



GOOD SHEPHERD LRD

VOLUME II | EIAR

Main Statement

GOOD SHEPHERD LRD

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CHAPTER ONE

INTRODUCTION

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CHAPTER ONE | Introduction

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) sets out the results of the environmental assessments which have been completed for the proposed development to inform the planning consent process.

The assessment has been completed as a statutory environment assessment. The environmental impact assessment process has been completed in line with Directive 2014/52/EU, based on the guidance presented in the Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA 2022).

EIA is a process for anticipating the effects on the environment caused by a development. The document prepared by the developer of the proposed development is termed the EIAR. Article 1(2)(g) of the 2014 Directive (2014/52/EU) states that:

“Environment 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.”*

The EIAR is a presentation of the potential environmental impacts of the proposed development with a focus on significant impacts.

Chapter 1 introduces the project and described the scope and methodology of the EIA process. The consultation process which was undertaken is outlined and the competencies of the environmental assessment team are provided.

1.1.1 Author Information and Competency

This chapter of the EIAR has been prepared by Saoirse Kavanagh, Executive Planning Consultant of McCutcheon Halley Planning Consultancy. Saoirse holds a Bachelor’s degree in Arts (International), majoring in Geography, and a Master’s in Planning and Sustainable Development. She has over 5 years’ experience working with multi-disciplinary teams and has provided input into a variety of projects. In particular, she has co-ordinated the preparation of the following Environmental Impact Assessment Reports (EIARs) including the completion of the Introduction, Alternatives, and Population and Human Health chapters.

- Dunboyne Phases 1 and 2 Large Scale Residential Development, Dunboyne, Co. Meath
- Rathgowan Large Scale Residential Development, Mullingar, Co. Westmeath
- Castlelands Large Scale Residential Development, Mallow, Co. Cork.

1.1.2 The Applicant

The applicant is Bellmount Good Shepherd Ltd. They are seeking permission to redevelop the Good Shepherd convent site to provide a high-quality student accommodation development that will bring this vacant and derelict site back into active use.

1.1.3 Reference to Guidelines Relevant to Discipline

This chapter has been prepared having regard to the following guidelines:

- Guidelines on the Information to be Contained in Environmental Impact Statements (Environmental Protection Agency (EPA), May 2022).
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003).
- EU Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (EU, 2017).
- EU Environmental Impact Assessment of Projects: Guidance on Scoping (EU, 2017).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (OPR, 2018).

1.2 Proposed Development

A detailed description of the project is provided in Chapter 2. To summarise, the applicant seeks permission for the development comprising student accommodation units and all associated site development works.

The site layout is shown below in Figure 1.1.



Figure 1.1 Site Layout

1.3 Site Location and Description

The subject site known formerly as the Good Shepherd Convent, is located in Sundays Well, Cork City, c. 2.4 km west of Cork City Centre and c. 1.5km north of University College Cork's main campus. The site is bound by existing residential developments to the north, south and east of the site, with Cork City Gaol located immediately west of the site. Access to the site is via the southwest corner of the site which connect to Convent Avenue that runs south to Sundays Well Road.

The Good Shepherd Convent is registered on the National Inventory of Architectural Heritage (Reg No. 20862019) and is listed as a protected structure (Ref No. PS721).

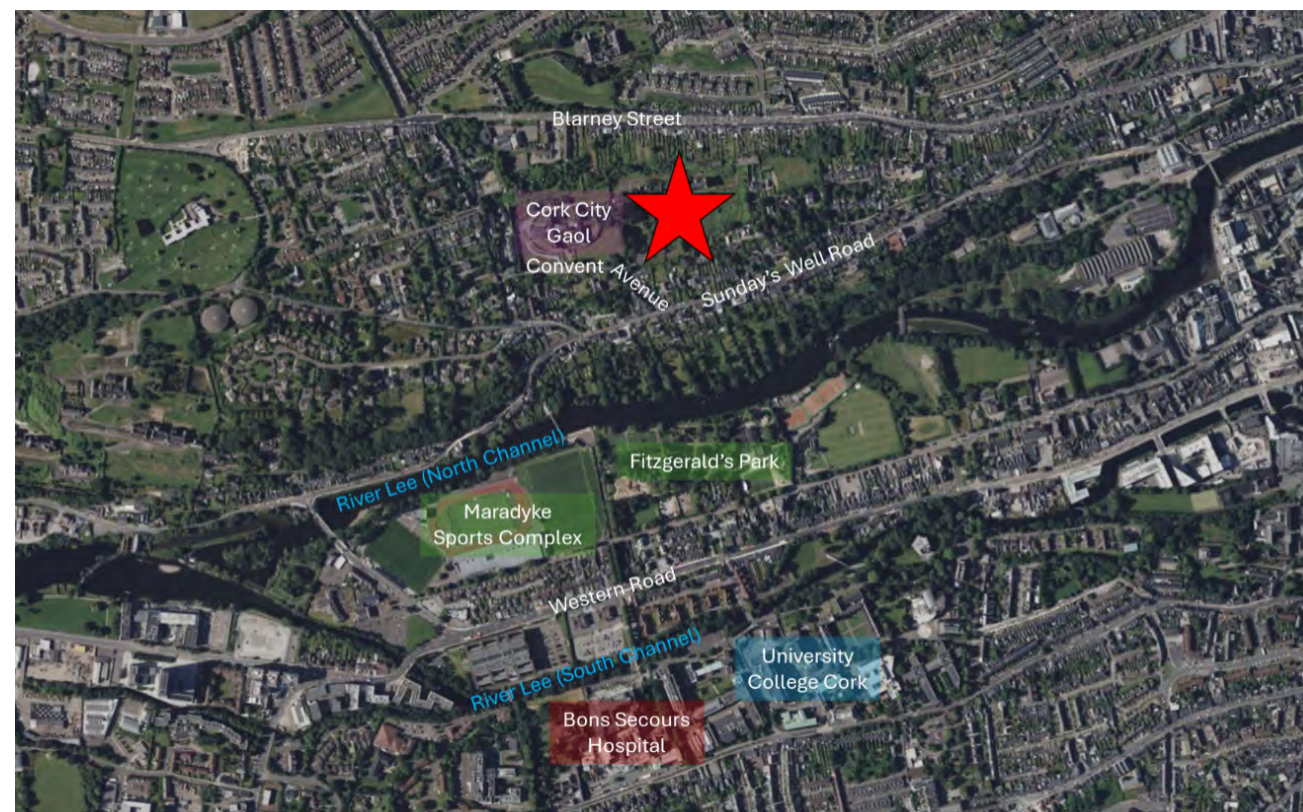


Figure 1.2 Site Location and Context

1.4 Land Use Zoning

The subject site is zoned primarily ZO 01 'Sustainable Residential Neighbourhoods' where the following objective applies:

"To protect and provide for residential uses and amenities, local services and community, institutional, educational and civic uses."

A portion of the site to the south and west is within the area zoned ZO 17 'Landscape Preservation Zones' where the following objective applies:

"To preserve and enhance the special landscape and visual character of Landscape Preservation Zones."

The site is located with an Architectural Conservation Area (ACA), 'Sundays Well ACA, Sub Area D'.

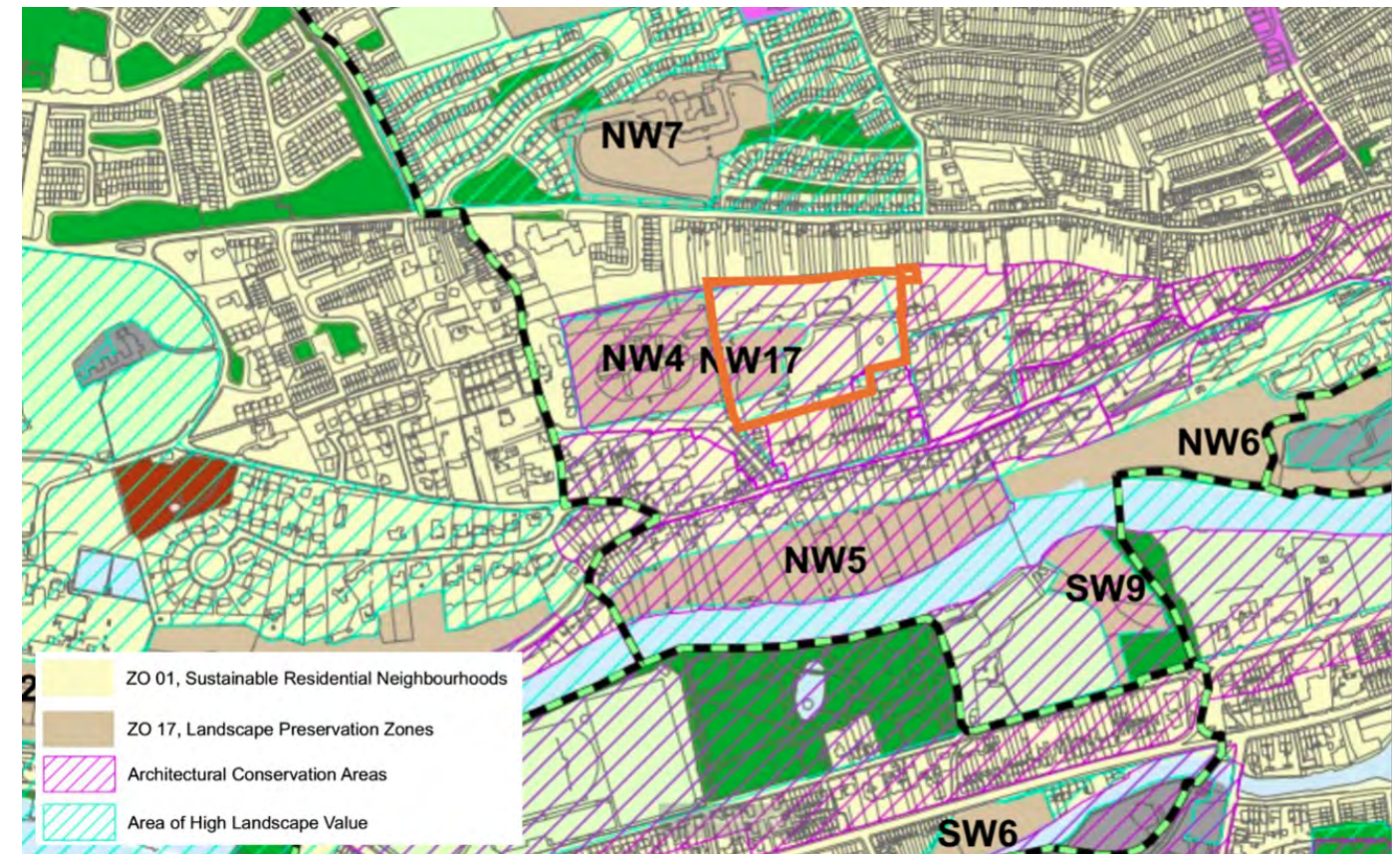


Figure 1.3 Extract from Cork City Development Plan Land Use Zoning Map. Site Outlined in orange.

1.5 Study Area

In general, the study areas are defined individually for each environmental topic, according to guidance and the geographic scope of the potential impacts or of the information required to assess those impacts. Details are provided by each discipline as part of the description of baseline conditions of the site.

1.6 Purpose of Environmental Impact Assessment

The objective of the Directive (Directive 2011/92/EU), as amended by Directive 2014/52/EU, is to ensure a high level of protection of the environment and human health, through the establishment of minimum requirements for environmental impact assessment (EIA), before development consent being given, of public and private developments that are likely to have significant effects on the environment.

The 2014 Directive, for the first time, provides a definition of EIA and this is now defined by section 171A of the Planning and Development Act, 2000 (as inserted by Regulation 16 of the 2018 Regulations).

It is defined as a process consisting of:

- a) the preparation of an EIAR by the developer;
- b) the carrying out of consultations with the public, prescribed bodies (and, where relevant, any affected Member States);
- c) the examination by the competent authority of the EIAR, any supplementary information provided, where necessary, by the developer and relevant information received through the consultation process;
- d) the reasoned conclusion of the competent authority on the significant effects of the project on the environment; and
- e) the integration of the competent authority's reasoned conclusion into any development consent decision.

The definition of EIA thus provides for a clear distinction between the process of environmental impact assessment to be carried out by the competent authority and the preparation by the developer of an EIAR.

Section 2 of the 2000 Act has been amended to define an EIAR as 'a report of the effects, if any, which proposed development, if carried out, would have on the environment and shall include the information specified in Annex IV of the Environmental Impact Assessment Directive.

1.7 Requirement for EIAR

Environmental Impact Assessment (EIA) requirements derive from EU Directives. Council Directive 2014/52/EU amended Directive 2011/92/EU and is transposed into Irish Law by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

Proposed development which falls within one of the categories of development specified in Schedule 5 of the Planning and Development Regulations 2001, as amended, which equals or exceeds, a limit, quantity, or threshold prescribed for that class of development must be accompanied by an EIAR.

The proposed development falls within the class of development types requiring an EIA under Schedule 5 of the Planning and Development Regulations 2001 (as amended). The proposed development is subject to Part 2 of this Schedule which deals with infrastructure projects where EIA is required for:

10. (b)

(i) Construction of more than 500 dwelling units

(iv) Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built up area and 20 hectares elsewhere

(in this paragraph "business district" means a district within a city or town in which the predominant land use is retail or commercial).

The proposed Large-Scale Residential Development (LRD) comprises the construction of 274 no. student accommodation units (with 957 no. bedspaces) and ancillary/associated development on a gross site area of 3.43ha. A mandatory EIAR is therefore not required as the LRD comprises urban development on a site area below the 10ha threshold and below the 500 dwellings unit threshold.

However, due to the site's history and cultural significance it was deemed appropriate to prepare a sub-threshold EIAR to assessed the potential for significant effects on the environment. This approach was taken in the previous 2017 application on site where an EIS was prepared as advised by Cork City Council (Cork City Council reference: 17/37279).

The criteria for assessing whether a development would or would not be likely to have significant effects on the environment is outlined in Schedule 7 of the 2001 Regulations and require the submission of information on the following:

- Characteristics of the proposed development
- Location of the proposed development, in terms of environmental sensitivity of geographical areas likely to be affected by the proposed development and
- Characteristics of the proposed impacts, in terms of the potential significant effects of the proposed development.

1.8 Content of Environmental Impact Assessment Report

The EIAR entails a systematic analysis and assessment of the potential environmental effects of a proposed development on its receiving environment. Article 3(1) of the amended Directive prescribes a range of environmental topics that must be addressed in the EIAR, as follows:

"The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors":

- a) A description of the likely significant effects of the project on the environment;
- b) A description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;
- c) A description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics and an indication of the main reasons for the options chosen, considering the effects of the project on the environment ; and
- d) A non-technical summary; and,
- e) Any additional information specified in Annex IV of the Directive/Schedule 6 to the 2001 Regulations, as amended, relevant to the specific characteristics of the project and to the environmental features likely to be affected.

As is required by Annex IV of the 2014 Directive, this EIAR addresses matters including proposed demolition works, risks to human health, major accidents/disasters, biodiversity, climate change and cumulative effects with other existing and/or approved projects.

1.9 Competency

It is a requirement that the EIAR must be prepared by competent experts. For the preparation of this EIAR, the Applicant engaged McCutcheon Halley Chartered Planning Consultants to direct and coordinate the preparation of the EIAR and a team of qualified specialists were engaged to prepare individual chapters, the consultant firms and lead authors are listed in the **Table 1.1**. Details of competency, qualifications, and experience of the lead author of each discipline is outlined in the individual chapters.

Various environmental specialists were commissioned to complete the specialist chapters of the EIAR, as required by Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment:

“Experts involved in the preparation of [EIARs] should be qualified and competent. Sufficient expertise, in the relevant field of the project concerned, is required for the purpose of its examination by the competent authorities in order to ensure that the information provided by the developer is complete and of a high level of quality”.

1.10 Format and Structure of the EIAR

This EIAR is prepared according to the ‘Grouped Format Structure’ as described in the Guidelines on information to be contained in Environmental Impact Statements (EPA, 2022). This means that each topic is considered as a separate section. The advantages of using this format are that it is easy to investigate a single topic and it facilitates easy cross-reference to specialist studies.

The EIAR is sub divided into 3 no. volumes as follows:

- **Volume I** Non-Technical Summary;
- **Volume II** Environmental Impact Assessment Report; and
- **Volume III** Appendices to Environmental Impact Assessment Report.

Volume II is presented 19 chapters as outlined in Table 1-1.

Table 1.1 EIAR Chapters and Contributors

Chapter	Aspect	Consultancy	Lead Consultant
1	Introduction	McCutcheon Halley Planning Consultants	Saoirse Kavanagh
2	Project Description	McCutcheon Halley Planning Consultants	Saoirse Kavanagh
3	Alternatives Considered	McCutcheon Halley Planning Consultants	Saoirse Kavanagh
4	Population & Human Health	McCutcheon Halley Planning Consultants	Saoirse Kavanagh
5	Land, Soils & Geology	AWN	Rashaqat Ali Siddiqui and Marcelo Allende
6	Hydrology & Hydrology	AWN	Rashaqat Ali Siddiqui and Marcelo Allende
7	Air Quality	AWN	Ciara Nolan

Chapter	Aspect	Consultancy	Lead Consultant
8	Climate	AWN	Ciara Nolan
9	Noise & Vibration	AWN	Abe Scheele
10	Landscape & Visual	Macroworks	Richard Barker
11	Waste Management	AWN	Chonaill Bradley
12	Material Assets: Traffic & Transport	MHL	David Murphy and Brian Murphy
13	Material Assets: Built Services	MMOS	William O’Sullivan and John Kelleher
14	Biodiversity	Veon	David McGillicuddy and Donnachadh Powell
15	Built Heritage	JCA	Jessie Castle, Katherine McClatchie, and Gareth O’Callaghan
16	Archaeology	John Cronin & Associates	John Cronin and David Murphy
17	Screening for Major Accidents	McCutcheon Halley Planning Consultants	Saoirse Kavanagh
18	Significant Interactions	McCutcheon Halley Planning Consultants	Saoirse Kavanagh
19	Summary of Mitigation Measures	McCutcheon Halley Planning Consultants	Saoirse Kavanagh

In addition, contributors have had regard to other relevant discipline-specific guidelines, these are noted in individual chapters of the EIAR.

1.11 Scoping

The purpose of scoping is to identify the information to be contained in an EIAR and the methodology to be used in gathering and assessing that information. The scope of this EIAR is informed by the requirements of the Directive 2014/52/EU and the transposing Regulations together with the Guidelines set out above. Applicants are not required to seek a formal scoping opinion.

The scope of individual assessments is informed by discipline specific guidelines and, where this is the case, they are referenced in each chapter.

Scoping requires the consideration of the nature and likely scale of the potential environmental impacts likely to arise from a proposed development or project. It is an iterative process that is ongoing throughout the development of the EIAR. The following topics, which include those stipulated in the amended Directive, have been scoped in for this assessment.

- Population and human health;
- Biodiversity (flora and fauna);
- Land, soils, geology and hydrogeology;

- Hydrology;
- Air quality and climate;
- Noise and vibration
- Landscape and visual amenity;
- Cultural heritage, archaeology and architectural heritage;
- Traffic and transportation;
- Waste;
- Services; and
- Interactions between the above-listed topics.

1.12 Scope of Cumulative Effects

Directive 2014/52/EU substituted a new Annex IV into Directive 2011/92/EU. Annex IV of the EIA Directive is to be read in conjunction with article 5(1) and sets out the information to be included in an EIAR. Annex IV was transposed into national law via article 97 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (the “2018 Regulations”) which substituted a new Schedule 6 into the Planning and Development Regulations 2000, as amended.

The Directive requires that the EIAR describes the cumulation of effects with other existing and/or approved projects.

Cumulative effects may arise from:

“- *The interaction between the various impacts within a single project;*

- *The interaction between all the differing existing and / or approved projects in the same areas as the proposed project.”¹*

In August 2018, the Department of Housing, Planning and Local Government issued Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment. The Guidelines summarise “cumulative effects” in the following way at page 40;

“Effects are not to be considered in isolation but cumulatively i.e., when they are added to other effects. A single effect on its own may not be significant in terms of impact on the environment but, when considered together with other effects, may have a significant impact on the environment. Also, a single effect which may, on its own, have a significant effect, may have a reduced and insignificant impact when combined with other effects.

Paragraph 2(e)(i)(V) of Schedule 6 (paragraph 5(e) of Annex IV) provides as follows;

*“the cumulation of effects with other **existing or approved developments, or both**, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.” (emphasis added).*

Accordingly, each chapter of this EIAR assesses the cumulative effect of this permitted development in combination with the proposed development.

Individually, each specialist consultant has reviewed under construction, permitted, and or under consideration development in the local area, and using their expertise they have identified projects relevant to their discipline that may

¹ Department of Housing, Planning and Local Government, “Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment” (August 2018), page 40.

interact to produce a cumulative effect. The detail of the identified projects and plans is set out within each specialist chapter of this EIAR.

While the Directive does not require a cumulative assessment of future proposals where a planning application has not been lodged, recognising the broad scope and purpose of the EIA Directive, regard is had to the judgement of *Fitzpatrick v An Bord Pleanála* [2019] IESC 23, henceforth referred to as the ‘Apple Case’.

The Supreme Court in the Apple Case held that:

- 1) An EIA must contain an assessment of the cumulative effects of future developments that form an “integral part” of the development applied for (i.e., where there is a “functional or legal interdependence” between the development applied for and the envisaged future development).

Cumulative effects are not limited to projects, and it is necessary to also consider relevant Plans. According to the Environment Protection Agency (2020), in Ireland, key cumulative effects – where environmental receptors are at, or near, their thresholds or their capacity to assimilate more change – include climate change; water quality, flood risk, air quality, biodiversity and landscape. For the purpose of this EIAR, the following have been considered in relation to culminative impacts:

- **Cork City Development Plan 2022-2028** - gives spatial expression to the city’s economic, social, housing, and cultural development. The Plan has a key role in protecting the environment, heritage, and amenities of the city and in mitigating against the impacts of climate change. It includes policies and objectives for all of the aspects included in this EIAR.
- **The Climate Action Plan, 2024** - climate change is the ultimate cumulative effect, nationally and internationally. Thresholds for greenhouse gas emissions are being exceeded. Under the Paris Agreement, Ireland pledged to reduce greenhouse gas emissions to 20% below 2005 levels by 2020, but it is set to exceed this target by 5–6%, and to exceed the 2021–2030 target by 25%. The Climate Action Plan 2024 puts forward measures for improving these trends, including increased use of renewable energy, and improved building energy efficiency, empowering a modal shift, and expanding the EV charging network.
- **National Biodiversity Plan 2023-2030** - The Plan sets out actions through which a range of government, civil and private sectors will undertake to protect and conserve biodiversity. It has been developed in line with the EU and International Biodiversity strategies and policies.
- **Standards in the EU Air Quality Directive and ‘daughter’ directives** - establish the levels of air pollutants that have no significant impacts on human health or the environment.

In addition, each of the specialist chapters (4 - 17) considers the cumulative effects of projects and plans relevant to the zone of influence and discipline specific factors.

1.13 Impact Assessment Methodology

Each chapter of this EIAR assesses the direct, indirect, cumulative, and residual impact of the proposed development for both the construction and operational stage of the proposed development.

The impact assessment methodology is detailed in the respect of the various environmental topics in the respective chapters herein. The assessment of impacts is based on the source-pathway-receptor model, which dictates that, for an environmental impact to occur, there must be a source, a receptor which is sensitive to the effect in question, and a pathway by which the

effect can reach the receptor. Unless otherwise stated, the criteria for effect / impact characterisation are as per the EPA guidelines (as set out in Table 1.2). The significance of an impact is determined through comparison of the character of the predicted effect to the sensitivity of the environment / receptor in question.

Table 1.2 Impact Rating Terminology

Quality of Effect	
Positive	A change which improves the quality of the environment (for example, by increasing species diversity, or the improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/ Adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Significance of Effect	
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences
Slight Effect	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effect	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effect	An effect which, by its character, magnitude, duration, or intensity, alters a sensitive aspect of the environment.
Very Significant Effect	An effect which, by its character, magnitude, duration, or intensity, significantly alters most of a sensitive aspect of the environment.
Profound Effect	An effect which obliterates sensitive characteristics.
Duration of Effects	
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting less than a year
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration
Frequency	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).
Extent and Context of Effects	

Extent	Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?).
Probability of Effects	
Likely	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Type of Effects	
Indirect (Secondary or Off-site)	Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
Cumulative	The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.
Do-Nothing	The environment as it would be in the future should the subject project not be carried out.
Worst-Case	The effects arising from a project in the case where mitigation measures substantially fail.
Indeterminable	When the full consequences of a change in the environment cannot be described.
Irreversible	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Residual	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
Synergistic	Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of SOx and NOx to produce smog).

1.14 Consultation

The EIAR was scoped following an appraisal of the 2022 EPA Guidelines on Information to be contained within the EIAR, through design team meetings with the specialist consultants and the pre-planning meetings held with Cork City Council.

Prior to lodging this application, the required information has been issued to the Department of Housing, Planning and Local Government’s EIA Portal. The purpose of this tool is to inform the public in a timely manner, of applications that are accompanied by an EIAR.

- The following prescribed bodies have been consulted in relation to the general scope of the EIAR.
- Department of Housing, Local Government, and Heritage
- Department of Tourism, Culture, Arts, Gaeltacht, Sport & Media
- Department of Education
- Geological Survey Ireland (Department of the Environment, Climate and Communications)
- The Heritage Council

- Office of Public Works (OPW)
- Transport Infrastructure Ireland (TII)
- The National Transport Authority (NTA)
- The Health and Safety Authority (HSA)
- The Health Service Executive (HSE)
- Inland Fisheries Ireland
- Bat Conservation Ireland
- Uisce Éireann
- An Taisce
- Bord Gais
- ESB
- Environmental Protection Agency
- Fáilte Ireland

Responses received are presented in Appendix 1.1

1.15 References & Sources

Guidelines on the Information to be Contained in Environmental Impact Statements (Environmental Protection Agency (EPA), May 2022); https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf

Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003). <https://www.epa.ie/publications/monitoring--assessment/assessment/advice-notes-on-current-practice-in-the-preparation-of-environmental-impact-stat.php>

EU Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (EU, 2017). https://ec.europa.eu/environment/eia/pdf/EIA_guidance_EIA_report_final.pdf

EU Environmental Impact Assessment of Projects: guidance on Scoping (EU, 2017). https://ec.europa.eu/environment/eia/pdf/EIA_guidance_Scoping_final.pdf

Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (OPR, 2018). <https://www.opr.ie/wp-content/uploads/2019/08/2018-Environmental-Impact-Assessment-1.pdf>



CHAPTER TWO

PROJECT DESCRIPTION

CHAPTER TWO

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CHAPTER TWO | Project Description

2.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) sets out the proposed development and provides details in relation to the demolition, construction and operational phases of the scheme. The chapter was prepared in conjunction with the relevant member of the Design Team, and it should be read in conjunction with the submitted drawings together with supporting reports.

2.2 Expertise and Qualifications

This chapter of the EIAR has been prepared by Saoirse Kavanagh, Executive Planning Consultant of McCutcheon Halley Planning Consultancy. Saoirse holds a Bachelor’s degree in Arts (International), majoring in Geography, and a Master’s in Planning and Sustainable Development. She has over 5 years’ experience working with multi-disciplinary teams and has provided input into a variety of projects. In particular, she has co-ordinated the preparation of the following Environmental Impact Assessment Reports (EIARs) including the completion of the Introduction, Alternatives, and Population and Human Health chapters.

- Dunboyne Phases 1 and 2 Large Scale Residential Development, Dunboyne, Co. Meath
- Rathgowan Large Scale Residential Development, Mullingar, Co. Westmeath
- Castlelands Large Scale Residential Development, Mallow, Co. Cork.

2.3 Proposed Development

The proposed development will consist of a 10-year planning permission for the following Large Scale Residential Development (LRD) comprising 274 no. student accommodation apartments and a total of 957 no. bed spaces. The proposed LRD includes the following works: i) the partial demolition, conservation, redevelopment and extension of the existing former Good Shepherd Convent buildings for student accommodation use; ii) modifications (including the removal of a glasshouse extension) to the former Bake House/Coach House building to provide a community / amenity space; iii) the conservation, redevelopment and extension of the existing Gate Lodge to provide a café, co-working space and security/administrative office use; iv) the demolition of the former hostel building (known as Well House) and demolition of sheds, glasshouses and other ancillary structures on site; v) the construction of 8 no. new student accommodation apartment blocks ranging in height from 3 to 5 storeys; vi) the construction of a 3 storey mixed-use building with commercial/retail use at groundfloor level and student accommodation on the upper floors; and vii) all associated ancillary development works including vehicular/pedestrian access and pedestrian crossing on to Convent Avenue, new footpaths and raised table at the junction of Convent Avenue and Sunday’s Well Road, landscaping, amenity and open space areas, boundary treatments, bicycle and car parking, bin storage, 2 no. ESB substations, public lighting and all other ancillary development at the Former Good Shepherd Convent, Convent Avenue and Buckston Hill, Sunday’s Well, Cork. The proposed development consists of works to and within the curtilage of the former Good Shepherd Convent, which is a protected structure (Ref. No. PS721). The proposed development also consists of works to the exterior of structures which are located within the Sunday’s Well Architectural Conservation Area.

An extract of the proposed layout is provided in Figure 2.1 and the key site statistics are provided in Table 2.1.



Figure 2.1 Proposed Layout

An overview of the key development statistics is set out in the following Table:

Table 2.1 Development Overview

Development Statistics	
Site Area	3.57ha (red line boundary) 3.42ha (gross) 2.76ha (net)
Student Apartments	274 no. apartments
Bedspace	957 no. bedspaces
Amenities & Facilities	Café, co-working space, commercial space, and exhibition space
Building Height	1 to 6 storeys
Car Parking	37 no. car parking spaces
Bicycle Parking	548 no. cycle parking spaces
Plot Ratio	0.90
Site Coverage	22%

2.3.1 Existing Structures

There are several existing structures and buildings on site associated with the Former Good Shepherd Complex. The general locations of the various structures are shown in Figure 2.2.



Figure 2.2 Existing Buildings on Site. Image Source: Bing Maps Satellite View

There is a gate lodge adjacent to the access to the site in the south-west corner. This red brick building is largely intact, but the roof was damaged by recent fires. The gate lodge will be retained and renovated as part of the proposed development to provide a café, co-working space, and a security/administrative office.

East of the gate lodge is a two-storey red brick building which was a former hostel and was in use as residential accommodation until recently. This building was built in the 20th Century and is in good condition. This building will be demolished as part of the proposed development and will be replaced with a new building (B7).

Further east of the former hostel, along the southern boundary, are several agricultural and outhouse buildings which were built c. 1900 and in the 20th Century. These buildings will all be demolished as part of the proposed development.

The main Former Good Shepherd complex buildings are in the northern portion of the site, at the highest point of the site. The three storey red brick buildings were initially built as separate structures in the 1870s as a convent, Magdalene asylum home, orphanage, industrial school, and dormitory. These separate buildings were joined by infill buildings in the mid-20th century.

Today, much of the original fabric of these buildings, including the roofs, have been lost to time. The buildings have been damaged by several fires that have occurred on site since the early 2000s with the most recent fire in 2024.

The dormitory, located furthest west, will be demolished. The infill buildings built between the home, convent, and orphanage will be demolished. In addition, the rear of the home, convent and orphanage will be demolished.

There is a basement level passage connecting the convent to the orphanage which will be demolished and infilled.

To the east of these main buildings is a single storey bake house on a raised base. A single storey coach house is attached to the western gable of this building. These buildings will be retained and renovated as part of the proposed development to provide a community/ amenity space.

There are the ruins of two glasshouses located to the south and east of the bake house building. These will be removed as part of the proposed development.

A graveyard associated with the convent is located in the north-eastern corner of the site. These graves will be untouched by the proposed development and will remain in situ.

There is a statue and several retaining walls in the open spaces to the south of the graveyard and bake house which will be removed as part of the proposed development.



Figure 2.3 Gate Lodge (in foreground) and Former Hostel (in background). Image Source: Google Streetview



Figure 2.4 Convent and Home. Image Source: Site Visit in February 2025



Figure 2.5 South Elevation of main Good Shepherd Complex Buildings. Red = Proposed Demolition

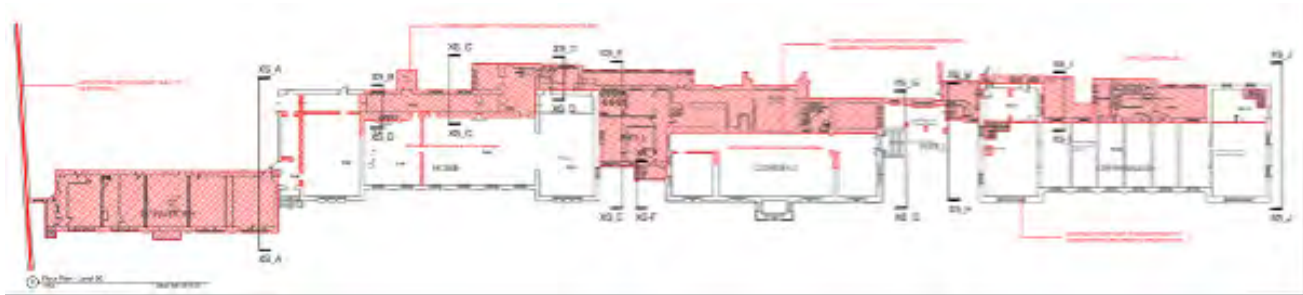


Figure 2.6 Ground Floor Plan of main Good Shepherd Complex Buildings. Red = Proposed Demolition



Figure 2.7 Bake House and Coach House. Image Source: Site Visit in February 2025

2.3.2 Proposed New Buildings

The proposal includes the construction of new apartment blocks to provide student accommodation. There are A Blocks proposed along the northern portion of the site with B Blocks to the east and south of the site.

Block A1 is orientated in a north-south direction and will be located in the north-west corner of the site, in place of the dormitory building which will be demolished.

Block A2 provides two extensions to the Magdalene Home building, both orientated in a north-south direction, on either side of the building to be retained.

Block A3 will be constructed as an extension to the Convent building which will be retained and renovated.

Block A4 provides two extensions to the Orphanage building, similar to the extension to the Magdalene Home building.

The extensions are set back from the original buildings to provide a clear delineation between old and new.

Block A5 provides a new block to the east of the orphanage and the south of the Bake House building. This Block A5 is orientated in a east west direction and mirrors the building line set by the historic convent buildings to the west.

Blocks B1 and B2 are located south of A5 and continue the east west direction of the A5. A new internal street separates Blocks B1 and B2.

Blocks B3 and B4 are located west of B2 and are located on the northern side of the new internal street. Blocks B5 and B6 are located south of the B3 and B4 and the new internal street. These blocks (B5 and B6) will replace the agricultural and outhouse buildings located along the southern boundary.

Block B7 is located west of B6 and is orientated in an east west direction. This block replaces the former hostel building which will be demolished as part of the proposed development.

An extension is proposed to the Gate Lodge which will extend the building from its northern elevation.

2.3.3 Student Accommodation

The proposed will provide a total of 274 no. student apartment units with a total of 957 no. beds. The proposal includes 140 no. studio apartments, 3 no. 3 bed apartments, 30 no. 4 bed apartments, 23 no. 5 bed apartments, 24 no. 6 bed apartments, 3 no. 7 bed apartments, and 51 no. 8 bed apartments.

Table 2-2 provides a breakdown of the bedspaces and unit mix. Table 2-3 provides an overview of the units and bedspaces in each block.

Table 2.2 Unit Mix

	Units	Beds
Studio	140	140
2 bed	0	0
3 bed	3	9
4 bed	30	120
5 bed	23	115
6 bed	24	144
7 bed	3	21
8 bed	51	408
Total	274	957

Table 2.3 Overview of Unit Mix and Bedspaces

Block	Apartments	Bed Spaces	Apartment Mix
A1	18	89	5 no. 4 beds, 9 no. 5 beds, and 4 no. 6 beds
A2	75	160	59 no. studios, 3 no. 3 beds, 3 no. 4 beds, and 10 no. 8 beds
A3	33	63	27 no. studios and 6 no. 6 beds
A4	72	164	54 no. studios, 8 no. 4 beds, 2 no. 7 beds, and 8 no. 8 beds
A5	8	63	1 no. 7 bed and 7 no. 8 beds
B1	20	103	5 no. 4 beds, 7 no. 5 beds, 8 no. 6 bed
B2	12	61	3 no. 4 beds, 5 no. 5 beds, and 4 no. 6 beds
B3	8	64	8 no. 8 no. bed
B4	8	56	2 no. 4 beds and 6 no. 8 beds

Block	Apartments	Bed Spaces	Apartment Mix
B5	6	48	6 no. 8 bed
B6	6	48	6 no. 8 bed
B7	8	38	4 no. 4 beds, 2 no. 5 beds, 2 no. 6 beds
Total	274	957	140 no. studios, 3 no. 3 beds, 30 no. 4 beds, 23 no. 5 beds, 24 no. 6 beds, 3 no. 7 beds, and 51 no. 8 beds.

2.3.4 Ancillary and Amenity Uses

The gate lodge located adjacent to the site access point will be renovated and extended to provide a café and a co-working space at Level 00 and a security/administrative storage and office spaces at Level 01. Due to the topography, level access will be provided at both Level 00 and Level 01.

The bake house building located along the northern boundary will provide a community/amenity space.

The ground floor of the proposed Block 7 will provide c. 433sqm of commercial space.

2.3.5 Height

The proposed development includes buildings which range in height from 1 to 6 storeys. The A blocks range from 4 to 6 storeys and the B blocks range from 3 to 5 storeys. The Bakehouse and the Gate Lodge are both 1 to 2 storeys.

The table below provides an overview of the building heights.

Table 2.4 Overview of Proposed Building Height

Block	Storeys
A1	4 to 5 storeys
A2	5 storeys
A3	4 to 5 storeys
A4	5 to 6 storeys
A5	4 storeys
Bakehouse	1 to 2 storeys
B1	5 storeys
B2	3 storeys
B3	4 storeys
B4	4 storeys
B5	3 storeys
B6	3 storeys
B7	3 storeys
Gate Lodge	1 to 2 storeys
Overall	1 to 6 storeys

2.3.6 Access, Parking & Connections

The proposal includes 548 no. bicycle parking spaces and 37 no. car parking spaces.

Table 2.5 Proposed Parking Provision

	Car Parking Spaces	Cycle Parking Spaces
A Blocks	8 no. (4 no. universal, 4 no. standard)	186 no. (104 no. covered, 82 no. open)
B Blocks	29 no. (9 no. universal, 20 no. standard)	356 no. (334 no. covered, 22 no. open)
Total	37 no. (13 no. universal, 24 no. standard)	548 no. (438 no. covered, 110 no. open)

2.3.7 Landscape

The landscape masterplan has been developed by Forestbird Design and includes large areas of open space to serve the development.

The proposed layout and landscaping scheme has been designed around both the Landscape Preservation Zone to the west of the site and the historic buildings located to the north of the site.

Maintaining public access to the cemetery in the north-east corner of the site has also been a key consideration of the landscaping scheme.

The landscaping includes native woodland planting, courtyards, seating, and amenity pathways through the scheme.



Figure 2.8 Proposed Landscaping Plan

2.3.8 Drainage

A full description is contained in the **Engineering Report** that accompanies this application under separate cover and it should be read in conjunction with this section.

2.3.8.1 Wastewater

The foul drainage for the proposed development has been designed as a separate system to the storm. All foul drainage from the units is to be collected beneath the ground floor slab and directed to the proposed new foul network onsite, which is proposed to discharge to the existing combined sewer to the southwest of the site.

2.3.8.2 Surface Water

Through the incorporation of SuDS and the use of tree pits, rain gardens, rainwater harvesting, and green roofs; it will allow for the temporary storage and filtration of surface water from this development whilst providing ancillary biodiversity and amenity benefits.

The surface water drainage will be gathered in a dedicated system and will drain all roofs, terraces, and hardstanding areas through the incorporated SuDS measures in conjunction with drainage channels, gullies, rainwater outlets and downpipes.

There will be a combination of green/blue roofs and an attenuation tank used to limit the flow of surface water to the combined sewer. The greenfield runoff rate (Qbar) was calculated for the site area, this resulted in a rate of approximately 18.91 l/s, however, the proposed discharge from the site to the combined sewer has been limited to 2.0 l/s through the use of a Hydro-Brake limiter.

The attenuation tank storage has been designed and is being provided as a 2300m3 below ground tank. The attenuation storage holds capacity for a 1 in 100-year storm event and includes for a 20% allowance for climate change. A non-return valve is located at the inlets of the attenuation tank.

2.3.8.3 Sustainable Urban Drainage Systems (SuDS)

SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the effective application of nature-based solutions (NBS) where suitable. This incorporation will result in the provision of temporary surface water retention and integration of blue and green infrastructure within the development. Additional benefits as a result of this implementation will also be provided including run-off cleansing and biodiversity enhancement.

2.3.8.4 Water Supply

The proposals for the water supply will involve taking a feed from the existing public watermain, sluices valves will be provided at appropriate locations to facilitate isolation and purging of the system.

2.3.9 Services

2.3.9.1 Electrical Supply

The existing ESB infrastructure within this area is adequate to support the proposed development in this case. The design of the new electrical distribution and supply network will be carried out by ESB networks who will decide on the preferred location of

sub stations, mini pillars and micro pillars. The construction of the ducting infrastructure for the site will be carried out by the developer in accordance with ESB Networks requirements and Regulations.

It is envisaged that the complete electrical distribution system within the development will be underground with the requirement for sub stations, transformers, mini pillars and micro pillars located overground in positions to be agreed with ESB Networks

2.3.9.2 Gas Supply

There is no Natural Gas requirement for development in the study area.

2.3.9.3 Telecommunications

The existing Eir telecommunications infrastructure within this area is adequate to support the proposed development in this case. There is Eir fibre broadband available locally. The design of the new telecommunications distribution and supply network will be carried out by Eir who will decide on the preferred location of distribution kiosks to serve the proposed development. The construction of the ductwork infrastructure for the site will be carried out by the developer in accordance with Eir requirements and regulations.

It is envisaged that the complete telecommunications distribution system within the development will be underground with the requirement for distribution kiosks located overground in positions to be agreed with Eir.

With the availability of high speed broadband in the area it is envisaged that telephone, broadband and digital television services will distribute through this network.

2.4 Demolition & Construction Phase

This application is accompanied by a **Construction Environmental Management Plan** (CEMP) prepared by MMOS. A Resource Waste Management Plan has also been prepared by AWN Consulting and is appended to this EIAR. Both of these reports should be read in conjunction with this chapter for a comprehensive description of the construction phase.

2.4.1 Programme



Figure 2.9 Construction Phasing Plan

It is intended that the proposed development will be constructed in 5 phases.

Phase 1 includes the works to the Home, Convent, and Orphanage buildings and the construction of blocks A2, A3 and A4. Phase 1 also includes the works to the road under the ownership of Cork City Council.

Phase 2 includes the construction of blocks A1, A5 and the coach house/bake house building. It also includes the works to the landscape preservation zone.

Phase 3 includes the construction of Blocks B1 and B3. Phase 4 includes the construction of Blocks B3, B4 and B6. The final phase 5 includes the construction of blocks B6 and B7 and the works to the Gate House building.

Phase 1 is expected to commence in January 2026 and to take approximately 30 months. Phases 2 to 5 are expected to each take 25 months and are expected to commence in May of 2027, 2029, 2030, and 2031 respectively.

2.4.2 Site Compound

The site compound will be located within the red line boundary of the proposed development.

2.4.3 Access and Parking

The main contractor will be responsible for all site entrance and exits during the works. The location of same and associated traffic movements will be agreed with Cork City Council in advance and for the duration of the works.

During the project site delivery traffic will access the site via Convent Road. Site traffic can approach Convent Road via Shankiel Road from the south or from Blarney Street from the north. It is anticipated that site traffic will exit site via Convent Road onto Shankiel Road but there is an alternative egress route via the one way road Strawberry Hill which is sufficiently wide to cater for the majority of site traffic.

Traffic in and around Shankiel Road will be carefully managed by the main contractor to ensure that there is no conflict with the general traffic as this is a main thoroughfare to the Apple Campus in Holyhill.

Heavy goods vehicle truck movements into and out of the site are expected to peak during the demolition and reduced dig stages excavation works.

There will be other times of peak HGV movements for large concrete pours, but these will be concentrated to within individual 24-hour periods.

People movement (in and out) and associated car trips during each construction stage will be up to 50no. as the frame is being progressed. The numbers on site will more or less maintain at this level during the development.

Typically, the trips to and from the site will be by private car and vans accommodating 1-2 workers. There is an array of public transportation alternatives that may also be availed of by individual workers. Typically, construction workers will remain on site from between 08.00 – 18.00 (Mon-Fri) and 08.00 -16.00 (Saturday) as required.

2.4.4 Construction Hours

The following working hours will be followed during the construction phase:

- 8am to 6pm Monday to Friday
- 8am to 4pm on Saturdays

Any works outside of these hours will be agreed with the local authority.

2.4.5 Construction Traffic

A **Construction Traffic Management Plan** prepared by MHL accompanies this application under separate cover.

2.4.6 Demolition Phase

The proposal includes the partial demolition of the Former Hostel building and the agricultural outhouse buildings along the southern boundary.

The proposal also includes the demolition of the dormitory building in the north-west corner and the partial demolition of the Convent, Home, and Orphanage buildings.

The remains of fountains, statues, glasshouses and other garden features located along the eastern portion of the site will also be removed as part of this proposed development.

The demolition phase will be completed in accordance with the mitigation measures set out in the CEMP and RWMP completed as part of this application.



Figure 2.10 Extract from Demolition Plan

2.4.7 Earthworks

2.4.7.1 Ground Conditions

The site includes a steep topography with existing buildings located at the high and low parts of the site.

2.4.7.2 Invasive Species

No High Impact or Third invasive species were identified on site during the site walkover. However, standard best practice will be in place during the construction phase to manage any potential invasive species on site.

2.4.7.3 Foundations and Services

There will be excavation associated with the pouring of foundations and the establishment of trenches for site services.

2.5 Commissioning

The testing and commissioning of services (drainage, watermain, gas, electricity) will be completed in accordance with relevant codes of practice.

2.6 Decommissioning

The design life of the scheme is greater than 60 years. Thus, for the EIA process, the development is considered permanent, and a decommissioning phase is not considered in this report.

2.7 Conclusion

This chapter sets out the development parameters for the proposed development including an overview of the Architectural, Landscape and Engineering strategy.



CHAPTER THREE

ALTERNATIVES CONSIDERED

CHAPTER THREE

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CHAPTER THREE | Alternatives Considered

3.1 Introduction

The requirement to consider alternatives within an Environmental Impact Assessment Report (EIAR) is set out in Annex IV (2) of the EIA Directive (2014/52/EU) and in Schedule 6 of Planning and Development Regulations 2001 (as inserted by article 97 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 which state (at paragraph 1(d)):

“A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment”.

The requirement is elaborated at paragraph 2(b), which makes clear that reasonable alternatives may include project design proposals, location, size and scale, which are relevant to the proposed development and its specific characteristics. The Regulations require that an indication of the main reasons for selecting the preferred option, including a comparison of the environmental effects be presented in the EIAR.

The Environmental Protection Agency *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*, 2022 states:

“The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with ‘an indication of the main reasons for selecting the chosen option’. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or ‘mini-EIA’) of each alternative is not required.”
(Section 3.4.1)

The Guidelines also state that the range of alternatives considered may include the ‘do-nothing’ alternative.

Accordingly, this chapter of the EIAR provides an outline of the main alternatives examined during the design phase. It sets out the main reasons for choosing the development as proposed, taking into account and providing a comparison on the environmental effects. The assessment of alternatives is considered under the following headings:

- i. Do Nothing Alternative
- ii. Alternative Locations
- iii. Alternative Use
- iv. Alternative Processes
- v. Alternative Design

Notwithstanding the above, pursuant to Section 3.4.1 of the 2022 EPA Guidelines, the consideration of alternatives also needs to be cognisant of the fact that *“in some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant ‘alternative location’...”* The Guidelines are also instructive in stating: *“Analysis of high-level or sectoral strategic alternatives cannot reasonably be expected within a project level EIAR... It should be borne in mind that the amended Directive refers to ‘reasonable alternatives... which are relevant to the proposed project and its specific characteristics’”.*

3.1.1 Author Information and Competency

This chapter of the EIAR has been prepared by Saoirse Kavanagh, Executive Planning Consultant of McCutcheon Halley Planning Consultancy. Saoirse holds a Bachelor’s degree in Arts (International), majoring in Geography, and a Master’s in Planning and Sustainable Development. She has over 5 years’ experience working with multi-disciplinary teams and has provided input into a variety of projects. In particular, she has co-ordinated the preparation of the following Environmental Impact Assessment Reports (EIARs) including the completion of the Introduction, Alternatives, and Population and Human Health chapters.

- Dunboyne Phases 1 and 2 Large Scale Residential Development, Dunboyne, Co. Meath
- Rathgowan Large Scale Residential Development, Mullingar, Co. Westmeath
- Castlelands Large Scale Residential Development, Mallow, Co. Cork.

3.2 Consideration of Alternatives

3.2.1 Do Nothing

The ‘Do-nothing’ alternative is a general description of the evolution of the key environmental factors of the site and environs if the proposed project did not proceed. Each Chapter of this EIAR includes a description of the ‘Do Nothing’ alternative and should be referenced in conjunction with this Chapter.

In the event that the Proposed Development does not proceed, the specific need for this residential development would still exist for the site, and as such the Proposed Development would need to be built elsewhere. In addition, the existing buildings on site would fall into further disrepair and their conservation and restoration would become more unviable over time.

It is noted that the duration of effects under this scenario are considered at least short-term (1-7 years), this reflects a reasonable timeframe for a further application for development to come forward on the site in the absence of this subject application.

With the mitigation measures proposed in this EIAR and having regard to the findings that no significant effects on the environment are expected for the proposed development, the proposed development is significantly positive when the comparative environmental effects is considered.

3.2.2 Alternative Locations

As noted in Section 4.13 of the 2018 Guidelines *“some projects may be site specific so the consideration of alternative sites may not be relevant.”* We also refer to the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA. 2022), which states that in some instances alternative locations may not be applicable or available for a specific project which is identified for a specific location.

An alternative location would essentially result in a ‘do nothing’ scenario for the site.

3.2.3 Alternative Uses

The primary determinant of suitable uses is established in the site's zoning which are set out in the Cork City Development Plan 2022-2028. The majority of the proposed development site is zoned ZO 01 'Sustainable Residential Neighbourhoods' which has the objective *'to protect and provide for residential uses and amenities, local services and community, institutional, educational and civic uses'*. The Development Plan notes that the primary uses in this zone include residential uses, crèches, schools, home-based economic activity, open space and places of public worship.

A portion of the site is zoned ZO 17 'Landscape Preservation Zones' which has the objective *'to preserve and enhance the special landscape and visual character of Landscape Preservation Zones'*. These areas have been identified due to their sensitive landscape character and have limited or no development potential.

3.2.4 Alternative Processes

Due to the nature and scale of the proposed development (i.e. a residential development greater than 200 student bed spaces), the only option is to submit a Large-Scale Residential Development planning application to Planning Authority. Therefore, there is no alternative process to consider.

3.2.5 Alternative Design

3.2.5.1 Alternative A – Cork City Council Reference: 06/30540; ABP Reference: 28.219782

Frinailla Limited applied for permission in February 2006 for demolition of modern additions to the existing Home Convent and Orphanage buildings, and the demolition of all ancillary sheds and structure, to facilitate 274 no. residential units.

This scheme included a creche, 4,235sqm of open space, and 343 no. car parking spaces.

Cork City Council granted permission in August 2006. This decision was subject to a third-party appeal to An Bord Pleanála who upheld the council's decision and granted permission in June 2007.

This layout included the construction of 13 no. new buildings, located throughout the site. Building J was located in the area which is now zoned for landscape preservation.

The Home, Convent and Orphanage buildings were retained in this layout as separate buildings to the new construction. The Bake House and Coach House were demolished as part of this layout. This layout did not include the Former Hostel building to the south of the site.

The access for this layout used the existing access road and extended this road down to the east of the site, between the proposed new buildings, into a cul-de-sac.



Figure 3.1 Alternative A – 2006 Application

3.2.5.2 Alternative B - Cork City Council Reference: 17/37279; ABP Reference 300690-18

In February 2017, Moneda Developments Limited submitted an application for the partial demolition, redevelopment and extension of the existing former Good Shepherd Convent, Orphanage and Magdalene home buildings, and the demolition of all ancillary sheds and structures to facilitate a residential development of 234 no. apartments. This development also included a creche, a resident community and interpretive centre, landscaped courtyards, a contemplative garden, 210 car parking spaces, and 234 no. cycle parking spaces.

An extract from the permitted site plan is shown below.

Cork City Council granted planning permission in December 2017. This decision was subject to a third party appeal to An Bord Pleanála who granted permission in September 2018.

This layout included the construction of 11 no. new buildings, three of which were connected to the Home, Convent and Orphanage buildings. The Bake House and Coach House were retained as part of this layout. This layout did not include the Former Hostel building to the south of the site.

The access to this layout used the existing access road and extended the road around to the east and south, providing a looped road within the site.



Figure 3.2 Alternative B - 2017 Application

3.2.5.3 Alternative C – Concept Scheme

Alternative C is a concept scheme that was prepared as part of the development of the scheme.

This layout includes the construction of 14 no. new buildings, five of which are connected to the Home, Convent, and Orphanage buildings.

The Bake House and Coach house are retained within this layout.

This layout included the demolition of the Former Hostel building to the south of the site, and the construction of a new building in its place.

A new access road is included along the southern boundary of this layout, which provides access to the proposed new buildings along the eastern portion of the site. The existing access road is retained and extended along the east and south of the site to create a looped road within the scheme.



Figure 3.3 Alternative C – Concept Scheme

3.2.5.4 Alternative D – Pre-Planning Layout

The layout presented to the council at the pre-planning stage included the construction of 14 no. new buildings, 5 no. of which were connected to the Convent, Home, and Orphanage buildings. This layout included the retention of the Coach House and Bake House.

Similar to Alternative C, this layout included the demolition of the Former Hostel building in the south-west corner and the construction of a new building in its place.

This alternative provided 281 no. student accommodation units, with a total of 903 no. student bedspaces.

The existing access road in the site was utilised in this layout to provide access to the entire site. This existing road was extended along the north of the site looped along the eastern side of the site to provide a circular road through the scheme.



Figure 3.4 Alternative D - S32B Layout

3.2.5.5 Alternative E – Final Layout

Following consultation with the council and the relevant council departments, the final layout was developed from the previous layouts.

The final layout includes a total of 274 no. student accommodation units with a total of 957 no. student bedspaces.

Similar to Alternative D, the layout includes a total of 14 no. new buildings with five of these buildings built as extensions to the Home, Convent and Orphanage buildings on site.

The layout provides an access road through the scheme, similar to as shown to the council in pre-planning discussions in Alternative D.



Figure 3.5 Alternative E - Final Layout

3.3 Conclusion

Throughout the design evolution of the subject site, the advantages and disadvantages of each early and alternative options were examined, with solutions considered in detail and the more favourable elements threaded through to the final and preferred strategy.

As a result, it is our opinion that the proposed final layout and design strategy outlined in Figure 3.5 (i.e. Alternative E – Final Layout), is the most appropriate scheme with the highest quality of residential amenity and least environmental effects.

The final scheme is consistent with both local and national planning policy and will create a new residential community with a strong identity, within a built-up urban environment



CHAPTER FOUR

POPULATION & HUMAN HEALTH

CHAPTER FOUR

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CHAPTER FOUR | Population & Human Health

4.1 Introduction

According to the European Commission's Environmental Impact Assessment of Projects: Guidance on the Preparation of the Environmental Impact Assessment Report (2017), human health is; *"a very broad factor that would be highly project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population."*

The Environmental Protection Agency (EPA) Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2022) advise that *"in an EIAR, the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in this EIAR e.g. under the environmental factors of air, water, soil etc."*

This chapter addresses the likely significant environmental impacts of the proposed development on population and human health. It is noted that other chapters of the EIAR also deal with likely significant environmental effects on population and human health arising from traffic and transportation, air quality and climate, noise and vibration, landscape and visual, material assets: utilities and the risk of major accidents and/or disasters and those chapters should be referenced in conjunction with this chapter of the EIAR.

4.2 Expertise and Qualifications

This chapter was prepared by Aida Vaisvilaite of McCutcheon Halley Chartered Planning Consultants. Aida holds a Bachelor's degree in Arts, majoring in English and a Master's in Planning and Sustainable Development, both awarded by University College Cork. Directly relevant experience to this proposed development that Aida has been involved in is the direction of EIARs and Environmental Reports to accompany residential led applications that received permission for development including;

- Population and Human Health Chapter for a Large Scale Residential Development, Mallow, Co. Cork
- Environmental Impact Assessment Screening Report for a Large Scale Residential Development in Castlemartyr, Co. Cork.
- Environmental Impact Assessment Screening Report for a Large Scale Residential Development in Douglas, Cork.

4.3 Proposed Development

A full description of the proposed development is provided in **Chapter 2** of this EIAR.

4.4 Methodology

This chapter has been prepared pursuant to Schedule 6 of the Planning and Development Regulations 2001 (as amended). Section 2 of Schedule 6 sets out the additional information relevant to the specific characteristics of the project required, which includes a description of the likely significant effects on the environment of the proposed development resulting from, among other things;

(IV) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters).

The Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022) state that:

"... in an EIAR, the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g., under the environmental factors of air, water, soil, etc."

Recital 22 to the EIA Directive provides that:

"in order to ensure a high level of protection of the environment and human health, screening procedures and environmental impact assessments should take account of the impact of the whole project in question, including, where relevant, its subsurface and underground, during the construction, operational and, where relevant, demolition phases."

The EPA Advice Notes (EPA 2003) recommend considering the following issues when assessing the potential impacts and effects of a proposed development on Population and Human Health:

- Economic Activity Likely to Lead to Projects – Will the development stimulate additional development and/or reduce economic activity, and if either, what type, how much and where?
- Social Consideration – will the development change the intensity of patterns and types of activities and land use?
- Land Use – will there be severance, loss of rights of way or amenities, conflicts, or other changes likely to ultimately alter the character and use of the surroundings?
- Tourism – will the development affect the tourism profile of the area?
- Health – have the vectors through which human health impacts could be caused been assessed, including adequate consideration of inter relationships between those assessments.

This chapter has been prepared having regard to the following guidelines:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022)
- Guidelines on the Information to be Contained in Environmental Impact Statements (EPA, 2002)
- Advise Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003)
- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (EU, 2017).

The impact assessment section of this chapter follows the terminology (where applicable) used in the EPA Guidelines as set out in **Chapter 1** of this EIAR.

4.5 Baseline Environment

The following provides a description of the receiving environment, with a focus on demography, land use and local amenity. The demographic profile of the Urbans Area within the study was examined utilising the CSO Census of Population Statistics dated 2022. Therefore, the data presented within this section reflects the most recent data available to the public.

4.5.1 Application Area

The subject site known formerly as the Good Shepherd Convent, is located in Sundays Well, Cork City, which is identified as 'North west suburbs' in the Cork City Development Plan. The subject site is situated approximately 2.4 km west of Cork City Centre and 1.5km north of U.C.C main campus. The site is situated on the north bank of the River Lee in the Sunday Well city area of Cork City. In terms of topography, the site slopes slightly from north to south. The site is bounded by existing residential developments to the north, south and east of the site, with Cork City Gaol bounding the site to the west. The Good Shepherd Convent is registered on the National Inventory of Architectural Heritage (Reg No. 20862019) and is listed as a protected structure (Ref No. PS721).

The site is within easy walking distance of Cork City Centre and UCC main campus which provides several educational, commercial and community facilities, including local shops, libraries, churches, and schools. Access to the site is via the southwest corner of the site which connect to Convent Avenue that runs south to Sundays Well Road. The site is served by the 201-bus route which is located approximately 600 metres from the site along Sunday's Well Road.



Figure 4.1 Application Area and Surrounding Context

4.5.2 Land Use Zoning

The subject site is zoned primarily ZO 01 'Sustainable Residential Neighbourhoods' where the following objective applies:

"To protect and provide for residential uses and amenities, local services and community, institutional, educational and civic uses."

A portion of the site to the south and west is within the area zoned ZO 17 'Landscape Preservation Zones' where the following objective applies:

"To preserve and enhance the special landscape and visual character of Landscape Preservation Zones."

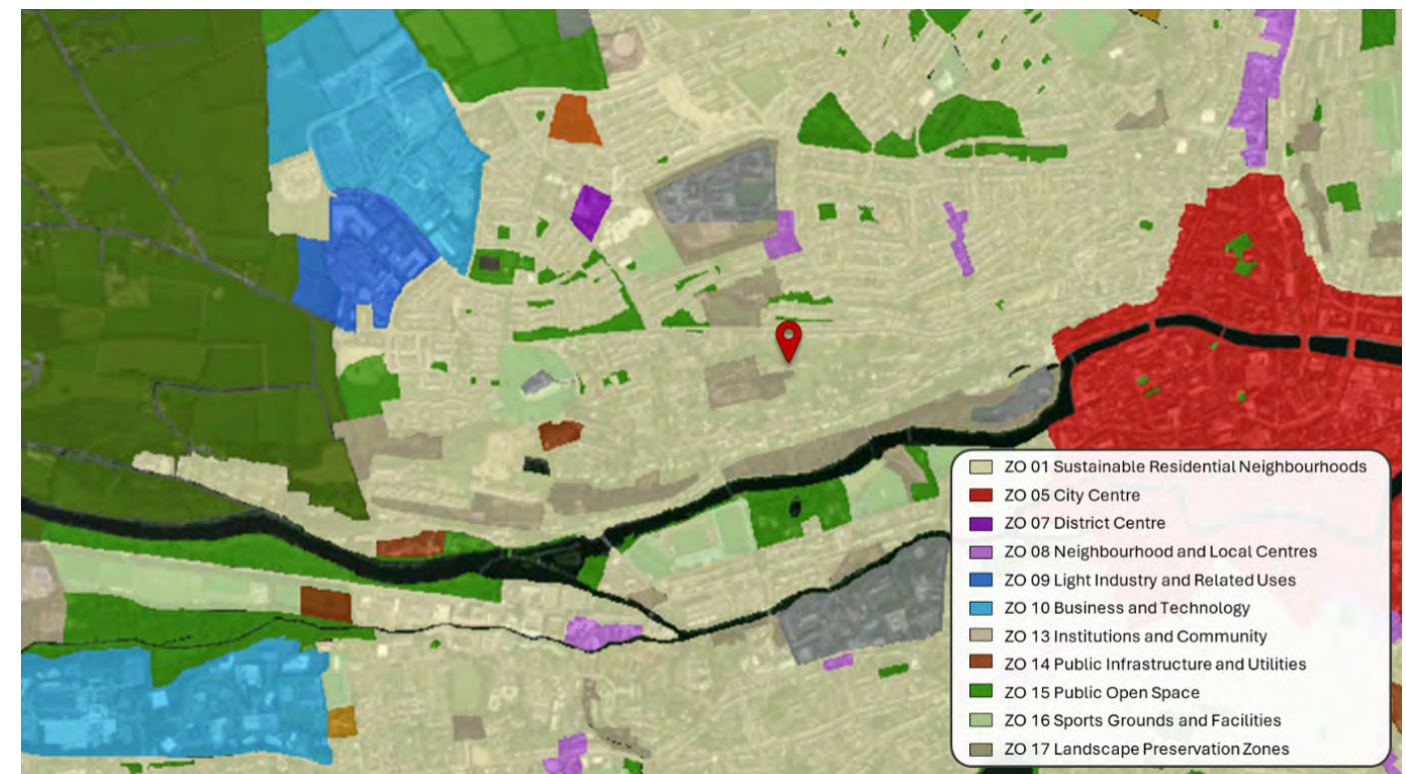


Figure 4.2 Site Zoning from the Development Plan (denoted by a red pin).

4.5.3 Surrounding Land Uses

The surrounding area is primarily residential, with some tourism-related use to the west, where the Cock City Gaol & Radio Museum are located. Additionally, within the vicinity some uses include public open spaces and a mix of Neighbourhood and Local Centres.



Figure 4.3 Surrounding Land Uses

4.5.4 Sensitive Receptors

For the purpose of this chapter, the primary sensitive receptors are:

- I. Residential Areas in Proximity;
- II. Community Facilities and Services;
- III. Local Amenity;
- IV. Economic Activities.

There are several existing residential properties which have the potential to be impacted by the development, specifically the residents of:

- V. Residential dwellings on Blarney St.;
- VI. Buxton Hill;
- VII. Convent Avenue; and
- VIII. Sunday's Well Rd.

4.5.5 Public Transport and Accessibility

The 201 bus service runs between Mayfield and Curraheen from Monday to Friday serving Munster Technological University (MTU) to Boherboy Road 5 times a day. Additionally, there are 8 services from Boherboy Road to Cork University Hospital (CUH). The closes bus stop to the site is located on Sunday's Well Road, opposite Fitzgerald's Park Lane. This is approximately 400m from the proposed development site.

The 208 bus route is the closest city-bound service, which runs every 10 minutes both east and west along Western Road. The nearest bus stop for the 208 service is located approximately a 10-minute walk away on Western Road.

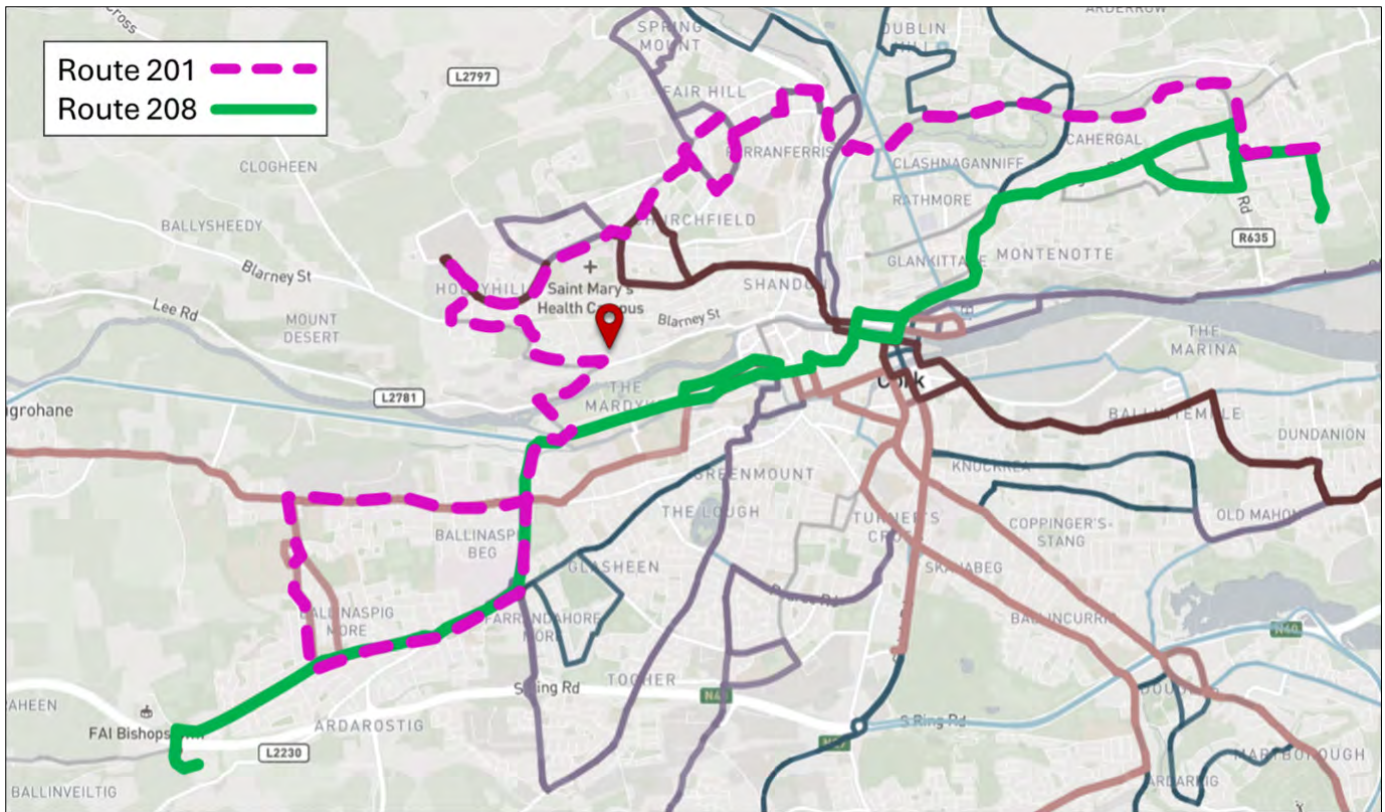


Figure 4.4 Public Transport Routes 201 & 208. Site denoted by a red pin.

The existing footpaths are narrow with one pedestrian crossing opportunity along Sunday's Well Road. A signalised pedestrian crossing is provided to the west of the Shanakiel Road priority junction. Daly's Bridge (The Shakey Bridge) will provide users of the development with a pedestrian/cycle route to and from UCC. The figure below highlights the 15-minute walking distance from the proposed development, which includes UCC within this range.

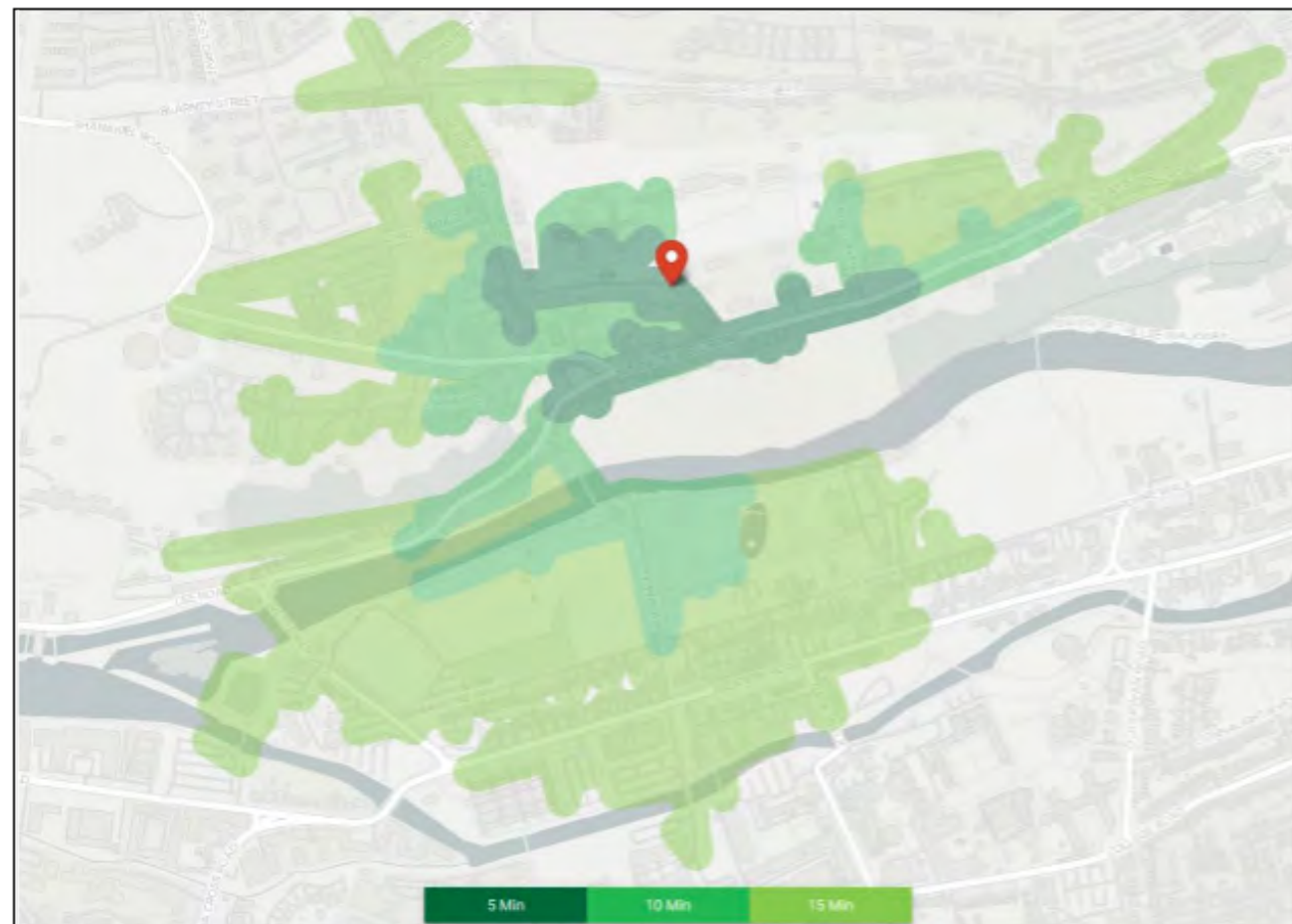


Figure 4.5 Walking Catchment prepared by MHL

The figure below shows the 15-minute cycle from the proposed development, generated by MHL & Associates Consulting Engineers. The figure highlights that Cork City Centre and UCC are within a 15-minute cycle from the proposed development. There is no significant cycle infrastructure along Sunday's Well or Convent Avenue.

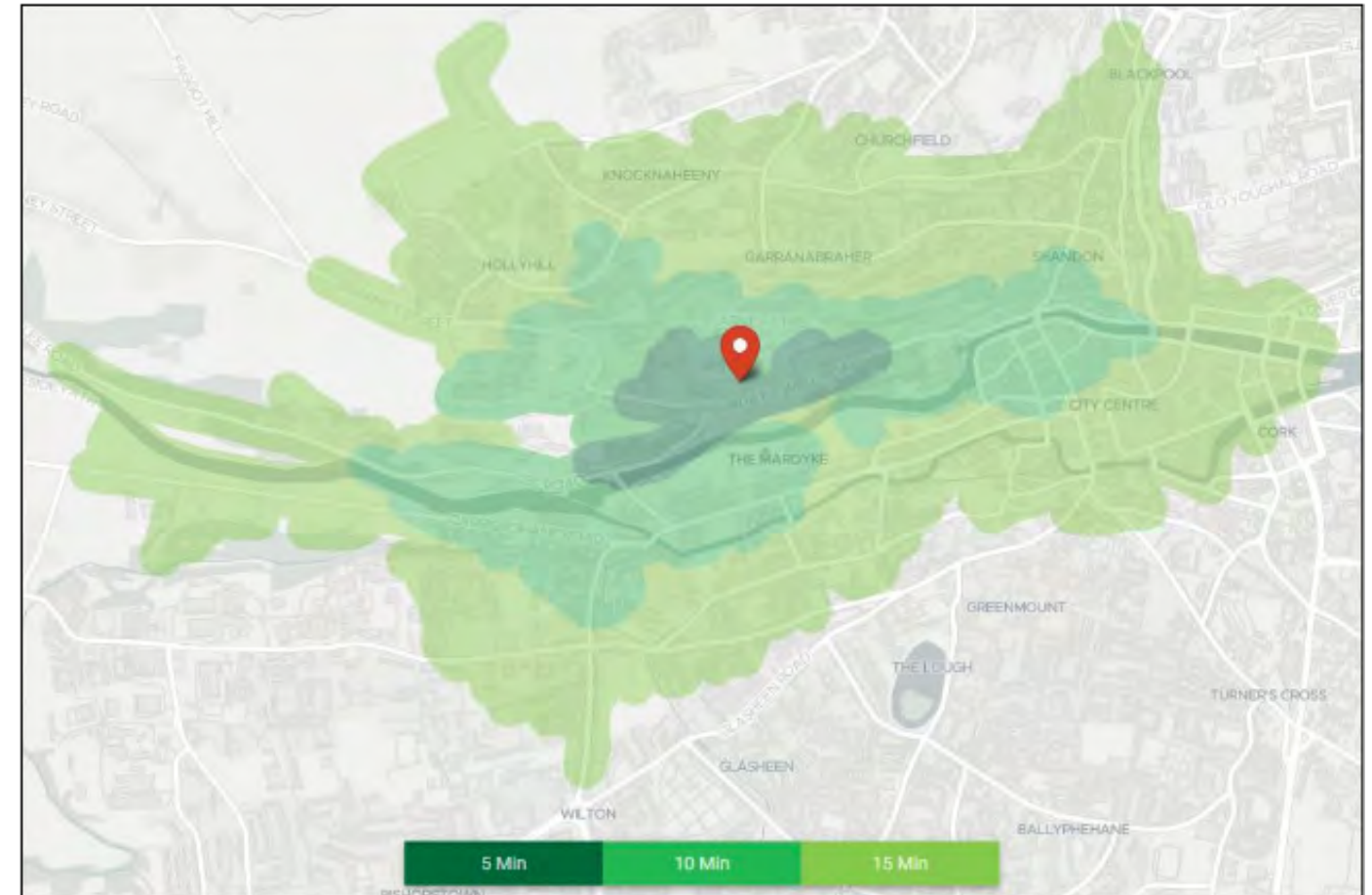


Figure 4.6 15-Minute Cycling Catchment prepared by MHL

4.5.6 Air Quality

Interactions between Air Quality and Population and Human Health have been considered as the Operational Phase has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the proposed development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected. Furthermore, traffic related pollutants have been assessed and determined as not significant, therefore, air quality impact from the proposed development are not expected to have a significant impact on population and human health.

4.5.7 Population

This section reviews the demographic characteristics, population, and age structure of Cork City Centre. The demographic profile of the Small Areas within the study area have been examined with the use of CSO Census of Population Statistics dated 2022. Therefore, the data presented within this section reflects the most recent data available to the public. Figure 4.5 represents the area of study, with CSO Census 2022 data available for the ‘City’ of Cork.

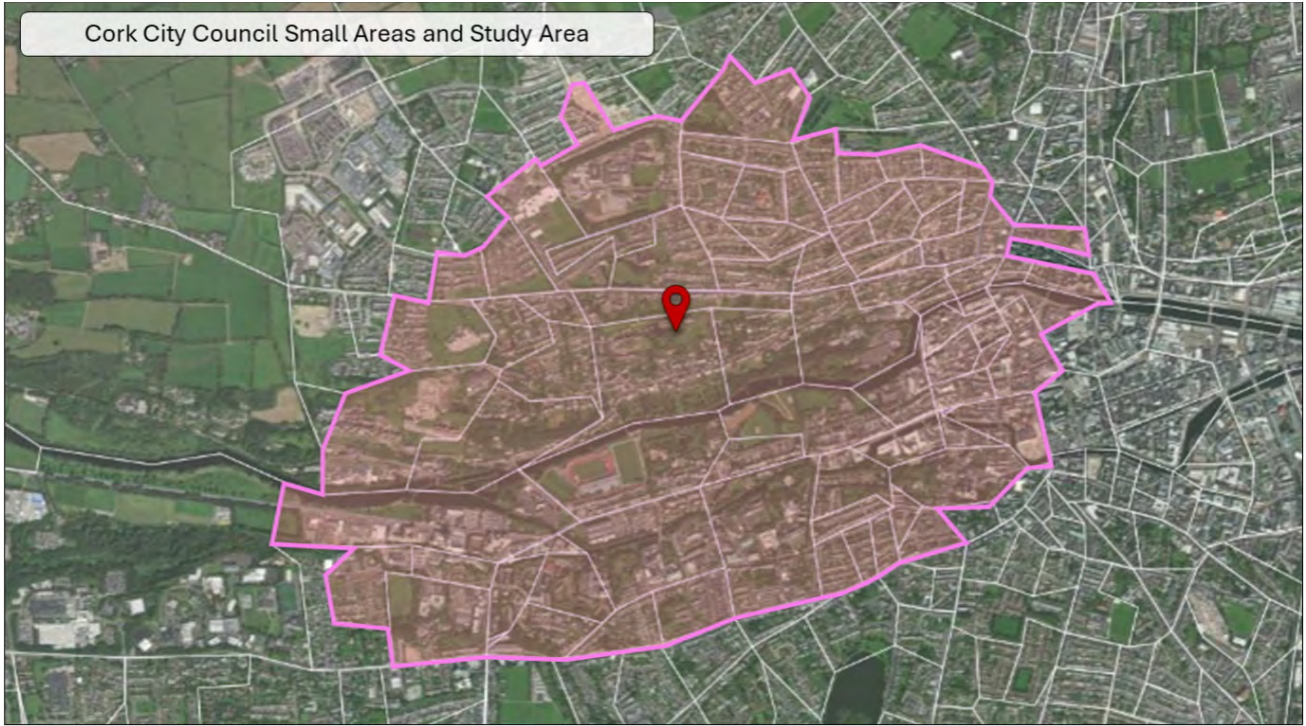


Figure 4.7 Study Area In Cork City Council

According to the selected Census 2002 data, the population of the study area stood at 21,039 people, indicating an increase of 1,202 people since the 2016 census. This represents a 6.6% growth in population within the selected area.

The study area population is closely split between the males and females, with the female population being 51.5% and the males account for 48.5% of the population.

The two largest age cohorts for the study area are the 20-24-years-old (16.8%) and the 25-29-year-olds (11.3%). The two smallest age groups in the town according to the Census are the 85 and over bracket (1.7%) and the 80-84 years group (2%).

The largest age groups are young adults indicating a young and possibly transient population. In contrast, the elderly population is relatively small suggesting either a lower life expectancy, migration of older adults, or a younger overall demographic composition. The gradual decline in population numbers from middle age onwards may indicate either migration out of the area or shifting birth rates over time.

The predominance of young adults suggests a lifestyle centred around education, employment, and early family formation. The area has a strong demand for higher education institutions, rental housing, nightlife, and social infrastructure catering to younger individuals. Additionally, high mobility and workforce participation are expected, meaning employment trends and economic opportunities will play a significant role in shaping the population's stability.

The migration trends indicated by the data suggest that the area attracts younger individuals, possibly due to educational institutions, employment opportunities, and urban lifestyle appeal.

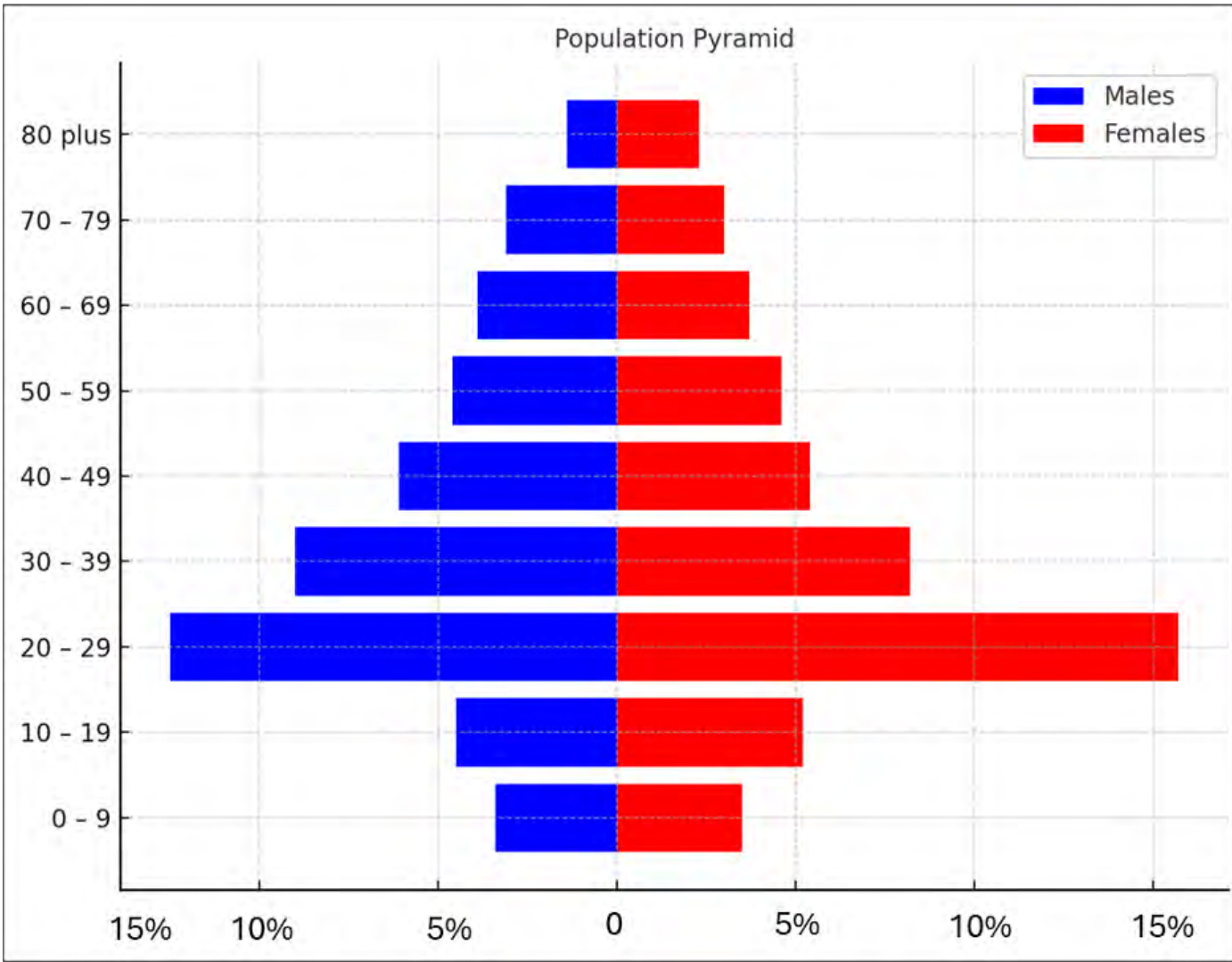


Figure 4.8 Population Pyramid for Study Area (Source: Census 2022)

Table 4.1 Breakdown of the Population by Age Cohort (Source: CSO)

Age Cohorts	Cumulative ED Study Area	
	Population	Age Cohorts Percentage
Age 0 - 4	717	3.4%
Age 5 - 9	730	3.5%
Age 10 - 14	709	3.4%
Age 15 - 19	1,325	6.3%
Age 20 - 24	3,539	16.8%
Age 25 - 29	2,386	11.3%
Age 30 - 34	2,036	9.7%
Age 35 - 39	1,590	7.6%
Age 40 - 44	1,323	6.3%
Age 45 - 49	1,092	5.2%
Age 50 - 54	967	4.6%
Age 55 - 59	967	4.6%
Age 60 - 64	839	4.0%
Age 65 - 69	765	3.6%
Age 70 - 74	703	3.3%
Age 75 - 79	570	2.7%
Age 80 - 84	416	2.0%
Age 85 and over	365	1.7%
Total:	21,039	100.0%

The population trends in the study area highlight strong demographic patterns that support the need for expanded residential infrastructure catering to a dynamic and growing community. Over the intercensal period, the total population increased by 5.8%, demonstrating steady growth and an increasing demand for housing, services, and amenities.

One of the most notable trends is the presence of a large and consistently replenishing young adult population, particularly in the 20-24 and 25-29 age brackets, which together make up a significant portion of the total population. While some fluctuations in specific age groups are observed, the overall stability of this demographic reflects a steady inflow of young individuals seeking opportunities in education, employment, and social engagement. This suggests a continuous demand for modern, well-located living spaces that cater to the evolving needs of a mobile and career-focused population.

Additionally, the area has seen strong growth in the 25-49 age range, indicating that many individuals who move into the area during their early years choose to remain, contributing to long-term community stability. This sustained retention of young professionals underscores the desirability of the location and suggests that there are ample educational, economic, and lifestyle opportunities that attract and maintain a young, vibrant population.

The study areas demographic structure also points to a shift toward high-mobility living preferences, with many individuals moving into the area during transitional life stages, such as pursuing studies or launching careers. This trend highlights the importance of accessible, high-quality, and well-situated housing options that accommodate the needs of a population that prioritizes flexibility, connectivity, and convenience.

Given the clear evidence of a sustained young adult presence and increasing population numbers, well-planned residential infrastructure will play a key role in fostering a thriving and dynamic community that continues to attract new residents while retaining existing ones.

4.5.8 Deprivation Index

The Pobal Deprivation Index is Ireland’s most widely used social gradient metric, which scores areas in terms of affluence or disadvantage. The index uses information from Ireland’s census, such as employment, age profile and educational attainment, to calculate this score.

Figure 4.9 below shows the level of affluence and deprivation at the Small Area level, within the study area according to the Pobal HP Deprivation Index. Scores range from -33 (Extremely Disadvantaged) to +21 (Very Affluent). According to the 2022 Pobal HP Deprivation Index, Cork City has an average deprivation score of 3.01, which is notably higher (indicating more affluence) than the national average of 0.56. The figure below illustrates that the development site is situated in an affluent area, with a mix of marginally below average, disadvantaged, and very disadvantaged areas to the north, while to the south, there is a combination of marginally above and below average areas, as well as affluent neighbourhoods.

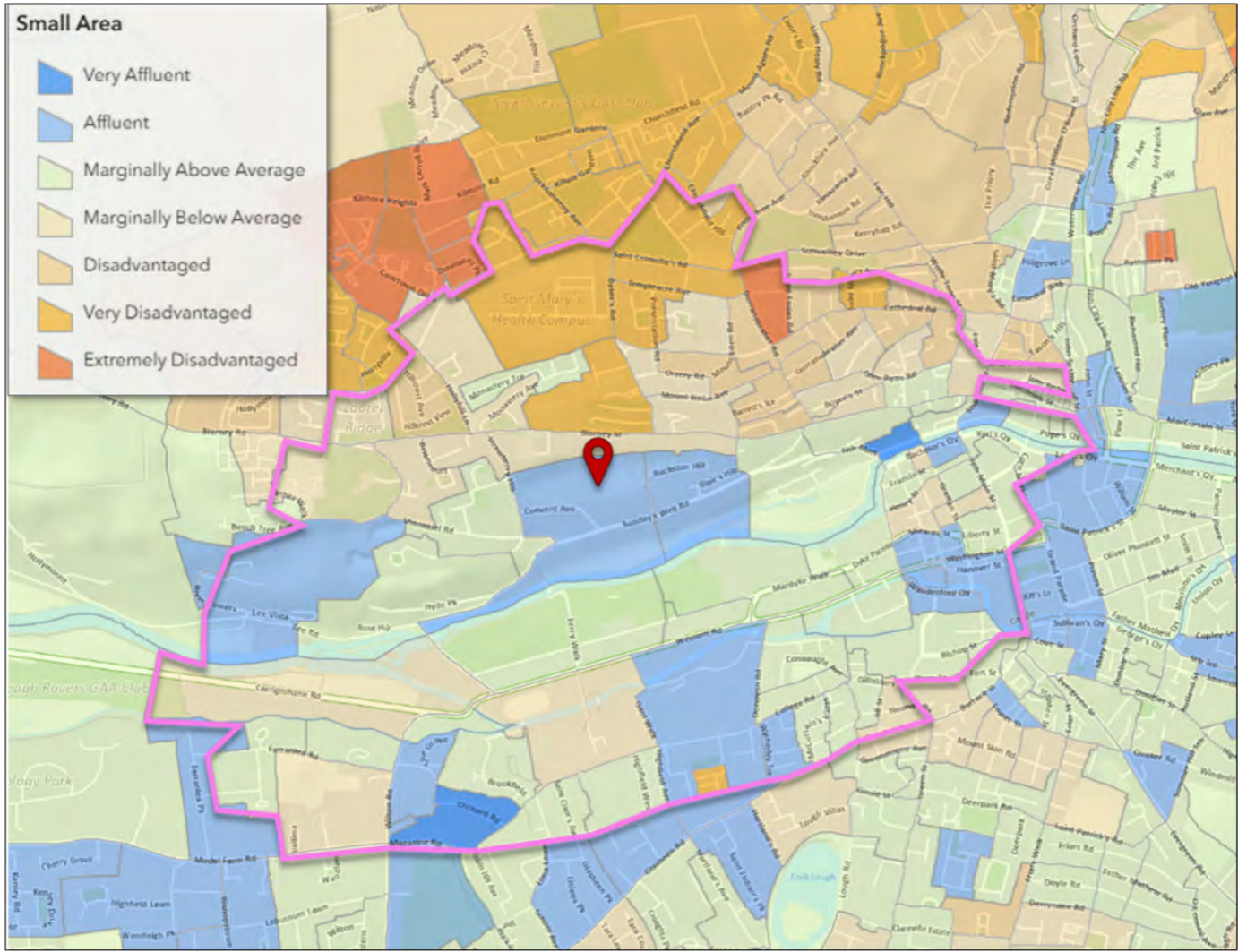


Figure 4.9 Deprivation Index. Study Area Outlined Pink and Site Location Denoted by a Red Pin

4.5.9 Households

The 2022 Census data on private households reveals key shifts in household composition within the study area, particularly in comparison to 2016 figures. The total number of households increased from 7,573 in 2016 to 8,100 in 2022, reflecting steady growth in residential demand. Similarly, the total population in households rose from 17,930 to 19,614, indicating a notable rise in the number of residents.

A significant trend observed is the prevalence of smaller households, with one-person (29.3%) and two-person households (33.1%) together accounting for over 62% of all households. This suggests a growing preference for independent living, aging populations, or an increase in couples without children. In contrast, larger households (five or more people) constitute only 8.4% of total households, reinforcing the idea that family sizes are becoming smaller over time.

