of the area and the scale of the proposed development compared to the current development.

The assessment addresses the impact on the Landscape Character and Context, Views and Prospects and Historical Landscapes during the construction and operation phase of the proposed development.

4.12.5 Mitigation Measures

Potential mitigation measures to minimise impacts to the receiving environment will be assessed and are expected to include enhancement of the existing and proposed planting along the perimeter of the site, the reduction of the disturbance of the users of the Shannon walkway and alternative structure and equipment finishes.

4.13 Cumulative Impacts and Interactions

The cumulative impacts of the proposed development together with other existing and proposed developments, will be addressed. The proposed developments that will be considered are generally those

that are 'committed development', i.e. have received planning permission but have not yet been built, and for which there is information in the public domain at a sufficient level of detail to allow their potential cumulative impacts to be assessed. Known projects that will be included in the EIAR (and NIS) for the assessment of cumulative/in-combination impacts include:

- Bunlicky WwTP Upgrade Project (Sludge Hub & Liquid Stream)
- Limerick Main Drainage Project
- Corbally Baths Project

SECTION 5: Scope of Natura Impact Statement

5.1 Introduction

Appropriate Assessment (AA) Screening is required under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Where it cannot be excluded that a project or plan, either alone or in combination with other projects or plans, would have a significant effect on a European Site then same shall be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives. The proposed development is not directly connected with, or necessary for, the management of any European Site, consequently the project has been subject to the AA Screening process.

The Appropriate Assessment Screening Report (ASSR) concluded that it cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the proposed development, individually or in combination with other plans and projects, would be likely to have a significant effect on Lower River Shannon SAC [002165] and River Shannon and River Fergus Estuaries SPA [004077]. As a result, an Appropriate Assessment is required, and a Natura Impact Statement will be prepared in respect of the proposed development.

The NIS is concerned with identifying the implications for Natura 2000 sites, with respect to their conservation objectives, of LIKELY and SIGNIFICANT effects caused by the project. The NIS will consider in detail the potential for significant effect on European Sites as identified within the Appropriate Assessment Screening Report. The effects can arise directly or indirectly from the project, or in combination with other projects. The receiving environment, in the context of a NIS, is thus exclusively focused on potential for significant effect on the Natura 2000 SACs and SPAs. It should also be noted that, since the purpose of the Natura 2000 sites is the conservation of habitats and species, there is considerable overlap between the NIS and the Biodiversity section of the EIAR. The content of Section 5.3 of this document will thus also be applicable to the NIS.

The current guidance for Appropriate Assessment in Ireland is contained within the document "Appropriate Assessment Screening for Development Management", published by the Office of the Planning Regulator (2021) and "Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities", published by the Department of the Environment Heritage and Local Government, December 2009 and revised February 2010. The guidance states that the Natura sites to be assessed should be those within the likely zone of impact of the project. UK guidance recommends all Natura 2000 sites within 15km should be considered, however the OPR guidance recommends that the potential zone of impact should be considered based on a source-pathway-receptor model for significant effect, thus this is the approach that will be used.

In this instance it is considered that likely and significant effects could arise from two possible sources:

- Construction Activities – either directly or indirectly affecting a Natura 2000 site; and/or
- Operations – only indirect effects are considered likely, specifically due to the final effluent
- discharge affecting a site.

It is thus considered necessary to assess all Natura 2000 sites identified to be part of a source-pathway-receptor chain for significant effect.

5.2 Construction Activities

The Natura 2000 sites of concern with respect to construction activities are considered to be:

- Lower River Shannon SAC [002165]
- River Shannon and River Fergus Estuaries SPA [004077]

The Lower River Shannon SAC is adjacent to the project site. The River Shannon and River Fergus Estuaries SPA is located downstream of the project site.. There are no instream or bankside works proposed as part of the development. Identified pathways for effect at this stage include the deterioration in water quality as a result of construction and operational works, thus effecting all downstream aquatic-dependant habitats and species, and the potential for disturbance of any QIs during works. The Lower River Shannon SAC is of international importance for the presence of the following habitats/species and the potential for effects will be assessed with regard to same:

- [1029] Freshwater Pearl Mussel *Margaritifera margaritifera*
- [1095] Sea Lamprey *Petromyzon marinus*
- [1096] Brook Lamprey *Lampetra planeri*
- [1099] River Lamprey *Lampetra fluviatilis*
- [1106] Atlantic Salmon Salmo salar (only in fresh water)
- [1110] Sandbanks which are slightly covered by sea water all the time
- [1130] Estuaries
- [1140] Mudflats and sandflats not covered by seawater at low tide
- [1150] *Coastal lagoons
- [1160] Large shallow inlets and bays
- [1170] Reefs
- [1220] Perennial vegetation of stony banks
- [1230] Vegetated sea cliffs of the Atlantic and Baltic coasts
- [1310] Salicornia and other annuals colonizing mud and sand
- [1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
- [1349] Bottlenose Dolphin Tursiops truncatus
- [1355] Otter Lutra lutra
- [1410] Mediterranean salt meadows (Juncetalia maritimi)
- [3260] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation
- [6410] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)
- [91E0] *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)

River Shannon and River Fergus Estuaries SPA is designated for use of the river and wetlands within the site by the following species:

- [A017] Cormorant Phalacrocorax carbo
- [A038] Whooper Swan Cygnus cygnus
- [A046] Light-bellied Brent Goose Branta bernicla hrota
- [A048] Shelduck Tadorna tadorna
- [A050] Wigeon Anas penelope
- [A052] Teal Anas crecca
- [A054] Pintail Anas acuta
- [A056] Shoveler Anas clypeata
- [A062] Scaup Aythya marila
- [A137] Ringed Plover Charadrius hiaticula
- [A140] Golden Plover Pluvialis apricaria
- [A141] Grey Plover Pluvialis squatarola
- [A142] Lapwing Vanellus vanellus
- [A143] Knot Calidris canutus
- [A149] Dunlin Calidris alpina
- [A156] Black-tailed Godwit Limosa limosa
- [A157] Bar-tailed Godwit Limosa lapponica

- [A160] Curlew Numenius arquata
- [A162] Redshank Tringa totanus
- [A164] Greenshank Tringa nebularia
- [A179] Black-headed Gull Chroicocephalus ridibundus
- [A999] Wetlands and waterbirds

The potential for effects during construction on the SPA will be assessed as per the documentation detailed above and Scottish Natural Heritage "Assessing Connectivity with Special Protection Areas (SPAs)" (2016) with regard to the SCI species and the supporting habitats. The proposed construction activities will include standard industry best practice as the basis for potential effects. Mitigation of any identified potential effects resulting from construction activities will be considered and proposed in the NIS.

5.3 Operations

The Natura 2000 sites of concern with respect to impact from the final effluent discharge are:

- Lower River Shannon SAC [002165]
- River Shannon and River Fergus Estuaries SPA [004077]

The above sites all contain qualifying interests/ special conservation interests, which could be impacted by the final effluent discharge, via the flow of the River Shannon. There are various sources of data to be utilised for this assessment, including the following:

- Review of NPWS Site Synopses, Conservation Objectives for the European Sites
- Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.
- Review of online web-mappers: EPA, Water Framework Directive (WFD), NPWS species and habitats datasets.
- Review of OS maps and aerial photographs of the site of the proposed development.

In addition, the assessment shall also consider the contribution of the project towards the objectives of the Water Framework Directive and whether there is a link between the objectives of the Water Framework Directive and the objectives of the Directives giving rise to the Natura 2000 sites.

Mitigation of potential significant impacts in relation to the operations phase will be considered and proposed in the NIS.

5.4 In-Combination Effects

The same approach as detailed in the Biodiversity Section 4.3 will apply in respect of the NIS.