Comparing the data with 2016, there is a clear increase in overall household numbers, driven mainly by growth in two-person households, which rose from 32.0% to 33.1%. The share of one-person households declined slightly from 31.2% to 29.3%, although they still remain a significant portion of the total. Three-person households also saw a minor percentage decline despite an increase in absolute numbers.

Notably, the proportion of larger households (five or more members) has declined, with six-person and seven-person households remaining under 2% of total households. This suggests fewer multi-generational family units and a shift away from large, shared living arrangements. The decline in large households could be attributed to changes in housing affordability, lifestyle preferences, or reduced birth rates.

These trends have important housing and urban planning implications. The increasing prevalence of smaller households suggests a growing demand for compact, well-situated housing units, such as apartments, townhouses, and smaller family homes. Additionally, the aging population effect is likely contributing to more one- and two-person households, highlighting the need for accessible, age-friendly housing and community services.

Overall, the population is growing, but household sizes are shrinking, pointing to a shift in living preferences and the need for adaptable housing solutions that cater to smaller and more mobile household structures.

Table 4.2 Census 2022, 1-2 Person Households

Households	Study Area	Cork City	Ireland
1 person households	12.1%	9.3%	8.4%
2 person households	27.3%	23.3%	21.1%
3 person households	22.3%	21.3%	19.5%
4 person households	18.5%	23.9%	24.6%
5 person households	9.9%	14.1%	16.3%
6 person households	5.8%	5.3%	6.6%
7 person households	2.4%	1.5%	2.0%
8 or more persons households	1.7%	1.1%	1.3%
Total households	100.0%	100.0%	100.0%

4.5.10 Housing Delivery

The National Planning Framework – Project Ireland 2040 (NPF) was developed by the Department of Housing and Local Government to provide a structured policy and planning framework for Ireland’s future development across social, economic, and cultural sectors. One of the core objectives of the NPF is to support population growth, economic expansion, and housing supply, all of which are fundamental to ensuring that Ireland can accommodate its growing workforce, student population, and broader demographic changes.

With Ireland’s population expected to increase by 1 million people by 2040, an estimated 500,000 new homes will be required. To meet this demand, the NPF originally set a baseline target of 25,000 homes annually until 2020, rising to 33,000 homes per year up to 2027. Additionally, 112,000 households are projected to have their housing needs met through social housing over the next decade. To prioritize compact and sustainable urban development, the NPF also stipulates that 40% of future housing should be delivered within or close to the footprint of existing built-up areas—a factor that aligns with the need for accessible, well-located accommodation close to urban centres, universities, and transport links.

However, Census 2022 data has shown greater population growth than initially projected, prompting a revision of the NPF. The Draft National Policy Objective 43 now aims to increase housing delivery to 50,000 additional households per annum to ensure supply keeps pace with demand.

Despite these revised targets, current housing delivery is falling short. According to the CSO New Dwelling Completions Q4 2024 Report, only 30,330 new dwellings were completed in 2024—a 6.7% decrease from 2023 and below the *Housing for All* annual target of 33,000 homes. Within this total, the number of scheme dwellings increased by 4.6% to 16,200, while single dwellings declined slightly by 2.2% to 5,367. Apartment completions, which are particularly relevant in urban housing supply, made up 28.9% of new housing in 2024, with scheme dwellings accounting for 53.4% and single dwellings at 17.7%.

The Q4 2024 data indicates further declines in certain housing categories. There were 8,732 new dwelling completions in Q4 2024, a 14.5% drop from 10,217 in Q4 2023. Apartments saw the sharpest decline, with a 35.3% reduction in completions compared to Q4 2023, falling from 3,989 to 2,580. Scheme dwellings fell by 1.6% from Q4 2023 to Q4 2024, and single dwelling completions saw a slight increase of 0.1% in the same period. Nationally, apartment completions dropped by 24.1% from 11,542 in 2023 to 8,763 in 2024.

Additionally, while student accommodation is a key component of housing supply, it is currently not included in the ESB domestic connections dataset used to track new dwelling completions. Student accommodation is generally recorded based on bed spaces rather than self-contained dwellings, and therefore, it is not yet fully integrated into the national housing statistics. However, the Higher Education Authority (HEA) has reported the completion of 100 new student bed spaces in Q4 2024, with a total of 1,205 bed spaces completed throughout the year. There are ongoing discussions regarding the potential inclusion of student accommodation as a separate category in future New Dwelling Completions reports.

The ongoing shortfall in housing supply, particularly in high-demand urban areas, highlights the urgency of increasing purpose-built accommodation that can efficiently meet the needs of growing demographic segments, including students and young professionals. With a significant portion of the housing target focused on compact growth within built-up areas, there is a clear opportunity to enhance residential delivery in urban locations where demand for accommodation is high, particularly near third-level institutions and employment hubs. Ensuring that housing delivery strategies align with the evolving needs of Ireland’s growing and mobile population will be key to supporting sustainable development and addressing accommodation shortages in high-demand areas.

The population and housing stock change for the study area between the 2016 and 2022 Censuses are shown below.

Table 4.3 Population and Housing in Study Area within Cork City (Source: CSO)

	2016	2022	6-year change
Total Population	19,878	21,039	5.8%
Housing Stock	7,573	8,100	7.0%

4.5.11 Tenure

The 2022 Census data on housing tenure highlights a strong reliance on the private rental sector, a significant presence of social housing, and lower levels of homeownership compared to national trends. These patterns provide insights into housing demand, affordability, and long-term settlement in the area.

Private rentals dominate, with 39.7% of households (42.0% of persons) renting from private landlords, reflecting high demand for flexible housing options, possibly driven by students, young professionals, and affordability challenges. This suggests a transient population, with many residents moving frequently due to economic or lifestyle factors.

Social housing accounts for 17.6% of households, with 15.1% renting from the Local Authority and 2.5% from voluntary or co-operative housing bodies. This highlights the ongoing need for public and affordable housing solutions, particularly for lower-income groups.

Homeownership is relatively low, with 21.0% of households owning outright and 11.7% owning with a mortgage or loan. This suggests barriers to purchasing homes, likely due to rising costs and supply constraints, making long-term rental a more viable option for many.

A small 1.3% of households live rent-free, while 8.7% did not state their occupancy status, indicating some level of unreported tenure.

Overall, the data points to a rental-heavy housing market, with a significant need for affordable and well-located housing options. The high proportion of renters underscores the demand for purpose-built accommodation to meet the needs of a growing and mobile population.

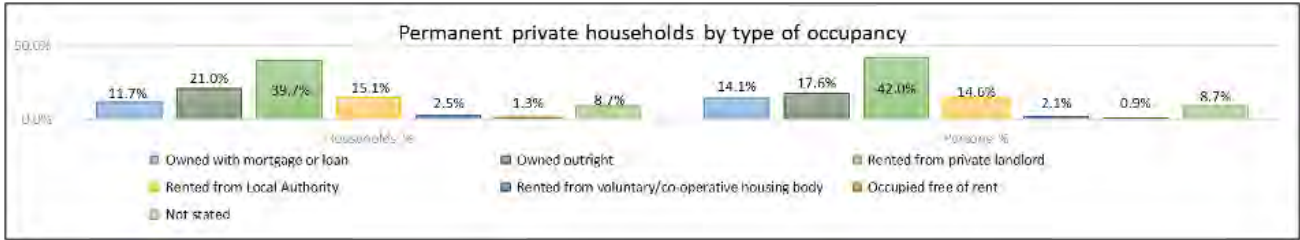


Figure 4.10 Percentage of households and persons according to occupancy type, Study Area within Cork City 2022

The number of households owned with a mortgage (-3.9%) and owned outright (-3.9%) has decreased between 2016 and 2022. At 11.7% and 21.0%, respectively, both are significantly lower than Cork City (23.7%, 32.6%) and Ireland (28.9%, 37.0%), indicating a lower homeownership rate in the study area.

Households renting from private landlords grew by 14.5%, now making up 39.7% of households—much higher than Cork City (23.6%) and Ireland (18.0%). This suggests a shift towards private renting, possibly due to affordability issues or limited homeownership opportunities.

Rentals from Local Authorities grew by 4.5%, reaching 15.1%, which is higher than the national (8.3%) and Cork City (12.5%) averages. Rentals from voluntary/co-operative housing bodies increased by 58.5%, though they still account for only 2.5% of households. This suggests efforts to expand affordable housing options.

Households occupied free of rent declined slightly (-1.9%) and remain a small portion (1.3%), aligning with Cork City (1.2%) and Ireland (1.7%).

The study area has a lower homeownership rate and a higher reliance on private renting compared to Cork City and Ireland. There has been moderate growth in social and co-operative housing, but affordability challenges may be contributing to the decline in homeownership.

Table 4.4 Population and Private households in the Study area and Cork City

Permanent private households by type of occupancy	Study Area		Cork City	Ireland
Households	2016	2022	2022 (%)	2022 (%)
Owned with mortgage or loan	987	949	23.7%	28.9%
Owned outright	1,767	1,698	32.6%	37.0%
Rented from private landlord	2,807	3,213	23.6%	18.0%
Rented from Local Authority	1,169	1,222	12.5%	8.3%
Rented from voluntary/co-operative housing body	130	206	1.9%	1.6%
Occupied free of rent	106	104	1.2%	1.7%
Not stated	607	708	4.5%	4.4%
Total	7,573	8,100	100.0%	100.0%

4.5.12 Employment

The high student population (22.5%) is a key factor in the lower employment rate (47.9%), which remains well below Cork City (55.2%) and Ireland (56.1%). This suggests that a significant portion of the population is engaged in full-time study rather than the workforce.

Although the student population has declined by 9.7%, it is still nearly double the national average (11.1%) and Cork City's rate (12.5%). This highlights the area's role as a student hub, likely due to the presence of universities and educational institutions, maintaining a steady demand for student housing.

The decline in people looking after home/family (-12.3%) and the drop in unemployment (-25.3%) suggest that more individuals are entering employment. However, students makeup a large proportion of the population within the study area.

As the retired population grows (12.7%), alongside an increase in those unable to work due to illness/disability (5.9%), there may be some competition for rental properties, particularly affordable housing options.

Table 4.5 Economic Status within the Study Area and Cork City

Population aged 15 years and over by principal economic status	Study Area		Cork City	Ireland
Persons	2016	2022	2022 (%)	2022 (%)
At work	7,431	9,053	55.2%	56.1%
Looking for first regular job	166	191	0.8%	0.8%
Unemployed having lost or given up previous job	1,210	904	4.0%	4.3%
Student	4,716	4,257	12.5%	11.1%
Looking after home/family	959	841	6.2%	6.6%
Retired	2,251	2,394	15.2%	15.9%
Unable to work due to permanent sickness or disability	943	1,111	5.5%	4.6%
Other	60	132	0.6%	0.7%
Total	17,736	18,883	100.0%	100.0%

4.5.13 Social Infrastructure

Social infrastructure includes a wide range of services and facilities, including education, health, community, cultural, play, recreation and sports facilities that contribute to the quality of life. Due to the nature of the proposed development, social infrastructure relating to student accommodation and student lifestyle have been assessed within the area. In summary, these reports confirm that sufficient facilities are available in the area and that these facilities can adequately provide for the new population anticipated as part of this development. In addition, this Chapter details information on nearby healthcare, recreation and retail facilities in the area.

While some key amenities are located outside the 15-minute walking buffer, they should still be considered easily accessible due to the area's strong transport connectivity and proximity to key educational institutions.

The study area is just outside Cork City Centre, with some minor overlap onto the city centre, which is well-served by public transport. Frequent bus routes, cycling infrastructure, and pedestrian-friendly pathways ensure that students and residents can reach essential services quickly and efficiently. The city's well-integrated transport network makes it easy to access healthcare facilities, recreational spaces, and retail hubs beyond the immediate 15-minute walking radius.

Secondly, these amenities are strategically located along key commuter routes frequently used by students attending the nearby colleges and universities. Many students are already accustomed to using public transport or cycling to navigate between accommodation, educational institutions, and city amenities. This established pattern of movement means that services outside the walking buffer are still highly practical and accessible.

Furthermore, the presence of public transport links significantly reduces the reliance on proximity alone as a measure of accessibility. A well-connected public transport system ensures that students and residents can efficiently access a broad range of services, enhancing their overall quality of life without being restricted to a strict 15-minute walking radius.

4.5.13.1 Third Level Education

This report has identified 4 no. third level education facilities in Cork City. The addresses of the facilities and their relation to the subject site are shown below.



Figure 4.11 Third Level Education Facilities in Study Area

Table 4.6 Third Level Education Facilities in Study Area

No.	Educational Establishment	Location	Distance to Site (km)	Travel Time (mins)			
				Car	Bicycle	Walk	Bus
1	University College Cork	College Rd. University College, Cork	2km	6mins	10mins	22mins	N/A
2	Cork College of FET	Morrison's Island, Cork.	3km	11mins	17mins	40mins	42mins
3	Munster Technological University (CIT)	Bishopstown, Cork.	4km	11mins	19mins	54mins	29mins
4	Griffith College	Wellington Rd. Cork	3.3km	10mins	15mins	45mins	42mins

4.5.13.2 Health Services

There are 6 no. hospitals and 10+ General Practitioners in Cork City along with 13+ no. pharmacies, no. dentist and 3 no. primary care centres. The location of these in the context of the development site are shown below. It should be noted that there are significantly more health services within the area, but the ones closest to the 15-minute walking buffer zone and colleges/universities have been selected for this assessment.



Figure 4.12 Healthcare Facilities in Study Area

Table 4.7 Medical Facilities in Study Area

No. Hospital	
1	Mercy University Hospital on Grenville Place, Centre, Cork
2	Bon Secours Hospital on College Rd, University College, Cork
3	South Infirmary Victoria University Hospital on Old Blackrock Road, Ballintemple Cork.
5	City General Hospital Ballintemple, Cork.
6	St. Finbarr’s Hospital on Douglas Rd. Ballinlough, Cork
No. General Practice	
1	Coachford Family Practice at Knocknowen, Coachford, Cork
2	UCC Student Heath Centre, University College Cork
3	Grand Parade Medical, Centre, Cork
4	Washington Street Medical Centre on Washington St. West, Centre, Cork.
5	Cork City dMedical Centre at 91 no. St. Patricks St. Centre, Cork.
6	Dr. Jacinta Barry at 51 Shandon St. Shandon, Cork.
7	Longford Hall Medical Centre at Langford Row, Ballintemple, Cork.
8	Cove Street Surgery, Dr. Paul Deasy and Dr. Annette Daly South Gate Hse Cove, Barrack St. Cork
9	Union Quay Medical Centre, Ballintemple
10	SUITE 6, Medical Centre, South Terrace, Ballintemple, Cork, T12 AE8Y

No. Pharmacies	
1	Johnsons Pharmacy at Victoria Cross Rd. Cork
2	Irwin’s Late Night Pharmacy on Shandon St. Gurranabraher, Cork
3	Daltons Pharmacy on Main St. Centre, Cork
4	Murphys Pharmacy, Main St. Cork
5	Minihans Pharmacy on Oliver Plunkett St. Centre Cork
6	CarePlus Pharmacy on College Road
7	Hickeys Pharmacy Bakers Road Gurranabraher
8	StayWell Santry’s Pharmacy on Washington St. West, Cork
9	McCabes Pharmacy on Grand Parade
10	Dan McCarthys Pharmacy on St. Patricks St. Centre, Cork.
11	Phelans Pharmacy St Patrick St. Cork
12	Walsh’s Pharmacy Shandon St. Gurranabraher Cork
13	Blackpool Late Night Pharmacy
No. Dentist	
1	Fenn Dental on Sheares St. Centre, Cork.
2	Grand Parade Dental, Grand Parade, Centre, Cork
3	Cork Dental Wellness on St. Patricks St. Centre, Cork
4	River Lee Dental St. Patrick St. Cork
5	Frank Whelton Dental Surgery St. Patricks St.
6	Cork City Dental on Lavitt’s Quay, Centre, Cork.
7	Smiles Dental Oliver Plunkett St. Centre, Cork
8	Monahan Dental Practice on Popes Quay, Shandon
9	Shandon Dental on Shandon St. Shandon, Cork
10	White Smile Dental Camden Qauy, Shandon, Cork.
No. Primary Care Centre	
1	St. Marys Primary Care Centre, Baker’s Rd. Gurranabraher, Cork
2	Shandon Bells Medical Centre. Gurranabraher, Cork
3	MedHub Medical Centre, Union Qauy, Cork

4.5.13.3 Community and Amenity Services

There are a number of sporting and recreational facilities in Cork City. These include skateparks, parks and amenity walks. In addition, there are sporting clubs all easily accessible from the site and the colleges and universities in Cork City.



Figure 4.13 Sports and Recreational Facilities in Study Area

Table 4.8 Sports and Recreational Facilities in Cork City

No.	Facility
1	Mardyke Sports Grounds UCC
2	Fitzgerald Park
3	Cork Skate Park
4	UCC Wildflower Meadow
5	Sundays Well Boating and Tennis
6	St. Vincents GAA Clubhouse
7	Hollyhill Ladies Football Club
8	Lough Rovers GAA Club
9	Neptune Stadium
10	Sam Allen Football Pitches
11	The Lee Fields Park
12	St. Anne’s Pitch and Putt Club
13	Bishop Lucey Park Cork City Centre

While some of the selected grocery stores, cafés, and restaurants are located outside the 15-minute walking buffer, they should still be considered easily accessible due to the area's strong transport connections and student-friendly infrastructure.

Cork City Centre, which is well connected by public transport, offers a wide variety of grocery stores, dining options, and cafés that cater to students and residents alike. With frequent bus routes, cycling infrastructure, and pedestrian pathways, these amenities can be reached quickly and conveniently, making them a realistic and practical choice for daily needs.

Additionally, the selected grocery stores, cafés, and restaurants are located along key commuter routes used by students traveling between their accommodation and nearby colleges and universities. Given that many students regularly rely on public transport, cycling, or short commutes, these establishments remain a natural part of their daily routines, even if slightly beyond a strict walking radius.



Figure 4.14 Corner Stores, Groceries, Cafes and Restaurants.

Table 4.9 Groceries, Restaurants and Cafes

No.	Facility
1	Singleton’s SuperValu Hollyhill
2	Tesco Paul Street
3	The English Market City Centre
4	Texaco Carrigrohane Rd. Cork
5	Dunnes Stores, Paul St.
6	Marks & Spencer’s Paul St.
7	Applegreen Harbour View Rd. Knocknaheeney, Hollyhill
8	The Residence Bar, Blarney St.
9	Farol Tapas Bar Sundays Well, Cork
10	The Lee Café Wood View Lee Rd. Sundays Well
11	Paradiso Lancaster Quay
12	Golden Bites Washington Street
13	McDonalds Patrick St.
14	Hillbillys Grand Parade
15	Istanbul Kebab Cork City
16	Abrakebabra Patrick St
17	French Tacos Paul St.
18	Nandos Academy Street,

4.6 The ‘Do Nothing’ Scenario

If the development were not to proceed there would be no immediate impact on the existing population, economic activity, or community services and facilities in the town. However, if the development does not occur there will be a shortfall in housing supply in the area which may negatively impact the continued sustainable growth of the city.

The site is zoned for residential development and the provision of housing on the subject site will support the core strategy and objectives of the Cork City Development Plan. If the development does not occur the zoning and objectives of the local planning policy will not be realised in the short term.

In terms of Population and Human Health, a ‘do nothing’ scenario (i.e., not developing the proposed development site) would represent a lost opportunity to develop these lands for residential use on a zoned site. As such, the proposed development site would remain underutilised, and it would not contribute to increasing the provision of housing in this area.

The impacts on land use are therefore envisaged to be negative to neutral for the ‘do-nothing’ scenario.

4.7 Difficulties Encountered

There were no difficulties encountered in preparing this chapter.

4.8 Consultation

Consultations with both the local authority and statutory bodies were also used to ensure that environmental issues, including socio-economic, recreational and amenity issues relating to the proposed development were addressed. Further information on the consultation process and responses received is provided in Appendix 1.1

4.9 Impact Assessment

This section describes the environmental effects that are likely to arise during the construction and operation of the proposed development. Section 4.10 sets out the mitigation measures required to alleviate identified effects.

Potential Impacts are considered under the following headings in line with the Guidelines set out in section 4.4:

- Population
- Employment and Economics
- Health
- Residential Amenity
- Local Amenity Impacts

Specific effects with respect to matters such as air quality, noise, traffic, visual impact etc. are dealt with in the respective assessments in this EIAR.

4.9.1 Construction Phase

The potential impacts of the proposal during the construction phase of the development are outlined below. The construction phase is expected to last approximately 8-10 years and will be completed in 5 phases.

4.9.1.1 Population

The construction phase is not likely to result in any changes to the settlement patterns.

The potential impacts arising during the construction phase relate to short term impacts to quality of life, including visual impact/amenity, noise, air quality, and transport. Where relevant, these impacts have been considered in the relevant chapters of the EIAR and will be minimised or mitigated where appropriate. It is unlikely that these impacts will be of a scale to either encourage people to move from the area or discourage people from moving to the area.

The construction phase may result in short term negative impacts on the local population.

4.9.1.2 Employment & Economics

The construction phase is anticipated to result in a temporary boost to the local economy as workers employed at the site can be expected to make use of local retail facilities and other services. If the application is successful, construction works will continue until the development is completed. Up to 250 workers will be employed on site during the construction phase, and there will be positive economic externalities to industries that are complimentary to the construction sector.

It is anticipated that the construction phase of the project will result in likely positive short term moderate effects locally and within the wider area.

4.9.1.3 Health

As with any construction site, there will be potential risk to health and safety in terms of injury or death of construction personnel on-site due to the usage of large, mobile machinery as well as heavy equipment and materials.

Human health may be impacted on in a variety of ways and by several environmental receptors including water, biodiversity, climate, flooding, air, and major accidents, etc. Exposure to contaminants or pollutants can have serious implications for human health. Potential impacts on population and human health include inadequate water and wastewater infrastructure, contamination of soils, excessive noise, flooding due to non-control of surface water, poor air quality in areas where there are large volumes of traffic, and the health impacts associated with the storage of hazardous materials during the construction stage. These issues are addressed within the relevant discipline of the EIAR.

4.9.1.4 Residential Amenity

The anticipated likely significant effects in the absence of mitigation on residential amenities relate to disruption due to increased construction traffic movements on the local road network, noise, dust and visual impact arising from plants (e.g. cranes) necessary to deliver the development.

In the absence of mitigation, the construction phase may result in short term negative impacts on the local population.

4.9.2 Operational Phase

Due to the nature of the development, there will be few hazards associated with the operational phase of the project and therefore no potential significant negative impact in terms of health and safety.

4.9.2.1 Population

The proposed development will deliver 274 no. student accommodation units with a total of 957no. beds. Therefore, the proposed development can be estimated to increase the local population by 957 no. persons.

4.9.2.2 Employment & Economy

There will be an economic benefit to local businesses during the operational phase. Residents will use local facilities and services, and it is anticipated that the additional population will result in increased business for the wider community, and will have a positive, slight, long-term impact on the services including dentist clinics, pharmacies, banks, and various retail outlets.

4.9.2.3 Health

The proposed development will not result in any significant negative impacts to the health and wellbeing of the existing population. In particular, the design of the scheme ensures that future residents of the local environment will benefit from the development, in the form of open spaces and amenity areas.

The potential impacts on cycling and pedestrians will be positive, given the additional infrastructure provided. A lack of adequate recreation or amenity facilities has the potential to negatively impact human mental and / or physical health. The proposed layout provides for excellent public amenity and recreational facilities.

The provision of these amenity facilities within the proposed development will be of benefit to future residents and existing residents in the local environs. The operational phase of the proposed development, in terms of recreation and amenity facilities will, therefore, have a permanent significant positive impact on Human Health.

4.9.2.4 Residential Amenity

During the operational phase, the high-quality living environment of the proposed scheme will result in positive impacts on amenity for future residents. Achieving a high-quality living environment through an integrated and balanced design approach will have a locally significant, positive and permanent effect on residential amenity.

Future residents will enjoy a combination of private and public amenity spaces, which allow for privacy and interaction and inclusion, helping to foster a sense of community within the neighbourhood. Open spaces will be overlooked ensuring sufficient passive surveillance. This is determined to have a positive effect on residential amenity.

The proposed development at operational stage will result in traffic movements that are naturally associated with residential neighbourhoods.

4.9.2.5 Local Amenity Impacts

The proposed student accommodation in Cork City will bring economic growth, improve services, and enhance public infrastructure. With the right planning, it will create a more vibrant, well-connected, and student-friendly city, benefiting both students and the wider community.

A growing student population will encourage improvements in public transport services, leading to more frequent buses and extended routes. This will benefit not just students but also local residents, making travel around the city more efficient and accessible. Increased student presence will support cafés, restaurants, supermarkets, and retail stores, leading to job creation and business expansion. More demand for student-friendly options could inspire new services, discounts, and extended hours, creating a vibrant, student-friendly economy. More students will contribute to a lively and dynamic social atmosphere, supporting gyms, libraries, sports facilities, cinemas, and entertainment venues. This will help create a more active and engaging city for all residents.

Purpose-built student accommodation (PBSA) will help reduce pressure on the private rental market, freeing up homes for local families and professionals. More housing options will contribute to a balanced and sustainable housing market in the city.

4.9.3 Cumulative Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period or concentrated in a location. Cumulative effects can occur where a proposed development results in impacts that, when considered in combination with impacts of other proposed or permitted plans and projects may result in a cumulative effect.

As noted above there is potential for the construction phase of the proposed development to overlap with the construction of recently permitted developments in Cork City (as listed in Chapter 1 of this EIAR) which would increase the potential impacts on human health and population. During the operational phase, the cumulative impact of these applications is expected to be slight, long-term impact and positive by providing additional homes, childcare facilities, community spaces, and public open spaces for the local population.

4.10 Mitigation Measures

4.10.1 Incorporated Design Mitigation

The proposed development complies with the Building Regulations which provide for the safety and welfare of people in and about buildings. The Building Regulations cover matters such as structure, fire safety, sound, ventilation, conservation of fuel and energy, and access, all of which safeguard users of the buildings and the health of occupants.

The proposed design provides for the segregation of pedestrians and bicycle traffic from motorised traffic. The design also incorporates the principles of universal design and the requirements of Part M of the Building Regulations so that the development will be readily accessible to all, regardless of age, ability or disability.

An assessment of the potential effects of the construction and operation of the proposed scheme in relation to climate forms part of Chapter 13 Air Quality & Climate of this EIAR. The assessment found that any impacts would be insignificant.

The integration of energy efficient measures into the design will provide for healthier living standards for future occupants, less dependence on fossil fuels and associated improved air quality. The availability of on the doorstep public open space, amenity spaces, and a highly accessible layout across the scheme will encourage sustainable modes of outdoor access for a wide age group.

4.10.2 Construction Phase Mitigation

An Outline Construction and Environmental Management Plan (CEMP), Outline Resource Waste Management Plan (RWMP) and Operational Waste Management Plan (OWMP) for the proposed development have been prepared for this application. The CEMP, RWMP & OWMP will be further updated by the contractor, agreed with Cork City Council prior to commencement, and implemented by the selected contractor after any consent is received.

All construction personnel will be required to understand and implement the requirements of the CEMP and RWMP and shall be required to comply with all legal requirements and best practice guidance for construction sites.

The CEMP provides for a construction phase management structure to ensure that environmental protection and mitigation measures are put in place. The CEMP requires that these measures will be checked, maintained to ensure

adequate environmental protection. The CEMP also requires that records will be kept and reviewed as required to by the project team and that the records will be available on site for review by the planning authority.

All construction personnel will attend induction and training classes as required to ensure that the CEMP is effectively implemented. The CEMP will comply with all appropriate legal and best practice guidance for construction sites.

A full summary of construction phase mitigation measures are presented in Chapter 17 of this EIAR

4.10.3 Operational Phase Mitigation

The proposed development is of a high quality design that incorporates generously sized units with integrated energy efficiency measures and an abundance of open space. The impact assessment section did not identify likely significant negative environmental impacts on population and human health arising from the operational phase of the proposed development. Accordingly, mitigation measures are not proposed.

4.11 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

The land will have an urban character for residential rather than brownfield site. The residual effect of the proposed development for population and human health is determined to be significantly positive having regard to the delivery of much needed new homes in a location that has the carrying capacity in terms of both services and amenities to support the population generated by the scheme. The proposed mitigation measures will avoid, prevent, reduce impacts on the human environment during the construction and operational phases of the proposed development, where no significant adverse residual effect have been identified.

The proposed development, in combination with the recently permitted development in Cork City and the study area will have a cumulative positive impact on the area.

4.12 Interactions

Interactions are considered in Chapter 16 of this EIAR.

4.12.1 Material Assets: Traffic and Transport

There is potential risk from traffic related incidents which may arise, including an increase in pollutants which may affect air quality. In the current assessment, traffic derived pollutants which may affect air quality and thus population and human health have been deemed as not significant.

The proposed development's proximity to services, amenities, and public transport would interact with patterns of traffic and transport locally during the operational phase. Traffic flows within the site have the potential to create safety risks for pedestrians and cyclists.

4.12.2 Land and Soils

There is a potential risk of dust generated from excavation and stockpiling of soil during the construction phase of the Proposed Development posing a human health risk in the absence of standard avoidance and mitigation measures which will be implemented to be protective of human health. Appropriate industry standards and health and safety legislative requirements will be implemented during the construction phase of the Proposed Development that will be protective of site workers.

4.12.3 Material Assets: Waste

The improper removal, handling and storage of hazardous waste could negatively impact on the health of construction workers.

4.12.4 Water and Hydrology

Pollution events can impact the water quality and thus impact the human health of the surrounding population. Appropriate surface water control measures will be implemented as part of the Proposed Development.

Appropriate industry standard and health and safety legislative requirements will be implemented during the demolition and construction phase of the Proposed Development that will be protective of site workers.

4.12.5 Noise and Vibration

There is potential for effects on human health associated with noise during the demolition and construction phase which may impact upon amenity.

The Noise and Vibration chapter has been prepared in consideration of and in conjunction with the relevant elements of this chapter. For example, noise and vibration impacts associated with the Proposed Development have been fully considered within this Chapter of the EIA Report. Mitigation and monitoring measures will be incorporated to further reduce the potential for noise generation from the proposed development.

4.12.6 Air Quality and Climate

Interactions between air quality and population and human health have been considered as the proposed development has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the proposed development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected. Furthermore, traffic-related pollutants have been assessed and determined as having an overall insignificant impact, therefore air quality impacts from the proposed development are not expected to have a significant impact on population and human health.

Energy efficient design within the proposed development may give rise to reduced electricity consumption by future residents, potentially decreasing dependence on fossil fuels for energy generation, resulting in significant CO₂ savings. There is potential for impact on human health from a deterioration in air quality associated with emissions from vehicles.

The potential significant effects on population and human health arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative effects will occur.

4.12.7 Landscape and Visual

Construction processes and plant such as cranes used during the construction phase may give rise to visual impacts. Appropriate mitigation measures are outlined in the Landscape and Visual Impact chapter, as deemed necessary.

During the operational phase, the landscape plan will impact the quality of the private, communal and public open spaces, which could impact people's health and well-being.

4.13 Risk of Major Accidents or Disasters

The potential of major risks and disasters as a result of the proposed development has been assessed and the findings are presented in Chapter 17 of this EIAR.

No risk of major accidents and disasters has been identified. The project comprises a residential use development on a brownfield site. All possible risks relating to existing soil contamination, potential flooding and construction activities have been considered and mitigation measures proposed where appropriate.

4.14 Worst Case Scenario

In the event that all mitigation measures fail to hinder potential negative impacts, the possibility of an increase of traffic within the surrounding roads and junctions of the site can occur. Further, without these mitigation measures in place, noise caused by the construction of the proposed scheme may increase and can cause a disturbance to any residential dwellings in close proximity to the site. Further, when mitigation measures are not considered, there is the possibility of the impact on dust that can be carried throughout the site. Dust can expand beyond the site and create adverse effects on the neighbouring environment, including the neighbouring residential dwellings. However, it is imperative that mitigation measures are implemented to ensure that the worst-case scenario does not occur. When considering the mitigation measures that will be in place, the event of a worst-case scenario is deemed to be unlikely.

4.15 Monitoring

Measures to avoid negative impacts on Population and Human Health are largely integrated into the design and layout of the proposed development. Compliance with the design and layout will be a condition of any permitted development.

No specific monitoring is proposed in relation to this section. Monitoring of standard construction mitigation measures as outlined in this EIAR will be undertaken by the appointed contractor.

4.16 Conclusion

There are no significant adverse effects with respect to socio-economic factors, land use, or the amenity value potential of the area. Issues which may cause risks and hazards during the construction and operational phase of the development are given due consideration. All necessary mitigation measures will be put in place to ensure the health and safety of all site personnel and neighbouring properties. All other environmental aspects relating to the human environment which could have an adverse effect on the local population such as soils, geology & hydrogeology, water and ecology have been addressed in the relevant chapters of this EIAR.

4.17 References and Sources

- National Planning Framework, Ireland 2040 – Our Plan (Government of Ireland, 2018 and 2024)
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022)
- Central Statistics Office (CSO) website www.cso.ie
- Department of Education and Sciences (DES) website www.education.ie.



CHAPTER FIVE

LAND, SOILS & GEOLOGY

CHAPTER FIVE

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CHAPTER FIVE | Land, Soils & Geology

5.1 Introduction

This chapter of the EIAR evaluates the likely significant effects, if any, which the proposed development will have on Land, Soils and Geology. This chapter contains necessary information as defined in the Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022).

The chapter initially provides a description of the receiving environment of the site and the potential impacts of the development. When assessing the potential impacts, this assessment considers the significance of the environmental attributes, the predicted scale and duration of the likely effects.

The chapter also outlines the proposed mitigation measures that will reduce or eliminate the identified potential impacts and defines the residual effects of the proposed development (the effect after the implementation of mitigation measures).

This chapter should be read in conjunction with Chapter 6 Hydrology and Hydrogeology. A full description of the proposed development is set out in Chapter 2 Development Description of this EIAR.

5.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Rashaqat Ali Siddiqui and Marcelo Allende in the Water section of AWN Consulting Ltd.

Rashaqat Ali Siddiqui (BSc, Msc, MIT). Ali is a hydrogeologist with over 6 years' experience in water resource management and impact assessment. He has a Masters in Hydrogeology and is a former Education Secretary of the Irish chapter for the Association of Hydrogeologists (IAH). Ali's specialist area of expertise is water resource management, Site investigation and monitoring, Contaminated land Assessment, hydrological assessment and environmental impact assessment.

Marcelo Allende (BSc, BEng) is a Principal Environmental Consultant (Hydrologist) at AWN with over 20 years of experience in Environmental Consulting as well as hydrological and hydrogeological technical studies. Marcelo holds a degree in Water Resource Civil Engineering from the University of Chile. He has worked on a wide of range of projects including multi-aspect environmental investigations, geo-environmental impact assessments, groundwater resource management, hydrological and hydrogeological conceptual and numerical modelling, strategic and site specific flood risk assessments, Due Diligence reporting, baselines studies, soils, surface water and groundwater monitoring and field sampling programmes on a variety of brownfield and greenfield sites throughout Ireland as well as overseas in Chile, Argentina, Peru and Panama. He also has detailed knowledge of environmental guidance, legislation, regulations & standards and expertise in GIS (expert level) and MATTE studies at COMAH establishments. He is currently a member of the International Association of Hydrogeologists (IAH, Irish Group) and a member of Engineers Ireland (MIEI).

5.3 Proposed Development

The proposed development will include the conservation, conversion and extension of the former Good Shepherd Convent, Home Building, Orphanage Building, Well Site, Gate Lodge, and Bakehouse to provide to provide student accommodation apartments and ancillary services and all associated ancillary development works at The Former Good Shepherd Convent, Convent Avenue, Sunday's Well, Cork.

A full description is included in Chapter 2 of this EIAR and in the statutory notices.

5.3.1 Aspects Relevant to this Chapter

The Chapter will assess the potential effects on the Soils and superficial geology, Bedrock geology, Karst Landforms, Landslide Susceptibility, Current and historic mining sites, Irish Geological Heritage Sites and Contaminated land during the demolition, construction and operation of the proposed development. These aspects will be considered together with the proposed development use. This section should be read in conjunction with the design drawings and reports which accompany this planning application.

5.4 Methodology

5.4.1 Criteria for Rating Effects

This section establishes the criteria, and guidance used to rate the significance of the potential impacts of the proposed development project on the land, soil and geological aspects of the site and surrounding area.

Alongside the legislation, policy, and guidance outlined in Chapter 1, this chapter is prepared in line with the 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022) and due consideration is also given to the guidelines provided by the Institute of Geologists of Ireland (IGI) in the document entitled 'Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements' (IGI 2013).

The document entitled 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the Transport Infrastructure Ireland (TII) formerly National Roads Authority (NRA) (TII, 2009) is referenced where the methodology for assessment of impact is appropriate. Furthermore, in line with the TII Guidelines, an assessment of the attribute importance has been undertaken in order to provide a basis for the assessment of impact provided. The attribute importance considers the potential as well as the existing use of the surface water features as a water resource i.e., water supply, fisheries and other uses, as well as ecological habitat requirements. The TII criteria for rating the soil and geology related attributes, are presented in Appendix 5.1.

The quality, significance, and duration of the potential impacts, residual effects, and cumulative effects are described using standard EIA descriptive terminology, included in Chapter 1 (EPA, 2022).

The principal attributes (and impacts) to be assessed include the following:

- Geological heritage sites in the vicinity of the perimeter of the subject site.
- Landfills, industrial sites in the vicinity of the site and the potential risk of encountering contaminated ground.
- The quality, drainage characteristics and range of agricultural uses of soil around the site;
- Quarries or mines in the vicinity, the potential implications (if any) for existing activities and extractable reserves.
- The extent of topsoil and subsoil cover and the potential use of this material on site or requirement to remove it off-site as waste for recovery or disposal.

5.4.2 Sources of Information

Desk-based geological information on the substrata (both quaternary deposits and bedrock geology) underlying the extent of the site was obtained through accessing national databases and site archives. The collection of baseline regional data was undertaken by reviewing the following sources:

Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and 1:100,000 mapping.

- Teagasc soil and subsoil database.
- Ordnance Survey Ireland - aerial photographs and historical mapping.
- Environmental Protection Agency (EPA) – website mapping and database information; and
- National Parks and Wildlife Services (NPWS) – Protected Site Register.

Site specific data was derived from the following sources:

- Site plans and drawings submitted with the planning application pack
- Consultation with the engineering team.
- Site Investigation (GII, 2024)
- Construction and Environmental Management plan (MMOS, 2025)
- Engineering Report (MMOS, 2025)

5.4.3 Relevant Legislation & Guidance

- Environmental Protection Agency (EPA) Advice notes on current practice in the preparation of Environmental Impact Statement (EPA, 2003) and Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2022a).
- TII/National Roads Authority Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (TII/formerly NRA, 2009).
- Institute of Geologists Ireland (IGI) -Geology in Environmental Impact Statements, a guide (IGI, 2002) and Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013).
- Waste Management Acts 1996 as amended;
- Environment Agency (EA), Land contamination: risk assessment (EA 2020);
- BS 10175:2011 + A2:2017 Investigation of potentially contaminated sites. Code of practice (British Standards Institute 2017);

- CIRIA C552 Contaminated Land Risk Assessment: A Guide to Good Practice (CIRIA 2001);
- Environmental Protection Agency, Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites (EPA 2013);
- Local Authority planning guidance as applicable,
- Consolidated EIA Directive 2011/92/EU and 2014/52/EU.

5.4.4 Site Surveys/Investigations

- GII, October 2024

Site investigation works were conducted within the site by Ground Investigation Ireland in October 2024 (Refer to Appendix 5.2). The objective of this site investigation was to determine whether the ground conditions are suitable for soakaway installation. 5no. Soakaway tests were carried out in accordance with BRE 365 as shown in Figure 5.1



Figure 5.1 Soakaway Test Locations (GII, 2024)

The pits were excavated to a maximum depth of 2.5m mbgl. During the excavation of the Soakaway pits, the sequence of strata encountered were consistent across the site and generally comprised;

- Topsoil
- Made Ground
- Cohesive Deposits

TOPSOIL: Topsoil was encountered in all the exploratory holes and was present to a maximum depth of 0.50m BGL.

MADE GROUND: Made Ground deposits were encountered beneath the Topsoil at the location of SA05 and SA06 to a maximum depth of 1.40m BGL. These deposits were described generally as dark brown or brown slightly sandy slightly gravelly CLAY with rare fragments of redbrick and low subangular to subrounded cobble content.

COHESIVE DEPOSITS: Cohesive deposits were encountered beneath the Made Ground and were described typically as orangey brown or brown slightly sandy slightly gravelly CLAY, overlying a Firm orangey brown slightly sandy slightly gravelly CLAY up to a depth of 2.5mbgl. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the glacial till matrix. The strength of the cohesive deposits was typically soft to firm. These deposits had some, occasional or frequent cobble and boulder content, where noted on the exploratory hole logs.

5.4.5 Consultation

There was no consultation with internal Local Authority departments, community or stakeholders encountered in compiling the specified information for this EIA chapter.

5.5 Difficulties Encountered

There were no significant difficulties encountered in compiling the specified information for this EIAR chapter.

5.6 Baseline Environment

5.6.1 Site Location & Surrounding Land Use

The former Good Shepherd Convent site is located to the north-west of Cork City centre, in the Sunday's Well area. The site is approximately centred at Easting 565,855 and Northing 572,101 (ITM), encompassing a gross site area of approximately 3.43 hectares. The site location is shown in Figure 5.2 below.



Figure 5.2 Site Location Map

Access to the proposed development site is via Convent Avenue (L99112), which connects Strawberry Hill (L5102) with Sunday's Well Road (R846). The site's western boundary adjoins the Cork City Gaol (Museum). This boundary consists of a large, well-constructed stone wall. The surrounding area to the north, east, and south of the proposed development site, consists primarily of residential dwellings.

The former Good Shepherd Convent site includes imposing buildings, now derelict, weatherworn and fire damaged, located along the northern boundary of the site. The three main buildings have been in a derelict condition since a serious fire in 2012. Extensive damage was caused to the home section of the property, with the convent and its wings surviving in a dilapidated state.

A cemetery is located in the northeast section of the site, with a nun's graveyard and the grave of Little Nellie of Holy God. There are also several headstones scattered along the northern boundary of the site.

5.6.2 Topography

A detailed topographic survey was carried out the Good Shepherd site. Based on the topographic survey, the levels typically vary from 56mAOD to 38mAOD dropping North to south at the proposed development area.

5.6.3 Soils and Subsoils

According to the EPA and GSI (2025) online mapping the principal soil type on-site is Made Ground, which is expected considering the development on the site. Refer to Figure 5.3 below.



Figure 5.3 Teagasc Soils (EPA, 2025)

The Quaternary geological period extends from about 1.5 million years ago to the present day and can be sub-divided into the Pleistocene Epoch, which covers the Ice Age period, which extended up to 10,000 years ago and the Holocene Epoch, which extends from that time to the present day.

The GSI (2025) database of the subsoils in the area of the proposed development site indicates that the material within the land site area is described as Urban deposits which is associated with imported soils as presented in Figure 5.4 below. Although, the site investigation carried out for soakaway testing indicate that made ground was only encountered in SA05 and SA06 up to a depth of 1.4mbgl which was followed by soft to stiff clays up to a maximum depth of 2.5mbgl.

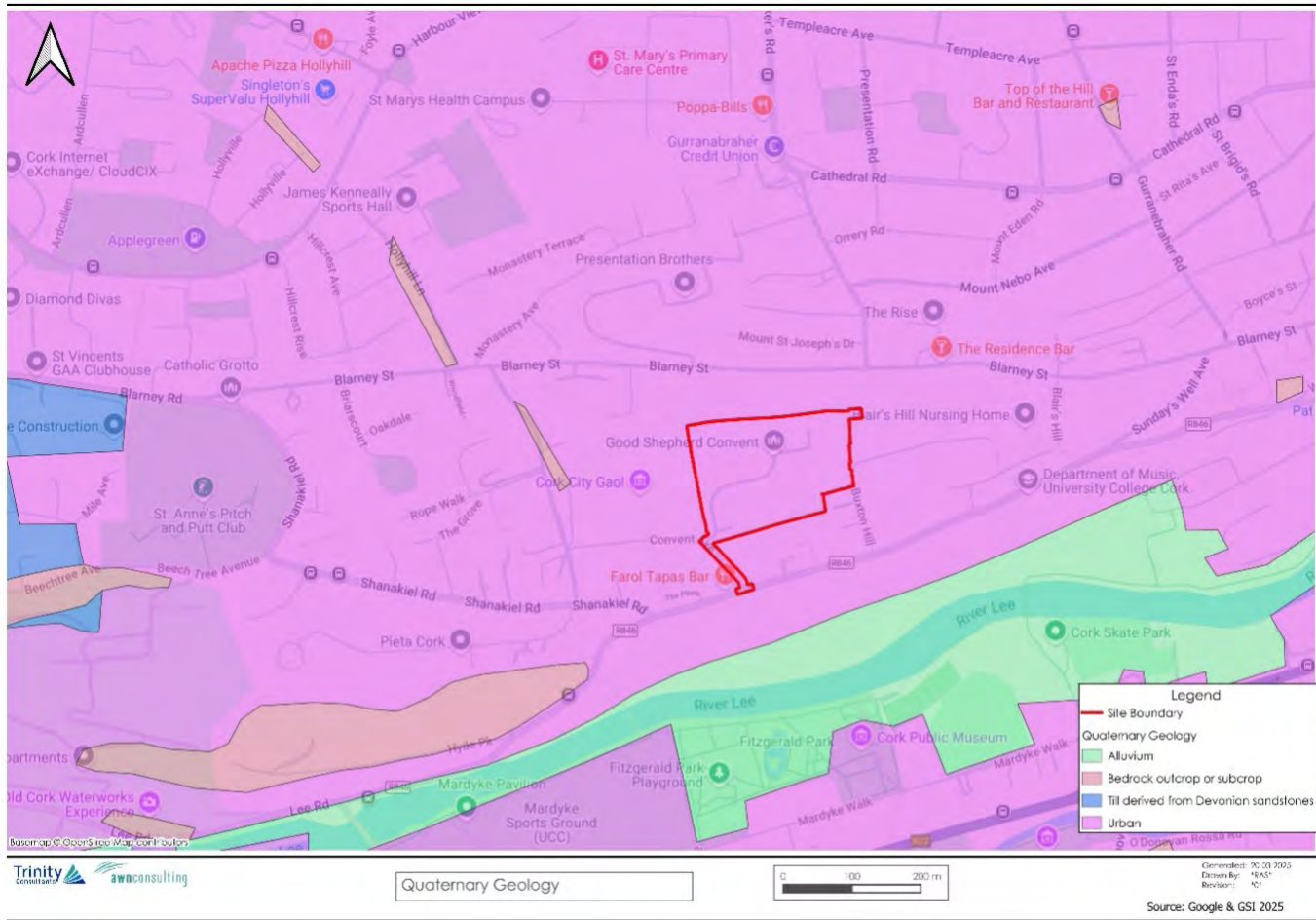


Figure 5.4 Quaternary Geology (GSI, 2025)

5.6.4 Bedrock Geology

Inspection of the available GSI (2025) online mapping, it was identified that the site is underlain by Devonian Sandstone with Mudstone and Siltstone- Rock Unit Code: CDDIN. This formation is from the Upper Devonian and Strunian age bracket. Refer to Figure 5.5.

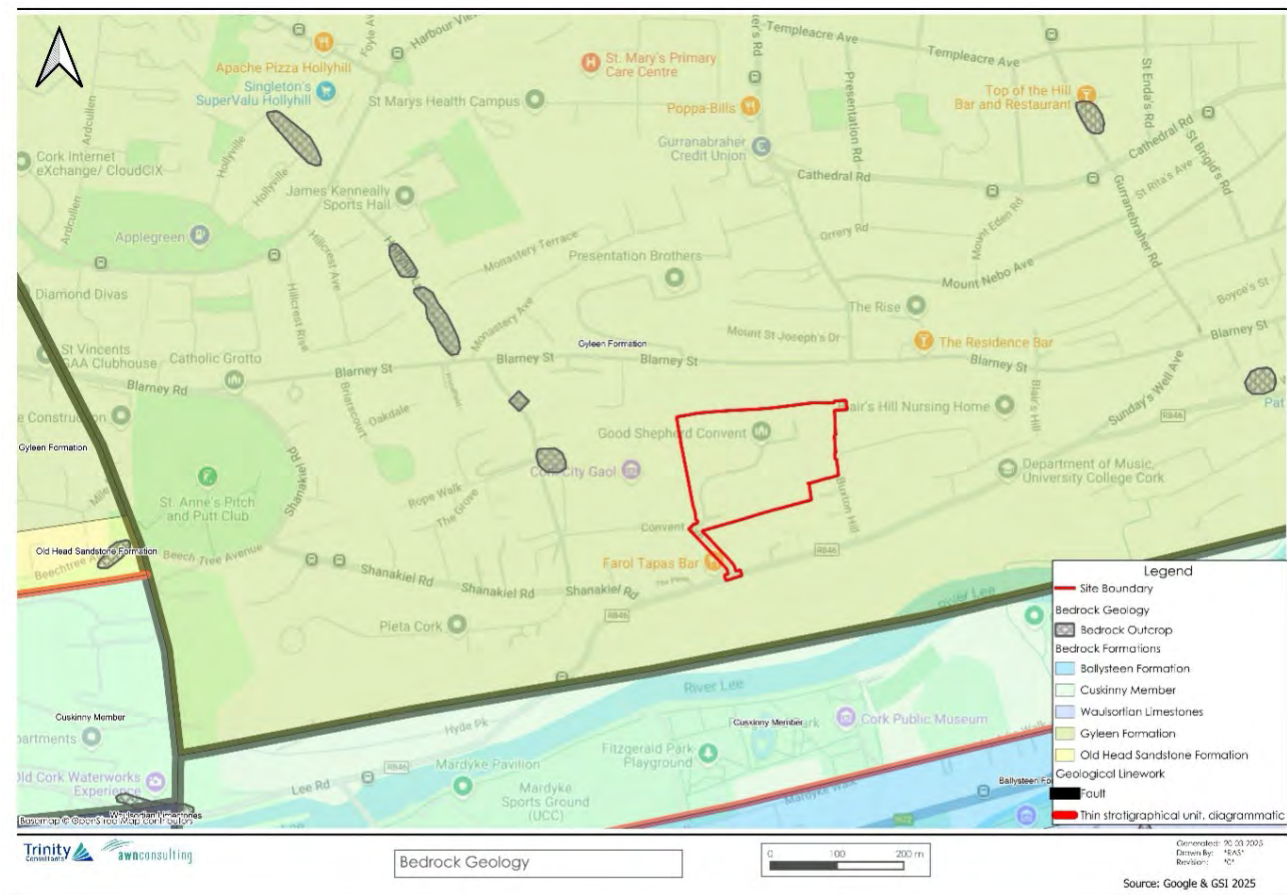


Figure 5.5 Bedrock Geology (GSI, 2025)

5.6.5 Groundwater Vulnerability Rating

Groundwater vulnerability is a term used to represent the natural ground, intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Due to the nature of the flow of groundwater through bedrock in Ireland, which is almost completely through fissures/ fractures, the main feature that protects groundwater from contamination, and therefore the most important feature in the protection of groundwater, is the subsoil (which can consist solely of/ or of mixtures of peat, sand, gravel, glacial till, clays or silts).

Groundwater vulnerability is an indication of how easily the aquifer can become contaminated by human activity. It is dependent on the thickness and permeability of the overlying soils and depth to the water table. For example, a bedrock aquifer with minimal thickness of overburden or with a thin layer of permeable overburden will be more vulnerable to

contamination than a bedrock aquifer which has a thick layer of low permeability overburden. Extreme groundwater vulnerability is also associated with karst landforms as these are a direct pathway for water and contaminants to enter the aquifer from the surface.

The GSI presently classifies the aquifer underlying the proposed development site with several vulnerability classifications. The eastern section of the proposed development site is classified by the GSI as having Extreme' (E) vulnerability as shown in Figure 5-6.

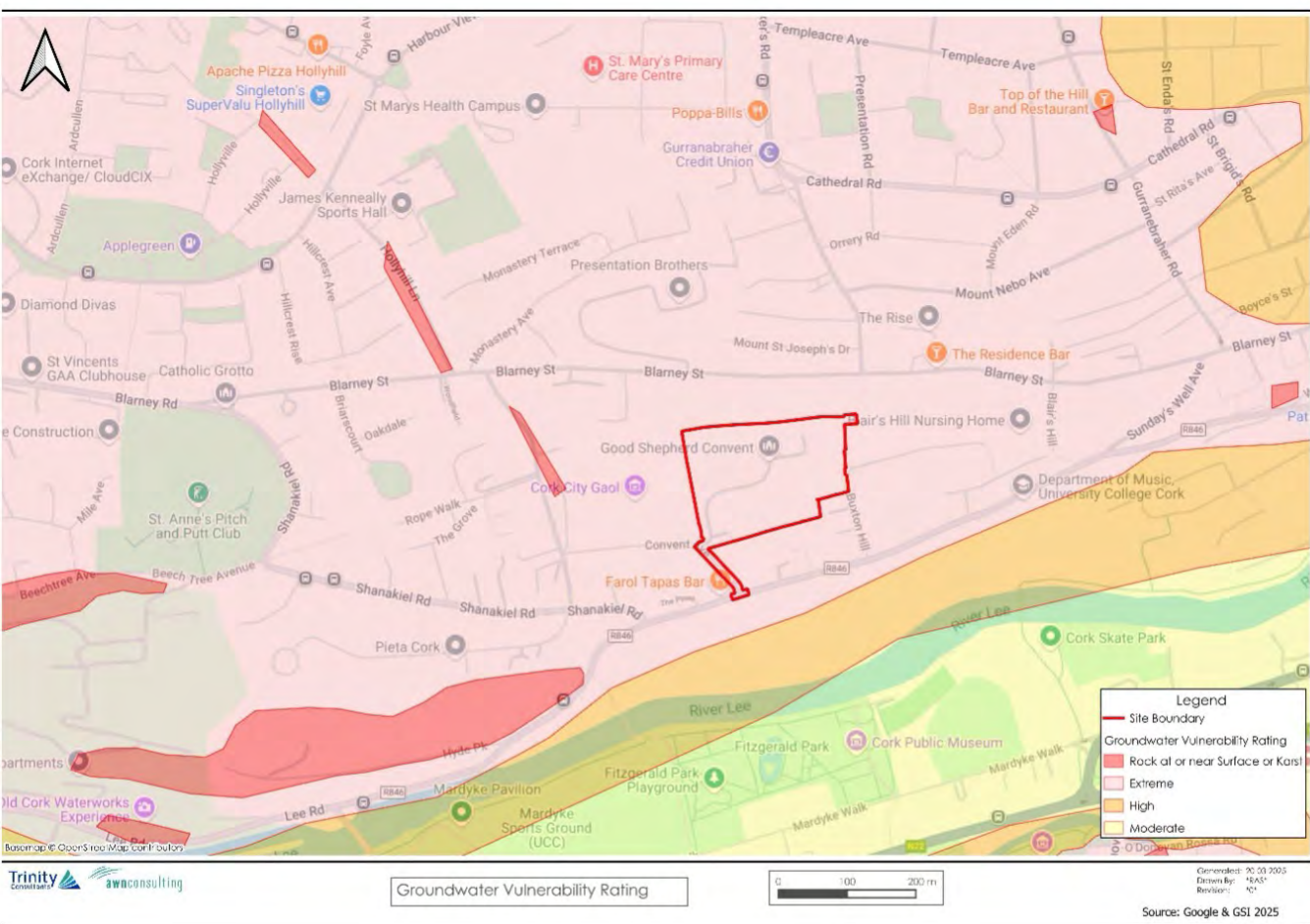


Figure 5.6 Groundwater Vulnerability Rating (GSI, 2025)

Aquifer vulnerability classifications are primarily based on the permeability and thickness of subsoils. Given the subsoils are Made ground underlain by clay along with extreme vulnerability. The expected bedrock depth is between 0-3m. Although, during the site investigation, the trial pits were excavated to a maximum depth of 2.5 m and no bedrock was encountered. Refer to Table 5-1 below.

Table 5.1 Vulnerability Mapping Guidelines (Source (DoELG, EPA, GSI, 1999))

Vulnerability Rating	Hydrogeological Conditions				
	Subsoil Permeability (Type) and Thickness			Unsaturated Zone	Karst Features
	High permeability (sand/gravel)	Moderate permeability (e.g. Sandy subsoil)	Low permeability (e.g. Clayey subsoil, clay, peat)		
Extreme (E)	0 - 3.0m	0 - 3.0m	0 - 3.0m	0 - 3.0m	-
High (H)	> 3.0m	3.0 - 10.0m	3.0 - 5.0m	> 3.0m	N/A
Moderate (M)	N/A	> 10.0m	5.0 - 10.0m	N/A	N/A
Low (L)	N/A	N/A	> 10.0m	N/A	N/A

Notes: (1) N/A = not applicable.
(2) Precise permeability values cannot be given at present.
(3) Release point of contaminants is assumed to be 1-2 m below ground surface.

5.6.6 Karst Landforms

There are no identified karst landforms within the site boundary. The closest identified karst feature is a Cave located circa 4.4km southeast from the site as presented in Figure 5.7.

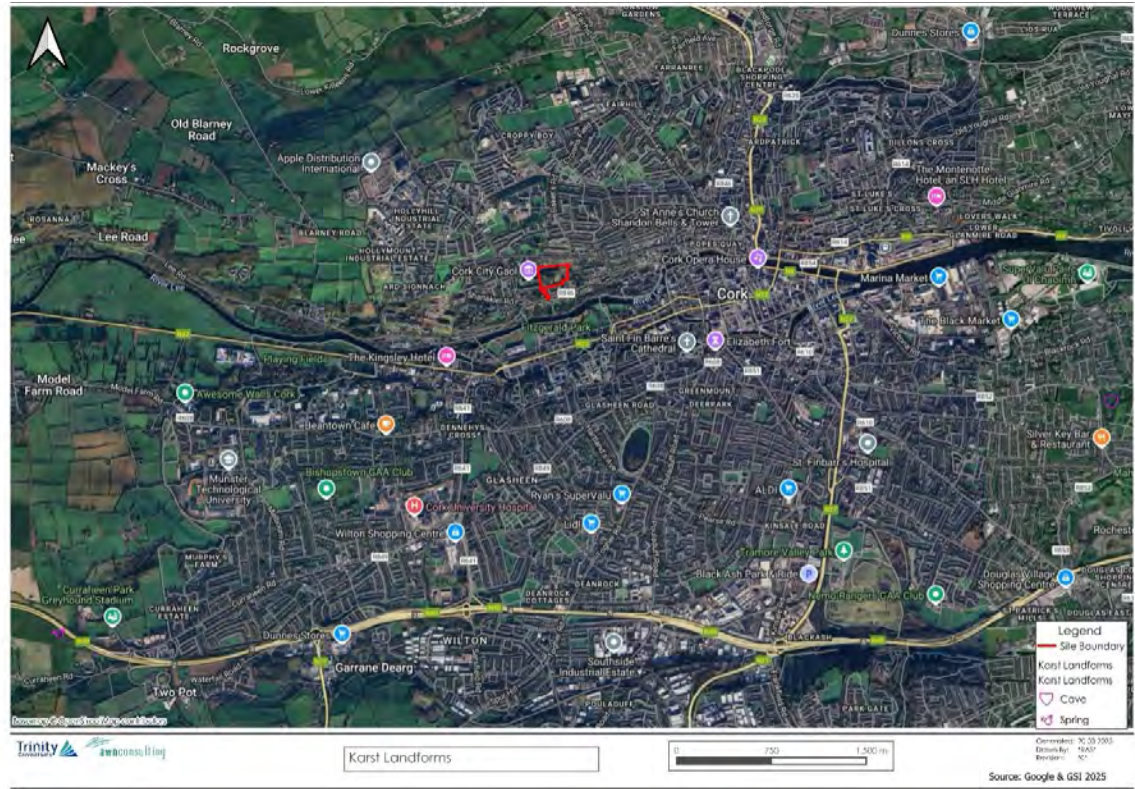


Figure 5.7 Karst Landforms (GSI, 2025)

5.6.7 Geological Heritage Sites

There are no geological heritage sites within the site boundary. The closest identified geological heritage site is St. Fin Barre's Cathedral (Site code: CC007) located circa 1.0km southeast from the proposed development. There are 6 no. Geological Heritage Sites located within the 5km radius of the proposed development as presented in Figure 5.8.

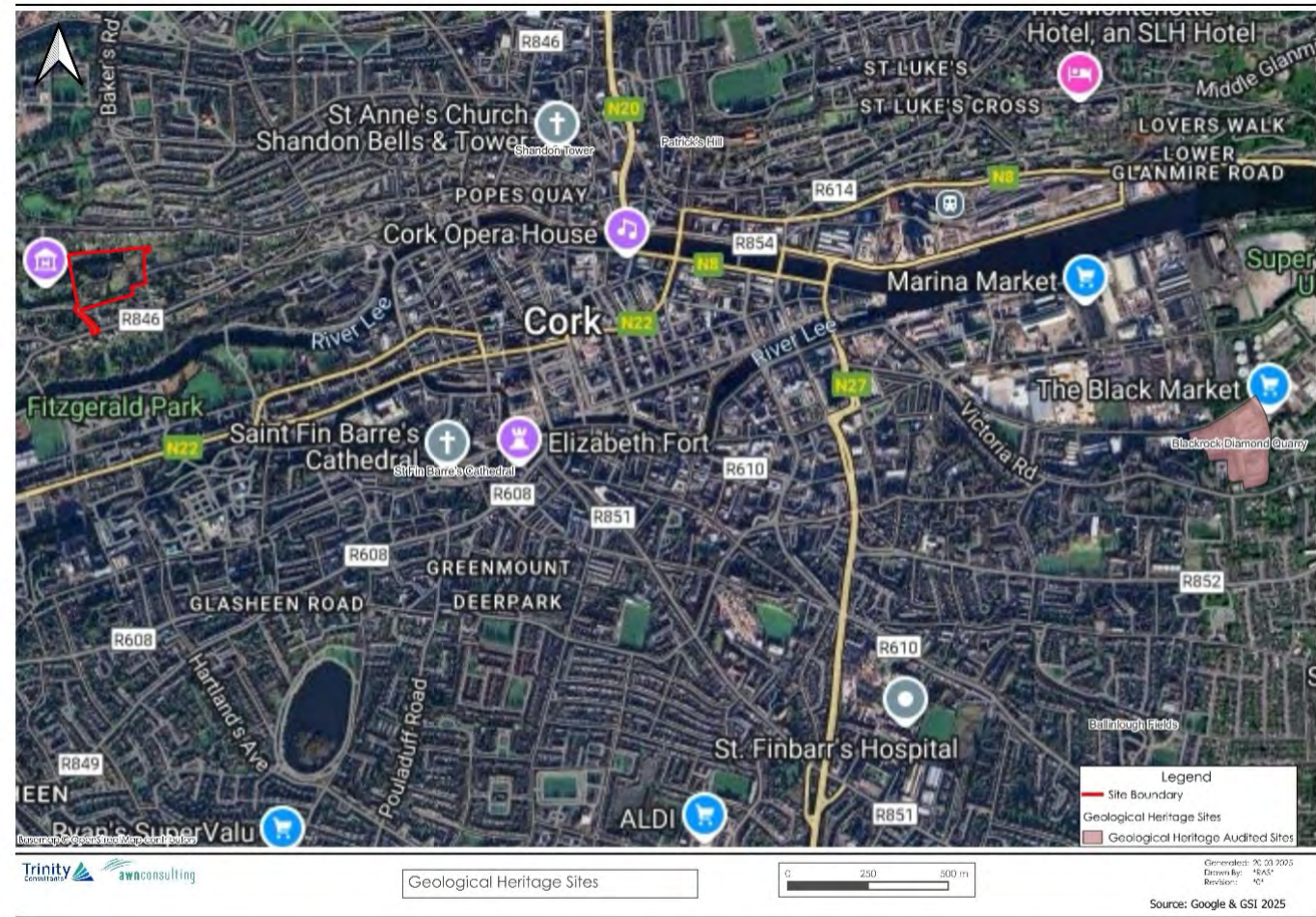


Figure 5.8 Geological Heritage Sites (GSI, 2025)

5.6.8 Economic Geology

The EPA Extractive Industry Register and the GSI mineral database were consulted to determine whether there are any mineral sites close to the proposed development site. There are no active quarries or mineral localities within the immediate vicinity of the proposed development site. The closest mineral site is located c. 2.7 km north of the site (Mineral Location Ref: 4214) comprising of small quartz lode with traces of malachite.

5.6.9 Radon

According to the EPA (2025) online maps (now incorporating the Radiological Protection Institute of Ireland) the site is located in an area where between 1 and 5 homes in the 10 km grid square are estimated to be above the Reference Level (200 bq/m3).

5.6.10 Geo-Hazards

In general, risk of landslides in this area of Ireland is considered to be low, as the land is not located in a region with high seismic activity or large mountain ranges. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff landslides and falls lead to recession of the cliffs. Landslides have occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities. The landslide susceptibility map (GSI spatial map viewer) identifies areas which are subject to landslides and is measured from low to high. The landslide susceptibility map considers the location of landslides and what causes them (slope, soil type and the impact of the flow of water).

Based on the GSI spatial map viewer (2025), the area of the proposed development and its surrounding have not been assessed for Landslide Susceptibility and no information is available.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics, Dublin Institute for Advanced Studies, has been recording seismic events in Ireland since 1978 (www.dias.ie). This network consists of several seismometers that are located throughout Ireland. Seismic activity and earthquake risk in Ireland are generally considered to be low. This is because Ireland is located on the western edge of the Eurasian Plate, which is a tectonic plate that is not known for its seismic activity. However, earthquakes can still occur in Ireland, although they are typically small and have little impact. There is a very low risk of seismic activity to the site.

There are no active volcanoes in Ireland so there is no risk from volcanic activity at the site.

5.6.11 Soil Quality

No soil quality analysis has been conducted at this stage for the proposed development site.

5.6.12 Site History and Previous Land Use

The Good Shepherd complex is located on an artificially constructed terrace on the south-facing hillslope above Sundays Well Road and overlooks the River Lee to the south. The 1869 Ordnance Survey map (published 1871) of the area indicates that there were no pre-existing structures on this site. The construction of the convent commenced in 1870 and have existed ever since.

Historical Ordnance Survey (OSi, 2025) maps were examined for the purpose of this study. OS maps were available for the period from 1830 to 1913 and included the historic 6" Cassini maps (c.1845), Historic Map 6-inch Colour (1837-1842), and the historic 25" maps (1888-1913). More recent aerial mapping (1995-to present date) was also used in this assessment.

Historic 6inch first edition map presented in Figure 5.9 below illustrates greenfield site while the 25inch Cassini and Historic 6inch last edition presented in Figure 5.10 and 5.11 respectively shows the buildings associated with Good Shepherd convent.



Figure 5.9 Historic 6inch First Edition (OPW, 2025)

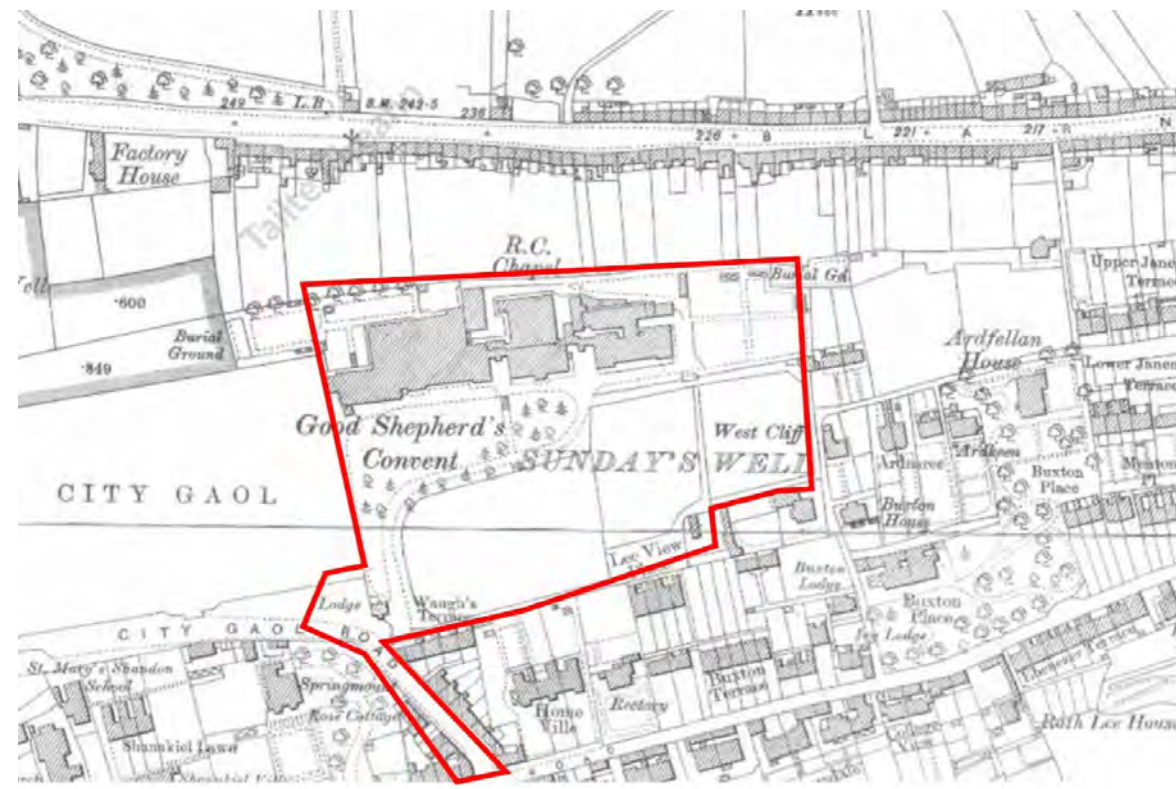


Figure 5.10 Historic 25Inch 'Cassini' (OPW, 2025)



Figure 5.11 Historic 6Inch Last Edition (OPW, 2025)

5.6.13 Rating of Site Importance of the Geological Features

Based on the NRA/TII methodology, the criteria for rating the importance of geological features, the importance of the bedrock and soil features at this site is rated as 'Low' Importance (refer to Appendix 5.1).

This is based on the assessment that the attribute has a low quality, significance or value on a local scale.

5.6.13.1 Conceptual Site Model

According to GSI database (2025), the Teagasc Soils are described as Made Ground while the subsoil underlying the site is described as Urban. However, site investigation carried out by Ground Investigations Ireland to facilitate infiltration testing indicate that the subsoil in the vicinity of the development site comprises a mixture of MADE GROUND and CLAY to varying depths and proportions across the site. The maximum depth of excavation across the site was 2.5mbgl.

Bedrock underlying the site is described as Devonian Sandstone with Mudstone and Siltstone- Rock Unit Code: CDDIN. This formation is from the Upper Devonian and Strunian age bracket

The GSI currently indicates that the site and its immediate vicinity overlies an aquifer which has been classified as having Extreme vulnerability which indicates a bedrock depth of 0-3m. Although, no bedrock was encountered during the excavation of trial pits.

5.7 Characteristics of the Proposed Development

The purpose of this section is to provide an overview of the key relevant details of the construction phase and operational phase of the Proposed Development. The information presented in this section is informed by the project design, but it is not a complete description of the Proposed Development. Therefore, it should be read in conjunction with the full development package. For a more comprehensive understanding of the Proposed Development, please refer to Chapter 2 (Description of the Proposed Development) of the EIA Report. Chapter 2 provides a detailed overview of the lifecycle of the project, including reference to the architectural and civil engineering, drawings, plans, reports, and other relevant document in order to define the Proposed Development.

Planning permission for a proposed Student Accommodation Development comprising the conservation, conversion and extension of the existing former Good Shepherd Convent, Home Building, Orphanage Building, and Well site to provide 274 no. student accommodation apartments, the conservation and conversion of the existing gate lodge and bakehouse to provide ancillary services and all associated ancillary development works at The Former Good Shepherd Convent, Convent Avenue, Sunday's Well, Cork. The maximum proposed depth of excavation is 3mbgl and it is not envisaged to excavate bedrock.

As outlined below the activities required for the construction phase of the Proposed Development represents the greatest risk of potential impact on the soil and geological environment. These activities primarily pertain to the site preparation / enabling works, excavation, and infilling activities required to facilitate construction of the Proposed Development.

Potential Significant Effects

An analysis of the potential effects of the Proposed Development on the land, soils and geological environment during the construction and operational phases are outlined below. Due to the inter-relationship between land, soils, and geology; and hydrology and hydrogeology the following impacts discussed will be considered applicable to both Chapter 5 (Land, Soils and Geology) and 6 (Hydrology and Hydrogeology) of this EIA Report. Mitigation measures included in the design of this project to address these potential impacts are presented in Section 5.10.

5.8 The 'Do Nothing' Scenario

If the proposed development was not to go ahead (i.e. in a Do-Nothing scenario) the baseline environment in terms of land, soils, and geology would remain unchanged as there would be no excavations or construction. Therefore, in a "Do Nothing" scenario, there would be a neutral effect on the land, soils and geological environment at the site. The likelihood in a temporary and short-term basis is the existing natural state of the area would persist, without any alterations or disturbances caused by the development.

However, there are a number of existing permitted developments in the vicinity of the proposed development.

It is likely that in the absence of the proposed development, that a development of a similar nature would be progressed on the site that accords with national and regional policies and therefore the likely significant effects would be similar to this proposal.

5.9 Potential Significant Effects

An analysis of the potential effects of the proposed development on the land, soils and geological environment during the demolition, construction and operational phases are outlined below. Due to the inter-relationship between land, soils, geology, hydrogeology and surface water (hydrology) the following impacts discussed will be considered applicable to both Chapter 5 and 6 of this EIA Report. Remediation and mitigation measures included in the design of this project to address these potential impacts are presented in Section 5.10.

5.9.1 Demolition Phase

The development contains existing buildings to be demolished. These structures were originally constructed such that they rely on internal elements such as columns beams and cross walls for their overall stability. The likelihood of significant effects on the land, soils and geology during the demolition phase is minimal due to the demolition works of the proposed development being limited to surface-level activities and do not involve any excavation works. The absence of excavation works means that there is no disturbance to the natural soil structure, preventing potential soil erosion or compaction. As a result, the impact on the land and soils is minimal and no significant effects on the land's composition, stability, or fertility are anticipated.

Overall, the surface-level demolition works will have a negligible impact on the land, soils and geology preserving their integrity and minimizing any potential environmental consequences. In the absence of mitigation, the effect on land, soils and geology is likely to be **short-term, imperceptible and negative**.

Refer to Chapter 11– Waste of this EIAR for further information on predicted on and off-site reuse, recycle and disposal rates for demolition waste.

5.9.2 Construction Phase

5.9.2.1 Accidental Spills, Leaks and Discharges

There is potential for the underlying soils, geology and groundwater to become contaminated with pollutants associated with construction activity. If a spill occurs, contaminated water and collected surface water run-off which arises from construction sites can pose a short-term risk to the underlying rock if contaminated water is allowed percolate to the aquifer unmitigated. The potential of contamination is associated with the following sources:

- Suspended solids (muddy water with increased turbidity (measure of the degree to which the water loses its transparency due to the presence of suspended particulates) – arising from dewatering, excavation and ground disturbance);
- Hydrocarbons and other construction chemicals (ecotoxic) – accidental spillages from construction plant or stored fuels, oils, and materials.
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

In the absence of mitigation, rainfall run-off and dewatering water during the construction phase may contain increased silt levels or otherwise become polluted from construction activities. Suspended solids in runoff water may result in an increase in suspended sediment load, resulting in increased turbidity, which may in turn impact on local infiltration capacity, or surface waterbodies. There is also the potential risk of unintentional discharge from construction traffic or stored materials like fuels and oils which could have negative impacts on both surface waters on-site and downstream

from the site and the underlying groundwater. Moreover, construction activities often involve the use of chemicals, such as paints, adhesives, solvents, and pesticides, which can also pose a risk of contamination if not handled and disposed of properly. These chemicals can seep into the soil or be carried by rainwater or other runoff, ultimately contaminating groundwater. It is necessary for the measures (set out in Section 9.9.3) to be implemented to reduce and prevent accidental discharges from occurring during construction, including the implementation of effective containment and monitoring procedures.

Accidental discharges can also occur from welfare facilities during construction activities. Wastewater can contain high levels of bacteria, chemicals and organic matter, which could contaminate nearby water sources if discharged incorrectly. The establishment and use of welfare facilities and use of sealed containment, ensures that there are no potential significant impacts; therefore, no additional mitigation is required.

In addition to the unintentional spillages of the primary sources of contaminants mentioned above, there is also a risk that rainfall run-off and dewatering water from excavation activities becoming contaminated by these sources. If not appropriately mitigated through containment, management, and monitoring, this could result in the mobilisation of these contaminants, leading to more widespread impacts on the surrounding environment. It is the intent to take necessary measures (set out in Section 5.10.3) to prevent such accidental discharges from occurring during construction, including the implementation of effective containment and monitoring procedures.

However, in the absence of mitigation, the effects on land, soils and geology are likely to be **long-term, significant and negative**.

5.9.2.2 Earthworks and Excavations

Removal and reinstatement (including infilling) of the 'protective' tarmac, concrete and subsoil cover across localised areas of the proposed development site will be undertaken during excavation and trenching works (including works for additional drainage and attenuation areas). The proposed development requires soil and stones to be excavated to facilitate construction of new foundations and the installation of underground services. The project engineers (MMOS) have estimated that c. 40,329 m³ of material will need to be excavated to do so. It is currently envisaged that there will be an opportunity to reuse all clean excavated soil on site for use in landscaping and fill. In the case that any excavated soil is tested and deemed contaminated and unfit for reuse on-site, it will need to be removed offsite. This will be taken for appropriate offsite reuse, recovery, recycling and / or disposal.

Bedrock may be encountered in these areas and temporarily exposed for the duration of the excavation works and will temporarily increase the vulnerability category for the site which is classified by the GSI as 'Extreme' indicating a general overburden depth potential between 0-3m, suggesting a limited natural protection of the aquifer by high permeability made ground. Although, local site investigations indicated that made ground was only encountered in the eastern section of the site as described in section 5.6.3. the trial pits were excavated to a maximum depth of 2.5mbgl and no bedrock was encountered. Given the anticipated size of the excavations, it is expected that they will involve only the uppermost strata and will not affect the bedrock associated to Ballinhassig East groundwater body and locally important aquifer.

However, these works are temporary only. It is currently envisaged that there will be an opportunity to reuse all clean excavated soil on site for use in landscaping and fill. In the case that any excavated soil is tested and deemed contaminated and unfit for reuse on-site, it will need to be removed offsite as stated above. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

However, in the absence of mitigation, the effects on land, soils and geology are likely to be **short-term, significant and negative**.

5.9.2.3 Storage of Hazardous Material

During the construction phase there will be a requirement for the temporary storage of fuels. Liquid materials i.e., fuel storage will be located within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications - BS8007-1987) to prevent spillage.

Construction activities will necessitate storage of cement and concrete materials, temporary oils, and fuels on site. Small localised accidental releases of contaminating substances including hydrocarbons have the potential to occur from construction traffic and vehicles operating on site. There is limited potential for leaks or spills of petroleum hydrocarbons during the construction of the development. Unmitigated leaks or spills may lead to contamination of soil and/or groundwater. Soils that are contaminated by petroleum hydrocarbons can affect soil health.

In the absence of mitigation measures, the potential effects during the operational phase on land and soils are **long-term, significant** and **negative**.

5.9.2.4 Import/Export of Materials

There will be a requirement for deliveries of imported engineering fill (sands and gravels), and other construction materials including, steel structure, concrete, cladding, ducting and piping. Construction materials will be brought to site via road.

A ‘Just in Time’ delivery system will operate to minimise storage of materials. Construction materials will be transported in clean vehicles. Lorries/trucks will be properly enclosed or covered during transportation of friable construction materials to prevent the escape of material along public roadways. Where possible it is proposed to source general construction materials from the local area to minimise transportation distances.

Soil requiring offsite removal will be removed from site regularly to ensure there is minimal need for stockpiling. Surplus topsoil, subsoil, and stones material will be transported off site and disposed of at a fully authorised soil recovery site.

In the absence of mitigation, measures the potential effects during the operational phase on land and soils are **long-term, significant** and **negative**.

5.9.3 Operational Phase

5.9.3.1 Hardstanding Areas

The effect on land take is likely to have an effect on the environment of the area; however, this change is consistent with existing and emerging trends.

The development will have an effect on recharge to localised portions of soil and bedrock during the operational phase due to the introduction of hard stand. This provides protection to the underlying aquifer but also reduces local recharge in this area of the aquifer. As the area of aquifer is large this reduction in local recharge will have no significant change in the natural hydrogeological regime. The operational stage of the residential development consists of the typical activities in a residential area and will not involve further disturbance to the topsoil, subsoils and geology of the area.

In the absence of mitigation measures, the potential effects during the operational phase on land, soils and geology are **short-term, imperceptible and neutral**.

5.9.3.2 Accidental Spill/Leaks

There will be no direct discharges to the ground or abstractions from the bedrock aquifer during the operation of the development. Localised accidental discharge to ground from a car park leak.

In the absence of mitigation, measures the potential effects during the operational phase on land and soils are **long-term, significant** and **negative**.

5.9.4 Cumulative Effects

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. Multiple developments in the area could potentially be developed concurrently or overlap during the demolition, construction and operational phases. There will be no effects on land soils and geology as each development will adhere to their own CEMP and mitigation plan. There is no pathway and connectivity to land soils and geology to each development.

In the absence of adherence to the CEMP and mitigation plan, the effect on the local and regional environment is likely to be **long-term, significant and negative**

5.9.5 Summary

The following Table summarises the identified likely significant effects during the construction phase of the proposed development before mitigation measures are applied. If the mitigation measures outlined in Section 5.10 below are not implemented and adhered to in full, the effect on the land and soils is likely to be **long-term, significant and negative**.

Table 5.2 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Accidental Spills, Leaks and Discharges	Negative	Significant	Local & Regional	Likely	Long-Term	Direct
Soil Erosion & Compaction	Negative	Significant	Local	Likely	Short-Term	Direct
Increased Sediment Run Off during excavation works carrying Sediment and Pollutants into the Soil and Bedrock	Negative	Significant	Local & Regional	Likely	Short-Term	Direct & Indirect
Soil Contamination from Construction Waste, Materials & Chemicals	Negative	Significant	Local	Likely	Long-Term	Direct
Lack of waste Classification & Improper disposal of Construction Waste increasing the risk of Soil Contamination	Negative	Significant	Local	Likely	Long-Term	Direct

The following Table summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

Table 5.3 Summary of Operational Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Accidental Spills, Leaks and Discharges	Negative	Significant	Local & Regional	Likely	Long-Term	Direct
Increased Sediment Run Off from Hardstanding Areas carrying Sediment and Pollutants into the Soil and Bedrock Off-Site	Negative	Significant	Local & Regional	Likely	Short-Term	Direct
Future Maintenance Works on Underground Services and Infrastructure involving Soil Excavations and Soil Disturbance and Disposal	Negative	<i>Imperceptible</i>	Local & Regional	Likely	Short-Term	Direct

5.10 Mitigation Measures

5.10.1 Incorporated Design Mitigation

This section outlines the measures that will be employed in order to ensure the project has minimal adverse effects on the surrounding environment, in this case land, soils and geology. These measures include appropriate design measures such as the proper storage and containment of hazardous substances and proper drainage systems in line with best practice, standard details, policies and guidelines already incorporated into the proposed design.

5.10.2 Demolition Phase Mitigation

To facilitate the development, demolition works are required. The demolition works of the proposed development are limited to surface-level activities and do not involve any excavation works. As a result, the impact on the land and soils is minimal.

The demolition process focuses on dismantling and removing structures, buildings and infrastructure to accommodate the new development and facilitation works, without disturbing the underlying soil or altering the landscape. This approach ensures that there are no significant effects on the land's composition, stability, or fertility. The absence of excavation works means that there is no disturbance to the natural soil structure, preventing potential soil erosion or compaction.

In addition, all waste materials will be dealt with in accordance with regional and national legislation, time and resources will be dedicated to ensuring efficient waste management practices and waste arisings will be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate.

Refer to Chapter 11 – Waste of the EIA for further information on predicted on demolition phase mitigation in terms of off-site reuse, recycle and disposal rates for demolition waste.

5.10.3 Construction Phase Mitigation

In order to reduce impacts on the land, soils and geological environment, a number of mitigation measures will be adopted as part of the construction works on site. The measures will address the main activities of potential impact which include:

- Control of soil excavation and export from site;
- Sources of fill and aggregates for the proposed development;
- Fuel and chemical handling, transport and storage; and
- Control of water during construction.

5.10.3.1 Construction Environmental Management Plan

The project engineer (MMOS) have prepared a Construction Environmental Management Plan (CEMP) that is included with the application documentation.

The main purpose of a CEMP is to provide a mechanism for implementation of the various mitigation and monitoring measures which are described in the EIAR. The CEMP demonstrates the applicant's commitment to implementing the proposed development in such a way as to avoid or minimise the potential environmental effects arising from construction activities. All personnel will be required to understand and implement the requirements of the plan.

Construction works and the proposed mitigation measures outlined in the CEMP are informed by best practice guidance on the prevention of pollution during development projects including but not limited to:

- Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016);
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741);
- Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005); and
- Guidelines for the crossing of watercourses during the construction of national road schemes (National Roads Authority; 2008).

The CEMP will be implemented and adhered to by the construction contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager, Resource Manager and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures.

The CEMP sets out the proposed procedures and operations to be utilised on the proposed construction site. All mitigation measures outlined here, and within the CEMP will be implemented during the construction phase, as well as any additional measures required pursuant to consent conditions which may be imposed.

During the project planning phase, a comprehensive emergency response plan will be developed by the construction contractor. This plan will outline a well-defined procedure for effectively managing emergencies as they arise. Furthermore, it's imperative to disseminate this emergency protocol to all site personnel during the site induction process. This plan will include for events such as:

- Pollution incidents: These may involve spillages, the malfunction of temporary structures, embankment collapse, acts of vandalism, fires, and other related events.
- Extreme weather occurrences: Events such as heavy rainfall, flooding, are important factors to consider due to their potential impact on the construction process.

The construction contractor will be required to implement emergency response procedures that align with industry best practice guidance. All personnel working on the site will be informed of the emergency procedures in place.

5.10.3.2 Soil Excavation, Removal and Infill

There will be soil and stones excavated to facilitate construction of new foundations and the installation of underground services. The project engineers (MMOS) have estimated that c. 40,329 m³ of material will need to be excavated to do so. It is currently envisaged that there will be an opportunity to reuse all clean excavated soil on site for use in landscaping and fill. In the case that any excavated soil is tested and deemed contaminated and unfit for reuse on-site, it will need to be removed offsite. This will be taken for appropriate offsite reuse, recovery, recycling and / or disposal.

Material that is exported from site, if not correctly managed or handled, could impact negatively on human beings (onsite and offsite) as well as water and soil environments. Contractors should prepare and adhere to a method statement indicating the extent of the areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.

Stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil stripping and stockpiling will be mitigated through the implementation of an appropriate earthworks handling protocol during construction.

Dust suppression measures (e.g. damping down during dry periods), vehicle wheel washes, road sweeping, and general housekeeping will ensure that the surrounding environment are free of nuisance dust and dirt on roads.

Any excavation works should be carefully monitored by a suitably qualified person to ensure any potentially contaminated soil is identified and segregated from clean/inert soil. In the unlikely event that any potentially contaminated soils are encountered, the soil will be tested and classified as hazardous or non-hazardous in accordance with the EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* publication, HazWasteOnline tool or similar approved method. The material will then need to be classified as inert, non-hazardous, stable non-reactive hazardous or hazardous in accordance with *EC Decision 2003/33/EC*. It should then be removed from site by a suitably permitted waste contractor to an authorised waste facility.

5.10.3.3 Sources of Engineering Fill and Aggregates

All imported fill and aggregate that may be required for the proposed development will be sourced from reputable suppliers. All suppliers will be vetted for:

- Aggregate compliance certificates/declarations of conformity for the classes of material specified for the proposed development;
- Environmental Management status; and
- Regulatory and Legal Compliance status of the Company

5.10.3.4 Fuel and Chemical Handling

The following mitigation measures will be taken at the construction stage in order to prevent any spillages to ground of fuels and prevent any resulting soil and/or water quality impacts:

- Designation of a bunded refuelling areas on the site if refuelling cannot be undertaken off site;
- Provision of spill kit facilities across the site;

- Where mobile fuel bowers are used the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowers to carry a spill kit;
 - Operatives must have spill response training; and
 - Drip trays used on any required mobile fuel units.

In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the site, they will be secured and on spill pallets; and
- Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment.

All contractors will be required to implement mitigation measures discussed above.

All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash-down and washout of concrete transporting vehicles will take place at a designated wash out point on site.

5.10.3.5 Environmental Procedures

There will be comprehensive emergency response procedures and standard operating procedures to respond to chemical spillage all types. All employees will be provided with such equipment, information, training and supervision as is necessary to implement the emergency response procedures and standard operating procedures.

The predicted impact on land and soils during the construction phase is **neutral, imperceptible** and **short-term**, the magnitude of impact is considered **negligible**.

5.10.4 Operational Phase Mitigation

The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Cork City Development Plan 2022-2028 specifies that “all planning applications for new developments incorporate SuDS in so far as possible.” Such proposals shall be accompanied by a comprehensive SuDS assessment including run-off quantity, run off quality, and impacts on habitat and water quality. As such, SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the application of nature-based solutions (NBS) which, whilst providing temporary water retention, will also allow for the integration of green infrastructure within this development. The drainage network will consist in 1 catchment attenuating to the green-field runoff using a flow control device (hydrobrake) from the site. Any localised car leaks will therefore discharge to the stormwater drainage and be treated the proposed Class 1 Hydrocarbon Interceptor. Therefore, the risk of accidental discharge has been adequately addressed through design.

The predicted impact on land and soils during the operation phase is *neutral, imperceptible* and *short-term*, the magnitude of impact is considered *negligible*.

5.11 Residual Impact Assessment

The implementation of mitigation measures outlined in Section 5.10 will ensure that the potential impacts on the land, soils and geological environment do not occur during the demolition, construction and operational phases of the proposed development. Due to the inter-relationship between land, soils, geology, hydrogeology and surface water the following impacts discussed will be considered applicable to both Chapter 5 (Land, Soils and Geology) & Chapter 6 (Hydrology and Hydrogeology) of the EIAR.

5.11.1 Demolition Phase

A carefully planned approach during the demolition phase in particular waste management, as set out in Section 5.10.2 and full adherence to the RWMP presented in Appendix 11.1 and Chapter 11 –Waste of the EIAR, will ensure that the predicted effect on the land, soils and geological environment will be *short-term, imperceptible* and *neutral*. Following the TII criteria for rating the magnitude and significance of impacts on the geological related attributes, the magnitude of impact is considered *negligible*.

5.11.2 Construction Phase

5.11.2.1 Soil Excavation, Removal and Infill

The implementation of mitigation measures outlined in Section 5.10.3.2 will ensure that the potential impacts on the land, soils and geological environment do not occur during the construction phase and that the residual effect will be *short-term-imperceptible-neutral*. Following the TII criteria for rating the magnitude and significance of impacts on the geological related attributes, the magnitude of impact is considered *negligible*.

5.11.2.2 Sources of Engineering Fill and Aggregate

The implementation of mitigation measures outlined in Section 5.10.3.3 will ensure that the potential impacts on the land, soils and geological environment do not occur during the construction phase and that the residual effect will be *short-term-imperceptible-neutral*. Following the TII criteria for rating the magnitude and significance of impacts on the geological related attributes, the magnitude of impact is considered *negligible*.

5.11.2.3 Fuel and Chemical Handling

The implementation of mitigation measures outlined in Section 5.10.3.4 will ensure that the potential impacts on the land, soils and geological environment do not occur during the construction phase and that the residual effect will be *short-term-imperceptible-neutral*. Following the TII criteria for rating the magnitude and significance of impacts on the geological related attributes, the magnitude of impact is considered *negligible*.

5.11.3 Operational Phase

5.11.3.1 Land, Soils and Geology

The implementation of the mitigation measures detailed in Section 5.10.4.1, will ensure that the potential impacts on land, soils and geology, once the proposed development is constructed and operational are adequately mitigated. The residual effect on land, soils and geology during the operational phase is considered to be *neutral-imperceptible-short-term*. Following the TII criteria for rating the magnitude and significance of impacts on the geological related attributes, the magnitude of impact is considered *negligible*.

5.11.4 Summary of Post-mitigation Effects

The following Table summarises the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

Table 5.4 Summary of Construction Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Accidental Spills, Leaks and Discharges	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct
Soil Erosion & Compaction	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct
Increased Sediment Run Off carrying Sediment and Pollutants	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct
Soil Contamination from Construction Waste, Materials & Chemicals	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct
Lack of waste Classification & Improper disposal of Construction Waste increasing the risk of Soil Contamination off-site	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct

The following Table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

Table 5.5 Summary of Operational Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Accidental Spills, Leaks and Discharges	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct
Unlicensed Waste Collection (Illegal Dumping)	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct
Increased Sediment Run Off from Hardstanding Areas carrying Sediment and Pollutants into the Soil and Bedrock Off-Site	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct & Indirect
Future Maintenance Works on Underground Services and Infrastructure involving Soil Excavations and Soil Disturbance and Disposal	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct & Indirect
Discharge of Water to Ground	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct

5.11.5 Cumulative Residual Effects

Table 5.6

Planning Ref	Description	Decision
Cork City: 21/40068; ABP 313328	New research facility at the site at: University College Cork, Distillery Fields, North Mall, Cork T23XA50	Granted by Cork City: 21/03/2022 Granted by ABP: 14/12/2023
Cork City: 24/42796	Amendments to Permitted SHD (ABP 308323)	Granted by Cork City: 20/05/2024

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. Multiple developments in the area could potentially be developed concurrently or overlap during the demolition, construction and operational phases.

5.11.5.1 Demolition Phase

The potential residual effects on the land, soils and geological environment surrounding the development are expected to be minimal due to the demolition works being limited to surface-level activities and do not involve any excavation works. As a result, there will be minimal impact on the land, soils and geological environment, and no significant effects on the composition, stability, or fertility of the land are anticipated. The absence of excavation works also means that there will be no disturbance to the natural soil structure, thus preventing potential soil erosion or compaction and increased run-off rates.

Any developments proposed in the area will have to adhere to their own CEMP and Mitigation plans. There are no pathway connecting the sites in terms of land, soils and geology.

Overall, the surface-level demolition works will have a negligible impact on the land, soils and geology environment, preserving their integrity and minimizing any potential environmental consequences.

The implementation of mitigation measures outlined in Section 5.10.2 will ensure the residual effect on the land, soils and geology environment during the demolition phase is likely to be **short-term-imperceptible-neutral**.

5.11.5.2 Construction Phase

The implementation of mitigation measures outlined in Section 5.10.3 will ensure the residual effect on the land, soils and geological environment during the construction phase detailed in Section 5.9.2 will be **short-term-imperceptible-neutral**.

Following the TII criteria for rating the magnitude and significance of impacts on the geological related attributes, the magnitude of impact is considered **negligible**.

5.11.5.3 Operational Phase

The implementation of mitigation measures highlighted in Section 5.10.4 will ensure that the potential effects detailed in Section 5.9.3 on the land, soils and geological environment do not occur during the operational phase and that the residual effect will be **short-term-imperceptible-neutral**. Following the TII criteria (Appendix 5.1) for rating the magnitude and significance of impacts on the geological attributes, the magnitude of impact is considered **negligible**.

5.12 Risk of Major Accidents or Disasters

The EPA Guidelines, 2022, state that:

“To address unforeseen or unplanned effects the Directive further requires that the EIAR takes account of the vulnerability of the project to risk of major accidents and /or disasters relevant to the project concerned and that the EIAR therefore explicitly addresses this issue. The extent to which the effects of major accidents and / or disasters are examined in the EIAR should be guided by an assessment of the likelihood of their occurrence (risk). This may be supported by general risk assessment methods or by systematic risk assessments required under other legislation e.g. a COMAH (Control of Major Accident Hazards involving Dangerous Substances) assessment.

The potential for a project to cause risks to human health, cultural heritage or the environment due to its vulnerability to external accidents or disasters is considered where such risks are significant, e.g. the potential effects of floods on sites with sensitive facilities. Where such risks are significant then the specific assessment of those risks in the form of a Seveso Assessment (where relevant) or Flood Risk Assessment may be required.”

In general, risk of landslides in this area of Ireland is considered to be low, as the land is not located in a region with high seismic activity or large mountain ranges. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff landslides and falls lead to recession of the cliffs. Landslides have occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities. The landslide

susceptibility map (GSI spatial map viewer) identifies areas which are subject to landslides and is measured from low to high. The landslide susceptibility map considers the location of landslides and what causes them (slope, soil type and the impact of the flow of water).

Based on the GSI spatial map viewer (2025), the area of the proposed development and its surrounding have not been assessed for Landslide Susceptibility and no information is available. The nearest landslide was c.8.4km to the south of the proposed development.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics, Dublin Institute for Advanced Studies, has been recording seismic events in Ireland since 1978 (www.dias.ie). This network consists of several seismometers that are located throughout Ireland. Seismic activity and earthquake risk in Ireland are generally considered to be low. This is because Ireland is located on the western edge of the Eurasian Plate, which is a tectonic plate that is not known for its seismic activity. However, earthquakes can still occur in Ireland, although they are typically small and have little impact. There is a very low risk of seismic activity to the site.

The most recent earthquake was in Co. Waterford (0.1 Magnitude) on the December 25th 2024 c. 65km to the north-east of the proposed development.

There are no active volcanoes in Ireland so there is no risk from volcanic activity at the site.

5.13 Worst Case Scenario

In a worst-case scenario, if the mitigation measures outlined in Section 5.10 aren't fully followed, there's a chance of contamination and pollution during the demolition, construction, and operational phases of the proposed development to occur. This could happen through accidental spills and leaks, increased run-off, sediment loading, excavation and maintenance works.

The mitigation measures set out in Section 5.10 above are in place to prevent any negative impacts on the land, soil, and geology. This will help minimize the likelihood of these issues occurring and protect the surrounding environment.

5.14 Interactions

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR.

5.14.1 Hydrology and Hydrogeology

5.14.1.1 Demolition Phase

The likelihood of significant effects on the hydrogeological and hydrological regime at the proposed development during the demolition phase is minimal due to the demolition works being limited to surface-level activities and do not involve any excavation works.

As a result, no significant effects on the land's composition, stability, or fertility are anticipated. The absence of excavation works means that there is no disturbance to the natural soil structure, preventing potential soil erosion or compaction.

Therefore, there is no risk of increased sediment loading and run off entering nearby surface waterbodies during this phase.

As well as the mitigation measures outlined in this section, the development should adhere to the mitigation measures set out in Section 6.10.2 of the EIAR.

5.14.1.2 Construction Phase

The construction phase of the proposed development has the potential to result in increased sediment runoff which has the potential to interact negatively on groundwater and surface water quality. The proposed construction phase mitigation outlined in Section 6.10 - Chapter 6 – Hydrology and Hydrogeology of the EIA, means that the proposed development will not result in significant negative impact on groundwater and surface water quality in the local area. The interaction is considered to be **neutral, Imperceptible, and short term**.

5.14.1.3 Operational Phase

The operational phase of the proposed development has the potential to interact negatively on groundwater and surface water quality via the proposed surface water network. The proposed operation phase mitigation outlined in Section 6.10 - Chapter 6 – Hydrology and Hydrogeology of the EIA, means that the proposed development will not result in significant negative impact on groundwater and surface water quality in the local area. The interaction is considered to be **neutral, Imperceptible, and short term**.

5.14.2 Biodiversity

5.14.2.1 Demolition Phase

The demolition works of the proposed development are limited to surface-level activities on predominately existing buildings and infrastructure and do not involve any excavation works. As a result, the impact on biodiversity is minimal.

Overall, the surface-level demolition works will benefit the local biodiversity, preserving their integrity and minimizing any potential environmental consequences. The interaction is considered to be **short-term, Imperceptible and neutral**.

5.14.2.2 Construction Phase

In the absence of standard mitigation measures to control the construction phase there is potential for silt laden material or pollution to enter nearby surface waterbodies (and impact on local biodiversity and European sites downstream from the works. Furthermore, dust emissions from exposed earthworks have the potential to settle on plants causing impacts to local ecology.

Taking into account the mitigation measures outlined in this Section 5.10.3, there still remains a residual negative interaction between land and soils with biodiversity during the construction phase. The interaction is considered to be **neutral, Imperceptible, and short term**.

5.14.2.1 Operational Phase

The proposed work is expected to have no significant impact on the local designated areas and their conservation objectives. The interaction is considered to be **long-term, imperceptible and neutral**.

5.14.3 Air Quality

5.14.3.1 Demolition & Construction Phase

Demolition and construction phase activities such as excavations and stockpiling of materials etc. have the potential for interactions between air quality and the land and soils environment in the form of dust emissions. Mitigation measures are proposed to prevent fugitive dust emissions from construction activities including excavation of soils. The interaction is considered to be *neutral, Imperceptible*, and *short term*.

5.14.3.2 Operational Phase

There are no interactions identified between land and soils and air quality during the operational phase.

5.14.4 Waste

5.14.4.1 Demolition & Construction Phase

During the construction phase, excavated soil and stone (c. 40,329 m³) will be generated from the excavations required to facilitate site levelling, construction of new foundations and installations of site services. It is currently envisaged that all clean excavated soil will be reused on-site.

If material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 11 (Waste), Chapter 9 (Land and Soils) and the requirements of the RWMP (Appendix 11.1), will ensure the effect is *long-term, imperceptible and neutral*.

5.14.4.2 Operational Phase

There are no potentially significant interactions identified between land and soils and geology during the operational phase.

5.15 Monitoring

5.15.1 Demolition Phase

The demolition works of the proposed development are limited to surface-level activities and do not involve any excavation works. The absence of excavation works means that there is no disturbance to the natural soil structure, preventing potential soil erosion or compaction.

In addition, all waste materials will be dealt with in accordance with regional and national legislation, time and resources will be dedicated to ensuring efficient waste management practices and waste arisings will be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate.

Therefore, no monitoring is required.

5.15.2 Construction Phase

During construction phase the following monitoring measures will be implemented:

- Regular inspection of surface water run-off and sediments controls (e.g., silt traps);
- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off;
- Excavation works to be monitored to record any signs of potentially contaminated soil;
- Regular inspection of construction / mitigation measures outlined in the CEMP should be adhered to during the construction phase. (e.g., concrete pouring, refuelling, etc); and
- Soil sampling of excavated soils and monitoring of surface water run off will be required in case of accidental discharges to underlying geology.

5.15.3 Operational Phase

Maintenance of the surface water drainage system, including hydrobrake, separators / interceptors, and foul sewers is recommended to minimise any accidental discharges to soil or groundwater.

Monitoring of surface water run off will be required in case of accidental discharges to underlying geology

5.16 Summary of Mitigation and Monitoring

The following Table summarises the Construction Phase mitigation and monitoring measures.

Table 5.7 Summary of Construction Phase Mitigation and Monitoring

Likely Significant Effect	Quality	Significance
Accidental Spills, Leaks and Discharges	Regular inspection of surface water run-off and sediments controls to ensure no accidental discharge occurs to underlying geology. Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off. Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Full adherence to and implementation of the CEMP.	Continuous implementation of the mitigation measures outlined in the EIAR in accordance with best practice guidelines throughout the course of the construction phase of the proposed development.
Soil Erosion & Compaction	Regular inspection of surface water run-off and sediments controls to ensure no accidental discharge occurs to underlying geology. Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off. Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Full adherence to and implementation of the CEMP.	Continuous implementation of the mitigation measures outlined in the EIAR in accordance with best practice guidelines throughout the course of the construction phase of the proposed development.

Likely Significant Effect	Quality	Significance
Increased Sediment Run Off carrying Sediment and Pollutants into the Soil and Bedrock	Regular inspection of surface water run-off and sediments controls to ensure no accidental discharge occurs to underlying geology. Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off. Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Full adherence to and implementation of the CEMP.	Continuous implementation of the mitigation measures outlined in the EIAR in accordance with best practice guidelines throughout the course of the construction phase of the proposed development.
Soil Contamination from Construction Waste, Materials & Chemicals	Regular inspection of surface water run-off and sediments controls to ensure no accidental discharge occurs to underlying geology. Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off. Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Full adherence to and implementation of the CEMP.	Continuous implementation of the mitigation measures outlined in the EIAR in accordance with best practice guidelines throughout the course of the construction phase of the proposed development.
Lack of Waste Classification & Improper disposal of Construction Waste increasing the risk of Soil Contamination	Regular inspection of surface water run-off and sediments controls to ensure no accidental discharge occurs to underlying geology. Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off. Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Full adherence to and implementation of the CEMP.	Continuous implementation of the mitigation measures outlined in the EIAR in accordance with best practice guidelines throughout the course of the construction phase of the proposed development.

Table 5.8 Summary of Operational Phase Mitigation and Monitoring

The following Table summarises the Operational Phase mitigation and monitoring measures.

Likely Significant Effect	Quality	Significance
Accidental Spills, Leaks and Discharges	Negative	Imperceptible
Unlicensed Waste Collection (Illegal Dumping)	Negative	imperceptible
Increased Sediment Run Off from Hardstanding Areas carrying Sediment and Pollutants into the Soil and Bedrock Off-Site	Negative	Imperceptible
Future Maintenance Works on Underground Services and Infrastructure involving Soil Excavations and Soil Disturbance and Disposal	Negative	Imperceptible
Discharge of Water to Ground	Negative	Imperceptible

5.17 Conclusion

This chapter has reviewed and analysed the potential and the predicted effects of the proposed development on the land, soils and geological environment (Land and Soils). These effects have been considered for the demolition, construction and operational phases of the proposed development. The cumulative impact of the proposed development and surrounding developments have also been considered.

Provided all mitigation measures set out in this chapter are adhered to in full throughout all phases, the overall predicted effect of the proposed development is **long-term, imperceptible** and **neutral**.

5.18 References and Sources

- Guidelines on the information to be contained in environmental impact assessment reports. Environmental Protection Agency (EPA, 2022).
- Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements. Institute of Geologists of Ireland (2013).
- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes’ by the National Roads Authority (NRA, 2009)
- Geological Survey Ireland Map Viewer (<https://www.gsi.ie>)
- Environmental Protection Agency (EPA) Map Viewer (<https://gis.epa.ie/EPAMaps/>)
- Teagasc Map Viewer (<http://gis.teagasc.ie/soils/map.php>)
- National Parks and Wildlife Services (NPWS) – Protected Site Register.
- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (2000).
- Cork County Development Plan (2021-2027).
- Directive 2014/52/EU (16 April 2014) European Parliament.
- TII, (2009). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes; June 2009. Transport Infrastructure Ireland, Dublin.
- Ordinance Survey of Ireland (2025) Geohive online mapping.



CHAPTER SIX

HYDROLOGY & HYDROGEOLOGY

CHAPTER SIX

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CHAPTER SIX | Hydrology & Hydrogeology

6.1 Introduction

This chapter of the EIAR evaluates the likely significant effects, if any, which the proposed development will have on Hydrology (surface water) and hydrogeology (groundwater). This chapter contains necessary information as defined in the Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2023).

The chapter initially provides a description of the receiving environment of the site and the potential impacts of the development. When assessing the potential impacts, this assessment considers the significance of the environmental attributes, and the predicted scale, and duration of the likely effects.

The chapter also outlines the proposed mitigation measures that will reduce or eliminate the identified potential impacts and defines the residual effects of the proposed development (the effect after the implementation of mitigation measures).

This chapter should be read in conjunction with Chapter 5 "Land, Soils and Geology" submitted with the planning application. A full description of the proposed development is set out in Chapter 2 "Development Description" of this EIAR.

6.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Rashaqat Ali Siddiqui and Marcelo Allende in the Water section of AWN Consulting Ltd.

Rashaqat Ali Siddiqui (BSc, Msc, MIT). Ali is a hydrogeologist with over 6 years' experience in water resource management and impact assessment. He has a Masters in Hydrogeology and is a former Education Secretary of the Irish chapter for the Association of Hydrogeologists (IAH). Ali's specialist area of expertise is water resource management, Site investigation and monitoring, Contaminated land Assessment, hydrological assessment and environmental impact assessment.

Marcelo Allende (BSc, BEng) is a Principal Environmental Consultant (Hydrologist) at AWN with over 20 years of experience water resources technical studies, conceptual and numerical modelling and environmental consultancy. Marcelo holds a degree in Water Resource Civil Engineering (BEng, Hons) from the University of Chile and a Bachelor of Science in Engineering (BSc, Hons). He has worked on a wide of range of projects including multi-aspect environmental investigations, geo-environmental impact assessments, surface and groundwater resource management, hydrological and hydrogeological conceptual and numerical modelling, strategic and site specific flood risk assessments (Stage 1,2 and 3), Due Diligence reporting, baselines studies, soils, surface water and groundwater monitoring and field sampling programmes on a variety of brownfield and greenfield sites throughout Ireland as well as overseas in Chile, Argentina, Peru and Panama. He also has detailed knowledge of environmental guidance, legislation, regulations & standards and expertise in GIS (expert level) and MATTE studies at COMAH establishments. He is currently a member of the International Association of Hydrogeologists (IAH, Irish Group) and a member of Engineers Ireland (MIEI).

6.3 Proposed Development

The proposed development will include the conservation, conversion and extension of the former Good Shepherd Convent, Home Building, Orphanage Building, Well Site, Gate Lodge, and Bakehouse to provide to provide student accommodation apartments and ancillary services and all associated ancillary development works at The Former Good Shepherd Convent, Convent Avenue, Sunday's Well, Cork.

A full description is included in Chapter 2 of this EIAR and in the statutory notices.

6.3.1 Aspects Relevant to this Chapter

The Chapter will assess the potential effects on the Surface water Quality and Quantity, Designated Areas, Groundwater Quality and Quantity, interaction between subsurface geology and groundwater, water supply, flood risk assessment, SuDS including storm and foul drainage and attenuation strategy. The potential effects will be assessed during the demolition, construction and operation of the proposed development. These aspects will be considered together with the proposed development use. This section should be read in conjunction with the design drawings and reports which accompany this planning application.

6.4 Methodology

6.4.1 Criteria for Rating Effects

This section establishes the criteria, and guidance used to rate the significance of the potential impacts of the proposed development project on the Hydrology and Hydrogeology aspects of the site and surrounding area.

Alongside the legislation, policy, and guidance outlined in Chapter 1, this chapter is prepared in line with the 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022) and due consideration is also given to the guidelines provided by the Institute of Geologists of Ireland (IGI) in the document entitled 'Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements' (IGI 2013).

The document entitled 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the Transport Infrastructure Ireland (TII) formerly National Roads Authority (NRA) (TII, 2009) is referenced where the methodology for assessment of impact is appropriate. Furthermore, in line with the TII Guidelines, an assessment of the attribute importance has been undertaken in order to provide a basis for the assessment of impact provided. The attribute importance considers the potential as well as the existing use of the surface water features as a water resource i.e., water supply, fisheries and other uses, as well as ecological habitat requirements.

The quality, significance, and duration of the potential impacts, residual effects, and cumulative effects are described using standard EIA descriptive terminology, included in Chapter 1 of this EIAR.

The principal attributes (and effects) to be assessed include the following:

- Water Framework Directive (WFD) Status and potential for increased risk of deterioration of this status due to the activities of the site.
- River and stream water quality in the vicinity of the site (where available).

- Surface, transitional and coastal watercourses near the site and potential impact on surface water quality arising from Proposed Development related works including any discharge of surface water run-off.
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any); and
- Surface water features within the area of the site.
- High-yielding water supply wells/ springs in the vicinity of/ within the site boundary to within a 2km radius and the potential for increased risk presented by the Proposed Development;
- Classification (regionally important, locally important etc.) and extent of aquifers underlying the site boundary area;
- Increased risks presented to the groundwater bodies by the Proposed Development associated with aspects such as, for example, the removal of subsoil cover, removal of aquifer (in whole or part thereof), spatial drawdown in water levels, alteration in established flow regimes, and changes in local/ regional groundwater quality;
- Natural hydrogeological/ karst features in the area and potential for increased risk presented by the activities at the site; and
- Groundwater-fed ecosystems and the increased risk presented by operations both spatially and temporally.

6.4.2 Relevant Legislation & Guidance

This impact assessment was undertaken having regard to the following legislation and guidance:

- EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2022).
- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (TII, 2009, previously NRA). The TII criteria for rating the hydrogeological and hydrological related attributes are presented in Appendix 6.1 of this EIAR.
- Water Framework Directive 2000/60/EC.

The strategies and objectives of the WFD in Ireland have influenced a range of national legislation, regulations and guidelines. These include the following:

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003);
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014);
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 (S.I. No. 272 of 2009 as amended SI No. 77 of 2019)
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 S.I. No. 366 of 2016);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010);
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011);
- Statutory Instrument (SI) No. 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988
- Local Government (Water Pollution) Acts 1977-1990
- SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998

- Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board);
- Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers;
- CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors;
- CIRIA C648 Control of Water Pollution from Constructional Sites; and
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA/TII, 2006).

6.4.3 Sources of Information

- Environmental Protection Agency (EPA) – website mapping and database information. Envision water quality monitoring data for watercourses in the area;
- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and 1:100,000 mapping;
- River Basin Management Plan for Ireland 2018-2021.
- Water Action Plan 2024 - A River Basin Management Plan for Ireland, (Department of Housing Local Government & Heritage, Sept 2024).
- Cork County Council Development Plan 2022-2028.
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW);
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie)
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001); and
- National Parks and Wildlife Services (NPWS) – Protected Site Register.
- Hydrometric data (www.floodinfo.ie/map/floodmaps/), OPW CFRAM Flood Risk Mapping, www.epa.ie/hydronet.

Site specific data was derived from the following sources:

- Site plans and drawings submitted with the planning application pack
- Consultation with the engineering team.
- Site Investigation (GII, 2024)
- Construction and Environmental Management plan (MMOS, 2025)
- Engineering Report (MMOS, 2025)

6.4.4 Site Surveys/Investigations

- GII, October 2024

Site investigation works were conducted within the site by Ground Investigation Ireland in October 2024. The objective of this site investigation was to determine whether the ground conditions are suitable for soakaway installation. 5no. Soakaway tests were carried out in accordance with BRE 365 as shown in Figure 6.1



Figure 6.1 Soakaway Test Locations (GII, 2024)

The pits were excavated to a maximum depth of 2.5m mbgl. During the excavation of the Soakaway pits, the sequence of strata encountered were consistent across the site and generally comprised;

- Topsoil
- Made Ground
- Cohesive Deposits

TOPSOIL: Topsoil was encountered in all the exploratory holes and was present to a maximum depth of 0.50m BGL.

MADE GROUND: Made Ground deposits were encountered beneath the Topsoil at the location of SA05 and SA06 to a maximum depth of 1.40m BGL. These deposits were described generally as dark brown or brown slightly sandy slightly gravelly CLAY with rare fragments of redbrick and low subangular to subrounded cobble content.

COHESIVE DEPOSITS: Cohesive deposits were encountered beneath the Made Ground and were described typically as orangey brown or brown slightly sandy slightly gravelly CLAY. overlying a Firm orangey brown slightly sandy slightly gravelly CLAY upto a depth of 2.5mbgl. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the glacial till matrix. The strength of the cohesive deposits were typically soft to firm. These deposits had some, occasional or frequent cobble and boulder content, where noted on the exploratory hole logs.

No groundwater or surface water assessment was carried out during the site investigation, and no groundwater was encountered during excavation of the pits.

It should be noted that bedrock was not encountered in the excavated pits.

6.4.5 Consultation

There was no consultation with internal Local Authority departments, community or stakeholders encountered in compiling the specified information for this EIA chapter.

6.5 Difficulties Encountered

There were no significant difficulties encountered in compiling the specified information for this EIAR chapter.

6.6 Baseline Environment

6.6.1 Site Location & Surrounding Land Use

The former Good Shepherd Convent site is located to the north-west of Cork City centre, in the Sunday's Well area. The site is approximately centred at Easting 565,855 and Northing 572,101 (ITM), encompassing a gross site area of approximately 3.43 hectares. The site location is shown in Figure 6.2 below.



Figure 6.2 Site Location Map

Access to the proposed development site is via Convent Avenue (L99112), which connects Strawberry Hill (L5102) with Sunday's Well Road (R846). The site's western boundary adjoins the Cork City Gaol (Museum). This boundary consists of a large, well-constructed stone wall. The surrounding area to the north, east, and south of the proposed development site, consists primarily of residential dwellings.

The former Good Shepherd Convent site includes imposing buildings, now derelict, weatherworn and fire damaged, located along the northern boundary of the site. The three main buildings have been in a derelict condition since a serious fire in 2012. Extensive damage was caused to the home section of the property, with the convent and its wings surviving in a dilapidated state.

A cemetery is located in the northeast section of the site, with a nun's graveyard and the grave of Little Nellie of Holy God. There are also several headstones scattered along the northern boundary of the site.

6.6.2 Topography

A detailed topographic survey was carried out the Good Shepherd site. Based on the topographic survey, the levels typically vary from 56mAOD to 38mAOD dropping North to south at the proposed development area.

6.6.3 Hydrology

6.6.3.1 Regional Hydrological Environment

The proposed development site lies within the Lee, Cork Harbour and Youghal Bay Catchment 19 and Lee[Cork]_SC_060 sub-catchment 19-8. According to the EPA river network (EPA maps, <https://gis.epa.ie/EPAMaps/> accessed on 16-03-2025), the nearest surface water receptor is the Lee (Cork) Upper Estuary transitional waterbody (EU code: IE_SW_060_0950) located c.220m south of the proposed development site. The River Lee_090 waterbody is located c. 850m upstream of the site and is also part of the hydrological environment. Refer to Figure 6.3 showing the regional hydrological environment in context of the proposed development site.

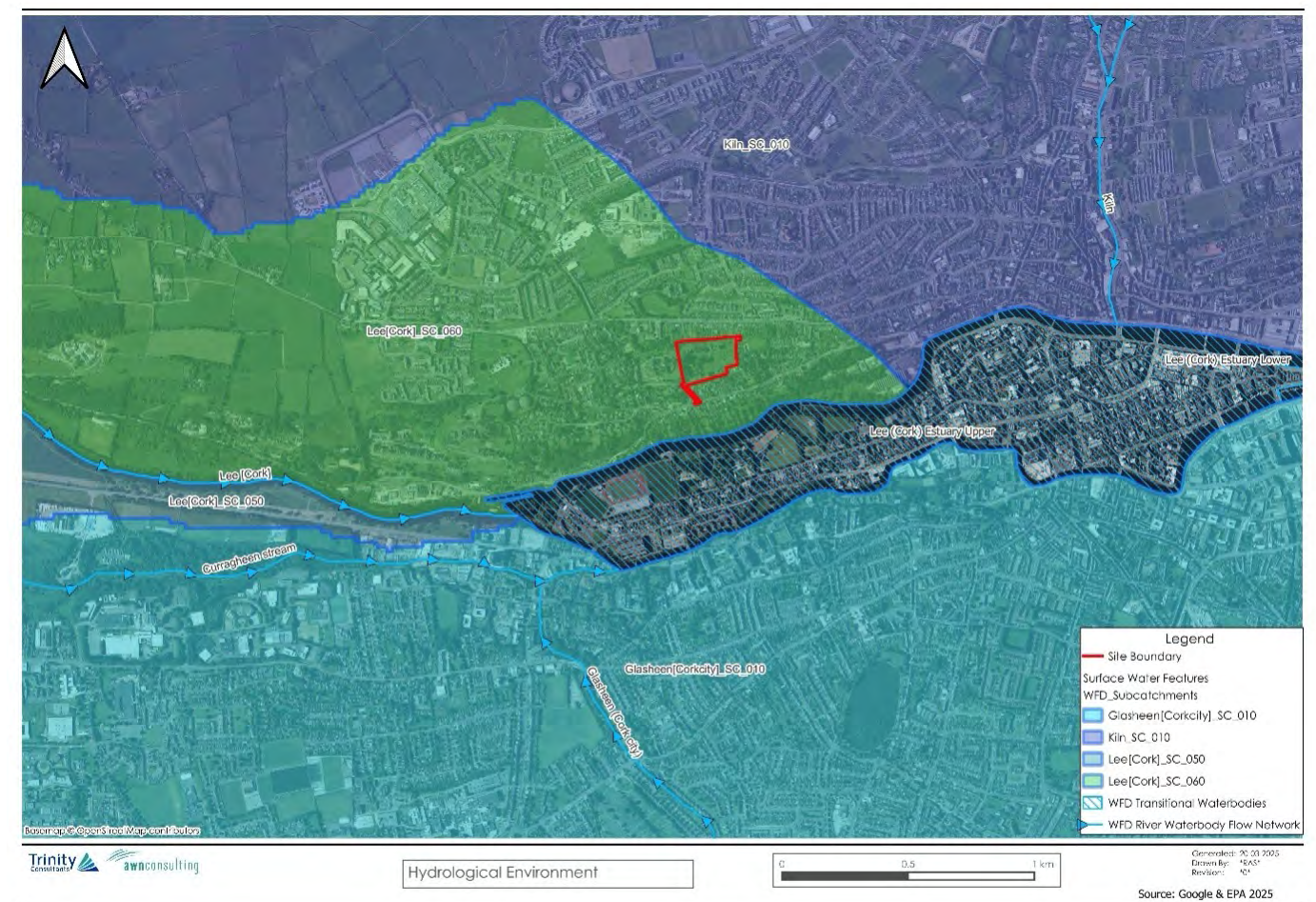


Figure 6.3 Hydrological Environment (EPA, 2025)

6.6.3.2 Surface Water Quality

Surface water quality is monitored periodically by the EPA at various regional locations along with principal and other smaller watercourses. The EPA assess the water quality of rivers and streams across Ireland using a biological assessment method, which is regarded as a representative indicator of the status of such waters and reflects the overall trend in conditions of the watercourse. The biological indicators range from Q5 - Q1. Level Q5 denotes a watercourse with good water quality and high community diversity, whereas Level Q1 denotes very low community diversity and bad water quality.

In relation to the Proposed Development site, the nearest (active) surface waterbody EPA monitoring station is:

- 'LEE (CORK) - Weir u/s Victoria Br (Intake)- RIVER STATION ' (EPA Code: RS19L030800), which is located in the Lee_090 waterbody c. 850m upstream of the Proposed Development site.

The most recent water quality status recorded by the EPA (2023) at this monitoring station (EPA Code: RS RS19L030800) for River Lee_090 is classified as Q3-4 Moderate, which denotes a slightly polluted waterbody. This Value is based primarily on the relative proportions of pollution sensitive to tolerant macroinvertebrates (the young stages of insects primarily but also snails, worms, shrimps etc.) resident at a river site.

Table 6.1

Q Value	WFD Status	Pollution Status	Condition
Q5, Q4-5	High	Unpolluted	Satisfactory
Q4	Good	Unpolluted	Satisfactory
Q3-4	Moderate	Slightly polluted	Unsatisfactory
Q3, Q2-3	Poor	Moderately polluted	Unsatisfactory
Q2, Q1-2	Bad	Seriously polluted	Unsatisfactory

In addition to the biological assessment method outlined above the EPA also classified water bodies in accordance with the WFD water quality status. Rivers, lakes, estuaries and coastal waters can be awarded one of five statuses: High, Good, Moderate, Poor, Bad. Groundwater has just two statuses – Good and Poor.

The Environmental Protection Agency (EPA, 2025) on-line mapping presents the available water quality status information for water bodies in Ireland. The most recent WFD Status score (2016-2021) states that the Lee (Cork) transitional waterbody has an 'Moderate' status while its WFD risk score is 'At Ris of not achieving good status' (refer to Figure 6.4). For the Lee Upper transitional waterbody, the closest active monitoring station (LE110 - Upper Lee Est N Channel, Daly's Bridge TW04003160LE1001) which is located c. 350m southwest from the propose development. The main pressures identified on the Lee (Cork) Estuary Upper are associated with Urban Run off and Urban Wastewater discharges, while its 'Moderate' status is due to hydromorphological and dissolved oxygen conditions in the watercourse.

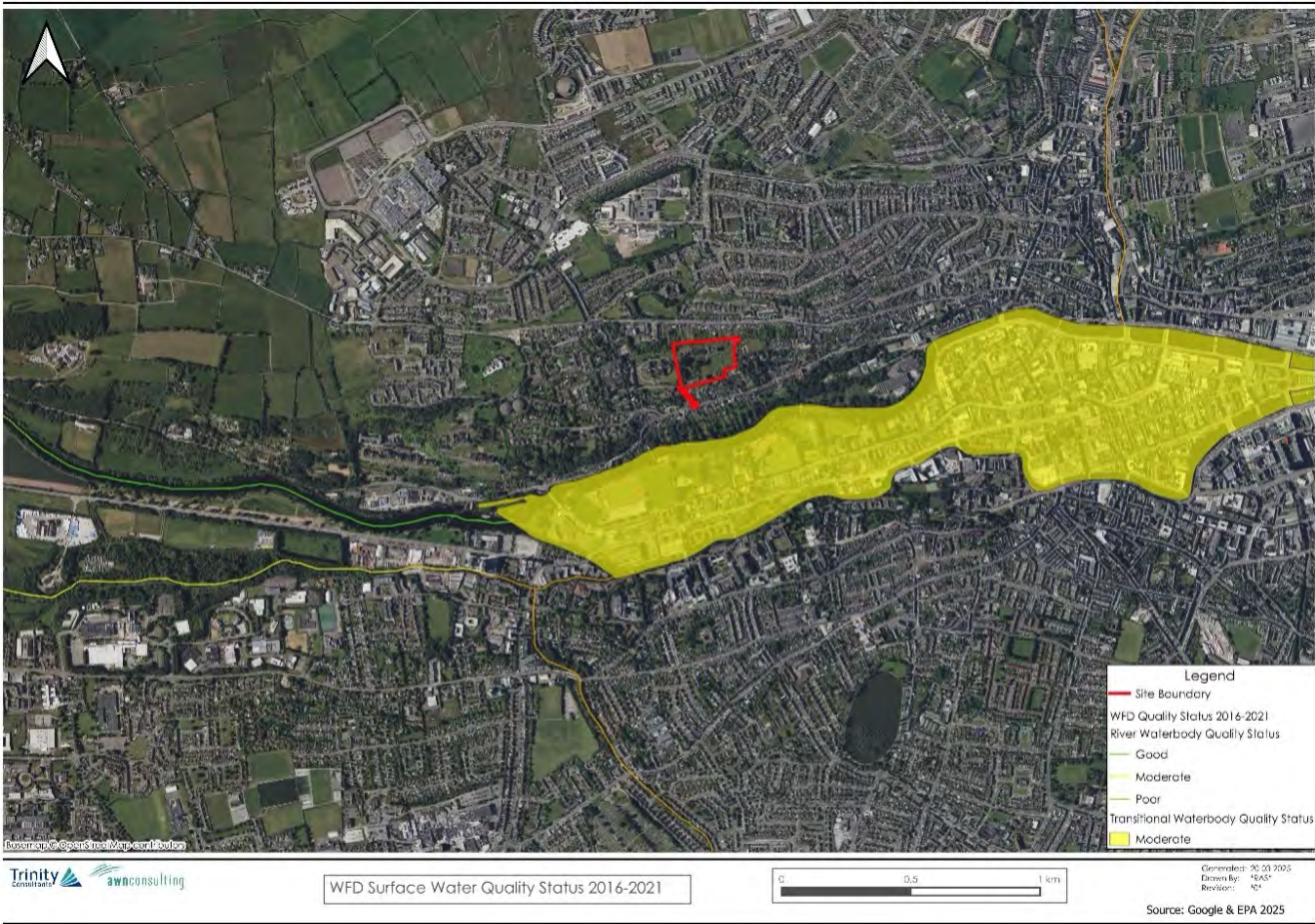


Figure 6.4 WFD Surface Water Quality Status 2016-2021 (EPA, 2025)

6.6.3.3 Bathing Waters and Recreational Waterbodies

A review of the Environmental Protection Agency's (EPA) online mapping that includes the Register of Protected Areas (RPA) under the Water Framework Directive (WFD) has shown that there are no Recreational Waters or Bathing Waterbodies located in the vicinity of the site. The nearest bathing waterbody is Outer Cork Harbour (BW ID: IE_SW_050_0000) located >c. 20km south-east of the proposed development site and no hydrological/hydrogeological connection/linkages exist.

6.6.3.4 Surface Water Local Drainage

The site is serviced by an existing 300mm diameter combined sewer at the main site entrance and it should be noted that there are no SuDS or drainage facilities in place. This combined sewer connects to an existing combined culvert on Convent Avenue before finally discharging to the existing 750mm diameter interceptor sewer which runs along the south side of the Sunday's Well area. The site is not hydrologically connected (directly) to the downstream surface waterbodies since the combined sewer system discharges to the Cork City Wastewater Treatment Plant, which in turn discharges into the Lough Mahon transitional waterbody after treatment.

6.6.3.5 Wastewater

The site is serviced by an existing 300mm diameter combined sewer at the main site entrance. This combined sewer connects to an existing combined culvert on Convent Avenue before finally discharging to the existing 750mm diameter interceptor sewer which runs along the south side of the Sunday's Well area. The site is not hydrologically connected (directly) to the downstream surface waterbodies since the combined sewer system discharges to the Cork City Wastewater Treatment Plant, which in turn discharges into the Lough Mahon transitional waterbody after treatment.

6.6.3.6 Water Supply

There is an existing 300mm diameter watermain located on Blarney Street which services the area.

6.6.3.7 Flood Risk

As part of the planning application for the scheme, MMOS conducted a Stage 3 Site Specific Flood Risk Assessment (SSFRA) in line with current flooding guidelines.

The guidelines describe good flood risk practice in planning and development management and seek to integrate flood risk management into the planning process, thereby assisting in the delivery of sustainable development. Planning authorities are directed to have regard to the guidelines in preparation of Development Plans and Local Area Plans, and for development control purposes. For this to be achieved, flood risk must be assessed as early as possible in the planning process.

Other sources of information, attached as appendices, used to compile this FRA include:

- OPW website, www.floodmaps.ie,
- Lee CFRAM

The stages involved in the assessment of flood risk are listed in the OPW publication as follows:

- Stage 1: Flood Risk Identification
- Stage 2: Initial Flood Risk Assessment
- Stage 3: Detailed Flood Risk Assessment

Geographical areas are similarly divided into three categories, based on their risk of river and tidal flooding. The three categories are as follows:

- Flood Zone A – where the probability of flooding from rivers and the sea is the highest (greater than 1% or 1 in 100 year for river flooding and 0.5% or 1 in 200 year for coastal flooding).
- Flood Zone B – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 year and 1% or 1 in 100 year for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 year for coastal flooding).
- Flood Zone C – where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 year for both river and coastal flooding i.e. all areas which are not within Zones A or B).

Figures 6.5 and 6.6 below are an extract from the relevant fluvial and tidal flood extent map, and it is noted that the site area is not affected by any flood extent. Which then classifies the area as Flood Zone C.



Figure 6.5 Fluvial Flood Extent (MMOS, 2025)

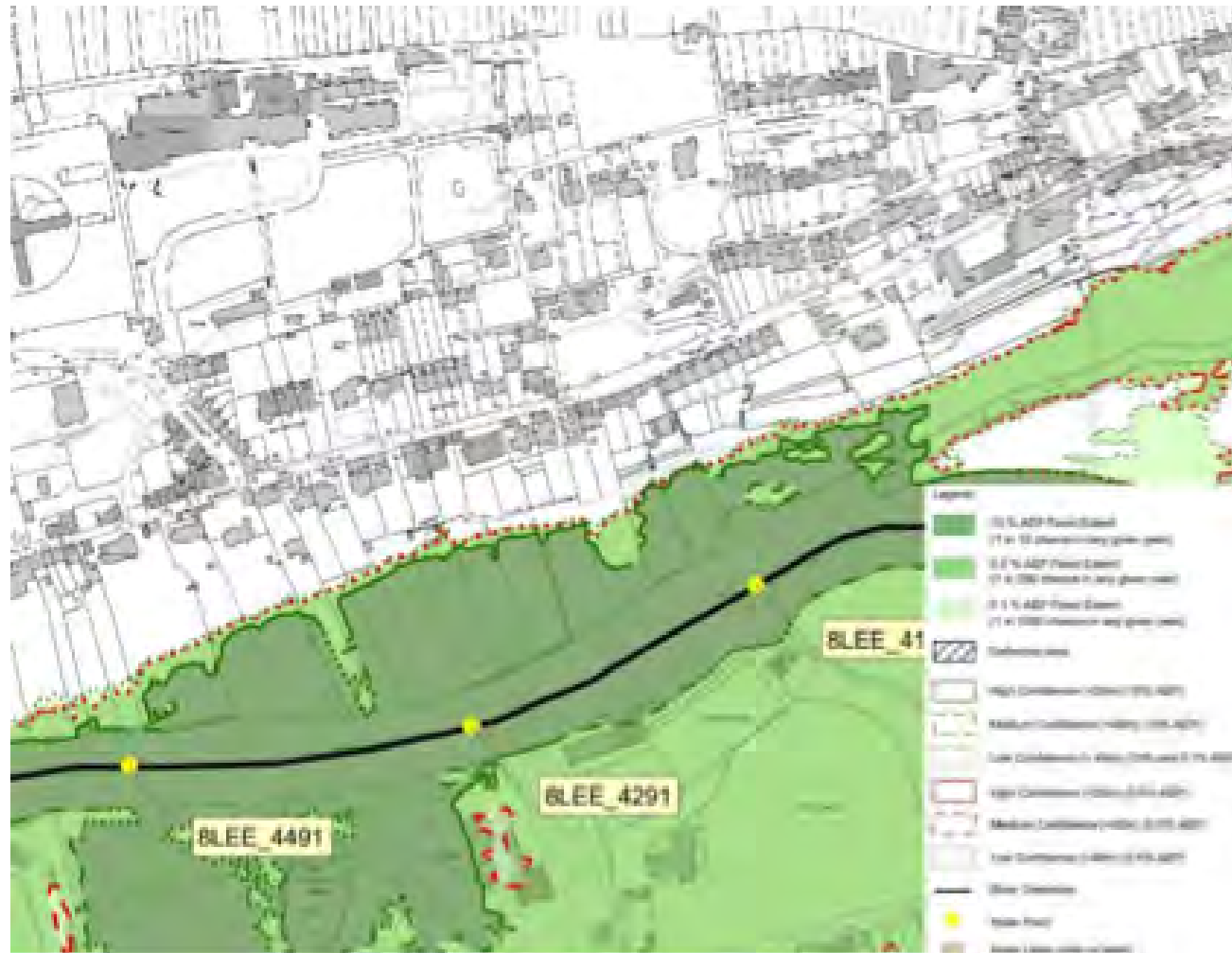


Figure 6.6 Tidal Flood Extent (MMOS, 2025)

The assessment confirms that the proposed development is located predominately in Flood Zone C, which means the probability of flooding from rivers and coastal areas is less than 0.1% or 1 in 1000 years. The assessment concludes with the appropriate mitigation measures, the proposed development is not at risk of fluvial or coastal flooding.

6.6.3.8 Areas of Conservation

The NPWS (2025) on-line database have been reviewed to determine the location of areas of conservation within proximity to the Proposed Development site, and there are no Special Protected Areas (SPA) established under the EU Birds Directive (79/409/EEC), or Special Areas of Conservation (SAC) established under the Habitats Directive on or within the boundary of the Proposed Development site. Furthermore, there are no Natural Heritage Areas (NHA), or proposed Natural Heritage Areas (pNHA) established under the Wildlife Acts, 1976 and 2000 (as amended) on or within the boundary of the Proposed Development site.

- Lee Valley pNHA (Site Code: 000094)- located c. 1.6km upstream of the site

- Cork Harbour SPA (Site Code: 004030) & Douglas River Estuary pNHA (Site Code: 001046) – located c. 6.4km downstream of the site.
- Great Island Channel SAC (Site Code: 001058) – located c. 10.7km downstream of the site.

Currently there is no direct hydrological linkage between the proposed development and these sites as shown in Figure 6.7 as the combined sewer is sent to the Wastewater Treatment Plant. No storm water is directly discharged to Lee Estuary. The Wastewater Treatment plant discharges to Lough Mahon Transitional Waterbody which is associated with the Cork Harbour SPA and Great Island Channel SAC.

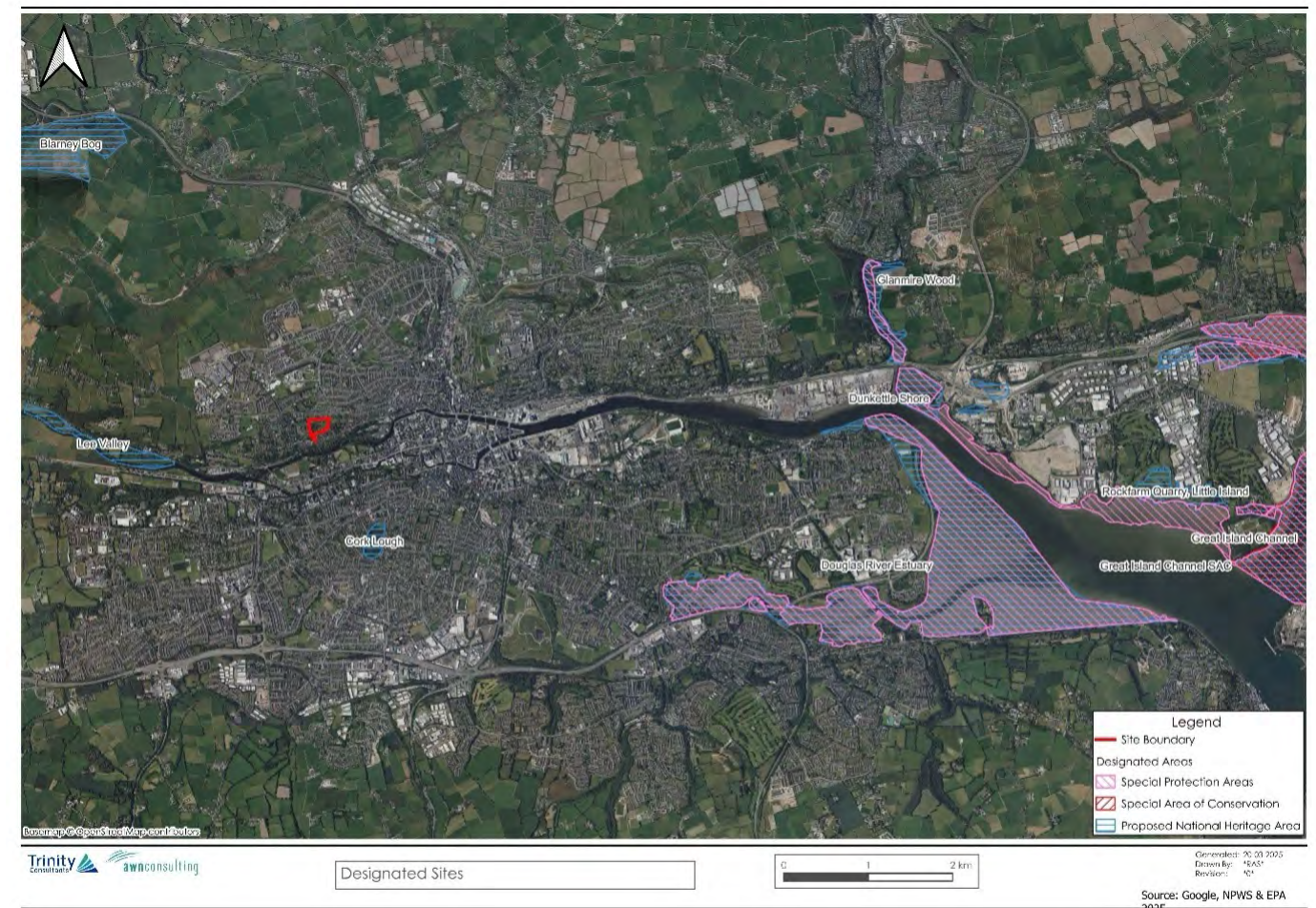


Figure 6.7 Designated Sites (NPWS, 2025)

6.6.3.9 Rating of Importance of Hydrological Attributes

Based on the review of the receiving environment undertaken (Section 6.6.3.1 through Section 6.6.3.8) and based on the TII methodology (2009) (See Appendix 6.1), the importance of the hydrological features at this site can be rated as 'Medium' to 'Low' importance with medium to low quality or value on a local scale, due to the status of the river waterbodies in the vicinity of the site (River Lee_090 and Lee (Cork) Estuary Upper) which are classified as 'Moderate' by the WFD and are 'At Risk' of not achieving a good status (WFD Period: 2016-2021).

6.6.4 Hydrogeology

6.6.4.1 Aquifer Classification

The GSI has devised a system for classifying the bedrock aquifers in Ireland. The aquifer classification for bedrock depends on a number of parameters including, the area extent of the aquifer (km²), well yield (m³ /d), specific capacity (m³ /d/m) and groundwater transmissivity (mm³ /d). There are three main classifications: regionally important, locally important and poor aquifers. Where an aquifer has been classified as regionally important, it is further subdivided according to the main groundwater flow regime within it. This sub-division includes regionally important fissured aquifers (Rf) and regionally important karstified aquifers (Rk). Locally important aquifers are sub-divided into those that are generally moderately productive (Lm) and those that are generally moderately productive only in local zones (LI). Similarly, poor aquifers are classed as either generally unproductive except for local zones (PI) or generally unproductive (Pu).

The GSI (2024) classifies the principal aquifer types in Ireland as:

Bedrock Aquifer

- Rkc – Regionally Important Aquifer – Karstified (conduit)
- Rkd – Regionally Important Aquifer – Karstified (diffuse)
- RK – Regionally Important Aquifer – Karstified
- Rf – Regionally Important Aquifer – Fissured bedrock
- Lm – Locally Important Aquifer – Bedrock which is Generally Moderately Productive
- Lk – Locally Important Aquifer – Karstified
- LI – Locally Important Aquifer – Bedrock which Moderately Productive only in Local Zones
- PI – Poor Aquifer – Bedrock which is Generally Unproductive except for Local Zones
- PU – Poor Aquifer – Bedrock which is generally Unproductive

Gravel Aquifer

- Lg – Locally Important Aquifer – Sand & Gravel
- Rg – Regionally Important Aquifer – Sand & Gravel

Presently, from the GSI (2023) National Bedrock Aquifer Map, the GSI classifies the bedrock aquifer beneath the subject site as a ‘*Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones*’. The potential for vertical or horizontal migration within this type of aquifer is not significant and on local scale. The GSI map does not identify structural faults underneath the area of the subject site. Refer to Figure 6.8.



Figure 6.8 Aquifer Classification (GSI, 2025)

6.6.4.2 Aquifer Vulnerability

Aquifer vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Due to the nature of the flow of groundwater through bedrock in Ireland, which is almost completely through fissures/ fractures, the main feature that protects groundwater from potential contamination, and therefore the most important feature in the protection of groundwater, is the subsoil (which can consist solely of or of mixtures of peat, sand, gravel, glacial till, clays or silts).

Groundwater vulnerability is an indication of how easily the aquifer can become contaminated by human activity. It is dependent on the thickness and permeability of the overlying soils and depth to the water table. For example, a bedrock aquifer with minimal thickness of overburden or with a thin layer of permeable overburden will be more vulnerable to contamination than a bedrock aquifer which has a thick layer of low permeability overburden. Extreme groundwater vulnerability is also associated with karst landforms as these are a direct pathway for water and contaminants to enter the aquifer from the surface.

The GSI presently classifies the aquifer underlying the Proposed Development site as having ‘Extreme’ (E) vulnerability as shown in Figure 6.9.

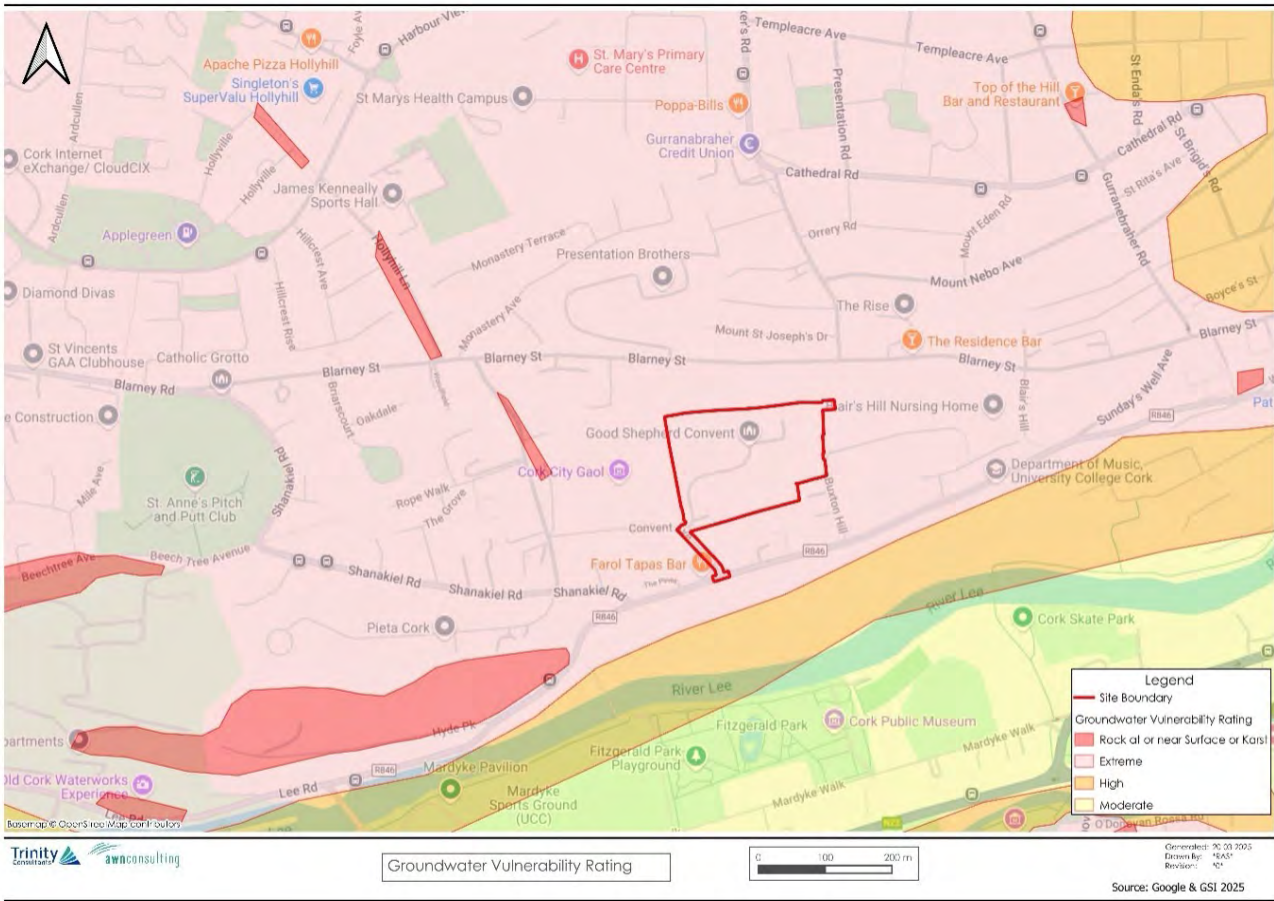


Figure 6.9 Groundwater Vulnerability Rating (GSI, 2025)

Aquifer vulnerability classifications are primarily based on the permeability and thickness of subsoils. Given the subsoils are Made ground underlain by clay along with extreme vulnerability. The expected bedrock depth is between 0-3m. Although, during the site investigation, the trial pits were excavated to a maximum depth of 2.5 m and no bedrock was encountered. Refer to Table 6-1 below

Table 6.2 Vulnerability Mapping Guidelines (Source (DoELG, EPA, GSI, 1999)

Vulnerability Rating	Hydrogeological Conditions				
	Subsoil Permeability (Type) and Thickness			Unsaturated Zone	Karst Features
	High permeability (sand/gravel)	Moderate permeability (e.g. Sandy subsoil)	Low permeability (e.g. Clayey subsoil, clay, peat)	(Sand/gravel aquifers only)	(<30 m radius)
Extreme (E)	0 - 3.0m	0 - 3.0m	0 - 3.0m	0 - 3.0m	-
High (H)	> 3.0m	3.0 - 10.0m	3.0 - 5.0m	> 3.0m	N/A
Moderate (M)	N/A	> 10.0m	5.0 - 10.0m	N/A	N/A
Low (L)	N/A	N/A	> 10.0m	N/A	N/A

Notes: (1) N/A = not applicable.
(2) Precise permeability values cannot be given at present.
(3) Release point of contaminants is assumed to be 1-2 m below ground surface.

6.6.5 Baseline Groundwater Quality

The Water Framework Directive (WFD) 2000/60/EC was adopted in 2000 as a single piece of legislation covering rivers, lakes, groundwater, transitional (estuarine) and coastal waters. In addition to protecting said waters, its objectives include the attainment of ‘Good Status’ in water bodies that are of lesser status at present and retaining ‘Good Status’ or better where such status exists at present. ‘Good Status’ was to be achieved in all waters by 2015, as well as maintaining ‘high status’ where the status already exists. The EPA co-ordinates the activities of the River Basin Districts, local authorities and state agencies in implementing the directive, and operates a groundwater quality monitoring programme undertaking surveys and studies across the Republic of Ireland.

The Groundwater Body (GWB) underlying the site is the Ballinhassig East GWB (EU Groundwater Body Code: IE_SW_G_004). Currently, the EPA (2025) classifies the Ballinhassig East GWB as having ‘Good Status’(Refer to Figure 6.10), and a WFD Risk Score of ‘Not at risk of not achieving good status’. The Ballinhassig East GWB has a Good Status for chemical and quantitative categories. Therefore, the overall status is considered Good.

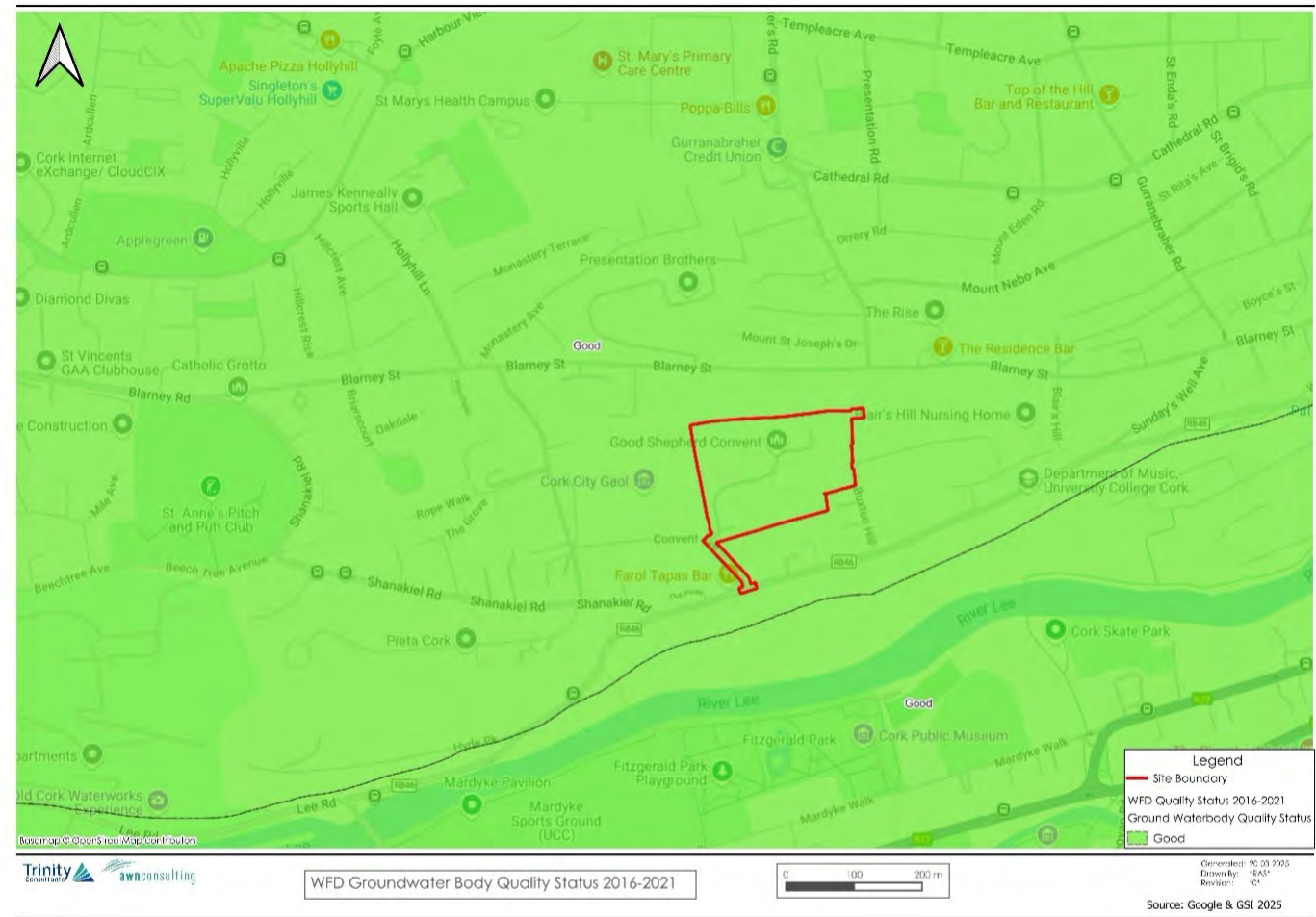


Figure 6.10 WFD Groundwater Body Quality Status 2016-2021 (EPA, 2025)

6.6.5.1 Groundwater Wells

The GSI Well Card Index is a record of wells drilled in Ireland, water supply and site investigation boreholes. It is noted that this record is not comprehensive as licensing of wells is not currently a requirement in the Republic of Ireland. The current well index shows there are no wells are located within the boundary of the Proposed Development site.

There are 11 no. wells are mapped in the wider study area within a 2km radius of the Proposed Development site as shown in Figure 6.11. Refer to table 6.2 for the reported uses.

Table 6.3 GSI Well Card Data for the Site location and Surrounding Area (GSI, 2025)

GSI Name	Type	Depth (m)	Townland	Source Use	Yield Class	Yield (m3d)
1405NEW066	Borehole	24.4	Ballincranig	Unknown	Poor	21.8
1407SEW138	Borehole	18	Cork	Unknown	Unknown	0
1407SEW180	Borehole	4	Farranmacteige	Unknown	Unknown	0
1407SEW181	Borehole	3.6	Farranmacteige	Unknown	Unknown	0
1407SEW182	Borehole	4	Farranmacteige	Unknown	Unknown	0
1407SEW183	Borehole	3	Farranmacteige	Unknown	Unknown	0
1407SEW184	Borehole	2.5	Farranmacteige	Unknown	Unknown	0
1407SEW028	Borehole	22.9	Killeen	Unknown	Poor	21.8
1407SEW059	Borehole	56.4	Killeens	Unknown	Poor	6.6
1407SEW060	Dug well	2.1	Knockpoge	Unknown	Poor	21.8
1407SEW061	Borehole	42.7	Holy Trinity	Unknown	Unknown	0

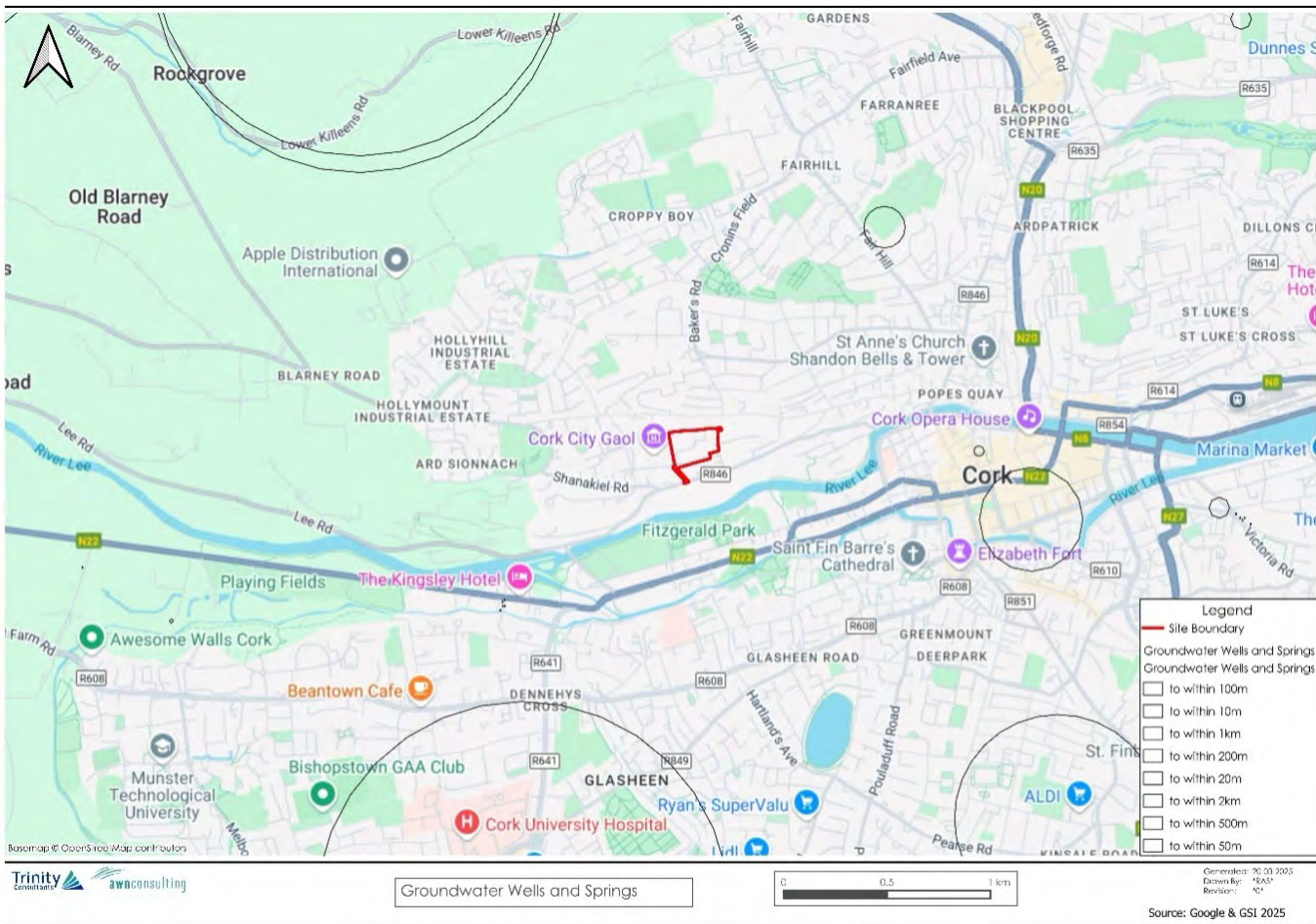


Figure 6.11 Groundwater Wells and Springs (GSI, 2025)

6.6.5.2 Source Protection Areas

There are no recorded source protection areas within a 5km radius of the proposed development. The nearest source protection area, Carraignabh fear PWS, is located c. 10.2 km north of the development site. As a result, there is no potential for negative effects on these sites from the proposed development.

6.6.5.3 Rating of Site Importance of the Hydrogeological Features

The review of the receiving environment, as detailed in Section 6.3.9 and based on the TII methodology (2009) (Appendix 6.1), indicates that the hydrogeological features at this site are of 'Medium to High' importance, with significant value on a local scale. This is due to the aquifer beneath the site being classified as "Locally Important" (LI), capable of supplying locally significant resources, such as smaller public water supplies and group schemes. While the Ballinhassig East GWB is classified as 'Good,' WFD Status and the groundwater vulnerability is categorized as 'Extreme.' Consequently, placing the local hydrological environment at risk of contamination.

6.6.6 Conceptual Site Model

AWN have developed a conceptual site model (CSM) in order to identify any likely Source-Pathway-Receptor linkages relating to the site and the proposed development.

The GSI presently classifies the aquifer underlying the Proposed Development site with ‘Extreme’ (E) vulnerability.

The bedrock aquifer underlying the Proposed Development site, according to the GSI (www.gsi.ie/mapping) National Draft Bedrock Aquifer Map, is classified as a “Locally important Aquifer” (LI). This aquifer is moderately productive only in local zones and capable of supplying locally important supplies (e.g., smaller public water supplies, group schemes).

There are no recorded source protection areas within a 5km radius of the proposed development. The nearest source protection area, Carraignabh fear PWS, is located c. 10.2 km north of the development site. As a result, there is no potential for negative effects on these sites from the proposed development.

River Lee_090 located c. 850m southwest and Lee (Cork) Estuary Upper Transitional waterbody located c. 220m south of the proposed development. Lee (Cork) Estuary Transitional waterbody is hydrologically connected to Cork Harbour SPA (Site Code: 004030) & Douglas River Estuary pNHA (Site Code: 001046) located c. 6.4km downstream of the site. It should be noted that the site has no hydrological connection to any of the waterbodies above (River Lee and Lee (Cork) Estuary Upper), as all the local drainage is currently discharged into an existing 300mm diameter combined sewer which outfalls into the Cork City Wastewater Treatment Plant which in turn discharges into Lough Mahon transitional waterbody. This waterbody hosts 2 no. conservation areas: Cork Harbour SPA and Great Island Channel SAC.

6.7 Characteristics of the Proposed Development

The purpose of this section is to provide an overview of the key relevant details of the construction phase and operational phase of the Proposed Development. The information presented in this section is informed by the project design, but it is not a complete description of the Proposed Development. Therefore, it should be read in conjunction with the full development package. For a more comprehensive understanding of the Proposed Development, please refer to Chapter 2 (Description of the Proposed Development) of the EIA Report. Chapter 2 provides a detailed overview of the lifecycle of the project, including reference to the architectural and civil engineering, drawings, plans, reports, and other relevant document in order to define the Proposed Development.

Planning permission for a proposed Student Accommodation Development comprising the conservation, conversion and extension of the existing former Good Shepherd Convent, Home Building, Orphanage Building, and Well site to provide 274 no. student accommodation apartments, the conservation and conversion of the existing gate lodge and bakehouse to provide ancillary services and all associated ancillary development works at The Former Good Shepherd Convent, Convent Avenue, Sunday’s Well, Cork. The maximum proposed depth of excavation is 3mbgl and it is not envisaged to excavate bedrock.

The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Cork City Development Plan 2022-2028 specifies that “all planning applications for new developments incorporate SuDS in so far as possible.” Such proposals shall be accompanied by a comprehensive SuDS assessment including run-off quantity, run off quality, and impacts on habitat and water quality. As such, SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the application of nature-based solutions (NBS) which, whilst providing temporary water retention, will also allow for the integration of green infrastructure within this development.

- The installation of Tree Pits along sections of the development is proposed due to the relative sizing of such installations. Tree Pits will be provided in conjunction with the landscaping design where surface water will be directed to the tree pits to provide temporary attenuation, infiltration, and surface water cleaning. An overflow pipe back to the main surface water runs will be provided to prevent against flooding in scenarios where the tree pits are overwhelmed during periods of excessive rainfall. Due the inability to calculate soil infiltration rates following soakaway testing, it is recommended that these tree pits mainly serve as enhanced storage as opposed to infiltration measures. There exists potential for the tree pits to filter out pollutants from runoff, thus reducing the potential pollutant loadings within receiving systems. Further environmental benefits may be experienced through the promotion of biodiverse habitats associated with the introduction of tree pits.
- Blue and green roof configurations are proposed for portions of this development where suitable to provide storage at source. This allows for effective stormwater management through the use and integration of green and blue infrastructure within the development whilst promoting biodiversity gains.
- Rainwater harvesting is proposed for this development where suitable which will involve the provision of a rainwater storage system. This will provide some temporary water storage; however, it will also promote the sustainability of the development by relieving additional demand on the watermain supply for landscaping purposes during the summer months.

Soakaways are not proposed or recommended for this development as a result of the poor soil infiltration rates. As a result of these constraints, an attenuation tank is proposed for the management of surface water from roofed, road, and paved areas within the development. The drainage network will consist in 1 catchment attenuating to the runoff using a flow control device (hydrobrake) from the site. Any localised car leaks will therefore discharge to the combined drainage network and be treated the proposed Class 1 Hydrocarbon Interceptor. Therefore, the risk of accidental discharge has been adequately addressed through design.

As outlined below the activities required for the construction phase of the Proposed Development represents the greatest risk of potential impact on the hydrological and hydrogeological environment. These activities primarily pertain to the site preparation / enabling works, excavation, and infilling activities required to facilitate construction of the Proposed Development.

Potential Significant Effects

An analysis of the potential effects of the Proposed Development on the hydrological and hydrogeological environment during the construction and operational phases are outlined below. Due to the inter-relationship between land, soils, and geology; and hydrology and hydrogeology the following impacts discussed will be considered applicable to both Chapter 5 (Land, Soils and Geology) and 6 (Hydrology and Hydrogeology) of this EIA Report. Mitigation measures included in the design of this project to address these potential impacts are presented in Section 6.10

6.8 The ‘Do Nothing’ Scenario

If the proposed development was not to go ahead (i.e. in a Do-Nothing scenario) the baseline environment in terms of hydrology and hydrogeology would remain unchanged as there would be no excavations or construction. Therefore, in a “Do Nothing” scenario, there would be a neutral effect on the hydrological and hydrogeological environment at the site. The likelihood in a temporary and short-term basis is the existing natural state of the area would persist, without any alterations or disturbances caused by the development.

However, there are a number of existing permitted developments in the vicinity of the proposed development.

It is likely that in the absence of the proposed development, that a development of a similar nature would be progressed on the site that accords with national and regional policies and therefore the likely significant effects would be similar to this proposal

6.9 Potential Significant Effects

An analysis of the potential effects of the proposed development on the hydrological and hydrogeological environment during the demolition, construction and operational phases are outlined below. Due to the inter-relationship between land, soils, geology, hydrogeology and surface water (hydrology) the following effects discussed will be considered applicable to both Chapter 5 and 6 of the EIA Report. Remediation and mitigation measures included in the design of this project to address these potential impacts are presented in Section 6.10.

6.9.1 Demolition Phase

The development contains existing buildings to be demolished. These structures were originally constructed such that they rely on internal elements such as columns beams and cross walls for their overall stability. The likelihood of significant effects on the hydrology and hydrogeology during the demolition phase is minimal due to the demolition works of the proposed development being limited to surface-level activities and do not involve any excavation works. The absence of excavation works means that there is no disturbance to the natural soil structure, preventing potential soil erosion or compaction. As a result, the impact on the land and soils is minimal and no significant effects on the land's composition, stability, or fertility are anticipated.

Overall, the surface-level demolition works will have a negligible impact on the hydrogeological and hydrological environment, preserving their integrity and minimizing any potential environmental consequences. In the absence of mitigation, the effect on land, soils and geology is likely to be **short-term, not significant and negative**.

Refer to Chapter 11– Waste of this EIAR for further information on predicted on and off-site reuse, recycle and disposal rates for demolition waste.

6.9.2 Construction Phase

6.9.2.1 Potential Impacts on Surface Water and Groundwater Quality

There is potential for the surface water quality to become contaminated with pollutants associated with construction activity. If a spill occurs, contaminated water and collected surface water run-off which arises from construction sites can pose a short-term risk to nearby watercourses. This potential contaminated run-off may enter directly into Lee (Cork) Upper Estuary transitional waterbody or Ballinhassig ground waterbody beneath the site through lateral migration into the underlying aquifer. Mitigation and avoidance measures will be put in place to manage run-off during the construction phase. The potential of contamination is associated with the following sources:

- Suspended solids (muddy water with increased turbidity (measure of the degree to which the water loses its transparency due to the presence of suspended particulates) – arising from dewatering, excavation and ground disturbance;
- Hydrocarbons and other construction chemicals (ecotoxic) – accidental spillages from construction plant or stored fuels, oils, and materials.
- Cement/concrete (increase turbidity and pH) – arising from construction materials.
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

In the absence of mitigation, rainfall run-off and potential dewatering during the construction and commissioning phase may contain increased silt levels or otherwise become polluted from construction activities. Suspended solids in runoff water may result in an increase in suspended sediment load, resulting in increased turbidity, which may in turn impact on local infiltration capacity, or downstream infrastructure or watercourses. There is also the potential risk of unintentional discharge from construction traffic or stored materials like fuels and oils which could have negative impacts on both surface water (Lee (Cork) Upper Estuary transitional waterbody) and the underlying groundwater (Ballinhassig GWB). Moreover, construction activities often involve the use of chemicals, such as paints, adhesives, solvents, and pesticides, which can also pose a risk of contamination if not handled and disposed of properly. These chemicals can seep into the soil or be carried by rainwater or other runoff, ultimately contaminating surface water. Concreting operations carried out near surface water drainage points during construction activities could lead to discharges to a watercourse. Concrete (specifically, the cement component) is highly alkaline and any spillage to a local watercourse would be detrimental to water quality and local fauna and flora. It is necessary for the measures (set out in Section 5.10.3) to be implemented to reduce and prevent accidental discharges from occurring during construction, including the implementation of effective containment and monitoring procedures.

Accidental discharges can also occur from welfare facilities during construction activities. Wastewater can contain high levels of bacteria, chemicals and organic matter, which could contaminate nearby water sources if discharged incorrectly. The establishment and use of welfare facilities and use of sealed containment, ensures that there are no potential significant impacts; therefore, no additional mitigation is required.

In the absence of mitigation measures the potential impacts during the construction phase on surface water quality are **negative, significant** and **short-term**.

6.9.2.2 Potential Impacts on Human Health and Populations

A reduction in water quality via unmitigated pollutants entering into Lee (Cork) Upper Estuary transitional waterbody and Ballinhassig GWB (groundwater body) has the potential to lead to negative impacts on human health and populations. Hydrocarbons and petroleum products for example have the greatest risk for human health when they are in drinking water. However, it is noted that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the environments.

Therefore, on this basis in the absence of mitigation measures the potential impacts during the construction phase on human health and populations due to changes to the hydrological environment are **negative, slight, and short-term**.

6.9.2.3 Potential Impacts on Water Framework Directive Status

There is a potential of accidental discharges during the construction phase (as set out in Section 6.9.1.1). However, these are temporary short-lived events that will not impact on the status of the Lee Estuary Upper, Ballinhassig GBW or the Cork Harbour SPA in the long-term. As such the proposed development will not cause any significant deterioration or change in water quality status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the third cycle river basin management plan (2022-2027) i.e. Water Action Plan 2024 - A River Basin Management Plan for Ireland.

Therefore, there is no potential for impacts on water framework directive status based on the current understanding of the proposed development during construction.

6.9.3 Operational Phase

6.9.3.1 Potential Effects on Surface Water Quality

6.9.3.1.1 Surface Water Drainage

Surface water runoff from roads, car parking, and hardstanding areas, can potentially contain elevated levels of contaminants such as hydrocarbons. These pollutants such as hydrocarbons if discharged accidentally due to runoff water may result in adverse changes in water chemistry (dissolved oxygen content, biological oxygen demand etc).

The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Cork City Development Plan 2022-2028 specifies that “all planning applications for new developments incorporate SuDS in so far as possible.” Such proposals shall be accompanied by a comprehensive SuDS assessment including run-off quantity, run off quality, and impacts on habitat and water quality. As such, SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the application of nature-based solutions (NBS) which, whilst providing temporary water retention, will also allow for the integration of green infrastructure within this development.

- The installation of Tree Pits along sections of the development is proposed due to the relative sizing of such installations. Tree Pits will be provided in conjunction with the landscaping design where surface water will be directed to the tree pits to provide temporary attenuation, infiltration, and surface water cleaning. An overflow pipe back to the main surface water runs will be provided to prevent against flooding in scenarios where the tree pits are overwhelmed during periods of excessive rainfall. Due the inability to calculate soil infiltration rates following soakaway testing, it is recommended that these tree pits mainly serve as enhanced storage as opposed to infiltration measures. There exists potential for the tree pits to filter out pollutants from runoff, thus reducing the potential pollutant loadings within receiving systems. Further environmental benefits may be experienced through the promotion of biodiverse habitats associated with the introduction of tree pits.
- Blue and green roof configurations are proposed for portions of this development where suitable to provide storage at source. This allows for effective stormwater management through the use and integration of green and blue infrastructure within the development whilst promoting biodiversity gains.
- Rainwater harvesting is proposed for this development where suitable which will involve the provision of a rainwater storage system. This will provide some temporary water storage; however, it will also promote the sustainability of the development by relieving additional demand on the watermain supply for landscaping purposes during the summer months.

Soakaways are not proposed or recommended for this development as a result of the poor soil infiltration rates. As a result of these constraints, an attenuation tank is proposed for the management of surface water from roofed, road, and paved areas within the development. The drainage network will consist in 1 catchment attenuating to the runoff using a flow control device (hydrobrake) from the site. Any localised car leaks will therefore discharge to the combined drainage network and be treated the proposed Class 1 Hydrocarbon Interceptor. Therefore, the risk of accidental discharge has been adequately addressed through design.

In the absence of bypass interceptor and mitigation measures, the potential effects during the operational phase on hydrology and hydrogeology are **long-term, significant and negative**.

6.9.3.1.2 Foul Wastewater Drainage

The site is serviced by an existing 300mm diameter combined sewer at the main site entrance. This combined sewer connects to an existing combined culvert on Convent Avenue before finally discharging to the existing 750mm diameter interceptor sewer which runs along the south side of the Sunday's Well area. A new network of foul sewers will be installed to serve the proposed development, discharging to the existing combined sewer system. There will be no direct or indirect foul water discharge into Lee Estuary Upper.

All generated foul water will be sent the Atlantic Pond pumping station, from there it goes to the first stage of treatment at a plant in Ballinure, Mahon and finally to the Cork city Wastewater treatment plant in Little Island.

According to Uisce Éireann's (Irish Water) Wastewater Treatment Capacity Register (June 2023), there is capacity available at Cork City WWTP. Therefore, no potential impacts are anticipated on the Lee Estuary Upper, Ballinhassig GBW or the Cork Harbour SPA.

On the basis of the design and characteristics of the proposed development, and feasibility of the connection with Irish Water to Cork City WWTP, in the absence of mitigation measures (or design measures) the potential impacts during the operational phase on Lee Estuary Upper, Ballinhassig GBW or the Cork Harbour SPA from the proposed foul water drainage are **neutral, imperceptible, long-term** in respect of wastewater loading.

6.9.3.2 Potential Impacts on Human Health and Populations

There is no potential for unmitigated off-site flooding as a result of the increased hardstanding areas due to the proposed design and drainage infrastructure proposed.

There are no recorded recreational waters, bathing waterbodies, surface water abstraction points (refer to Section 6.6.3.3) located downstream of the proposed development site.

In addition, there are no recorded Public Supply Source Protection Area or Group Scheme Preliminary Source Protection Areas defined by the GSI within which development is limited in order to protect drinking water supplies from potential pollution located in the vicinity of the proposed development site (refer to Section 6.6.5.2 above).

Therefore, there is no potential for impacts on human health and populations.

6.9.3.3 Potential Impacts on Water Framework Directive Status

There are no proposed direct or indirect discharges of surface water to Lee estuary upper during the operational phase since the combined sewer system is sent to the Cork City WWTP.

According to Uisce Éireann's (Irish Water) Wastewater Treatment Capacity Register (June 2023), there is capacity available at Cork City WWTP. Therefore, no potential impacts are anticipated on the Lee Estuary Upper, Ballinhassig GBW or the Cork Harbour SPA.

Therefore, there is no potential for impacts on water framework directive status based on the current understanding of the proposed development during operation.

6.9.4 Cumulative Effects

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. Multiple developments in the area could potentially be developed concurrently or overlap during the demolition, construction and operational phases. There will be no effects on hydrology and hydrogeology as each development will adhere to their own CEMP and mitigation plan. There is no pathway and connectivity to hydrology and hydrogeology to each development.

In the absence of adherence to the CEMP and mitigation plan, the effect on the local and regional environment is likely to be **long-term, significant and negative**.

6.9.5 Summary

The following Table summarises the identified likely significant effects during the construction phase of the proposed development before mitigation measures are applied. If the mitigation measures outlined in Section 6.10 below are not implemented and adhered to in full, the effect on the land and soils is likely to be **long-term, significant and negative**.

Table 6.4 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Accidental Spills, Leaks and Discharges	Negative	Significant	Local & Regional	Likely	Long-Term	Direct
Increased Sediment Run Off during excavation works carrying Sediment and Pollutants into Lee (Cork) Estuary upper Transitional Waterbody and Ballinhassig GWB	Negative	Significant	Local & Regional	Likely	Long-Term	Direct
Groundwater Contamination through lateral migration from improper management of Construction Waste, Materials & Chemicals	Negative	Significant	Local & Regional	Unlikely	Long-Term	Direct

Table below summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

Table 6.5 Summary of Operational Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Accidental Spills, Leaks and Discharges	Negative	Significant	Local & Regional	Likely	Long-Term	Direct
Increased Sediment Run Off from Hardstanding Areas carrying Sediment and Pollutants into Lee (Cork) Estuary upper Transitional Waterbody and Ballinhassig GWB	Negative	Significant	Local & Regional	Likely	Long-Term	Direct
Future Maintenance Works on Underground Services and Infrastructure involving Excavations exposing bedrock aquifer beneath the site introducing a pathway for contaminants to enter Ballingassig GWB	Negative	Significant	Local & Regional	Likely	Short-Term	Direct

If the mitigation measures outlined in Section 6.10 below are not implemented and adhered to in full, the effect on the hydrogeological and hydrological environment is likely to be **long-term, significant and negative**.

6.10 Mitigation Measures

6.10.1 Incorporated Design Mitigation

This section outlines the measures that will be employed in order to ensure the project has minimal adverse effects on the surrounding environment, in this case hydrogeology and hydrology. These measures include appropriate design measures such as the proper storage and containment of hazardous substances and proper drainage systems in line with best practice, standard details, policies and guidelines. For further information on design refer to Engineering Planning Report – Good Shephard (MMOS, 2025).

6.10.1.1 Surface Water Quality and Drainage

The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Cork City Development Plan 2022-2028 specifies that “all planning applications for new developments incorporate SuDS in so far as possible.” Such proposals shall be accompanied by a comprehensive SuDS assessment including run-off quantity, run off quality, and impacts on habitat and water quality. As such, SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the application of nature-based solutions (NBS) which, whilst providing temporary water retention, will also allow for the integration of green infrastructure within this development.

- The installation of Tree Pits along sections of the development is proposed due to the relative sizing of such installations. Tree Pits will be provided in conjunction with the landscaping design where surface water will be directed to the tree pits to provide temporary attenuation, infiltration, and surface water cleaning. An overflow pipe back to the main surface water runs will be provided to prevent against flooding in scenarios where the tree pits are overwhelmed during periods of excessive rainfall. Due the inability to calculate soil infiltration rates following soakaway testing, it is recommended that these tree pits mainly serve as enhanced storage as opposed to infiltration measures. There exists potential for the tree

pits to filter out pollutants from runoff, thus reducing the potential pollutant loadings within receiving systems. Further environmental benefits may be experienced through the promotion of biodiverse habitats associated with the introduction of tree pits.

- Blue and green roof configurations are proposed for portions of this development where suitable to provide storage at source. This allows for effective stormwater management through the use and integration of green and blue infrastructure within the development whilst promoting biodiversity gains.
- Rainwater harvesting is proposed for this development where suitable which will involve the provision of a rainwater storage system. This will provide some temporary water storage; however, it will also promote the sustainability of the development by relieving additional demand on the watermain supply for landscaping purposes during the summer months.

Soakaways are not proposed or recommended for this development as a result of the poor soil infiltration rates. As a result of these constraints, an attenuation tank is proposed for the management of surface water from roofed, road, and paved areas within the development. The drainage network will consist in 1 catchment attenuating to the runoff using a flow control device (hydrobrake) from the site. Any localised car leaks will therefore discharge to the combined drainage network and be treated the proposed Class 1 Hydrocarbon Interceptor. Therefore, the risk of accidental discharge has been adequately addressed through design.

6.10.1.2 Foul Water Drainage

A new network of foul sewers will be installed to serve the proposed development, discharging to existing connections to the existing combined sewer system. There will be no direct or indirect foul water discharge into Lee (Cork) Estuary Upper, Ballinhassig GBW or the Cork Harbour SPA.

6.10.1.3 Potential Impacts on Water Framework Directive Status

The following design mitigation measures have been incorporated in the design to mitigate potential impacts have taken account of the potential impacts of the development.

- Provision of SuDS measures such as tree pits, blue and green roof, rainwater harvesting and attenuation system with petrol interceptors and hydrobrake included. Therefore, the risk of accidental discharge has been adequately addressed through design.
- All surface and foul water will be discharged to the existing combined sewer system.

6.10.2 Demolition Phase Mitigation

The development contains existing buildings to be demolished. These structures were originally constructed such that they rely on internal elements such as columns beams and cross walls for their overall stability. The likelihood of significant effects on the hydrology and hydrogeology during the demolition phase is minimal due to the demolition works of the proposed development being limited to surface-level activities and do not involve any excavation works. The absence of excavation works means that there is no disturbance to the natural soil structure, preventing potential soil erosion or compaction. As a result, the impact on the land and soils is minimal and no significant effects on the land's composition, stability, or fertility are anticipated.

Refer to Chapter 11– Waste of this EIAR for further information on predicted on and off-site reuse, recycle and disposal rates for demolition waste.

Overall, no mitigation measures are required during the demolition phase in relation to hydrogeology and hydrology due to the surface level nature of the works. The surface-level demolition works will have a negligible impact on hydrogeology and hydrology, preserving their integrity and minimizing any potential environmental consequences.

6.10.3 Construction Phase Mitigation

In order to reduce impacts on the hydrogeological and hydrological environment, a number of mitigation measures will be adopted as part of the construction works on site. The measures will address the main activities of potential impact which include:

- Control of soil excavation and export from site;
- Sources of fill and aggregates for the proposed development;
- Fuel and chemical handling, transport and storage; and
- Control of water during construction.

6.10.3.1 Outline Construction Environmental Management Plan

In order to reduce impacts on the land, soils and geological environment, a number of mitigation measures will be adopted as part of the construction works on site. The measures will address the main activities of potential impact which include:

- Control of soil excavation and export from site;
- Sources of fill and aggregates for the proposed development;
- Fuel and chemical handling, transport and storage; and
- Control of water during construction.

6.10.3.2 Construction Environmental Management Plan

The project engineer (MMOS) have prepared a Construction Environmental Management Plan (CEMP) that is included with the application documentation.

The main purpose of a CEMP is to provide a mechanism for implementation of the various mitigation and monitoring measures which are described in the EIAR. The CEMP demonstrates the applicant's commitment to implementing the proposed development in such a way as to avoid or minimise the potential environmental effects arising from construction activities. All personnel will be required to understand and implement the requirements of the plan.

Construction works and the proposed mitigation measures outlined in the CEMP are informed by best practice guidance on the prevention of pollution during development projects including but not limited to:

- Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016);
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741);
- Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005); and
- Guidelines for the crossing of watercourses during the construction of national road schemes (National Roads Authority; 2008).

The CEMP will be implemented and adhered to by the construction contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager, Resource Manager and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures.

The CEMP sets out the proposed procedures and operations to be utilised on the proposed construction site. All mitigation measures outlined here, and within the CEMP will be implemented during the construction phase, as well as any additional measures required pursuant to consent conditions which may be imposed.

During the project planning phase, a comprehensive emergency response plan will be developed by the construction contractor. This plan will outline a well-defined procedure for effectively managing emergencies as they arise. Furthermore, it's imperative to disseminate this emergency protocol to all site personnel during the site induction process. This plan will include for events such as:

- Pollution incidents: These may involve spillages, the malfunction of temporary structures, embankment collapse, acts of vandalism, fires, and other related events.
- Extreme weather occurrences: Events such as heavy rainfall, flooding, are important factors to consider due to their potential impact on the construction process.

The construction contractor will be required to implement emergency response procedures that align with industry best practice guidance. All personnel working on the site will be informed of the emergency procedures in place.

6.10.3.3 Surface Water Run-Off

As there is low potential for run-off to enter/discharge into to the Lee (Cork) Estuary Upper transitional Waterbody located c. mitigations will be put in place to manage run-off during the construction phase as follows:

- Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.
- Should any discharge of construction water be required during the construction phase, discharge will be to the combinedsewer. Therefore, there will be no interaction between silt laden construction water and surface water quality combined with Pre-treatment and silt reduction measures on site and hydrocarbon interceptors. All refuelling will be carried out at adequate distances away from waterbodies from doubled skinned bowsers and spill kits will be available at all times.
- Any minor ingress of groundwater and collected rainfall in the excavation will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low and limited to localised perched water. It is therefore proposed that the water be discharged via the existing combined sewer network. The use of slit traps and an oil interceptor (if required) will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to the sewer. There shall be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavations are kept relatively dry, however this is expected to be low due to the low permeability of the subsoils and the relative shallow nature for excavations. Likewise, infiltration to the underlying aquifer is not anticipated.
- Run-off water containing silt will be contained on site via settlement tanks/lagoons and treated to ensure adequate silt removal. Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks and settlement tanks/ponds).
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted and / or backbucketed to reduce runoff and graded to aid in runoff collection. This will prevent any potential negative impact on the stormwater drainage and the material will be stored away from any surface water drains. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust. Excavations will remain open for as

little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations. Soil from works will be stored away from existing drainage features to remove any potential impact.

- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site and the suitable distance of topsoil piles from surface water drains will be maintained.