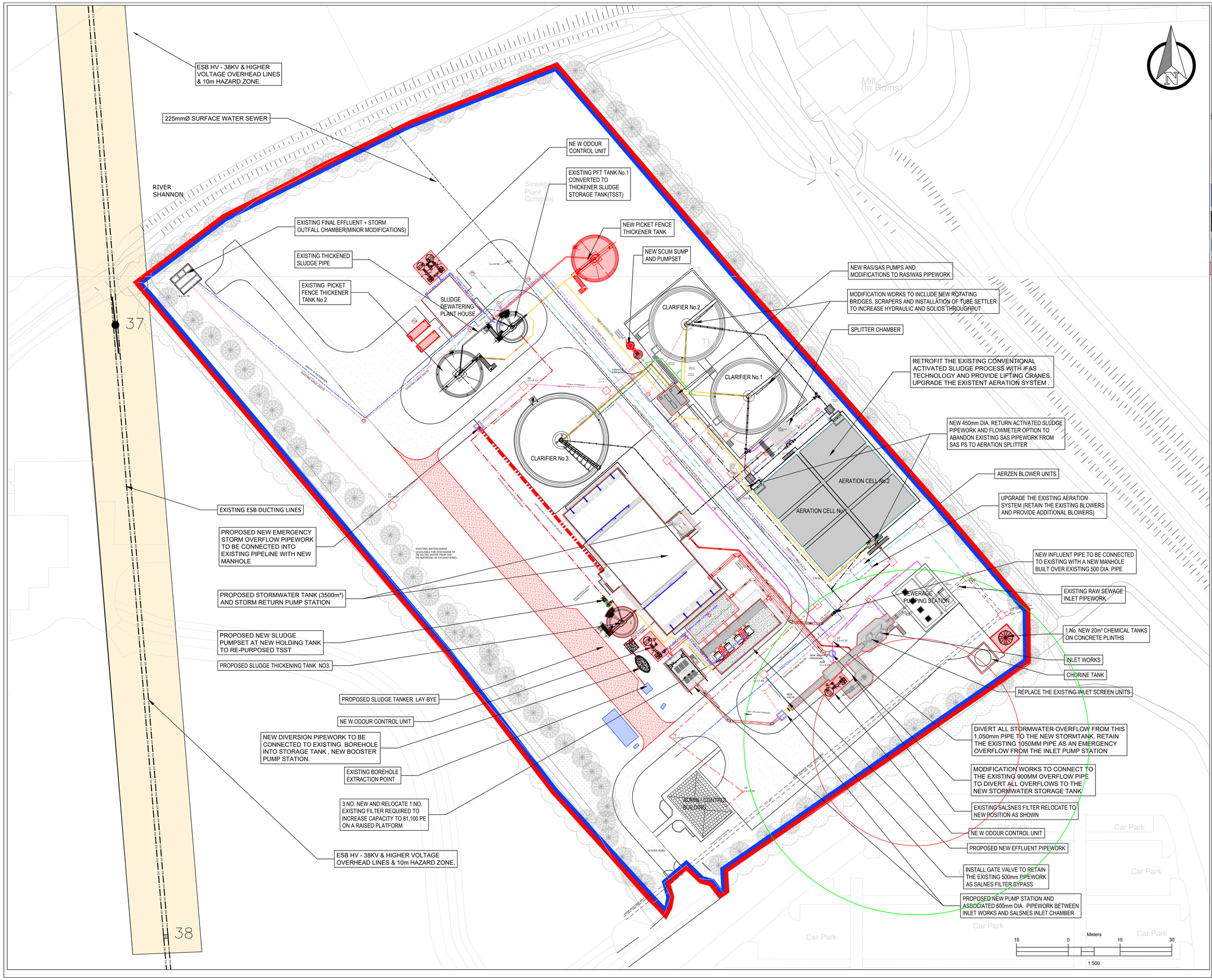
SECTION 6: Conclusion

An Appropriate Assessment Screening Report (ASSR) concluded that Appropriate Assessment is required, and the proposed development also falls under 'Environmental Infrastructure' development (works relating to WWTPs with a capacity greater than 10,000PE) which automatically requires an EIA. Therefore, an Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) are being undertaken as part of the planning process associated with the proposed development at Castletroy WwTP. As part of the EIA process, Irish Water will prepare a detailed Environmental Impact Assessment Report (EIAR) describing the potential environmental impacts which may arise as result of the construction and operational phases of the proposed development. As part of the AA process, Irish Water will prepare a Natura Impact Statement (NIS) describing the potential impacts of the project on sites in the Natura 2000 Network.