6.10.3.4 Fuel and Chemical Handling

The following mitigation measures will be taken at the construction stage in order to prevent any spillages to ground of fuels and prevent any resulting soil and/or groundwater quality impacts:

- Designation of a bunded refuelling areas on the site
- Provision of spill kit facilities across the site;
- Where mobile fuel bowsers are used the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowsers to carry a spill kit;
 - Operatives must have spill response training; and
 - Bowsers to be double skinned.

In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the site, they will be secured and on spill pallets; and
- Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment.

All contractors will be required to implement mitigation measures discussed above.

All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash-down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.

6.10.3.5 Cement/ concrete works

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with Uisce Éireann.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

6.10.3.6 Soil Removal and Compaction

There will be soil and stones excavated to facilitate construction of new foundations and the installation of underground services. The project engineers (MMOS) have estimated that c. 40,329 m³ of material will need to be excavated to do so. It is currently envisaged that there will be an opportunity to reuse all clean excavated soil on site for use in landscaping and fill. In the case that any excavated soil is tested and deemed contaminated and unfit for reuse on-site, it will need to be removed offsite. This will be taken for appropriate offsite reuse, recovery, recycling and / or disposal.

During the construction phase of the proposed development, several mitigation measures will be implemented to effectively manage and mitigate the effects of soil compaction and its associated negative consequences.

- Excavated soil and stone surplus to requirements on-site will be taken for appropriate offsite reuse, recovery, recycling and/or disposal.
- Temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment. The material will be stored away from any surface water drains and surface waterbodies (Carlingford Lough). Movement of material will be minimised to reduce degradation of soil structure and generation of dust.
- All excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

6.10.3.7 Environmental Procedures

There will be comprehensive emergency response procedures and standard operating procedures to respond to chemical spillage all types. All employees will be provided with such equipment, information, training and supervision as is necessary to implement the emergency response procedures and standard operating procedures.

6.10.3.8 Human Health and Populations

It has been established (Section 6.6.33) that there are no recorded Recreational Waters, Bathing Waterbodies, or Drinking Water Rivers, located in the vicinity of the proposed development site. On a precautionary basis, the mitigation measures set out in Section 6.10.3 will be implemented during the construction works for the protection of human health and populations.

Furthermore, as stated in Section 6.10.3.6 all excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

6.10.3.9 Potential Impacts on Water Framework Directive Status

There is a potential of accidental discharges during the construction phase (as set out in Section 6.9.1.1). However, these are temporary short-lived events that will not impact on the status of the Lee Estuary Upper, Ballinhassig GBW or the Cork Harbour SPA in the long-term. As such the proposed development will not cause any significant deterioration or change in water quality status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the third cycle river basin management plan (2022-2027) i.e. Water Action Plan 2024 - A River Basin Management Plan for Ireland.

Therefore, there is no potential for impacts on water framework directive status based on the current understanding of the proposed development during construction. On a precautionary basis, the mitigation measures set out in Section 6.10.3 will be implemented during the construction works for the protection of surface water quality.

6.10.4 Operational Phase Mitigation

6.10.4.1 Surface Water Quality

The design has taken account of the potential effects of the development on surface water quality and measures have been incorporated in the design to mitigate these potential effects, as outlined in Section 6.10.1.

The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Cork City Development Plan 2022-2028 specifies that “all planning applications for new developments incorporate SuDS in so far as possible.” Such proposals shall be accompanied by a comprehensive SuDS assessment including run-off quantity, run off quality, and impacts on habitat and water quality. As such, SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the application of nature-based solutions (NBS) such as tree pits, blue and green roofs, rainwater harvesting and attention system. The design of the attenuation storage system has been carried out for the 1 in 100-year event with a 20% allowance for climate change.

There is no discharge to ground proposed as part of the surface water drainage strategy. Surface water will be discharged to the combined sewer system.

6.10.4.2 Foul Water Drainage

The site is serviced by an existing 300mm diameter combined sewer at the main site entrance. This combined sewer connects to an existing combined culvert on Convent Avenue before finally discharging to the existing 750mm diameter interceptor sewer which runs along the south side of the Sunday's Well area. A new network of foul sewers will be installed to serve the proposed development, discharging to the existing combined sewer system. There will be no direct or indirect foul water discharge into Lee Estuary Upper.

All generated foul water will be sent the Atlantic Pond pumping station, from there it goes to the first stage of treatment at a plant in Ballinure, Mahon and finally to the Cork city Wastewater treatment plant in Little Island.

According to Uisce Éireann's (Irish Water) Wastewater Treatment Capacity Register (June 2023), there is capacity available at Cork City WWTP. Therefore, as there are no effects on the hydrogeology and hydrogeology at the proposed development, no mitigation is required.

6.10.4.3 Human Health and Populations

On a precautionary basis, the operational mitigation measures for Water & Hydrology set out in Section 6.10.4 of the EIAR will be implemented during the operational phase for the protection of human health and populations.

There are no proposed discharges to ground as part of the surface water drainage strategy and all surface and foul water discharge is sent to the combined sewer network.

Therefore, as there are no effects on the hydrogeological and hydrological environment at the proposed development, no mitigation is required.

6.10.4.4 Potential Impacts on Water Framework Directive Status

The design mitigation measures included in section 6.10.1 have taken account of the potential impacts of the development on surface water quality; measures have been incorporated in the design to mitigate these potential impacts.

The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Cork City Development Plan 2022-2028 specifies that “all planning applications for new developments incorporate SuDS in so far as possible.” Such proposals shall be accompanied by a comprehensive SuDS assessment including run-off quantity, run off quality, and impacts on habitat and water quality.

As such, SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the application of nature-based solutions (NBS) such as tree pits, blue and green roofs, rainwater harvesting and attention system. The design of the attenuation storage system has been carried out for the 1 in 100-year event with a 20% allowance for climate change.

There is no discharge to ground proposed as part of the surface water drainage strategy. Surface water will be discharged to the combined sewer system

No further mitigation is required.

6.11 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented. The implementation of mitigation measures outlined in Section 10.9 will ensure that the potential impacts on the hydrogeological and hydrological environment do not occur during the demolition, construction and operational phases of the proposed development. Due to the inter-relationship between land, soils, geology, hydrogeology and surface water the following impacts discussed will be considered applicable to both Chapter 6 (Hydrology and Hydrogeology) and Chapter 5 (Land, Soils and Geology) of the EIAR.

6.11.1 Demolition Phase

As stated in Section 6.9.1, the potential impacts on the hydrogeological and hydrological environment surrounding the development are expected to be minimal due to the demolition works being limited to surface-level activities and do not involve any excavation works. As a result, there will be minimal impact on the hydrogeological and hydrological environment, and no significant effects on the composition, stability, or fertility of the land are anticipated. The absence of excavation works also means that there will be no disturbance to the natural soil structure, thus preventing potential soil erosion or compaction and increased run-off rates.

Overall, the surface-level demolition works will have a negligible impact on the hydrogeological and hydrological environment, preserving their integrity and minimizing any potential environmental consequences.

The implementation of mitigation measures outlined in Section 6.10.2 will ensure the residual effect on the hydrogeological and hydrological environment during the demolition phase is likely to be **neutral, imperceptible** and **short-term**.

6.11.2 Construction Phase

6.11.2.1 Surface Water Quality

The implementation of the mitigation and monitoring measures detailed in Section 6.10.3 will ensure that the potential impacts on the hydrogeological and hydrological environment during the construction phase are adequately mitigated. The residual effect on surface water quality during the construction phase is considered to be **neutral, imperceptible** and **short-term**.

6.11.2.2 Human Health and Populations

The implementation of the mitigation and monitoring measures detailed in Section 6.10.3, will ensure that the potential impacts on human health and populations (and material assets) during the construction phase are adequately mitigated. The residual effect on human health and populations during the construction phase is considered to be **neutral, imperceptible** and **short-term**.

6.11.2.3 Water Framework Directive Status

Even in the absence of the mitigation and monitoring measures detailed in Section 6.10.3, there will be no predicted degradation of the current water body (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in third cycle river basin management plan (2022-2027) i.e. Water Action Plan 2024 - A River Basin Management Plan for Ireland.

There are appropriately designed mitigation measures which will be implemented during the construction phase to protect the hydrological environment. There is a potential of accidental discharges during the construction phase, however these are temporary short-lived events that will not impact on the water status of waterbodies long-term and as such will not impact on trends in water quality and over all status assessment.

The residual effect on Water Framework Directive Status during the construction phase is considered to be **neutral, imperceptible** and **short-term**.

6.11.3 Operational Phase

6.11.3.1 Surface Water Quality

The implementation of the mitigation measures detailed in Section 10.9.4.1, will ensure that the potential impacts on surface water quality once the proposed development is constructed and operational are adequately mitigated. The residual effect on surface water quality during the operational phase is considered to be **neutral, imperceptible** and **short-term**.

There will be no impact to the quality of Lee Estuary Upper, Ballinhassig GWB or the Cork Harbour SPA due to the hydrological volume and dilution of Lee Estuary Upper and the mitigation measures cited. In addition, overall, the SuDS attenuation proposed will improve flood management and water quality exiting the site.

6.11.4 Summary of Post-mitigation Effects

The implementation of mitigation measures outlined in Section 6.10 will ensure that the potential impacts on the hydrogeological and hydrological environment do not occur during the demolition, construction and operational phases of the proposed development. Due to the inter-relationship between land, soils, geology, hydrogeology and surface water the following impacts discussed will be considered applicable to both Chapter 6 (Hydrology and Hydrogeology) & Chapter 5 (Land, Soils and Geology) of the EIAR.

The following Table summarises the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

Table 6.6 Summary of Construction Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Accidental Spills, Leaks and Discharges	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct
Increased Sediment Run Off carrying Sediment and Pollutants	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct
Surface Water and Groundwater Contamination from Construction Waste, Materials & Chemicals	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct

The following Table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

Table 6.7 Summary of Operational Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Accidental Spills, Leaks and Discharges	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct
Surface Water discharge to Surface and Ground Waterbodies carrying Potential Contaminants / Pollutants	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Direct
Future Maintenance Works on Underground Services and Infrastructure involving Excavations exposing bedrock aquifer beneath the site introducing a pathway for contaminants to enter Dundalk GWB	Neutral	Imperceptible	Local & Regional	Unlikely	Short-Term	Neutral

6.11.5 Cumulative Residual Effects

Table 6.8

Planning Ref	Description	Decision
Cork City: 21/40068; ABP 313328	New research facility at the site at: University College Cork, Distillery Fields, North Mall, Cork T23XA50	Granted by Cork City: 21/03/2022 Granted by ABP: 14/12/2023
Cork City: 24/42796	Amendments to Permitted SHD (ABP 308323)	Granted by Cork City: 20/05/2024

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. Multiple developments in the area could potentially be developed concurrently or overlap during the demolition, construction and operational phases.

6.11.5.1 Demolition Phase

The potential residual effects on the hydrogeological and hydrological environment surrounding the development are expected to be minimal due to the demolition works being limited to surface-level activities and do not involve any excavation works. As a result, there will be minimal impact on the hydrogeological and hydrological environment, and no significant effects on the composition, stability, or fertility of the land are anticipated. The absence of excavation works also means that there will be no disturbance to the natural soil structure, thus preventing potential soil erosion or compaction and increased run-off rates.

Overall, the surface-level demolition works will have a negligible impact on the hydrogeological and hydrological environment, preserving their integrity and minimizing any potential environmental consequences.

The implementation of mitigation measures outlined in Section 6.10.2 will ensure the residual effect on the hydrogeological and hydrological environment during the demolition phase is likely to be **short-term, imperceptible and negative**.

6.11.5.2 Construction Phase

In relation to the potential cumulative impact on hydrology during the construction phases, the construction works which would have potential cumulative impacts are as follows:

- Surface water run-off during the construction phase may contain increased silt levels or become polluted from construction activities. Run-off containing large amounts of silt can cause damage to receiving surface and ground waterbodies.
- Stockpiled material will be stored on away from surface water drains, and gullies will be protected during works to ensure there is no discharge of silt-laden water into the surrounding surface water drainage system.
- Contamination of local water sources from accidental spillage and leakage from construction traffic and construction materials is possible unless project-specific measures are put in place for each development and complied with.

The works contractors for other planned or permitted developments as set out in Chapter 1 of this EIA Report will be obliged to ensure that measures are in place to protect groundwater and surface water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019).

A review of the permitted development set out in Chapter 2 – Development Description of this EIA Report has been undertaken and there are no proposed developments capable of combining with the proposed development and resulting in significant cumulative effects. The implementation of mitigation measures detailed in Section 6.10.3 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change in groundwater and surface water during the construction phase of the proposed development.

The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible** and **short-term**.

6.11.5.3 Operational Phase

Surface water runoff from roads, car parking, and hardstanding areas, can potentially contain elevated levels of contaminants such as hydrocarbons. These pollutants such as hydrocarbons if discharged accidentally due to runoff water may result in adverse changes in water chemistry (dissolved oxygen content, biological oxygen demand etc).

The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Cork City Development Plan 2022-2028 specifies that “all planning applications for new developments incorporate SuDS in so far as possible.” Such proposals shall be accompanied by a comprehensive SuDS assessment including run-off quantity, run off quality, and impacts on habitat and water quality. As such, SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the application of nature-based solutions (NBS) which, whilst providing temporary water retention, will also allow for the integration of green infrastructure within this development.

- The installation of Tree Pits along sections of the development is proposed due to the relative sizing of such installations. Tree Pits will be provided in conjunction with the landscaping design where surface water will be directed to the tree pits to provide temporary attenuation, infiltration, and surface water cleaning. An overflow pipe back to the main surface water runs will be provided to prevent against flooding in scenarios where the tree pits

are overwhelmed during periods of excessive rainfall. Due the inability to calculate soil infiltration rates following soakaway testing, it is recommended that these tree pits mainly serve as enhanced storage as opposed to infiltration measures. There exists potential for the tree pits to filter out pollutants from runoff, thus reducing the potential pollutant loadings within receiving systems. Further environmental benefits may be experienced through the promotion of biodiverse habitats associated with the introduction of tree pits.

- Blue and green roof configurations are proposed for portions of this development where suitable to provide storage at source. This allows for effective stormwater management through the use and integration of green and blue infrastructure within the development whilst promoting biodiversity gains.
- Rainwater harvesting is proposed for this development where suitable which will involve the provision of a rainwater storage system. This will provide some temporary water storage; however, it will also promote the sustainability of the development by relieving additional demand on the watermain supply for landscaping purposes during the summer months.

Soakaways are not proposed or recommended for this development as a result of the poor soil infiltration rates. As a result of these constraints, an attenuation tank is proposed for the management of surface water from roofed, road, and paved areas within the development. The drainage network will consist in 1 catchment attenuating to the runoff using a flow control device (hydrobrake) from the site. Any localised car leaks will therefore discharge to the combined drainage network and be treated the proposed Class 1 Hydrocarbon Interceptor. Therefore, the risk of accidental discharge has been adequately addressed through design.

Each permitted development is required by the Local Authority and IW to comply with the Local Authority and IW requirements by providing suitable attenuation on-site and ensure that there is no increase in off-site flooding as a result of the development in question.

All developments are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (Water Framework Directive and associated legislation) such that they would be required to manage run-off and fuel leakages.

The implementation of mitigation measures detailed in Section 6.10.4 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change in surface water during the operational phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible** and **long-term**.

6.12 Risk of Major Accidents or Disasters

The EPA Guidelines, 2022, state that:

“To address unforeseen or unplanned effects the Directive further requires that the EIAR takes account of the vulnerability of the project to risk of major accidents and /or disasters relevant to the project concerned and that the EIAR therefore explicitly addresses this issue. The extent to which the effects of major accidents and / or disasters are examined in the EIAR should be guided by an assessment of the likelihood of their occurrence (risk). This may be supported by general risk assessment methods or by systematic risk assessments required under other legislation e.g. a COMAH (Control of Major Accident Hazards involving Dangerous Substances) assessment.

The potential for a project to cause risks to human health, cultural heritage or the environment due to its vulnerability to external accidents or disasters is considered where such risks are significant, e.g. the potential effects of floods on sites with

sensitive facilities. Where such risks are significant then the specific assessment of those risks in the form of a Seveso Assessment (where relevant) or Flood Risk Assessment may be required.”

In general, risk of landslides in this area of Ireland is considered to be low, as the land is not located in a region with high seismic activity or large mountain ranges. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff landslides and falls lead to recession of the cliffs. Landslides have occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities. The landslide susceptibility map (GSI spatial map viewer) identifies areas which are subject to landslides and is measured from low to high. The landslide susceptibility map considers the location of landslides and what causes them (slope, soil type and the impact of the flow of water).

Based on the GSI spatial map viewer (2025), the area of the proposed development and its surrounding have not been assessed for Landslide Susceptibility and no information is available. The nearest landslide was c.8.4km to the south of the proposed development.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics, Dublin Institute for Advanced Studies, has been recording seismic events in Ireland since 1978 (www.dias.ie). This network consists of several seismometers that are located throughout Ireland. Seismic activity and earthquake risk in Ireland are generally considered to be low. This is because Ireland is located on the western edge of the Eurasian Plate, which is a tectonic plate that is not known for its seismic activity. However, earthquakes can still occur in Ireland, although they are typically small and have little impact. There is a very low risk of seismic activity to the site.

The most recent earthquake was in Co. Waterford (0.1 Magnitude) on the December 25th 2024 c. 65km to the north-east of the proposed development.

There are no active volcanoes in Ireland so there is no risk from volcanic activity at the site

6.13 Worst Case Scenario

In a worst-case scenario, if the mitigation measures outlined in Section 6.10 aren't fully followed, there's a chance of contamination and pollution during the demolition, construction, and operational phases of the proposed development to occur. This could happen through accidental spills and leaks, increased run-off, sediment loading, excavation and maintenance works.

The mitigation measures set out in Section 6.10 above are in place to prevent any negative impacts on the hydrogeological and hydrological environment. This will help minimize the likelihood of these issues occurring and protect the surrounding environment.

6.14 Interactions

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR.

6.14.1 Land and Soils

6.14.1.1 Demolition Phase

The likelihood of significant effects on hydrogeology and hydrology at the proposed development during the demolition phase is minimal due to the demolition works being limited to surface-level activities and do not involve any excavation works.

As a result, no significant effects on the land's composition, stability, or fertility are anticipated. The absence of excavation works means that there is no disturbance to the natural soil structure, preventing potential soil erosion or compaction.

As well as the mitigation measures outlined in this section, the development should adhere to the mitigation measures set out in Section 5.10.2 of the EIAR.

Full adherence to the RWMP presented in Appendix 11.1 and Chapter 11 –Waste of the EIAR.

6.14.1.2 Construction Phase

The construction phase of the proposed development has the potential to result in increased sediment runoff which has the potential to interact on surface water quality. The proposed construction phase mitigation outlined in Section 6.10.3, means that the proposed development will not result in significant negative impact on surface water quality in the local area.

Taking into account the design and mitigation measures set out in Chapter 6 (Hydrology and Hydrogeology) & Chapter 5 (Land, Soils and Geology) of this EIA Report, means that the proposed development will not result in significant negative impact on the Land, Soils and Geology in the local area. The interaction is considered to be **neutral, Imperceptible**, and **short term**.

6.14.1.3 Operational Phase

Taking into account the design and mitigation measures set out in Chapter 6 (Hydrology and Hydrogeology) & Chapter 5 (Land, Soils and Geology) of this EIA Report. There are no potentially significant interactions identified between Land, Soils and, Hydrogeology and Hydrology during the operational phase.

6.14.2 Biodiversity

6.14.2.1 Demolition Phase

The demolition works of the proposed development are limited to surface-level activities on predominately existing buildings and infrastructure and do not involve any excavation works. As a result, the impact on biodiversity is minimal.

Overall, the surface-level demolition works will benefit the local biodiversity, preserving their integrity and minimizing any potential environmental consequences. The interaction is considered to be **short-term, Imperceptible and neutral**.

6.14.2.2 Construction Phase

Dust emissions have the potential to settle on plants causing impacts to local ecology. Mitigation measures during the construction phase of the proposed development will ensure that dust generation is minimised.

Taking into consideration the implementation SuDS, discharge of surface and foul water to the combined sewer network and the mitigation measures outlined in Section 6.10.3. the impact on biodiversity should be minimal.

Taking into account the design and mitigation measures set out in Chapter 6 (Hydrology and Hydrogeology) and Chapter 14 (Biodiversity) of this EIA Report, the interaction between Water and Hydrology, and Biodiversity is considered to be **short-term, imperceptible** and **neutral**.

6.14.2.3 Operational Phase

The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Cork City Development Plan 2022-2028 specifies that “all planning applications for new developments incorporate SuDS in so far as possible.” Such proposals shall be accompanied by a comprehensive SuDS assessment including run-off quantity, run off quality, and impacts on habitat and water quality. As such, SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the application of nature-based solutions (NBS) such as tree pits, blue and green roofs, rainwater harvesting and attention system. The design of the attenuation storage system has been carried out for the 1 in 100-year event with a 20% allowance for climate change.

There is no discharge to ground proposed as part of the surface water drainage strategy. Surface water will be discharged to the combined sewer system which is connected to the Cork City WWTP.

Taking into account the design and mitigation measures set out in Section 10.9.3 of this EIA Report, the interaction between Hydrogeology and Hydrology, and Biodiversity during the operational phase is considered to be **short-term, imperceptible** and **neutral**.

6.14.3 Air Quality

6.14.3.1 Demolition Phase

Demolition phase activities such as demolition of existing infrastructure and stockpiling of materials etc. have the potential for interactions between air quality and hydrology and hydrogeology in the form of dust emissions that may deposit in surface waters.

Mitigation measures implemented during the demolition phase outlined in Section 6.10.2 will ensure that the deposition of dust is minimised. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and, water and hydrology. The interaction is considered to be **short-term, imperceptible** and **neutral**.

6.14.3.2 Construction Phase

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and hydrology and hydrogeology in the form of dust emissions that may deposit in surface waters.

Mitigation measures implemented during the construction phase outlines in section 6.10.3 will ensure that the deposition of dust is minimised. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and, water and hydrology. The interaction is considered to be **short-term, imperceptible** and **neutral**.

6.14.3.3 Operational Phase

There are no potentially significant interactions identified between Hydrology and Hydrogeology, and Air Quality during the construction phase.

6.14.4 Climate

6.14.4.1 Demolition Phase

There are no interactions identified between Water and Hydrology, and Climate during the demolition phase.

6.14.4.2 Construction Phase

There are no interactions identified between Water and Hydrology, and Climate during the construction phase.

6.14.4.3 Operational Phase

Climate change has the potential to lead to increased rainfall in future years which may result in flood impacts and interactions between Hydrogeology and Hydrology, and Land, Soils and Geology.

As part of the planning application for the scheme, MMOS conducted a Stage 3 Site Specific Flood Risk Assessment (SSFRA) in line with current flooding guidelines which can be found in Appendix 6.2 of the EIAR.

The guidelines describe good flood risk practice in planning and development management and seek to integrate flood risk management into the planning process, thereby assisting in the delivery of sustainable development. Planning authorities are directed to have regard to the guidelines in preparation of Development Plans and Local Area Plans, and for development control purposes. For this to be achieved, flood risk must be assessed as early as possible in the planning process.

Other sources of information, attached as appendices, used to compile this FRA include:

- OPW website, www.floodmaps.ie,
- Lee CFRAM

The stages involved in the assessment of flood risk are listed in the OPW publication as follows:

- Stage 1: Flood Risk Identification
- Stage 2: Initial Flood Risk Assessment
- Stage 3: Detailed Flood Risk Assessment

Geographical areas are similarly divided into three categories, based on their risk of river and tidal flooding. The three categories are as follows:

- Flood Zone A – where the probability of flooding from rivers and the sea is the highest (greater than 1% or 1 in 100 year for river flooding and 0.5% or 1 in 200 year for coastal flooding.
- Flood Zone B – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 year and 1% of 1 in 100 year for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 year for coastal flooding.
- Flood Zone C – where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 year for both river and coastal flooding i.e. all areas which are not within Zones A or B.

The assessment confirms that the proposed development is located predominately in Flood Zone C, which means the probability of flooding from rivers and coastal areas is less than 0.1% or 1 in 1000 years. The assessment concludes with the appropriate mitigation measures, the proposed development is not at risk of fluvial or coastal flooding.

Therefore, it can be determined that there is no significant risk to the proposed development as a result of increased rainfall and climate. No significant interactions between Climate, Hydrology and Hydrogeology, and Land, Soils and Geology is predicted.

6.15 Monitoring

6.15.1 Demolition Phase

The demolition works of the proposed development are limited to surface-level activities and do not involve any excavation works. The absence of excavation works means that there is no potential for increasing the groundwater vulnerability to contamination in case of accidental spills or discharges.

In addition, all waste materials will be dealt with in accordance with regional and national legislation, time and resources will be dedicated to ensuring efficient waste management practices and waste arisings will be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. Hence, eliminating the risk of contaminated runoff to surface or groundwater.

6.15.2 Construction Phase

During construction phase the following monitoring measures will be considered:

- Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 20 m from surface water receptors.
- Regular inspection of surface water run-off and sediments controls will be implemented throughout the construction phase and full adherence to the Outline Construction Environmental Plan will be maintained..
- Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life.

- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off; and
- Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc).
- Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network.

6.15.3 Operational Phase

Oil separators will be maintained and cleaned out in accordance with the manufacturer’s instructions.

Maintenance of the surface water drainage system and foul sewers is recommended to minimise any accidental discharges to surface water.

6.16 Summary of Mitigation and Monitoring

The following Table summarises the Construction Phase mitigation and monitoring measures.

Table 6.9 Summary of Construction Phase Mitigation and Monitoring

Likely Significant Effect	Quality	Significance
Accidental Spills, Leaks and Discharges	Regular inspection of surface water run-off and sediments controls (e.g., silt traps). Inspection and maintenance of the silt fences. Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life. Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off. Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network. Full adherence to and implementation of the CEMP.	Continuous implementation of the mitigation measures outlined in the EIAR in accordance with best practice guidelines throughout the course of the construction phase of the proposed development.
Soil Erosion & Compaction	Regular inspection of surface water run-off and sediments controls (e.g., silt traps). Inspection and maintenance of the silt fences. Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life. Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off. Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network. Full adherence to and implementation of the CEMP.	Continuous implementation of the mitigation measures outlined in the EIAR in accordance with best practice guidelines throughout the course of the construction phase of the proposed development.

Likely Significant Effect	Quality	Significance
Increased Sediment Run Off carrying Sediment and Pollutants	Regular inspection of surface water run-off and sediments controls (e.g., silt traps). Inspection and maintenance of the silt fences. Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life. Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off. Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network. Full adherence to and implementation of the CEMP.	Continuous implementation of the mitigation measures outlined in the EIAR in accordance with best practice guidelines throughout the course of the construction phase of the proposed development.
Surface Water and Groundwater Contamination from Construction Waste, Materials & Chemicals	Regular inspection of surface water run-off and sediments controls (e.g., silt traps). Inspection and maintenance of the silt fences. Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life. Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off. Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network. Full adherence to and implementation of the CEMP.	Continuous implementation of the mitigation measures outlined in the EIAR in accordance with best practice guidelines throughout the course of the construction phase of the proposed development.

The following Table summarises the Operational Phase mitigation and monitoring measures.

Table 6.10 Summary of Operational Phase Mitigation and Monitoring

Likely Significant Effect	Quality	Significance
Accidental Spills, Leaks and Discharges	Implementation of a number of Sustainable Urban Drainage Systems (SuDS) measures such as blue and green roofs, rainwater harvesting and attenuation systems. Regular inspection of surface water run-off and sediments controls (e.g., silt traps). Inspection and maintenance of the silt fences. Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life. Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network. Full adherence to and implementation of the CEMP.	Continuous implementation of the mitigation measures outlined in the EIAR in accordance with best practice guidelines throughout the course of the operational phase of the proposed development.
Surface Water discharge to Surface and Ground Waterbodies carrying Potential Contaminants / Pollutants	Implementation of a number of Sustainable Urban Drainage Systems (SuDS) measures such as blue and green roofs, rainwater harvesting and attenuation systems. Regular inspection of surface water run-off and sediments controls (e.g., silt traps). Inspection and maintenance of the silt fences. Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life. Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network. Full adherence to and implementation of the CEMP.	Continuous implementation of the mitigation measures outlined in the EIAR in accordance with best practice guidelines throughout the course of the operational phase of the proposed development.
Future Maintenance Works on Underground Services and Infrastructure involving Excavations exposing bedrock aquifer beneath the site introducing a pathway for contaminants to enter Dundalk GWB	Implementation of a number of Sustainable Urban Drainage Systems (SuDS) measures such as blue and green roofs, rainwater harvesting and attenuation systems. Regular inspection of surface water run-off and sediments controls (e.g., silt traps). Inspection and maintenance of the silt fences. Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life. Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network. Full adherence to and implementation of the CEMP.	Continuous implementation of the mitigation measures outlined in the EIAR in accordance with best practice guidelines throughout the course of the operational phase of the proposed development.

6.17 Conclusion

This chapter has reviewed and analysed the potential and the predicted impacts of the proposed development on the Hydrogeological and hydrological environment (Hydrology and Hydrogeology). These effects have been considered for the demolition, construction and operational phases of the proposed development. The cumulative impact of the proposed development and surrounding developments have also been considered.

Provided all mitigation measures set out in this chapter are adhered to in full throughout all phases, the overall predicted impact of the proposed development is **long-term, imperceptible** and **neutral**.

6.18 References and Sources

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CHAPTER SEVEN

AIR QUALITY

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CHAPTER SEVEN | Air Quality

7.1 Introduction

This chapter assesses the likely air quality impacts associated with the proposed student accommodation development on the site of the former Good Shepherd Convent, located in the north-western part of Cork City, in Sunday’s Well. This report assesses the baseline air quality conditions at the site and evaluates the potential effects of the proposed development’s construction and operation. Where required, appropriate mitigation measures to limit any identified likely significant adverse impacts to air quality are recommended.

A full description of the development is available in Chapter 2. This Chapter should be read in conjunction with Chapter 12 Material Assets Traffic and Transport and the Traffic and Transportation Assessment submitted with the planning application.

7.2 Expertise & Qualifications

This chapter was completed by Aisling Cashell. Aisling is an Environmental Consultant in the air quality section of AWN Consulting Ltd. She holds a BA and an MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. She is a member of Engineers Ireland. She has specialized in air quality, climate, and sustainability for two years. Her experience includes preparing air quality and climate assessments for EIARs on residential and commercial developments such as Twenties Lane (Planning Application Ref: 22713), Cherrywood T13 (Planning Application Ref: DZ23A/0028), Corballis Donabate LRD (Planning Application Ref: LRD0017/S3), The Paddocks (Planning Application Ref: 2360349), and Dublin Airport Authority.

7.2.1 Aspects Relevant to this Assessment

During the construction phase construction dust emission have the potential to impact air quality. Dust emissions will primarily occur as a result of site preparation works, earthworks and the movement of trucks on site and exiting the site. There is also the potential for engine emissions from site vehicles and machinery to impact air quality. Construction phase impacts will be short-term in duration.

Engine emissions from vehicles accessing the site have the potential to impact air quality during the operational phase of the development through the release of nitrogen dioxide (NO₂) and particulate matter (as PM₁₀ and PM_{2.5}). Operational phase impacts will be long-term in duration.

7.3 Methodology

7.3.1 Relevant Legislation & Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on air quality are summarised below.

- Guidance on the Assessment of Dust from Demolition and Construction v2.2 (Institute of Air Quality Management [IAQM] (hereafter referred to as the IAQM Guidelines) (IAQM, 2024);

- A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020); and
- PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (Transport Infrastructure Ireland [TII], 2022).

In addition to specific air quality guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018); and
- Environmental Impact Assessment (EIA) Directive Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission, 2017).

7.3.2 Criteria for Rating of Impacts

7.3.2.1 Ambient Air Quality Standards

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.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland are set out in Directive (EU) 2024/2881 of the European Parliament and of the Council of 23 October 2024 on ambient air quality and cleaner air for Europe (recast). This Directive sets out new air quality standards for pollutants to be reached by 2030 which are more closely aligned with the World Health Organisation (WHO) air quality guidelines.

Prior to 2030 the air quality standards set out in EU Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe are still applicable.

The Air Quality Standards Regulations 2022 (S.I. 739 of 2022) transposed EU Directive 2008/50/EC. With the adoption of Directive (EU) 2024/2881, Ireland must transpose this Directive into national law (i.e. update the Air Quality Standards Regulations) before December 2026.

The ambient air quality standards applicable for nitrogen dioxide (NO₂) and particulate matter (as PM₁₀ and PM_{2.5}) are outlined in Table 7.1. These pollutants are of relevance to the proposed development. The limit values set out in Directive (EU) 2024/2881 will need to be achieved by 2030, with the limit values set out in the Air Quality Standards Regulations 2022 (and future updated regulations) applicable until 2030.

Table 7-1 Ambient Air Quality Limit Values

Pollutant	Directive 2008/50/EC		Directive (EU) 2024/2881	
	Limit Type	Limit Value (applicable until 2030)	Limit Type	Limit Value (to be attained by 2030)
Nitrogen Dioxide (NO ₂)	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m ³	Hourly limit for protection of human health - not to be exceeded more than 3 times/year	200 µg/m ³
	N/A	N/A	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	50 µg/m ³
	Annual limit for protection of human health	40 µg/m ³	Annual limit for protection of human health	20 µg/m ³
Particulate Matter (as PM ₁₀)	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m ³	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	45 µg/m ³
	Annual limit for protection of human health	40 µg/m ³	Annual limit for protection of human health	20 µg/m ³
Particulate Matter (as PM _{2.5})	N/A	N/A	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	25 µg/m ³
	Annual limit for protection of human health	25 µg/m ³	Annual limit for protection of human health	10 µg/m ³

7.3.2.2 WHO Air Quality Guidelines & Clean Air Strategy

In April 2023, the Government of Ireland published the *Clean Air Strategy for Ireland* (Government of Ireland, 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target 3 (IT3) by 2026 (Table 7-2), the IT4 targets by 2030 and the final targets by 2040 (Table 7-2). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final PM_{2.5} target of 5 µg/m³. The strategy also acknowledges that “meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both PM_{2.5} and NO₂”.

Annex II of Directive (EU) 2024/2881 gives assessment thresholds which align with the clean air strategy final 2040 WHO targets. Directive (EU) 2024/2881 states that “Member States shall endeavour to achieve and preserve the best ambient air quality and a high level of protection of human health and the environment, with the aim of achieving a zero-pollution objective as referred to in Article 1(1), in line with WHO recommendations, and below the assessment thresholds laid down in Annex II.”

These assessment thresholds relate to monitoring of ambient air quality by Member States, where “exceedances of the assessment thresholds specified in Annex II shall be determined on the basis of concentrations during the previous 5 years where sufficient data are available. An assessment threshold shall be deemed to have been exceeded if it has been exceeded during at least 3 separate years out of those previous 5 years.”

Table 7-2 WHO Air Quality Guidelines 2021

Pollutant	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO ₂	24-hour limit for protection of human health	-	-	25 µg/m ³
	Annual limit for protection of human health	20 µg/m ³	-	10 µg/m ³
PM (as PM ₁₀)	24-hour limit for protection of human health	75 µg/m ³	50 µg/m ³	45 µg/m ³
	Annual limit for protection of human health	30 µg/m ³	20 µg/m ³	15 µg/m ³
PM (as PM _{2.5})	24-hour limit for protection of human health	37.5 µg/m ³	25 µg/m ³	15 µg/m ³
	Annual limit for protection of human health	15 µg/m ³	10 µg/m ³	5 µg/m ³

The applicable air quality limit values for the purposes of this assessment are those set out in Table 7-1. The limit values stipulated under Directive 2008/50/EC and the Air Quality Standards Regulations 2022 are applicable for the construction phase and Opening Year 2026 for the proposed development. The limit values stipulated by Directive (EU) 2024/2881 are applicable for the Design Year 2041 for the proposed development.

7.3.2.3 Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust that are less than 10 microns (PM₁₀) and less than 2.5 microns (PM_{2.5}). The EU ambient air quality standards outlined in Table 7-1 have set ambient air quality limit values for PM₁₀ and PM_{2.5}.

With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust in respect of this development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/m²/day averaged over a one-year period at any receptors outside the site boundary. The TA-Luft standard has been applied for the purpose of this assessment based on recommendations from the EPA in Ireland in the document titled *Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)* (EPA, 2006). The document recommends that the TA-Luft limit of 350 mg/m²/day be applied to the site boundary of quarries. This limit value can be implemented with regard to dust impacts from construction of the proposed development.

7.3.2.4 Air Quality & Traffic Significance Criteria

The Transport Infrastructure Ireland (TII) guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) details a methodology for determining air quality impact significance criteria for road schemes which can be applied to any project that causes a change in traffic. The degree of impact is determined based on the percentage change in pollutant concentrations relative to the Do Nothing scenario. The TII significance criteria are outlined in Table 4.9 of *Air Quality*

Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022) and reproduced in Table 7-3 below. These criteria have been adopted for the proposed development to predict the impact of NO₂, PM₁₀ and PM_{2.5} emissions as a result of the proposed development.

Table 7-3 Air Quality & Traffic Significance Criteria

Long-term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Limit Value (AQLV)			
	1%	2-5%	6-10%	>10%
75% or less of AQLV	Neutral	Neutral	Slight	Moderate
76 – 94% of AQLV	Neutral	Slight	Moderate	Moderate
95 – 102% of AQLV	Slight	Moderate	Moderate	Substantial
103 – 109% of AQLV	Moderate	Moderate	Substantial	Substantial
110% or more of AQLV	Moderate	Substantial	Substantial	Substantial

Source: Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022))

As per Table 7-3 a neutral effect is one where a change in concentration at a receptor is:

- 5% or less where the Opening Year, without the proposed development, annual mean concentration is 75% or less of the standard; or
- 1% or less where the Opening Year, without the proposed development, annual mean concentration is 94% or less of the standard.

Where an effect does not meet the criteria for neutral, as described above, the effect can either be positive or negative. The TII guidance (TII, 2022) states that “the evaluation of significance of effects for the operational phase should be undertaken for the Opening Year only as the Design Year is likely to show lower total pollutant concentrations and changes in concentration” (TII, 2022).

Non-significant effects (i.e. of local importance only) are ‘neutral’ or ‘slight’ changes in concentrations while significant effects can be changes in pollutant concentrations that are either ‘moderate’ or ‘substantial’. However, the TII guidance (TII, 2022) states that these must be considered in the context of the project and ‘moderate’ or ‘substantial’ increases are not necessarily always significant effects.

The impact descriptors in Table 7-3 are used to describe the impact at each modelled receptor location, and the significance of the impacts is then determined, aligning with the terminology in the EPA guidelines (EPA, 2022). Whilst it may be determined that there are ‘slight’, ‘moderate’ or ‘substantial’ impacts at one or more receptors, an overall judgement should be made of whether the proposed development is ‘significant’ or ‘not significant’ in terms of air quality. Factors to consider when determining the overall significance of a proposed development are provided in Table 4.10 of the TII guidance (TII, 2022).

7.3.3 Construction Phase

7.3.3.1 Construction Dust Assessment

The Institute of Air Quality Management in the UK (IAQM) guidance document ‘Guidance on the Assessment of Dust from Demolition and Construction’ (IAQM, 2024) outlines an assessment method for predicting the impact of dust emissions

from construction activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. The use of UK guidance is recommended by Transport Infrastructure Ireland in their guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022).

The major dust generating activities are divided into four types within the IAQM guidance (IAQM, 2024) to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

The magnitude of each of the four categories is divided into Large, Medium or Small scale depending on the nature of the activities involved. The criteria for determining the category for the works involved are outlined in Table 7-4, these are based on the IAQM guidance (IAQM, 2024). The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities. This allows the level of site-specific mitigation to be determined.

Table 7-4 IAQM Criteria to Determine Dust Emissions Magnitude

Dust Emission Magnitude		
Small	Medium	Large
Demolition		
• Total building volume <12,000 m³ • Construction material with low potential for dust release (e.g. metal cladding or timber) • Demolition activities <6 m above ground • Demolition during wetter months	• Total building volume 12,000 - 75,000 m³ • Potentially dusty construction material • Demolition activities 6 – 12 m above ground level	• Total building volume >75,000 m³ • Potentially dusty construction material (e.g. concrete) • On-site crushing and screening • Demolition activities >12 m above ground level
Earthworks		
• Total site area <18,000 m² • Soil type with large grain size (e.g. sand) • <5 heavy earth moving vehicles active at any one time • Formation of bunds <3 m in height • Earthworks during wetter months	• Total site area 18,000 m² - 110,000 m² • Moderately dusty soil type (e.g. silt) • 5 – 10 heavy earth moving vehicles active at any one time • Formation of bunds 3 – 6 m in height	• Total site area >110,000 m² • Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) • >10 heavy earth moving vehicles active at any one time • Formation of bunds >6 m in height

Dust Emission Magnitude		
Small	Medium	Large
Construction		
- Total building volume <12,000 m³ - Construction material with low potential for dust release (e.g. metal cladding or timber)	- Total building volume 12,000 - 75,000 m³ - Potentially dusty construction material (e.g. concrete) - On-site concrete batching	- Total building volume >75,000 m³ - On-site concrete batching - Sandblasting
Trackout (Truck Movements)		
<20 HDV (>3.5 t) outward movements in any one day - Surface material with low potential for dust release - Unpaved road length <50 m	20 – 50 HDV (>3.5 t) outward movements in any one day - Moderately dusty surface material (e.g. high clay content) - Unpaved road length 50 – 100 m	>50 HDV (>3.5 t) outward movements in any one day - Potentially dusty surface material (e.g. high clay content) - Unpaved road length >100 m

Once the dust emission magnitude has been determined the next step, according to the IAQM guidance (IAQM, 2024), is to establish the level of risk by combining the magnitude with the overall sensitivity of the area to dust soiling, human health and ecological effects. The level of risk associated with each activity is determined using the criteria in Table 7-5.

Table 7-5 IAQM Criteria to Determine Risk of Dust Impacts

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High risk	Medium risk	Medium risk
Medium	High risk	Medium risk	Low risk
Low	Medium risk	Low risk	Negligible
Earthworks			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Construction			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Trackout			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

7.3.3.2 Construction Phase Traffic Assessment

Construction phase traffic also has the potential to impact air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022), states that road links meeting one or more of the following criteria can be defined as being ‘affected’ by a proposed development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects, the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

MHL & Associates Limited have prepared a Traffic and Transport Impact Assessment for the proposed development enclosed separately and have prepared Chapter 12 Material Assets – Traffic and Transport of this EIAR. As per Chapter 12, it has been determined by MHL & Associates Limited that the construction stage traffic will not increase by 1,000 AADT, or 200 HDV AADT, or that the development will not result in speed changes or changes in road alignment. Therefore, the traffic does not meet the above scoping criteria. A detailed air quality assessment of construction stage traffic emissions has been scoped out from any further assessment as there is no potential for significant impacts to air quality with respect with human or ecological receptors.

7.3.4 Operational Phase

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 7.3.3.2 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air dispersion modelling assessment. The proposed development will not result in the operational phase traffic increasing by more than 1,000 AADT. In addition, there are no proposed changes to the traffic speeds or road alignment. Therefore, no road links impacted by the proposed development satisfy the screening criteria (Section 7.3.3.2). A quantitative assessment of the impact of traffic emissions on ambient air quality is not necessary as there is no potential for significant impacts to local air quality.

7.4 Difficulties Encountered

There were no difficulties encountered when compiling this assessment.

7.5 Baseline Environment

7.5.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM₁₀, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than PM_{2.5}) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive

emissions of coarse particles ($PM_{2.5}$ - PM_{10}) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Cork Airport meteorological station, which is located approximately 7.7 km west of the site. Cork Airport meteorological data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (Figure 7-1). For data collated during five representative years (2020 – 2024), the predominant wind direction is westerly to south-westerly with generally moderate wind speeds (Met Éireann, 2025).

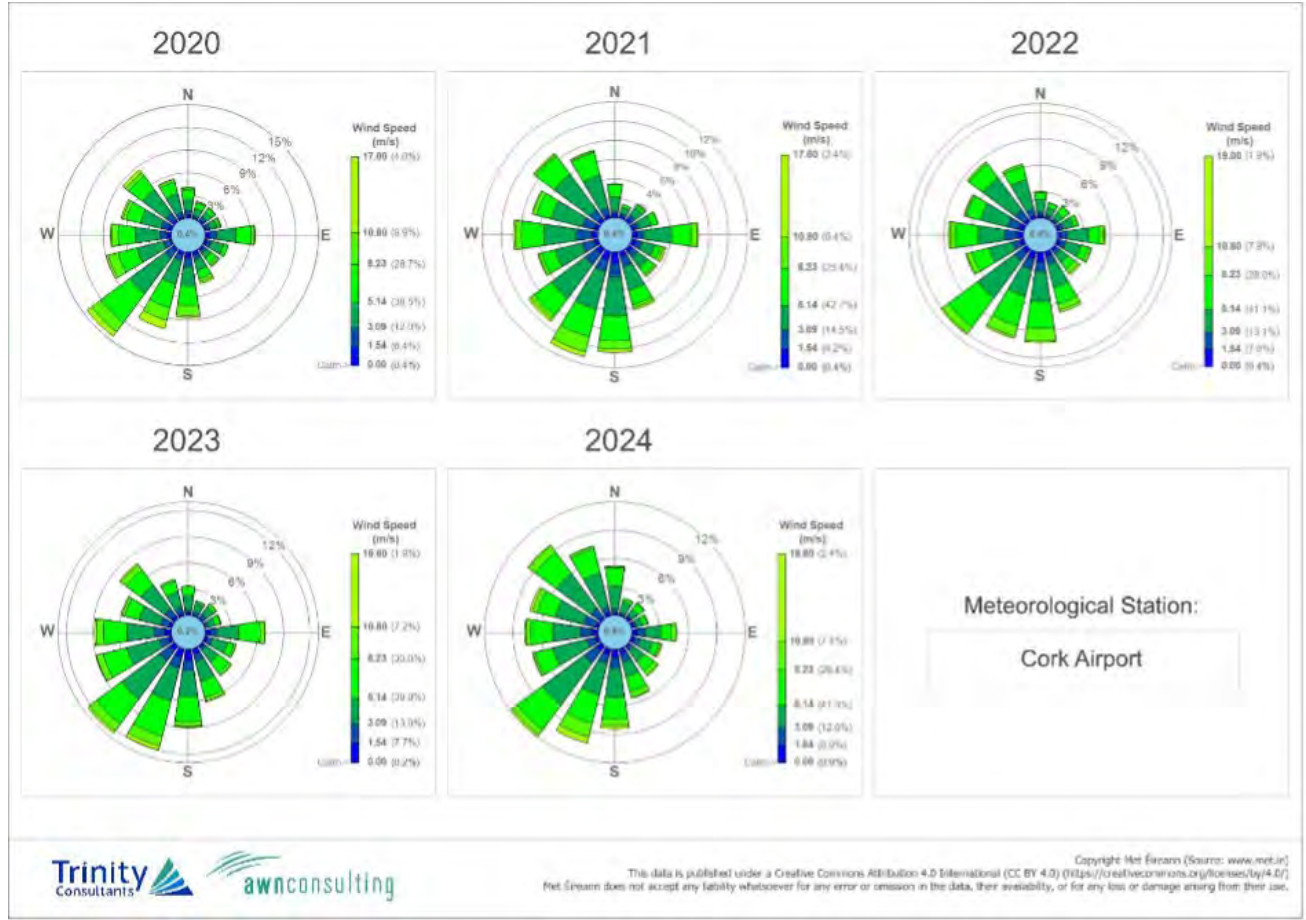


Figure 7-1 Wind Roses for Cork Airport Meteorological Station

7.5.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is ‘Air Quality In Ireland 2023’ (EPA, 2024). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments.

As part of the implementation of the Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022), as amended, four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2024). Dublin is

defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the proposed development site is within Zone B (EPA, 2024). The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the proposed development. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating etc.).

7.5.2.1 NO₂

Long-term NO₂ monitoring was carried out at the representative Zone B suburban background location of UCC Distillery Fields for the period 2019 – 2023 (Table 7-6) (EPA, 2024). Long-term average concentrations are significantly below the annual average limit of 40 µg/m³. Average results range from 8 – 10 µg/m³. The overall annual average concentration for this 5-year period is 9 µg/m³. Additionally, there were no exceedances of the hourly limit value of 200 µg/m³. Based on the above information a conservative estimate of the current background NO₂ concentration for the region of the proposed development is 9 µg/m³.

Table 7-6 Trends In Zone B Air Quality - Nitrogen Dioxide (NO₂)

Station	Averaging Period	Year				
		2019	2020	2021	2022	2023
UCC Distillery Fields	Annual Mean NO ₂ (µg/m ³)	10	8	9	9	8
	1-hr Mean > 200 µg/m ³ (days)	-	0	0	0	0

7.5.2.2 PM₁₀

Continuous PM₁₀ monitoring was carried out at two representative Zone B locations from 2019 – 2023; Bishopstown MTU and Heatherton Park. Annual average PM₁₀ concentrations across the sites ranged from 11 – 15 µg/m³ over the 2019 – 2023 period (Table 7-7). The overall annual average concentration for this 5-year period is 13 µg/m³. There were at most 2 exceedance of the daily limit of 50 µg/m³ in 2020 (at Heatherton Park). However, 35 exceedances are permitted per year (EPA, 2024). Based on the EPA data, a conservative estimate of the current background PM₁₀ concentration in the region of the proposed development is 13 µg/m³.

Table 7-7 Trends In Zone B Air Quality - PM₁₀

Station	Averaging Period	Year				
		2019	2020	2021	2022	2023
Bishopstown MTU	Annual Mean PM ₁₀ (µg/m ³)	15	14	13	14	11
	24-hr Mean > 50 µg/m ³ (days)	-	0	1	0	-
Heatherton Park	Annual Mean PM ₁₀ (µg/m ³)	-	11	11	12	11
	24-hr Mean > 50 µg/m ³ (days)	-	2	1	0	-

7.5.2.3 PM_{2.5}

Average PM_{2.5} levels in Heatherton Park, UCC Distillery Fields and Bishopstown MTU over the period 2019 - 2023 ranged from 5 - 8 µg/m³ (EPA, 2024). The overall annual average concentration for this 5-year period is 7 µg/m³ (Table 7-8). Based on this information, an estimate of the background PM_{2.5} concentration in the region of the proposed development is 7 µg/m³.

Table 7-8 Trends In Zone B Air Quality - PM_{2.5}

Station	Averaging Period	Year				
		2019	2020	2021	2022	2023
Heatherton Park	Annual Mean PM _{2.5} (µg/m³)	8	8	8	5	6
UCC Distillery Fields	Annual Mean PM _{2.5} (µg/m³)	8	7	7	5	-
Bishopstown MTU	Annual Mean PM _{2.5} (µg/m³)	-	-	-	-	7

7.5.2.4 Summary

Based on the above information the air quality in the suburban Cork area is generally good, with concentrations of the key pollutants generally well below the relevant limit values set out in Directive 2008/50/EC. The current pollutant concentrations at these monitoring sites are also in compliance with the 2030 limit values set out in Directive (EU) 2024/2881 and the clean air strategy, however, concentrations are approaching the limit values. Further measures will be needed at a national scale to reduce air pollution in future years. The EPA have indicated that road transport emissions are contributing to increased levels of NO₂ with the potential for breaches in the annual NO₂ limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM₁₀ and PM_{2.5}). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2024).

7.5.3 Sensitivity of the Receiving Environment

In line with the UK Institute of Air Quality Management (IAQM) guidance document ‘Guidance on the Assessment of Dust from Demolition and Construction’ (IAQM, 2024) prior to assessing the impact of dust from a proposed development, the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time. Commercial properties and places of work are regarded as medium sensitivity while low sensitivity receptors are places where people are present for short periods or do not expect a high level of amenity. Table 7-9 outlines the criteria for determining the sensitivity of the area to dust soiling and dust-related human health effects as per the IAQM guidance (IAQM, 2024).

Table 7-9 Criteria for Determining the Sensitivity of the Area

Sensitivity of the Area to Dust Soiling Effects on People and Property						
Receptor Sensitivity	Number of Receptors	Distance from Source (m)				
		<20	<50	<100	<250	
High	>100	High	High	Medium	Low	
	10 - 100	High	Medium	Low	Low	
	1 - 10	Medium	Low	Low	Low	
Medium	>1	Medium	Low	Low	Low	
Low	>1	Low	Low	Low	Low	
Sensitivity of the Area to Human Health Impacts						
Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<250
High	< 24 µg/m³	>100	Medium	Low	Low	Low
		10 - 100	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Medium	< 24 µg/m³	>10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Low	< 24 µg/m³	>1	Low	Low	Low	Low

In terms of receptor sensitivity to dust soiling, there are a number of highly sensitive residential properties within 100 m of the proposed development boundary (Figure 7-2). There are >100 properties within 100m, 10-100 within 50m and 10-100 within 20m of the site boundary. Based on these receptor numbers and using the IAQM criteria in Table 7-9, the sensitivity of the area to dust soiling impacts from the proposed development is high.

In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current annual mean PM₁₀ concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works. A conservative estimate of the current annual mean PM₁₀ concentration in the vicinity of the proposed development is 13 µg/m³. There are a 10-100 high sensitivity receptors within 20 m of the proposed development boundary (Figure 7-2). Based on the IAQM criteria outlined in Table 7-9 the worst-case sensitivity of the area to dust-related human health effects is low.

The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability of the plant, as well as other effects. The guidance states that dust impacts to vegetation can occur up to 50 m from the site, and 50 m from site access roads, up to 250 m for the site entrance. The sensitivity of the area is determined based on the distance to the source, the designation of the site, (European, National or local designation) and the potential dust sensitivity of the ecologically important species present. There are no sensitive ecological receptors that meet these criteria within the study area and there is no potential for impacts to sensitive ecology from construction dust emissions and no further assessment is required.



Figure 7-2 Sensitive Receptors within 20m, 50m and 100m of Site

7.6 The ‘Do Nothing’ Scenario

In the Do Nothing scenario, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc).

The Do Nothing scenario associated with the operational phase of the development is assessed within Section 7.3.4 and it was found to be **direct, long-term, negative** and **slight** which is overall **not significant**.

7.7 Potential Significant Effects

7.7.1 Construction Phase

7.7.1.1 Construction Dust Assessment

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 250 m of a construction site, the majority of the deposition occurs within the first 50 m (IAQM, 2024). The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction

activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Cork Airport meteorological data indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature (Section 7.5.1). In addition, dust generation is considered negligible on days where rainfall is greater than 0.2 mm. A review of historical 30 year average data for Cork Airport meteorological station indicates that on average 194 days per year have rainfall over 0.2 mm (Met Éireann, 2025). Therefore, it can be determined that 53% of the time dust generation will be reduced due to natural meteorological conditions.

To determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (Section 7.5.3). The major dust generating activities are divided into four types within the IAQM (IAQM, 2024) guidance to reflect their different potential impacts. These are: demolition, earthworks, construction and trackout (movement of heavy vehicles).

7.7.1.1.1 Determining the Potential Dust Emission Magnitude

The magnitude of the works under each category can be classified as either small, medium or large depending on the scale of the works involved. The magnitude of each activity has been determined below for the proposed development using the criteria in Table 7-4.

- **Demolition:** The dust emission magnitude for the demolition activities can be categorised as small due to the volume of buildings involved, with the potential for <12,000 m³ of buildings to be demolished.
- **Earthworks:** The dust emission magnitude for the proposed earthwork activities can be classified as medium as the total site area is between 18,000 – 110,000 m².
- **Construction:** The dust emission magnitude for the proposed construction activities can be classified as medium as a worst-case as the total volume of buildings to be constructed will be 12,000 - 75,000 m³.
- **Trackout:** The dust emission magnitude for the proposed trackout can be classified as medium, as there will be between 20 - 50 outward HGV movements per day during the construction phase of the proposed development.

7.7.1.1.2 Determining the Risk of Dust Impacts

Once the dust emission magnitude has been determined the next step, according to the IAQM guidance (IAQM, 2024), is to establish the level of risk by combining the magnitude with the overall sensitivity of the area to dust soiling and dust-related human health effects (Section 7.5.3). The level of risk associated with each activity is determined using the criteria in Table 7-5. The overall risk of dust impacts from the construction works is shown in Table 7-10 for each category.

- **Demolition:** As the overall sensitivity of the area to dust soiling is high, when combined with a small dust emission magnitude, this produces an overall medium risk of dust soiling impacts (as per the criteria in Table 7-5). As the overall sensitivity of the area to dust-related human health effects is low, this results in a negligible risk of dust-related human health effects (as per the criteria in Table 7-5).
- **Earthworks:** As the overall sensitivity of the area to dust soiling is high, when combined with a medium dust emission magnitude, this produces an overall medium risk of dust soiling impacts (as per the criteria in Table 7-5). As the overall sensitivity of the area to dust-related human health effects is low, this results in a low risk of dust-related human health effects (as per the criteria in Table 7-5).
- **Construction:** Combining the large dust emissions magnitude for the construction activities with the high sensitivity to dust soiling results in a medium risk of dust soiling impacts using the criteria in Table 7-5. There is an overall low risk of dust-related human health impacts as a result of the proposed construction activities.
- **Trackout:** Combining the medium dust emission magnitude for the trackout activities with the high sensitivity to dust soiling results in a medium risk of dust soiling impacts using the criteria in Table 7-5. There is an overall low risk of dust-related human health impacts as a result of the proposed trackout activities.

There is at most a medium risk of dust soiling impacts and a low risk of dust-related human health impacts associated with the proposed works. As a result, best practice dust mitigation measures associated with medium-risk works will be implemented to ensure there are no significant impacts at nearby sensitive receptors. In the absence of mitigation, dust impacts are predicted to be direct, short-term, negative and slight.

Table 7-10 Risk of Dust Impacts used to Define Site-Specific Mitigation

Receptor	Receptor Sensitivity	Dust Emission Magnitude	Risk of Dust-Related Impacts
Demolition			
Dust Soiling	High	Small	Medium Risk
Human Health	Low		Negligible
Earthworks			
Dust Soiling	High	Medium	Medium Risk
Human Health	Low		Low Risk
Construction			
Dust Soiling	High	Medium	Medium Risk
Human Health	Low		Low Risk
Trackout			
Dust Soiling	High	Medium	Medium Risk
Human Health	Low		Low Risk

7.7.1.2 Construction Phase Traffic Assessment

There is also the potential for traffic emissions to impact air quality with respect to human health in the short-term over the construction phase, particularly, due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed and a detailed air quality assessment has been scoped out as none of the road links impacted by the proposed development satisfy the TII assessment criteria in Section 7.3.3.2.

Therefore, it can be determined that the construction stage traffic will have an imperceptible, neutral, short-term and not significant impact on air quality.

7.7.2 Operational Phase

There is the potential for vehicles accessing the site to result in emissions of NO₂, PM₁₀ and PM_{2.5}. However, the proposed development will not increase traffic by 1,000 AADT or 200 HDV AADT. In addition, there are no proposed changes to the traffic speeds or road alignment. Therefore, no road links impacted by the proposed development satisfy the screening criteria (Section 7.3.3.2). A detailed air quality assessment was scoped out for the operational stage of the development as per the TII screening criteria. Operational stage effects on air quality are predicted to be *imperceptible, neutral* and *long-term*, which is overall *not significant* in EIA terms.

7.7.3 Cumulative Effects

7.7.3.1 Construction Phase

Cumulative construction dust impacts may occur if other large-scale developments within 500 m of the site are under construction simultaneously.

A review of the planned and permitted projects within the last ten years in vicinity of the site was undertaken to identify developments with the potential for cumulative construction phase impacts. There is the potential for the construction phase of the proposed development to coincide with that of the following permitted developments:

- University College Cork (App. Ref. 2240919);
- University College Cork (App. Ref. 1737290);
- University College Cork (App. Ref. 1938327);
- University College Cork and Tyndall National Institute (App. Ref. 2140068); and
- Progressive Commercial Construction Ltd. (App. Ref. 1536378).

If these sites were to commence construction at the same time, the cumulative effects will be temporary and slight. Otherwise, no significant cumulative impacts have been identified.

The dust mitigation measures outlined in Section 7.8.1 will be applied during the construction phase which will avoid significant cumulative impacts on air quality. With appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the construction phase of the proposed development is *short-term, direct, negative* and *not significant*. No significant cumulative impacts to air quality predicted for the construction phase.

7.7.3.2 Operational Phase

The cumulative effect is included within the operational stage effect for the proposed development. However, provided the mitigation measures outlined in Section 7.8.2 are implemented throughout the operational phase of the proposed development significant cumulative dust effects are not predicted. The effect is predicted to be *long-term, direct, negative* and *imperceptible* with regards to air quality.

7.7.4 Summary

The following table summarises the identified likely significant effects during the construction phase of the proposed development before mitigation measures are applied.

Table 7-11 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Construction Dust Impact	Negative	Not significant - slight	Localised	Likely	Short-term	Direct
Construction Traffic Impacts	Neutral	Not significant - imperceptible	Localised	Likely	Short-term	Direct

The following table summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

Table 7-12 Summary of Operational Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Operational Traffic Impacts	Neutral	Not significant - imperceptible	Localised	Likely	Long-term	Indirect

7.8 Mitigation Measures

7.8.1 Construction Phase Mitigation

The proposed development has been assessed as having a medium risk of dust soiling impacts and a low risk of dust related human health impacts during the construction phase as a result of demolition, earthworks, construction and trackout activities (see Section 7.7.1.1). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a medium risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The mitigation measures draw on best practice guidance from Ireland (DCC (2018), DLRCC (2022)), the UK (IAQM (2024), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site. The measures are divided into different categories for different activities.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details.

Site Management

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension therefore mitigations must be implemented if undertaking dust generating activities during these weather conditions.
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out.

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.

- Cover, seed or fence stockpiles to prevent wind whipping.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.

Operating Vehicles / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

Measures Specific to Demolition

- Prior to demolition blocks should be soft striped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- During the demolition process, water suppression should be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction should be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment should be minimised, if necessary fine water sprays should be employed.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture

content is high enough to increase the stability of the soil and thus suppress dust.

- Measures Specific to Construction
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

Measures Specific to Trackout

- A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Monitoring

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

7.8.2 Operational Phase Mitigation

No site-specific mitigation measures are proposed for the operational phase as impacts are predicted to be not significant.

7.9 Residual Impact Assessment

7.9.1 Construction Phase

To minimise dust emissions during construction, a series of mitigation measures have been prepared as outlined in Section 7.8. Provided the dust minimisation measures are adhered to, the predicted residual air quality impacts during the construction phase are **short-term, direct, negative, localised** and **not significant**.

Best practice mitigation measures are proposed for the construction phase of the proposed development, which will focus on the proactive control of dust and other air pollutants, to minimise generation of emissions at source. The mitigation measures that will be put in place during construction will ensure that the impact complies with all EU ambient air quality legislative limit values (set out in Directive 2008/50/EC), which are based on the protection of human health (Table 7-1). Therefore, the predicted residual, dust-related, human health impact of the construction phase of the proposed development is **short-term, direct, negative, localised** and **not significant**.

7.9.2 Operational Phase

The operational stage traffic has been reviewed and a detailed air quality assessment has been scoped out as none of the road links impacted by the proposed development satisfy the TII scoping assessment criteria in Section 7.3.3. Therefore, the operational phase effect on air quality and human health as a result of increased traffic is **direct, long-term, neutral** and **imperceptible**, which is overall **not significant** in EIA terms.

7.9.3 Summary of Post-mitigation Effects

The following table summarises the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

Table 7-13 Summary of Construction Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Impact of construction dust from demolition, earthworks, construction and trackout in terms of dust soiling, and human health	Negative	Not significant	Study area as per Section 7.5.3	Likely	Short-term	Direct
Impact of construction phase traffic on air quality	Neutral	Imperceptible	Detailed assessment and study area scoped out as per Section 7.3.3	Likely	Short-term	Direct

The following table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

Table 7-14 Summary of Operational Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Impact of operational phase traffic on air quality	Neutral	Imperceptible	Detailed assessment and study area scoped out as per Section 7.3.4	Likely	Long-term	Direct

7.9.4 Cumulative Residual Effects

The primary potential cumulative residual effect relates to construction dust emissions. According to the IAQM guidance (IAQM, 2024), if the construction phase of the proposed development coincides with the construction phase of any other large scale permitted projects within 500m of the site, there is a possibility of cumulative residual dust effects occurring at any nearby sensitive receptors. Should simultaneous construction phases occur, it would lead to cumulative residual dust soiling and dust-related effects on human health, specifically localised to the works area associated with the proposed works.

However, should the construction phases of the development and any localised permitted developments coincide, it is predicted that once the mitigation measures outlined in Section 7.8.1 are put in place impacts will not be significant. Impacts will be **short-term, direct, localised, negative** and **not significant**. No significant cumulative adverse impacts to air quality are predicted for the construction or operational phases.

7.10 Risk of Major Accidents or Disasters

There are no likely risks of major accidents and disasters in relation to air quality associated with the proposed development due to the nature and scale of the development. The proposed development is residential in nature and will not require large scale quantities of hazardous materials or fuels.

7.11 Worst Case Scenario

Reasonable worst case estimates have been used as part of this assessment. As a result, Section 7.9 details the worst-case residual effect of the proposed development.

7.12 Interactions

7.12.1 Air Quality and Population & Human Health

7.12.1.1 Construction Phase

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between Population and Human Health and Air Quality. An adverse air quality impact during the construction phase can cause health and dust nuisance issues. There is a low risk of dust-related human health impacts during the construction phase of the proposed development. Best practice mitigation measures will implemented during the construction phase to ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore,

the predicted impact is **direct, short-term, negative, localised** and **not significant** with respect to Population and Human Health during the construction phase.

7.12.1.2 Operational Phase

Vehicles accessing the site will emit pollutants which may impact Air Quality and Human Health. However, the increased number of vehicles associated with the proposed development will not cause a significant change in air pollutant emissions in the locality. It has been assessed that emissions will be in compliance with the ambient air quality standards which are set for the protection of human health. Impacts will be **long-term, localised, direct, neutral** and **not significant**.

7.12.2 Air Quality and Climate

Air Quality and Climate have interactions as the emissions from the burning of fossil fuels during the construction and operational phases generate both air quality and climate impacts. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

7.12.3 Air Quality and Land & Soils

7.12.3.1 Construction Phase

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between Air Quality and Land & Soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils during the construction phase.

7.12.3.2 Operational Phase

There are no potentially significant interactions identified between Air Quality, and Land & Soils during the operational phase.

7.12.4 Air Quality and Biodiversity

7.12.4.1 Construction Phase

Dust generation can occur during extended dry weather periods due to construction traffic along haul routes and construction activities such as excavations and infilling works. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability as well as other effects. There are no designated ecological sites within 250 m of the proposed development site area. Significant dust impacts are not predicted beyond this distance. Dust mitigation measures will be implemented on site as set out in Section 7.8.1. With the implementation of these mitigation measures dust emissions will be minimised and impacts will be **direct, short-term, negative, localised** and **not significant** with respect to biodiversity.

7.12.4.2 Operational Phase

There are no potentially significant interactions identified between Air Quality, and Biodiversity during the operational phase.

7.12.5 Air Quality and Material Assets – Traffic & Transport

7.12.5.1 Construction Phase

Interactions between Air Quality and Traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between Traffic and Air Quality are linked but there is no potential for significant impacts from traffic on air quality. The effects are considered to be **direct, short-term, neutral, localised** and **not significant** during the construction phase.

7.12.5.2 Operational Phase

The impact of the interactions between Traffic and Air Quality are considered to be **long-term, direct, neutral** and **not significant** during the operational phase.

7.13 Monitoring

7.13.1 Construction Phase

The following monitoring measures are proposed to ensure the dust mitigation measures are working satisfactorily:

Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.

Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

7.13.2 Operational Phase

There is no monitoring recommended for the operational phase of the proposed development as impacts to air quality are predicted to be imperceptible.

7.14 Summary of Mitigation and Monitoring

The following Table summarises the Construction Phase mitigation and monitoring measures.

Table 7-15 Summary of Construction Phase Mitigation and Monitoring

Likely Significant Effect	Quality	Significance
Impact of construction dust from demolition, earthworks, construction and trackout in terms of dust soiling and human health	Dust control measures as per IAQM Guidance (IAQM, 2024) and Section 7.8.1	Monitoring of construction dust deposition as per Section 7.13.1

The following table summarises the Operational Phase mitigation and monitoring measures.

Table 7-16 Summary of Operational Phase Mitigation and Monitoring

Likely Significant Effect	Quality	Significance
No mitigation or monitoring required for the operational phase of the development as impacts to air quality are predicted to be imperceptible.		

7.15 Conclusion

This chapter has reviewed and analysed the potential and the predicted impacts of the proposed development with regards to air quality. These impacts have been considered for both the construction and operational phases of the proposed development. The cumulative impact of the proposed development and surrounding developments have also been considered.

Provided all mitigation measures as set out in this chapter, the overall predicted effect of the proposed development is **not significant**.

7.16 References and Sources

BRE (2003) Controlling Particles, Vapours & Noise Pollution from Construction Sites

Department of the Environment Heritage and Local Government (DEHLG) (2004) Quarries and Ancillary Activities, Guidelines for Planning Authorities

Environmental Protection Agency (2006) Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)

Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

Environmental Protection Agency (2024) Air Quality in Ireland 2023 (& previous annual reports)

German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft

Government of Ireland (2023) Clean Air Strategy for Ireland

Institute of Air Quality Management (IAQM) (2020) A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1)

Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction (Version 2.2)

Met Éireann (2025) Met Éireann website: <https://www.met.ie/>

The Scottish Office (1996) Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings

Transport Infrastructure Ireland (2022) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

UK Office of Deputy Prime Minister (2002) Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance

USEPA (1997) Fugitive Dust Technical Information Document for the Best Available Control Measures

World Health Organisation (2021) Air Quality Guidelines (and previous Air Quality Guideline Reports 1999 & 2000 & 2006)



CHAPTER EIGHT

CLIMATE

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CHAPTER EIGHT | Climate

8.1 Introduction

This chapter assesses the likely climate impacts associated with the proposed student accommodation development on the site of the former Good Shepherd Convent, located in the north-western part of Cork City, in Sunday's Well. A full description of the development is available in Chapter 2.

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude.
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a project's vulnerability to climate change and identifies adaptation measures to increase project resilience.

8.2 Expertise & Qualifications

This chapter was completed by Ciara Nolan. Ciara is a Principal Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Sciences (MIEnvSc). She has over 8 years of experience in undertaking air quality and climate assessments. She has prepared air quality and climate impact assessments as part of EIARs for residential developments including Woodbrook, Shankill (Planning Application Ref. ABP30584419), Ballygossan Park, Skerries (Planning Application Ref. LRD0010/S3), SHD Ratoath (Planning Application Ref. SH305196), SHD Rathmullen, Drogheda (Planning Application Ref. SH305552), commercial and industrial developments by Dublin Airport Authority, Abbvie, Mountpark, Pfizer, Takeda, as well as renewable energy developments such as Crockahenny Windfarm, Upperchurch Windfarm, Knocknamona Windfarm and Keerglen Windfarm. She also specialises in conducting air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Echelon DC, AWS, Takeda, MSD and Regeneron. She has undertaken air quality and climate impact assessments for transportation schemes, primarily regional and national road schemes, from constraints, through to route selection and EIAR stage.

8.2.1 Aspects Relevant to this Assessment

During the construction phase engine emissions from site vehicles and machinery have the potential to impact climate through the release of CO₂ and to a lesser extent, other greenhouse gases (GHGs). Embodied carbon of demolition waste materials as well as materials used in the construction of the development along with site activities will impact climate. Impacts to climate are assessed against Ireland's obligations under the EU 2030 GHG targets and sectoral emissions ceilings.

Engine emissions from vehicles accessing the site have the potential to impact climate during the operational phase of the development through the release of CO₂. Operational phase impacts will be long-term in duration. In addition, the vulnerability of the proposed development in relation to future climate change must be considered during the operational

phase. The proposed development has been designed to minimise the impact on climate where possible in line with the most recent development guidelines (Part L of the Building Regulations 2022) and in reference to measures within the Climate Action Plan 2024 (DECC, 2023a).

8.3 Methodology

8.3.1 Relevant Guidance, Legislation & Policy

8.3.1.1 Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on climate are summarised below. In addition to specific climate guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022); and
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).

The assessment has made reference to national guidelines where available, in addition to international standards and guidelines relating to the assessment of climate impacts. These are summarised below:

- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a);
- Transport Infrastructure Ireland (TII) PE-ENV-01105: Climate Assessment Standard for Proposed National Roads (TII, 2022b);
- Transport Infrastructure Ireland (TII) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2024);
- Institute of Environmental Management & Assessment (IEMA) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the IEMA 2022 GHG Guidance) (IEMA, 2022);
- IEMA Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the IEMA 2020 EIA Guide) (IEMA, 2020a);
- IEMA GHG Management Hierarchy (hereafter referred to as the IEMA 2020 GHG Management Hierarchy) (IEMA, 2020b);
- IEMA Principles Series: Climate Change Mitigation & EIA (IEMA, 2010);
- Carbon Management in Infrastructure and Built Environment - PAS 2080 (BSI, 2023); and
- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a).

8.3.1.2 Legislation

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the 2015 Act). The purpose of the 2015 Act was to enable Ireland 'to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050' (3.(1) of No. 46 of 2015). This is referred to in the 2015 Act as the 'national transition objective'. The 2015 Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the 2015 Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The Government published the second Climate Action Plan in November 2021 (Government of Ireland, 2021a) and a third update in December 2022 (Government of Ireland, 2022) with an Annex of Action published in March 2023. The current Climate Action Plan is CAP24, published in December 2023 (DECC, 2024a).

Following on from Ireland declaring a climate and biodiversity emergency in May 2019, and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme in December 2019, followed by the publication of the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as the 2021 Climate Act) in March 2021. The Climate Act was signed into Law on the 23rd July 2021, giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act (Government of Ireland, 2021) is to provide for the approval of plans “for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050”. The 2021 Climate Act also provides for “carbon budgets and a decarbonisation target range for certain sectors of the economy”. The 2021 Climate Act defines the carbon budget as “the total amount of greenhouse gas emissions that are permitted during the budget period”.

In relation to carbon budgets, the 2015 Act (as amended) states ‘A carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a ‘budget period’). The carbon budget is to be produced for 3 sequential budget periods (Table 8.1). The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the Minister for the Environment) shall prepare and submit to government the maximum amount of GHG emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectoral emission ceilings for 2030 were published in the Climate Action Plan 2024 (CAP24) (DECC, 2023a) (Table 8.2).

Table 8.1 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2025

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO ₂ e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO ₂ e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO ₂ e	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 8.2 Sectoral Emission Ceilings 2030

Sector	Baseline (MtCO ₂ e)	Carbon Budgets (MtCO ₂ e)		2030 Emissions (MtCO ₂ e)	Indicative Emissions % Reduction in Final Year of 2025 – 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Electricity	10	40	20	3	75
Transport	12	54	37	6	50
Built Environment – Residential	7	29	23	4	40
Built Environment – Commercial	2	7	5	1	45
Industry	7	30	24	4	35
Agriculture	23	106	96	17.25	25
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Land Use, Land-use Change and Forestry (LULUCF)	5	Reflecting the continued volatility for LULUCF baseline emissions to 2030 and beyond, CAP24 puts in place ambitious activity targets for the sector reflecting an EU-type approach.			
Total	68				
Unallocated Savings	-	-	26	-5.25	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

8.3.1.3 Policy

8.3.1.3.1 Greenhouse Gas Assessment Policy

In December 2023 the current Climate Action Plan, CAP24, was published (DECC, 2023a). CAP25 is due to be published in 2025 which will update CAP24. CAP24 builds on the progress of CAP23, which first published carbon budgets and sectoral emissions ceilings, and it aims to implement the required changes to achieve a 51% reduction in carbon emissions by 2030 and 2050 net zero goal. The CAP has six vital high impact sectors where the biggest savings can be made. These sectors are renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and change of land-use. CAP24 states that the decarbonisation of Ireland’s manufacturing industry is key for Ireland’s economy and future competitiveness. There is a target to reduce the embodied carbon in construction materials by 10% for materials produced and used in Ireland by 2025 and by at least 30% for materials produced and used in Ireland by 2030. CAP24 states that these reductions can be brought about by product substitution for construction materials and reduction of clinker content in cement. Cement and other high embodied carbon construction elements can be reduced by the adoption of the methods set out in the Construction Industry Federation 2021 report *Modern Methods of Construction* (Construction Industry Federation, 2021). The IDA Ireland will also seek to attract businesses to invest in decarbonisation technologies to ensure economic growth can continue alongside a reduction in emissions.

In April 2023, the Government published its *Long-Term Strategy on Greenhouse Gas Emissions Reductions* (DECC, 2023b). This strategy provides a long-term plan on how Ireland will transition towards net carbon zero by 2050, achieving the interim targets set out in the Climate Action Plan.

The *Cork City Council (CCC) Climate Action Plan 2024-2028* (CCC, 2024) outlines the Council's commitment to achieving significant reductions in GHG emissions while preparing for the impacts of climate change. The plan is informed by Cork's participation in the EU Mission for Climate-Neutral and Smart Cities, which sets ambitious goals, including a transition to net-zero emissions by 2030.

A key focus of the Cork City Climate Action Plan is to reduce car dependency by promoting a shift towards more sustainable modes of transport, such as active travel (walking and cycling), and expanding the public transport network. The Council also plans to work with relevant transportation bodies to introduce these measures, similar to the approach adopted by the National Climate Action Plan.

8.3.1.3.2 Climate Change Vulnerability Policy

The second National Adaptation Framework (NAF) (DECC, 2024) was published in June 2024 in line the five-year requirement of the 2015 Climate and Low Carbon Development Act. The plan provides a whole of government and society approach to climate adaptation in Ireland to reduce Irelands vulnerability to climate change risks including extreme weather events, flooding, drought, loss of biodiversity, sea level rise and increased temperatures. Similar to the *“Just Transition”* when considering carbon emissions, the NAF aims for *“Just Resilience”* stating that:

“A climate resilient Ireland will have a reduced reliance on fossil fuel, it will have widely accessible electrified public transport and will have transitioned towards sustainable agricultural practices such as agroforestry and organic farming.”

In relation to the built environment the NAF states in Chapter 3 *“deepening of adaptation considerations in the planning and building standards processes is considered the most appropriate way of increasing the resilience of the built environment”*. Within the NAF it mentions that there is a risk of damage to buildings and structures from severe weather events such as high winds and intense rainfall. New development should accommodate predicted future climate change impacts without requiring major redesign or redevelopment in the future which may be costly and inefficient. This will require facilitating innovative building design, new materials and standards (to accommodate hotter summers while withstanding changes in precipitation patterns and more intense storms for example) according to the NAF (DECC, 2024).

The National Climate Change Risk Assessment (NCCRA) was published in May 2024 (EPA, 2024a). The NCCRA was required to be developed under Action 457 from the 2021 CAP (Government of Ireland 2021). Action 457 seeks to *“Further develop Ireland’s national climate change risk assessment capacity to identify the priority physical risks of climate change to Ireland”*. The NCCRA uses definitions of the risk determinants from the Intergovernmental Panel on Climate Change (IPCC) Risk Framework (IPCC 2023):

- **Hazard** - the potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources
- **Exposure** - the presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected
- **Vulnerability** - the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts including sensitivity
- **Risk** - the potential for adverse consequences for human or ecological systems.

When considering risk, the NCCRA assesses exposure and vulnerability for two future climate change scenarios or Representative Concentration Pathways (RCPs):

- RCP4.5 was selected as it represents a scenario aligned with the global temperature trajectory
- RCP8.5 was selected as it represents a high-emissions scenario and achieves the highest level of modelled

temperature increases by the end of the century. Consequently, this scenario will result in the highest level of physical risk for Ireland, and the greatest requirement for adaptation.

These scenarios align with a conservative approach to assess risks to Ireland and assumes global emission reduction targets are not met. This aligns with the principle of precaution as stated in the NAF (DECC 2024). In addition to the future climate scenarios, the NCCRA assesses the risk from the future climate during the following timeframes:

- Present (~2030)
- Medium term (~2050)
- Long term (~2100).

The *Cork City Climate Action Plan 2024-2028* highlights the increasing risks posed by climate change to the city’s infrastructure, residents, and businesses, particularly from extreme weather events such as flooding, heatwaves, and droughts. Pluvial, fluvial, and coastal flooding are identified as significant risks due to rising sea levels and more intense rainfall events. Without mitigation, these events are projected to lead to the inundation of properties, damage to infrastructure, and disruptions to transport networks.

Flood-relief measures, including both engineered and nature-based solutions, such as Sustainable Urban Drainage Systems (SuDS), have been incorporated into city planning. Recent and ongoing works, including those in Togher, Douglas, and the Lower Lee flood protection schemes, will enhance Cork's resilience to future flooding risks.

8.3.2 Greenhouse Gas Assessment

As per the EU guidance document *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (see Section 8.5.1).

8.3.2.1 Construction Phase

The GHG assessment accounts for various components relating to the project during different life stages to determine the total impact of the development on climate. The reference study period (i.e. the assumed building life expectancy) for the purposes of the assessment is 60 years. Embodied carbon emissions are attributed to four main categories, taken from BS EN 15978. The categories are:

- **Product Stages (Category A1 to A3)** The carbon emissions generated at this stage arise from extracting the raw materials from the ground, their transport to a point of manufacture and then the primary energy used (and the associated carbon impacts that arise) from transforming the raw materials into construction products.
- **Construction (Category A4 to A5)** These carbon impacts arise from transporting the construction products to site, and their subsequent processing and assembly into the building.
- **Use Stage (Category B1 to B7)** This covers a wide range of sources from the GHG emissions associated with the operation of the building (B1), maintenance (B2), repair (B3), refurbishment (B4) and replacement (B5) of materials, and operational energy use (B6) and water use (B7).
- **End of Life Stages (Category C1 to C4)** The eventual deconstruction and disposal of the existing building at the end of its life takes account of the on-site activities of the demolition contractors. No ‘credit’ is taken for any future carbon benefit associated with the reuse or recycling of a material into new products.

PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage embodied carbon using the TII Online Carbon Tool (TII, 2024). Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy

needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site. The purpose of the embodied carbon assessment is to engage the design team in the consideration of embodied carbon at an early stage in the development and mitigate embodied carbon. This engagement aims to ensure carbon savings are made and to assist in aligning the project to Ireland's CAP goal of Net Carbon Zero by 2050.

The TII Online Carbon Tool (TII, 2024) has been commissioned by TII to assess GHG emissions associated with road or rail projects in Ireland. The TII Carbon Tool (TII, 2024) uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database (CESSM, 2013), which can be applied to a variety of developments, not just road or rail. The tool aligns with PAS 2080.

For the building elements of the proposed development, the Carbon Designer for Ireland tool was considered more appropriate. The Irish Green Building Council in partnership with One Click LCA Ltd. have developed the Carbon Designer for Ireland tool (One Click LCA Ltd., 2025) for use on Irish specific building projects. The Carbon Designer tool is promoted by the EPA and the Land Development Agency. OneClick LCA is certified to EN 15978, EN 15978, ISO 21931 – 1 & ISO 21929, and data requirements of ISO 14040 & EN 15804, and is LEED, BREEAM and PAS 2080 aligned. It allows users to assess the carbon impact of buildings at an early stage using typical default materials and values. Inputs to the tool include the gross floor area and number of stories above ground level along with the building frame type. Once the baseline is established using generic data, the tool allows for optioneering and optimization of the carbon impact. It highlights the key areas within the building with the highest carbon impact and provides options for lower carbon intensive materials. The Carbon Designer for Ireland tool was completed by the project architects with the outputs provided to Awn Consulting to assess the GHG impact of the building elements of the proposed development. The TII Carbon Tool was utilised to estimate the GHG emissions associated with the non-building elements of the proposed development including construction activities and construction wastes and demolition wastes.

Reasonable conservative estimates have been used in this assessment where necessary to provide an estimate of the GHGs associated with the proposed development.

8.3.2.2 Operational Phase

8.3.2.2.1 Traffic Emissions

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO₂) which will impact climate.

The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022b), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment, and also the climate assessment. While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5 m or greater.

There are no road links that meet the above screening criteria and therefore a detailed assessment of traffic emissions has been scoped out. There is no predicted significant impact to climate from traffic related CO₂ emissions.

8.3.2.2.2 Operational Phase Energy Use

The EU guidance (European Commission, 2013) also states indirect GHG emissions as a result of a development must be considered, which includes emissions associated with energy usage. Information on the proposed energy strategy for the development was obtained from the building engineers on the project and used to inform this assessment. A number of measures in relation to sustainable energy usage have been incorporated into the overall design of the development which will have the benefit of reducing the impact to climate where possible during operation.

8.3.2.3 Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document entitled PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a) outlines a recommended approach for determining the significance of both the construction and operational phases of a development.

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022a) is based on IEMA guidance (IEMA, 2022) which is consistent with the terminology contained within Figure 3.4 of the EPA's (2022) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports'.

The 2022 IEMA Guidance (IEMA, 2022) sets out the following principles for significance:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. Therefore, the significance of a project's emissions should be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

The criteria for determining the significance of effects are a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors (i.e. Ireland's National GHG targets). In relation to climate, there is no project specific assessment criteria, but the project will be assessed against the recommended TII significance determination. This takes account of any embedded or committed mitigation measures that form part of the design which should be considered.

TII (TII 2022a) states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact. TII reference the IEMA guidance (2022) which states that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*".

Significance is determined using the criteria outlined in Table 8.3 (derived from Table 6.7 of PE-ENV-01104 (TII 2022a)) along with consideration of the following two factors:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

Table 8.3 Significance Criteria for GHGA

Effects	Significance Level	Description
Significant adverse	Major adverse	• The project’s GHG impacts are not mitigated. • The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and • No meaningful absolute contribution to Ireland’s trajectory towards net zero.
	Moderate adverse	• The project’s GHG impacts are partially mitigated. • The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and • Falls short of full contribution to Ireland’s trajectory towards net zero.
Not significant	Minor adverse	• The project’s GHG impacts are mitigated through ‘good practice’ measures. • The project has complied with existing and emerging policy requirements; and • Fully in line to achieve Ireland’s trajectory towards net zero.
	Negligible	• The project’s GHG impacts are mitigated beyond design standards. • The project has gone well beyond existing and emerging policy requirements; and • Well ‘ahead of the curve’ for Ireland’s trajectory towards net zero.
Beneficial	Beneficial	• The project’s net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. • The project has gone well beyond existing and emerging policy requirements; and • Well ‘ahead of the curve’ for Ireland’s trajectory towards net zero, provides a positive climate impact.

Ireland’s carbon budgets can also be used to contextualise the magnitude of GHG emissions from the proposed development (TII, 2022a). The approach is based on comparing the net proposed development GHG emissions to the relevant carbon budgets (DECC, 2023a). With the publication of the Climate Action Act in 2021 and the Climate Action Plan 2024, sectoral carbon budgets have been published for comparison with the net GHG emissions from the proposed development over its lifespan. The aim of the carbon budgets is to ensure we are on a trajectory to meet the National Climate Objective of Net Zero by 2050.

8.3.3 Climate Change Risk Assessment

The assessment involves determining the vulnerability of the proposed development to climate change. This involves an analysis of the sensitivity and exposure of the development to climate hazards which together provide a measure of vulnerability.

PE-ENV-01104 (TII, 2022a) states that the CCRA is guided by the principles set out in the overarching best practice guidance documents:

- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a); and
- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition) (IEMA, 2020).

The baseline environment information provided in Section 8.5, future climate change modelling and input from other experts working on the proposed development (i.e. hydrologists) should be used to assess the likelihood of a climate risk.

First an initial screening CCRA based on the operational phase is carried out, according to the TII guidance PE-ENV-01104. This is carried out by determining the sensitivity of proposed development assets (i.e. receptors) and their exposure to climate change hazards.

The proposed development asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 (TII, 2022a) provides the list of asset categories and climate hazards to be considered. The asset categories will vary for development type and need to be determined on a development by development basis.

- **Asset Categories** Pavements; drainage; structures; utilities; landscaping; signs, light posts, buildings, and fences.
- **Climate Hazards** Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High Sensitivity** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium Sensitivity** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2.
- **Low Sensitivity** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location irrespective of the project type. For example, flooding could be a risk if the project location is next to a river in a floodplain. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High Exposure** It is almost certain or likely this climate hazard will occur at the project location, i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium Exposure** It is possible this climate hazard will occur at the project location, i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low Exposure** It is unlikely or rare this climate hazard will occur at the project location, i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability.

8.3.3.1 Significance Criteria for CCRA

The CCRA involves an initial screening assessment to determine the vulnerability of the proposed development to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the proposed development to various climate hazards.

Vulnerability = Sensitivity x Exposure

The vulnerability assessment takes any proposed mitigation into account. Table 8.4 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale.

TII guidance (TII, 2022a) and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. Therefore, the impact from climate change on the proposed development can be considered to be not significant.

However, where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks. An assessment of construction phase CCRA impacts is only required according to the TII guidance (TII, 2022a) if a detailed CCRA is required.

Table 8.4 Vulnerability Matrix

		Exposure		
		High (3)	Medium (2)	Low (1)
Sensitivity	High (3)	9 - High	6 – High	3 - Medium
	Medium (2)	6 - High	4 - Medium	2 - Low
	Low (1)	3 - Medium	2 – Low	1 - Low

The screening CCRA, detailed in Section 8.7.2.2, did not identify any residual medium or high risks to the proposed development as a result of climate change. Therefore, a detailed CCRA for the construction and operational phase were scoped out.

While a CCRA for the construction phase was not required, best practice mitigation against climate hazards is still recommended in Section 8.8.

8.3.4 Site Surveys/Investigations

No surveys were required as part of the climate assessment.

8.3.5 Consultation

No specific consultation with relevant bodies was undertaken as part of the climate assessment. The submissions received were reviewed and addressed as required within the assessment.

8.4 Difficulties Encountered

There were no difficulties encountered in compiling this assessment.

8.5 Baseline Environment

PE-ENV-01104 (TII, 2022a) states that a baseline climate scenario should identify, consistent with the study area for the project, GHG emissions without the project for both the current and future baseline.

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland’s current failure to meet its EU binding targets under Regulation 2018/842 (European Union, 2018) results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

8.5.1 Current GHG Baseline

Data published in July 2024 (EPA, 2024), indicates that Ireland exceeded, without the use of flexibilities, its 2023 annual limit set under EU’s Effort Sharing Decision (ESD) (EU 2018/842) by 2.27 Mt CO₂e. However, the 2023 emissions were the first time that Ireland’s emission were below (-1.2%) 1990 levels. ETS (Emissions Trading Scheme) emissions decreased (-17.0%) and ESR (Effort Sharing Regulation) emissions decreased (-3.4%). Ireland’s target is an emission reduction of 626 kt of CO₂e by 2030 on an average baseline of 2016 to 2018. The EPA estimate that 2023 total national GHG emissions, excluding LULUCF, have decreased by 6.8% on 2022 levels to 55.01 Mt CO₂e, with a 2.2 Mt CO₂e (-21.6%) reduction in electricity industries alone. This was driven by a 40.7% share of energy from renewables in 2023 and by increasing our imported electricity. Manufacturing combustion and industrial processes decreased by 5.1% to 6.3 Mt CO₂e in 2023 due to declines in fossil fuel usage. The sector with the highest emissions in 2023 was agriculture at 37.6% of the total, followed by transport at 21.4%. For 2023, total national emissions (including LULUCF) were 60.62 Mt CO₂e (EPA, 2024) (Table 8.5).

The provisional 2023 figures indicate that Ireland has used 63.9% of the 295 Mt CO₂e Carbon Budget for the five-year period 2021-2025.

Table 8.5 Trends in Total National GHG Emissions 2021 – 2023

Sector ^{Note 1}	2021	2022	2023	Total Budget (Mt CO ₂ e) (2021-2025)	% Budget 2021-2025 Used	Annual Change 2022 to 2023
Electricity	9.893	9.694	7.558	40.0	67.9%	-22.0%
Transport	11.089	11.760	11.791	54.0	64.1%	0.3%
Buildings (Residential)	6.868	5.753	5.346	29.0	62.0%	-7.1%
Buildings (Commercial and Public)	1.444	1.447	1.409	7.0	61.4%	-2.6%
Industry	7.093	6.622	6.288	30.0	66.7%	-5.0%
Agriculture	21.940	21.795	20.782	106.0	60.9%	-4.6%
Other ^{Note 2}	1.864	1.931	1.832	9.0	62.5%	-5.1%
LULUCF	4.628	3.983	5.614	—	—	40.9%
Total including LULUCF	64.819	62.986	60.620	295.0	63.9%	-3.8%

Note 1 Reproduced from latest emissions data on the EPA website July 2024 (EPA, 2024).

Note 2 Other includes Petroleum refining, F-Gases and Waste (emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste).

8.5.2 Future GHG Baseline

The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022a) and IEMA Guidance (IEMA, 2022) the future baseline is a trajectory towards net zero by 2050, “whether it [the project] contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050”.

The future baseline will be determined by Ireland meeting its targets set out in the CAP24, and future CAPs, alongside binding 2030 EU targets. The European Union (EU) enacted ‘Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013’ (hereafter referred to as the Regulation) (European Union, 2018) to meet the commitments under the Paris Agreement. The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The Regulation was amended in April 2023 and Ireland must now limit its ETS and non-ETS greenhouse gas emissions by at least 42% by 2030. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and includes GHG emissions from transport, residential and commercial buildings and agriculture.

In June 2024, the EPA released the report *Ireland’s Greenhouse Gas Emissions Projections 2023-2050* (EPA, 2024d), which includes total projected emissions and a breakdown of projected emissions per sector under the ‘With Existing Measures’ and ‘With Additional Measures’ scenarios. The EPA projections indicate that under the ‘With Existing Measures’ scenario, Ireland will achieve a reduction of 11% on 2018 levels by 2030. A reduction of 29% by 2030 can be achieved under the ‘With Additional Measures’ scenario, which is still short of the 42% reduction target, set out in the carbon budgets.

8.5.3 Current CCRA Baseline

The region of the proposed development has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Cork Airport is the nearest, representative, weather and climate monitoring station to the proposed development with meteorological data recorded for the 30-year period from 1991 to 2020. The historical regional weather data for Cork Airport metrological station is representative of the current climate in the region of the proposed development. The data for the 30-year period from 1991 to 2020 indicates that the wettest months at Cork Airport Metrological Station were January, October and December, and the driest month on average was May (Met Éireann, 2025a). July was the warmest month with a mean temperature of 15.2 Celsius. January was the coldest month with a mean temperature of 5.7 Celsius.

Met Éireann’s 2023 Climate Statement (Met Éireann, 2024a) states 2023’s average shaded air temperature in Ireland is provisionally 11.20°C, which is 1.65°C above the 1961-1990 long-term average. Previous to this 2022 was the warmest year on record; however, 2023 was 0.38°C warmer (see Figure 8.1).

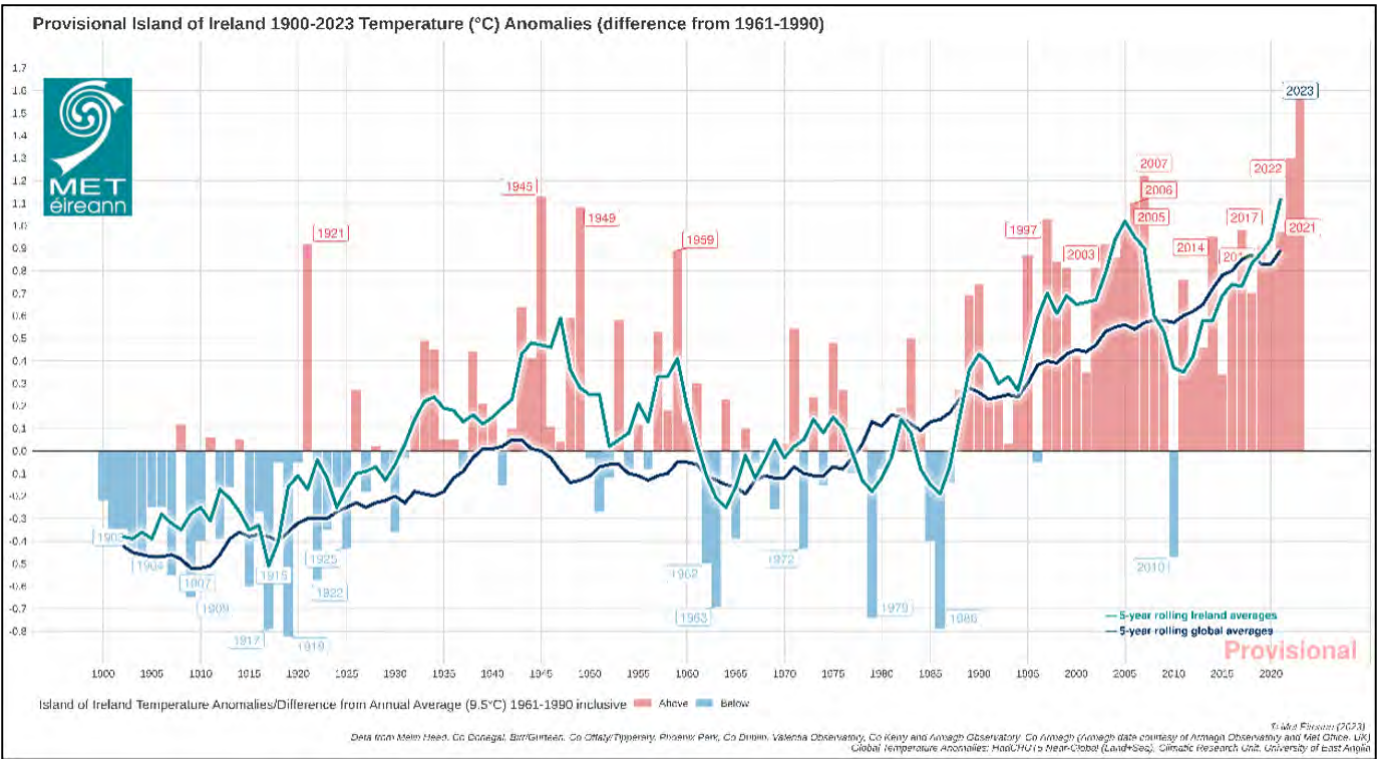


Figure 8.1 1900-2023 Temperature (°C) Temperature Anomalies (differences from 1961-1990)

2023 also had above average rainfall, this included the warmest June on record and the wettest March and July on record. Record high sea surface temperatures (SST) were recorded since April 2023 which included a severe marine heatwave to the west of Ireland during the June 2023. This marine heatwave contributed to the record rainfall in July.

Met Éireann’s 2024 Climate Statement (Met Éireann 2025b) states 2024’s average shaded air temperature in Ireland is provisionally 10.72°C, which is 1.17°C above the 1961-1990 long-term average or 0.55°C above the most recent 1991-2020 long-term average. This is the 4th warmest year on record with 2023 breaking previous records. Seven of the top ten warmest years have occurred since 2005. Record high sea surface temperatures (SST) were recorded in 2022, and in 2024 continued at or near record high levels. 2024 was overall drier than average, however there were many instances of heavy or intense rainfall which led to flooding events.

This trend is predicted to continue with climate change with an increase in both dry periods and heavy rainfall events. Considering the extraordinary data, Met Éireann states that the latest Irish climate change projections indicate further warming in the future, including warmer winters. The record temperatures means the likelihood of extreme weather events occurring has increased. This will result in longer dry periods and heavy rainfall events. Storm surges and coastal flooding due to sea level rise. Compound events, where coastal surges and extreme rainfall events occur simultaneously will also increase. Met Éireann has high confidence in maximum rainfall rates increasing but not in how the frequency or intensity of storms will change with climate change.

8.5.4 Future CCRA Baseline

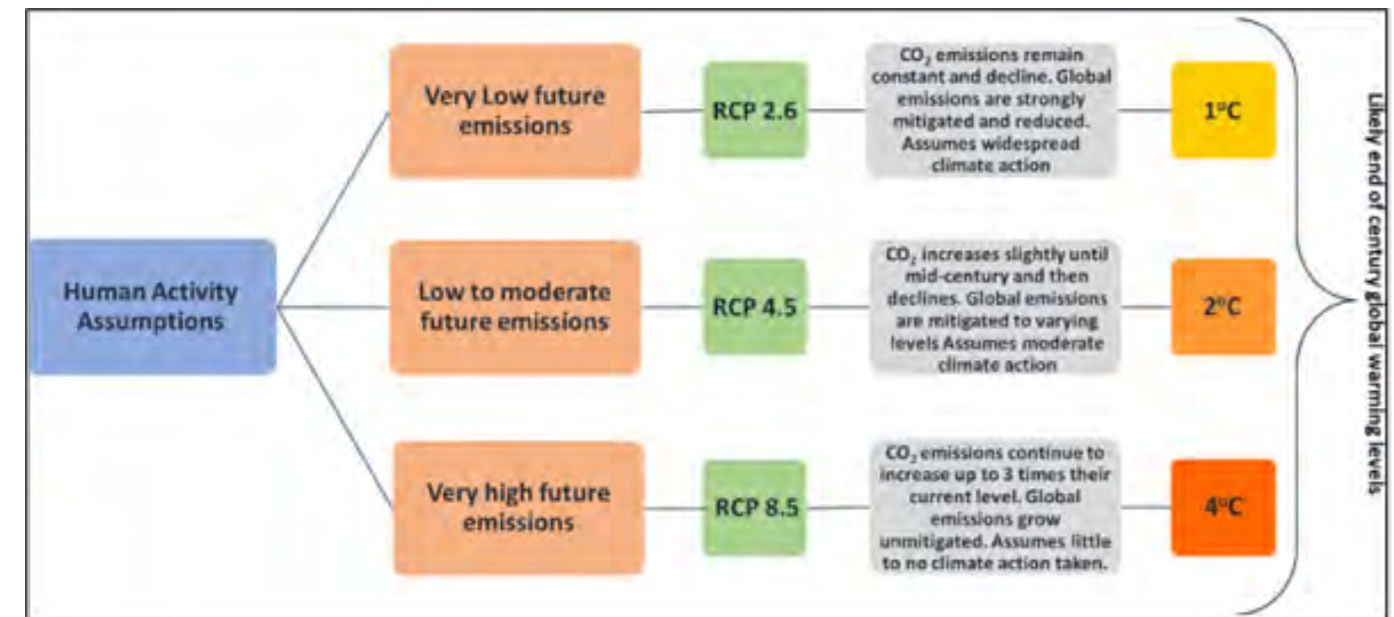
Impacts as a result of climate change will evolve with a changing future baseline, changes have the potential to include increases in global temperatures and increases in the number of rainfall days per year. Therefore, it is expected that the baseline climate will evolve over time and consideration is needed with respect to this within the design of the proposed development.

Ireland has seen increases in the annual rainfall in the north and west of the country, with small increases or decreases in the south and east including in the region where the proposed development will be located (EPA, 2021b). The EPA have compiled a list of potential adverse impacts as a result of climate change including the following which may be of relevance to the proposed development (EPA, 2021b):

- More intense storms and rainfall events;
- Increased likelihood and magnitude of river and coastal flooding;
- Water shortages in summer in the east;
- Adverse impacts on water quality; and
- Changes in distribution of plant and animal species.

TII's Guidance document PE-ENV-01104 (TII 2022a) states that for future climate change a moderate to high Representative Concentration Pathways (RCP) should be adopted. RCP4.5 is considered moderate, while RCP8.5 is considered high. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken.

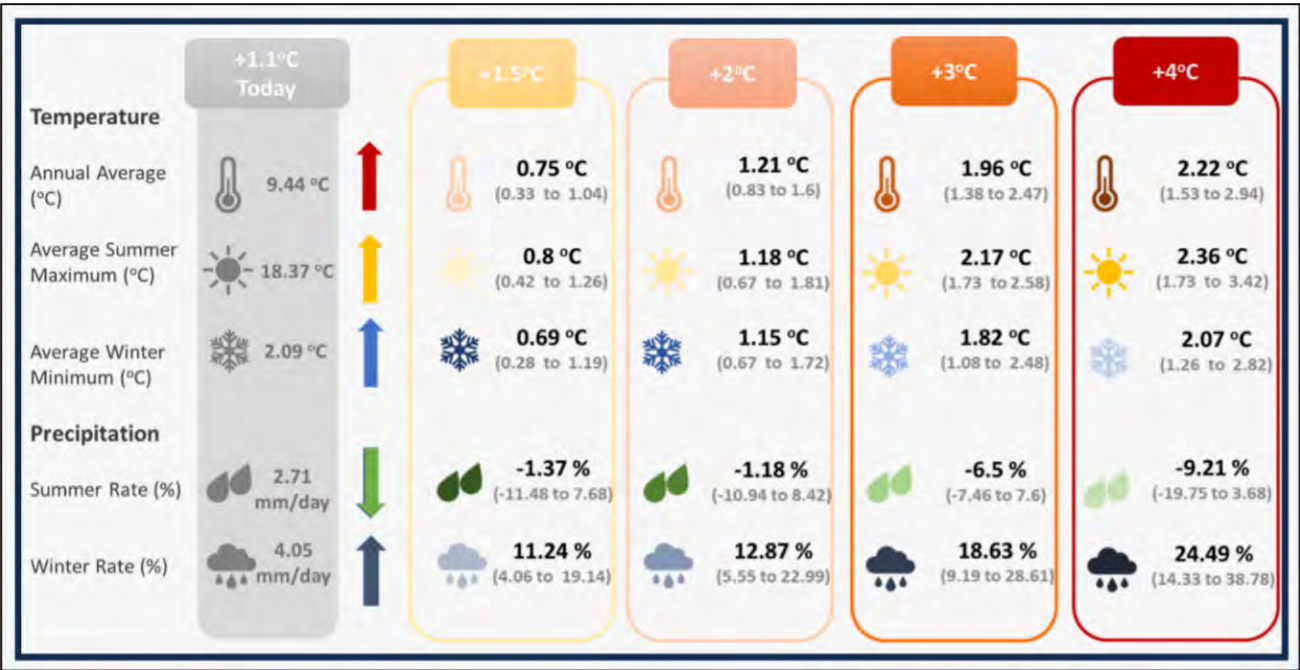
National Framework for Climate Services (NFCS) was founded in June 2022 to streamline the provision of climate services in Ireland and will be led by Met Éireann. The aim of the NFCS is to enable the co-production, delivery and use of accurate, actionable and accessible climate information and tools to support climate resilience planning and decision making. In addition to the NFCS, further work has been ongoing into climate projects in Ireland through research under the TRANSLATE project. TRANSLATE (Met Éireann, 2023b) has been led by climate researchers from University of Galway – Irish Centre for High End Computing (ICHEC), and University College Cork – SFI Research Centre for Energy, Climate and Marine (MaREI), supported by Met Éireann climatologists. TRANSLATE's outputs are produced using a selection of internationally reviewed and accepted models from both CORDEX and CMIP5. Representative Concentration Pathways (RCPs) provide a broad range of possible futures based on assumptions of human activity. The modelled scenarios include for “least” (RCP2.6), “more” (RCP4.5) or “most” (RCP8.5) climate change, see Figure 8.2.



Source: TRANSLATE project storymap (Met Éireann 2023)

Figure 8.2 Representative Concentration Pathways associated emission levels

TRANSLATE (Met Éireann, 2023b) provides the first standardised and bias-corrected national climate projections for Ireland to aid climate risk decision making across multiple sectors (for example, transport, energy, water), by providing information on how Ireland's climate could change as global temperatures increase to 1.5°C, 2°C, 2.5°C, 3°C or 4°C. Projections broadly agree with previous projections for Ireland. Ireland's climate is dominated by the Atlantic Meridional Overturning Circulation (AMOC), a large system of ocean currents – including the Gulf Stream – characterised by a northward flow of warm water and a southward flow of cold water. Due to the AMOC, Ireland does not suffer from the extremes of temperature experienced by other countries at a similar latitude. Recent studies have projected that the AMOC could decline by 30 – 40 % by 2100, resulting in cooler North Atlantic Sea surface temperatures (SSTs) (Met Éireann, 2023b). Met Éireann projects that Ireland will nevertheless continue to warm, although the AMOC cooling influence may lead to reduced warming compared with continental Europe. AMOC weakening is also expected to lead to additional sea level rise around Ireland. With climate change Ireland's temperature and rainfall will undergo more and more significant changes e.g. on average summer temperature could increase by more than 2°C, summer rainfall could decrease by 9% while winter rainfall could increase by 24% (See Figure 8.3). Future projects also include a 10-fold increase in the frequency of summer nights (values > 15°C) by the end of the century, a decrease in the frequency of cold winter nights and an increase in the number of heatwaves. A heatwave in Ireland is defined as a period of 5 consecutive days where the daily maximum temperature is greater than 25°C.



Source: TRANSLATE project storymap (Met Éireann, 2023b)

Figure 8.3 Change of climate variables for Ireland for different Global warming thresholds

The TRANSLATE research report (Met Éireann, 2024d) finds that night-time temperatures will warm more than day-time temperatures, with temperatures increases across all seasons but the highest in the summer (with an increase of 0.5°C to 3.5°C). Autumn is projected to have the highest increase in average minimum temperatures (with an increase of 1.1°C to 4.4°C). The variance is dependent on the scenario that is being reviewed. While these temperatures are projected across all of Ireland, they increase most in the east of the country compared to the west. With respect to rainfall, increases of 4% to 38% are projected, however this will not be spread across the year as during summer months there are projected decreases in rainfall beyond the 2°C warming scenario.

In January 2024 the EPA published *Ireland’s Climate Change Assessment Synthesis Report* (EPA, 2024e) which contained four volumes:

- Volume 1: Climate Science: Ireland in a Changing World
- Volume 2: Achieving Climate Neutrality by 2050
- Volume 3: Being Prepared for Ireland’s Future Climate
- Volume 4: Realising the Benefits of Transition and Transformation

This report reinforces the existing and future risks arising from climate change. Volume 1 (EPA, 2024e) states that under Early action, the temperature increase averaged across the island of Ireland relative to the recent past (1976 to 2005) would reach 0.91°C (0.44 to 1.10°C) by mid-century before falling back to 0.80°C (0.34 to 1.07°C) at the end of the century. Whereas under Late action, by the end of the century it is projected that the temperature increases could be 2.77°C (2.02 to 3.49°C). Heat extremes will become more frequent and more severe and cold extremes will become less frequent and less severe with further warming.

Precipitation was 7% higher over the period 1991 to 2020 than over the 1961 to 1990 period. The average future predicted increase in precipitation is <10% in annual mean accumulated. By 2100 projected additional rises in sea level range from

0.32 to 0.6m under early action to 0.63 to 1.01m under late action scenarios, with greater storm surges potentially effecting critical infrastructure along the coastline. Projections of changes in storminess are highly uncertain and translate into large uncertainties in future frequency and intensity of extreme waves.

Volume 3 (EPA, 2024e) discusses how water supplies will face growing pressures resulting in increased water demand and how options need to be developed, including potential new sources. The report states the key role of critical infrastructure for delivering public services, economic development and a sustainable environment. These are exposed to a range of climate extremes. Failures in critical infrastructure can cascade across other sectors and present a multi-sector risk due to climate change.

The report references the EPA’s *Critical Infrastructure Vulnerability to Climate Change* report (EPA, 2021a) as the most substantial research project in Ireland to date on climate change and critical infrastructure which assesses the future performance of Ireland’s critical infrastructure when climate is considered. The Critical Infrastructure Vulnerability to Climate Change report states with respect to water availability and quality, that flood risk and heatwaves have a medium vulnerability index and the underground supply network has a high vulnerability to snowstorms and cold spells. However, while the vulnerability is high, the exposure is likely to reduce due to future climate change resulting in less cold weather events. The risk assessment highlights the co-dependence of the water sector to the energy sector, and how vulnerability in the energy sector may have cascading impacts.

Volume 4 (EPA, 2024e) calls for system change, including a transformation of urban settings. Stating that meaningful urban transformation can create a better living environment while simultaneously reducing emissions.

The projections were echoed by the *Updated High-resolution Climate Projections for Ireland Research Report: 471* (EPA, 2024f) which was in broad agreement with previous research. The future autumn and winter months are projected to be up to 10% wetter, while summer is projected to be up to 8% drier.

8.6 The ‘Do Nothing’ Scenario

In the Do-Nothing scenario, the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc).

As the site is zoned for development, it is likely that in the absence of the proposed development a development of a similar nature would occur. Therefore, the predicted climate impacts within this report are likely to occur even in the absence of the proposed development however, the significance of the impact is unknown.

8.7 Potential Significant Effects

8.7.1 Greenhouse Gas Assessment

8.7.1.1 Demolition Phase

There are some demolition works proposed as part of the proposed development. A total of 7,768 m³ of buildings are predicted to be demolished. Information from the project architects regarding the justification for the demolition rather than refurbishment of the existing buildings has been used to inform this assessment. Additionally, the predicted demolition waste figures and waste routes have been informed by Chapter 11 – Material Assets (Waste).

The existing buildings on site are of very poor condition with some suffering extensive fire damage. The strategy for the proposed development is to refurbish and incorporate the existing buildings into the new development where possible, particularly the existing architecturally important buildings of the convent, home and orphanage.

The primary concern from a climate perspective in relation to demolition works is the embodied carbon impact. Depending on the final end-use of the demolition wastes, the associated embodied carbon has the potential to impact climate. Where possible demolished materials should be re-used on site or sent to a suitably licenced waste facility for re-use on other sites. Brickwork, concrete, steel and glazing are materials which have the potential for very high embodied carbon but also have the potential for recovery or recycling.

The estimated GHG impact of the demolition wastes has been calculated using the TII Carbon Tool (2024). These are presented in Table 8.6. The predicted GHG emissions have been compared against the Waste and Transport sector 2030 budgets. As can be seen in Table 8.6, the predicted GHG emissions from the demolition wastes will be a small fraction of the total carbon budgets.

Table 8.6 Greenhouse Gas Assessment Results – Demolition Phase

GHG Assessment Category	tCO ₂ e	Target / Sectoral Budget (tCO ₂ e)	% of Relevant Target / Budget	
Demolition Waste	170	2030 Sectoral Budget (Waste Sector)	1,000,000	0.0003%
Demolition Waste Transport	9	2030 Sectoral Budget (Transport Sector)	6,000,000	0.000003%

In relation to the justification for the demolition works, the project architects have outlined that the long-term sustainability benefits of a high-performance new building outweigh the carbon impact of demolition. The cost and carbon impact of retrofitting the outdated hostel building structure would be excessive compared to the efficiency gains of a purpose-built facility.

Operational carbon of an inefficient building can be greater than embodied carbon over time. In relation to the existing hostel building, which is proposed for demolition, the existing building relies on gas-powered heating, a system suited to refurbishment but which is inconsistent with Ireland’s long term decarbonisation goals. The new proposed building will operate using electricity-powered air-to-water heat pumps, aligning with Ireland’s transition to renewable energy sources such as wind and solar, levels of which are set to increase over the long term. Additionally, the new structure will be designed to Nearly Zero Energy Building (NZEB) standards and will offer:

- Reduced energy demand.
- Improved indoor environmental quality (ventilation, daylighting, and insulation).
- Long-term sustainability, outweighing the short-term carbon cost of demolition.

The new development will support the critical need for a purpose-built student accommodation in Cork City as well as supporting broader housing objectives. It also provides the opportunity to introduce new amenities to the area benefitting both students and the local community. One of the goals of the project is to create a more cohesive and well-integrated site layout, balancing conservation and redevelopment.

Mitigation measures for the demolition phase, specifically in relation to management of demolition wastes will aid in reducing the embodied carbon impact of the demolition phase of the proposed development.

8.7.1.2 Construction Phase

The most significant proportion of GHG emissions tend to occur during the construction phase as a result of embodied carbon in construction materials and emissions from construction activities. Therefore, the assessment has been included

in the construction phase assessment for the purposes of the EIAR. The assessment is broken down into the following stages as per Section 8.3.2.1

- Product stage (A1 – A3);
- Transportation to site (A4);
- Site operations (construction activities) (A5); and
- Material replacement & refurbishment (B4 – B5).

The construction phase GHG emissions comprise stages A1 – A5 which includes the construction materials, the transport of the materials to site and the construction activities or site operations. Ongoing material refurbishment and replacement throughout the lifetime of the development is included within category B4 – B5, these are default values based on the typical maintenance requirements for the chosen material types over the assumed 60 year lifetime. Figure 8.4 shows the GHG emissions for the proposed development per life-cycle stage based on the output from the Carbon Designer for Ireland tool and the TII tool.

Construction materials make up the majority of GHG emissions for the proposed development making up approximately 74% of the total construction phase GHG emissions across the various buildings. Material replacement makes up the second highest contribution at 21% of the total and material transport and construction activities make up the remainder of the construction GHG emissions. The A5 and B4-B5 categories include carbon savings associated with waste material recycling or re-use.

The carbon assessment has highlighted the areas where the highest embodied carbon emissions occur, specifically as a result of building materials. Where material types were not known, as these will not be selected until detailed design stage, the standard default material type was used within the Carbon Designer for Ireland tool.

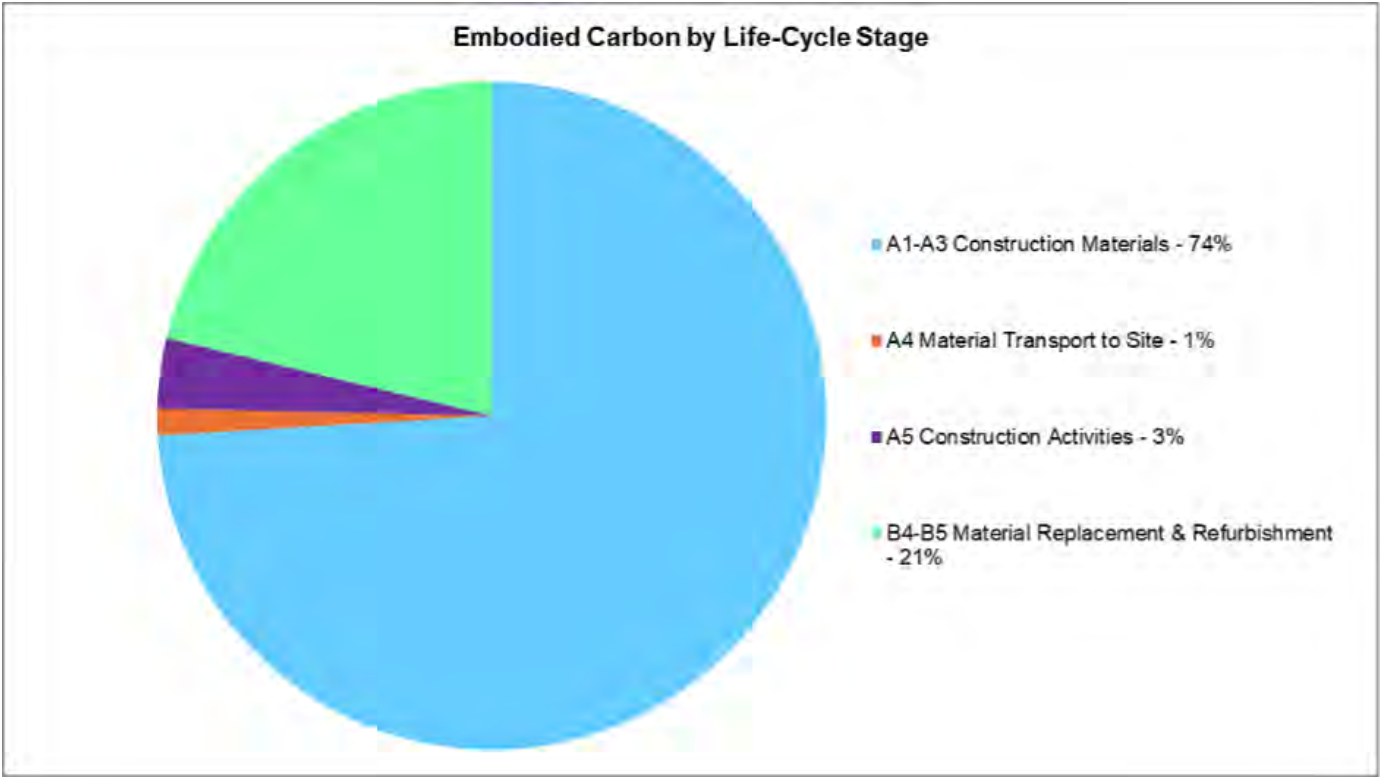


Figure 8.4 Embodied Carbon by Life-Cycle Stage

It has been calculated that the total construction phase embodied carbon (including maintenance and replacement of materials over the development lifetime) will be 17,624 tonnes CO₂e (see Table 8.7). The GHG emissions from the development as a total cannot be compared against one specific sector 2030 carbon budget, the emissions are broken down into different assessment categories and these must be compared separately to the relevant sectoral emissions budget which are detailed in Table 8.7 and Table 8.8. The relevant sectoral emissions for the proposed development comparison include the Industry sector, Transport sector and Waste sector. The predicted emissions for the proposed development are annualised over the assumed 60 year lifespan and then compared to the relevant sector 2030 carbon budgets. Annualising the full carbon emissions over the lifetime of the development allows for appropriate comparison with annual GHG targets.

Table 8.7 GHG Assessment Results – Construction Phase

Stage	GHG Assessment Category	Predicted GHG Emissions (tCO ₂ e)	Predicted GHG Emissions as % of Project Total	Relevant Sector for Carbon Budget Comparison
A1-A3	Materials	13,053	74%	Industry
A4	Material Transport	227	1%	Transport
A5	Excavations	21	0.1%	Industry
	Construction site material waste	531	3%	Waste
	Construction site material waste transport	9	0.05%	Transport
	Construction site waste	36	0.20%	Waste
B4 - B5	Maintenance Material	2,897	16%	Industry
	Maintenance Material Transport	6	0.04%	Transport
	Maintenance Material Waste	844	5%	Waste
Total		17,624		

In Table 8.8, GHG emissions have been compared against the carbon budget for the industry, transport and waste sectors in 2030 (DECC, 2024), against Ireland’s total GHG emissions in 2023 and against Ireland’s EU 2030 target of a 30% reduction in non-ETS sector emissions based on 2005 levels (27.7 Mt CO₂e) (set out in Regulation EU 2018/842 of the European Parliament and of the Council).

The estimated total GHG emissions, when annualised over the 60-year proposed development lifespan, are equivalent to 0.0005% of Ireland’s total GHG emissions in 2023 and 0.001% of Ireland’s non-ETS 2030 emissions target. The estimated GHG emissions associated with transport-related activities are 0.0001% of the 2030 Transport budget, construction waste GHG emissions are 0.002% of the Waste budget and industry-related activities are 0.01% of the 2030 Industry budget.

Table 8.8 Estimated GHG Emissions Relative to Sectoral Budgets and GHG Baseline

Target/Sectoral Budget (tCO ₂ e)		Annualised Development GHG Emissions		% of Relevant Target/Budget
Ireland's 2023 Total GHG Emissions (existing baseline)	60,620,000	294	Total GHG Emissions	0.0005%
Non-ETS 2030 Target	27,722,000	294	Total GHG Emissions	0.001%
2030 Sectoral Budget (Industry Sector)	4,000,000	266	Total Industry Emissions	0.01%
2030 Sectoral Budget (Transport Sector)	6,000,000	4	Total Transport Emissions	0.0001%
2030 Sectoral Budget (Waste Sector)	1,000,000	24	Total Waste Emissions	0.002%

8.7.1.3 Operational Phase

8.7.1.3.1 Operational Energy Usage

The proposed development has been designed to reduce the impact to climate where possible. A number of measures have been incorporated into the design to ensure the operational phase emissions are minimised. The primary elements with respect to reducing climate impacts and optimising energy usage are summarised in Section 8.8.1 and are based on information provided by the project building engineers.

8.7.1.3.2 Operational Traffic Emissions

There is the potential for increased traffic volumes to impact climate during the operational phase. As per Section 8.3.2.2.1 a detailed assessment of traffic related CO₂ emissions has been screened out due to the low level changes in traffic associated with the proposed development. There are no significant impacts to climate predicted as a result of traffic emissions.

8.7.1.4 GHGA Significance of Effects

The TII guidance states that the following two factors should be considered when determining significance:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland’s GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

The level of mitigation described in Section 8.8 has been taken into account when determining the significance of the proposed development’s GHG emissions. According to the TII significance criteria described in Section 8.3.2.3 and Table 8.4, the significance of the GHG emissions during the construction and operational phase is minor adverse. The proposed development has mitigated some GHG impacts where possible.

In accordance with the EPA guidelines (EPA, 2022), the above significance equates to a significance of effect of GHG emissions during the construction and operational phase which is **direct, long-term, negative** and **slight**, which is overall **not significant**.

8.7.2.1 Climate Change Risk Assessment

8.7.2.1 Construction Phase

A detailed CCRA of the construction phase has been scoped out, as discussed in Section 8.3.3 and Section 8.7.2.2, which states that there are no residual medium or high risk vulnerabilities to climate change hazards. Therefore, a detailed CCRA is not required (TII, 2022a). However, consideration has been given to the proposed development’s vulnerability to the following climate change hazards with best practice mitigation measures proposed in Section 8.8:

- Flood Risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow; and
- Major Storm Damage including wind damage.

8.7.2.2 Operational Phase

The sensitivity and exposure of the development to various climate hazards must first be determined to then determine the vulnerability of the proposed development to climate change. Flooding (coastal, pluvial, fluvial), extreme heat, extreme cold, wildfire, drought, extreme wind, lightning, hail, landslides and fog have been considered as climate hazards in the context of the proposed development.

The sensitivity of the proposed development to the climate hazards is assessed irrespective of the project location. Table 8.9 details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the proposed development to each of the climate hazards is determined, this is the likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards as per Table 8.5. The results of the vulnerability assessment are detailed in Table 8.9.

Table 8.9 Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Coastal, Pluvial, Fluvial)	1 (Low)	1 (Low)	1 (Low)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low)
Extreme Cold	1 (Low)	2 (Medium)	2 (Low)
Wildfire	1 (Low)	1 (Low)	1 (Low)
Drought	1 (Low)	1 (Low)	1 (Low)
Extreme Wind	1 (Low)	1 (Low)	1 (Low)
Lightning & Hail	1 (Low)	1 (Low)	1 (Low)
Landslides	1 (Low)	1 (Low)	1 (Low)
Fog	1 (Low)	1 (Low)	1 (Low)

The sensitivity and exposure of the area was determined with reference to a number of online tools and with input from the various discipline specialists on the project team. It was concluded that the proposed development does not have any significant vulnerabilities to the identified climate hazards as described in the below sections. All vulnerabilities are classified as low.

8.7.2.2.1 Flooding

A Flood Risk Assessment (FRA) was undertaken by Murphy Matson O’Sullivan Consulting Civil & Structural Engineers and is submitted as part of the Engineering Report for this planning application. This document was reviewed to inform the climate change vulnerability assessment and assess the potential for flooding at the proposed development site.

The proposed development is located in Flood Zone C, which indicates flooding is not a risk for the site. The development’s drainage design includes for a 20% climate change allowance. There is no risk of flooding affecting the site area from tidal or fluvial sources. Incorporation of good building practice in design and construction of ground floor level and associated drainage systems, and by maintenance and management of the property will further reduce any residual flood risk.

Additionally sustainable drainage systems (SuDS) have been incorporated into the proposed development as per the requirements of the *Cork City Development Plan 2022-2028*. These measures are discussed in further detail within the Engineering Report prepared by Murphy Matson O’Sullivan Consulting.

In relation to increased rainfall, this has been considered in the landscaping requirements for the proposed development. As per advice from Forestbird Design (the landscape architects on the project) the increased frequency of saturated ground can be more damaging to the landscape than drought conditions. Increased wet days can impact tree root health (rotting) and tree stability. To accommodate this, the proposed native trees have a higher percentage of Alder, Willow and Birch that are more tolerant of such conditions and are better at absorbing groundwater. It is also proposed to use Pedunculate Oak rather than Sessile Oak, which is better at adjusting to more saturated soils.

It can be concluded that overall the proposed development has low vulnerability to flood risk.

8.7.2.2.2 Extreme Wind, Fog, Lightning & Hail

In relation to extreme winds, the building shall be designed to the appropriate standards to account for the relevant wind loadings events for RCP4.5 and RCP8.5. If required as part of the building design, lightning protection shall be provided for. Hail and fog are not predicted to significantly affect the building due to its design.

Increased intensity of storms and wind speeds has been considered in relation to the landscaping proposals for the proposed development. As per advice from Forestbird Design (the landscape architects on the project) most of our native trees can tolerate a high degree of wind, but as a coping mechanism they do like to shed branches in order to keep the tree alive and standing. Where we have a density in the public realm, this isn't always suitable, particularly with larger canopy trees. The proposed development requires large canopy trees, so in that regard, a small percentage of non-native Acer species have been included that have a very high wind tolerance to improve public safety.

It can be concluded that overall the proposed development has low vulnerability to extreme wind, fog, lightning and hail.

8.7.2.2.3 Wildfires

In relation to wildfires, the *Think Hazard!* tool developed by the Global Facility for Disaster Reduction and Recovery (GFDRR, 2025), indicates that the wildfire hazard is classified as medium for the Cork area. This means that there is between a 10% to 50% chance of experiencing weather that could support a hazardous wildfire that may poses some risk to life and property loss in any given year. Future climate modelling indicates that there could be an increase in the weather conditions which are favourable to fire conditions. These include increases in temperature and prolonged dry periods. However, due to the project location in a built-up, urban area the risk of wildfire is significantly lessened and it can be concluded that the proposed development is of low vulnerability to wildfires.

8.7.2.2.4 Landslides

The Geological Society of Ireland (GSI) landslide susceptibility mapping database (GSI, 2025) was reviewed to inform the risk from landslides at the proposed development. There have not been any historical landslide events in the vicinity of the proposed development and the area is of made ground which is considered of low susceptibility to future landslides. Therefore, the vulnerability of the proposed development to landslides is classed as low.

8.7.2.2.5 Extreme Temperatures (Heat & Cold) & Drought

Extreme temperatures, both extreme heat and extreme cold, have the potential to impact the building materials and some related infrastructure. However, high quality, durable building materials will be selected for the proposed development at the detailed design stage. Throughout detailed design phase, the architects will be using guidance documents to inform with design detail decisions including; the EU Commission *Technical Guidance on Adapting Buildings to Climate Change* (European Commission (2021a), LETI emergency design guide (LETI, 2020), and the latest available IPCC report. In addition, should updated EuroCodes be published prior to completion of detailed design, which will include consideration for climate impacts, these design standards will be taken into account.

8.7.2.2.6 Summary

Overall, the proposed development has at most low vulnerabilities to the identified climate hazards. Therefore, no detailed risk assessment is required.

8.7.2.3 CCRA Significance of Effects

With design mitigation in place, there are no significant risks to the proposed development as a result of climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the proposed development as a result of climate change are **direct, long-term, negative** and **imperceptible**, which is overall **not significant** in EIA terms.

8.7.3 Cumulative Effects

With respect to the requirement for a cumulative assessment the IEMA (IEMA, 2022) and TII (TII, 2022a) guidance on which the assessment is based states that:

“the identified receptor for the GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland’s trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland’s ability to meet its national carbon reduction target. This assessment approach is considered to be inherently cumulative”.

The traffic data used for the operational phase assessment included cumulative traffic from existing and permitted developments in the surrounding area. Therefore, this impact assessment is cumulative.

As per the above, the cumulative impact of the proposed development in relation to GHG emissions is considered **direct, long-term, negative** and **slight**, which is overall **not significant** in EIA terms.

8.7.4 Summary

The following table summarises the identified likely significant effects on climate due to the proposed development before mitigation measures are applied.

Table 8.10 Summary of Likely Significant Effects in the absence of mitigation

Likely Significant Effect in accordance with EPA Terminology	Quality	Significance	Extent	Probability	Duration	Type
GHG emissions from construction materials & activities and operational energy usage	Negative	Significant (moderate adverse as per Table 8.3)	National	Likely	Long-term	Direct
Climate change and related vulnerability of the proposed development	Negative	Not significant - slight	Local	Likely	Long-term	Direct

8.8 Mitigation Measures

8.8.1 Incorporated Design Mitigation

A number of measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change (Section 8.7.2.2). Landscaping planting elements have been chosen with consideration for climate change impacts in future years.

In relation to operational energy usage information from the project building engineers has been used to inform this assessment. The incorporated design measures in relation to operational energy are outlined below:

- The development will be in compliance with the requirements of the Near Zero Energy Building (NZEB) Standards.
- The development is targeting a Building Energy Rating (BER) of A3.
- High efficiency air to water heat pumps will be installed to provide both heating and hot water to each apartment unit.
- The ventilation system will be Central Mechanical Extract Ventilation (CMEV) systems which will continuously extract from wet rooms and kitchens while providing fresh air via trickle vents in all habitable rooms in accordance with both Part F and Part L of the Building Regulations.
- The thermal performance of the building will meet or exceed the current Part L back stop values including floors, walls, windows and roofs.

These identified measures will aid in reducing the impact to climate during the operational phase of the proposed development in line with the goals of the Climate Action Plan.

8.8.2 Demolition Phase Mitigation

Embodied carbon of demolition waste materials will be the primary source of climate impacts during the demolition phase. The following measures will aid in reducing the embodied carbon impact of the demolition wastes:

- Creating a demolition and construction program which allows for sufficient time to determine reuse and recycling opportunities for demolition wastes.
- Appointing a suitably competent demolition contractor who will undertake a pre-demolition audit detailing resource recovery best practice and identify materials/building components that can be reused/recycled.
- Materials will be reused on site within the new build areas where possible.

8.8.3 Construction Phase Mitigation

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. The following measures to reduce the embodied carbon of the construction works are:

- Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled.
- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.
- Sourcing materials locally where possible to reduce transport related CO₂ emissions.
- Target embodied carbon rates for detailed design (LETI, 2020).

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

Throughout detailed design and construction phase, guidance documents to inform with design detail decisions shall be reviewed e.g. the EU Commission *Technical Guidance on Adapting Buildings to Climate Change* (European Commission (2021a), LETI emergency design guide (LETI, 2020), and the latest IPCC report.

8.8.4 Operational Phase Mitigation

The proposed development has been designed to reduce the impact on climate as a result of energy usage during operation. These measures are outlined in Section 8.8.1 above as incorporated design mitigation. No further operational phase mitigation is proposed.

8.9 Residual Impact Assessment

The impact to climate as a result of a proposed development must be assessed as a whole for all phases. The proposed development will result in some impacts to climate through the release of GHGs. TII reference the IEMA guidance which states that the crux of assessing significance is “*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*”. The proposed development has proposed some best practice mitigation measures and is committing to reducing climate impacts where feasible. As per the assessment criteria in Table 8.3 the residual impact of the proposed development in relation to GHG emissions is considered minor adverse, this equates to a **direct, long-term, negative** and **slight**, impact which is overall **not significant** in EIA terms.

In relation to climate change vulnerability, it has been assessed that there are no significant risks to the proposed development as a result of climate change. The residual effect of climate change on the proposed development is considered **direct, long-term, negative** and **imperceptible**, which is overall **not significant** in EIA terms.

8.9.1 Summary of Post-mitigation Effects

The following table summarises the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

Table 8.11 Summary of Effects Post Mitigation

Likely Significant Effect in accordance with EPA Terminology	Quality	Significance	Extent	Probability	Duration	Type
GHG emissions from construction materials & activities and operational energy usage	Negative	Not significant (minor adverse as per Table 8.3)	National	Likely	Long-term	Direct
Climate change and related vulnerability of the proposed development	Negative	Not significant	Local	Likely	Long-term	Direct

8.9.2 Cumulative Residual Effects

With respect to the requirement for a cumulative assessment the IEMA (IEMA, 2022) and TII (TII, 2022a) guidance on which the assessment is based states that:

“the identified receptor for the GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland’s trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland’s ability to meet its national carbon reduction target. This assessment approach is considered to be inherently cumulative”.

The traffic data used for the operational phase assessment included cumulative traffic from existing and permitted developments in the surrounding area. Therefore, this impact assessment is cumulative.

As per the above, the cumulative impact of the proposed development in relation to GHG emissions is considered **direct, long-term, negative** and **slight**, which is overall **not significant** in EIA terms.

8.10 Risk of Major Accidents or Disasters

As detailed in Section 8.7.2.2, climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. However, the potential for flooding on site has been reviewed and adequate attenuation and drainage have been provided for to account for increased rainfall in future years. All climate change related risks were categorised as ‘low’ as per Section 8.7.2.2.

8.11 Worst Case Scenario

Worst case estimates have been used as part of this assessment. As a result, Section 8.7 details the worst-case impact for the proposed development.

8.12 Interactions

Climate has the potential to interact with a number of other environmental attributes.

8.12.1 Land, Soils, Geology and Hydrology

The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for increased rainfall in future years as a result of climate change. The effect of the interactions between climate and land, soils, geology and hydrology are *direct, short-term, negative* and *imperceptible* during the construction phase and *direct, long-term, negative* and *imperceptible* during the operational phase, which is overall *not significant* in EIA terms.

8.12.2 Air Quality

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Chapter. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

8.12.3 Traffic and Transportation

During the construction and operational phase, there is the potential for interactions between climate and traffic. Vehicles accessing the site will result in emissions of CO₂, a greenhouse gas. The effects of the proposed development on climate are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are considered to be *direct, short-term, negative* and *not significant* during the construction phase and *direct, long-term, negative* and *not significant* during the operational phase, which is overall *not significant* in EIA terms.

8.12.4 Waste

Waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered to be *direct, short-term, negative* and *not significant* during the construction phase and *direct, long-term, negative* and *not significant* during the operational phase, which is overall *not significant* in EIA terms.

8.13 Monitoring

There is no monitoring required for the construction or operational phases.

8.14 Summary of Mitigation and Monitoring

The following table summarises the Construction Phase mitigation and monitoring measures.

Table 8.12 Summary of Construction Phase Mitigation and Monitoring

Likely Significant Effect	Proposed Mitigation	Proposed Monitoring
Impact of proposed development greenhouse gas emissions on climate.	Demolition Phase: • Creating a demolition and construction program which allows for sufficient time to determine reuse and recycling opportunities for demolition wastes. • Appointing a suitably competent demolition contractor who will undertake a pre-demolition audit detailing resource recovery best practice and identify materials/building components that can be reused/recycled. • Materials will be reused on site within the new build areas where possible. Construction Phase: • Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled. • Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods. • Ensure all plant and machinery are well maintained and inspected regularly. • Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site. • Sourcing materials locally where possible to reduce transport related CO₂ emissions. • Target embodied carbon rates for detailed design (LETI, 2020).	No monitoring proposed.
	Vulnerability of proposed development to future climate change. • Contractor will be required to mitigate against the effects of extreme rainfall/flooding, extreme winds/storms, temperature extremes, fog, lightning and hail through site risk assessments and method statements. • All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures.	

The following table summarises the Operational Phase mitigation and monitoring measures.

Table 8.13 Summary of Operational Phase Mitigation and Monitoring

Likely Significant Effect	Proposed Mitigation	Proposed Monitoring
Impact of proposed development greenhouse gas emissions on climate.	Incorporated design mitigation relating to operational energy usage. See Section 8.8.1 for further details.	No monitoring proposed.
Vulnerability of proposed development to future climate change.	Incorporated design mitigation regarding drainage design, landscaping requirements, building design. See Section 8.7.2.2 for further details.	No monitoring proposed.

8.15 Conclusion

This chapter has reviewed and analysed the potential and the predicted impacts of the proposed development with regards to climate. These impacts have been considered for both the construction and operational phases of the proposed development. The cumulative impact of the proposed development and surrounding developments have also been considered.

Provided all mitigation measures as set out in this chapter, the overall predicted effect of the proposed development is not significant in relation to GHG emissions and climate change risk.

8.16 References and Sources

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Environmental Protection Agency (2020b) Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach’

Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

Environmental Protection Agency (2024) Ireland's Provisional Greenhouse Gas Emissions 1990-2023

Environmental Protection Agency (2024a) National Climate Change Risk Assessment (NCCRA)

Environmental Protection Agency (2024d) Ireland's Greenhouse Gas Emissions Projections 2023-2050

Environmental Protection Agency (2024e) Ireland's Climate Change Assessment Synthesis Report

Environmental Protection Agency (2024f) Updated High-resolution Climate Projections for Ireland Research Report: 471

Environmental Protection Agency (EPA) (2021a) Critical Infrastructure Vulnerability to Climate Change Report No. 369

European Commission (2013) Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment

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European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report

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Institute of Environmental Management & Assessment (IEMA) (2020a) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation

Institute of Environmental Management & Assessment (IEMA) (2020b) GHG Management Hierarchy

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Transport Infrastructure Ireland (2022a) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document

Transport Infrastructure Ireland (2022b) PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects

Transport Infrastructure Ireland (2024) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document



CHAPTER NINE

NOISE & VIBRATION

CHAPTER NINE

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CHAPTER NINE | Noise & Vibration

9.1 Introduction

This EIAR Chapter has been prepared by Awn Consulting Ltd (AWN) to assess the potential noise and vibration effects of the proposed development in the context of current relevant standards and guidance.

This chapter includes a description of the receiving ambient noise climate in the vicinity of the subject site and an assessment of the potential noise and vibration impact associated with the proposed development, during both the short-term construction phase and the long-term operational phase. The assessment of direct, indirect and cumulative noise and vibration effects on the surrounding environment have been considered in this chapter.

Noise and vibration impact is considered in terms of two aspects. The first is the outward effect of the proposed development on its surrounding environment, and the second is the inward effect of existing noise sources in the surrounding environment on the development itself. A full project description is included in Chapter 2: Site Location & Project Description of this Environmental Impact Assessment Report (EIAR).

9.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Abe Scheele (Acoustic Consultant) who holds the Institute of Acoustics Diploma in Acoustics and Noise Control, along with City & Guilds Level 1 and 2 in Sound Engineering and City & Guilds Music Technology. Abe has been working in the field of acoustics since 2016. He is experienced in environmental, building and architectural acoustics. He has knowledge of surveying, computer modelling, impact assessment of environmental noise and architectural acoustic assessments for various sectors including, industrial, commercial, and residential and been involved in the preparation of EIARs for the following projects:

- Deerpark Howth
- Cratloe Road, Limerick
- Q3 Carrickmines

9.3 Proposed Development

The proposed development will include the conservation, conversion and extension of the former Good Shepherd Convent, Home Building, Orphanage Building, Well Site, Gate Lodge, and Bakehouse to provide student accommodation and ancillary services. A full description is included in Chapter 2 of this EIAR and in the statutory notices.

9.4 Methodology

9.4.1 Assessment Overview

The following methodology has been prepared based on the requirements of the EPA Guidelines the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022) and on Awn's experience of preparing the noise and vibration chapters for similar developments. The following approach has been used for this assessment:

- Baseline noise monitoring has been undertaken at the development site in order to characterise the existing noise environment;

- A review of the most applicable standards and guidelines has been reviewed in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development;
- Predictive calculations have been performed to estimate the likely noise emissions during the construction phase of the proposed development at the nearest Noise Sensitive Locations (NSLs) to the site;
- Predictive calculations have been performed to assess the potential effects associated with the operation of the proposed development at NSLs surrounding the site;
- An assessment has been completed of potential cumulative effects that may arise as a result of the proposed development and other existing or proposed plans and projects; and
- A schedule of mitigation measures has been proposed, where relevant, to control the noise and vibration emissions associated with both the construction and operational phases of the proposed development.

9.4.2 Criteria for Rating of Impacts

The assessment has been undertaken with reference to the most appropriate guidance documents relating to environmental noise and vibration which are set out in the following sections. There are no statutory standards in Ireland relating to noise and vibration limit values for construction works or for environmental noise relating to the operational phase. In the absence of specific statutory Irish guidelines, the assessment has made reference to non-statutory national guidelines, where available, in addition to international standards and guidelines relating to noise and / or vibration impact for environmental sources.

In addition to specific noise and vibration guidance documents, the following Environmental Protection Agency (EPA) Guidelines the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022) were considered and consulted in the preparation of this Chapter.

The significance of noise and vibration effects has been assessed in accordance with the EPA 2022 Guidelines. With regard to the quality of the effect, ratings may have positive, neutral or negative applications.

9.4.3 Assessment Criteria and Guidelines – Construction Phase

Local Authorities typically control construction activities by imposing limits on the hours of construction and consider noise limits at their discretion. Construction noise sources include construction plant and machinery, and construction related traffic on surrounding roads. Reference is made to the following guidelines and standards to inform the most appropriate construction noise and vibration significance thresholds and assessment methodologies:

- British Standard Institute (BSI) British Standard (BS) 5228-1:2009 +A1 2014 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise (hereafter referred to as BS 5228-1) (BSI 2014a);
- BS 5228-2:2009+A1:2014 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration (hereafter referred to as BS 5228 – 2) (BSI 2014b);
- BS 7385: 1993 Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration (hereafter referred to as BS 7385-2). (BSI 1993);
- BS 6472-1: 2008 Guide to evaluation of human exposure to vibration in buildings, Part 1 Vibration sources other than blasting (hereafter referred to as BS 6472-1) (BSI 2008);
- UK Highways Agency (UKHA) Design Manual for Roads and Bridges (DMRB) LA 111 Sustainability and Environmental Appraisal LA 111 Noise and Vibration Revision 2 (hereafter referred to as DMRB Noise and Vibration) (UKHA 2020); and
- International Organization for Standardization (ISO) 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors - Part 2: General method of calculation (hereafter referred to as ISO 9613 – 2) (ISO 1996).

9.4.3.1 Construction Noise

The British Standard BS 5228–1 (BSI 2014a) ‘ABC’ method is referenced here for the purposes of setting appropriate construction noise limits for the development. This is the most widely accepted standard for this purpose in Ireland.

The approach adopted calls for the designation of a noise sensitive location into a specific category (A, B or C) based on exiting ambient noise levels in the absence of construction noise. For the appropriate assessment period (i.e. daytime in this instance) the ambient noise level is determined and rounded to the nearest 5 dB. This then sets a threshold noise value that, if exceeded at this location, indicates a potential significant noise effect is associated with the construction activities, depending on context. Note that, in accordance with the BS5228-1 guidance, this assessment criterion is only applicable to residential receptors.

Table 9.1 sets out the construction noise thresholds (CNTs) at the façade of residential receptors for the different baseline noise categorises from BS 5228-1.

Table 9.1 Threshold of Potential Significant Effect at Dwellings

Assessment category and threshold value period (L _{Aeq})	Threshold value, in decibels (dB)		
	Category A ^a	Category B ^b	Category C ^c
Daytime (07:00 – 19:00) and Saturdays (07:00 – 14:00)	65	70	75
Evenings and weekends D	55	60	65
Night-time (23:00 to 07:00hrs)	45	50	55

Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.
Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

9.4.3.2 Proposed Threshold Noise Levels

Taking into account the proposed documents outlined above and making reference to the baseline noise environment monitored around the development site (see Section 9.6), BS 5228-1 has been used to inform the assessment approach for construction noise.

- The following Construction Noise Threshold (CNT) levels are proposed for the construction stage of this development:
- For residential NSLs in proximity to the main site development works, Category A values are deemed appropriate using the ABC method.
 - For commercial premises, the Category C value is considered an appropriate threshold value.
 - There is no scheduled night-time construction work proposed as part of the proposed development.

9.4.3.3 Significance of Construction Noise Levels (CNL)

In order to assist with interpretation of significance relating a calculated construction noise level (CNL), Table 9.2 includes guidance as to the likely magnitude of impact associated with construction noise, relative to the CNT. This guidance is derived from DMRB: Noise and Vibration (UKHA 2020) and adapted to include the EPA EIAR Guidelines.

Table 9.2 Construction Noise Significance Ratings

Guidelines for Noise Impact Assessment Significance (DMRB)	Construction Noise Level per Period	EPA EIAR Significance Effects	Determination
Negligible	Below or equal to baseline noise level	Not Significant	Depending on CNT, duration & baseline noise level
Minor	Above baseline noise level and below or equal to CNT	Slight to Moderate	
Moderate	Above CNT and below or equal to CNT +5 dB	Moderate to Significant	
Major	Above CNT +5 dB	Significant, to Very Significant	

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely effects during the construction stage.

9.4.3.4 Construction Vibration

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. For the purpose of the proposed development, the range of relevant criteria used for surface construction works for both building protection and human comfort are expressed in terms of Peak Particle Velocity (PPV) in mm/s.

Peak Particle Velocity (PPV) is a measure of the velocity of vibration displacement in terms of millimetres per second (mm/s). It is defined as follows within BS 7385-2 (BSI 1993) as ‘the maximum instantaneous velocity of a particle at a point during a given time interval’.

Building Response

There is no published statutory Irish guidance relating to the maximum permissible vibration level. The following standards are the most widely accepted in this context and are referenced here in relation to cosmetic or structural damage to buildings:

- British Standard BS 5228-2 (BSI 2014b); and
- British Standard BS 7385-2 (BSI 1993)

BS7385-2 (BSI 1993) and BS5228-2 (BSI 2014b) advise that, for soundly constructed residential properties and similar light-framed structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz and 50 mm/s at 40 Hz and above for transient vibration. Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the

guide values in Table B.2 of BS5228-2 (BSI 2014b) might need to be reduced by up to 50%. On a cautious basis, therefore, continuous vibration limits are set as 50% of those for transient vibration across all frequency ranges. For buildings or structures that are structurally unsound, lower vibration magnitudes will apply, typically 50% of those for structurally sound buildings. Protected or historic buildings are not automatically assumed to be more vulnerable to vibration unless they have existing structural defects. The recommend transient vibration thresholds from BS5228-2 (BSI 2014b) for the avoidance of cosmetic damage to light framed and residential buildings are summarised in Table 9.3.

Table 9.3 Recommended Construction Vibration Threshold for Control of Building Damage

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of: -		
Less than 15Hz	15 to 40Hz	40Hz and above
15mm/s	20mm/s	50mm/s

Human Response

Human response to vibration stimuli occurs at orders of magnitude below those associated with any form of building damage, hence vibration levels lower than those indicated in Table 9.3 can lead to concern. Table 9.4 presents the significance table relating to potential effects to building occupants during construction based on guidance from BS5228-2 (BSI 2014b), the DMRB Noise and Vibration (UKHA 2020) document and the associated EPA significant ratings.

Table 9.4 Guidance on Effects of Human Response to PPV Magnitudes

PPV Range	BS 5228-2 (Note A, B, C)	DMRB Impact Magnitude	EPA Significance Ratings
≥10 mm/s PPV	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.	Very High	Very Significant
≥1 to 10 mm/s PPV	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents	High	Significant to Very Significant
≥0.3 to <1 mm/s PPV	Vibration might be just perceptible in residential environments.	Medium	Slight to Moderate
<0.3 mm/s PPV	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	Low	Not significant

Notes from BS5228-2

- A) The magnitudes of the values presented apply to a measurement position that is representative of the point of entry into the recipient.
- B) A transfer function (which relates an external level to an internal level) needs to be applied if only external measurements are available.
- C) Single or infrequent occurrences of these levels do not necessarily correspond to the stated effect in every case. The values are provided to give an initial indication of potential effects, and where these values are routinely measured or expected then an assessment in accordance with BS 6472 (BS1 2008), and/or other available guidance, might be appropriate to determine whether the time varying exposure is likely to give rise to any degree of adverse comment.

9.4.3.5 Construction Phase Traffic Noise

Vehicular movement to and from the construction site for the proposed development will make use of the existing road network. In order to assess the potential impact of additional traffic on the human perception of noise, the following two guidelines are referenced: DMRB Noise and Vibration (UKHA 2020) and the EPA Guidelines (EPA, 2022). For construction traffic, due to the short-term period over which this impact occurs, the magnitude of impacts is assessed against the ‘short term’ period in accordance with the DMRB Noise and Vibration (UKHA 2020) document.

Table 9.5 sets out the classification of changes in noise level to impact on human perception based on the guidance contained in these documents.

Table 9.5 Classification of Magnitude of traffic noise changes for Construction Traffic

Change in Sound Level (dB)	Subjective Reaction	DMRB Impact Magnitude (Short-term)	EPA Significance Ratings
Less than 1 dB	Inaudible	Negligible	Imperceptible
1 – 2.9	Barely Perceptible	Minor	Not Significant
3 – 4.9	Perceptible	Moderate	Slight, Moderate
≥ 5	Up to a doubling of loudness	Major	Significant

9.4.4 Assessment Criteria and Guidelines – Operational Phase

The main potential source of outward noise from the proposed development will be limited to traffic flows to and from the development site onto the public roads. There may also be an element of mechanical and electrical plant required to service the apartment buildings. The relevant guidance documents used to assess potential operational noise, and vibration impacts on the surrounding environment are summarised below.

- BS 8233:2014 Guidance on sound insulation and noise reduction for buildings (hereafter referred to as BS 8233) (BSI 2014c);
- BS 4142: 2014 +A1 2019 Methods for Rating and Assessing Industrial and Commercial Sound (hereafter referred to as BS 4142) (BSI 2019);
- ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures (hereafter referred to as ISO 1996 – 1) (ISO 2016);
- The UK Department of Transport Calculation of Road Traffic Noise (hereafter referred to as the CRTN) (UK Department of Transport 1988).
- UK Highways Agency (UKHA) Design Manual for Roads and Bridges (DMRB) LA 111 Sustainability and Environmental Appraisal LA 111 Noise and Vibration Revision 2 (UKHA 2020);
- Cork Agglomeration Noise Action Plan 2024 – 2028 (Cork County Council 2024)
- International Organization for Standardization (ISO) 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors - Part 2: General method of calculation (hereafter referred to as ISO 9613 – 2) (ISO 1996);
- ANC, IOA & CIEH (2017). ProPG: Planning & Noise – Professional Practice Guidance on Planning & Noise – New Residential Development (hereafter referred to as ProPG: Planning and Noise).

9.4.4.1 Operational Phase Traffic Noise

Vehicular movement to and from the proposed development will make use of the existing road network and new junction arrangement. Given that traffic from the development will make use of existing roads already carrying traffic volumes, it is appropriate to consider the increase in traffic noise level that arises as a result of any additional vehicular movements associated with the development.

In order to assess the potential impact of additional traffic on the human perception of noise, the following two guidelines are referenced DMRB Noise and Vibration (UKHA 2020) and the EPA EIAR Guidelines (EPA, 2022) which categorise the magnitude of effect relating to changes in road traffic. For the operational phase, traffic noise impacts are assessed against the ‘long term’ magnitude ratings from the DMRB. These are discussed in Table 9.6.

Table 9.6 Likely Impact Associated with Change in Traffic Noise Level

Change in Sound Level (dB)	Subjective Reaction	DMRB Impact Magnitude (Long -term)	EPA Significance of Effect
0	Inaudible	No impact	Imperceptible
0.1 – 2.9	Barely Perceptible	Negligible	Not significant
3 – 4.9	Perceptible	Minor	Slight, Moderate
5 – 9.9	Up to a doubling of loudness	Moderate	Significant
10+	Doubling of loudness and above	Major	Very significant

9.4.4.2 Mechanical and Electrical Services Criteria

The proposed development is residential in nature comprising a mixture of houses, duplex and apartments. There will be minimal mechanical and / or electrical plant items required to service the development that will generate any audible noise levels outside of the site boundary or at the developments buildings themselves. Plant contained within enclosed plant rooms has the least potential for impact, once consideration is given to appropriate design of the space.

The closest noise sensitive locations to any operational plant items are residential properties adjacent to the proposed development and the residential dwellings within the proposed development itself.

Good practice guidance on noise emissions from mechanical plant items would typically make reference to the British Standard BS 4142: 2014 +A1 2019: Method for Rating and Assessing Industrial and Commercial Sound. This document is the industry standard method for analysing building services plant noise emissions to residential receptors and is the document used commonly by local authorities in their standard planning conditions and also in complaint investigations.

BS 4142 describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

For an appropriate BS 4142 assessment, it is necessary to compare the measured external background noise level (i.e. the $L_{A90,T}$ level measured in the absence of plant items) to the rating level ($L_{Ar,T}$) of the various plant items, when operational.

Where noise emissions are found to be tonal, impulsive in nature or irregular enough to attract attention, BS 4142 also advises that a penalty be applied to the specific level to arrive at the rating level.

The subjective method for applying a penalty for tonal noise characteristics outlined in BS 4142 recommends the application of a 2 dB penalty for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible.

The following definitions are taken from BS 4142:

“ambient noise level, $L_{Aeq,T}$ ” is the noise level produced by all sources including the sources of concern, i.e. the residual noise level plus the specific noise of mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].

“residual noise level, $L_{Aeq,T}$ ” is the noise level produced by all sources excluding the sources of concern, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].

“specific noise level, $L_{Aeq,T}$ ” is the sound level associated with the sources of concern, i.e. noise emissions solely from the mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].

“rating level, $L_{Ar,T}$ ” is the specific sound level plus any adjustments for the characteristic features of the sound (e.g. tonal, impulsive or irregular components);

“background noise level, $L_{A90,T}$ ” is the sound pressure level of the residual noise that is exceeded for 90% of the time period T.

If the rated plant noise level is +10 dB or more above the pre-existing background noise level, then this indicates that complaints are likely to occur and that there will be a significant adverse impact. A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

Once operational noise levels within the proposed residential units are controlled to within the criteria within BS 4142 discussed above, operational noise emissions to the surrounding environment will be minimal. The operational noise impact to the surrounding existing NSLs is therefore not significant.

9.4.4.3 Other Noise Sources

For operational activities associated with the development that are not continuous in nature or entertainment noise, it is considered more appropriate to set noise limits at the nearest noise sensitive locations using guidance contained within British Standard BS 8233 (2014): *Guidance on Sound Insulation and Noise Reduction for Buildings*. This Standard sets out recommended noise limits for indoor ambient noise levels as listed in Table 9-7.

For the purposes of this study, it is appropriate to derive external limits based on the internal criteria noted in the paragraph above. This is done by factoring in the degree of noise reduction afforded by a partially open window. This is typically taken to be 15dB(A).

As short periods of noise have the potential to cause a greater disturbance at night-time, a shorter assessment time period (T) is adopted. Appropriate periods are 1 hour for daytime (07:00 to 23:00 hours) and typically 5 minutes for night-time (23:00 to 07:00 hours).

In summary, the following criteria for non-plant items apply at the façades of those residential properties closest to the proposed development:

- Daytime (07:00 to 23:00hrs) 50 dB L_{Aeq,1hr}
- Night-time (23:00 to 07:00hrs) 45 dB L_{Aeq,15min}

9.4.4.4 Operational Phase – Vibration Criteria

There are no sources of vibration associated with the operational phase, therefore, vibration criteria have not been specified for this phase.

9.4.5 Criteria for Assessing Inward Noise Impacts

9.4.5.1 Cork County Council Noise Action Plan

The Cork Agglomeration Noise Action Plan was revised in 2024 and states the following regarding suitable documents to assist with the assessment of new residential developments in relation to noise:

“Relevant standards and guidance for the consideration of noise where there is proposed new residential development near major transportation sources (roads and railways) include the Professional Planning Guidance on Planning & Noise: New Residential Development (ProPG, 2017), Acoustic Ventilation and Overheating, Residential Design Guide (AVO, 2021), BS 8233:2014 Guidance on sound Insulation and Noise Reduction for Buildings and ISO 19488:2021 Acoustics: Acoustic classification of dwellings”.

The NAP also states the following regarding the interaction between acoustic comfort and thermal requirements:

“The AVO guidelines provide an approach as to how the competing aspects of thermal and acoustic comfort can be managed, which is particularly important in situations where acoustic requirement may call for closed windows. BS 8233:2014 provides recommendations for the control of noise in and around buildings.”

To assist local authorities and in the absence of Irish planning guidance the Draft Interim National Guidance for the Consideration of Transportation Noise in the Design of New Residential Development was compiled in 2021 by the NIECE Local Authority Noise Subgroup with the express purpose:

“that good acoustic design should be implemented from the outset of the design of new residential developments and recommends the use of the ProPG approach to bringing people to noise and cognisance of BS 8233:2014 and the AVO guidelines.”

With reference to new residential developments located in close proximity to major roads the NAP states the following:

“All new applications for residential developments shall be assessed in accordance with and where there is the likelihood of an adverse noise impact near major roads. Guidance on Acoustic Design Statements can be accessed in ‘Professional Practice Guidance on Planning and Noise: New Residential Developments’ (ProPG) .”

9.4.5.2 Professional Practice Guidance on Planning and Noise (ProPG 2017)

The ProPG: Planning and Noise document is generally considered best practice guidance adopted in Ireland the absence of equivalent Irish guidance for inward noise impact assessments, i.e., for assessing the impact of an existing source of new planned residential developments.

The ProPG outlines a systematic risk based 2-stage approach for evaluating noise exposure on prospective sites for residential development. The two primary stages of the approach can be summarised as follows:

Stage 1: Comprises a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels.

Stage 2: Involves a detailed appraisal of the Proposed Development dependent on the risk category of the site and considers the site design and layout, internal noise levels and external noise in amenity areas.

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorisation of the site as a negligible, low, medium or high risk, based on the pre-existing noise environment. Figure 9-1 presents the basis of the initial noise risk assessment; it provides appropriate risk categories for a range of continuous noise levels either measured and / or predicted on site.

A site should not be considered a negligible risk if more than 10 no. L_{AFMax} events exceed 60 dB during the night period, and the site should be considered a high risk if the L_{AFMax} events exceed 80 dB more than 20 times a night.

Element 2 of the ProPG: Planning and Noise document sets out recommended internal noise targets derived from BS 8233: 2014 (BSI 2014c); The recommended indoor ambient noise levels are set out in and are based on annual average data. In addition to these absolute internal noise levels, ProPG: Planning and Noise provides guidance on flexibility of these internal noise level targets. For instance, in cases where the development is considered necessary or desirable, and noise levels exceed the external noise guidelines, then a relaxation of the internal L_{Aeq} values by up to 5 dB can still provide reasonable internal conditions.

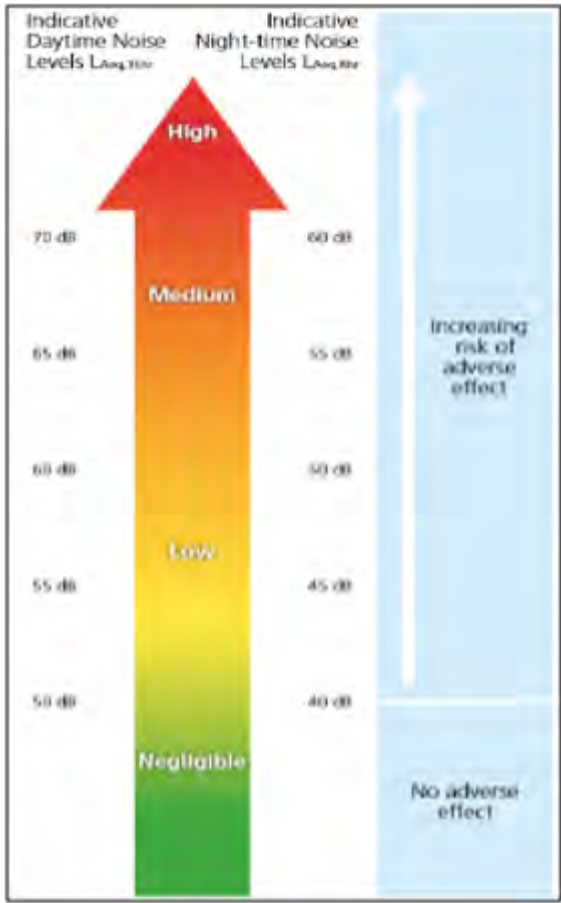


Figure 9.1 ProPG Stage 1 – Initial Noise Risk Assessment

Table 9.7 Guidance on Indoor Ambient Noise Levels for Dwellings

Activity	Location	Daytime (07:00 to 23:00hrs)	Night (23:00 to 07:00hrs)	Derived External Levels
Resting	Living Room	35 dB LAeq,16hr	-	50 dB LAeq,16hr
Dining	Dining Room	40 dB LAeq,16hr	-	55 dB LAeq,16hr
Sleeping (daytime resting)	Bedroom	35 dB LAeq,16hr	30 dB LAeq,8hr	50 dB LAeq,16hr (45 dB LAeq,8hr at night)

9.5 Difficulties Encountered

There were no significant difficulties encountered in compiling the specified information for this EIA chapter.

9.6 Baseline Environment

The subject site is located at the site of Good Shepherd convent, County Cork. The site is bound by residential properties to the North, East and South and Cork Gaol museum to the west.

9.6.1 Noise Survey

An environmental noise survey has been conducted at the site in order to quantify the existing noise environment. The survey was conducted in general accordance with ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise. Specific details are set out below.

9.6.1.1 Choice of Measurement Locations

The measurement locations were selected to represent the noise environment at noise-sensitive locations surrounding the proposed development. The selected measurement locations are shown in Figure 9.2 and described as follows in Table 9.8.

Table 9.8 Description of Noise Monitoring Locations

Monitoring Location	Description
AT1	Attended monitoring position at the western site boundary of the proposed development site, representative of the noise environment at Cork City Gaol museum/theatre. The closest NSLs at Blarney Street are approximately 10m from the proposed development boundary.
AT2	Attended monitoring position representative of the noise environment of existing residential properties along Blarney Street. The closest NSLs at Blarney Street are approximately 40m from the proposed development boundary.
AT3	Attended monitoring position representative of the noise environment of existing residential properties on the eastern boundary of the site. The closest NSLs to the east of the site are approximately 10m from the proposed development boundary.
UN1	Unattended monitoring position representative of the noise environment of the existing residential properties on the southern boundary of the site. The closest NSLs to the east of the site are approximately 10m from the proposed development boundary.



Figure 9.2 Baseline Noise Survey Locations

9.6.1.2 Survey Periods

Attended daytime noise measurements at locations AT1 to AT3 were conducted between 12:10hrs to 15:05hrs on 06 February 2025.

Unattended noise measurements at locations UN1 were conducted between 16:20hrs on 05 February 2025 to 16:20hrs on 06 February 2025.

The weather during the survey period was dry with 50% cloud cover. Wind speeds were generally moderate and below 5m/s,

Personnel and Instrumentation

AWN carried out all attended surveys. The following instrumentation was used in conducting the noise surveys:

Table 9.9 Equipment used for Noise Monitoring

Equipment	Type	Serial Number	Calibration Date
Sound Level Meter	Rion NL52	586940	February 2024
	Rion NL52	976162	September 2024
Calibrator	Rion NC-75	34313057	November 2024

9.6.1.3 Noise Measurement Parameters

The noise survey results are presented in terms of the following parameters:

L_{Aeq} is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.

L_{AFmax} is the instantaneous maximum sound level measured during the sample period using the ‘F’ time weighting.

L_{A90} is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The “A” suffix for the noise parameters denotes the fact that the sound levels have been “A-weighted” in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2×10^{-5} Pa.

9.6.1.4 Noise Survey Results

The results of the attended noise surveys at AT1, AT2, AT3 and UN1 are summarised in Table 9-10 to Table 9-13. It should be noted that a logarithmic average is used for the L_{Aeq} parameter, while an arithmetic average is used for the L_{A90} parameter.

Table 9.10 Summary of Attended noise measurements at AT1

Period	Time	L_{Aeq}	L_{Amax}	L_{A90}
Day	12:10	50	67	46
Day	13:10	48	63	46
Day	14:10	47	58	45

At AN1, noise levels were in the range 47 to 50 dB $L_{Aeq,15min}$ and 45 to 46 dB $L_{A90,15min}$. Wind noise in foliage and birdsong were the dominant sources at this location. Distant road traffic noise from Sunday’s Well Road was also audible, as well as occasional air traffic noise. Distant sirens were audible during the second measurement at this location.

Table 9.11 Summary of Attended noise measurements at AT2

Period	Time	L _{Aeq}	L _{Amax}	L _{A90}
Day	12:30	45	67	41
Day	13:30	43	59	40
Day	14:30	47	67	40

At AN2, noise levels were in the range 43 to 47 dB L_{Aeq,15min} and in the range of 40 to 41 dB L_{A90,15min}. Birdsong and distant road traffic from Blarney Street were the dominant sources of noise at this location. Some distant construction and drilling noise was audible intermittently, as well as occasional air traffic noise. A low flying plane passed overhead during the third measurement.

Table 9.12 Summary of Attended noise measurements at AT3

Period	Time	L _{Aeq}	L _{Amax}	L _{A90}
Day	12:50	53	65	42
Day	13:50	44	61	40
Day	14:50	55	63	42

At AN3, noise levels were in the range 44 to 55 dB L_{Aeq,15min} and in the range of 40 to 42 dB L_{A90,15min}. Birdsong was the constant dominant source at this location as well as distant road traffic noise from Sunday’s Well Road. Occasional air traffic noise was audible. During the first and third measurements, a nearby operating power washer was the dominant source of noise, as well as banging and construction noise from a nearby house.

Table 9.13 Summary of Attended noise measurements at UN1

Period	Time	L _{Aeq}	L _{A90}
Day	Average	48	45
	Max	53	50
	Min	42	38
Night	Average	44	42
	Max	49	40
	Min	48	39

At UN1, noise levels were in the range 40 to 53 dB L_{Aeq,15min} and in the range of 38 to 50 dB L_{A90,15min}. Birdsong and wind noise in foliage were the dominant noise sources at this location, with distant road traffic noise from Sunday’s Well Road and Convent Avenue also audible. Occasional air traffic passing overhead was audible.

Noise levels measured at UN1 are graphed in Figure 9.3. The frequency of night time L_{max} events is graphed in Figure overleaf.

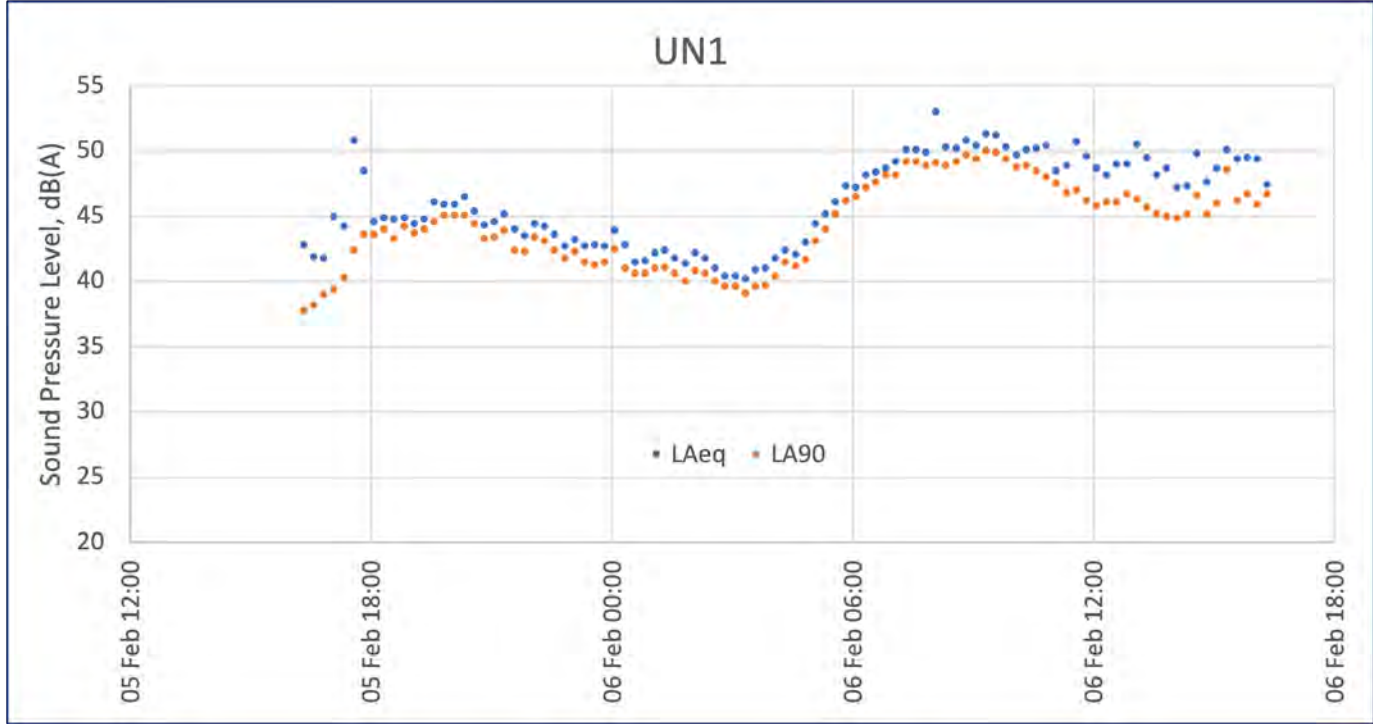


Figure 9.3 UN1 Graphed Noise Levels

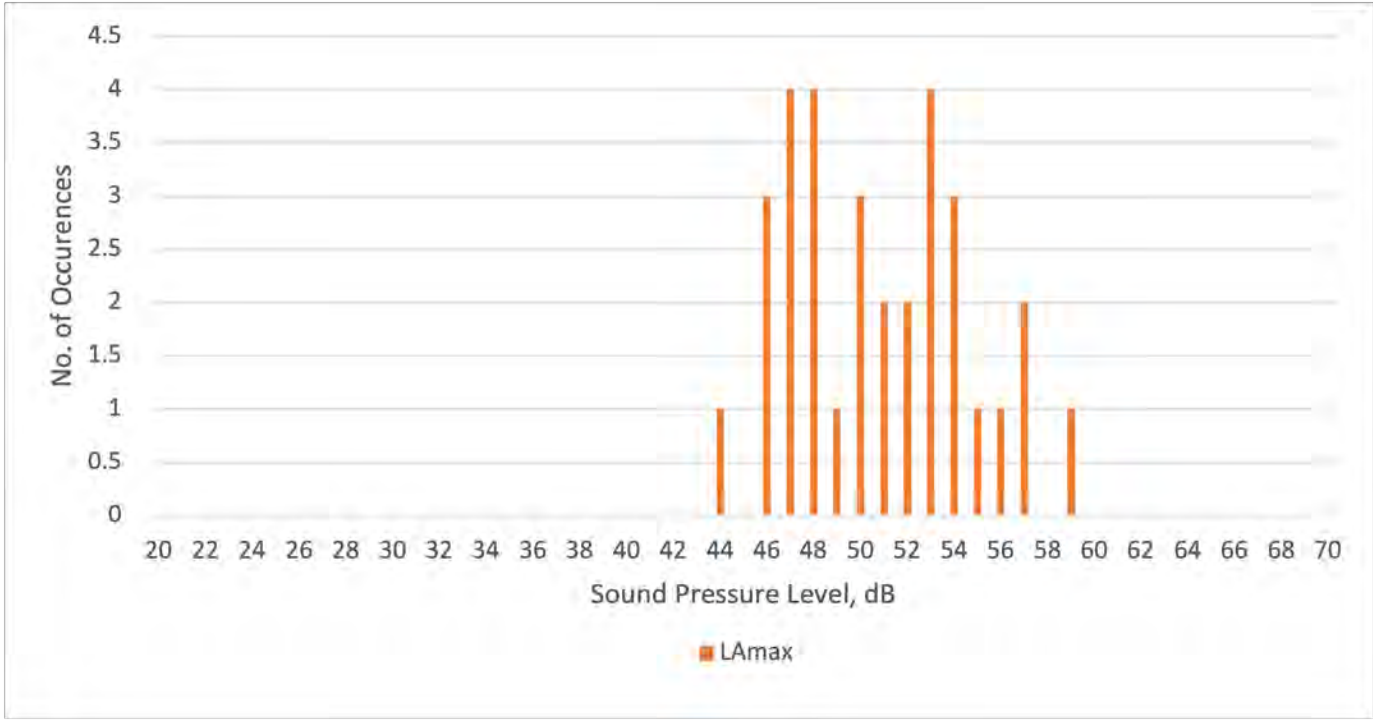


Figure 9.4 Night Time L_{max} Number of Occurrences

9.7 The 'Do nothing' Scenario

In the absence of the proposed project, the existing noise and vibration levels within the study area are expected to remain largely unchanged. The current baseline conditions characterised by the noise surveys within Section 9.6.1 will continue to prevail.

9.8 Characteristics of the Proposed Development

The proposed development will include the conservation, conversion and extension of the former Good Shepherd Convent, Home Building, Orphanage Building, Well Site, Gate Lodge, and Bakehouse to provide student accommodation and ancillary services.

A full description is included in Chapter 2 of this EIAR and in the statutory notices.

When considering a development of this nature, the potential noise and vibration impact on the surroundings must be considered for each of two distinct stages:

- the construction and demolition phase, and;
- the operational phase.

9.8.1 Construction Phase

The highest potential noise and vibration impact of the proposed development will occur during the construction phase due to the activity of mobile and construction plant items with high noise levels.

During the construction phase, activities will involve site clearance, demolition, excavation and foundation works during the early-stage clearance and ground works. At this point it is not yet determined whether rock breaking or piling will be required. This assessment has accounted for impacts from both rock breaking and piling should they be required. Following this structural and building works associated be undertaken. Following the main ground and structural works, internal fit out works and landscaping will occur. Five phases of construction are proposed. For each stage there will be on-site plant and equipment operating in addition to construction traffic including movement of machinery and materials within and to and from the construction site.

A variety of items of plant will be in use during these construction work all of which have the potential to generate high levels of noise. These will include excavators, loaders, dozers, cranes and static plant such as generators, compressors and pumps.

In the absence of piling or rock breaking, vibration associated with the proposed construction site activities will be low due to the absence of any intrusive ground works and the distance between the works and the nearest structures and buildings. In a scenario where piling or rock breaking is required, vibration magnitudes will be far below those associated with structural damage.

The potential impact associated with these activities are discussed in the following sections.

9.8.2 Operational Phase

Once operational, there are no major noise sources associated with the proposed development which is residential in nature. The range of operational activities are in line with those in the surrounding environment at nearby existing and planned residential areas (e.g., local vehicle movements, amenity and commercial/retail areas etc.). None of these activities are associated with any significant noise impacts to the surrounding noise environment. The main potential source of outward noise from the proposed development is associated with traffic flows to and from the development site on the surrounding road network and occasional noise associated with communal areas. There will also be potential for an element of mechanical and electrical plant required to service apartment buildings and the interpretive centre to the southwest of the proposed development.

9.9 Potential Significant Effects

9.9.1 Construction Phase

9.9.1.1 Closest NSLs and Noise Thresholds

The construction of the proposed development will occur over five construction phases. The proposed construction phasing program is highlighted below in Figure 9.5. As the works in each phase are completed the residential units within the completed phases, once occupied, will become NSLs.



Figure 9.5 Proposed Construction Phasing for Proposed Development

Figure 9.6 illustrates the location of the closest NSLs in the surrounding environment. These NSLs are also discussed below in Table 9.14 in relation to their position and distance from the proposed development.

Table 9.14 NSLs Closest to Development

NSL	Description	Approximate distance from closest NSL to Proposed Development Construction Works
1	NSL 1 represents residential houses to the north of the proposed development along Blarney Street.	50m
2	NSL 2 represents residential houses to the east of the proposed development and will be bounded to the west by properties within the proposed development.	20m
3	NSL 3 represents residential houses to the south east boundary of the proposed development.	10m
4	NSL 4 represents residential houses to the south east boundary of the proposed development.	10m
5	NSL 5 represents residences to the south of the southern boundary.	15m
6	NSL 6 is Cork City Gaol museum to the west of the proposed development.	40m

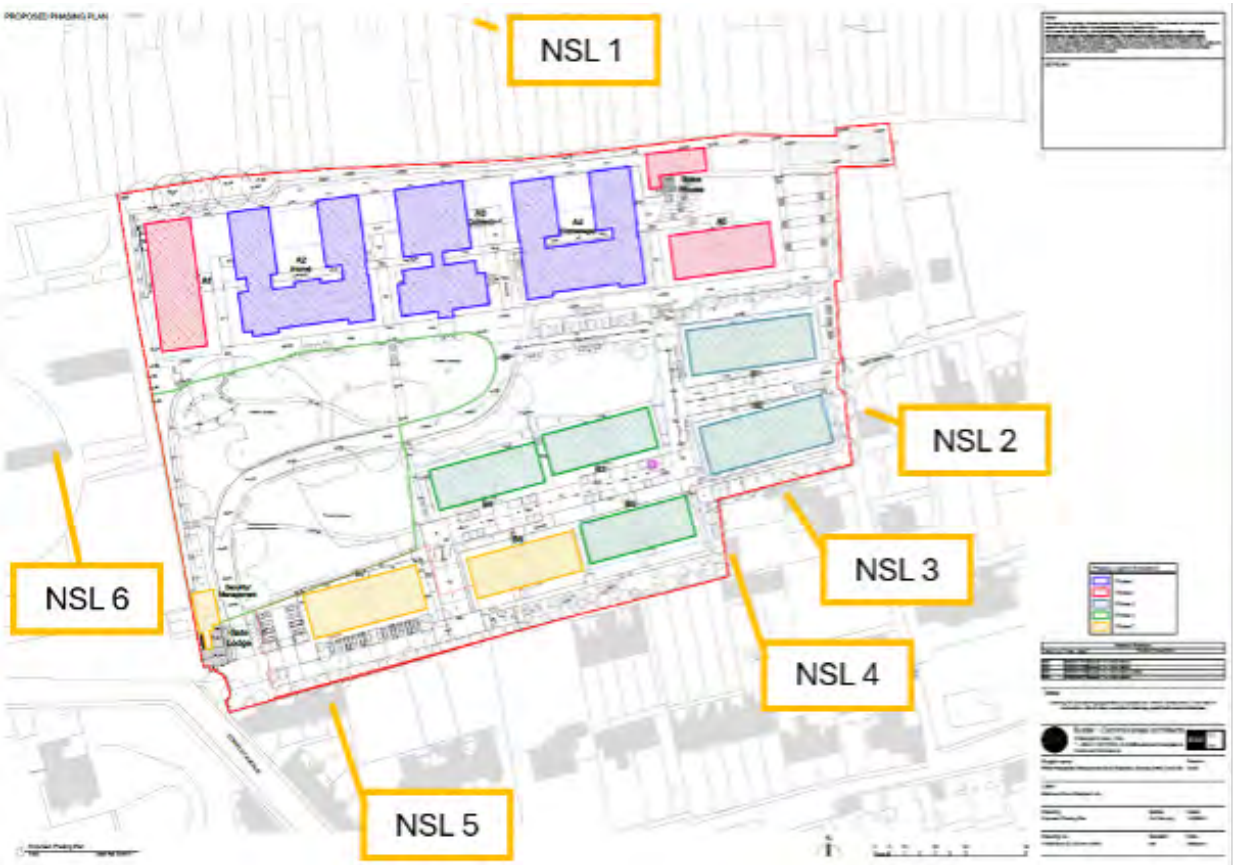


Figure 9.6 Identified NSLs during Construction

The construction noise threshold is determined by referring to Table 9.1(BS 5228-1) and the baseline ambient noise levels (as referred to in Section 9.6.1), as outlined in the assessment criteria section.

The standard working hours for the proposed development as outlined within the CEMP are as follows:

- Monday to Friday: 08:00 to 18:00hrs;
- Saturdays: 08:00 to 14:00hrs,

The CEMP also notes that it is not anticipated that work will take place on Sundays and Bank Holidays. Should there be a requirement for works outside of the normal working hours a written submission seeking authorisation will be made to Cork County Council.

Based on the prevailing noise environment measured, the construction noise thresholds are defined from Category A as appropriate and defined within Table 9.1.

- Category A sets the following construction noise thresholds:
- Monday to Friday (07:00 – 19:00) 65 dB L_{Aeq,T}
- Saturdays (07:00 – 14:00hrs) 65 dB L_{Aeq,T}
- Evening and Saturday afternoons (14:00 – 23:00hrs) 55 dB L_{Aeq,T}

9.9.1.2 Source Noise Levels

Since the construction programme has been established in outline form, construction noise associated with activities on site during each construction phase are reviewed for the purposes of determining the likely significant effects. Indicative ranges of noise levels associated with construction may be calculated in accordance with the methodology set out in BS 5228-1. This standard sets out sound power and sound pressure levels for plant items normally encountered on construction sites, which in turn enables the prediction of noise levels.

Given that the construction stage is highly transient in nature and involves a number of various stages which will encompass a range of different activities on a day to day and week to week basis, it is not possible to calculate with a high degree of accuracy the specific levels of noise associated with each stage. The construction stage will be undertaken over a number of stages from site preparation through to building construction and internal fit out. Expected typical levels of noise associated with the key stages of work are discussed below. For the purposes of this assessment the various phases of construction have been split into two distinct phases the more noise intrusive site clearance works and the general construction anticipated to take place on a development of this nature.

9.9.1.2.1 Piling and Rockbreaking

It is not yet known at this stage whether piling or rockbreaking are likely to be required. For the purposes of the assessment it has been assumed that piling and rockbreaking will be taking place.

Reference to BS 5288-1 indicates that highest noise levels on the site are associated with activities associated with rock breaking and king post drilling associated with building foundations. Noise levels from these activity types are typically in the range of 80 to 90 dB L_{Aeq} at 10m.

For construction activities associated with rock breaking and foundation phase using king post drilling , a total construction noise level of 92 dB L_{Aeq,T} at 10m has been used for the purposes of indicative calculations. This would involve for example, one item of

plant at 90 dB L_{Aeq} and two items of plant at 85 dB L_{Aeq} and one item of plant at 80 dB L_{Aeq} operating simultaneously within one work area which is considered a highly worst-case scenario.

For construction works associated with such activities as rotary piling and demolition works including pulverisers and concreting works etc. noise levels are typically in the range of 80 dB L_{Aeq} at 10m. A total construction noise level of 85 dB L_{Aeq} at 10m has been used for the purposes of indicative calculations for these activities representing a variety of plant items and activities over this stage. This would include, for example three items of plant at 83 dB L_{Aeq} and two items of plant at 80 dB L_{Aeq} operating simultaneously within one work area resulting in a total noise level of 85 dB L_{Aeq} .