This scoping document is intended to outline key issues to be addressed in the preparation of the EIAR and NIS, and the proposed predictive and evaluation methodologies to be used. Consultation with the public, statutory organisations and non-statutory organisations is being undertaken, based on this document, to ensure input from all interested parties from the earliest stages of the EIAR and NIS preparation.

Observations, comments, and submissions arising during this consultation phase, will be considered EIAR and NIS, and compiled in a Consultation Report. The completed EIA, NIS and Consultation Reports will be submitted to An Bord Pleanála as part of the formal planning application process.

Appendix A: Drawings



Notes:
1. All levels are in metres and relate to O.S. Datum MALIN.
2. This drawing is reproduced from digital maps:
   O.S. MAPS - Scale 1:2,500
   O.S. MAPS - Scale 1:1,000
   Discovery Series - Scale 1:50,000
3. All Maps are referenced to IRISH TRANSVERSE MERCATOR (I.T.M.)
4. Ordnance Survey Ireland Licence No. EN 0003022
   ©Government of Ireland.

LEGEND

MAPPING
OS SHEETS: 4683-A,4683-C,
DISCOVERY SERIES; OS1614_D

SITE BOUNDARY OUTLINED IN RED

LANDS IN CONTROL OF THE APPLICANT OUTLINED IN BLUE

SITE AREA = 3.166Ha

- PROPOSED UPGRADE WORKS
- PROPOSED NEW WORKS
- PROPOSED NEW PIPEWORK
- EXISTING WATERMAIN
- EXISTING FINAL EFFLUENT
- EXISTING SETTLED EFFLUENT
- EXISTING CABLE DUCTS
- EXISTING RAW SEWAGE
- EXISTING SUPERNATANT
- EXISTING SAS
- EXISTING RETURN SLUDGE R/MAIN
- EXISTING SCUM PIPE
- EXISTING STORM OVERFLOW
- EXISTING SITE FOULSEWER
- EXISTING SITE SURFACE WATER DRAINAGE
- ESB HV - 38KV & HIGHER VOLTAGE OVERHEAD LINES"

NOTE:
MAXIMUM FLOOD LEVEL IS +6.93MOD

Rev.	Suit.	Description	Drawn	Ch'kd	Date
P04	S2	DRAFT ISSUE	LA	PJ	23.05.22
P03	S2	DRAFT ISSUE	LA	PJ	25.03.22
P02	S2	ISSUED FOR INFORMATION	JMG	PJ	17.05.21
P01	S4	ISSUED FOR PRE-PLANNING	LA	PJ	16.02.21

Client:

UISCE ÉIREANN / IRISH WATER

Irish Water
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Tel:1890 278 278
Int: +353-1-707 2828
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Consultant:

J. B. Barry and Partners Limited
Consulting Engineers

Classon House
Dundrum Business Park
Dundrum Road
Dublin 14
Tel: +353-1-4851400
email: info@jbbarry.ie
website: www.jbbarry.ie

Project:

CASTLETROY WASTEWATER TREATMENT PLANT

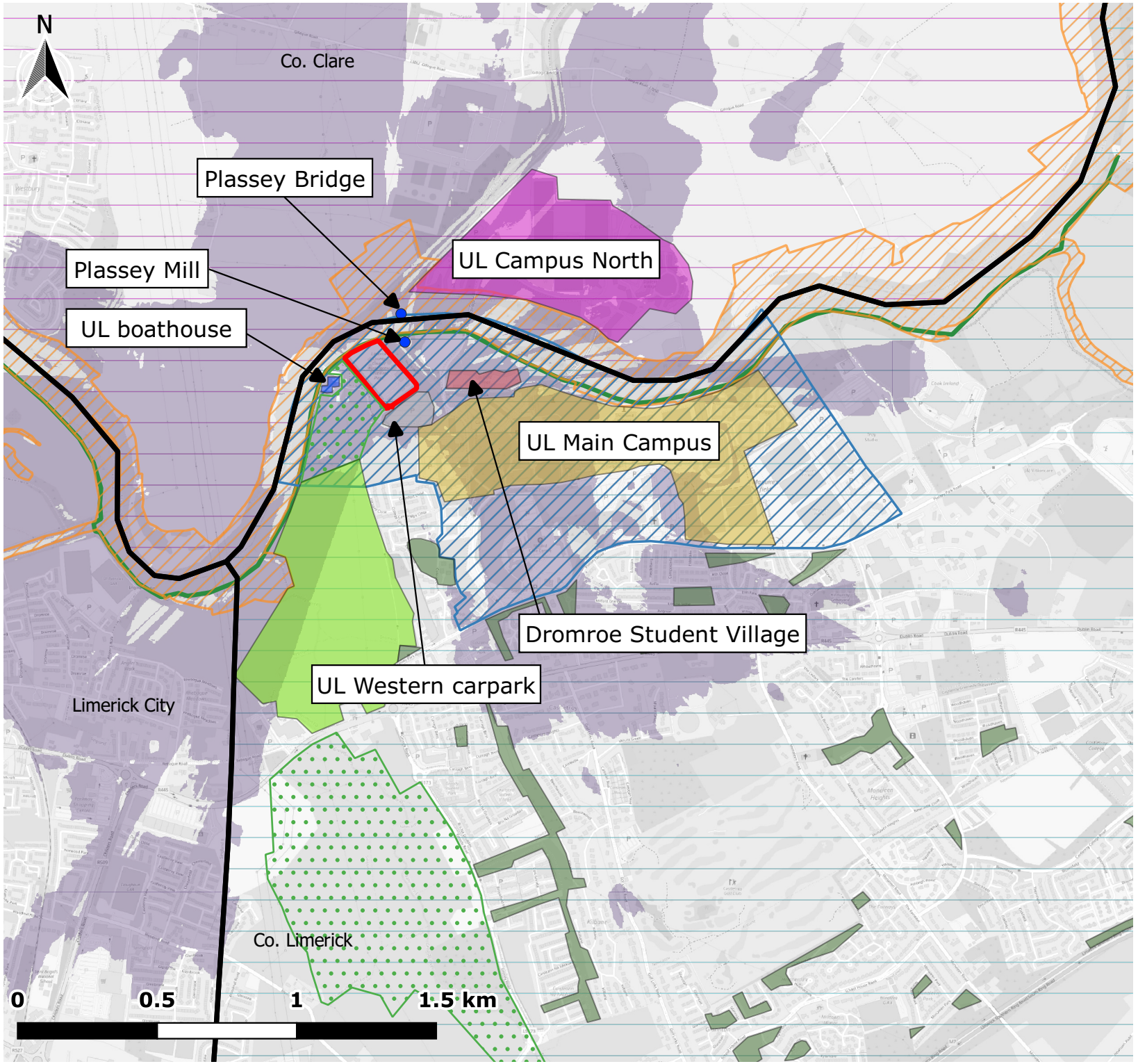
Drawing Title

PROPOSED SITE LAYOUT PLAN

Drawn by :	LHA	Date :	FEB 2021
Checked by :	JR	Date :	FEB 2021
Approved by :	PJ	Date :	FEB 2021

Internal Project REF : 20701
Scales : 1:500 @ A1
Stage : PLANNING

Drawing No. :	Revision	Suitability Code
20701-JBB-00-XX-DR-Z-1204	P04	S2



Legend

- Site boundary
- Administrative boundaries
- Lower River Shannon SAC
- Dromroe Student Village
- UL boathouse
- UL Main Campus
- UL Campus North
- UL Western carpark
- Groody Valley Green Wedge
- Green Open Space
- Agriculture
- Riverside walk
- Castletroy - Dromore ACA
- National Inventory of Architectural Heritage