9.9.1.2.2 Site Clearance and Ground Preparation Works

For site clearance, building construction works, road works and landscaping works typical plan items will include excavators, loaders, dozers, concreting works, mobile cranes and generators. Noise source levels are quoted in the range of 70 to 80 dB L_{Aeq} at distances of 10 m within BS 5228-1. For the purposes of this assessment, a combined sound pressure level of 85 dB $L_{Aeq,T}$ at 10m has been used for construction noise calculations. This would include, for example, 2 no. items of construction plant with a sound pressure level of 80 dB L_{Aeq} at 10 m and 3 no. items of plant with a sound pressure level of 75 dB L_{Aeq} at 10 m, resulting in a total noise level of 85 dB L_{Aeq} at 10m along the closest works boundary.

Given the nature of the proposed works which will include standard house and apartment building techniques across the site, a cumulative construction noise level of 85 dB L_{Aeq} at 10m represents a conservative noise level used to assess construction activities associated with the earlier stages of construction when site clearance, excavation, and foundation work will be employed. This worst-case scenario is a robust assumption made for developments of this size, on the basis that it is unlikely that more than 5 no. items of such plant/equipment would be operating simultaneously in such close proximity to each other at all times. In reality items of construction plant and machinery will be operating at varying distances from any one NSL.

9.9.1.2.3 General Construction

Once the ground preparation and foundation works have been completed, a large portion of the work will involve manual labour and cranes with lower overall noise levels. For the purpose of this assessment a combined sound pressure level of 78 dB $L_{Aeq,T}$ at 10m has been used for construction noise calculations during ongoing site works and compounds once site clearance and excavation works are completed. This would include, for example, one item of plant at 75 dB L_{Aeq} and three items of plant at 70 dB L_{Aeq} operating simultaneously within a work area resulting in a total noise level of 78 dB L_{Aeq} along the closest works boundary.

9.9.1.3 Construction Noise Calculations

Construction noise levels have been calculated at the closest NSLs, assuming the construction noise levels discussed above. For the purpose of the assessment, partial site screening (5 dB) has been assumed from the use of a standard site hoarding of 2.4 m high for noise sensitive boundaries. The calculations also assume that the equipment will operate for 66% of the working time over a construction working day. Table 9.15 summarises the result of this assessment.

Table 9.15 Indicative Construction Noise Levels at Varying Distances

Construction Phase	Cumulative Sound Pressure, dB $L_{Aeq,T}$ at 10m	Calculated Noise Levels at Varying Distances, dB $L_{Aeq,T}$								
		10m	20m	30m	40m	50m	100m	150m	200m	250m
Rock breaking	92	85	79	75	73	71	63	59	55	53
Piling	85	78	72	68	66	64	57	53	50	48
Site Clearance and Preparation	85	78	72	68	66	64	57	53	50	48
General Construction	78	71	65	61	59	57	50	46	43	41

9.9.1.3.1 Phase 1 Construction Noise

The construction noise levels detailed in Table 9.15 indicate that construction activities can operate within the adopted CNT of 65 dB $L_{Aeq,T}$ at distances of $\geq 50m$ from construction works with higher noise emissions associated with piling, site clearance, excavations, foundations and road works etc.

The closest NSLs during the Phase 1 construction are NSLs 1, 2 and 6. The closest dwellings in this development are at distances of 50m at NSLs 1 extending out to greater than approximately 70m from Phase 1 works at NSLs2. The impact at the properties closest to the construction works is determined to be temporary to short term, negative and slight to moderate during the piling, site clearance, excavations, foundations and road works etc stages.

Other existing NSLs are at distances of approximately 80m from Phase 1 development construction works or farther. At these distances construction noise levels are at or below the significance threshold 65 dB $L_{Aeq,T}$. Reference to Table 9.2 determines the construction noise effect associated with rock breaking, piling, site clearance, excavations, foundations and road works is short term, negative and slight to moderate at these NSLs.

In the scenario where breaking works are required for the phase 1 development, construction activities can operate within the adopted CNT of 65 dB $L_{Aeq,T}$ at distances of $\geq 80m$. Reference to Table 9.2 determines the construction noise effect associated with general site works at the closest NSLs at 50 is temporary to short term, negative and significant to very significant reducing to short term, negative and moderate to significant at the remaining NSLs at 70m.

9.9.1.3.2 Phase 2 Construction Noise

The closest NSLs during the Phase 2 construction are NSLs 2. The closest dwellings in this development are at distances of approximately 20m at NSLs 2 extending out to greater than approximately 10m at NSLs 5. For NSL 2, the impact during the site clearance and preparation phase, and for the scenario where piling is required at the properties closest to the construction works is determined to be temporary to short term, negative and significant to very significant.

Other existing NSLs are at varying distances from approximately 50 to 300m from Phase 2 residential development construction works. At these distances construction noise levels for during the site clearance and preparation phase, piling are below the significance threshold 65 dB $L_{Aeq,T}$. Reference to Table 9.2 determines the construction noise effect at these NSLs to be short term, negative and slight to moderate.

During general construction works associated with façade and fit out works, construction activities can operate within the adopted CNT of 65 dB $L_{Aeq,T}$ at distances of ≥ 20 m. Reference to Table 9.2 determines the construction noise effect associated with general site works at the closest NSLs at 20m is temporary to short term, negative and slight to moderate, at greater distances effects of impact will be reduced.

In the scenario where breaking works are required for the phase 2 development, construction activities can operate within the adopted CNT of 65 dB $L_{Aeq,T}$ at distances of ≥ 80 m. Reference to Table 9.2 determines the construction noise effect associated with general site works at the closest NSLs at ≥ 20 is temporary to short term, negative and significant to very significant reducing to short term, negative and moderate to significant for NSLs at 70m. At greater distances effects will be reduced.

9.9.1.3.3 Phase 3 Construction Noise

The closest NSLs during the Phase 3 construction are NSLs 2, 3 and 4. The closest dwellings in this development are at distances of 10 – 20m at NSLs 2, 3 and 4 extending out to greater than approximately 200m at NSL6. The impact during the construction at the properties closest to the construction works is determined to be temporary to short term, negative and significant to very significant.

Other existing NSLs are at varying distances from approximately 50 to 200m from Phase 3 residential development construction works. At these distances construction noise levels are below the significance threshold 65 dB $L_{Aeq,T}$. Reference to Table 9.2 determines the construction noise effect at these NSLs to be short term, negative and slight to moderate.

During general construction works associated with façade and fit out works, construction activities can operate within the adopted CNT of 65 dB $L_{Aeq,T}$ at distances of ≥ 20 m. Reference to Table 9.2 determines the construction noise effect associated with general site works at the closest NSLs within 10m is temporary to short term, negative and significant to very significant reducing to short term, negative and slight to moderate at the remaining NSLs beyond 20m.

Where breaking works are required for the phase 3 development, construction activities can operate within the adopted CNT of 65 dB $L_{Aeq,T}$ at distances of ≥ 80 m. Reference to Table 9.2 determines the construction noise effect associated with general site works at the closest NSLs at 10m is temporary to short term, negative and significant to very significant reducing to short term, negative and moderate to significant for NSLs at 70m. At greater distances effects will be reduced.

9.9.1.3.4 Phase 4 Construction Noise

During Phase 4 of the construction works, the closest existing NSLs are NSLs 4 and 5 at distances of approximately 10 and 15m. The remaining existing NSLs are at distances ranging from 25 to 150m. The impact during the construction at the properties closest to the construction works is determined to be temporary to short term, negative and significant to very significant.

At distances ≥ 50 m for site clearance, general construction and where piling is necessary, construction noise levels are below the significance threshold 65 dB $L_{Aeq,T}$. Reference to Table 9.2 determines the construction noise effect at these NSLs to be short term, negative and slight to moderate.

During general construction works associated with façade and fit out works, construction activities can operate within the adopted CNT of 65 dB $L_{Aeq,T}$ at distances of ≥ 20 m. Reference to Table 9.2 determines the construction noise effect at all NSLs to be short term, negative and slight to moderate.

Where breaking works are required for the phase 4 development, construction activities can operate within the adopted CNT of 65 dB $L_{Aeq,T}$ at distances of ≥ 80 m. Reference to Table 9.2 determines the construction noise effect associated with general site works at the closest NSLs at 10m is temporary to short term, negative and significant to very significant reducing to short term, negative and moderate to significant for NSLs at 70m. At greater distances effects will be reduced.

9.9.1.3.5 Phase 5 Construction Noise

During Phase 5 construction works, the closest existing NSLs are NSL 5 south of the site. These NSLs are at distances of 15 m. The remaining existing NSLs are at distances ranging from 45 to 170m. The impact during the site clearance and preparation phase and potential piling, at the properties closest to the construction works is determined to be temporary to short term, negative and significant to very significant.

At distances ≥ 50 m during the site clearance and preparation and piling phase construction noise levels are predicted to be below the significance threshold 65 dB $L_{Aeq,T}$. Reference to Table 9.2 determines the construction noise effect at these NSLs to be short term, negative and slight to moderate.

During general construction works associated with house, apartment and duplex façade and fit out works, construction activities can operate within the adopted CNT of 65 dB $L_{Aeq,T}$ at distances of ≥ 20 m. Reference to Table 9.2 determines the construction noise effect at all NSLs during phase 5 to be short term, negative and slight to moderate.

Where breaking works are required for the phase 5 development, construction activities can operate within the adopted CNT of 65 dB $L_{Aeq,T}$ at distances of ≥ 80 m. Reference to Table 9.2 determines the construction noise effect associated with general site works at the closest NSLs at 15m is temporary to short term, negative and significant to very significant reducing to short term, negative and moderate to significant for NSLs at 70m. At greater distances effects will be reduced.

9.9.1.3.6 NSLs Within Proposed Development During Construction

During the construction of various phases of the proposed development, residential units from subsequent phases may be occupied. These units would, in turn, become the most affected NSLs as they will be closest to the construction works. Where site clearance and preparation occur within 50m of residential NSLs within the proposed development, the effect will be temporary to short-term, negative, and moderate to significant to very significant, depending on the distance from the works. Where general construction occurs within 20 meters, the effect at residential NSLs within the proposed development will be short-term, negative, and moderate to significant to very significant, depending on the distance from the works. Beyond these distances, the effect will be short-term, negative, and slight to moderate.

9.9.1.4 Construction Phase – Vibration

The main potential source of vibration during the construction phase is associated with piling and ground and rock-breaking activities.

For the purposes of this assessment the expected vibration levels during piling have been determined through reference to published empirical data. The British Standard BS 5228 – Part 2: *Vibration*, publishes the measured magnitude of vibration of rotary bored piling using a 600mm pile diameter for bored piling into soft ground over rock, (Table D.6, Ref. No. 106):

- 0.54mm/s at a distance of 5m, for auguring;

Considering the low vibration levels at very close distances to augured piling rigs, vibration levels at the adjoining buildings are not expected to pose any significance in terms of cosmetic or structural damage to any of the protected structures in proximity to the development works or any of the other adjacent buildings.

During any breaking within the site, there is also potential for vibration to be generated through the ground. Empirical data for this activity is not provided in the BS 5228-2 standard, however the likely levels of vibration from this activity is expected to be below the lower adopted criteria for building damage based on experience from other sites.

The main potential source of vibration during the construction programme is associated with any initial groundbreaking activities.

During intermittent breaking activity at ground level, there is also potential for vibration to be generated. Empirical data for this activity is not provided in the BS 5228- 2 standard, however the likely levels of vibration from this activity is expected to be significantly below the vibration criteria for building damage based on experience from other sites. AWN Consulting have previously conducted vibration measurements under controlled conditions, during trial construction works on a sample site where concrete slab breaking was carried out. The trial construction works consisted of the use of the following plant and equipment when measured at various distances:

- 3 tonne hydraulic breaker on small CAT tracked excavator
- 6 tonne hydraulic breaker on large Liebherr tracked excavator

Vibration measurements were conducted during various staged activities and at various distances. Peak vibration levels during staged activities using the 3 Tonne Breaker ranged from 0.48 to 0.25 PPV (mm/s) at distances of 10 to 50m respectively from the breaking activities. Using a 6 Tonne Breaker, measured vibration levels ranged between 1.49 to 0.24 PPV (mm/s) at distances of 10 to 50m respectively. Whilst these measurements relate to a solid concrete slab, the range of values recorded provides some context in relation typical ranges of vibration generated by construction breaking activity.

Vibration magnitudes associated with this activity are well below those associated with any form of cosmetic damage to buildings. There is potential for a **brief, negative** and **moderate** impact for building occupants within 20m of this activity using a 6 Tonne Breaker or equivalent. Some NSLs within NSL 1 are within 20m of the construction works and may feel this effect.

During the construction phase it is expected that the potential effect due to vibration will be **brief, negative** and **moderate to significant** in the absence of mitigation at distances less than 20m, however at the majority of receptors the effect in relation to vibration will be **short term, negative** and **not significant**.

9.9.1.5 Construction Phase – Traffic

During the construction phase, traffic associated with the proposed development would consist of a mix of Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs) travelling to and from the site.

In terms of the additional construction traffic on local roads that will be generated as a result of the proposed development, the following comment is presented: As stated in the DMRB Noise and Vibration (UKHE 2020), Volume 11, Section 3, Part 7, in order to increase traffic noise levels by 1 dB traffic volumes would need to increase by the order of 25% it is considered that additional traffic introduced onto the local road network due to the construction phase associated with various phases of the development will introduce a level of traffic that will not result in a significant noise impact. However, a series of mitigation measures within Section 9.10 will be implemented to ensure that noise from vehicle movements during construction are reduced to a minimum.

9.9.2 Operational Phase

9.9.2.1 Mechanical Plant and Services

Any required plant items serving development buildings will be designed and located so that there is no negative impact on sensitive receivers within the proposed development itself.

BS 4142 (BSI 2019) sets out a method for assessing the impact of a new continuous noise sources to a residential environment such as plant items used to service the proposed development. BS 4142 (BSI 2019) states that if the rating level of the item exceeds the background noise level by 5 dB, an adverse impact is likely to occur, while an exceedance of 10 dB is likely to cause a significant adverse impact, depending on the context.

The lowest background noise levels at the boundaries and throughout of the site were determined through baseline noise surveys. Average background noise levels during the day were in the range 38 to 46 dB $L_{A90,T}$ whilst average night time levels were 42 dB $L_{A90,T}$ at monitoring location UN1.

BS 4142 (BSI 2019) also states that where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background.

Based on the above, it is recommended that cumulative plant noise associated with the development does not exceed the absolute levels of 45 dB $L_{Aeq,15min}$ during the daytime periods and 40 dB $L_{Aeq,15min}$ during the night-time periods. It is also recommended that the proposed plant does not contain audible tones at NSLs outside of the site. This is set to ensure no significant increase in the prevailing background noise level occurs at existing NSL's.

Once noise emissions from operational plant are designed to not exceeded the noise criteria at the new residential units within the proposed development, the related noise impact to existing NSLs offsite will be imperceptible. The overall outward noise impact of mechanical and electrical services on site to existing surrounding NSLs is determined to be neutral, not significant and long-term.

9.9.2.2 Additional Traffic on Public Roads

For the purposes of assessing the potential noise impact, it is appropriate to consider the relative increase in noise level associated with traffic movements on existing roads and junctions with and without the proposed development, given that traffic from the development will make use of the existing road network.

A traffic impact assessment relating to the proposed development has been prepared as part of this EIAR (refer to Chapter 11 (Traffic and Transport))

Traffic flows along the surrounding road network in terms of Annual Average Daily Traffic (AADT) for the Do Minimum and Do Something scenarios have been reviewed to calculate the change in traffic noise. The junctions used for the assessment are highlighted below in Figure 9.7.



Figure 9.7 Traffic Assessment Junctions

The calculated change in noise levels between the Do Nothing and Do Something scenarios for the Opening year of 2026 and future years 2031 and 2041 are assessed below. The traffic assessment considers all phases of the proposed development. All calculations are assessed against the criteria within Table 9.6.

Table 9.16 Potential Impact in relation to Operational Traffic 2026

Road Section	Total Vehicle AADT (2026 Do Nothing)	HGV% (2026 Do Nothing)	Total Vehicle AADT (2026 Do Something)	HGV % (2026 Do Something)	Calculated Change in Noise Levels, dB	Significance
Convent Avenue	2315	2%	2356	2%	+0.1	Not Significant
Sundays Well Road	6735	2%	6756	2%	0.0	Imperceptible
Shanakiel Road	9050	2%	9070	2%	0.0	Imperceptible

The calculated change in noise level between the Do Nothing and Do Something for a future design year of 2031 are summarised below in Table 9.17.

Table 9.17 Potential Impact in relation to Operational Traffic 2031

Road Section	Total Vehicle AADT (2031 Do Nothing)	HGV% (2031 Do Nothing)	Total Vehicle AADT (2031Do Something)	HGV % (2031 Do Something)	Calculated Change in Noise Levels, dB	Significance
Convent Avenue	2477	2%	2517	2%	+0.1	Not Significant
Sundays Well Road	7205	2%	7226	2%	0.0	Imperceptible
Shanakiel Road	9682	2%	9701	2%	0.0	Imperceptible

The calculated change in noise level between the Do Nothing and Do Something for a future design year of 2041 are summarised below in Table 9-18.

Table 9.18 Potential Impact in relation to Operational Traffic 2041

Road Section	Total Vehicle AADT (2041 Do Nothing)	HGV% (2041 Do Nothing)	Total Vehicle AADT (2041Do Something)	HGV % (2041 Do Something)	Calculated Change in Noise Levels, dB	Significance
Convent Avenue	2683	2%	2724	2%	+0.1	Not Significant
Sundays Well Road	7805	2%	7826	2%	0.0	Imperceptible
Shanakiel Road	10488	2%	10508	2%	0.0	Imperceptible

The resultant change in noise level in relation to operational traffic of the development is calculated to increase from no increase to 0.1dB (A). The resulting impact of operational traffic is determined to be long term, negative and imperceptible to not significant.

9.9.2.3 External Activity

The potential noise impact associated with the external amenity areas is limited to voices from residents of the scheme.

In order to predict the impact of the proposed outdoor areas on the nearest noise sensitive locations, calculations have been carried out based on standardised noise source data for a typical human voice. Table 9-19 details the standardised sound pressure level of a normal human voice at a distance of 1m from the speakers mouth. This level is taken from the American National Standards Institute document *ANSI 3.5:1997 – Methods for calculation of the speech intelligibility index*. This sound pressure level is an average of male and female voices and is a free-field level.

Table 9.19 Noise Associated with Speech

Description	Sound Pressure Level, dB re 2x10 ⁻⁵ Pa at Octave Band Centre Frequency (Hz)							dB(A)
	125	250	500	1k	2k	4k	8k	
Normal Voice Effort	51	57	60	54	49	44	39	60

For the purposes of this assessment, it is assumed that an outdoor area will be busy with up to 30 people conversing simultaneously. We have also added a 5 dB penalty to account for raised voices. This represents a worst-case assessment as typically there will be less people using the outdoor areas.

Taking this into account and including the noise attenuation due to distance and the shielding by the development buildings the noise level at the nearest sensitive locations is predicted to be of the order of 48 dB L_{Aeq,T}

The predicted noise level is within the day criterion of 50 dB L_{Aeq,1hr}. It is envisaged that outdoor amenity areas will be subject to development management during night-time hours, i.e. 23:00hrs to 07:00hrs.

It is concluded that the likely noise impact of outdoor activity is not significant. Notwithstanding this, typical noise management policies are discussed in Section 9.10.2.3 of this report and will be the responsibility of the development management agency to implement.

9.9.2.4 Inward Noise Impact

9.9.2.4.1 Stage 1 – Noise Risk Assessment

For inward noise risk categorisation purposes consideration has been made to the measured baseline noise levels presented within Section 9.6 and to the criteria presented within Figure 9-1 for categorising the noise risk of the site in relation to ProPG.

Measured noise levels across the site indicate that the site falls within the Negligible Risk category in accordance with the ProPG noise level categories.

ProPG sates the following with respect to negligible risk areas.

Negligible Risk: These noise levels indicate that the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds

Based on the above a Stage 2 assessment has not been undertaken and it is anticipated that the internal noise criteria within Table 9-7 will be easily achievable via the use of standard construction techniques and standard glazing utilised across the proposed development. The resulting inward noise impact on future occupants within the proposed development is therefore determined to be neutral, not significant and long term.

9.9.3 Cumulative Effects

9.9.3.1 Construction Phase

In the event that construction activities at nearby sites are taking place concurrently with the construction of the proposed development, there is potential for cumulative noise impacts to occur. Due to the nature of construction works associated with the proposed development, noise levels from this site will dominate the noise environment when occurring in proximity to the noise sensitive locations along its immediate boundary. The noise contribution from other construction sites would need be equal to those associated with the proposed development in order to result in any cumulative effect.

In the event of the two construction phases of the proposed development overlapping predicted construction noise levels within Section 9.9.1.3 may rise by the order of +3 dB.

9.9.3.2 Operational Phase

The noise limits set for on-site buildings are designed to avoid any significant increase in the prevailing background noise environment external to the site. Operational noise limits included in this report refer to cumulative noise from all fixed installations on site. The design of plant and other fixed installations will be progressed during the design stage to ensure the noise limits at off-site noise sensitive locations are not exceeded.

Traffic volumes assessed take account of the additional traffic from other permitted developments and therefore the traffic noise assessment presented is already assessing the cumulative impact. This assessment has concluded there will be no significant noise impact due to operational traffic.

9.10 Mitigation and Monitoring

9.10.1 Construction Phase Mitigation

The assessment detailed in Section 9.4.3.1 has determined that construction activities can operate within the adopted construction noise threshold levels at NSLs 50m and beyond for the Site Clearance and Preparation phase and 20m and beyond for the general construction phase of the proposed development. At NSLs situated close to the site there is a high potential for the CNT to be exceeded during both phases of works.

Vibration levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in Table 9.3 to avoid any cosmetic damage to buildings.

A suite of noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid exceedance of the adopted construction noise threshold values at the nearest NSLs. The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- Selection of quiet plant;
- Noise control at source;
- Screening, and;
- Liaison with the Public

Further comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, hours of work and noise monitoring, where required.

9.10.1.1 Selection of Quiet Plant

The potential for any item of plant to result in exceedance of construction noise thresholds will be assessed prior to the item being brought onto the site. The least noisy item of plant will be selected wherever practicable (e.g., plant items with sound attenuation incorporated). Should a particular item of plant already on the site be found to exceed the construction noise thresholds, the first action will be to identify whether the item can be replaced with a quieter alternative.

The appointed contractor will evaluate the choice of excavation, breaking, piling or other working methods taking into account various ground conditions and site constraints. Where alternative lower noise generating equipment are available that will provide equivalent structural / excavation results, these will be selected to control noise within the relevant thresholds, where it is practicable to do so.

9.10.1.2 Noise Control at Source

The following measures will be implemented, by the appointed contractor to control noise at source. These measures relate to specific site considerations:

- For mobile plant items such as dump trucks, cranes, excavators and loaders, the installation of an acoustic exhaust, utilising an acoustic canopy to replace the normal engine cover and / or maintaining enclosure panels closed during operation can reduce noise levels by up to 10 dB. Mobile plant will be switched off when not in use and not left idling.
- For percussive tools such as pneumatic concrete breakers and tools a number of noise control measures include fitting a muffler or sound reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed;
- Where compressors, generators and pumps are located in proximity to NSLs and have the potential to exceed the construction noise thresholds, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation; and
- Resonance effects in panel work or cover plates can be reduced through stiffening or the application of damping compounds, while other noise nuisance can be controlled by fixing resilient materials in between the surfaces in contact.
- For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.

9.10.1.3 Piling

Piling programmes will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on a site at the same time as other works of construction or demolition that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.

During consultation the planner, developer, architect and engineer, as well as the local authority, should be made aware of the proposed method of working of the piling contractor. The piling contractor will in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results.

Noise reduction will be achieved by enclosing the driving system in an acoustic shroud.

Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either to the source of noise (as with stationary plant) or to the listener. Removal of a direct line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in location, having due regard also for access routes. When appropriate, screens or enclosures will be provided for such equipment.

Contributions to the total site noise can also be anticipated from mobile ancillary equipment, such as handling cranes, dumpers, front end loaders etc. These machines may only have to work intermittently, and when safety permits, their engines will be switched off (or during short breaks from duty reduced to idling speed) when not in use.

9.10.1.4 Screening

Screening is an effective method of reducing CNLs at a receiver location and can be used successfully as an additional measure to other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen, its mass, and its position relative to both the source and receiver. Standard construction site hoarding (2.4 m in height) with a mass per unit of surface area greater than 7 kg/m² can provide adequate sound insulation. This is recommended, as a minimum around all site boundaries of the proposed development site.

Erection of localised demountable enclosures or screens will be used around particularly noisy equipment as required, when in operation in proximity to NSLs with the potential to exceed the construction noise thresholds. Annex B of BS 5228-1 (Figures B1, B2 and B3) provide typical details for temporary and mobile acoustic screens, sheds and enclosures that can be constructed on-site from standard materials. A well placed and designed mobile temporary screen around a pile, breaker or excavation can effectively reduce noise emissions by 10 dB(A).

In addition, careful planning of the construction site layout will also be considered. The placement of site buildings such as offices and stores between the site and sensitive locations can provide a good level of noise screening.

9.10.1.5 Hours of Work

Working hours will be restricted to 08:00 to 18:00 Monday to Friday & 08:00 to 14:00 on Saturdays. Sunday or Bank Holiday work will only take place periodically at the agreement with Cork County Council. Similarly, any other out of hours working will be only permitted by arrangement with site management and Cork County Council.

9.10.1.6 Liaison with the Public

A designated Community Liaison Officer (CLO) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to particularly noisy construction activity, the CLO will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

9.10.1.7 Monitoring

Where required, construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion. Noise monitoring should be

conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise*.

Vibration monitoring stations should continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with BS ISO 4866: 2010: Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures.

9.10.1.8 Vibration Control

On review of the likely vibration levels associated with construction activities, construction activities associated with the proposed development are not expected to give rise to vibration that is either significantly intrusive or capable of giving rise to structural or cosmetic damage to buildings.

Vibration from construction activities will be limited to the values set out in Table 9-3 to avoid any form of potential cosmetic damage to buildings and structures. Monitoring will be undertaken at sensitive buildings, where proposed works have the potential to be at or exceed the vibration limit values in Table 9-3.

9.10.2 Operational Phase Mitigation

9.10.2.1 Traffic Along Surrounding Road Network

Changes to traffic flows will result in a not significant increase in noise level in the surrounding environment. Therefore, no mitigation measures are necessary in this case.

9.10.2.2 Building Services Noise

With consideration at the detailed design stage, the selection and location of plant items within the proposed development and associated buildings will ensure that noise emissions from any mechanical and electrical building services plant do not exceed the relevant noise criteria within Section 9.9.2.1, therefore no further mitigation is required. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements.

Once operational noise emissions are controlled within the development site, there will be no perceptible noise impact at sensitive receivers off-site.

9.10.2.3 Outdoor Activity

The developer will implement in full the following noise management policy throughout the operational phase of the development to minimise further any noise impact from the amenity areas. The implementation of this policy will ensure that noise from the amenity areas will be minimised. The noise management policy outlines the following measures:

- The external amenity area opening hours will be 07:00hrs to 23:00hrs with no activity at night except for circulation as required.
- Members of staff will conduct regular checks of the external area at all times. The area will also be subject to CCTV coverage. Coverage will operate for 24 hours with images retained for 30 days.
- Signage will be erected in the external area and by all exits to the premises to remind students of the need to respect the rights of our neighbours to the quiet enjoyment of their homes, businesses and other activities.

- If on occasion students are found to be making excessive noise a member of staff will take immediate action to rectify the situation, e.g. ask the student to talk more quietly or if problems persist, ask them to return inside the premises.
- A telephone number will be circulated to residents to allow any complaints as to noise from the premises or as to any other elements of its operation to be communicated easily.
- If any complaints of noise disturbance are received immediate steps will be taken to prevent a recurrence of the situation.
- The premises management will ensure that all residents and staff are made aware of the need to respect the rights of our neighbours to the quiet enjoyment of their homes, businesses and other activities.
- Regular residents meetings will be convened unless it is apparent that attendance at such meetings means they may no longer be necessary. The meetings will allow any issues which arise from the operation of the premises to be discussed.

9.10.2.4 Inward Noise Impact

The site is considered a negligible noise risk in relation to ProPG. Therefore, no mitigation measures are necessary in this case.

9.10.3 Cumulative Mitigation

To ensure that construction activities associated with the proposed development are controlled at the closest NSLs, a series of mitigation measures have been included within Section 9.10.1. Any planned development within the vicinity of the proposed development will require similar measures to ensure that cumulative noise levels from construction do not result in a significant effect.

Mitigation in relation to the operational phase will be in the form of detailed design to ensure that the operational from proposed development operate within the outlined criteria. Any other proposed development near the proposed development site will also be required to prepare an EIAR where in operational noise and associated cumulative impacts will also be considered.

9.11 Residual Impact Assessment

9.11.1 Construction Phase

The use of best practice noise control measures, hours of operation, scheduling of works within appropriate time periods, and noise monitoring during this phase will be implemented. With the inclusion of the various noise and vibration control measures on site discussed in Section 9.10, it is expected that calculated noise levels in Table 9-15 can be reduced by 5 to 10 dB.

After the implementation of mitigation measures, residual construction noise levels at the closest NSLs within 10m are expected to be up to 8 dB above the CNT of 65 dB $L_{Aeq,T}$ during site clearance and ground preparation works and for any potential piling. This will affect the nearest NSLs within 10m of the construction site during phases 2, 3, 4 and 5 for intermittent periods of construction. Referring to Table 9.2 there is a potential for a residual temporary to short term, negative, significant to very significant impact at these NSLs during the site clearance and preparation phase. This will reduce to a short term, negative, moderate to significant impact during the general construction phase.

During phases 1 of the proposed development, the NSLs closest to the construction boundary — both during the site clearance and preparation phase and the general construction phase—are at distances where, after the implementation of mitigation measures, it is expected that construction noise levels will fall within the adopted CNT. This will result in a residual, temporary to short-term, negative impact that is slight to moderate.

Where rock breaking is required, after the implementation of mitigation measures, residual construction noise levels at the closest NSLs within 10 - 50m of the closest works have the potential to be up to 6 - 20 dB above the CNT of 65 dB $L_{Aeq,T}$. This will affect the nearest NSLs within 50m of the construction site during phases 1, 2, 3, 4 and 5 for intermittent periods of construction. Referring to Table 9.2 there is a potential for a residual temporary to short term, negative, significant to very significant impact at these NSLs during rock breaking.

It is important to note that construction activities are inherently transient, meaning noise intrusive works will only affect the nearest NSLs for brief periods. The construction noise calculations are highly conservative, representing a worst-case scenario. In practice, it is likely that the actual noise levels and associated residual impacts will be lower than predicted.

The residual effect of construction vibration is short term, negative, and not significant. Where rock breaking is necessary residual effect of construction vibration is **short term, negative** and **moderate to significant**.

9.11.2 Operational Phase

Noise levels from any building services plant within the development site will be controlled to not exceed the noise levels outlined within section 9.9.2.1.

Once operational noise emissions are controlled within the development site, noise emissions outside the site will be imperceptible. The residual noise effect is neutral, not significant and long Term.

Traffic along the surrounding road network will not lead to a change in noise level that would pose any significant effect. The resultant impact is long-term, negative and not significant.

The site is considered a negligible risk in relation to inward noise. Therefore the residual effect on future occupants of the development in relation to inward noise will be neutral, not significant and long term.

Once operational noise emissions are controlled within the development site, noise emissions outside the site will be imperceptible. The residual noise effect is Neutral, Imperceptible and Long Term.

9.11.3 Cumulative Impact

There is potential for a temporary increase in cumulative construction noise if multiple phases or other developments occur at the same time. Residual cumulative effects related to the construction phase, post-mitigation, are likely to be not significant. This is also true for the operational phase, provided that the operational noise levels outlined in section 9.9.2.1 are adhered to during the detailed design, and the mitigation measures specified in section 9.10 are followed.

9.12 Risk of Major Accidents or Disasters

The assessment of noise and vibration during both the construction and operational phases of the project has been conducted in accordance with relevant regulations and guidelines.

During the construction phase, the primary risks associated with noise and vibration include equipment failure, which can lead to unexpected high noise levels and potential disturbances or harm to nearby residents and workers, and accidental spills or explosions, which can result in sudden, high-intensity noise and vibration, posing risks to human health and structural integrity. Mitigation measures outlined within section 9.10 decrease the chances of these events taking place.

In the operational phase, the risks are generally lower but still present, such as operational malfunctions, where failures in noise control systems or unexpected operational changes can lead to increased noise levels. Mitigation strategies involve continuous monitoring, adherence to operational noise limits as specified in section 9.9.2.1, and implementation of the mitigation measures outlined in section 9.10.

Overall, with the application of these mitigation measures, the risk of major accidents or disasters resulting in significant noise and vibration impacts is considered to be low.

9.13 Significant Interactions

The potential interaction between noise and vibration and other specialist chapters in the EIAR is primarily limited to Chapter 4 (Population & Human Health), Chapter 11 (Traffic & Transport) and Chapter 13 (Biodiversity). This chapter has been prepared in consideration of and in conjunction with the relevant elements of these chapters. For example, noise and vibration impacts associated with the Proposed Development have been fully considered within this Chapter of the EIA Report. The traffic flow projections associated with the development provided by the traffic consultants in Chapter 11 (Traffic & Transport) has been utilised in the operational noise calculations in this Chapter of the EIAR report.

9.14 References & Sources

- British Standard Institute (BSI) British Standard (BS) 5228-1:2009 +A1 2014 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise
- BS 5228-2:2009+A1:2014 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration (BSI 2014b);
- BS 7385: 1993 Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration (hereafter referred to as BS 7385-2). (BSI 1993);
- BS 6472-1: 2008 Guide to evaluation of human exposure to vibration in buildings, Part 1 Vibration sources other than blasting (BSI 2008);
- BS 8233:2014 Guidance on sound insulation and noise reduction for buildings
- BS 4142: 2014 +A1 2019 Methods for Rating and Assessing Industrial and Commercial Sound (BSI 2019);
- Cork Agglomeration Noise Action Plan 2024 – 2028 (Cork County Council 2024)
- UK Highways Agency (UKHA) Design Manual for Roads and Bridges (DMRB) LA 111 Sustainability and Environmental Appraisal LA 111 Noise and Vibration Revision 2 (UKHA 2020);
- S.I. No. 549/2018 – European Communities (Environmental Noise) Regulations 2018
- S.I. No. 241/2006 - European Communities Noise Emission by Equipment for Use Outdoors (Amendment) Regulations 2006;
- International Organization for Standardization (ISO) 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors - Part 2: General method of calculation (ISO 1996);
- ISO 1996-1: 2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures (ISO 2016);
- ISO 1996-2:2017 - Description, measurement and assessment of environmental noise - Part 2: Determination of sound pressure levels (hereafter referred to as ISO 1996 – 2) (ISO 2017), and;
- The UK Department of Transport Calculation of Road Traffic Noise (hereafter referred to as the CRTN) (UK Department of Transport 1998).



CHAPTER TEN

LANDSCAPE AND VISUAL

CHAPTER TEN

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CHAPTER TEN | Landscape and Visual

10.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on Townscape and Visual.

It should be read in conjunction with the project description and Architectural / Landscape Architectural design statements as well as the associated design drawings and the set of verifiable photomontages included in Volume 3 of the EIAR.

10.2 Expertise & Qualifications

This TVIA was prepared by Richard Barker (MLA MILI), Director at Macro Works Ltd of Cherrywood Business Park, Loughlinstown, Dublin 18; a consultancy firm specialising in Townscape and Visual Assessment and associated maps and graphics. Macro Works’ relevant experience includes a broad range of infrastructural, industrial and commercial projects since 1999, including numerous urban, residential, and mixed-use development projectsand including the following projects:

- Atkins Hall SHD, Cork
- Central Mental Hospital SHD, Dundrum, County Dublin
- Dundrum Town Centre Phase 2
- Telephone House redevelopment, Dublin City Centre

10.3 Proposed Development

The full description of the proposed development is outlined in Chapter 2 ‘Development Description’ of this EIAR.

Planning permission for a proposed Student Accommodation Development comprising the conservation, conversion and extension of the existing former Good Shepherd Convent, Home Building, Orphanage Building, and Well site to provide student accommodation apartments, the conservation and conversion of the existing gate lodge and bakehouse to provide ancillary services and all associated ancillary development works at The Former Good Shepherd Convent, Convent Avenue, Sunday’s Well, Cork. The proposed scheme includes works to and within the curtilage of the former Good Shepherd Convent and Orphanage, which is a protected structure (Ref. No. PS721).

10.3.1 Aspects Relevant to this Assessment

The aspects of the proposed development that are relevant to this assessment are those that seek to change the physical and visual form of the site that might contribute to townscape character and visual amenity. These include changes to site topography and the loss of vegetation as well as the layout, scale and finish of new buildings, streets, open spaces and planting and how these relate to the retained convent structure.

10.4 Methodology

This document uses methodology as prescribed in the previously mentioned GLVIA3. Given the site’s context, this is principally a ‘townscape’ assessment, albeit the assessment utilises the same outline methodology as would be employed for the more familiar Landscape and Visual Impact Assessment (LVIA) of developments in rural settings.

GLVIA3 follows the European Landscape Convention (ELC) definition of landscape:

‘Landscape is an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors’ (Council of Europe, 2000). Thus, GLVIA-2013 covers all landscapes from “high mountains and wild countryside to urban and fringe farmland (rural landscapes), marine and coastal landscapes (seascapes) and the landscapes of villages towns and cities (townscapes)” - whether protected or degraded.

Townscape is defined in GLVIA3 in the following manner (section 2.7):

‘Townscape’ refers to areas where the built environment is dominant. Villages, towns and cities often make important contributions as elements in wider-open landscapes but townscape means the landscape within the built-up area, including the buildings, the relationships between them, the different types of urban spaces, including green spaces, and the relationship between buildings and open spaces. There are important relationships with historic dimensions of landscape and townscape, since evidence of the way the villages, towns and cities change and develop over time contributes to their current form and character.

In the context of ‘townscape’ it is recognised that there is a strong interrelationship between the ‘townscape’ and ‘cultural heritage’ assessments. As stated in section 5.11 of GLVIA;

“the sharing of relevant baseline information should not be confused with the need for separate cultural heritage appraisals such as historic landscape characterisation and assessment of historic townscape appraisal, or there will be a danger of both double handling and inappropriate judgements by non-experts. It is particularly important that responsibilities are clear in considering any effects on the settings and views for historic buildings, conservation areas and other heritage assets.”

The identification of heritage assets in this assessment is made to indicate the value and quality of the wider townscape character as well as provide an indication of areas from which views are potentially more sensitive to change.

10.4.1 Scope of the Assessment

GLVIA3 establishes guidelines and not a specific methodology. The preface recognises that:

‘This edition concentrates on principles and processes. It does not provide a detailed or formulaic ‘recipe’ that can be followed in every situation – it remains the responsibility of the professional to ensure that the approach and methodology adopted are appropriate to the task in hand.’

The methodology for this assessment has therefore been developed specifically for this assessment to ensure that it is appropriate and fit for purpose.

10.4.2 Study Area

The site’s wider townscape and visual context have been reviewed, due to the combined influence of natural topography, and screening elements in the site’s wider urban context, the site is not readily visible from many locations beyond the immediate locality or is seen in the context of continuous urban fabric from a distance.

With this in mind, and considering the general diminishment of effects over distance, a proportionate focus is placed on the townscape within approximately 1.5km of the development. This study area contains locations from where the development will be most visible, and beyond this distance, the proposed development is not likely to give rise to significant townscape or visual impacts. It is also the same extent of study area that was applied to the St Kevin’s Hospital redevelopment, which is of a similar scale and nature a short distance to the west.



Figure 10.1 Study Area for the Townscape and Visual Assessment

10.4.3 Townscape Impact Assessment

This part of the TVIA provides an assessment of how the introduction of the proposed development will affect the physical features and fabric of the townscape, and then how the proposals influence townscape character with reference to published descriptions of character and an understanding of the contemporary character of the townscape as informed through desktop and site studies.

When assessing the potential townscape effects of the development, the value and sensitivity of the townscape receptor are weighed against the magnitude of the townscape impact to determine the significance of the townscape effect. The criteria outlined are used to guide these judgements.

10.4.3.1 Townscape Sensitivity

The sensitivity of the townscape to change is the degree to which a particular setting can accommodate changes or new elements without unacceptable detrimental effects on its essential characteristics. The judgement reflects such factors as its quality, value, contribution to the urban character and the degree to which the particular element or characteristic can be replaced or substituted. Townscape Sensitivity is classified using the following criteria set out in Table 1

Table 10.1 Townscape Sensitivity

Sensitivity	Description
Very High	Areas where the townscape character exhibits a very low capacity for change in the form of development. Examples of which are high value townscapes, protected at an international or national level (e.g. World Heritage Site), where the principal management objectives are likely to be protection of the existing character.
High	Areas where the townscape character exhibits a low capacity for change in the form of development. Examples of which are high value townscapes, protected at a national or regional level, where the principal management objectives are likely to be considered conservation of the existing character.
Medium	Areas where the townscape character exhibits some capacity and scope for development. Examples of which are townscapes, which have a designation of protection at a county level or at non-designated local level where there is evidence of local value and use.
Low	Areas where the townscape character exhibits a higher capacity for change from development. Typically, this would include lower value, non-designated townscapes that may also have some elements or features of recognisable quality, where management objectives include, enhancement, repair and restoration.
Negligible	Areas of townscape character that include derelict sites and degradation where there would be a reasonable capacity to embrace change or the capacity to include the development proposals. Management objectives in such areas could be focused on change, creation of townscape improvements and/or restoration.

10.4.3.2 Magnitude of Impact – Townscape

The magnitude of change is a product of the scale, extent or degree of change that is likely to be experienced as a result of the proposed development. The magnitude takes into account whether there is a direct physical impact resulting from the loss of townscape components and/or a change that extends beyond the immediate setting that may affect the townscape character. Table 2 outlines the criteria used to inform this judgement.

Table 10.2 Townscape Impact Magnitude

Criteria	Description
Very High	Change that would be large in extent and scale with the loss of critically important townscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an extensive change of the townscape in terms of character, value and quality.
High	Change that would be more limited in extent and scale with the loss of important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to a considerable change of the townscape in terms of character, value and quality.
Medium	Changes that are modest in extent and scale involving the loss of landscape characteristics or elements that may also involve the introduction of new uncharacteristic elements or features that would lead to noticeable changes in townscape character, and quality.
Low	Changes affecting small areas of landscape character and quality, together with the loss of some less characteristic landscape elements or the addition of new features or elements that would lead to discernible changes in townscape character, and quality.
Negligible	Changes affecting small or very restricted areas of townscape character. This may include the limited loss of some elements or the addition of some new features or elements that are characteristic of the existing townscape or are hardly perceivable leading to no material change to townscape character, and quality.

10.4.4 Visual Impact Assessment

This part of the TVIA provides an assessment of how the introduction of the proposed development will affect views within the townscape. It therefore needs to consider:

- Direct impacts of the proposed development upon views through intrusion or obstruction;
- The reaction of viewers who may be affected, e.g. residents, walkers, road users; and
- The overall impact on visual amenity.

It has been deemed appropriate to structure the assessment around a series of representative viewpoint locations. All viewpoints are located within the public domain and are representative of views available from main thoroughfares and pedestrian areas within the vicinity of the proposed development. The selected viewpoints are considered to be comprehensive in communicating the variable nature of the visual effects.

When assessing the potential visual effects of the development, the sensitivity of the visual receptor is weighed against the magnitude of the visual impact to determine the significance of the visual effect. The criteria outlined below are used to guide these judgements.

10.4.4.1 Sensitivity of Visual Receptors

As with townscape sensitivity, the sensitivity of a visual receptor is categorised as Very High, High, Medium, Low, and Negligible. However, unlike townscape sensitivity, the sensitivity of visual receptors has an anthropocentric (human) basis. It considers factors such as the perceived quality and values associated with the view, the townscape context of the viewer, the likely activity the viewer is engaged in and whether this heightens their awareness of the surrounding environment.

A list of the factors considered by the assessor in estimating the level of sensitivity for a particular visual receptor is outlined below to establish visual receptor sensitivity at each viewpoint location.

10.4.4.2 Susceptibility of Visual Receptors to Change

In accordance with GLVIA3, visual receptors most susceptible to changes in views and visual amenity are:

- “Residents at home;
- People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focussed on the landscape and on particular views;
- Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience;
- Communities where views contribute to the landscape setting enjoyed by residents in the area;
- Travellers on road rail or other transport routes where such travel involves recognised scenic routes and awareness of views is likely to be heightened”.

Visual receptors that are less susceptible to changes in views and visual amenity include;

People engaged in outdoor sport or recreation, which does not involve or depend upon appreciation of views of the landscape;

People at their place of work whose attention may be focussed on their work or activity, not their surroundings and where the setting is not important to the quality of working life”.

10.4.4.3 Value Attached to Views

The value attached to a view is determined by considering the following:

- Recognised scenic value of the view (County Development Plan designations, guidebooks, touring maps, postcards etc). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population because in the case of County Development Plans, for example, a public consultation process is required;
- Views from within highly sensitive townscape areas. These are likely to be in the form of Architectural Conservation Areas, which are incorporated within the Development Plan and therefore subject to the public consultation process. Viewers within such areas are likely to be highly attuned to the townscape around them;
- Primary views from residential receptors. Even within a dynamic city context, views from residential properties are an important consideration in respect of residential amenity;
- Intensity of use, popularity. This relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at a national or regional scale;
- Viewer connection with the townscape. This considers whether or not receptors are likely to be highly attuned to views of the townscape i.e. commuters hurriedly driving on busy roads versus tourists focussed on the character and detail of the townscape;

- Provision of vast, elevated panoramic views. This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas;
- Sense of remoteness and/or tranquillity. Receptors taking in a remote and tranquil scene, which is likely to be fairly static, are likely to be more receptive to changes in the view than those taking in the view of a busy street scene, for example;
- Degree of perceived naturalness. Where a view is valued for the sense of naturalness of the surrounding landscape it is likely to be highly sensitive to visual intrusion by distinctly manmade features;
- Presence of striking or noteworthy features. A view might be strongly valued because it contains a distinctive and memorable townscape feature such as a cathedral or castle;
- Historical, cultural and/or spiritual significance. Such attributes may be evident or sensed by receptors at certain viewing locations, which may attract visitors for the purposes of contemplation or reflection heightening the sense of their surroundings;
- Rarity or uniqueness of the view. This might include the noteworthy representativeness of a certain townscape type and considers whether the receptor could take in similar views anywhere in the broader region or the country;
- The integrity of the townscape character. This looks at the condition and intactness of the townscape in view and whether the townscape pattern is a regular one of a few strongly related components or an irregular one containing a variety of disparate components;
- Sense of place. This considers whether there is a special sense of wholeness and harmony at the viewing location;
- Sense of awe. This considers whether the view inspires an overwhelming sense of scale or the power of nature.

Those locations which are deemed to satisfy many of the above criteria are likely to be of higher sensitivity, and no relative importance is inferred by the order of listing.

It is recognised that a viewer’s interpretation and experience of the townscape can have preferential and subjective components. Where relevant, judgements are made on those elements of the townscape that are considered to contribute more prominently and positively to the visual townscape resource as well as those elements that contribute negatively. Overall sensitivity may be a result of a number of these factors or, alternatively, a strong association with one or two in particular.

10.4.4.4 Magnitude of Impact – Visual

The magnitude of change is again a product of the scale, extent, or degree of change that is likely to be experienced as a result of the proposed development. This is directly influenced by its ‘visual presence/prominence’, as experienced by visual receptors. These terms are somewhat qualitative and essentially relate to how noticeable or ‘dominant’ the proposal is within a particular view. Aside from the obvious influence of scale and distance, a development’s visual presence is influenced by the extent and complexity of the view, contextual movement in the landscape/townscape, the nature of the backdrop, and its relationship with other features within the view. It is often, though not always, expressed using one of the following terms: Minimal; Sub-dominant; Co-dominant; Dominant; or Highly dominant.

Criteria used to inform judgements are provided in Table 10.3.

Table 10.3 Visual Impact Magnitude

Criteria	Description
Very High	Complete or very substantial change in view, dominant, involving complete or very substantial obstruction of existing view or complete change in character and composition of baseline, e.g., through removal of key elements.
High	A major change in the view that is highly prominent and has a strong influence on the overall view. This may involve the substantial obstruction of existing views or a complete change in character and composition of baseline, e.g. through removal of key elements or the introduction of new features that would heavily influence key elements.
Medium	Moderate change in view: which may involve partial obstruction of existing view or partial change in character and composition of baseline, i.e., pre-development view through the introduction of new elements or removal of existing elements. Change may be prominent but would not substantially alter scale and character of the surroundings and the wider setting. View character may be partially changed through the introduction of features which, though uncharacteristic, may not necessarily be visually discordant.
Low	Minor change in baseline, i.e. pre-development view - change would be distinguishable from the surroundings whilst composition and character would be similar to the pre change circumstances.
Negligible	Very slight change in baseline, i.e. pre-development view - change would be barely discernible. Composition and character of view substantially unaltered.

10.4.5 Significance of Effects

The significance of a townscape or visual effect is based on a balance between the sensitivity of the receptor and the magnitude of change and is categorised as Profound, Substantial, Moderate, Slight, or Imperceptible. Intermediate judgements are also provided to enable an effect to be more accurately described where relevant. ‘No Effect’ may also be recorded as appropriate where the effect is so negligible it is not noteworthy.

The significance category judgement is arrived at using the Significance Matrix in Table 10.4as a guide. This applies the principle of significance being a function of magnitude weighed against sensitivity, but employs slightly different terminology that avoids the potentially confusing use of the term ‘significant’ (as recommended by GLVIA3 Statement of Clarification 1/13 (Landscape Institute, 10th June 2013)).

Indicative criteria descriptions used in relation to the significance of effect category are presented in Table 5.

Table 10.4 Significance Matrix

Sensitivity of Receptor					
Magnitude	Very High	High	Medium	Low	Negligible
Very High	Profound	Profound-substantial	Substantial	Moderate	Slight
High	Profound-substantial	Substantial	Substantial-moderate	Moderate-slight	Slight-imperceptible
Medium	Substantial	Substantial-moderate	Moderate	Slight	Imperceptible
Low	Moderate	Moderate-slight	Slight	Slight-imperceptible	Imperceptible
Negligible	Slight	Slight-imperceptible	Imperceptible	Imperceptible	Imperceptible

Table 10.5 Indicative significance of effect criteria descriptions

Landscape		Visual
Profound	There are notable changes in landscape characteristics over an extensive area or a very intensive change over a more limited area.	The view is entirely altered, obscured or affected.
Substantial	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the landscape. There are notable changes in landscape characteristics over a substantial area or an intensive change over a more limited area.	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the visual environment. The proposal affects a large proportion of the overall visual composition, or views are so affected that they form a new element in the physical landscape.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. There are minor changes over some of the area or moderate changes in a localised area.	An effect that alters the character of the visual environment in a manner that is consistent with existing and emerging trends. The proposal affects an appreciable segment of the overall visual composition, or there is an intrusion in the foreground of a view.
Slight	An effect which causes noticeable changes in the character of the landscape without affecting its sensitivities. There are minor changes over a small proportion of the area or moderate changes in a localised area or changes that are reparable over time.	An effect which causes noticeable changes in the character of the visual environment without affecting its sensitivities. The affected view forms only a small element in the overall visual composition or changes the view in a marginal manner.
Imperceptible	An effect capable of measurement but without noticeable consequences. There are no noticeable changes to landscape context, character or features.	An effect capable of measurement but without noticeable consequences. Although the development may be visible, it would be difficult to discern resulting in minimal change to views.

The likely effects of the proposals must be transparently assessed and understood so that the determining authority can bring a balanced, well-informed judgement to bear when making a planning decision. As such, whilst the Significance Matrix and criteria provide a useful guide, the significance of an effect is ultimately determined by the landscape specialist using professional judgement, and also in the context of occasionally using hybrid judgements to account for nuance.

Effects assessed as ‘Substantial’ or greater (shaded cells) are considered to be the most notable in townscape and visual terms and may be regarded as ‘Significant’, albeit it is important to note that this is not a reflection on their acceptability in planning terms.

10.4.6 Quality of Effects

In addition to assessing the significance of townscape and visual effects, the quality of the effects is also determined. Whereas, the introduction of new built elements into countryside areas often results in negative landscape and visual effects, in urban and urban edge settings, new built form through its architectural design and public realm treatment, can contribute positively to a townscape / streetscape, and generate a combination of positive and negative effects.

It is therefore noted that urban development projects can give rise to a broad spectrum of opinions ranging from strongly negative to strongly positive, with a wide range of opinions lying somewhere between these two positions. Whilst some impacts are quantifiable, other impacts (such as the influence of architecture), are more qualitative in nature, where professional judgement is required.

In determining the quality of effects in this assessment, it is noted that the authors of this TVIA are Chartered members of the Landscape Institute, experienced in large-scale public realm and urban design and regeneration projects and the production of landscape/townscape and visual impact assessments.

Within this TVIA, effects are described as negative/adverse, neutral, or positive/beneficial, and the following criteria have been used to guide these judgements.

- Positive/beneficial - A change which improves the quality of the environment, enhancing the existing view/townscape;
- Neutral - No effects or effects that are imperceptible, within normal bounds of variation e.g. will neither detract from nor enhance the existing view/townscape, or alternatively, a balance of minor positive and Negative effects;
- Negative/adverse - A change which reduces the quality of the environment, detracting from the existing view/townscape.

The judgment of the quality of the effects is made in combination with the significance judgement for both townscape and visual impacts e.g. Moderate / Positive, Moderate / Neutral, or Moderate / Negative.

10.4.7 Relevant Legislation & Guidance

The methodology for this TVIA is based on the primary best practice document, the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3) (LI/IEMA, 2013). In accordance with this published guidance, townscape and visual impacts are assessed separately, although the procedure for assessing each of these is closely linked. A clear distinction has been drawn between townscape and visual impacts as described below:

- Townscape impacts relate to the influence of the proposals on the physical and perceptual characteristics of the townscape and its resulting character and quality;
- Visual impacts relate to the influence of the proposals on specific views experienced by visual receptors and on visual amenity more generally.

In addition to GLVIA3, in the production of the TVIA, due regard has also been made to the following guidance and policy documents:

- Cork City Development Plan 2022-2028
- Cork County Development Plan 2022 – 2028;
- Environmental Protection Agency (EPA) publication ‘Guidelines on the Information to be contained in Environmental Impact Statements (2022);
- Urban Development and Building Heights Guidelines for Planning Authorities by Department of Housing, Planning and Local Government (DHPLG) (2018);
- Technical Information Note 05/17 - Townscape Character Assessment (2017);
- Technical Information Note 01/21 – GLVIA webinar Q&As;
- Technical Guidance Note 1/20 - Reviewing Landscape and Visual Impact Assessments (LVIAs) and Landscape and Visual Appraisals (LVAs);
- Technical Guidance Note GLVIA3 Statement of Clarification 1/13, 2/13, 1/14, and 2/14.

10.5 Difficulties Encountered

There were no particular difficulties encountered in the assessment of Townscape and Visual Effects. Seasonal variation in potential visibility was noted due to foliage screening and photomontages were therefore prepared for summer and winter conditions in the vast majority of cases. Where summer photography was not available, ‘worst-case’ winter photography is used.

10.6 Baseline Environment

10.6.1 Landscape Character

Landform and Drainage

The Good Shepherd Covent site lies on the relatively steep northern slopes above the River Lee, which runs in an easterly direction through the heart of Cork City and around which the City has formed. The site is surrounded by steep terrain that ascends towards the north. The terrain on the southern side of the River Lee rises more gently. In the western extents of the study area, a minor branch of the River Lee diverges south-eastwards for a short distance to join the Curragheen River, which arrives from the southwest. Together these run parallel for several hundred metres to the south of the River Lee and form the elongated island that hosts the Cork Central Business District before re-joining the main river on its way to the Lee Estuary.

Land use and land cover

The site itself comprises a row of derelict, red brick buildings surrounded by regenerating grass and scrub. A notable group of mature trees is located immediately south of the buildings and towards the western side of the site. The architecture is gothic in design, despite the exterior structure remaining more or less intact, vegetation can be seen emerging from the buildings and the structures are dilapidated. Pathways within the site are overgrown by vegetation. A curved path provides a connection to Convent Ave and the southeast portion consists of an open patch of greenspace and regenerating vegetation.

With regard to the surrounding context, immediately west is the historic Cork City Gaol and Radio Museum, which are both respected heritage and tourism features in their own right. The adjacent land to the east, south and north primarily consist of two storey residential dwellings all oriented towards the south overlooking the River Lee. The local roads surrounding the site are well treed, contributing to a notable amount of canopy cover. The River Lee corridor is fringed by dense plantings.

With regards to the wider surrounds, the southern and eastern sides of the study area are associated with the Cork city centre featuring the University College Cork (south) and CBD (east). Alternatively the land in the wider west and northern portion of the study area is more commonly associated with industrial activity and agricultural land typical of the urban fringe.

Transport Routes

The primary transport route in the study area is the N22 national road that exits Cork City to the west and runs parallel to south of the River Lee, where it is known as the Carrigrohane Road. It is approximately 540m to the south of the site at its nearest point. Notable road corridors in the immediate vicinity of site include; the R846 regional road (which meets Sunday’s Well Rd) running parallel to the River Lee c.150m south of site. The site is accessed via a local road ‘Convent Ave’ which diverts off the R846 southwest of the site. The site is adjacent to Buxton Hill (a local laneway to the east) which similarly extends north off the R846. To the north, Blarney St runs in a general east to west direction c.80m north of the site.

Other notable road corridors within the wider vicinity include R608 (Model Farm Road), which also runs parallel to the south of the River Lee, at a distance of c. 1km. The R641 diverts south of the N22 900m from site.

Public Amenities

The main public amenities and facilities within the study area relate to the River Lee. These include Fitzgerald Park and the various sporting features nearby.

- Beara Gougane Barra Cycle Route on the southern side of the river
- Adjacent to the west of the site is Cork City Gaol and Radio Museum
- Old Cork Waterworks Experience
- Fitzgerald’s Park occupies a notable area on the south side of the River Lee. Similarly a group of tennis courts, and numerous sports fields stretch along the island in the centre of the river.

10.6.2 Historical Context of the Study Area

The Good Shepherd Laundry at Sundays Well was established by the Good Shepherd Sisters in 1870. The order ran the institution until its closure in 1977. According to the National Built Heritage Website: *“The Good Shepherd Convent was designed by George Coppinger Ashlin for Dr Delaney, Bishop of Cork, on a ten acre site, much of which was donated by Alderman James Hegarty who also partly funded construction. The foundation stone was laid in 1870, and the central convent block and Magdalene asylum wing opened in 1872. Works began on the industrial school wing in 1874. The complex remained in use until the late 1970s. It was decimated by fire in 2003, with a number of buildings lost, though the convent and its wings survive in a dilapidated state.”*

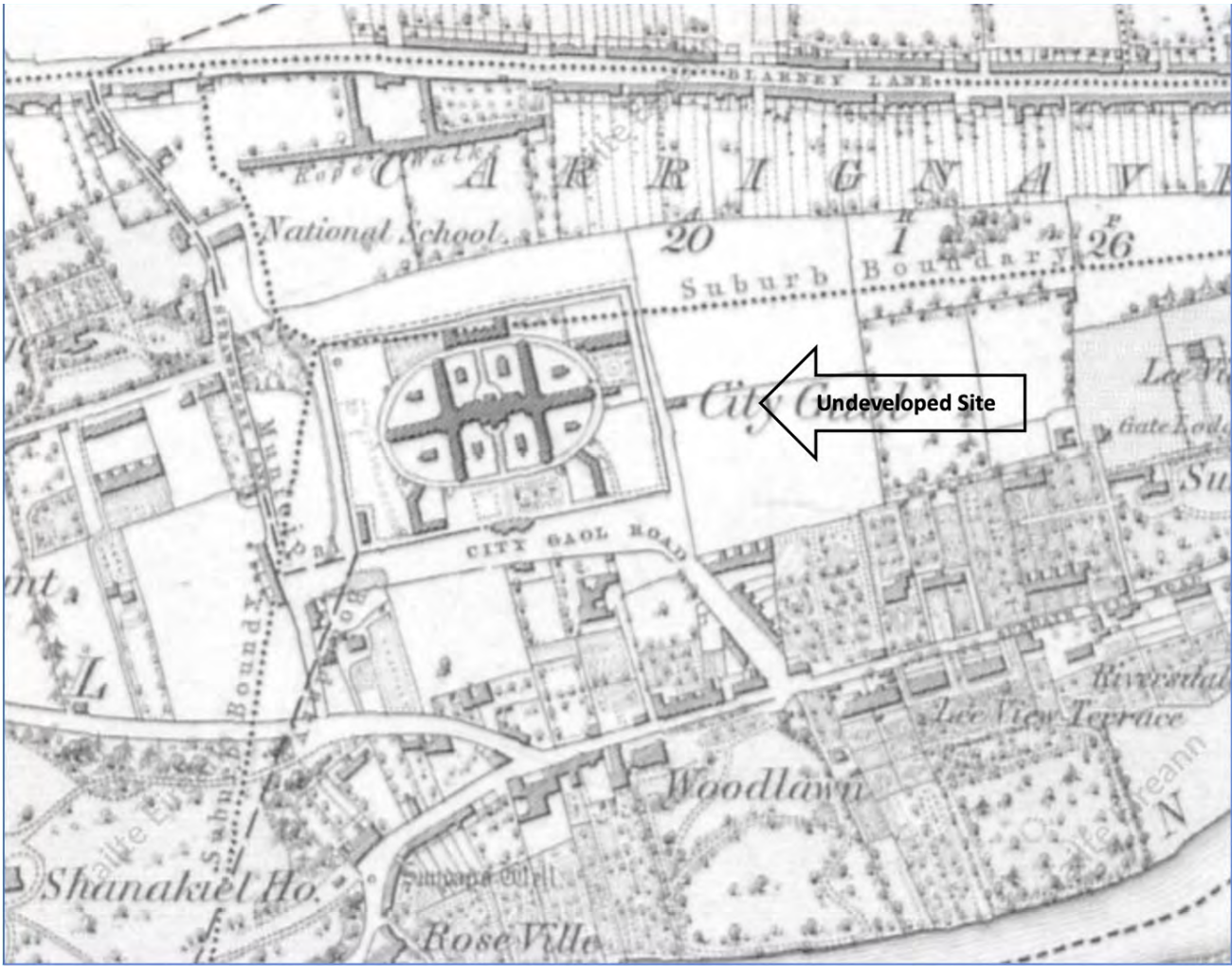


Figure 10.2 – Historical Map 1837

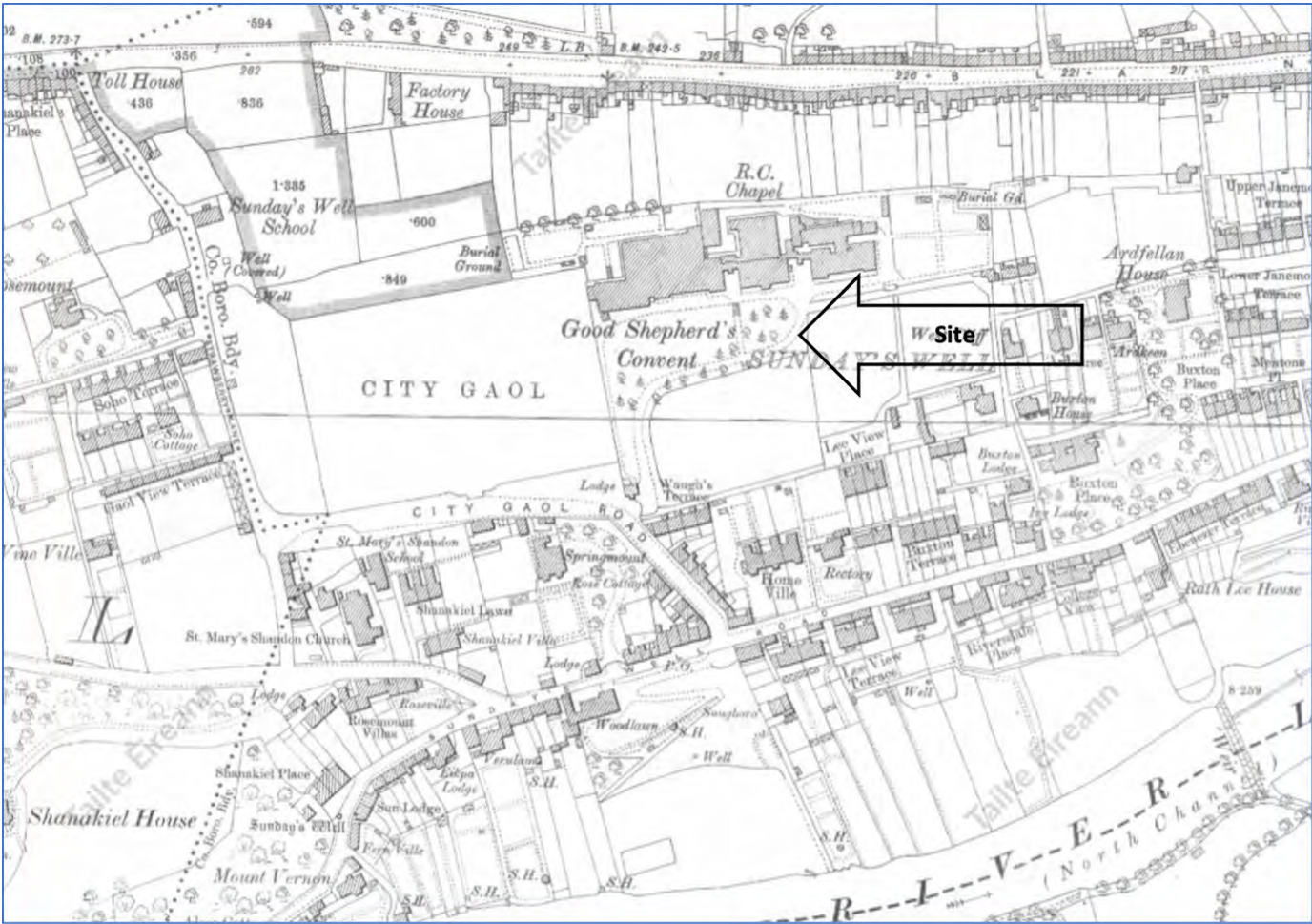


Figure 10.3 – Historical Maps 1888 - 1913

10.6.3 Landscape Context

Cork City Development Plan 2022-2028

Landscape and visual policy is contained in Chapter 6 'Green and Blue Infrastructure, Open Space and Biodiversity' of the Cork City Development Plan 2022-2028.

The subject site straddles two land use zonings in the Cork City Development Plan 2022-2028 (CDP) as shown in Figure 1. The site is primarily contained within 'ZO 01 Sustainable Residential Neighbourhoods' land use zoning, with the objective to; *"protect and provide for residential uses and amenities, local services and community, institutional, educational and civic uses."* The entirety of the site is contained within an 'Architectural Conservation Zone'.

The southwest part of the site is contained within 'ZO 17 Landscape Preservation Zones' with the objective; *"To preserve and enhance the special landscape and visual character of Landscape Preservation Zones."* Specifically, the site is located within the Landscape Preservation Zone NW17 – '(Former) Good Shepherd Convent'. Table 6.10 of the CDP identifies the following landscape assets to be protected in this area;

C – 'Tree Canopy - Areas with existing woodlands or significant tree groups, or areas with potential for new woodlands.'

G - 'Landmarks / Natural Features / Cultural Landscape – land forming the setting to existing landmark buildings and/or protected structures / buildings of significance'

H – 'Public and Private Open Space footprint, including land with potential for Public Open Space'

The specific objectives for this Landscape Preservation Zone NW17 is; *"To provide landscape structure and open space in any redevelopment."*



Figure 10.4 Land use zoning context of the site

Section 6.2 of the Cork city CDP identifies 'Areas of High Value Landscapes' (AHVL) these are an additional objective overlaying the land-use zoning objective. Of these AHVL the Cork City CDP states; *"Areas of High Landscape Value display an intrinsic landscape character and a special amenity value. Development will be appropriate only where it results in a neutral / positive impact on the landscape. Although many AHLV consist of a built form and a strong landscape character, typically the built form is secondary to the landscape character."*

The area within the site zoned 'ZO 01 Sustainable Residential Neighbourhoods' has an 'AHVL' overlay. This AHVL overlay also occupies much of the adjacent land to the southwest and southeast. The objective is to;

"conserve and enhance the character and visual amenity of Areas of High Landscape Value (AHLV) through the appropriate management of development, in order to retain the existing characteristics of the landscape, and its primary landscape assets. Development will be considered only where it safeguards to the value and sensitivity of the particular landscape. There will be a presumption against development where it causes significant harm or injury to the intrinsic character of the Area of High Landscape Value and its primary landscape assets, the visual amenity of the landscape; protected views; breaks the existing ridge silhouette; the character and setting of buildings, structures and landmarks; and the ecological and habitat value of the landscape."



Figure 10.5 Areas of High Value Landscapes in relation to the site

10.6.4 Views & Prospects

Protected views and prospects within Cork City are mapped in Volume 2, Chapter C where they form part of the ‘View Management Framework’. There are three types of protected prospect and two types of protected view and these are listed below;

- Strategic Landmark Building
- Local Landmark Building
- Strategic viewing locations
- Strategic Linear Views
- Viewing location of linear views of special amenity value

None of these types of protected views and prospects specifically relate to The Good Shepherd Convent or the adjacent Gaol site. The nearest include Saint Vincent’s Church on Sundays Well Road as a ‘Local Landmark Building’ with four associated ‘Viewing location of linear views of special amenity value’ that are concentrated towards it.

10.7 Identification of Viewshed Reference Points as a basis for Assessment

Viewshed Reference Points (VRP’s) are the locations used to study the likely visual impacts associated with the proposed development. It is not warranted to include each and every location that provides a view as this would result in an unwieldy report and make it extremely difficult to draw out the key impacts arising from the proposed development. Instead, the selected viewpoints are intended to reflect a range of different receptor types, distances and angles. The visual impact of a proposed development is assessed using up to 6 categories of receptor type as listed below:

- Key Views - from features of national or international importance;
- Designated Scenic Routes and Views;
- Local Community views;
- Centres of Population;
- Major Routes; and
- Amenity and heritage features.

The Viewshed Reference Points selected in this instance are set out in Table 10.6 and shown on Figure 10.6 below.

Table 10.6 Representative Viewpoint Locations

Viewpoint reference	Location	Direction of View
VP1	Buckston Hill	West
VP2	Cork Gaol	Northeast
VP3	Mardyke Sports Area	North-northeast
VP4	Fitzgerald Park	North
VP5	UCC Kane Building	North
VP6	Buckston Hill 50m from site	West
VP7	Buckston Hill South	Northwest
VP8	City end of Mardyke Walk	Northwest
VP9	Aula Maxima UCC	North-northwest
VP10	Blarney Street Looking East	Southeast
VP11	Blarney Street Looking West	Southwest
VP12	Magazine Rd Highfield Ave Junction	North

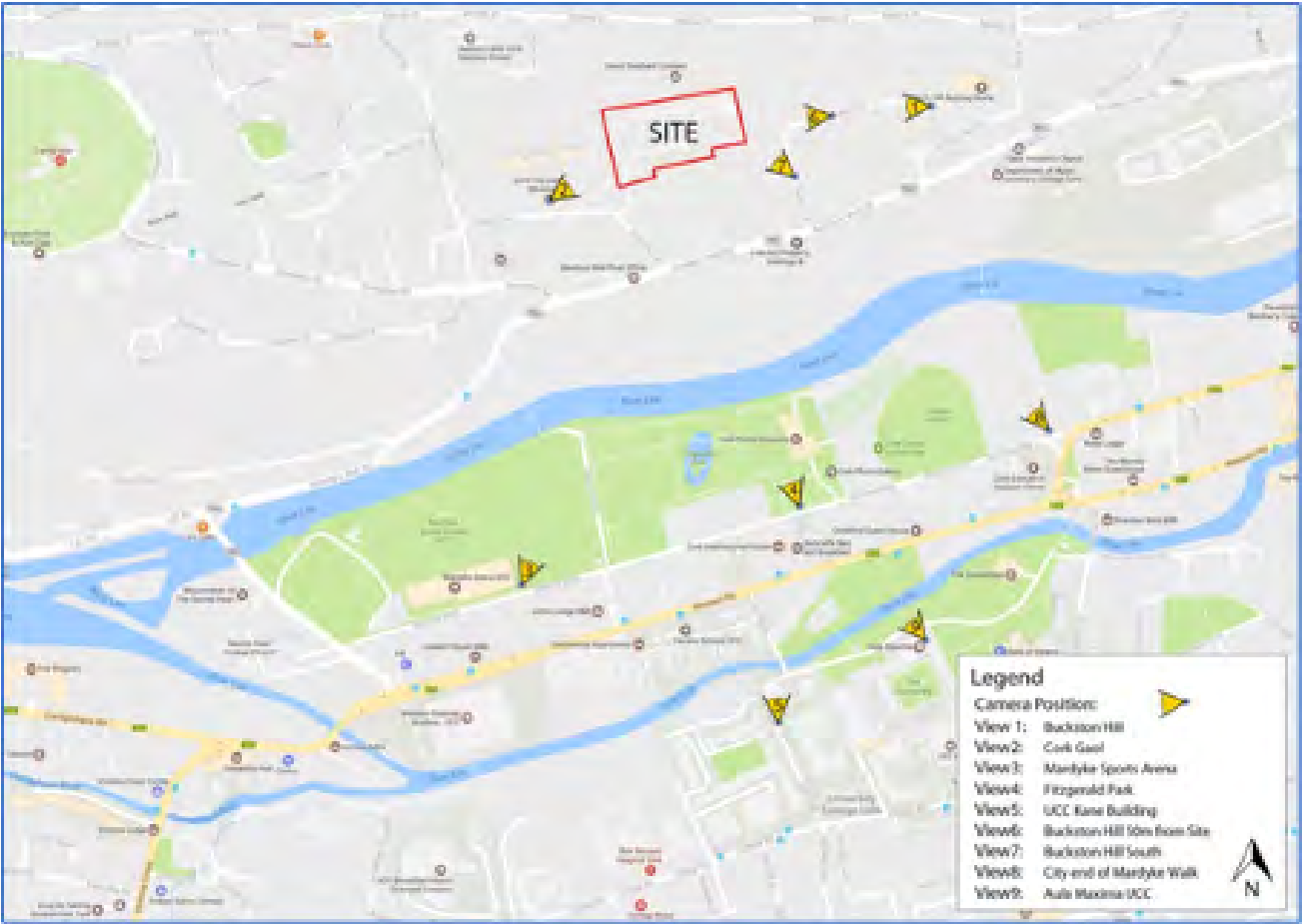


Figure 10.6 Representative Viewpoint Locations Map

10.8 The ‘Do Nothing’ Scenario

In a do-nothing scenario, the site would remain underutilised and further dereliction is likely to occur in the short to medium term.

10.9 Potential Significant Effects

10.9.1 Townscape

10.9.1.1 Townscape Sensitivity

In accordance with Section 5.5 of the GLVIA-2013, a townscape character assessment requires a particular understanding of, among other criteria, “the context or setting of the urban area and its relationship to the wider landscape”. In this case there are several key and somewhat competing factors relating to the value and sensitivity of this site and its immediately surrounding context. These include, the obvious architectural heritage value of the Good Shepherd Convent building. However, the resolute and austere appearance of this complex of substantial scale heritage building standing proudly above the River Lee belies the dereliction that is much more apparent from close quarters and within the site itself.

An important aspect of the townscape value of the Good Shepherd site is its relationship to surrounding landscape features and heritage buildings / sites. In terms of form and function it is closely associated with the Cork Gaol site. Both buildings have very long and narrow east – west form responding to the prevailing slope as well as presenting to the River Lee and maximising views across it.

The relationship of both buildings to the River Lee is also important and it is not by chance that they form a commanding presence over the river and western approach to Cork City in conjunction with Atkins Hall and St Kevin’s Hospital further along the slope to the west. Indeed, the western outskirts of the city must once have been considered a hub for grand scale institutional land uses. All of these aspects understandably influence the landscape designations contained within the CCDP, which considers the wider context of the site to be an Area of High Landscape Value and an Architectural Conservation Area. The finer scale Landscape Preservation Zone (NW17) considers the ‘*Tree Canopy*’ blanketing much of the slopes within, but mainly around the site to be a valued asset. It also considers ‘*Landmarks / Natural Features / Cultural Landscape*’ in the form of the parkland landscape of the site and the setting of the Convent building to be integral to its landscape value. And finally, the reference to ‘*Public and Private Open Space footprint*’ is clearly a reflection of the scale, mature vegetation and parkland character of the site.

Outside of the heritage complex that governs the site and its immediately surrounding context, the land use of the wider study is a richly varied mix of commercial, residential, institutional, educational and recreational land uses. This is a vibrant part of the city that is relatively near to both the city centre along the River Lee to the east, as well as to its rural hinterland a short distance to the west. Much of the recreation and amenity relates to the River Lee and the sense of enclosure from its steep and populated northern slopes adds distinct character to this wider landscape / townscape setting. Whilst there are some derelict sites scattered throughout the study area, these are not a defining element. Instead they tend to reflect a dynamic townscape in constant transition.

On the basis of the reasons outlined above, it is considered that the site and its immediate heritage context are very sensitive to change that might undermine or dilute the strong sense of heritage character and their sense of commanding presence above the River Lee and western environs of Cork City. They are also sensitive to further neglect that might undermine the structures themselves due to further dereliction. In that sense the Good Shepherd Convent and its attendant grounds are in need of some form of rejuvenation and preservation of particularly the structures. On balance, therefore, the landscape / townscape sensitivity of the site and its immediate context (within c. 300m) is deemed to be **High-medium**. Within the wider context of the study area the townscape sensitivity is generally in the order of **Medium-low**, albeit with some higher sensitivity pockets of natural and cultural townscape features present.

10.9.2 Demolition and Construction Phase

10.9.2.1 Townscape Effects – Construction Phase

During the demolition and construction stage there will be intense construction-related activity within and around the site, including approach roads. This will include, but is not limited to:

- HGVs transporting materials to and from the site;
- Removal/ disturbance of existing vegetation across the site.
- Removal be additional of existing perimeter vegetation and landcover across the site, however these effects will be localised.
- Movement of heavy earth-moving machinery and tower cranes on-site;
- Temporary storage of excavated materials and construction materials on-site;
- Gradual emergence of the incomplete residential development, and associated works;
- Security hoarding and site lighting.
- The refurbishment of the existing Good Shepherd Convent building;
- The construction of new buildings, roadways, paths and amenity features

The physical impacts on the site's land cover will be permanent and not readily reversible. There will be minor impacts on the character of the study area as a result of the intensity of movement and clutter of temporary structures associated with the construction works. Most notably, some of the established vegetation across the site will be removed. However, any removal will be localised and much of it is to be retained to form an integral part of the landscape masterplan for the proposed development. Ground level activity and stockpiling will be contained behind a security hoarding, but will be potentially visible from distance looking upslope from the northern side of the River Lee / across slope from the south of the River Lee.

Construction Stage effects will be at their greatest when the buildings structures are present but are partially complete without final finishes, draped in scaffolding and surrounded by tower cranes in a complex and dynamic scenario that will appear cluttered. Nonetheless, construction stage effects on townscape character will be of a familiar form as construction work is commonplace on both large and small sites throughout the city. Effects will also be relatively localised and will be 'short-term' (i.e. lasting 1-7 years), in accordance with the EPA definitions of impact duration.

On the basis of the reasons outlined above, the magnitude of the Short-term construction stage landscape/townscape impacts is deemed to be **Medium** and of a **Negative** quality.

10.9.2.2 Visual Impact – Construction phase

During the demolition and construction stage the visual impacts will also relate to movement and clutter of machinery and emerging partially completed structures within the confines of the site. Loss of some existing vegetation may open up views into the site that were not previously afforded. Although there will be a site hoarding around the perimeter of the site, which will limit visibility of ground based movement storage of materials and clutter from local receptors, there is potential to see into the site from more distant receptors to the south due to the south facing slope of the site.

Construction stage visual effects will be Negative in terms of quality but they are only of a short term duration and of a familiar nature within the city and particularly in relation to the St Kevin's Hospital site a short distance to the west that

is going through construction of a similar nature at present. In terms of proportionality of the visual impact assessment, it is the permanent operational phase effects that are the key consideration relative to the short term construction stage effects.

On the basis of the reasons outlined above, the magnitude of the Short-term construction stage visual impacts is deemed to be **Medium** and of a **Negative** quality.

10.9.3 Operational Phase

10.9.3.1 Townscape Effects – Operational Phase

Following the completion of the proposed works, landscape/townscape impacts will relate entirely to the development's impact on the character of the receiving landscape/townscape and whether this is positive or negative.

The proposed development will repair and refurbish the existing fire damaged and derelict Good Shepherd Convent building ensuring that it will remain a bastion of the heritage built fabric of Cork City's western fringe in perpetuity. This can only be considered a positive effect in its own right. The newly proposed residential apartment buildings will line the slopes around the convent buildings except to the southwest where the entire area under Area of High Value Landscape (AHVL) zoning objective is retained as an established part of the overall landscape masterplan for the site. This has the benefit of retaining much of the mature tree canopy cover within the site and allowing the proposed apartment blocks to nestle into the parkland context of the sloped site. It also maintains the strong parkland connection to the adjacent Gaol site to the west.

The apartment blocks are scaled and sited in such a manner as to balance strong utility for the site for accommodation purposes, but without a sense of over development. There are generous landscaped spaces between the blocks allowing both visual and physical permeability between them as well as adequate space to the fore of the convent building to afford the heritage structure the reverence it deserves when viewed from within the wider townscape context to the south. The apartment blocks scale up from three storey structures where they abut existing residential boundaries to the south and southeast, but scale up towards the interior of the site and where buffered by generous buffers to non-residential boundaries. To the north of the convent building, the proposed apartment blocks are of a height that they will not be seen to rise above and dominate the heritage structure when viewed from the townscape to the south. Nor will they block views from the dwellings that line the southern side of Blarney Road further upslope, which have long back yards connecting downslope towards the site.

The proposed development will add markedly to the scale, intensity and extent of development on the site, whilst safeguarding its key assets in accordance with the NW17 specific zoning objectives. Those being the preservation of '*Tree Canopy*'; '*Landmarks / Natural Features / Cultural Landscape*' and '*Public and Private Open Space footprint*'. The integrity of the site and its key assets is safeguarded by the subtle and incremental terracing of the site to mirror the underlying landform rather than attempting to 'flatten' broad areas of the site to maximise use through excessive excavation. The existing tree canopy is also supplemented by newly proposed tree planting within and around the perimeter of the site. The design rationale for the landscape masterplan highlights that the tree planting measures undertaken now are for the benefit of the site in perpetuity. The newly planted trees will eventually take over responsibility for maintaining the mature tree canopy cover of the site from the current trees when they begin to decline with age.

The envelopment of the convent building by residential apartment buildings will slightly dilute the visual presence of the heritage structure as its current backdrop / framing when viewed from the south tends to be vegetation within a substantially open site. However, the added weight of built development also adds to the overall visual presence and intensity of the site whilst allowing the convent building to remain chief of these structures. It is also important to consider that this is ostensibly an urban setting and additional built development is not contrary to the nature and character of the study area and is also in line with the residential zoning of those portions of the site subject to built development proposals.

For the reasons outlined above, it is considered that the increased intensity of built development within this site is appropriate in terms of scale, form and function and has been thoughtfully designed to complement and reinforce the key heritage and landscape assets of the site. Any minor dilution of the open setting of the hospital building is balanced by the refurbishment that will take place to this derelict building and its unkempt site. Consequently, the magnitude of landscape impact is deemed to be **Medium** and of a **Positive** quality.

When combining the sensitivity of the site and its surrounds with the magnitude of townscape impact, the significance of townscape effect is deemed to be **Moderate / Positive**. Whilst the significance of effect will reduce with greater distance and broader townscape context beyond 300m but the quality of effect will remain positive.

10.9.3.2 Visual Impact – Operational Phase

10.9.3.2.1 Visual Receptor Sensitivity

All of the viewpoints are located within a relatively contained urban area, with a key differential in visual receptor sensitivity relating to whether or not the viewpoint represents residential receptors or people travelling along busy roads and within other areas of the public realm. The visual setting is richly varied in terms of the scale and form of development as well as the time depth of land uses. However, it is a dynamic urban setting where change is constant and increased scale and intensity of development does not automatically have a negative connotation.

It is noted that residential visual amenity on the south facing slopes in the vicinity of the site relates to elevated and broad visibility of and across the River Lee and Cork City’s southwestern suburbs in a southerly direction. In this respect, the residential streets and dwellings above the site to the north are most susceptible to visual obstruction and intrusion from the proposed downslope development. Whereas, those residential streets and residences below the site to the south are not susceptible to blocking of key amenity views, but are more susceptible to the potentially overbearing presence of new apartment blocks on the slopes above them. For these reasons, receptors to the north are generally deemed to be of a Medium sensitivity and those to the south of a Medium-low sensitivity.

Within the broader townscape context to the south of the River Lee, the densely treed slopes above the River are interspersed with austere institutional developments that provide a commanding backdrop to this portion of the city. These include Atkins Hall and St Kevin’s Hospital further to the west and Cork Gaol immediately to the west of the Good Shepherd Convent which itself contributes to this notable pattern. The rest of the townscape fabric on these slopes is generally made up of residential development both grand and modest. It is an eclectic backdrop that adds to the character of the visual setting but without a strong sense of susceptibility to visual change. Consequently, general receptor sensitivity is deemed to be Medium-low except where recreational use or naturalistic / heritage character contributes to the view in question.

Based on the considerations outlined above, the visual receptor sensitivity is assessed separately and on a case-by-case basis for each of the representative viewpoints used for the visual impact assessment contained in Table 10.7.

10.9.3.2.2 Visual Impact Magnitude

The assessment of visual impacts at each of the selected viewpoints is aided by photomontages of the proposed development. Photomontages are a ‘photo-real’ depiction of the scheme within the view, utilising a rendered three-dimensional model of the development, which has been geo-referenced to allow accurate placement and scale.

For each viewpoint, the existing view is presented alongside the view of the development once established. Table 10.7 presents the judgements made with regard to the operational phase visual effects from the viewpoint locations.

Whilst the visual effects of the development will inherently vary from location to location, from many locations in the wider townscape, the built form is either not visible or only forms a minor component in the overall view. The most notable visual influence relates to views experienced from the immediate area of townscape.