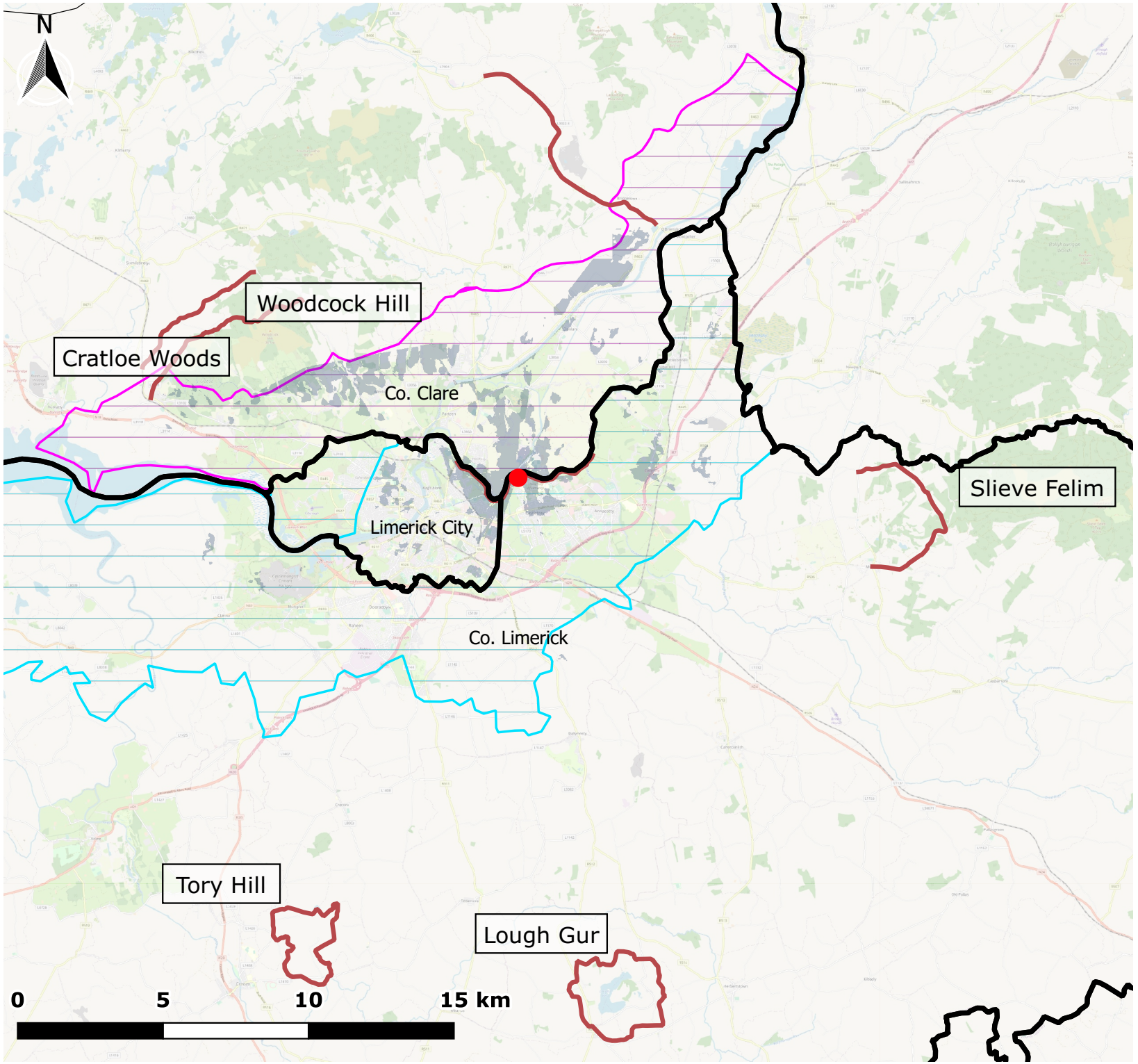
Landscape Character Areas

- River Shannon Farmland (Clare LCA)
- Shannon ICZM (Limerick LCA)
- ZTV (indicative only - based on publicly available data)

JBA Consulting Engineers and Scientists Ltd
Unit 8, Block 660
Greenogue Business Plaza
Rathcoole
Dublin

JBA consulting

Castletroy WWTP - Immediate Receiving Environment



Legend

- Site location
- Protected Views and Vistas/ Scenic Routes

Landscape Character Areas

- River Shannon Farmland (Clare LCA)
- Shannon ICMZ (Limerick LCA)
- ZTV (indicative only - based on publicly available data)

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Dublin

JBA consulting

Castletroy WWTP - Wider Receiving Environment