Table 7 – Operational Phase Visual Effects

	Existing view	Sensitivity	Description and Magnitude of Visual impact	Significance
VP1	Buckston Hill This is a contained view looking west along the narrow upper Janemount Road towards the even narrower Buxton Hill laneway. A series of two storey dwellings overlook the street from the northern, uphill side, whilst the southern side is contained by dense mature vegetation. An oblique view across the front and eastern side facades of the red brick Good Shepherd Convent building is afforded in the middle distance above intervening buildings and vegetation where it continues the building line from the foreground dwellings.	Medium-low	One of the proposed apartment blocks will appear to the fore of the south-eastern corner of the convent building where it is also only partially visible through and above intervening buildings and vegetation and less likely so during summer months when trees are in-leaf. Its flat roof form and light tone finish makes it appear distinct to the convent building in what is clearly a deliberate design decision. It is also subordinate in height and scale to the Convent building whilst providing an appropriate transition in scale between the adjoining residential building line and the heritage structure. It will block the view of the trio of arched windows in the eastern façade of the Convent building. Whilst the apartment design is appropriate to the setting, it is not considered that the proposed development improves the view, but the reinstated roof of the more distant sections of the convent building roof. On balance of the factors outlined above, the magnitude of visual impact is deemed to be Low and the quality of the effect is marginally Negative i.e. Neutral-Negative.	Slight / Neutral-Negative / Permanent
VP2	Cork Gaol This view is from within the front courtyard of Cork Gaol looking east. It is a strongly enclosed view due to the high external walls of the Gaol, the Gaol buildings itself and the large mature trees that occur within the adjacent Good Shepherd Convent site. The Convent building itself is only just visible from here as the partial roof profile at its western end. There is a strong sense of heritage within this visual setting.	High-medium	The only visible aspect of the proposed development will be the upper section of the westernmost apartment block which will subtly rise between the Gaol building and the Good Shepherd Convent building. Whilst it bridges the gap between the two heritage structures in terms of perceived scale from this location, it also stands as a distinctly modern structure in this heritage context. This is appropriate in terms of reading the time depth between the developments, but does draw slightly from the integrity of sense of heritage in the visual setting. Nonetheless, it is a subtle addition to the view that will only be visible from a modest proportion of the Gaol site. Critically, the mature parkland setting and tall tree canopy within the proposed site that contributes to visual amenity within the Gaol site will remain unaffected. The roofline of the convent building will also be restored as part of the development. Overall, the magnitude of visual impact is deemed to be Low and the quality of the effect will be Negative.	Moderate-slight / Negative / Permanent
VP3	Mardyke Sports Area This is an open view across sports pitches within the Mardyke Sports facility, which lies on relatively flat ground on the southern side of the River lee corridor. Looking north towards the steeper slopes on the northern side of the river is a matrix of mature trees and grand houses, interspersed with large institutional heritage structures including Cork Gaol, Good Shepherd Convent and further upslope on the ridgeline, Presentation Brothers school.	Medium	The proposed development will present as a series of modern apartment blocks with a high proportion of glazing and light toned materials that pop out of the wooded slopes intermittently in a similar fashion to the institutional buildings and large dwellings that otherwise occupy the northern slopes above the River. They will slightly increase the intensity and general scale of built development across the slope as well as increasing the mix of modern development amongst the heritage structures within the Architectural Conservation Area. Although one of the central blocks appears to the fore of the Good Shepherd Convent building and will obscure the arched windows of the front façade, the upper floor and roof profile remain unhindered. Furthermore the apartment blocks beyond the convent building are not discernible and it is views such as this that determined their appropriate scale. In the broad context of this vista the proposed development is not a distinctive feature and will not unduly draw from visual amenity. Instead it will add to the eclectic time depth of development across the wooded slopes to the north. On balance of the factors outlined above, the magnitude of visual impact is deemed to be Low and the quality of effect Neutral.	Slight / Neutral / Permanent
VP4	Fitzgerald Park This view is from in front of the Cork Public Museum which is contained within the passive parkland area of Fitzgerald Park, which in turn lies between the Mardyke Sports centre subject of VP3 and the Cork County Cricket Ground to the east. In a gap beyond the treelined open space and Museum in the foreground are the northern slopes above the River Lee where the eastern end of the Good Shepherd Convent building stands proud amounts layer of residential development than makes its way in bands up the slope. It is a distinctive feature but a background one nonetheless.	Medium	The flat rooflines of about six of the proposed apartment blocks will rise just above and between intervening buildings an vegetation to the fore of the convent building, while those beyond it are screened from view. Although different in finish and form to the surrounding residential development the apartment blocks tie into the layered horizontal pattern that has long been established across the slope. The blocks immediately to the fore of the visible section of the convent building will screen its lower façade, but leave the upper floors and roofline exposed as the dominant built form within the site. This distinction and dominance is aided by the variance in tone and texture between the light toned apartment blocks and red brick convent building. There will be a marginal increase in the scale and intensity of modern built form on the slopes to the north, but this also reads as improved site utility in an urban setting such as this. It also represents part of the long term preservation strategy for both the Convent building and the mature tree canopy within the site. On balance of the factors outlined above, the magnitude of visual impact is deemed to be Low and the quality of effect Neutral.	Slight / Neutral / Permanent

VP5	UCC Kane Building On a similar alignment to VP4 but further away from the site within the University College Cork campus, VP5 provides a clear view towards the northern slopes above the Rover Lee, albeit above a foreground car park and perimeter wall that screens the base of the slope. The prominent features on the visible section of slope are the Good Shepherd Convent with Presentation brothers school further upslope on the ridge. To the south and west of these heritage buildings is strong tree canopy cover whilst the east (right) are layered lines of residential streets making their way upslope.	Medium-low	As with the view from VP4, the partial flat rooflines of six of the proposed apartment blocks will rise just above and between intervening buildings and vegetation to the fore of the convent building, while those beyond it are substantially screened from view, except in a gap between convent structures. Although different in finish and form to the surrounding residential development the apartment blocks tie into the layered horizontal pattern that has long been established across the slope to the east. The blocks to the west of the Convent building are substantially screened by tree cover within the site. The blocks immediately to the fore of the visible section of the convent building will screen its lower façade, but leave the upper floors and roofline exposed as the dominant built form within the site. This distinction and dominance is aided by the variance in tone and texture between the light toned apartment blocks and red brick convent building. There will be a noticeable increase in the scale and intensity of modern built form on the slopes to the north, but this also reads as improved site utility in an urban setting such as this. It also represents part of the long term preservation strategy for both the Convent building and the mature tree canopy within the site. On balance of the factors outlined above, the magnitude of visual impact is deemed to be Low and the quality of effect Neutral.	Slight / Neutral / Permanent
VP6	Buckston Hill 50m from site This is a view from closer to the site along the Buckston Hill Laneway than VP1, but with a similar angle of view towards the south-eastern corner of the burnt out Good Shepherd Convent building. It is an enclosed view that is contained by the front of south facing dwellings to uphill side of the lane and rear entrances to dwellings on the downhill side. Mature trees and boundary walls limit visibility downslope to the south.	Medium-low	Two of the easternmost apartment blocks will rise to the fore of the convent building allowing only a narrow residual view between them of the corner of the heritage structure, which has also been refurbished. The blocks themselves are only partially revealed above and between boundary walls and sections of intervening vegetation. They are higher than the foreground dwellings but not imposing or over-scaled in relation to them. Nor will there be any sense of overlooking as they too are oriented to take advantage of the elevated views to the south over the city. The sense of heritage within the site is reduced but this was not a high amenity view of the convent building and there is an appropriately clear distinction between the design, form and finish of the convent building and the proposed modern structures. The convent building is also restored from burnt out dereliction to a form that will endure for many decades to come. On balance of the factors outlined above, the magnitude of visual impact is deemed to be Medium and the quality of that effect, marginally Negative.	Moderate-slight / Neutral-Negative / Permanent
VP7	Buckston Hill South This is a cross slope / upslope view towards the site from the bend in Buxton Hill laneway. It is separated from the site by a two storey residential property that occupies and encloses the foreground of the view and yet this is still one of the more open sections of the Laneway. There is a view of the burnt out upper storeys at the south-eastern corner of the Good Shepherd convent building beyond the dwelling with the red brick Presentation brothers school further upslope on the ridge.	Medium-low	Two of the proposed apartment blocks will rise into view above intervening sections of boundary walls beyond the foreground dwelling. These are upper sections of modest scale buildings which are enclosing, but not overbearing. While the dwelling in the foreground will be afforded clearer views from within the property and from rear windows and there might be some sense of overlooking, the key amenity views from the dwelling are downslope to the south and remain unaffected. There will also be a considerable degree of tree planting placed between the foreground dwellings and the two apartment blocks to aid privacy. This will be most effective during winter months when the trees are in-leaf. From the VP location the view of the convent building will be blocked by the nearest apartment building, but this was never a key component of this particular view. Overall, the visual impact from this laneway view will be Medium and Negative in terms of quality.	Moderate-slight / Negative / Permanent
VP8	City end of Mardyke Walk This is a view from the popular public amenity space of Mardyke Walk looking towards the northern slopes above the River Lee across a foreground of parkland laws trees and paths. The northern slopes consist of large heritage dwellings within an Architectural Conservation Area that are interspersed by layers of mature tree canopies. The Good Shepherd Convent building is partially visible within that same context where its red brick façade stands in contrast to surrounding dwellings.	Medium	The upper roof profile of two of the apartment blocks on the lower part of the site can just be seen rising to the fore of the convent building. They will partly obscure a small portion of the lower façade of the convent building but it continues to be the dominant built feature within the site, The refurbished roofline of the convent is also noticeable. These subtle changes to the view of the site are more diluted in the context of the distance and overall view afforded from here and the magnitude of visual impact is deemed to be Low-negligible and of a Neutral quality.	Slight / Neutral / Permanent

VP9	Aula Maxima in UCC This location within the UCC campus provides a clear view towards the northern slopes above the Rover Lee through a frames foreground of woodland trees. The prominent features on the visible section of slope are the Good Shepherd Convent with Presentation brothers school further upslope on the ridge. To the south and west of these heritage buildings is strong tree canopy cover whilst below the site and to the east are layered lines of residential streets making their way upslope.	Medium	The flat rooflines of most of the proposed apartment blocks will rise above intervening buildings and vegetation to the fore of the convent building, while those beyond it are substantially screened from view. Although different in finish and form to the surrounding residential development the apartment blocks tie into the layered horizontal pattern that has long been established across the slope to the east. The blocks to the west of the Convent building are substantially screened by tree cover within the site. The blocks immediately to the fore of the visible section of the convent building will screen its lower façade, but leave the upper floors and roofline exposed as the dominant built form within the site. This distinction and dominance is aided by the variance in tone and texture between the light toned apartment blocks and red brick convent building. There will be a noticeable increase in the scale and intensity of modern built form on the slopes to the north, but this also reads as improved site utility in an urban setting such as this. It also represents part of the long term preservation strategy for both the Convent building and the mature tree canopy within the site. On balance of the factors outlined above, the magnitude of visual impact is deemed to be Low and the quality of effect Neutral.	Slight / Neutral / Permanent
VP10	Blarney Street Looking East This a slightly downhill view to the southeast looking along Blarney Street from its crest. Strawberry Hill Middle School can be seen directly across the road with terraces of houses beyond as the road begins to descend more rapidly in the middle distance. There is a glimpse of the city on lower ground in the distance looking along the road alignment, but otherwise, the view is contained by buildings that line the street to the south.	Medium-low	The proposed development will not be visible from here due to screening by intervening terrain and buildings. Consequently, the magnitude of visual impact is deemed to be Negligible by default. This view has been used as an 'Illustrative View' i.e. to illustrate the absence of visual impact from this part of the study area.	Imperceptible/ Neutral / Permanent
VP11	Blarney Street Looking West This is a downhill view from just above Blarney street looking to the southwest across a foreground car park at an attractive and eclectic terrace of multi-coloured dwellings. On the opposite side of the road. This consolidated terrace of two storey dwellings rises gently up the slope with a complex stepping of roof lines that follows the bend in the road.	Medium-low	The proposed development will not be visible from here due to screening by intervening terrain and buildings. Consequently, the magnitude of visual impact is deemed to be Negligible by default. This view has been used as an 'Illustrative View' i.e. to illustrate the absence of visual impact from this part of the study area.	Imperceptible/ Neutral / Permanent
VP12	Magazine Rd Highfield Ave Junction This view to the north follows Highfield avenue downhill where it is lined by terraces of Victorian era terraced residences. The Kane building from UCC can be seen downslope on the righthand side of the road, but rising to the meet the foreground building line. In the middle distance are the slopes on the opposite side of the River Lee which are equally populated by vegetation and an eclectic mix of buildings. Most notable the roofless Good Shepherd Convent, and Cork Gaol with Presentation Brothers school on the ridge above.	Medium-low	The proposed development is substantially screened from here by intervening buildings on the righthand side of the road. The most notable change is the convent building receives a new roof and is more conspicuous as a result. One of the proposed apartment blocks is also partially visible on the slopes below it, but with posing any obstruction to the convent or other buildings on the slope. There is a marginally increased scale and intensity of built development on the visible section of the opposing slopes, but generally the visual change is subtle and characteristic of the varied built form that surrounds it. Overall, the magnitude of visual impact is deemed to be Low-negligible and of a Neutral Quality.	Slight-imperceptible/ Neutral / Permanent

10.9.4 Cumulative Effects

The main cumulative effect for the proposed development is its relationship to the St Kevin’s Hospital site further along the northern slopes above the River Lee to the west where a redevelopment of a similar nature and scale is partially constructed. The St Kevin’s Hospital building is of a similar era to the Good Shepherd convent and has a similar gothic red brick appearance and scale. It is central within a northward sloping site which is being redeveloped for a mix of residential apartment blocks and houses, whilst the heritage structure is refurbished as residential apartments after having been gutted by fire. In essence, a very similar redevelopment of the Good Shepherd site is being proposed here, but with apartment blocks.

Cumulatively, the two developments add the scale and intensity of modern built development in an area where large scale institutional heritage buildings and wooded sites are prevalent and a key contributor to townscape character. However, the design approach in both instances is a sensitive one that balances increased site utility with the long term preservation the heritage buildings in question and the mature tree canopy within the sites. The combine to form a pattern of redevelopment, but a well-considered one that alters, but does not transform the prevailing townscape character and adds clear and deliberate time depth to the built fabric in a positive manner.

For these reasons, it is considered that the proposed development, in conjunction with other similar scale development within the study will not give rise to any significant and negative cumulative impacts.

10.10 Mitigation Measures

10.10.1 Incorporated Design Mitigation

The most effective mitigation in the case of the proposed development is that which is incorporated into the design. This consists of the site layout which avoids disturbing the key area of mature tree canopy within the southwestern portion of the site, which is also associated with a High Value Landscape designation of the Cork City Development Plan. The landscape masterplan for the proposed development also incorporates replacement tree planting within this area in the long term, which will see new tree planting take over the canopy as older trees decline.

Incorporated mitigation is also evident in the considered design of the proposed apartment buildings, which are subordinate in height and placement to the convent building allowing the heritage structure to continue to dominate the site in an austere manner. The design, finish and light tone of the apartment blocks also seeks differentiation and subordination to the convent building, whilst being of a high architectural standard. The height and placement of the apartment buildings is also cognisant of maintaining vast elevated views for surrounding residents above the site and keeping the roof profile out of view behind the convent building when viewing north across the Rive Lee from the southwestern suburbs of the city. There is also an incremental step-up in scale from the boundary to afford an appropriate transition from surrounding residential development.

10.10.2 Demolition and Construction Phase Mitigation

There is no specific landscape and visual mitigation proposed or considered necessary during the demolition and construction phases. The site perimeter hoarding, which has many purposes will aid in the screening of ground based activity and the clutter of stored materials and welfare facilities. However, it will be inconsequential for the main construction phase

activities relating to the apartment buildings rising from the sloping site. The key consideration for construction stage landscape and visual effects is that they will be short-term in duration.

10.10.3 Operational Phase Mitigation

The only specific operational phase mitigation of note for landscape and visual effects that is not otherwise covered by incorporated design mitigation will be the planting and establishment over time of new trees within and around the site. However, in the context of a site already containing and preserving substantial mature tree canopy cover this will not have a material bearing on assessed landscape and visual impacts except potentially in relation to localised property scale effects around the perimeter of the site.

10.11 Residual Impact Assessment

There are no specific landscape and visual mitigation measures proposed that are not already incorporated into the proposed development that has been already assessed. This assessment was supported by the photomontage set, which equally, did not require before and after mitigation views to be prepared for a robust assessment. Consequently, Residual impacts remain unchanged from those already assessed herein. These are summarised in Table 10.

10.11.1 Summary of Residual Visual Effects

The following Table summarises the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

Table 10-1 Summary of Operational Phase Residual Visual Effects

Viewpoint	Location	Sensitivity	Magnitude of Change	Operation Stage Significance & Quality
1	Buckston Hill	Medium-low	Low	Slight / Neutral-Negative
2	Cork Gaol	High-medium	Low	Moderate-Slight / Negative
3	Mardyke Sports Area	Medium	Low	Slight / Neutral
4	Fitzgerald Park	Medium	Low	Slight / Neutral
5	UCC Kane Building	Medium-low	Low	Slight / Neutral
6	Buckston Hill 50m from site	Medium-low	Medium	Moderate-Slight / Neutral-Negative
7	Buckston Hill South	Medium-low	Low	Moderate-slight / Negative
8	City end of Mardyke Walk	Medium	Low-negligible	Slight / Neutral
9	Aula Maxima UCC	Medium	Low	Slight / Neutral
VP10	Blarney Street Looking East	Medium-low	Negligible	Imperceptible
VP11	Blarney Street Looking West	Medium-low	Negligible	Imperceptible
VP12	Magazine Rd Highfield Ave Junction	Medium-low	Negligible	Slight-imperceptible / Neutral

10.12 Risk of Major Accidents or Disasters

The risk of major accidents or disasters is not relevant to the townscape and visual assessment.

10.13 Worst Case Scenario

Worst case scenario is not relevant to the townscape and visual assessment.

10.14 Interactions

Key interactions with the landscape and Visual factor include;

- **Human Beings** – in relation to visual impacts
- **Ecology / Biodiversity** – in relation to site landscaping measures and retained vegetation
- **Architectural and Cultural Heritage** – in relation to visual impacts from key heritage sites as an aid to assessing the effects on the setting of protected sites and structures

10.15 Monitoring

There are no specific landscape and visual mitigation measures proposed or considered necessary in this instance and thus, there is no requirement for ongoing mitigation and monitoring.

10.16 Summary of Mitigation and Monitoring

As there are no specific landscape and visual mitigation measures proposed or considered necessary in this instance, there is no requirement for ongoing mitigation and monitoring. However, it is worth noting that the main contractor and landscape contractor responsible for new planting within the site will be subject to installing and maintaining tree protection measures from British Standard BS5837 – ‘Trees in Relation to Design, Demolition and Construction’. The landscape contractor will also be subject to a defects and liability period of minimum 20 years to replace any plants that fail to establish within that period.

10.17 Conclusion

Based on the assessment of townscape effects, visual effects and cumulative effects contained in Chapter 10, it is considered that the proposed development will not give rise to any significant adverse effects.

10.18 References and Sources

- IEMA & Landscape Institute (UK) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition 2013 (GLVIA-2013)
- Cork City Development Plan 2022 – 2028;
- Environmental Protection Agency (EPA) publication ‘Guidelines on the Information to be contained in Environmental Impact Statements (2022);
- Urban Development and Building Heights Guidelines for Planning Authorities by Department of Housing, Planning and Local Government (DHPLG) (2018);

- Technical Information Note 05/17 - Townscape Character Assessment (2017);
- Technical Information Note 01/21 – GLVIA webinar Q&As;
- Technical Guidance Note 1/20 - Reviewing Landscape and Visual Impact Assessments (LVIAs) and Landscape and Visual Appraisals (LVAs);
- Technical Guidance Note GLVIA3 Statement of Clarification 1/13, 2/13, 1/14, and 2/14



CHAPTER ELEVEN

WASTE MANAGEMENT

CHAPTER ELEVEN

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CHAPTER ELEVEN | Waste Management

11.1 Introduction

This chapter evaluates the impacts, if any, which the proposed development may have on Material Assets - Waste as defined in the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) and the EPA 2022 Guidelines on the information to be contained in Environmental Impact Assessment Reports during the construction and operational phases of the proposed development, as described in Chapter 2 (Site Location & Proposed Development).

A site-specific Resource Waste Management Plan (RWMP) has been prepared by AWN Consulting to guide and manage the waste generated during the construction (including demolition and excavation) phase of the proposed development (including excavation, refurbishment and demolition works) and has been included as Appendix 11.1. The RWMP was prepared in accordance with the Environmental Protection Agency's (EPA) document *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects (2021)*.

A separate Operational Waste Management Plan (OWMP) has been prepared for the operational phase of the proposed Development and is included as Appendix 11.2 of this Chapter.

This Chapter has been prepared in accordance with European Commissions Guidelines, Guidance on the preparation of the Environmental Impact Assessment Report (2017), the EPA Guidelines on the Information to be contained in EIAR (2022).

These documents will ensure the management of wastes arising at the development site in accordance with legislative requirements and best practice standards.

11.2 Expertise & Qualifications

This Chapter has been prepared by Chonaill Bradley (Bsc ENV, PG Dip Circ Econ, AssocCIWM) of AWN Consulting. Chonaill is a Principal Environmental Consultant in the Environment Team at AWN. He holds a BSc in Environmental Science from Griffith University, Australia and a Postgraduate Diploma in Circular Economy Leadership for the Built Environment from the Atlantic Technological University, Galway. He is an Associate Member of the Institute of Waste Management (AssocCIWM). Chonaill has over ten years' experience in the environmental consultancy sector and specialises in waste management.

11.3 Proposed Development

The proposed development will include the conservation, conversion and extension of the former Good Shepherd Convent, Home Building, Orphanage Building, Well Site, Gate Lodge, and Bakehouse to provide student accommodation and ancillary services.

A full description is included in Chapter 2 of this EIAR and in the statutory notices.

11.3.1 Aspects Relevant to this Chapter

The aspects of the development that will be considered as part of this chapter are the existing site conditions, existing site use and the waste that will be generated as part of the demolition, construction and operation of the proposed development. These aspects will be considered together with the proposed development use. This section should be read in conjunction with the design drawings and reports which accompany this planning application.

11.4 Methodology

The assessment of the impacts of the proposed development, arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management; including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

This Chapter is based on the proposed development, as described in Chapter 2 (Site Location & Proposed Development) and considers the following aspects:

- Legislative context;
- Construction phase (including site demolition and excavation works); and
- Operational phase.

A desktop study was carried out which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the Construction and Operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction and operational phases of the proposed development have been calculated and are included in Section 11.6 of this chapter. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and National Waste Statistics, data recorded from similar previous developments, Irish and US EPA waste generation research.

Mitigation measures are proposed to minimise the effect of the proposed development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal. This information is presented in Section 11.9.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 5 of this EIAR (Land, Soils & Geology).

11.4.1 Relevant Legislation & Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation and control, which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended). European and national waste management policy is based on the concept of 'waste hierarchy', which

sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (Figure 11-1).



Figure 11.1 Waste Hierarchy (Source: European Commission).

EU and Irish National waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products. (Figure 11-2).



Figure 11.2 Circular Economy (Source: Repak).

The Irish government issues policy documents which outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document, *Waste Action Plan for a Circular Economy (WAPCE) – Waste Management Policy in Ireland*, was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan, *A Resource Opportunity*, in 2012.

One of the first actions to be taken from the WAPCE was the development of the *Whole of Government Circular Economy Strategy 2022-2023 'Living More, using Less' (2021)* to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The *Circular Economy and Miscellaneous Provisions Act 2022* was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will work to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)*. The guidance documents, *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects and Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers (FÁS & Construction Industry Federation, 2002)*, were also consulted in the preparation of this assessment.

There are currently no national guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including the National Waste Management Plan for a Circular Economy 2024 – 2030 (NWMPCE) (2024), BS 5906:2005 Waste Management in Buildings – Code of Practice, the Cork City Council (CCC) Waste Management (Segregation, Storage & Presentation of Household and Commercial Waste) Bye-Laws (2019), the EPA National Waste Database Reports 1998 – 2020, the Circular Economy and National Waste Database Report 2021-2022 (2024) and the EPA National Waste Statistics Web Resource.

11.4.2 Site Surveys/Investigations

Site investigations were carried out by Ground Investigations Ireland (GII) in October 2024. While initial site investigations have been undertaken there have not been any samples taken and sent for environmental soil testing. Prior to any material being removed from site further site investigations, environmental soil testing and waste classification will be undertaken and results will be sent onto CCC upon request.

The assessment of the impacts of the proposed development, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management; including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

11.4.3 Consultation

Consultation was undertaken with Cork City Council in the form of a pre-application consultation.

11.5 Difficulties Encountered

Until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

While it is possible to initially select a licensed waste facility for soil disposal, there is potential to encounter contaminated material or material with naturally occurring variations in minerals and chemicals that necessitates sending it to a different suitably licensed facility. The sampling and testing carried out in the Site Investigation (SI) process provides spot samples, and further testing is required during the excavation process, as the true condition of all excavated materials cannot be ascertained with certainty until this is undertaken.

There is a number of licensed, permitted and registered waste facilities in the Cork Area, Southern regions and across Ireland and Northern Ireland. However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

Licensed waste facilities have annual limitations on material that they can import as part of their license agreements. Because of this it would not make it possible to commit to a singular specific receiving facility as it is not available throughout the excavation phase. It would not be viable to cease a development and wait until a receiving facilities annual receiving quotas are reset. In a normal development waste facilities would switch between facilities with available capacity.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability. The waste facilities selected will ultimately be selected to minimise the environmental impacts on the surrounding environment.

11.6 Baseline Environment

11.6.1 Demolition

There will be waste materials generated from the demolition and partial demolition of some of the existing buildings as well as from the further excavation of the building foundations of the units to be demolished in full to accommodate the new development and facilitation works.

Further detail on the waste materials likely to be generated during the demolition works are presented in the project-specific RWMP in Appendix 11.1. The RWMP provides an estimate of the main waste types likely to be generated during the C&D phase of the proposed Development. The reuse, recycling / recovery and disposal rates have been estimated using the EPA National Waste Reports and the developments targeted recycling and reuse rates. The quantities of waste material have been supplied by the project engineers – MMOS, and are summarised in Table 11.1, below.

Table 11.1 Predicted on and off-site reuse, recycle and disposal rates for demolition waste.

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	419.5	0	0.0	85	356.6	15	62.9
Concrete, Bricks, Tiles, Ceramics	2377.0	0	2020.5	5	118.9	10	237.7
Plasterboard	186.4	85	55.9	60	111.9	10	18.6
Asphalts	46.6	30	11.7	70	32.6	5	2.3
Metals	699.1	25	35.0	80	559.3	15	104.9
Slate	372.9	5	0.0	85	316.9	15	55.9
Timber	559.3	0	55.9	60	335.6	30	167.8
Total	4660.8		2178.9		1831.7		650.2

11.6.1 Construction

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated.

There will be soil and stones excavated to facilitate construction of new foundations and landscaping. The project engineers (MMOS) have estimated that c. 40,329 m³ of material will need to be excavated to do so. It is currently envisaged that there will be an opportunity to reuse all clean excavated soil on site for use in landscaping and fill. In the case that any excavated soil is tested and deemed contaminated and unfit for reuse on-site, it will need to be removed offsite. This will be taken for appropriate offsite reuse, recovery, recycling and / or disposal.

When material that requires removal from the site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under Regulation 27 (By-products), as amended, of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2011-2020, (Previously Article 27 of the European Communities (Waste Directive)). For more information in relation to the envisaged management of by-products, refer to the RWMP (Appendix 11.1).

In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2019). Environmental soil analysis will be carried out prior to removal of the material on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). This legislation

sets limit values on landfills for acceptance of waste material based on properties of the waste, including potential pollutant concentrations and leachability. Any surplus excavated material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment / recovery or exported abroad for disposal in suitable facilities.

Waste will also be generated from construction phase workers e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and, potentially, sewage sludge from temporary welfare facilities provided on-site during the Construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific RWMP (Appendix 11.1). The RWMP provides an estimate of the main waste types likely to be generated during the Construction phase of the proposed development. These are summarised in Table 11.2, below.

Table 11.2 Predicted On and Off-Site Reuse, Recycle and Disposal Rates for Construction Waste.

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	624.9	10	62.5	80	499.9	10	62.5
Timber	530.2	40	212.1	55	291.6	5	26.5
Plasterboard	189.4	30	56.8	60	113.6	10	18.9
Metals	151.5	5	7.6	90	136.3	5	7.6
Concrete	56.8	30	17.0	65	36.9	5	2.8
Other	284.1	20	56.8	60	170.4	20	56.8
Total	1836.9		412.8		1248.9		175.2

11.6.1 Operation

All waste materials will be segregated into appropriate categories and will be stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site. It is envisaged that waste types will be generated from the residential student units and the commercial units.

The total estimated waste generation for the proposed development for the main waste types, based on the AWN waste generation model (WGM) incorporating EPA National Waste reports data, EPA National Waste Statistics Web Resource and floor use per m² of the proposed development, is presented in Tables 11.3 – 11.4, below, and is based on the uses and areas as advised by the project architect. Further break down of the estimated waste generation during the operational phase for each of the residential units can be found in the OWMP (Appendix 11.2).

Table 11.3 Estimated Waste Generation During Operational Phase for Commercial Units.

Waste Type	Waste Volume (m ³ / week)
	Commercial Units
Organic Waste	0.24
Dry Mixed Recyclables	4.78
Glass	0.13
Mixed Non-Recyclables	1.99
Total	7.16

Table 11.4 Estimated Waste Generation During Operational Phase for Residential Units.

Waste Type	Waste Volume (m ³ / week)
	Residential Unit
Organic Waste	5.20
Dry Mixed Recyclables	35.67
Glass	1.01
Mixed Non-Recyclables	20.72
Total	62.60

In addition to the typical waste materials that are generated on a daily basis, there will be some additional waste types generated from time to time that will need to be managed separately. A non-exhaustive list is presented below.

Deposit Return Scheme

Most drinks containers can be recycled via the deposit return scheme, such as bottles, cans and tins made from plastic, aluminium or steel can be returned once they are between 150ml and 3 litres in size and have the Re-turn logo on them.

At the shops you can either return the containers:

- Using a Reverse Vending Machine (RVM)
- Manually in the shop

If a shop does not have a RVM but they sell containers with the Re-turn logo, the shop may allow you to manually return containers in store, unless they have a take back exemption.

Locations of RVM machines can be found via the Re-turn website (www.re-turn.ie).

Green waste

Green waste may be generated from gardens, external landscaping and internal plants / flowers. Green waste generated from landscaping of external areas will be removed by external landscape contractors. Green waste generated from gardens internal plants / flowers can be placed in the organic waste bins.

Batteries

A take-back service for waste batteries and accumulators (e.g. rechargeable batteries) is in place in order to comply with the S.I. No. 283/2014 - European Union (Batteries and Accumulators) Regulations 2014, as amended. In accordance with these regulations, consumers are able to bring their waste batteries to their local civic amenity centre or can return them free of charge to retailers which supply the equivalent type of battery, regardless of whether or not the batteries were purchased at the retail outlet and regardless of whether or not the person depositing the waste battery purchases any product or products from the retail outlet.

The commercial tenants cannot use the civic amenity centre. They must segregate their waste batteries and either avail of the take-back service provided by retailers or arrange for recycling / recovery of their waste batteries by a suitably permitted / licenced contractor. Facilities management may arrange collection, depending on the agreement.

Waste batteries must be separately stored and returned to retailer or collected for recycling and recovery of resources and the operator(s) are responsible for arranging this. Waste batteries generated from the residents may be returned to any retail outlet where similar batteries are sold, regardless of whether they were originally purchased in that outlet. The operator will be required to store batteries within an industrial store. The operator will arrange for the return to retailers or collection by an authorised waste contractor, as required.

Waste Electrical and Electronic Equipment (WEEE)

The WEEE Directive (Directive 2002/96/EC) and associated Waste Management (WEEE) Regulations have been enacted to ensure a high level of recycling of electronic and electrical equipment. In accordance with the regulations, consumers can bring their waste electrical and electronic equipment to their local recycling centre. In addition, consumers can bring back WEEE within 15 days to retailers when they purchase new equipment on a like for like basis. Retailers are also obliged to collect WEEE within 15 days of delivery of a new item, provided the item is disconnected from all mains, does not pose a health and safety risk and is readily available for collection.

As noted above, the commercial tenants cannot use the civic amenity centre. They must segregate their WEEE and either avail of the take-back / collection service provided by retailers or arrange for recycling / recovery of their WEEE by a suitably permitted / licenced contractor. Facilities management may arrange collection, depending on the agreement.

WEEE must be separately stored and returned to manufacturer/retailer or collected for recycling and recovery of resources and the tenant(s) are responsible for arranging this. The *WEEE Directive 2002/96/EC* and associated *European Union (WEEE) Regulations 2014* have been enacted to ensure a high level of recycling of electronic and electrical equipment. It is the manufacturers' responsibility to take back the WEEE, regardless of whether a replacement product is purchased or not and retailers are required to take back WEEE where a similar product is purchased. Operator will be required to store WEEE within an internal store, the operator will arrange for the return to retailers or collection by an authorised waste contractor, as required.

Printer Cartridge/Toners

It is recommended that a printer cartridge / toner bin is provided in the commercial unit, where appropriate. The commercial tenant will be required to store this waste within their unit and arrange for return to retailers or collection by an authorised waste contractor, as required.

Waste printer cartridge / toners generated by residents can usually be returned to the supplier free of charge or can be brought to a civic amenity centre.

Chemicals (solvents, paints, adhesives, resins, detergents etc)

Chemicals (such as solvents, paints, adhesives, resins, detergents, etc) are largely generated from building maintenance works. Such works are usually completed by external contractors who are responsible for the off-site removal and appropriate recovery / recycling / disposal of any waste materials generated.

Any waste cleaning products or waste packaging from cleaning products generated in the commercial units that is classed as hazardous (if they arise) will be appropriately stored within the tenants' own space. Facilities management may arrange collection, depending on the agreement.

Any waste cleaning products or waste packaging from cleaning products that are classed as hazardous (if they arise) generated by the residents should be brought to a civic amenity centre.

Light Bulbs (Fluorescent Tubes, Long Life, LED and Filament bulbs)

Waste light bulbs (fluorescent, incandescent and LED) may be generated by lighting at the commercial units. It is anticipated that commercial tenants will be responsible for the off-site removal and appropriate recovery / disposal of these wastes. Facilities management may arrange collection, depending on the agreement.

Waste light bulbs (fluorescent, incandescent and LED) may be generated by lighting at the residential units. It is anticipated that facilities management will be responsible for the off-site removal and appropriate recovery / disposal of these wastes. Facilities management may arrange collection, depending on the agreement.

Textiles

Where possible, waste textiles should be recycled or donated to a charity organisation for reuse. Commercial and residential tenants will be responsible for disposing of waste textiles appropriately.

Waste Cooking Oil

If the commercial tenants use cooking oil, waste cooking oil will need to be stored within the unit on a bunded area or spill pallet and regular collections by a dedicated waste contractor will need to be organised as required. Under sink grease traps will be installed in any cooking space.

If the residents generate waste cooking oil, this can be brought to a civic amenity centre.

Furniture (and other bulky wastes)

Furniture and other bulky waste items (such as carpet, etc.) may occasionally be generated by the commercial tenant. The collection of bulky waste will be arranged, as required by facilities management.

Abandoned Bicycles

Bicycle parking areas are planned for the development. As happens in other developments, residents sometimes abandon faulty or unused bicycles, and it can be difficult to determine their ownership. Abandoned bicycles should be donated to charity if they arise or Facilities management will may arrange collection by a licensed waste contractor.

11.7 The 'Do Nothing' Scenario

If the proposed development was not to go ahead (i.e. in the Do-Nothing scenario) there would be no excavation or construction at this site. There would, therefore, be a neutral effect on the environment in terms of waste.

11.8 Potential Significant Effects

11.8.1 Demolition Phase

The proposed Development will generate a range of non-hazardous and hazardous waste materials during site demolition works. General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by construction employees, including food waste. Waste materials will be required to be temporarily stored on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant and negative**.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant and negative**.

Wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. There are numerous licensed waste facilities in the Southern Region which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the development site would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant and negative**.

11.8.2 Construction Phase

The impact assessment in this section relates to all phases of construction including site excavations and demolition works.

The proposed Development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction. General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by construction employees, including food waste. Waste materials will be required to be temporarily stored on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant and negative**.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant and negative**.

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There is a quantity of material which will need to be excavated to facilitate the proposed development. A detailed review of the existing ground conditions on a regional, local site-specific scale are presented in Chapter 5. It is anticipated that all clean excavated soil can be reused on-site. In the event that excavated material is found to be contaminated it will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant and negative**.

11.8.3 Operational Phase

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. In the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant and negative**.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The knock-on effect of litter issues is the presence of vermin in affected areas. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant and negative**.

Waste contractors will be required to service the proposed development on a regular basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant and negative**.

11.8.4 Cumulative Effects

If waste material is not managed and stored correctly and in the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant and negative**.

11.8.5 Summary

The following Table summarises the identified likely significant effects during the construction phase including site excavations and demolition works of the proposed development before mitigation measures are applied.

Table 11.5 Summary of Construction Phase Likely Significant Effects in the Absence of Mitigation.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Litter Pollution	Negative	Significant	Local	Likely	Short-Term	Indirect & Direct
Unlicensed Waste Collection (Illegal Dumping)	Negative	Significant	Local & Regional	Likely	Long-Term	Direct
Insufficient Waste Facilities	Negative	Significant	Local & Regional	Unlikely	Short-Term	Direct
Lack of waste Classification	Negative	Significant	Local & Regional	Likely	Short-Term	Direct

The following Table summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

Table 11.6 Summary of Operational Phase Likely Significant Effects in the Absence of Mitigation.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Unlicensed Waste Collection (Illegal Dumping)	Negative	Significant	Local & Regional	Likely	Long-Term	Direct
Poor Waste Segregation	Negative	Significant	Local & Regional	Likely	Long-Term	Direct
Litter Pollution	Negative	Significant	Local & Regional	Likely	Short-Term	Direct

11.9 Mitigation Measures

11.9.1 Incorporated Design Mitigation

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

The concept of the ‘Waste Hierarchy’ and ‘Circular Economy’ is employed when considering all mitigation measures. The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. The circular economy principle aims to keep materials, components, and products in-use in the economy for as long as possible. In circularity, the key objective is to design consumption and production systems to create and retain value. Both principles have been applied and will further be applied during the detailed design, construction and operational phases.

11.9.2 Demolition Phase Mitigation

The following mitigation measures will be implemented during the demolition phase of the proposed development:

As previously stated, a project specific RWMP has been prepared in line with the requirements of EPA Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects’ (2021) and is included as Appendix 11.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition phase of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 11.1) in agreement with CCC and in compliance with any planning conditions, or submit an addendum to the RWMP to CCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The Contractor will implement the RWMP throughout the duration of the proposed demolition phase and should treat the document as outlined in the guidance as a live document.

In addition, the following mitigation measures will be implemented:

- On-site segregation of waste materials will be carried out where possible to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
 - Concrete, Bricks, Tiles, Ceramics
 - Plasterboard
 - Metals, and
 - Timber
- Any suitable demolition materials to be re-used on-site, where possible;
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the demolition works;
- All staff will be provided with training regarding the waste management procedures;

- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

These mitigation measures will ensure that the waste arising from the demolition phase of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated *Regulations and the Litter Pollution Act 1997*, the NWMPCE (2024). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

11.9.3 Construction Phase Mitigation

The following mitigation measures will be implemented during the excavation and construction phase of the proposed development:

As previously stated, a project specific RWMP has been prepared in line with the requirements of the EPA Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and is included as Appendix 11.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 11.1) in agreement with CCC and in compliance with any planning conditions, or submit an addendum to the RWMP to CCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases and should treat the document as outlined in the guidance as a live document.

A quantity of topsoil and sub soil will need to be excavated to facilitate the proposed development. The project design team have estimated that all clean excavated soil can be reused on-site. In the event that any excavated soil is found to be contaminated it will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented:

- Building materials will be chosen to 'design out waste';
- On-site segregation of waste materials will be carried out where possible to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
 - Concrete rubble (including ceramics, tiles and bricks);
 - Plasterboard;
 - Metals, and
 - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible;

- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Regulation 27 of the EC (Waste Directive) Regulations (2011-2020). EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, the NWMPCE (2024). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

11.9.4 Operational Phase Mitigation

The following mitigation measures will be implemented during the operational phase of the proposed development:

All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins, skips or other suitable receptacles in a designated, easily accessible areas of the site.

- The Staff / Facilities Management of the Site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – for the authoring and implementation of an Operational Waste Management Strategy, ensuring a high level of recycling, reuse and recovery at the site of the proposed development.
- The Staff/ Facilities Management will regularly audit the onsite waste storage facilities and infrastructure and maintain a full paper trail of waste documentation for all waste movements from the site.

The following mitigation measures will be implemented:

- The Residents/ Staff / Facilities Management will ensure on-Site segregation of all waste materials into appropriate categories, including (but not limited to):
 - Organic waste;
 - Dry Mixed Recyclables;
 - Mixed Non-Recyclable Waste;
 - Glass;
 - Cardboard;
 - Plastic;
 - Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment;

- Waste Electrical and Electronic Equipment
- Cooking oil;
- Cleaning chemicals (paints, adhesives, resins, detergents, etc.);
- Furniture (and from time-to-time other bulky waste); and
- Abandoned bicycles
- The Staff / Facilities Management will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials;
- The Staff / Facilities Management will ensure that all waste collected from the site of the proposed development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and
- The Staff / Facilities Management will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997, the NWMPCE (2024) and the CCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

11.10 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

The implementation of the mitigation measures outlined in Section 11.9 will ensure that targeted rates of reuse, recovery and recycling are achieved at the site of the proposed development during the construction and operational phases. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

11.10.1 Demolition Phase

A carefully planned approach to waste management as set out in Section 11.9.2 and adherence to the RWMP (which includes mitigation) (Appendix 11.1) during the demolition phase will ensure that the predicted effect on the environment will be **short-term, imperceptible** and **neutral**.

11.10.2 Construction Phase

A carefully planned approach to waste management as set out in Section 11.9.3 and adherence to the RWMP (which includes mitigation) (Appendix 11.1) during the construction phase will ensure that the predicted effect on the environment will be **short-term, imperceptible** and **neutral**.

11.10.3 Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 11.9.4 will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be **long-term, imperceptible** and **neutral**.

11.10.4 Summary of Post-Mitigation Effects

The implementation of the mitigation measures outlined in Section 11.9 will ensure that high rates of reuse, recovery and recycling are achieved at the site of the proposed development during the construction and operational phases and the waste will be correctly managed. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

The following Table summarises the identified likely significant residual effects during the construction phase (including site excavation and demolition works) of the proposed development following the application of mitigation measures.

Table 11.7 Summary of Construction Phase Effects Post-Mitigation.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Litter Pollution	Negative	Not Significant	Local	Unlikely	Short-Term	Indirect & Direct
Unlicensed Waste Collection (Illegal Dumping)	Negative	Significant	Local & Regional	Unlikely	Long-Term	Direct
Insufficient Waste Facilities	Negative	Significant	Local & Regional	Unlikely	Short-Term	Direct
Lack of waste Classification	Negative	Significant	Local & Regional	Unlikely	Short-Term	Direct

The following Table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

Table 11.8 Summary of Operational Phase Effects Post-Mitigation.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Unlicensed Waste Collection (Illegal Dumping)	Negative	Significant	Local & Regional	Unlikely	Long-Term	Direct
Poor Waste Segregation	Negative	Not Significant	Local & Regional	Unlikely	Long-Term	Direct
Litter Pollution	Negative	Not Significant	Local & Regional	Unlikely	Short-Term	Direct

11.10.5 Cumulative Residual Effects

11.10.5.1 Demolition & Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. Multiple developments in the area could potentially be developed concurrently or overlap in the construction phase.

Developments that potentially could overlap during the demolition and construction phase:

Table 11.9 Summary of Development Applications That Have Been Considered in the Cumulative Impacts.

Planning Ref	Description	Decision
Cork City: 21/40068; ABP 313328	New research facility at the site at: University College Cork, Distillery Fields, North Mall, Cork T23XA50	Granted by Cork City: 21/03/2022 Granted by ABP: 14/12/2023
Cork City: 24/42796	Amendments to Permitted SHD (ABP 308323)	Granted by Cork City: 20/05/2024

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the effect will be **short-term, not significant** and **neutral**.

11.10.5.2 Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area and the developments planned for the surrounding land will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such the effect will be a **long-term, imperceptible** and **neutral**.

11.11 Risk of Major Accidents or Disasters

There is no Risk of Major Accidents or Disasters related to Material Assets Waste and the proposed development.

11.12 Worst Case Scenario

In a worst-case scenario, if no mitigation measures found in Section 11.9 are followed, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution as shown in Section 11.8.

11.13 Interactions

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR.

11.13.1 Land & Soils

During the construction phase, excavated soil and stone (c. 40,329 m³) will be generated from the excavations required to facilitate site levelling, construction of new foundations and installations of site services. It is currently envisaged that

all clean excavated soil will be reused on-site. In the event that any excavated soil is found to be contaminated it will need to be removed off-site.

If material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 11, Chapter 5 (Land, Soils & Geology) and the requirements of the RWMP (Appendix 11.1), will ensure the effect is **long-term, imperceptible** and **neutral**.

11.13.2 Traffic & Transport

Local traffic and transport will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the proposed Development. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movements will be imperceptible in the context of the overall traffic and transportation increase. Traffic-related impacts during the construction and operational phases are addressed in Chapter 12 (Material Assets: Traffic & Transport). Provided the mitigation measures detailed in Chapter 12 and Chapter 11 are adhered to, the predicted effects are **short to long-term, imperceptible** and **neutral**.

11.13.3 Population & Human Health

The potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific RWMP and mitigation measures in Chapter 4 (Population & Human Health) and Chapter 11, will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be **long-term, imperceptible** and **neutral**.

11.14 Monitoring

The management of waste during the construction phase will be monitored by the Contactor’s appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation.

The management of waste during the operational phase will be monitored by the Operator / Buildings Manager to ensure effective implementation of the mitigation measures outlined in Section 11.9 internally and by the nominated waste contractor(s).

11.14.1 Demolition and Construction Phases

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation, demolition and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting schedule targets. The RWMP specifies the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the demolition phase of the proposed Development will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future developments.

11.14.2 Operational Phase

During the operational phase, waste generation volumes should be monitored by the Operator / Buildings Management. There may be opportunities to reduce the number of bins and equipment required in the Waste Storage Area (WSA's), where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contactor costs.

11.15 Summary of Mitigation and Monitoring

The following Table summarises the Construction Phase mitigation and monitoring measures.

Table 11.10 Summary of Construction Phase Mitigation and Monitoring.

Likely Significant Effect	Quality	Significance
Litter Pollution	The Contractor will be required to fully implement the RWMP throughout the duration of the proposed construction phase.	The Contractor will review and maintain waste records and site audits
Unlicensed Waste Collection (Illegal Dumping)	All waste leaving the site will be recorded and copies of relevant documentation maintained.	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Insufficient Waste Facilities	All waste leaving the site will be recorded and copies of relevant documentation maintained.	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Lack of waste Classification	All waste material leaving site will be correctly classified and segregation prior to removal where possible.	An appointed Waste Manager will monitor all onsite waste segregation and classification

The following Table summarises the Operational Phase mitigation and monitoring measures.

Table 11.11 Summary of Operational Phase Mitigation and Monitoring.

Likely Significant Effect	Quality	Significance
Unlicensed Waste Collection (Illegal Dumping)	The Operator / Buildings Manager will ensure that all waste leaving the Site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.	The Operator / Buildings Manager will maintain waste receipts onsite for a period of 7 years and make available to CCC as requested.
Poor Waste Segregation	The Operator / Buildings Manager will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.	Waste generation volumes will be monitored by the Operator / Buildings Manager.
Litter Pollution	The Operator / Buildings Manager will ensure that all waste collected from the Site of the proposed Development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available	Waste storage areas will be monitored by the Operator / Buildings Manager.

11.16 Conclusion

This chapter has reviewed and analysed the potential and the predicted impacts of the proposed development with regards to waste management. These impacts have been considered for both the construction and operational phases of the proposed development. The cumulative impact of the proposed development and surrounding developments have also been considered.

Provided all mitigation measures as set out in this chapter and the attached RWMP, the overall predicted impact of the proposed development is **long-term, imperceptible** and **neutral**.

11.17 References and Sources

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CHAPTER TWELVE

MATERIAL ASSETS: TRAFFIC & TRANSPORT

CHAPTER TWELVE

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CHAPTER TWELVE | Material Assets: Traffic & Transport

12.1 Introduction

MHL & Associates Ltd., Civil Engineering Consultants, undertook the preparation of this section of the Environmental Impact Assessment Report (EIAR), in association and consultation with McCutcheon Halley, AWN, Macroworks, MMOS, Veon, JCA and John Cronin.

This chapter of the Environmental Impact Assessment Report (EIAR) has been prepared to assess the potential impact of the proposed development on traffic and transport. It provides an overview of the existing environment, including the current road network, traffic conditions, and surrounding transport infrastructure. A comprehensive and robust assessment of the potential effects on the local road network has been undertaken, covering both the short-term construction phase and the long-term operational phase of the development. Additionally, the chapter outlines mitigation measures aimed at minimising or avoiding significant impacts on traffic flow and road safety.

The Traffic and Transport Assessment has been prepared by MHL Consulting Engineers Ltd., who have extensive experience in Transport Statements, Transport Assessments, and development proposals across Ireland. This document should be read in conjunction with the accompanying Transport Assessment, which includes a Mobility Management Plan as part of the planning application.

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on the local traffic and transportation network, as well as the surrounding environment. It evaluates how the project may influence traffic patterns, pedestrian safety, and air quality, while also considering the effects on nearby communities and infrastructure. The assessment aims to identify any potential adverse impacts arising from increased traffic volume and movement during both the construction and operational phases, ensuring that effective mitigation strategies are proposed to promote a safe, efficient, and sustainable transportation environment.

It should be read in conjunction with reference other relevant Chapters of this EIAR, inclusive of supporting assessments/reports/plans submitted as part of this application.

12.2 Expertise and Qualifications

The Traffic and Transport Assessment has been prepared by qualified transport engineers and planners with expertise in traffic modelling, transport impact assessment, and infrastructure planning. The team is experienced in preparing EIAR chapters in line with the Design Manual for Urban Roads and Streets (DMURS, 2019) and other relevant guidelines such as TII's Traffic and Transport Assessment Guidelines (2014), ensuring the highest standards are adhered to.

This chapter of the EIAR was prepared by Mr. David Murphy, B.Eng. (Hons), M.A, MIEI, of MHL & Associates, and reviewed by Mr. Brian Murphy, BE, CEng MIEI of MHL & Associates.

David holds an Honours Bachelor's Degree in Civil, Structural and Environmental Engineering, with a Masters in Coastal Management and Geographical Information Systems. David has carried out numerous Traffic and Transportation Assessments, Traffic Statements, Mobility Planning, is also expert in the use of Traffic Engineering Modelling Software (TRICS, ARCADY, PICADY, LINSIG, PARAMICS DISCOVERY and Micro-Simulation Techniques). and has been involved in the preparation of EIARs for the following projects:

- Ringwood LRD Phase 01
- Ringwood LRD Phase 02
- Mountain Road EIAR

12.3 Proposed Development

The full description of the proposed development is outlined in Chapter 2 "Site Location and Proposed Development" of this EIAR. In summary, the applicant seeks permission for the following Large Scale Residential Development (LRD) a proposed Student Accommodation Development comprising the conservation, conversion and extension of the existing former Good Shepherd Convent, Home Building, Orphanage Building and Well site to provide student accommodation apartments, the conservation and conversion of the existing gate lodge and bakehouse to provide ancillary services and all associated ancillary development works at The Former Good Shepherd Convent, Convent Avenue, Sunday's Well, Cork. The proposed scheme includes works to and within the curtilage of the former Good Shepherd Convent and Orphanage, which is a protected structure (Ref. No. PS721). Aspects Relevant to this Assessment

The proposed development is a large mixed-use scheme that will generate additional traffic during all phases.

12.3.1 Key aspects considered in this assessment include:

- Access and egress points from the development site to the local road network.
- Potential changes to traffic flow, parking requirements, and public transport demand.
- Impact on active travel modes (walking and cycling).
- Interactions with existing and future road infrastructure, as outlined in Project Ireland 2040 and other regional strategies.
- Internal road layout & parking and external road improvements

12.4 Methodology

The methodology follows a structured approach based on relevant guidance and best practice for transport impact assessment.

In Ireland, there are currently no definitive guidelines or standards for quantifying or describing the effects of traffic and transport in the context of Environmental Impact Assessments (EIA). However, Transport Infrastructure Ireland (TII) provides Traffic and Transport Guidelines that indicate if the traffic impact from a new development is expected to exceed 10% of existing traffic movements, it is considered material regarding the local network. In sensitive areas, this threshold is reduced to 5%.

In the UK, the Institute of Environmental Management and Assessment (IEMA) offers additional guidance in its publication, Environmental Assessment of Traffic and Movement (2023). The IEMA recommends two broad rules to help determine the scale and extent of assessments: if traffic (or heavy goods vehicles) increases post construction by more than 30%, a more detailed assessment is warranted, while a 10% increase threshold is advised for sensitive locations. According to the IEMA Guidelines, various indicators are utilised to assess the significance of relief from severance. Changes in traffic flow of 30%, 60%, and 90% are categorised as producing 'slight', 'moderate', and 'substantial' changes, respectively. The guidelines also indicate that increases in traffic flow of less than 10% on uncongested roads are considered 'not significant' since daily variations in background traffic can fluctuate within this range.

The following section outlines the methodology used to assess the significance of effects at locations along the proposed routes within the study area, focusing on those where total traffic levels exceed the screening thresholds established by IEMA. If operational traffic impacts exceed 30% on any particular link or 10% on sensitive links, a detailed assessment of the significance of the effect is conducted. This assessment considers link sensitivity and the magnitude of change, considering criteria set out in the IEMA Guidelines, including severance, driver delay, pedestrian delay, pedestrian amenity, and safety.

The supporting LRD Traffic Assessment (TA) has been prepared in accordance with the TII's Traffic & Transportation Assessment Guidelines. It complies with Cork City Development Plan requirements by conducting traffic surveys, including counts and junction analysis, to assess whether the existing road network has adequate capacity to support the proposed development.

The TA considers the traffic impact of both the proposed development and any committed developments resulting from previously approved phases in background traffic growth. The primary focus of the study is on the traditional vehicular impact, while the accompanying LRD Mobility Management Plan and associated transport documents outlines the mobility and active travel transport options available at the site.

12.4.1 Relevant Legislation & Guidance

The Traffic and Transport chapter of this Environmental Impact Assessment Report (EIAR) has been prepared in alignment with the assumptions outlined in the accompanying Traffic and Transport Assessment and relevant EIAR guidance documents. The chapter is informed by the following key guidelines:

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022)
- Institute of Environmental Management and Assessment (IEMA) Guideline: Environmental Assessment of Traffic and Movement (IEMA, 2023)
- PAG Unit 5.3: Travel Demand Projections (TII, 2019)
- Project Ireland 2040 – National Planning Framework
- Transport Infrastructure Ireland’s (TII’s) Traffic & Transport Assessment Guidelines (2014)
- Cork City Development Plan 2022-2028
- Design Manual for Urban Roads and Streets (DMURS) (updated 2019)
- National Cycle Manual (NTA, 2023)

These guidelines ensure that the assessment is consistent with national and European best practices and considers both current and future transport infrastructure needs.

12.4.2 Site Surveys/Investigations

Site visits and surveys were conducted to gather current traffic data, road conditions, and public transport usage. Data were collected over a typical week, covering peak and off-peak periods to ensure a representative sample of traffic patterns and transport activity. Traffic count surveys were conducted by Irish Traffic Surveys Ltd at identified junction on the adjacent road network.

12.4.3 Consultation

Section 247 Pre-Application meetings have been held with Cork City Council (CCC) on 22 January 2025. In addition, a Section 32C pre-planning meeting was held with representatives of Cork City Council on 28 February 2025. Several follow up meetings have been held with members of CCC’s Traffic and Transportation service, to discuss the methodology of both the EIAR and TA.

The design team has engaged with key stakeholders, including Cork City Council, to address traffic and mobility concerns and ensure compliance with guidelines. From the local authority’s feedback, a Traffic and Transport Assessment (TTA) was conducted in accordance with TII’s 2014 guidelines, considering traffic volumes, key routes, and impacts on the adjoining

road network. Sub-threshold requirements in Section 2.2 of the guidelines were also addressed. Additionally, a Road Safety Audit (RSA) evaluated potential safety impacts, particularly at nearby junctions. All assessments align with national best practices, emphasizing mitigation of significant road network impacts and ensuring safety and efficiency.

12.4.4 Sensitivity

The sensitivity of a road segment to changes in traffic levels, as well as the receptors located along that segment, is typically evaluated by examining the residual capacity of the network under current conditions. When there is a substantial amount of residual capacity, the network can easily accommodate an increase in traffic, indicating low sensitivity to change. In contrast, if existing traffic levels are close to the road’s capacity, leaving minimal spare capacity, the sensitivity to fluctuations in traffic levels is considered high.

The criteria used to assess the sensitivity of the receptors, and the magnitude of change are summarised in the following Table 12.1.

Table 12.1 Framework for Determining Sensitivity of Receptors

Sensitivity	Description
High	The receptor/resource has limited capacity to accommodate change without fundamentally altering its current character and is of national or international significance. This includes local residents reliant on unrestricted movement in their environment, as well as receptors such as schools, colleges, hospitals, and accident-prone areas.
Medium	The receptor/resource can moderately accommodate change without significantly affecting its existing character and holds considerable importance.
Low	The receptor/resource can tolerate change without impacting its character and is of low or local significance. This includes areas like trunk roads or ‘A’ class roads designed to handle substantial heavy goods vehicle (HGV) volumes.
Negligible	Users are not sensitive to transportation impacts. This category encompasses very small settlements and roads without significant populations, including new strategic trunk roads or motorways.

12.4.5 Magnitude

The magnitude of effects is a function of the existing traffic volume, the percentage increase and change due to the proposed development, changes in the type of traffic and the temporal distribution of traffic (day of week, time of day).

The determination of magnitude has been undertaken by reviewing the proposed development, establishing the parameters of the receptors that may be affected and quantifying these effects utilising guidelines and professional judgement. Consideration is given to the composition of the traffic on the road network, under both existing and proposed conditions. For example, LGVs have less effect on traffic and the road system than HGVs. Similarly, HGVs can have less effect than abnormal load vehicles, depending on the frequency of the abnormal loads. The criteria that have been used to make judgement on the magnitude of the effect on the receptor(s) is presented in Table 12.2.

Table 12.2 Framework for Determining Magnitude of Effects

Major
Complete loss of, or significant alteration to, essential elements/features of the baseline (pre-development) conditions, resulting in a fundamental change to the post-development character, composition, or attributes. Typically, a change in traffic exceeding 90% (or over 70% at sensitive receptors) is classified as a major magnitude.
Moderate
Loss or alteration of one or more key elements/features of the baseline conditions, leading to a substantial change in the post-development character, composition, or attributes. A change in traffic between 60% and 90% (or between 40% and 70% at sensitive receptors) is regarded as moderate magnitude.
Minor
A slight deviation from baseline conditions. The change due to loss or alteration will be noticeable but not significant. The fundamental character, composition, or attributes of the baseline conditions will remain similar to those prior to development. Typically, a change in traffic ranging from 30% to 60% (or from 10% to 40% at sensitive receptors) is seen as a minor magnitude.
Negligible
Minimal change from baseline conditions. The change is hardly noticeable, resembling a situation of ‘no change.’ Typically, a change in traffic of less than 30% (or under 10% at sensitive receptors) is considered negligible magnitude.

12.4.6 Significance

To guide the assessment—though not as a replacement for professional judgment—the criteria for evaluating the significance of traffic-related effects are detailed in Table 12.3. This assessment is based on the combination of the effect's magnitude and the sensitivity of the receptor.

Table 12.3 Significance Criteria Matrix

Sensitivity of Receptor	Magnitude of Change			
	Major	Moderate	Minor	Negligible
High	Major	Major/ Moderate	Moderate	Minor
Medium	Major/ Moderate	Moderate	Moderate / Minor	Minor
Low	Moderate	Moderate/ Minor	Minor	Negligible

Significance is classified as major, moderate, minor, or negligible. Effects assessed as minor or negligible significance are regarded as ‘Not Significant.’

12.4.7 Potential Environmental Effects

The assessment focuses on evaluating the potential environmental impacts associated with traffic and transport. The EPA EIAR guidelines (2022) provide several definitions to describe potential significant effects, including aspects related to the quality, significance, extent, probability, duration, frequency, and type of effects. While some of these can be clearly defined using the EPA guidelines, interpreting the significance of the effects depends on professional engineering judgment. The IEMA Guidelines identify several potential significant effects, including:

- Noise
- Driver delay
- Pedestrian delay
- Pedestrian amenity
- Accidents and safety
- Hazardous loads (e.g., nuclear products)
- Dust and dirt

According to the IEMA guidance, to determine the scale and extent of the assessment and the impact of the Proposed Development on the surrounding road network, the following two ‘rules’ should be adhered to:

Rule 1 – Include highway links where traffic flows are expected to increase by more than 30% (or 10% if it impacts a sensitive area) or where the number of heavy goods vehicles (HGVs) is anticipated to rise by more than 30%.

Rule 2 – Include any specifically sensitive area where traffic flows are projected to increase by 10% or more.

Paragraph 2.5 of the IEMA Guidelines outlines groups, locations, and special interests that may be sensitive to changes in traffic conditions, which include:

- Residents
- Employees in workplaces
- Vulnerable groups such as children, the elderly, and individuals with disabilities
- Sensitive locations, such as hospitals, churches, schools, and historic buildings
- Individuals walking or cycling
- Open spaces, recreational areas, and shopping districts
- Sites of ecological or nature conservation significance, as well as tourist attractions

The significance of each effect is considered against the criteria within the IEMA Guidelines, where possible, however the guidelines state that:

“For many effects there are no simple rules or formulae which define the thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed- up by data or quantified information wherever possible. Such judgements will include the assessment of the numbers of people experiencing a change in environmental impact as well as the assessment of the damage to various natural resources.”

12.5 Difficulties Encountered

No major difficulties were encountered during the assessment, although some minor limitations, such as seasonal variations in traffic data and public transport schedules, were noted. These were addressed by using industry-standard traffic modelling techniques to normalise the data. The available traffic data was comprehensive and current, allowing for an accurate analysis of local conditions. Additionally, on site validation during the teams site visits provided valuable insights into specific traffic patterns. This approach ensured a robust assessment of current and projected future traffic impacts and a thorough evaluation of sensitive receptor responses to changes in traffic levels. Overall, the process benefited from a strong foundation of data and supportive resources.

12.6 Baseline Environment

The following section provides a summary of the proposed development's receiving environment. Full details are included in the submitted Traffic and Transport Assessment.

The receiving environment describes the current traffic conditions, road infrastructure, and the overall transportation network surrounding the proposed development site. This includes an assessment of existing traffic volumes, vehicle types, and peak travel times, as well as the conditions of local roads and their capacities. Additionally, it considers sensitive receptors in the vicinity, such as residential areas, schools, hospitals, and community facilities, which may be affected by increased traffic. The evaluation included pedestrian and cyclist infrastructure, public transport availability, and traffic safety issues, providing a comprehensive understanding of how the existing environment interacts with current traffic patterns. By establishing a clear baseline of the receiving environment, the assessment can effectively identify potential impacts of the proposed development and inform appropriate mitigation measures to minimise disruption to the surrounding community and infrastructure.

12.6.1 Site Location

The subject site is located circa 1.6km to the west of the city centre, and c. 1km to the north of UCC main campus. The site is to be accessed via an existing priority junction with Convent Avenue, which will be the single point of access for vehicles, cyclists and pedestrians.

12.6.2 Transport Accessibility & Infrastructure

The closest bus stops to the site are located on the Western Road. These are circa 900m in distance from the proposed site access point, which corresponds to an approximate 10 -minute walking time.

The 201-bus service runs between Mayfield and Curraheen from Monday to Friday with 5 services from Munster Technological University (MTU) to Boherboy Road, and eight services from Boherboy Road to Cork University Hospital (CUH). The nearest bus stop is located on Sunday's Well Road, opposite Fitzgerald's Park Lane.

The 208 is the nearest city-bound bus service, which runs every 10 minutes both east and west along Western Road. Please refer to <https://www.buseireann.ie/news/> for up-to-date information of serviced routes.

12.6.3 Road Network Infrastructure & Traffic Conditions

The local road network comprises a mix of primary, secondary, and tertiary roads, with varying levels of congestion depending on the time of day. Traffic counts and surveys indicate moderate to high volumes during peak periods.

12.6.4 Public Transport & Site Accessibility

The site is served by multiple bus routes. However, some public transport routes are near capacity during peak hours, which could impact the development's future transport demand.

12.6.5 Pedestrian and Cycle Infrastructure

Existing pedestrian facilities are present along Convent Avenue. Key elements of existing pedestrian infrastructure are:

12.6.5.1 Convent Avenue

Convent Avenue is a short street in the Sunday's Well area, leading to landmarks like the Cork City Gaol. It's primarily a residential and access road. Pedestrian infrastructure here likely consists of standard pavements, typical of urban residential streets in Cork. There's no dedicated cycling infrastructure (like cycleways or shared paths) on Convent Avenue itself. Given its narrow width and role as an access route, it's unlikely to have extensive cycling facilities, though cyclists can use the carriageway alongside vehicles. Pedestrian access is straightforward, with pavements providing connectivity to Sunday's Well Road.

12.6.5.2 Sunday's Well

Sunday's Well is a hilly, residential area overlooking the River Lee, with Sunday's Well Road being a key artery. Pedestrian infrastructure includes pavements along most of this road, though their condition and width may vary due to the area's topography and older urban layout. The search results mention road closures and water infrastructure works in 2022, but these were temporary and focused on utilities rather than pedestrian or cycling upgrades. There's no evidence of dedicated cycleways on Sunday's Well Road itself. The steep gradients in parts of this area might deter casual cycling, and infrastructure appears geared more towards pedestrians and vehicular traffic. Connectivity to nearby areas like Western Road and Shanakiel Road relies on these basic provisions.

12.6.5.3 Shanakiel Road

Shanakiel Road connects Sunday's Well to the Shanakiel area, running uphill from the river. Pedestrian infrastructure consists of pavements, though the quality may depend on the specific stretch—older parts of Cork sometimes have narrow or uneven paths. The road's incline and residential nature mean it's functional for walking but not optimised for cycling without additional effort.

12.6.5.4 Daly Bridge

Daly Bridge, locally known as the "Shaky Bridge," is a notable pedestrian-only suspension bridge crossing the River Lee. Built in 1926, it's a historic structure designed exclusively for foot traffic, connecting Sunday's Well Road to the north bank near Fitzgerald's Park. It's a key piece of pedestrian infrastructure, offering a scenic and car-free route across the river. However, it's not designed for cyclists—its narrow width (about 1.5–2 metres) and swaying motion make it impractical and potentially unsafe for bikes. Cyclists in this area would need to use alternative routes, like Western Road, to cross the river. The bridge remains a vital link for pedestrians, enhancing walkability between Sunday's Well and the city centre.

12.6.5.5 Western Road

Western Road is a major thoroughfare running west from Cork city centre along the south bank of the River Lee. It’s a busy arterial road with significant pedestrian and vehicular traffic, connecting to areas like University College Cork (UCC). Pedestrian infrastructure includes well-maintained pavements on both sides, often wide enough to accommodate higher footfall near UCC and commercial zones. Cycling infrastructure on Western Road is limited—there’s no dedicated cycleway along its full length, though some sections painted cycle lanes or shared spaces closer to the city centre as part of Cork’s gradual expansion of cycling networks. Cyclists typically share the carriageway with cars, which can be challenging given the traffic volume. The road’s flat terrain makes it more cycle-friendly than the hilly Sunday’s Well area, but infrastructure remains basic compared to modern cycling standards.

12.6.6 Future Sustainable Transport

The future of sustainable transport in the area is poised for significant enhancement through various initiatives outlined in the Cork Metropolitan Area Transport Strategy (CMATS) and other related programs. These initiatives aim to promote environmentally friendly transportation options, reduce traffic congestion, and improve overall accessibility for residents.

- **CMATS Implementation:** The Cork Metropolitan Area Transport Strategy emphasises the development of an integrated transport network that prioritises sustainable modes of travel. This includes expanding public transport services, enhancing walking and cycling infrastructure, and improving connectivity between different transport modes. The applicant’s site will benefit from the broader goals of CMATS, which aims to reduce reliance on private cars and encourage public transport use.
- **Public Transport Enhancements:** Plans for improved public transport services include increased frequency and reliability of bus routes serving the wider area. The introduction of priority signalling at intersections will enhance the efficiency of public transport, making it a more attractive option for commuters.
- **Active Travel Infrastructure:** To support walking and cycling, initiatives will include the construction of new pedestrian and cycling paths, as well as the enhancement of existing routes. These upgrades aim to create a safer and more convenient environment for pedestrians and cyclists, encouraging active travel within the community.
- **Electric Vehicle Charging Infrastructure:** As part of the transition to sustainable transport, there will be an expansion of electric vehicle (EV) charging points throughout the City. This infrastructure will support the adoption of electric vehicles, contributing to reduced emissions and promoting greener transportation options.
- **Mobility Management Programs:** Local initiatives aimed at promoting sustainable transport behaviours, such as carpooling, public transport use, and active travel, will be implemented. These programs may include awareness campaigns and incentives to encourage residents to choose more sustainable travel options.

The CMATS strategy is supported within the Cork City Development Plan.

The NTA launched a design for the Cork City Bus Network in June 2022. The following high quality bus routes serve the proposed development and are shown below in Figure 12.2:

- Route 2A: MTU – Glanmire Hazlewood Centre (Frequency – 15minutes).
- Route 5: Two-Way CUH – Cork Bus Station – Apple Loop (Frequency 15minutes).

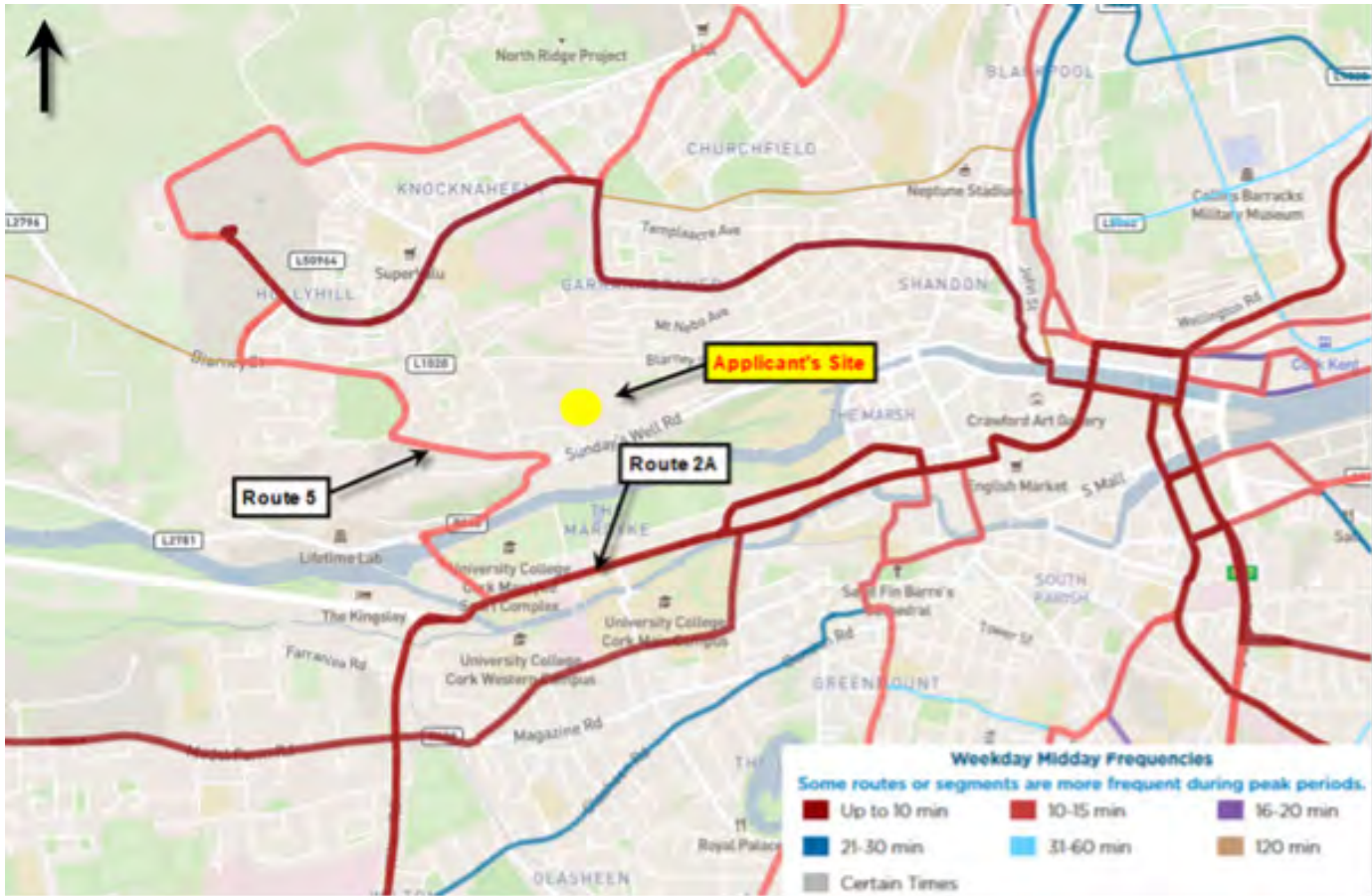


Figure 12.1 Bus services- (Bus Connects - NTA)

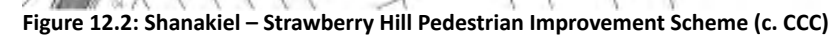
The proposed development will include amenities such as a café and public open space which will be accessible to the general public as well as residents. These amenities will be accessed from the main entrance to the development which is off Convent Avenue. There is potential for full pedestrian and cycle access through the site with a possible future connection to Buxton Hill to the east of the site.

In order to ensure a high level of accessibility to the proposed development by foot, the following infrastructural improvements are to be undertaken by Bellmount Good Shepherd Ltd:

- New pedestrian crossing to the south of the development entrance.
- The junction of Convent Avenue/Sunday’s Well Road is to be raised with footpath and pedestrian crossing facilities to be provided.

Cork City Council are currently preparing the “Shanakiel – Strawberry Hill Pedestrian Improvement Scheme” project that is to deliver a range of improvements in the area surrounding the proposed development. The scheme is inclusive of:

- A new shared footway/cycleway along Convent Avenue.
- A new footpath along the southern extent of Convent Avenue.
- New signalisation of the Shanakiel Rd/Sunday’s Well Rd junction which will include controlled pedestrian crossings as well as a new footpath along the western extents of Shanakiel Rd.



The applicant has undertaken to work with Cork City Council in the delivery of the improved pedestrian facilities proposed as part of their development.

The key roads within the study area are described below.

A brief description of the local road network near the proposed development is provided below.

Convent Avenue primarily serves to local residential properties along its length and the former Cork City Gaol (now a visitor attraction). Traffic on this section of roadway has recently increased following the introduction of traffic management restrictions on Strawberry Hill. The roadway opposite the Cork City Gaol is wide and can support on-street parking; at the junction with Sunday's Well Road, however, the street narrows and on-street parking impacts the traffic flows. It is primarily residential parking along the lower end of Convent Avenue; however commercial and retail properties at the corner of Sunday's Well and Convent Avenue generate parking demand, in particular at lunch time and in the evening.

Sunday's Well Road is a two-way single carriageway roadway. It acts as a radial route into the city from the western suburbs, however, its narrow carriageway width and on-street parking long traffic delays are frequently experienced along the roadway. Queues and delays are primarily experienced at the Sunday's Well Road/Shanakiel Road junction and the Sunday's Well Road/Thomas Davis Bridge junction.

This is a two-way single carriageway with a steep gradient. It also acts as a primary route between the city centre and the northwest areas of the city. The junction with Sunday's Well Road experiences delays during both morning and evening peak periods.

Buxton Hill is a narrow residential road providing access to a small number of dwellings.

The 201-bus service runs between Mayfield and Curraheen from Monday to Friday with 5 services from Munster Technological University (MTU) to Boherboy Road, and eight services from Boherboy Road to Cork University Hospital (CUH). The nearest bus stop is located on Sunday's Well Road, opposite Fitzgerald's Park Lane.

The 208 is the nearest city-bound bus service, which runs every 10 minutes both east and west along Western Road. The closest bus stop for the 208-bus service is located a 10-minute walk away on Western Road.

12.6.8 Baseline Traffic Movements

Current traffic movements in the area are dominated by private vehicle use, with public transport and active travel modes accounting for a smaller proportion of journeys. In order to establish baseline traffic conditions on the local road network, new traffic surveys were undertaken in May 2024. These comprised Junction Turning Count (JTC) surveys at 4 locations.



Figure 12.3 JTC Locations Source: Google Maps

This TTA assessment focused on the following traffic junctions and are shown in Figure 12.3 above, namely:

- Junction 1 – Development Junction with Convent Avenue
- Junction 2 – R846 Sunday’s Well Rd/Convent Avenue priority T-Junction.
- Junction 3 – R846 Sunday’s Well Rd/Shanakiel Rd Priority T-Junction.
- Junction 4 – Sunday’s Well Rd/Lee Rd/Thomas Davis Bridge Signalised Junction.

Surveyed AM and PM peak hour traffic flows were converted into AADT using a factor calculated from the TII expansion factors. Vehicle flows across the study area were calculated for the links shown in Figure 12.4.



Figure 12.4 Links in the Study Area (PM peak flows)

Table 12.4 displays the calculated Base 2024 Average Annual Daily Traffic (AADT) for each of the links shown in Figure 12.4 and additionally highlights the links deemed sensitive to increases in traffic levels. This sensitivity assessment has been conducted by MHL, considering the presence of sensitive receptors (such as schools and community facilities) as well as the nature and purpose of the roads.

Table 12.4 Base AADT

Link Ref.	Description	Base 2026 AADT *(2way flow) estimated	Sensitive link (as per IEMA Guidelines)	IEMA Threshold for assessment	Note
1	Convent Avenue	2200	Yes	0.1	Sensitive as passes through residential area
2	Sundays Well Road	6400	Yes	0.1	Sensitive as passes through residential area
3	Shanakiel Road	8600	Yes	0.1	Sensitive as passes through residential area
4	Wellington Bridge	14400	Yes	0.1	Sensitive as passes through residential area
5	Lee Road	4200	Yes	0.1	Sensitive as passes through residential area
6	Strawberry Hill	2500	Yes	0.1	Sensitive as passes through residential area
7	Blarney St.	5000	Yes	0.1	Sensitive as passes through residential area

12.6.9 Road Safety

The Road Safety Authority traffic collision statistics for the surrounding road network are currently unavailable due to GDPR reasons. A Road Safety Audit Stage 1 has been completed as part of the LRD application.

12.6.10 Future Infrastructural Improvement

The National Planning Framework and local development plans propose several infrastructural improvements, including enhanced cycling infrastructure and public transport upgrades, which are factored into the future scenario analysis.

12.7 The ‘Do Nothing’ Scenario

If the proposed development were not to proceed, the baseline situation would remain unchanged, with current traffic patterns, transport infrastructure, and environmental impacts persisting. Evaluating the "do-nothing" scenario involves considering the likely consequences over both temporary (less than 1 year) and short-term (1-7 years) periods.

In the short-term, the absence of development could lead to impacts, such as:

- No additional construction-related traffic: This would avoid temporary increases in traffic congestion, noise, and air pollution typically associated with construction activities.
- Minimal disruption to local residents: With no construction occurring, local communities would experience fewer disruptions from road closures or altered traffic patterns.

However, there are also likely negative impacts, including:

- No infrastructure improvements: The opportunity to improve road networks, pedestrian paths would be lost, potentially exacerbating existing traffic congestion and limiting sustainable transport options.
- Continued reliance on car travel: Without the development, sustainable transport initiatives, such as enhanced public transport or walking and cycling infrastructure, may be delayed, reinforcing a car-dependent culture in the area.
- Increased pressure on existing infrastructure: With population growth and urban expansion, the absence of the proposed development may lead to more significant traffic problems in the future, as the existing infrastructure struggles to cope with rising demand.

If the development does not proceed, the current traffic conditions would likely remain unchanged in the short term, with gradual increases in traffic levels due to regional growth. No significant improvements to local transport infrastructure would occur, and existing congestion points would persist. While avoiding the proposed development may result in fewer immediate disruptions, the long-term implications could include missed opportunities for improved transport infrastructure, sustainable travel options, and reduced traffic-related environmental impacts.

12.8 Characteristics of the Proposed Development

A description of the site is provided in ‘Chapter 2 – Proposed Development’. The main features of the site design from a transport perspective are:

- Pedestrian and vehicular access into the site will be taken from an existing access junction on Convent Avenue, which will form the main access into the site. The junction will incorporate an uncontrolled crossings on the priority junction arms.
- A network of high-quality walking routes will be created within the subject site, and an extensive set of measures are in place to reduce vehicle speeds and priority. All proposed road and paths within the development will be designed in accordance with the Design Manual for Roads and Streets (DMURS, 2019) and the NTA’s National Cycle Manual 2023.
- The development will contribute to a CCC project to improve the existing footpaths on Convent Avenue, between the site access and Sunday’s Well Road.

12.9 Potential Significant Effects

The proposed development will have direct and indirect traffic-related impacts during both the construction and operational phases. Direct effects include increased traffic volumes, noise, air pollution, and potential road safety risks due to construction vehicles and increased daily trips. Indirect effects involve potential disruptions to the local community’s accessibility, impacts on public transport, and cumulative effects on traffic congestion when combined with other developments.

However, the project offers positive impacts, such as improved road infrastructure, enhanced pedestrian and cycling facilities, and alignment with sustainable transport initiatives like CMATS, which support long-term reductions in car dependency. Mitigation measures are expected to minimise negative effects to acceptable levels.

12.9.1 Site Set up Phase

During the site set up phase, there will be a temporary increase in traffic due to the movement of construction vehicles, including heavy goods vehicles (HGVs) transporting debris and materials to and from the site. This could lead to short-term congestion, particularly around access routes and local roads. These impacts are expected to be temporary, lasting only for the duration of these initial activities, and will be managed through the implementation of a Construction Traffic Management Plan (CTMP) to mitigate congestion and parking disruptions, with work parking to be provide on site for the duration of the works.

12.9.2 Construction Phase

The construction phase will generate additional traffic, particularly heavy goods vehicles (HGVs) and worker transport. Road closures and temporary diversions may be required, leading to moderate, short-term impacts.

12.9.2.1 Construction Programme

The overall construction programme will extend through the 10-year permission, with different construction phases built out over this time period.

12.9.2.2 Site Operating Hours

The anticipated working hours on site are as follows:

- Monday to Friday: 8:00 – 18:00
- Saturday: 8:00 – 16:00

It is proposed that, in exceptional circumstances and with prior approval from the planning authority, working hours may be extended, and work may take place on Sundays and Bank Holidays if critical tasks need to be expedited. Extended working hours may be implemented during scheduled concrete pours. Any request for longer working hours will be coordinated in advance with the planning authority.

12.9.2.3 Vehicle Types

The following types of vehicles (estimated) will be utilised on site during the construction phase:

- Bowsers
- Breakers
- Containers
- Dozers
- Dumpers
- Excavators
- Generators
- Plate Compactors
- Power Washers
- Rollers

12.9.3 Construction Traffic

Construction traffic will consist of vehicles used by construction workers (cars), LGV's and HGV's transporting construction materials. The peak period for HGV movements on site is expected to occur during early earthworks/ construction. During this time, there will be an estimated 30 HGV trips to the site (60 two-way movements). Additionally, it is anticipated that there may be up to 8 construction workers on site during peak periods of Stage I (site set up), up to 8-50 construction workers on site during peak periods of Stage II, (Setting Out of Sites And Provisions Of Services), and there may be up to 100 construction workers on site during peak periods of Stage III (Construction Stage of Residential Units). Assuming a conservative occupancy of 2 workers per vehicle, this would result in up to 50 inbound and 50 outbound vehicle trips to the site each day. Travel for construction workers will generally take place outside of peak hours on the local road network, with most operatives arriving before 8:00 AM and departing after the evening peak.

The following table shows the predicted daily percentage impact on the road links on the proposed construction routes, conservatively assuming that all construction traffic travels on each road link.

Table 12.5 Construction Impact

Ref	Road Link	DM 2026			Construction Traffic AADF					
		HGV	CAR/LV	Total	HGV	CAR/LV	Total	CAR/LV	HGV	Total
1	Convent Avenue South	22	2178	2200	20	33	53	1.5%	90.9%	2.4%
1	Convent Avenue West	22	2178	2200	10	17	27	0.8%	45.5%	1.2%
2	Sundays Well Road West	64	6336	6400	14	22	36	0.3%	21.9%	0.6%
2	Sundays Well Road East	64	6336	6400	6	11	17	0.2%	9.4%	0.3%
3	Shanakiel Road	86	8514	8600	7	11	18	0.1%	8.1%	0.2%
4	Wellington Bridge	144	14256	14400	7	11	18	0.1%	4.9%	0.1%
5	Lee Road	42	4158	4200	7	11	18	0.3%	16.7%	0.4%
6	Strawberry Hill	9.5	1890.5	1900	0	10	10	0.5%	0.0%	0.5%
7	Blarney St.	50	4950	5000	10	17	27	0.3%	20.0%	0.5%

Table 12.5 shows that, in terms of overall traffic numbers, the biggest impact will be in traffic on Convent Avenue, followed by Sunday's Well and Blarney St, however, within this figures there will be an increase in construction HGV flows.

When the magnitude of effect is combined with the sensitivity of the receptor in accordance with Table 12.3, it can be concluded that there will be a short-term major / moderate effect during construction stage, without mitigation.

Table 12.6 Severance (without mitigation)

Link	Description	Sensitivity	Magnitude of Impact	Significance of Effect
1	Convent Avenue South	Medium	Major	Major / Moderate
1	Convent Avenue West	Medium	Major	Major / Moderate
2	Sundays Well Road West	Medium	Major	Major / Moderate
2	Sundays Well Road East	Medium	Major	Major / Moderate
3	Shanakiel Road	Low	Minor	Moderate /Minor
4	Wellington Bridge	Low	Negligible	Negligible
5	Lee Road	Low	Negligible	Negligible
6	Strawberry Hill	Medium	Major	Major / Moderate
7	Blarney St.	Medium	Major	Major / Moderate

The Construction Traffic Management Plan (CTMP) aims to mitigate the traffic impacts during the construction phase, particularly concerning Heavy Goods Vehicles (HGVs) on Convent Avenue. Key measures include scheduling HGV deliveries outside peak traffic hours to reduce congestion, implementing on-site wheel washing facilities and road sweeping to minimize dust and debris transfer, and installing safety signage to warn road users of slow-moving construction traffic.

As a result of these proactive measures, the residual impact on local traffic is expected to be reduced. While there may still be some temporary disruptions due to construction activities, the planned interventions will effectively reduce significant adverse effects, ensuring the safe and efficient movement of traffic in the area. Overall, the CTMP is designed to maintain local road safety and accessibility throughout the construction phase.

Table 12.7 Severance (with mitigation)

Link	Description	Sensitivity	Magnitude of Impact	Significance of Effect
1	Convent Avenue South	Medium	Major	Major / Moderate
1	Convent Avenue West	Medium	Moderate	Moderate
2	Sundays Well Road West	Medium	Minor	Moderate/Minor
2	Sundays Well Road East	Medium	Minor	Moderate/Minor
3	Shanakiel Road	Low	Minor	Moderate /Minor
4	Wellington Bridge	Low	Negligible	Negligible
5	Lee Road	Low	Negligible	Negligible
6	Strawberry Hill	Medium	Negligible	Minor
7	Blarney St.	Low	Minor	Minor

12.9.4 Haulage Construction Routes

To minimize the impact on the local community, it is proposed to limit HGV deliveries to the most appropriate routes. The recommended access routes are shown in Figure 12.5.

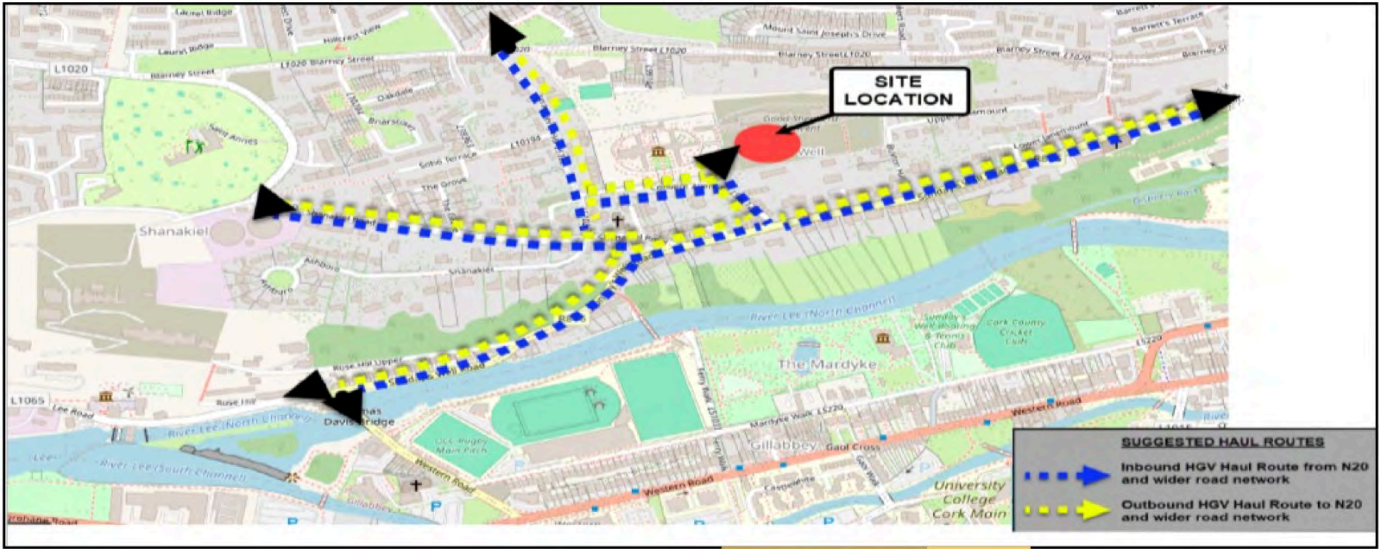


Figure 12.5 Construction Haulage Routes

During the project site delivery traffic will access the site via Convent Road. Site traffic can approach Convent Road via Shanakiel Road from the south or from Blarney Street from the north. It is anticipated that site traffic will exit site via Convent Road onto Shanakiel Road but there is an alternative egress route via the one-way road Strawberry Hill which is sufficiently wide to cater for the majority of site traffic. The specific details of the proposed construction routing will be agreed upon with CCC prior to the start of construction works, with the national road network being utilised as much as possible. These designated routes can be incorporated into the Contractor’s obligations, and adherence will be ensured through regular observations and monitoring.

12.9.5 Operational Phase

Once operational, the development will generate additional daily trips from residents, employees, and visitors. Increased demand for parking and public transport services is anticipated, as well as potential impacts on local traffic flow.

12.10 Trip Generation

Trip generation analysis for the proposed development was conducted as part of the Traffic and Transportation Assessment (TTA) with the predicted vehicle trip generation based on the development’s proposed layout and schedule of areas. These figures were calculated using the mode split from the 2022 Census data, assuming that historical levels of car usage will persist in future years. The TTA also takes into account a modal split aligned with the Climate Action Plan 2024 targets, which aim for a significant shift towards sustainable transportation. In the city area, this shift will be facilitated by the implementation of the BusConnects programme. As a result, the figures presented in the TTA provide a highly robust forecast of future traffic volumes. To mitigate operational traffic impacts, improvements to public transport access, incentives for cycling and walking, and parking restrictions will be implemented.

Table 12.8 Predicated Development Trips (Veh)

	AM PEAK		PM PEAK	
	Arrivals	Departures	Arrivals	Departures
Good Shephard Convent Student Accommodation				
Student Accommodation Apartments				
Peak Trips Trip Rates Per Student	0.008	0.006	0.007	0.008
Peak Trips	8	6	7	8
Convenience Store				
Peak Trips Trip Rates Per 100m2 G.F.A.	2.665	2.222	3.889	3.889
Peak Trips	10	8	14	14
Café				
Peak Trips Trip Rates Per 100m2 G.F.A.	1.875	1.250	2.105	2.895
Peak Trips	3	2	3	4
Total Trips Generated	20	16	24	26
	36		50	

Table 12.8 shows that during the AM peak hours (08:00 – 09:00), the development is expected to generate a total of 36 vehicle trips. In the PM peak hour (17:00 – 18:00), 50 trips are expected to be generated.

12.11 Traffic Distribution

The new traffic demand generated by the development, has been allocated across the network based on the traffic distribution observed in the 2024 surveys. This methodology is discussed in submitted Traffic and Transportation Assessment (TTA).

12.11.1 Traffic Impact

Traffic flows have been calculated for the following scenarios:

- Do Minimum 2027 (Year of Opening) (without scenario)
- Do Something 2027 (Year of Opening) (with scenario)
- Do Minimum 2032 (Year of Opening +5) (without scenario)
- Do Something 2032 (Year of Opening +5) (with scenario)
- Do Minimum 2042 (Year of Opening + 15) (without scenario)
- Do Something 2042 (Year of Opening + 15) (with scenario)

Background traffic growth, along with traffic from committed developments, has been incorporated into the 2024 survey totals to establish the future year Do Minimum scenarios.

Traffic growth between 2024, 2027, and 2042 has been determined using trip-end totals from the CMATS Regional Traffic Model, which indicates the following growth factors within the Cork Metropolitan area:

- 2024-2027 – 5.2%
- 2024-2042 – 22%

These growth factors are considered robust, especially in light of the overarching goals of CMATS and the Climate Action Plan 2024 which aim to reduce traffic levels over the same timeframe.

The increase in traffic resulting from applying this growth is viewed by MHL as a proxy for the traffic generated by developments in the Development Plan for the City.

The development contribution to the future year link flows on the wider local road network is shown in Table 12.9.

Table 12.9: AADT Link Flows & Development Contribution (post construction/operational)

Ref	Road Link	IEMA Threshold	DM 2027	DM 2027 with devt.	Increase** (assumed worst case traffic on each link)	% impact
1	Convent Avenue South	10%	2315	2356	50	2%
1	Convent Avenue West	10%	2315	2356	50	2%
2	Sundays Well Road West	10%	6735	6756	50	1%
2	Sundays Well Road East	10%	6735	6756	50	1%
3	Shanakiel Road	10%	9050	9070	50	1%
4	Wellington Bridge	10%	15154	15180	50	0%
5	Lee Road	10%	4420	4422	50	1%
6	Strawberry Hill	10%	2631	2646	50	2%
7	Blarney St.	10%	5262	5277	50	1%

The figures above show that the predicted impacts of the development are below 10% on all links in the study area. A detailed assessment has been undertaken on this link and is presented below.

12.11.2 Severance

12.11.2.1 Description

Severance, as defined by the IEEMA Guidelines, refers to the perceived division within a community when major traffic arteries separate neighbourhoods or areas. The potential for the proposed development to cause severance is evaluated individually, relying on professional judgment, particularly when traffic increases are anticipated on roads that pass through residential areas.

Increased severance can lead to the isolation of parts of a settlement or individual properties. This situation may arise from the challenges of crossing heavily trafficked roads or from physical barriers created by those roads themselves. The effects of severance can impact various groups, including residents, motorists, and pedestrians, making it crucial to assess and address these potential consequences during planning and development processes. Effective mitigation measures, such as improved pedestrian crossings, traffic calming features, and community engagement in design, are essential to minimize severance impacts and maintain community connectivity.

12.11.2.2 Assessment

According to Table 12.1, the sensitivity of Link 1 (Convent Avenue) to changes in traffic levels regarding severance is deemed moderate/minor. As indicated in Table12.2, the anticipated change in total traffic on Link 1 is classified as minor, with increases within this threshold range. Additionally, a new pedestrian crossing facility will be implemented at the Convent Avenue/Site Access junction, providing a safe crossing option where none currently exists.

By combining the minor magnitude of effect with the medium sensitivity of the receptor as outlined in Table 12.3, it can be concluded that there will be a moderate effect. The proposed development is not expected to have a negative impact on the community linkages and connectivity in the long term. The traffic routing and infrastructure considerations have been carefully planned to ensure that access to key areas, including residential, commercial, and transport links, remains efficient and uninterrupted, thus maintaining the overall connectivity within the community.

Table 12.10 Severance

Link	Description	Sensitivity	Magnitude of Impact	Significance of Effect
1	Convent Avenue South	Medium	Minor	Moderate/ Minor
1	Convent Avenue West	Medium	Minor	Moderate/ Minor
2	Sundays Well Road	Medium	Minor	Moderate/ Minor
6	Strawberry Hill	Medium	Minor	Moderate/ Minor

12.11.3 Driver Delay

12.11.3.1 Description

The IEMA Guidelines indicate that delays are considered significant primarily when traffic on the surrounding network is already at or near its capacity. This means that if the existing road system is functioning close to its maximum capacity, any additional traffic introduced by a new development could exacerbate congestion, leading to notable delays. Therefore, the potential for significant delays is closely tied to the current levels of traffic and the overall capacity of the transportation infrastructure in the vicinity of the proposed development.

12.11.3.2 Assessment

Additional delay to non-development traffic may occur at several points on the road network in the vicinity of the subject site, including:

- At the Site access junction, where there will be additional turning movements, and new delay to traffic on Convent Avenue
- At the Sunday’s Well Road / Convent Avenue junction, through which the majority of development traffic will pass.

The sensitivity of Convent Avenue to an increased driver delay effect is considered to be medium in accordance with Table 12.1, as there are few alternative routes for east west traffic to use.

With reference to Table 12.2, the magnitude of change in total traffic on Link 1 is considered to be minor as the increase in both is between 10% and 40%. Combining the minor magnitude of the change with the medium sensitivity of the receptor in accordance with Table 12.3 equates to an effect which is classed as long-term, moderate / minor as per the EIA Regulations.

The EIAR assessment is a link assessment that differs from the junction capacity assessment that has been undertaken in the TTA. This assesses the impact at the Sunday’s Well Road / Convent Avenue junction in detail.

The results show that with the addition of traffic from the development, the Convent Avenue arm of the junction is predicted to operate within practical capacity in 2027. The TTA concludes that this level of predicted short-lived congestion is not unusual in an urban setting during the peak hour, and is acceptable, particularly when the robust approach to trip generation that has been adopted is taken into account.

Table 12.11 Driver Delay

Link	Description	Sensitivity	Magnitude of Impact	Significance of Effect
1	Convent Avenue South	Medium	Minor	Moderate/ Minor
1	Convent Avenue West	Medium	Minor	Moderate/ Minor
2	Sundays Well Road	Medium	Minor	Moderate/ Minor
6	Strawberry Hill	Medium	Minor	Moderate/ Minor

12.11.3.3 Description

Traffic volume, composition, speed, and the presence (or lack of) pedestrian footways and crossings all contribute to the level of general pleasantness, fear, intimidation and delay experienced by pedestrians and other vulnerable road users.

12.11.3.4 Assessment

There is an existing footpath of circa 2m in width, alongside the northern kerb of Convent Avenue, that runs for a short distance from the Sunday’s Well Road / Convent Avenue junction.

The sensitivity of Convent Avenue to an increased pedestrian delay and amenity is considered to be medium in accordance with Table 12.1. This is in relation to pedestrian amenity, where narrow footways and the close proximity of traffic mean that the pedestrian experience is not particularly pleasant.

With reference to Table 12.2, the magnitude of change in total traffic on Link 1 is considered to be minor as the increase in both is between 10% and 40%. The development will improve footways on Convent Avenue between the site access and the Sunday’s Well Road, which also supports this assessed minor magnitude of change.

Combining the minor magnitude of the effect with the medium sensitivity of the location in accordance with the matrix in Table 12.3, it is considered that increased traffic associated with the proposed development will have a long-term, moderate / minor effect on pedestrian delay and amenity.

Table 12.12 Pedestrian Delay and Amenity

Link	Description	Sensitivity	Magnitude of Impact	Significance of Effect
1	Convent Avenue South	Medium	Minor	Moderate/ Minor
1	Convent Avenue West	Medium	Minor	Moderate/ Minor
2	Sundays Well Road	Medium	Minor	Moderate/ Minor
6	Strawberry Hill	Medium	Minor	Moderate/ Minor

12.11.4 Cumulative Effects

Cumulative impacts have been assessed in conjunction with other planned developments in the area, considering overall growth in traffic demand. These impacts are expected to be moderate to significant, particularly during peak periods.

12.11.4.1 Summary

The key impacts across all phases will be increased traffic volumes, with potential effects on road safety, public transport capacity, and local congestion.

The following table summarises the identified likely significant effects during the construction phase of the proposed development before mitigation measures are applied.

Table 12.13 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Increased traffic congestion	Adverse	Moderate	Local	Likely	Short-term	Direct
Noise from construction activities	Adverse	Moderate	Local	Likely	Temporary	Direct

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Dust and air quality deterioration	Adverse	Moderate	Local	Likely	Temporary	Direct
Disruption to pedestrian access	Adverse	Minor	Local	Possible	Temporary	Direct
Risk of accidents due to increased HGVs	Adverse	Moderate	Local	Possible	Short-term	Direct

The following table summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

Table 12.14 Summary of Operational Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Increased traffic volume	Adverse	Moderate	Local	Likely	Long-term	Direct
Air quality impacts from vehicle emissions	Adverse	Moderate	Local	Likely	Long-term	Direct
Noise pollution from increased traffic	Adverse	Moderate	Local	Likely	Long-term	Direct
Effects on local community amenity	Adverse	Minor	Local	Possible	Long-term	Indirect
Increased risk of accidents due to higher traffic levels	Adverse	Moderate	Local	Likely	Long-term	Direct

12.12 Accidents and Safety

12.12.1 Description

A high-level calculation has been undertaken to quantify the increased level of accident risk that could be expected due to an increase in traffic associated with the proposed development.

The likelihood of an accident occurring is commonly expressed in terms of ‘accidents per million vehicle- km’. Accidents that are appraised in relation to transport are those in which personal injury is sustained by those involved (personal injury accidents (PIAs)).

12.12.1.2 Assessment

Links 1, between the site access junction and the Sunday’s Well Road is circa 85m in length and can be classified as ‘urban typical single carriageway’ in accordance with the criteria set out within DMRB. Accident rates from the DMRB for this standard of road are:

- Urban typical single carriageway: 0. 844 PIA per million vehicle km.
- The annual calculated increase in PIA as a result of the development is 0. 068 PIA per year, which equates to <1 additional PIA over a ten-year period.

In addition, a Stage 1 Road Safety Audit has been carried out at the Convent Avenue / Site access junction, and on the footpath proposals on Convent Avenue. The RSA considers vehicle, pedestrian and cyclist safety, as well as the safety of other vulnerable road users. This has ensured that the proposed designs provide suitable and safe infrastructure for all users.

Receptor sensitivity for Accident and Safety effects is always considered as high. The assessed magnitude of this effect is negligible. When combined, the effect can be classified as long-term, Minor impact.

Table 12.15 Accidents and Safety

Link	Description	Sensitivity	Magnitude of Impact	Significance of Effect
1	Convent Avenue	Medium	Minor	Moderate / Minor
2	Convent Avenue/ Sunday's Well Road	Medium	Minor	Moderate / Minor

12.12.1.3 Screening conclusion

In conclusion, all of the impacts of the scheme have been assessed as minor in accordance with the EIA Regulations.

12.13 Residual Impact Assessment

This section evaluates the potential significant environmental impacts that may persist after mitigation measures have been applied. Direct effects could include residual traffic increases, such as minor congestion during peak periods, localised noise, and air quality impacts from operational traffic. While these impacts are expected to be minimal, they may still affect nearby residents and local ecosystems, even after the mitigation measures are in place.

Indirect effects might involve long-term changes in traffic patterns, potentially influencing public transport efficiency and accessibility, as well as altering community mobility behaviour. The cumulative impact of increased traffic, when combined with other nearby developments, may contribute to a slight, residual pressure on local infrastructure. However, with mitigation strategies such as improved road design and sustainable transport options, these impacts are expected to remain within acceptable limits, ensuring that the overall environmental impact is minimal.

12.13.1 Construction setup up

After mitigation, residual impacts during the construction set up phase are expected to be minor and short-term.

12.13.2 Construction Phase

Residual impacts during construction are predicted to be moderate but temporary, mainly due to the influx of construction traffic.

12.13.3 Operational Phase

Residual impacts during the operational phase, after mitigation, are expected to be minor to moderate, with the greatest impacts during peak travel times.

12.14 Mitigation Measures

12.14.1 Incorporated Design Mitigation

The design incorporates enhanced pedestrian crossings, and traffic calming measures in line with DMURS (2019).

12.14.2 Demolition Phase Mitigation

A detailed traffic management plan will be implemented during demolition, including restricted delivery hours to avoid peak periods and advance notification of road users.

12.14.3 Construction Phase Mitigation

During construction, mitigation measures will include a construction traffic management plan, optimised routing of HGVs, and temporary parking solutions for construction workers.

Traffic impacts during the construction phase will be minimised through the implementation of a Construction Traffic Management Plan (CTMP), which will be agreed upon with CCC. A Framework CTMP, outlining the key principles to be followed, is included as part of the application package.

The following measures will help minimise the impact of HGV traffic on Convent Avenue:

- Scheduled Deliveries: HGV deliveries will be planned, as much as possible, outside of peak traffic periods, which have been identified as 08:00 – 09:00 and 16:30 – 17:30.
- Dust and Debris Control: Wheel washing facilities will be provided on site to reduce the transfer of dust and debris onto local roads. Additionally, a road sweeper will be deployed as needed to ensure the local road network remains clear.
- Warning Signage: Signs will be placed along Convent Avenue to alert all road users and local residents of the presence of slow-moving and turning HGV traffic. Further warning signs will be installed ahead of the Site Access junction to notify drivers approaching from both directions.

Any works on the public road, such as service connections, will require the submission of a Road Opening Licence application by the contractor to the Local Authority. This application will include a detailed Construction Traffic Management Plan, prepared in accordance with Chapter 8 of the Traffic Signs Manual, for pre-approval by the Local Authority.

Construction vehicle movements will be minimised through the following measures:

- Consolidation of delivery loads to and from the site, with larger deliveries scheduled outside peak traffic hours.
- Use of precast or prefabricated materials where feasible.
- Provision of adequate on-site storage space to prevent any impact on public streets or areas.

The contractor will also implement best practice mobility management measures to encourage site staff to access the site via modes other than private cars. These measures will be considered by the appointed contractor before work commences on site.

12.14.4 Operational Phase Mitigation

A Mobility Management Plan has also been developed by MHL and supplements the Traffic and Transportation Assessment submitted as part of the planning application. This plan serves as a ‘best practice’ measure to accompany the application. The purpose of the Mobility Management Plan is to reduce the percentage of single-occupancy vehicle trips and address the anticipated transport impacts on the end-users of the site. These mobility measures will also support residents who may choose to live ‘car-free’ by providing a range of sustainable transportation options, thus eliminating the need for car ownership. The measures primarily focus on promoting walking, cycling, and public transport use and can be broadly categorised into the following groups:

- Appointing a Mobility Manager.
- Providing a Welcome Travel Pack for students/ residents.
- Implementing measures to encourage walking, such as clear signage and maps throughout the site.
- Implementing measures to promote cycling, including bike hire hubs on site and cycling signage and maps that indicate travel times to key destinations.
- Encouraging public transport use by collaborating with local bus operators to improve bus scheduling, routes, and school travel options.

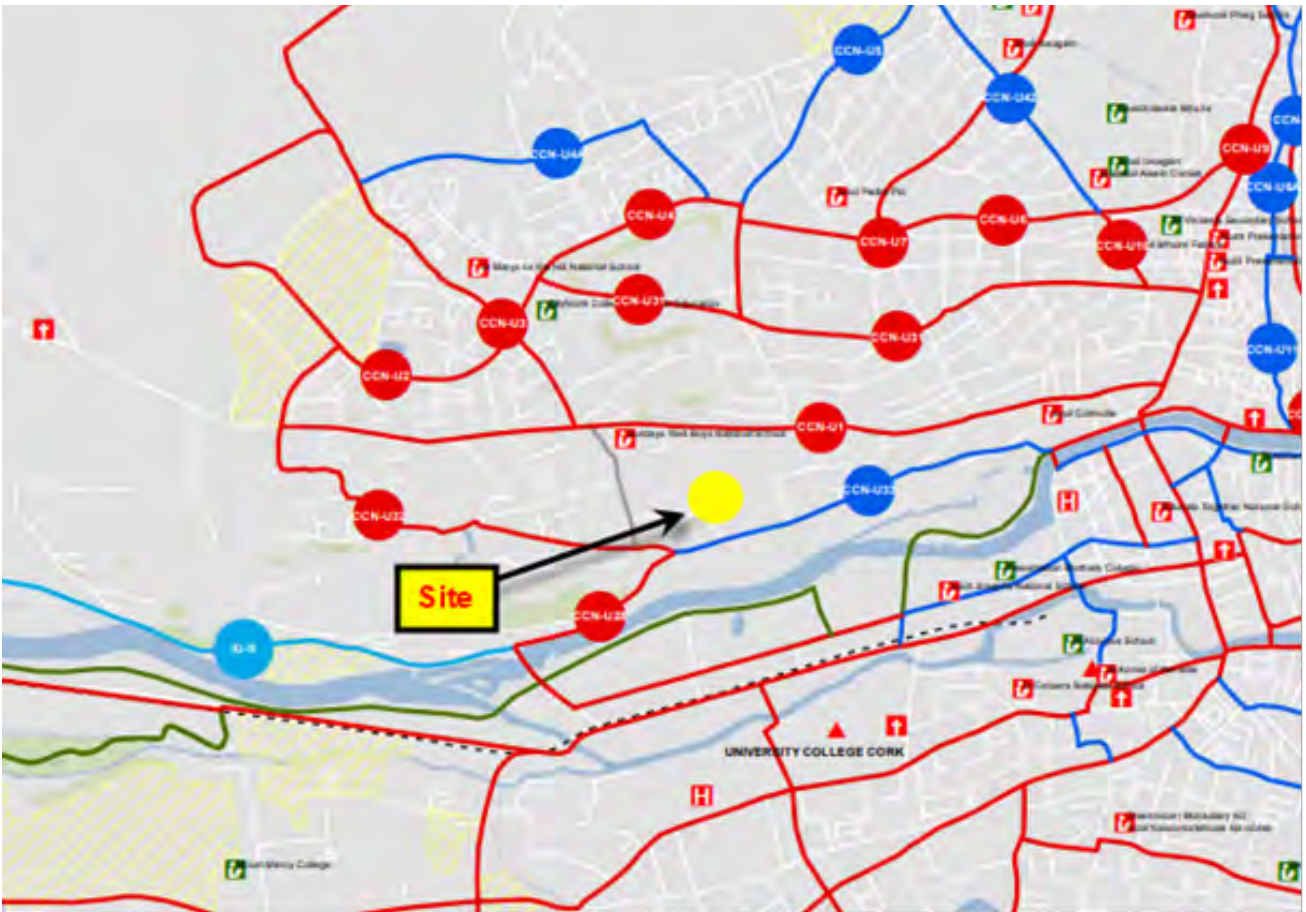


Figure 12.6 Proposed Cork Cycle Network Plan in Vicinity of Proposed Development (Source: Cork Cycle Network Plan)

The development will be designed to complement and support future transport initiatives such as these proposed cycle routes, which will provide cyclists with a safer and more efficient means of connectivity with The Shakey Bridge and further connectivity to UCC

12.15 Summary of Post-mitigation Effects

With mitigation in place, most impacts are reduced to acceptable levels, with no significant long-term adverse effects anticipated.

The following table summarises the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

- Quality: Indicates whether the effect is neutral, positive, or negative.
- Significance: Represents the overall importance of the effect post-mitigation.
- Extent: Specifies the geographical area affected.
- Probability: The likelihood of the effect occurring.
- Duration: Refers to how long the effect is expected to last.
- Type: Indicates whether the effect is direct or indirect. (Direct effects are immediate, measurable impacts resulting directly from a project’s activities, while indirect effects stem from secondary consequences that can develop over time.)

Table 12.16 Summary of Construction Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Reduced traffic congestion	Neutral	Minor	Local	Likely	Temporary	Direct
Noise reduction due to noise barriers	Neutral	Minor	Local	Likely	Temporary	Direct
Dust control measures effectively implemented	Neutral	Minor	Local	Likely	Temporary	Direct
Maintained pedestrian access	Positive	Minor	Local	Highly Likely	Temporary	Direct
Improved safety through traffic management measures	Positive	Moderate	Local	Likely	Temporary	Direct

The following table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

Table 12.17 Summary of Operational Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Improved traffic flow due to road upgrades	Positive	Moderate	Local	Likely	Long-term	Direct
Reduced air quality impacts from enhanced traffic management	Positive	Moderate	Local	Likely	Long-term	Direct
Noise levels maintained within acceptable limits	Positive	Minor	Local	Likely	Long-term	Direct
Enhanced pedestrian safety through improved crossings	Positive	Moderate	Local	Highly Likely	Long-term	Direct
No significant increase in accident rates	Positive	Major	Local	Very Unlikely	Long-term	Direct

12.16 Residual Impact Assessment

12.16.1 Construction Phase

The construction traffic volumes have been evaluated and are anticipated to be similar to or lower (managed CTMP) than the traffic volumes during the operational stage. As such, the impact of construction traffic on the local road network is expected to be minimal. Additionally, the implementation of a Construction Traffic Management Plan will further reduce and control any potential effects.

12.16.2 Operational Phase

Based on the thorough operational stage assessment, which considers the additional vehicle movements during the AM peak hour and in the PM peak hour, and using the TII Threshold Assessment methodology, it is evident that the operational phase will not result in a significant traffic impact. The analysis confirms that the operation of the proposed development, along with locally committed developments, will have a minor effect on the capacity and safety of the surrounding road network and can be accommodated. No noticeable or significant residual effects are anticipated post construction.

12.16.3 Cumulative Impact

As outlined above, the cumulative impact of the operational development has been evaluated in line with the standard practice. This assessment is based on a comprehensive 2024 traffic survey of the impacted road network, along with a review of the local area of influence. As previously noted, the impact has been determined to be minor when considered against the existing network flow conditions.

12.16.4 Cumulative Residual Effects

Cumulative effects from the development and other local projects are expected to be minor to moderate after the proposed mitigation measures are implemented.

Residual impacts are defined as the effects that are expected to persist after all assessments and mitigation measures have been implemented. These impacts represent the remaining "environmental costs" of a project, reflecting the final or intended effects of a development once mitigation efforts have been applied to minimise or eliminate adverse impacts. The potential residual impacts from the Proposed Development have been taken into account in this environmental assessment.

With the implementation of the Outline Construction Traffic Management Plan (CTMP) and the Mobility Management Plan, the residual impact of the Proposed Development is assessed as minor when considering the development in isolation. Additionally, the proposed Active Travel improvements for the wider area will ensure that the cumulative effects of the development lead to a 'not significant' residual impact. These improvements are designed to enhance pedestrian infrastructure, promoting sustainable modes of transport and reducing the overall reliance on private vehicles.



Figure 12.7 Potential construction build out phasing

Estimated development construction build out sequencing:

Construction Stage 1

- Delivery of residential dwellings.
- Construction of a new priority access junction on Convent Avenue.
- Development of the section of the internal access road, serving as the spine road for future estate connection roadways.
- Establishment of a site compound and material enclosure.

Construction Stage 2:

- Extension of the internal access road into the development.
- Construction of residential units on residentially zoned lands.

Construction Stage 3:

- Construction of residential units on residentially zoned lands.

Sub-Phase 4:

- Construction of residential units on residentially zoned lands.

Sub-Phase 5:

- Construction of residential units on residentially zoned lands.

The cumulative assessment takes into account how development might proceed on the Convent Avenue site in future years. It assumes the following:

- Construction of sub phasing/ delivery of yearly unit quantum
- A new access junction on the Convent Avenue, which provides the primary access into the site. The access junction would be delivered in sub phase A, with internal linkages built out as subsequent construction sub phases are built out. A trip distribution from all Phases of the site, with traffic to and from the east using the Sunday’s Well Road junction.
- In terms of the initial threshold assessment, the cumulative assessment assumes that the above would be in place from 2042 onwards.

12.17 Risk of Major Accidents or Disasters

The project has been carefully assessed for potential risks of major accidents, with particular attention to its vulnerability to such events. While the nature of the development introduces certain risks, the implementation of comprehensive road upgrades, rigorous safe working practices, and robust mitigation measures significantly minimises these risks. Enhanced infrastructure will improve traffic flow and reduce the likelihood of accidents, while stringent safety protocols during construction will protect workers and the surrounding community. Furthermore, the incorporation of emergency response plans ensures preparedness for any unforeseen incidents. As a result, the expected significant adverse effects on the environment from potential accidents or disasters are greatly mitigated, reinforcing the project’s commitment to maintaining a safe and sustainable development environment.

The risk of major accidents or disasters related to transport, such as hazardous material spills, is low given the nature of the development. Emergency response plans will be in place and are to be agreed between the appointed contractor and the local authority.

12.18 Worst Case Scenario

The worst-case scenario would involve delays in public transport and road infrastructure upgrades, which could lead to more severe congestion and greater reliance on private car use.

12.19 Interactions

The Traffic and Transport Assessment (TTA) is linked to several other components of the Environmental Impact Assessment Report (EIAR), including sections focused on noise, air quality, and land use planning. This interconnectedness stems from the significant relationship between traffic volumes and their potential environmental consequences. For example, an increase in traffic can lead to heightened noise levels, which may adversely affect local residents and wildlife. Additionally, greater traffic volumes can result in worsened air quality due to higher emissions, posing risks to public health and the environment. Traffic patterns also play a crucial role in land use planning, as new developments can change existing traffic flows, which in turn impacts infrastructure needs and access considerations. By taking these interrelated aspects into

account, the EIAR facilitates a thorough evaluation of the overall effects of the proposed development on both the environment and the well-being of the community. Please consult the relevant chapter of the Environmental Impact Assessment Report (EIAR) for additional details and information regarding the development assessment and subsequent findings.

12.20 Monitoring

Traffic conditions will be monitored post-construction to ensure that mitigation measures are effective, with adjustments made as needed in collaboration with local authorities.

12.21 Summary of Mitigation and Monitoring

A comprehensive set of mitigation and monitoring measures has been proposed to minimise the development’s impact on traffic and transport, focusing on all phases of the project.

The following table summarises the construction phase mitigation and monitoring measures.

Table 12.18 Summary of Construction Phase Mitigation and Monitoring

Likely Significant Effect	Mitigation	Monitoring
Increased Traffic Congestion	Schedule construction traffic outside peak hours.	Regular monitoring of traffic flow and congestion levels.
Noise Pollution	Implement noise barriers and limit construction hours.	Conduct noise level assessments at sensitive receptors.
Dust and Air Quality Degradation	Employ dust suppression techniques (e.g., water spraying).	Monitor air quality at nearby residential areas.
Disruption to Pedestrian Access	Establish clear signage and detours for pedestrians.	Conduct regular checks to ensure pedestrian routes are safe.

The following table summarises the Operational Phase mitigation and monitoring measures.

Table 12.19 Summary of Operational Phase Mitigation and Monitoring

Likely Significant Effect	Mitigation	Monitoring
Increased Traffic Volume	Implement a Mobility Management Plan to promote sustainable transport options.	Monitor traffic volumes and patterns post-implementation.
Improved Public Transport Access	Enhance public transport connections and facilities	Survey public transport usage and satisfaction regularly.
Pedestrian and Cyclist Safety	Install pedestrian crossings, safety signage.	Conduct regular safety audits and monitor accident reports.
Reduced Air Quality Issues	Encourage use of electric vehicles and provide EV charging stations.	Monitor air quality at key locations near the development.
Noise Levels Near Sensitive Areas	Implement noise-reduction measures (e.g., sound barriers, landscaping).	Regularly measure noise levels near sensitive receptors.

12.22 Conclusion

The assessment has found that there will no significant negative impact in terms of Traffic and Transportation post construction. The proposed development will have some traffic and transport impacts during the construction stage. However, with the implementation of effective construction and traffic mitigation measures, including the proposed upgrade of Convent Avenue, these impacts are not expected to be significant in the long term. The mitigation strategies will help to manage disruptions, ensuring that the development proceeds smoothly without causing lasting adverse effects on traffic flow or community connectivity. The development aligns with national and regional transport policies aimed at promoting sustainable transport modes.

12.23 References and Sources

- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.
- Institute of Environmental Management and Assessment (IEMA) Guideline: 'Environmental Assessment of Traffic and Movement (IEMA, 2023).
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- National Cycle Manual (NTA, 2023).
- National Transport Authority (2014). Traffic Management Guidelines. Available at: <https://www.nationaltransport.ie/>
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- Cork City Council & Cork County Council (2019). Cork Metropolitan Area Transport Strategy. Available at: <https://www.corkmetropolitanareatransportstrategy.ie/>
- Transport Infrastructure Ireland (n.d.). Design Manual for Urban Roads and Streets. Available at: <https://www.tii.ie/>
- Cork Metropolitan Bus Network. National Transport Authority (NTA), June 2022
- Shanakiel – Strawberry Hill Pedestrian Improvement Scheme
- Climate Action Plan 2024.
- Transport Infrastructure Ireland (TII) - Guidelines for the Treatment of Noise and Vibration in National Road Schemes (Revised 2004, Updated as Relevant)
- National Transport Authority (NTA) - BusConnects Cork Sustainable Transport Corridors (Draft, 2023/2024)
- Cork City Development Plan 2022-2028
- Cork County Development Plan 2022-2028
- Environmental Protection Agency (EPA) - Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Draft Update, Expected 2025)
- IEMA - Guidelines for the Environmental Assessment of Road Traffic (1993, Updated in 'Environmental Assessment of Traffic and Movement', 2023)
- National Sustainable Mobility Policy (Department of Transport, 2022)
- TII - Project Management Guidelines (PE-PMG-02041, Latest Revision)
- Cork Area Strategic Plan (CASP) Update (2008, with Ongoing Relevance)
- Climate Action and Low Carbon Development (Amendment) Act 2021 & Associated Transport Sectoral Plans
- TII - Rural Road Link Design (DN-GEO-03036, Latest Revision)
- National Roads Authority (NRA) - Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (2008)
- Cork Active Travel Strategy (Cork City Council, Ongoing Updates)
- Irish Road Traffic Forecasts (TII, Latest Available Data)
- EU EIA Directive 2014/52/EU (Implemented in Ireland via Planning and Development Regulations)



CHAPTER THIRTEEN

MATERIAL ASSETS: BUILT SERVICES

CHAPTER THIRTEEN

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CHAPTER THIRTEEN | Material Assets: Built Services

13.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on material assets including services, utilities, below ground drainage, and mains water supply during both the construction and operational phases.

It should be read in conjunction with the Engineering Report prepared by MMOS Consulting Engineers and submitted with the planning application.

13.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by William O’Sullivan of Murphy Matson O’Sullivan Consulting Engineers and John Kelleher MSc., C.Eng., M.C.I.B.S.E., Managing Director at John Kelleher & Associates Building Services Engineers regarding electricity, telecommunications, public lighting and gas.

William holds a Masters in Engineering and Charterships with IEI and IStructE. William has carried out assessments of the below ground drainage and water supply and has been involved in the preparation of EIARs for the following projects:

- Jacobs Island, Cork
- Navigation Square, Cork
- Gouldings site, Cork

13.3 Proposed Development

A full description of the proposed development is provided in Chapter 2 of this EIAR and in the statutory notices.

13.3.1 Aspects Relevant to this Chapter

13.3.1.1 Surface Water Drainage

Through the incorporation of SuDS and the use of tree pits, rain gardens, rainwater harvesting, and green roofs; it will allow for the temporary storage and filtration of surface water from this development whilst providing ancillary biodiversity and amenity benefits.

The surface water drainage will be gathered in a dedicated system and will drain all roofs, terraces, and hardstanding areas through the incorporated SuDS measures in conjunction with drainage channels, gullies, rainwater outlets and downpipes.

There will be a combination of green/blue roofs and an attenuation tank used to limit the flow of surface water to the combined sewer. The greenfield runoff rate (Qbar) was calculated for the site area, this resulted in a rate of approximately 18.91 l/s, however, the proposed discharge from the site to the combined sewer has been limited to 2.0 l/s through the use of a Hydro-Brake limiter.

The attenuation tank storage has been designed and is being provided as a 2300m³ below ground tank. The attenuation

storage holds capacity for a 1 in 100-year storm event and includes for a 20% allowance for climate change. A non-return valve is located at the inlets of the attenuation tank.

Additional blue roof attenuation storage is proposed for this development for buildings B1 to B7 as shown in surface water drainage drawing. These roofs are to be topped with a green roof layer to provide additional biodiversity benefits to the development in conjunction with slowing the rate of rain infiltration to the underlying blue roof attenuation tank.

The attenuation tank, blue roof attenuation, contributing area, and Qbar calculations are enclosed in the MMOS Engineering Report. Details of the proposed surface water drainage layout are shown in the Engineering Drawings.

It should be noted that all storm drainage works will be undertaken in accordance with the local authority requirements and Irish Water standard details as required.

13.3.1.2 Wastewater Drainage

The foul drainage for the proposed development has been designed as a separate system to the storm. All foul drainage from the units is to be collected beneath the ground floor slab and directed to the proposed new foul network onsite, which is proposed to discharge to the existing combined sewer to the southwest of the site.

The proposed development is to comprise no. 903 beds across no. 281 apartments. The proposed foul flow for the development has been estimated by the below:

Residential Discharge

Average DWF = 1.724 l/s

Peak DWF = 10.347 l/s

Commercial Discharge

Average DWF = 0.101 l/s

Peak DWF = 0.454 l/s

Total Discharge

Average DWF = 1.825 l/s

Peak DWF = 10.801 l/s

We note that a pre connection enquiry has been submitted to Uisce Eireann with regards to the proposed foul discharge for the development (REF: CDS24001396) and a confirmation of feasibility was issued by Uisce Eireann.

A submission for Design Acceptance was issued to Uisce Eireann on the 24/01/2025.

Details of the proposed foul drainage layout are shown within the proposed services drawings. It should be noted that all services works will be undertaken in accordance with Uisce Eireann standard details and codes of practice for wastewater as required.

13.3.1.3 Water Supply

The proposals for the water supply will involve taking a feed from the existing public watermain, sluices valves will be provided at appropriate locations to facilitate isolation and purging of the system. Details of the proposed watermain layout are shown on services drawing included in Appendix D.

The proposed development is to comprise no. 903 beds across no. 281 apartments. The proposed water demand for the development has been estimated by the below:

Residential Demand

Average Demand = 1.96 l/s

Peak Demand = 9.798 l/s

Commercial Demand

Average Demand = 0.092 l/s

Peak Demand = 0.458 l/s

Total Demand

Average Demand = 2.051 l/s

Peak Demand = 10.257 l/s

We note that a pre connection enquiry has been submitted to Uisce Eireann with regards to the water supply for the proposed development (REF: CDS24001396) and a confirmation of feasibility was issued by Uisce Eireann.

A submission for Design Acceptance was issued to Uisce Eireann on the 24/01/2025.

Details of the proposed watermain supply layout are shown within the proposed services drawings. It should be noted that all services works will be undertaken in accordance with Uisce Eireann standard details and codes of practice for water as required.

13.3.1.4 Electrical Supply

The existing ESB infrastructure within this area is adequate to support the proposed development in this case. The design of the new electrical distribution and supply network will be carried out by ESB networks who will decide on the preferred location of sub stations, mini pillars and micro pillars. The construction of the ducting infrastructure for the site will be carried out by the developer in accordance with ESB Networks requirements and Regulations.

It is envisaged that the complete electrical distribution system within the development will be underground with the requirement for sub stations, transformers, mini pillars and micro pillars located overground in positions to be agreed with ESB Networks.



Figure 13.1 ESB Substation



Figure 13.2 ESB Mini Pillar

13.3.1.5 Telecommunications

The existing Eir telecommunications infrastructure within this area is adequate to support the proposed development in this case. There is Eir fibre broadband available locally. The design of the new telecommunications distribution and supply network will be carried out by Eir who will decide on the preferred location of distribution kiosks to serve the proposed development. The construction of the ductwork infrastructure for the site will be carried out by the developer in accordance with Eir requirements and regulations.

It is envisaged that the complete telecommunications distribution system within the development will be underground with the requirement for distribution kiosks located overground in positions to be agreed with Eir.

With the availability of high speed broadband in the area it is envisaged that telephone, broadband and digital television services will distribute through this network.



Figure 13.3 Eir Broadband Cabinet

13.3.1.6 Public Lighting

A new public lighting system shall be designed, installed and commissioned by the developer with a view to the system being taken in charge by Cork City Council on completion. The public lighting system shall be connected to the proposed electrical distribution system by way of micro pillars located adjacent to the proposed ESB mini pillars.

The design of the new public lighting system will be carried out by suitably qualified Consultants in accordance with the following:

- Cork City Council Policy Guidelines For Exterior Public Lighting
- Code Of Practice For Public Lighting ET211:2003
- National Rules For Electrical Installations
- ESB Networks National Code Of Practice For Customer Interface

The public lighting within the housing areas will be designed to Class P3 in accordance with BS 5849:2013 with the following features:

- LED low energy lighting throughout
- All light fittings will be fitted with individual photocells with 20 lux on / 20 lux off control
- All light fittings will have electronic control gear and will be Phillips or Thorn high quality manufacture
- All lighting columns shall be galvanised steel construction with minimum 3mm wall thickness in accordance with IS EN 40. Heights 6000mm/8000mm/10000mm with 400mm outreach and 5 degree tilt. All columns will have a certified design life of 25 years minimum.
- All underground mains cables will be installed in accordance with ET210:2003 Code Of Practice For Public Lighting Installations In Public Areas. All underground ducting shall be laid in public ground and all columns will be erected between the back of the footpath and the boundary on public ground.
- It is envisaged that the complete public lighting distribution system within the development will be underground with the requirement for micro pillars located overground in positions to be agreed with ESB Networks



Figure 13.4 Typical public lighting luminaire

13.3.1.7 Natural Gas

There is no Natural Gas requirement for development in the study area and therefore no further assessment is required.

13.4 Methodology

13.4.1 Relevant Legislation & Guidance

The below ground drainage and mains water design is in compliance with Uisce Eireann standards, Local Authority requirements and the Building Regulations.

13.4.2 Site Surveys/Investigations

A site suitability assessment was undertaken by Ground Investigations Ireland in October 2024 to determine the sites ability to naturally drain the surface water runoff.

13.4.3 Consultation

Cork City Council were consulted regarding the local surface water drainage system.

13.5 Difficulties Encountered

MMOS were furnished with maps of the local network. As the maps did not show any local storm sewers, MMOS have written to Uisce Eireann to seek permission to discharge surface water to the local combined sewer at a reduced flow rate.

13.6 Baseline Environment

13.6.1.1 Surface Water Drainage

There is no local surface water drainage system. The local system is a combined foul and surface water drainage system.

13.6.1.2 Wastewater Drainage

There is a combined foul and surface water drainage network local to the entrance to the development.

13.6.1.3 Water Supply

There is watermain local to the development that will require circa 100m of upgrade works at the expense of the developer.

13.6.1.4 Electrical Supply

Context and Character:

It is envisaged that the complete electrical distribution system within the development will be underground with the requirement for sub stations, transformers, mini pillars and micro pillars located overground in positions to be agreed with ESB Networks.

Sensitivity:

The installation will be cable based within an underground ductwork system so they have low sensitivity.

13.6.1.5 Telecommunications

Context and Character:

It is envisaged that the complete telecommunications distribution system within the development will be underground with the requirement for distribution kiosks located overground in positions to be agreed with Eir.

Sensitivity:

The installation will be cable based within an underground ductwork system so they have low sensitivity.

13.7 The ‘Do Nothing’ Scenario

As the existing buildings are in a state of disrepair and there were some significant fires recently, it is likely that there may be a risk of ground water contamination if the fire damaged structure is exposed to the elements in the long term.

13.8 Potential Significant Effects

13.8.1 Demolition Phase

13.8.1.1 Drainage

There is a risk of contamination of the groundwater during to demolition due to the various materials that may be uncovered and exposed to the elements.

13.8.1.2 Electrical supply services

No likely significant effects.

13.8.1.3 Telecommunications services

No likely significant effects.

13.8.2 Construction Phase

13.8.2.1 Groundwater

There is a risk to contamination of the groundwater during construction due to the various chemicals and material used in their raw state.

13.8.2.2 Electrical supply services

No likely significant effects.

13.8.2.3 Telecommunications services

No likely significant effects.

13.8.3 Operational Phase

13.8.3.1 Drainage

There should be limited risk during operation, as the services will be designed to suit.

13.8.3.2 Electrical supply services

The predicted impact of the operational phase on electrical supply services is **Neutral** in quality, **Imperceptible** in significance, **Permanent** in duration and **Indirect** in type.

13.8.3.3 Telecommunications services

The predicted impact of the operational phase on telecommunications services is **Neutral** in quality, **Imperceptible** in significance, **Permanent** in duration and **Indirect** in type.

13.8.4 Cumulative Effects

13.8.4.1 Drainage

The cumulative effects of the foul drainage, storm drainage and watermain are anticipated to be short term, neutral and imperceptible. No significant impacts are anticipated.

13.8.4.1.1 Electrical supply services

In the context of an orderly development of other consented sites the cumulative impact of the construction phase on water supply services is likely to be **Direct** in type, **Neutral** in quality, **Imperceptible** in significance, **Medium-term** in duration.

13.8.4.1.2 Telecommunications services

In the context of an orderly development of other consented sites the cumulative impact of the construction phase on water supply services is likely to be **Direct** in type, **Neutral** in quality, **Imperceptible** in significance, **Medium-term** in duration.

13.9 Mitigation Measures

All possible measure will be adopted to avoid unplanned disruption to any services within the site during construction.

13.9.1 Incorporated Design Mitigation

13.9.1.1 Drainage

The permanent works services design will be independent of the temporary works services for construction. The connection and installation of the permanent works services are therefore designed to have no impact on the temporary services.

13.9.1.2 Electrical supply services

The following measures shall be implemented in relation to Electrical Supply services:

- ESB Networks will be consulted prior to commencement of the works
- A quality management plan shall be created and implemented to ensure that the works are executed to deliver the permitted Electrical Supply System free of significant defects.

13.9.1.3 Telecommunications services

The following measures shall be implemented in relation to Telecommunication Supply services:

- Openair will be consulted prior to commencement of the works
- A quality management plan shall be created and implemented to ensure that the works are executed to deliver the permitted Telecommunications Supply System free of significant defects.

13.9.2 Demolition Phase Mitigation

The following mitigation measures are proposed for the demolition phase of the development with respect to Material Assets:

- The proposed development should comply with the provisions of the Construction Waste Management Plan with respect to construction waste.
- The proposed development will comply with the provisions of the Construction Environmental Management Plan.
- Water metering will be provided during the demolition phase to record consumption.
- Hazardous materials to be stored and banded appropriately.
- All new services will be constructed and provided in strict accordance with the relevant codes of practice.

13.9.3 Construction Phase Mitigation

The following mitigation measures are proposed for the construction phase of the development with respect to Material Assets:

- The proposed development should comply with the provisions of the Construction Waste Management Plan with respect to construction waste.
- The proposed development will comply with the provisions of the Construction Environmental Management Plan.

- Water metering will be provided during the construction phase to record consumption.
- Hazardous materials to be stored and banded appropriately.
- All new services will be constructed and provided in strict accordance with the relevant codes of practice.

13.9.4 Operational Phase Mitigation

13.9.4.1 Drainage

- All new foul and surface water drainage pipes to be pressure tested and CCTV surveyed to identify any possible defects.
- Water conservation measures to be implemented, which include water metering, recycling vehicle wash waters, rainwater capture, low flush, waterless urinals, spray taps, efficiency attachments.
- Ensure that all Hydrobrakes are designed to limit the flow of water from the development to the combined sewer.
- All watermain pipes to be pressure tested in accordance with Irish Water details.

13.9.4.2 Electrical supply services

The operational electricity demand of the proposed development has already been calculated and agreed at 12KV a per unit. The connection to the existing network to supply the site will form part of the customer Agreement with ESB Networks. ESB Networks will take charge of their system on completion and will be responsible for the ongoing maintenance and operation of the service.

13.9.4.3 Telecommunications services

The operational telecommunications requirement of the proposed development has already been calculated and agreed. The connection to the existing network to supply the site will form part of the customer Agreement with Openair. Openair will take charge of their system on completion and will be responsible for the ongoing maintenance and operation of the service.

13.10 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

13.10.1 Demolition Phase

13.10.1.1 Drainage

There is a risk of spills of hazardous materials into drains and soakage into the ground. Following the implementation of the mitigation measures, this impact is considered slight negative and the risk of the impact is considered low.

13.10.1.2 Electrical supply services

No likely significant effects.

13.10.1.3 Telecommunications services

No likely significant effects.

13.10.2 Construction Phase

13.10.2.1 Drainage

There is a risk of spills of hazardous materials into drains and soakage into the ground. Following the implementation of the mitigation measures, this impact is considered slight negative and the risk of the impact is considered low.

13.10.2.2 Electrical supply services

Potential Indirect, Secondary and Cumulative effects of the construction phase on electrical supply services are:

- No likely significant effects
- With the implementation of mitigation measures the **Direct** impact of the construction phase on water supply services is **Neutral** in quality, **Insignificant** significance, **Likely** probability, **Medium-term** in duration.

13.10.2.3 Telecommunications

Potential Indirect, Secondary and Cumulative effects of the construction phase on electrical supply services are:

- No likely significant effects
- With the implementation of mitigation measures the **Direct** impact of the construction phase on water supply services is **Neutral** in quality, **Insignificant** significance, **Likely** probability, **Medium-term** in duration.

13.10.3 Operational Phase

13.10.3.1 Drainage

There is no foreseeable risk during normal operation.

13.10.3.1 Electrical supply services

Potential Direct effects on electrical supply services in operation are as follows:

- No likely significant effects

With the implementation of mitigation measures the **Direct** impact of the operational phase on water supply services is **Neutral** in quality, **Insignificant** in significance, **Likely** probability, **Permanent** in duration.

13.10.3.2 Telecommunications

Potential Direct effects on telecommunication services in operation are as follows:

- No likely significant effects

With the implementation of mitigation measures the **Direct** impact of the operational phase on water supply services is **Neutral** in quality, **Insignificant** in significance, **Likely** probability, **Permanent** in duration.

13.10.4 Cumulative Residual Effects

The cumulative effects of the foul drainage, storm drainage and watermain are anticipated to be short term, neutral and imperceptible. No significant impacts are anticipated.

13.11 Risk of Major Accidents or Disasters

There are no major accidents of disasters in the proposed development site.

13.12 Worst Case Scenario

The worst case scenario is that a major spill of hazardous materials occurs. If the site rules and procedures are followed, this risk should be mitigated.

13.13 Interactions

There will be a requirement to interact with the public systems when connections are made. The Uisce Eireann procedures should be followed to ensure a smooth interface.

13.14 Monitoring

There may be a requirement for groundwater monitoring following the site investigation.

13.15 Conclusion

There should be limited impact due to below ground services, provided the site rules and procedures are followed.

13.16 References and Sources

MMOS Engineering Report

MMOS Engineering Drawings



CHAPTER FOURTEEN

BIODIVERSITY

CHAPTER FOURTEEN

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CHAPTER FOURTEEN | Biodiversity

14.1 Introduction

Veon Ltd. was commissioned to undertake an assessment of impacts on biodiversity (flora and fauna) associated with the proposed development at the former Good Shepherd Convent, Sunday's Well, Co. Cork (hereinafter referred to as the proposed development), located at Irish Grid Reference W 65882 72068 (see **Figure 14.1** below for the site location). This chapter was prepared in compliance with the 2014 EIA Directive, the Planning and Development Act 2000 (as amended), and the European Commission's guidance on the preparation of the Environmental Impact Assessment Report (EIAR).

The proposed development will include the conservation, conversion and extension of the former Good Shepherd Convent, Home Building, Orphanage Building, Well Site, Gate Lodge, and Bakehouse to provide student accommodation and ancillary services. A full description is included in **Chapter 2** of this EIAR and in the statutory notices.

The purpose of this report is to:

- Establish and evaluate the baseline ecological environment, as relevant to the proposed development.
- Identify, describe, and assess all potentially significant ecological effects associated with the proposed development.
- Outline the mitigation measures required to address any potentially significant ecological effects and ensure compliance with relevant nature conservation legislation.
- Provide an assessment of the significance of any residual ecological effects.
- Identify any appropriate compensation, enhancement, or post-construction monitoring requirements.

14.1.1 Aims & Objectives

The primary aim of this Chapter of the EIAR is to establish a baseline of ecological data for the proposed application area, enabling a comprehensive assessment of any potential constraints and/or impacts (including cumulative impacts) of the proposed development on the local ecological resources. The specific objectives of the Baseline Ecological Assessment were as follows:

- To survey the habitats, flora, and fauna within the study area (including updated 2024 and 2025 data).
- To assess the potential presence, distribution, and conservation status of ecological habitats and species of flora/fauna within the study area.
- To identify elements or areas of specific potential for biodiversity or conservation interest.
- To highlight elements with the potential to damage the ecological integrity of the study area, such as invasive alien plant species.
- To identify the potential presence and effectiveness of ecological corridors within the study area, as well as connections to adjoining areas of potential biodiversity interest, which can inform the development of any Green Infrastructure Network.
- To assess and make recommendations on conservation priorities regarding the identified biodiversity resources of the Site.
- To provide recommendations for future habitat management and ecological monitoring at the Site.
- Where potential impacts are identified, to propose detailed and comprehensive mitigation measures, which will include avoidance of an element(s) if, and where deemed necessary.

14.1.1 Author Statement

This Biodiversity Chapter was authored by David McGillicuddy, BSc, ACIEEM, AEnvCW, Project Ecologist at Veon Ltd., and reviewed by Donnachadh Powell, BSc, Lead Ecologist at Veon Ltd. The background and experience of the author is outlined below.

David McGillicuddy is a Project Ecologist with Veon Ecology. David holds an BSc. (Hons) in Wildlife Biology from Munster Technological University (formerly IT Tralee). David has extensive experience in conducting field surveys across Ireland, including wintering and breeding bird surveys, bat surveys, and assessments of other protected mammals. Other experience includes assessing invasive species, river management, conducting habitat and botanical surveys, and use of GIS software. At Veon, David's work also includes data analysis and the preparation of Appropriate Assessment (AA) reports and Ecological Impact Assessments (EclAs) for residential and other commercial projects nationwide.

14.2 Legislation & Policy

14.2.1 Legislation

The following international legislation is relevant to the proposed development:

- Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (as amended), hereafter referred to as The Habitats Directive.
- Directive 2009/147/EC, of the European Parliament and of the Council on the conservation of wild birds, hereafter referred to as The Birds Directive.
- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy, hereafter referred to as The Water Framework Directive.

The following national legislation is relevant to the proposed development:

- Wildlife Act, 1976 (as amended), hereafter collectively referred to as the Wildlife Acts.
- Planning and Development Act 2000 (as amended), hereafter collectively referred to as the Planning and Development Acts.
- European Communities (EC) (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011 (as amended), hereafter referred to as the Birds and Habitats Regulations.
- Flora (Protection) Order, 2022. This lists species of plant protected under Section 21 of the Wildlife Act, 1976 (as amended).

14.2.2 Planning & Policy

The following plans and policies are relevant to the proposed development:

- All-Ireland Pollinator Plan 2021 – 2025.
- Ireland's 4th National Biodiversity Action Plan 2023–2030
- Cork County Development Plan 2022–2028
- Cork City Development Plan 2022–2028
- Cork City Heritage and Biodiversity Plan 2021–2026
- Cork City Climate Action Plan 2024 – 2029

14.3 Methodology

14.3.1 Zone of Influence

The study area is defined by the Zone of Influence (Zoi) of the proposed development in relation to the ecological receptors that could potentially be affected.

The Zoi, or the buffer distance within which potentially significant effects may occur, will differ across the Key Ecological Receptors (KERs)¹, depending on the potential impact pathway(s). There is no arbitrary distance for the Zoi of a project (although, for the purposes of Appropriate Assessment (AA), it is generally set at 15 km).

The results of both the desk study and the suite of ecological field surveys have established the habitats and species present within, and in the vicinity of, the proposed development site. The Zoi and study area were then informed and defined by the sensitivities of each of the KERs present, in conjunction with the nature and potential impacts associated with the proposed development. Considering the proposed development, the potential Zoi for general construction activities (e.g., habitat loss, habitat fragmentation, risk of spreading/introducing non-native invasive species, dust deposition and disturbance due to increased noise, vibration, human presence and lighting), is generally regarded as being limited to approximately 2 km from the site perimeter. Since the application area is not an ecologically sensitive location, the Zoi is not extended beyond this distance (with the exception of European sites, where this is extended to 15 km).

The Zoi for habitat loss impacts will be confined to the proposed development boundary.

There are no surface watercourses within the proposed development site. Although unlikely given the distances involved, the Zoi for potential impacts on surface water quality in the receiving environment could potentially extend downstream to the River Lee (North Channel), approximately 220m south of the proposed development.

The proposed surface water drainage network will connect to the existing drainage system. Sanitary waste generated by the development during its operation will be directed to the existing combined sewer on Convent Avenue.

14.3.2 Desk Study

A desk study was undertaken on the 11th of September 2024, to collate available information on the local ecological environment. The following resources were used to inform the assessment presented in this report:

- Data on European sites, Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) held by the National Parks and Wildlife Service (NPWS). Available at <https://www.npws.ie/protected-sites> and <https://www.npws.ie/maps-and-data>.
- Records of rare and protected species for the 10km and/or 2km grid square(s), held by the National Biodiversity Data Centre (NBDC). These records are available at <http://www.biodiversityireland.ie> or through the NPWS.
- Spatial information relevant to the planning process, including land zoning and planning applications from the Department of Housing, Local Government and Heritage (DHLGH) web map portal. Available at <https://myplan.ie>.
- Ordnance Survey Ireland (OSi) mapping and aerial photography, sourced from the National Geospatial Data Hub. Available at <https://geohive.ie>.
- Images from Google Earth Pro were analysed using the “Show historical imagery” function, allowing satellite images of the subject site to be reviewed from 2003, 2013, 2018, 2020, 2022, and 2024. This enabled a visual comparison of land use changes over time.

¹ National Roads Authority, (2009). Guidelines for assessment of ecological impacts of national road schemes. National Roads Authority (NRA).

- Data on water bodies, including information on rivers, lakes, groundwater, and water quality, from the Environmental Protection Agency (EPA) web map service. Available at <https://gis.epa.ie>.
- Information on soils, geology and hydrogeology in the area from the Geological Survey Ireland (GSI) online Spatial Resources service. Available at <https://gsi.ie>.
- Information on the conservation status of birds in Ireland from *Birds of Conservation Concern in Ireland (BoCCI) 2020-2026 & 2014-2019* (Gilbert, Stanbury & Lewis, 2021; Colhoun & Cummins, 2013). Available at <https://birdwatchireland.ie>.
- Details on the location, design, and nature of the proposed development were provided by the applicant’s design team.
- Other relevant datasets were consulted, as appropriate. These include:
 - Information on Irish wetland sites from the online database produced by Wetland Surveys Ireland and Foss Environmental Consulting. Available at <https://wetlandsurveysireland>.
 - Online information regarding catchments. Available at <https://catchments.ie>.
 - Irish Wetland Bird Survey (I-WeBS) data from Bird Watch Ireland (BWI). Available at <https://birdwatchireland.ie>.
 - Online information from Bat Conservation Ireland (BCI). Available at <https://batconservationireland>.

14.3.3 Field Surveys

Ecological surveys were carried out by qualified ecologist(s) from Veon Ecology, at the proposed development site in August and September 2024. These surveys were designed to compile comprehensive baseline information regarding the site’s existing ecology. The likelihood of additional ecological impacts occurring, which have not been identified in this EIAR, is considered remote. The surveys comprised the following:

- Habitats were mapped according to the classification scheme outlined in the Heritage Council publication *A Guide to Habitats in Ireland* (Fossitt, 2000).
- The proposed development area was surveyed for invasive species.
- All bird species observed during the ecology surveys were recorded.
- Specialised bird surveys were deemed unnecessary given the site’s urban location and the highly modified nature of the habitats within the site boundary, which consist primarily of buildings and artificial surfaces, woodland and grassland.
- A general mammal survey was undertaken in conjunction with the habitat survey.
- A general survey for reptiles and amphibians was undertaken in conjunction with the habitat survey.
- Bat surveys were conducted using active acoustic sampling with handheld bat detectors (Wildlife Acoustics Echometer Touch 2).
- No surface watercourses are present within the proposed development site; therefore, aquatic surveys were deemed unnecessary.

As regards survey limitations, it should be noted that the habitat and floral surveys were conducted towards the end of the ideal growing season for flora, with follow-up surveys undertaken in March and April 2025. The optimal period for habitat surveys is from April - September, the growing season for most plants. The optimal period may be shorter or different where surveys focus on particular habitats or aspects of habitats. Additionally, some habitats noted were in a transitional state, which made habitat classification difficult in certain circumstances.

The lack of evidence of a protected species does not necessarily preclude its presence at the Site, either at the time of the current surveys or in the future. No other survey limitations were identified.

In addition, a site visit was conducted in February 2025, in consultation with the local conservation ranger, the client, and Veon Ecologists. During the visit, key habitat areas were reviewed, and observations regarding protected fauna (primarily birds and bats), and potential ecological impacts were discussed. The ranger provided valuable insights into local wildlife considerations, while the client outlined specific project requirements. This collaborative approach ensured a thorough understanding of the site's ecological context and informed subsequent mitigation and enhancement measures.

14.3.3.1 Habitat & Flora Survey

A habitat survey was carried out on the 20th of August 2024. Habitats were mapped according to the classification scheme outlined in the Heritage Council publication *A Guide to Habitats in Ireland* (Fossitt, 2000) and following the guidelines contained in *Best Practice Guidance for Habitat Survey and Mapping* (Smith *et al.*, 2011). Habitats were cross referenced with habitats listed on Annex I of the Habitats Directive.

Information gathered from this survey supplemented the data collected during the habitat surveys conducted in 2016 as part of the previous assessment (Main EIAR Chapter 11 - Biodiversity, Arup, 2017). In conjunction with the habitat survey, a walkover botanical survey was completed within the study area, which followed a 'look-see' search methodology (NRA, 2009). This survey aimed to confirm the presence of any plant species (still present/in flower in August/September) that are considered rare in both a national and local context.

The botanical survey focused particularly on rare, protected, or annexed habitats/species with reference to the following:

- The Flora (Protection) Order, 2022
- Flora species listed in *The Irish Red Data Book* (Wyse Jackson *et al.*, 2016)
- Species listed in Annex II of the EU Habitats Directive
- Habitats listed in Annex I of the EU Habitats Directive

Vascular and bryophyte plant nomenclature generally follow that of *The National Vegetation Database* (Weekes & FitzPatrick, 2010) and *An Irish Flora* (Webb, 2012 – 8th Edn), with consideration given to more recent taxonomic changes as outlined in the *New Flora of the British Isles* (Stace, 2019) and the British Bryological Society's *Mosses and Liverworts of Britain and Ireland: A Field Guide* (Atherton *et al.*, 2010).

A written description of the habitats within the receiving environment was recorded, detailing the dominant species present. Photographs representative of the individual macro-habitats identified within the survey site are included for illustration purposes. Additionally, an evaluation of the ecological significance of the flora and habitats occurring within the Site, relative to surrounding habitats, was undertaken.

14.3.3.2 Invasive Plant Species Survey

During all ecological surveys conducted within the study area, the presence of Invasive Alien Species (IAS), was documented, with particular focus given to species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended).

Of the species listed in Part 1 of the Third Schedule, a number are of particular concern due to the location of the survey area and the potential for spread through disturbance. However, only 2 no. instance of a Third Schedule species were recorded within the application site: patches of *Allium triquetrum* and a single stand of *Gunnera tinctoria*. Additionally, *Rhododendron ponticum* was previously recorded along the edge of the woodland area by Dixon Brosnan - Environmental Consultants (Main EIAR Chapter 11 - Biodiversity, Arup, 2017).

The following species are considered noteworthy for their potential environmental impact:

- Giant-rhubarb (*Gunnera tinctoria*)
- Brazilian giant-rhubarb (*Gunnera manicata*)
- Three-cornered leek (*Allium triquetrum*)
- Japanese knotweed (*Fallopia Japonica*)
- Himalayan knotweed (*Persicaria wallichii*)
- Himalayan balsam (*Impatiens glandulifera*)
- Giant hogweed (*Heracleum mantegazzianum*)
- Rhododendron (*Rhododendron ponticum*)
- Spanish Bluebell (*Hyacinthoides hispanica*)

The single stand of *Gunnera tinctoria* was identified within the proposed development site, located to the rear of block A3 (Former Orphanage). This immature stand was found within the development's planning application boundary (coordinate reference: W 65935 72087). Beneath sections of woodland, some small patches of Three-cornered Leek (*Allium triquetrum*) can be found growing (coordinate references: W 65795 72096 and W 65801 71984).

Additionally, 7 no. non-native invasive species not listed on the Third Schedule were recorded at multiple locations during the survey. However, these species are not considered to pose a significant risk of impact to protected, notable, or rare species of conservation concern. The species recorded included:

- Buddleia/Butterfly bush (*Buddleja davidii*)
- Winter Heliotrope (*Petaistes fragrans*)
- Traveler's-joy/Old man's beard (*Clematis vitalba*)
- Snowberry (*Symphoricarpos albus*)
- Sycamore (*Acer pseudoplatanus*)
- Cherry laurel (*Prunus laurocerasus*)
- Japanese honeysuckle (*Lonicera japonica*)

14.3.3.3 Bird Survey

A general bird survey of the Site was conducted alongside the habitat and terrestrial mammal surveys in August and September 2024. All birds observed and/or heard were recorded to compile a casual species list. Given the relatively small and self-contained nature of the Site, surveys utilised a 'Roving Records' methodology, similar to that used in the *Bird Atlas 2007-11* (Balmer *et al.*, 2013), ensuring comprehensive coverage of the entire study area. When required, binoculars (Hawke Nature-Trek 8x42) were used to identify bird species. Bird identification follows Mullaney *et al.*, (1999).

Given the site's characteristics, particular attention was paid to its potential use by Peregrine (*Falco peregrinus*), Kestrel (*Falco tinnunculus*), Barn Owl (*Tyto alba*), Buzzard (*Buteo buteo*), Stock Dove (*Columba oenas*), and Swift (*Apus apus*). Although the surveys were conducted in the latter and early part of the breeding season, evidence of these species using the site would likely still be detectable through direct observation, as well as through the presence of nests, nesting material, droppings, or other field signs. Species of regional conservation concern or BoCCI amber-listed species were also considered and included other raptor species, waders, gulls, and waterbirds.

The objectives of the general bird survey were to:

- Record any priority species (Annex I, Red, or Amber listed) and assess their status within the Site.
- Identify any areas of habitat with particular significance with regard to avian biodiversity.

The breeding bird survey was conducted on 14th March 2025 and 8th April 2025. The survey methodology followed that recommended in standard literature from the British Trust for Ornithology (BTO) (Gillings et al., 2007; Bibby et al., 1992; Gilbert et al., 1998), which has subsequently been adapted into guidelines for ecological consultants by the Bird Survey & Assessment Steering Group (2025).

During the survey, the Site was walked slowly, approaching all habitats within and adjacent to the proposed development site while scanning and listening for birds. The survey area focused on habitats within the proposed development site boundary. The Site was walked so that all habitats within c. 50m of all potential nesting features were surveyed. The ornithological surveyor slowly walked through the Site, stopping at regular intervals to scan with binoculars and to listen for bird calls or songs. Birds were identified by both sight and song, and all species observed or heard within the survey area and its immediate surroundings were recorded, including those in flight.

The survey was undertaken during favourable weather conditions. All species encountered were coded using standard BTO species codes, and their activity was recorded using BTO breeding evidence codes. To minimise potential disturbance, no attempts were made to locate nests, as observed behaviours are generally sufficient to determine probable or confirmed breeding. The conservation status of recorded bird species was also recorded.

14.3.3.4 Non-Volant Mammal Survey

A survey for non-volant mammals (i.e., land-based mammals that cannot fly) was carried out in August and September 2024, in conjunction with the habitat surveys. This survey focused on protected species, including Badger (*Meles meles*), Irish stoat (*Mustela erminea hibernica*), Irish hare (*Lepus timidus hibernicus*), Pygmy shrew (*Sorex minutus*), Red squirrel (*Sciurus vulgaris*), Hedgehog (*Erinaceus europaeus*), Pine marten (*Martes martes*), and Otter (*Lutra lutra*).

The presence/absence of terrestrial fauna species was determined through the detection of field signs such as tracks, markings, feeding signs, and droppings, as well as by direct observation. The habitats within the site were assessed for signs of usage by protected/red-listed fauna species, and their potential to support these species. Additionally, the survey included checks for the presence of badger setts and otter holts (e.g., resting places of these protected species).

The mammal surveys, conducted over 2 no. survey years (2024 and 2025), covered the entire footprint of the proposed development. The surveys included initial ecology walkovers of the study area to identify suitable habitats and breeding locations. Additionally, trail cameras were deployed at strategic locations within the proposed development site in March 2025.

Trail Cameras

To supplement the walkover surveys, trail cameras were deployed within the proposed development site. Camera traps (Num'axes, model: PIE1059) were deployed at 2 no. locations within the proposed development site. The cameras were placed within woodland and scrub at locations noted as suitable habitat and/or showing evidence of mammal activity, including existing mammal trails. The camera trap locations were:

- Camera Trap no. 1: coordinate reference: W 65872 71986
- Camera Trap no. 2: coordinate reference: W 65801 72008

The 2 no. cameras were installed on 14th March 2025 and collected on 20th March 2025. They were angled to capture views of the existing mammal trails. All photographs logged by the cameras were reviewed for the presence of protected species.

14.3.3.5 Bat Survey

Bat surveys were carried out between the 12th and 30th of September 2024. These included a Preliminary Roost Assessment (PRA) and a structural survey of the buildings/structures on-site. The daylight inspections covered both the external and internal environment of the former Good Shepherd Convent, Orphanage, and Magdalene Home buildings, where access was possible.

The trees, stone walls, and buildings/structures within the proposed development site were appraised and inspected for signs of roosting bats (e.g., droppings, oil staining, corpses) on the 12th of September 2024, by Donnachadh Powell of Veon Ltd.

Following these assessments, a bat emergence survey was conducted, focusing primarily on of the buildings/structures. Observations were also made regarding trees within the woodland and treelines occurring within and adjacent to the site. Data from these surveys supplemented the findings of bat surveys conducted in 2016 as part of the previous site assessments (Main EIAR Chapter 11 - Biodiversity, Arup, 2017).

The bat surveys followed the methodologies outlined in the following guidance documents:

- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. Dublin: National Roads Authority (NRA, 2006a).
- Bat Survey Guidelines: Traditional Farm Buildings Scheme (Aughney *et al.*, 2008).
- Collins, J. (ed.) (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th ed.). The Bat Conservation Trust, London.
- Marnell, F., Kelleher, C. & Mullen, E. (2022). Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

Bat surveys of the application site were carried out by Donnachadh Powell, using hand-held detectors during the emergence/walkover surveys.

14.3.3.6 Reptiles & Amphibians

A general survey for reptiles and amphibians was carried out in August and September 2024, in conjunction with the habitat surveys. The lands were visually assessed for their suitability for use by reptiles and amphibians. The common lizard (*Zootoca vivipara*), Ireland's only native reptile species, requires a range of basking, foraging, and sheltering areas and can be found in a variety of habitats². Ireland's amphibians are typically associated with wetlands and pond edges, but also forage in terrestrial habitats (King *et al.*, 2011).

14.3.4 Ecological Evaluation & Impact Assessment

The criteria used to assess the ecological value and significance of the application site for habitats and species are based on the guidelines provided in the *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA, 2009a) and are consistent with the *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2* (CIEEM, 2018).

This evaluation scheme provides value ratings for ecological receptors, with values ranging from locally important to internationally important in an Irish context. Internationally important receptors include Special Areas of Conservation (SAC) or Special Protected Areas (SPA), while those of national importance would include Natural Heritage Areas (NHAs).

The evaluation scheme was adapted to assess the value of habitats and fauna in the study area. Habitats are evaluated based on their condition, size, rarity, and both legal and conservation status. Fauna are assessed by considering their legal protection, conservation status, and biodiversity value, taking into account factors such as national distribution, abundance, rarity, and associated trends.

Once the values of the identified ecological receptors were determined, the potential impact of the proposed development on these ecological receptors was assessed. The impacts were assessed under a number of parameters such as magnitude, extent, duration and reversibility. The significance of the impacts was categorised following EPA Guidelines (EPA, 2022). See **Table 14.3 – 14.4** below.

In accordance with NRA guidelines (2009), impact assessment is undertaken for ‘Key Ecological Receptors’ (KERs). KERs are within the zone of influence of the development and are *‘both of sufficient value to be material in decision making and likely to be affected significantly’*. To qualify as KERs, features must be of local Importance (higher value) or higher. Features of lower ecological value are not assessed.

The highest levels of impact significance for each key ecological receptor ‘value’ rating are shown in **Table 14.1**. The impact assessment was also guided by the relevant EPA Guidelines³.

Table 14.1 Maximum level of significance of impacts on Key Ecological Receptors.

Key Ecological Receptor Value Rating	Highest possible significance Rating
International importance	Significant positive/negative impact at an international level
National importance	Significant positive/negative impact at a national level
County importance	Significant positive/negative impact at a county level
Local importance	Significant positive/negative impact at a local level

14.3.4.1 Ecological Evaluation Criteria

All ecological receptors within the project’s zone of influence were assessed according to criteria for site evaluation outlined in the *NRA Guidelines for Ecological Impact Assessment of National Road Projects* (NRA, 2009). These guidelines set out the context for the determination of value on a geographic basis with a hierarchy assigned in relation to the importance of any particular receptor. The ecological value of a feature was determined using a geographic frame of reference (**Table 14.2**). Professional judgement was used to define the geographic framework based on available guidance, existing criteria, historical trends and information on the distribution, abundance and status of the ecological feature. The assessment takes into account the source-pathway-receptor (S-P-R) model.

Table 14.2 Site Evaluation Scheme (based on NRA, 2009).

Ecological Value	Qualifying Criteria
International Importance:	• ‘European Sites’ including Special Area of Conservation (SAC),& Special Protection Areas (SPA). • Sites that satisfy the criteria for designation as a ‘European Site’ (see Annex III of the Habitats Directive, as amended). • Features essential to maintaining the coherence of the Natura 2000 Network. • Sites containing ‘best examples’ of the habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: • – Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or • – Species of animals and plants listed in Annex II and/or IV of the Habitats Directive. • Ramsar Sites (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). • World Heritage Sites (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Biosphere Reserve (UNESCO Man & The Biosphere Programme). • Major salmon river fisheries. • Major salmonid (salmon, trout or char) lake fisheries.
National Importance:	• Site designated or proposed as a Natural Heritage Area (NHA). • Statutory Nature Reserve. • Refuge for Fauna and Flora protected under the Wildlife Acts. • National Parks. • Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: • – Species protected under Wildlife Acts; and/or • – Species listed on the relevant Red Data list. • Sites containing ‘viable areas’ of the habitat types listed in Annex I of the Habitats Directive. • Major trout river fisheries. • Water bodies with major amenity fishery value. • Commercially important coarse fisheries.

3 Environmental Protection Agency (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports.

Ecological Value	Qualifying Criteria
County Importance:	• Area of Special Amenity. • Area subject to a Tree Preservation Order. • Area of High Amenity, or equivalent, designated under the County Development Plan. • Resident or regularly occurring populations (assessed to be important at the County level)10 of the following: • Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; • Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; • Species protected under the Wildlife Acts; and/or • Species listed on the relevant Red Data list. • Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. • County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared. • Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. • Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (higher value):	• Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared. • Resident or regularly occurring populations (assessed to be important at the Local level) of the following: • Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; • Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; • Species protected under the Wildlife Acts; and/or • Species listed on the relevant Red Data list. • Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality. • Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value. • Any water body with unpolluted water (Q-value rating 4-5).
Local Importance (lower value):	• Sites containing small areas of semi-natural habitat that are of some local importance for wildlife. • Sites or features containing non-native species that are of some importance in maintaining habitat links. • Water bodies with no current fisheries value and no significant potential fisheries value.

14.3.4.2 Impact Assessment Criteria

After establishing the value of the ecological receptors (features and resources), the potential effect or impact of the proposed development on the features of ecological significance was assessed. The magnitude of the effect (or impact level) was considered in terms of the spatial and temporal duration of the effect. The spatial character refers to the geographical extent and location as well as habitat function (corridors, habitat fragmentation), while the temporal duration refers to the length of time that the ecological receptors will be affected by the change. The cumulative impact of the proposed development is also assessed.

The ecological significance of the effects of the proposed development are determined following the precautionary principle and in accordance with the guidelines produce by the CIEEM (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).

The EPA *Guidelines on information to be included in Environmental Impact Assessment Reports* (EPA, 2022) and the *Guidelines for assessment of Ecological Impacts of National Road Schemes*, (NRA, 2009a) were also considered when determining significance.

The terminology used in the determination of significance follows the suggested language set out in the EPA Guidelines (2022) as shown in **Table 14.3** below.

Table 14.3 Criteria for Assessment of Effects, based on (EPA, 2022) guidelines.

Quality of Effect	Definition
Positive Effect	A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral Effect	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/Adverse Effect	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance).
Significance of Effect	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.

Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics.
Probability of Effect	Definition
Likely Effect	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effect	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

The methodology for the assessment of impacts is derived from the Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018). Potential changes and impacts on ecosystem and receptor structure and function make reference to the parameters discussed below in **Table 14.4**.

Table 14.4 Characteristics for Describing Impacts on Ecosystem Structure & Function.

Characteristics	Definition of Impact Characteristics ⁴
Positive or negative	Positive and negative impacts/effects should be determined according to whether the change is in accordance with nature conservation objectives and policy: Positive impact - a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. Positive impacts may also include halting or slowing an existing decline in the quality of the environment. Negative impact - a change which reduces the quality of the environment e.g. destruction of habitat, removal of species foraging habitat, habitat fragmentation, pollution.
Extent	The extent is the spatial or geographical area over which the impact/effect may occur.
Magnitude	Magnitude refers 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	Duration should be defined in relation to ecological characteristics (such as a species' lifecycle) 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. The duration of an activity may differ from the duration of the resulting effect caused by the activity. For example, if short-term construction activities cause disturbance to birds during their breeding period, there may be long-term implications from failure to reproduce that season. Effects may be described as short, medium or long-term and permanent or temporary. Short, medium, long-term and temporary will need to be defined in months/years.

⁴ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester

Characteristics	Definition of Impact Characteristics ⁴
Frequency and timing	The number of times an activity occurs will influence the resulting effect. For example, a single person walking a dog will have very limited impact on nearby waders using wetland habitat, but numerous walkers will subject the waders to frequent disturbance and could affect feeding success, leading to displacement of the birds and knock-on effects on their ability to survive. The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. bird nesting season.
Reversibility	An irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation. In some cases, the same activity can cause both reversible and irreversible effects. For example, placement of a temporary access through an ancient wood could cause the loss of food and shelter for common woodland birds that may be reversible, but the compaction of fragile woodland soils and damage to ancient woodland ground flora along the access route is effectively irreversible.
Cumulative impacts and effects	Cumulative or in-combination effects are experienced where the project may impact or influence an impact to an ecological receptor in combination with other projects / interactions within the zone of influence. Different types of actions can cause cumulative impacts and effects: Additive/incremental - multiple activities/projects (each with potentially insignificant effects) added together to give rise to a significant effect due to their proximity in time and space. The effect may be additive (1+1 = 2) or synergistic (1+1 = 3). Associated/connected - a development activity 'enables' another development activity e.g. phased development as part of separate planning applications. Associated developments may include different aspects of the project which may be authorised under different consent processes. It is important to assess impacts of the 'project' as a whole and not ignore impacts that fall under a separate consent process.
Residual Impacts	After assessing the impacts of the proposed project all attempts should be made to avoid and mitigate ecological impacts. Once measures to avoid and mitigate ecological impacts have been finalised, assessment of the residual impacts should be undertaken to determine the significance of their effects on ecological features.

14.3.4.3 Cumulative Effect

The cumulative impacts of the proposed development are assessed in **Section 14.6.3** by discussing the impact of the proposal, in terms of other activities and developments that have planning permission that are under construction or are in existence in the area.

14.3.4.4 Mitigation: Rationale & Design

Where potential effects are assessed to be significant or lower, mitigation measures have been incorporated into the project design to remove or reduce these effects, along with enhancement measures. These are detailed in **Section 14.7** below. The residual effects, following the implementation of mitigation, are then evaluated in **Section 14.8** below.

14.4 Existing Environment

14.4.1 Site Location

The former Good Shepherd Convent site is located to the north-west of Cork City centre, in the Sunday's Well area. The site is approximately centred at Easting 565,855 and Northing 572,101 (ITM), encompassing an area of approximately 3.4 hectares. The site location is shown in **Figure 14.1** below.

Currently, the site comprises overgrown amenity grassland, scattered mature trees, and the remaining structures of the former Good Shepherd Convent. Due to years of neglect and recent fires, most of the buildings on-site are now derelict.

Access to the proposed development site is via Convent Avenue (L99112), which connects Strawberry Hill (L5102) with Sunday's Well Road (R846). The site's western boundary adjoins the Cork City Gaol (Museum). This boundary consists of a large, well-constructed stone wall. The surrounding area to the north, east, and south of the proposed development site, consists primarily of residential dwellings.

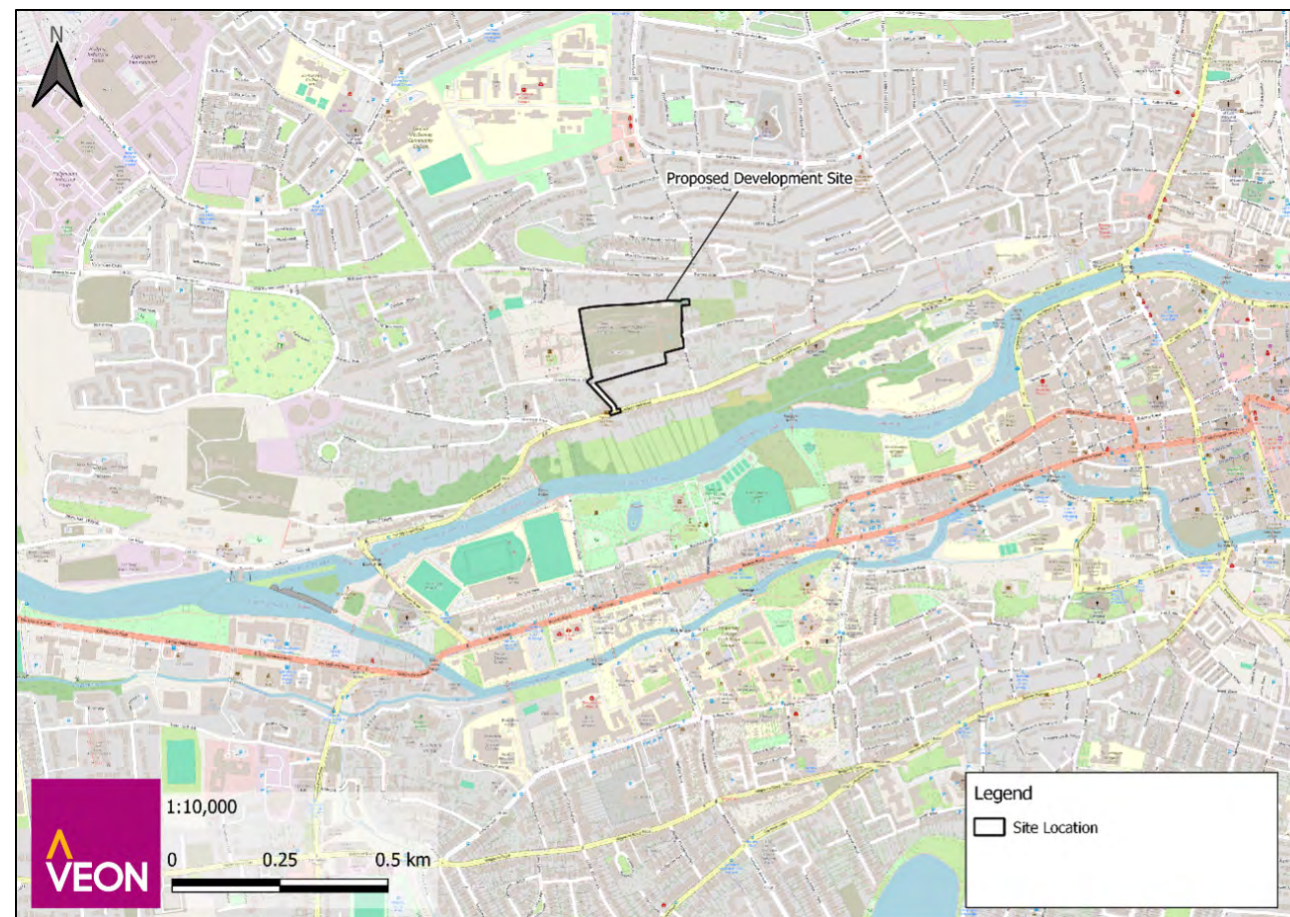


Figure 14.1 Proposed Development Site Location.

14.4.2 Designated Sites

14.4.2.1 European (Natura 2000) Designated Sites

Special Areas of Conservation (SACs) are designated under the EC Habitats Directive (92/43/EEC), as amended, which has been transposed into Irish law through a variety of legislation, including the Birds and Habitats Regulations and the Planning and Development Acts. This legislation provides for the protection of certain habitats (listed in Annex I of the Directive) and/or species (listed in Annex II). Special Protection Areas (SPAs) are designated under the Birds Directive (2009/147/EC), which provides for the protection of bird species listed in Annex I of the Directive, including regularly occurring populations of migratory species such as ducks, geese and waders, as well as areas of international importance for birds. Collectively, these sites are referred to as Natura 2000 or European sites.

There are no European sites within or directly adjacent to the boundaries of the proposed development site; therefore, it does not form part of any European site. There is 1 no. SAC (Great Island Channel SAC) and 1 no. SPA (Cork Harbour SPA) within c. 15km of the proposed development site. The closest European site to the proposed development is Cork Harbour SPA (Site code: 004030), situated c. 4.4km to the south-east at its nearest point. See **Figure 14.2** and **Figure 14.3** for maps of European Sites located within the vicinity of the proposed development.

The proposed development site is located within the Lee, Cork Harbour and Youghal Bay catchment, the Lee[Cork]_SC_060 sub-catchment and the LEE (CORK)_090 Water Framework Directive (WFD) River sub-basin. There are no watercourses within the proposed development site. The nearest watercourse, according to the EPA mapping, is the north channel of the River Lee (WFD Transitional waterbody code: IE_SW_060_0950; Segment code 19_2148), which is located c. 220m south of the proposed development site. This watercourse is transitional and forms part of the Lee (Cork) Estuary Upper transitional waterbody which flows into the Lee (Cork) Estuary Lower and Lough Mahon transitional waterbody.

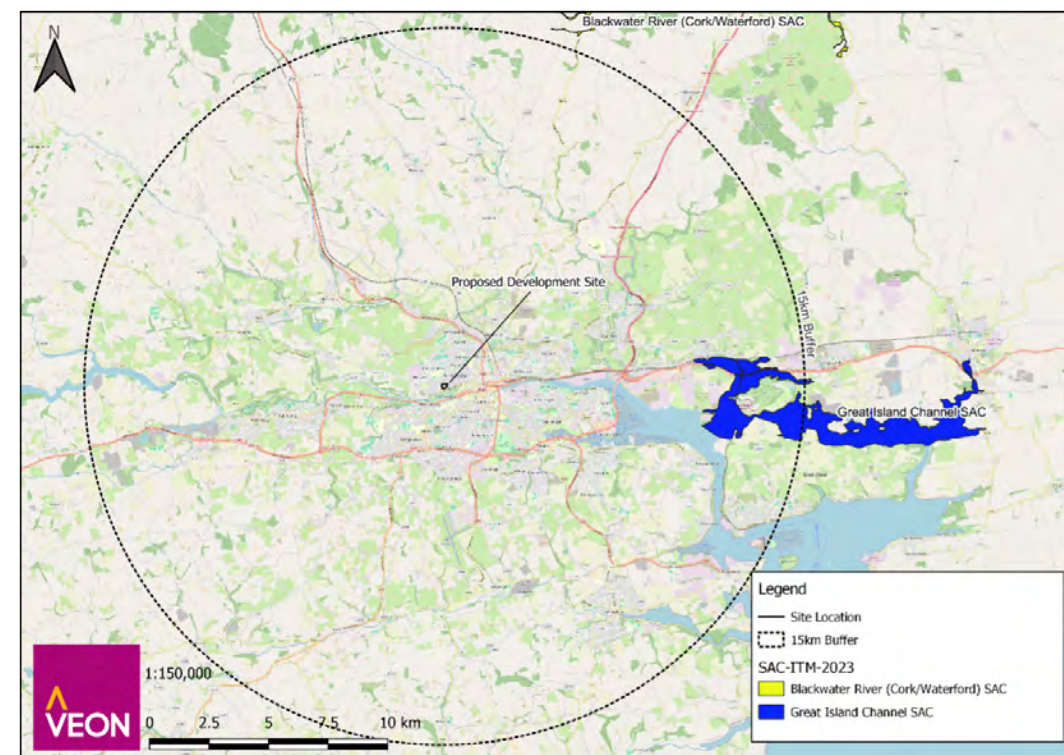


Figure 14.2 SACs in relation to proposed development site.

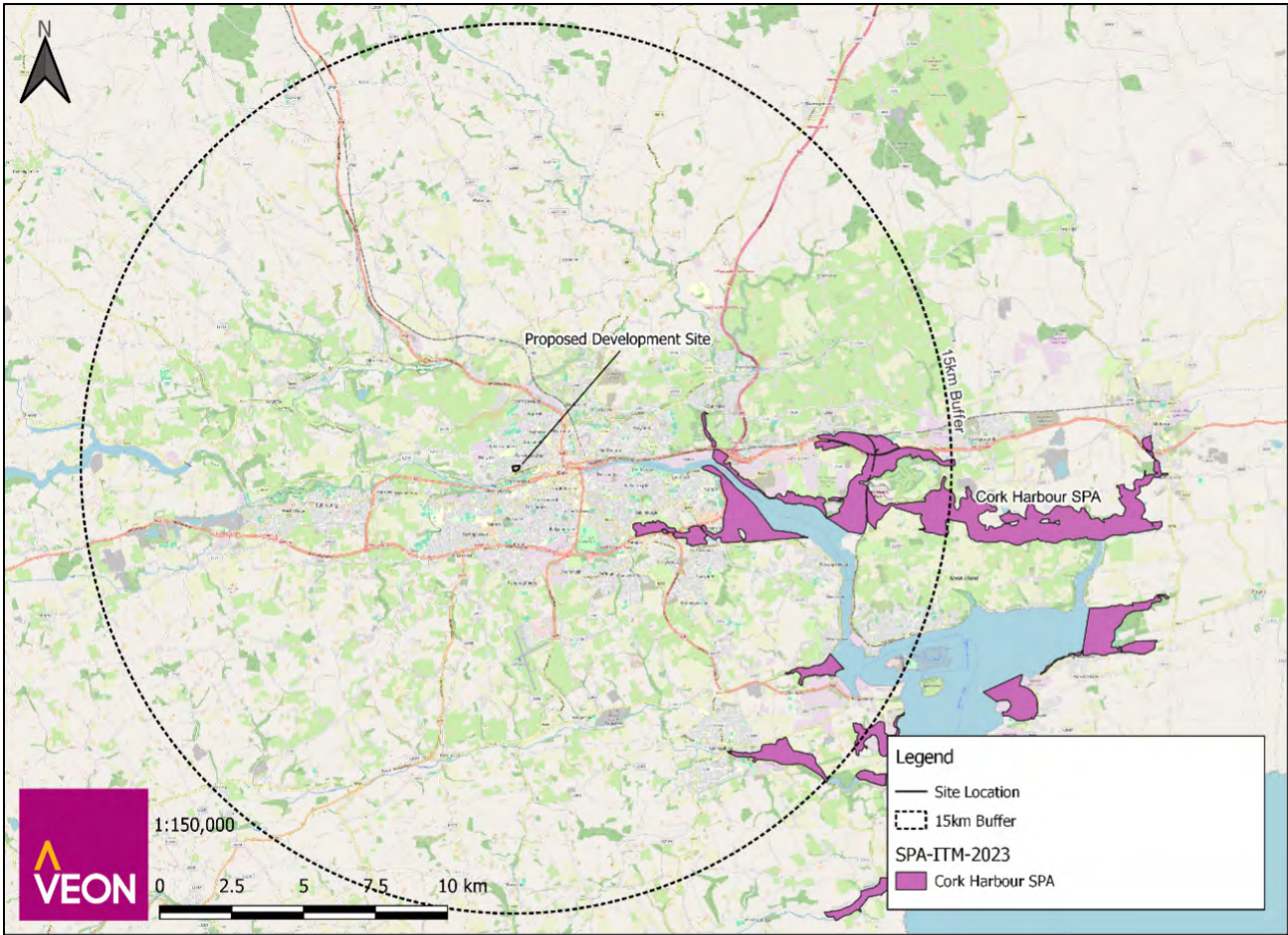


Figure 14.3 SPAs in relation to the proposed development site.

14.4.2.2 Nationally Designated Sites

In Ireland, the basic designation for wildlife conservation is the Natural Heritage Areas (NHA), established under the Wildlife Act 1976, as amended. NHAs are considered important for the habitats present, or which holds species of flora and fauna whose habitat needs protection. A list of proposed Natural Heritage Areas (pNHAs) was published on a non-statutory basis in 1995; however, these sites have not since been statutorily proposed or designated. Prior to statutory designation, pNHAs are subject to limited protection including in the areas of agri-environmental farm planning schemes, certain Forest Service requirements related to payment of afforestation grants, and recognition of the ecological value of pNHAs by Planning and Licensing Authorities.

There are no NHAs and 16 no. pNHAs within 15km of the proposed development site. No potential impacts on NHAs/pNHAs have been identified. There are no NHAs within or directly adjacent to the boundaries of the proposed development site. The nearest NHA site to the proposed development is the Sovereign Islands NHA (000105) which is situated c. 24.7km south of the proposed development site.

There are no pNHAs within or directly adjacent to the boundaries of the proposed development site. The nearest pNHA site to the proposed development is Cork Lough pNHA (001081) which is situated c. 1.2km south-east of the proposed development site. See Figure 14.4 showing the NHAs/pNHAs located within the vicinity of the proposed development site.

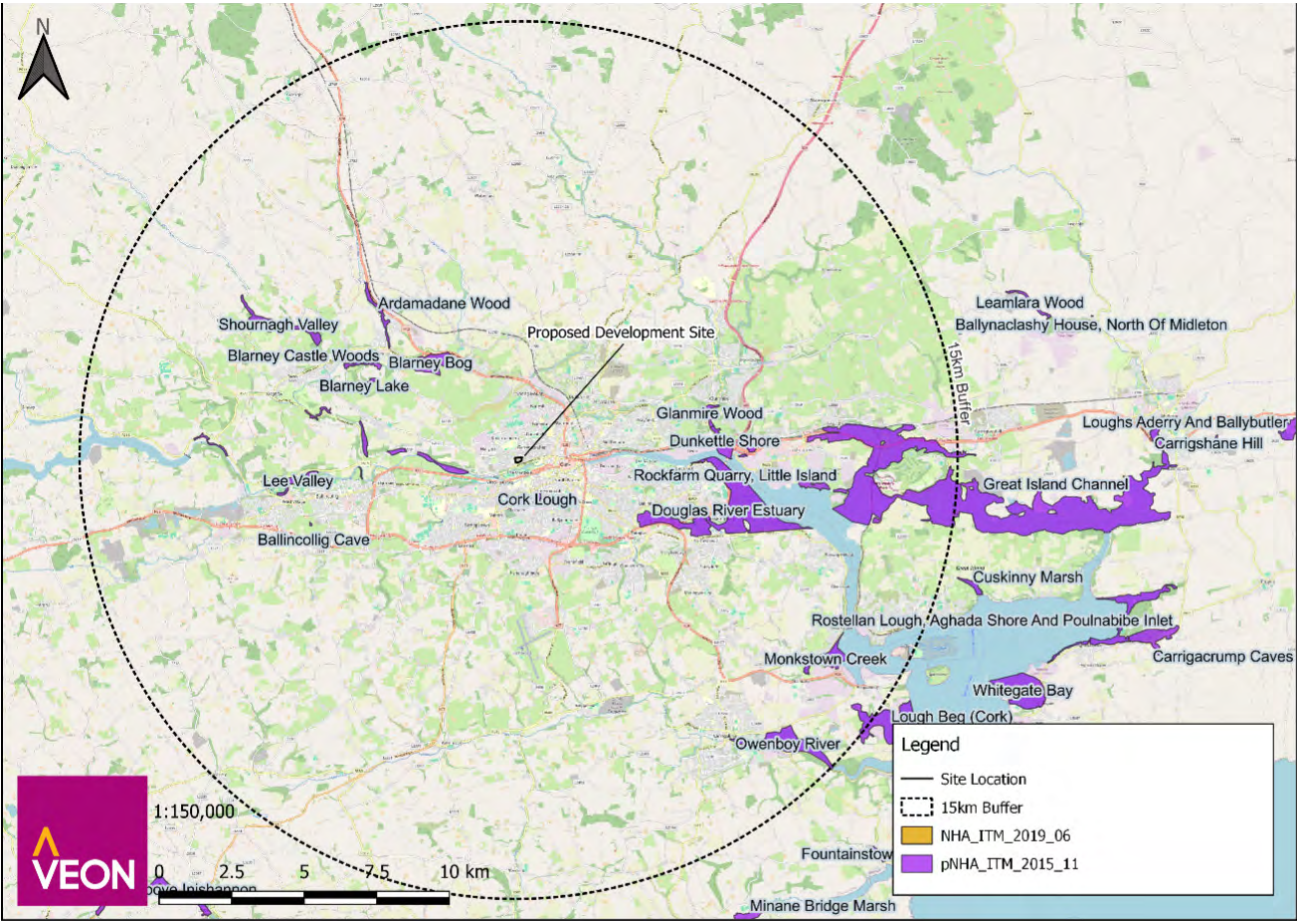


Figure 14.4 NHAs/pNHAs in relation to the proposed development site.

All relevant designated conservation sites within a 15km radius of the proposed development site have been compiled and listed in Table 14.5 below.

Table 14.5 Designated Sites and their proximity to the Proposed Development.

Site Name	Code	Distance (Nearest Point)
Special Areas of Conservation (SAC)		
Great Island Channel SAC	001058	10.4km E
Special Protection Areas (SPA)		
Cork Harbour SPA	004030	4.4km SE
Natural Heritage Areas (NHA)		
N/A	-	-
proposed Natural Heritage Areas (pNHA)		
Lee Valley	000094	1.65km W
Ballincollig Cave	001249	7.30km WSW
Cork Lough	001081	1.25km S

Site Name	Code	Distance (Nearest Point)
Dunkettle Shore	001082	6.71km E
Douglas River Estuary	001046	4.40km SE
Shournagh Valley	000103	5.08km W
Blarney Lake	001798	5.59km NW
Blarney Castle Woods	001039	5.55km NW
Blarney Bog	001857	3.82km NNW
Ardamadane Wood	001799	5.73km NNW
Great Island Channel	001058	9.84km E
Rockfarm Quarry, Little Island	001074	9.59km E
Monkstown Creek	001979	11.54km SE
Owenboy River	001990	11.97km SE
Lough Beg (Cork)	001066	14.15km SE
Glanmire Wood	001054	6.53km E

14.4.3 Additional Sites

14.4.3.1 Ramsar Sites

The Ramsar Convention on Wetlands of International Importance, especially as Waterfowl Habitat, is an international treaty that was established for the conservation and sustainable use of wetlands. This intergovernmental treaty provides a framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. A key commitment of Ramsar Contracting Parties is to identify and designate suitable wetlands for inclusion in the List of Wetlands of International Importance. Currently, Ireland has 45 sites designated as Wetlands of International Importance.

Cork Harbour (site no. 837) is the only Ramsar site within approximately 15km of the proposed development site. This is a non-statutory designation. The Cork Harbour Ramsar site, covering an area of approximately 1,436ha, supports a variety of breeding waterbirds, internationally important populations of wintering and spring staging waterbirds, and provides important feeding areas for waders (<https://ramsar.org/country-profile/ireland>).

Cork Harbour is part of a sheltered bay system with several river estuaries. The Site consists of four separated intertidal mud and sand flats. The tidal regime is complex, with the mudflats flooding and emptying rapidly, rather than following a typical twelve-hour tidal cycle. These habitats regularly support 20,000 wintering waterbirds, making Cork Harbour one of Ireland’s top five waterbird sites. More than one percent of the regional population of black-tailed godwit (*Limosa limosa*) can be found here, and the site provides feeding and roosting habitat for the vulnerable common pochard (*Aythya ferina*) and horned grebe (*Podiceps auritus*).

14.4.3.2 Additional NPWS Data

In addition to the designated site database, the following spatial data resources were also queried as regards to the proposed development footprint:

- Irish Semi-natural Grassland Survey
- National Survey of Native Woodlands

- Ancient and Long Established Woodland Inventory
- Margaritifera Sensitive Areas.

Although several sites within c. 5km of the proposed development were surveyed as part of the National Semi-natural Grassland Survey and the National Survey of Native Woodlands, no sites were recorded within the proposed application area.

14.4.3.3 Important Bird Areas (IBAs)

Important Bird and Biodiversity Areas (IBAs) are sites selected for their significance in bird conservation, as they regularly support substantial populations of one or more globally or regionally threatened, endemic, or congregatory bird species, or highly representative bird assemblages. A main aim of BirdLife International’s IBA Programme is to secure protection for selected IBAs, with robust bird data playing a crucial role in making a strong case for statutory protection. The function of the IBA Programme is to identify, protect and manage a network of sites that are important for the long-term viability of naturally occurring bird populations, across the geographical range of those bird species for which a site-based approach is appropriate.

20 no. IBA criteria have been established for the selection of IBAs in Europe. These criteria allow the identification of IBAs based on a site’s international importance for:

- Threatened bird species
- Congregatory bird species
- Assemblages of restricted-range bird species
- Assemblages of biome-restricted bird species

The criteria have been developed so that, by applying different (staggered) numerical thresholds, a site’s international importance for a species can be categorised at three distinct geographical levels:

- Global (‘A’ criteria)
- European (‘B’ criteria)
- European Union (‘C’ criteria)

Ireland currently has 105 no. IBA sites covering a total area of c. 5,702 km². Cork Harbour (Site code: IE088) qualifies for designation under the following IBA Criteria:

- **A4iii:** The site is known or thought to hold, on a regular basis, ≥ 20,000 waterbirds or ≥ 10,000 pairs of seabird of one or more species.
- **B1i:** The site is known or thought to hold ≥ 1% of a flyway or other distinct population of a waterbird species
- **C3:** The site is known to regularly hold at least 1% of a flyway population of a migratory species not considered threatened at the EU level (as referred to in Article 4.2 of the EC Birds Directive) (not listed on Annex I).
- **C4:** The site is known to regularly hold at least 20,000 migratory waterbirds and/or 10,000 pairs of migratory seabirds of one or more species.
- **C6:** The site is one of the five most important in the European region (NUTS region) in question for a species or subspecies considered threatened in the European Union (i.e. listed in Annex I of the EC Birds Directive)

14.4.4 Habitats

During the habitat survey, the various habitats present within the study area were recorded, and their condition was assessed. Habitat mapping followed the methodology outlined in the Heritage Council’s, *Best Practice Guidance for Habitat Survey and*

Mapping (Smith *et al.*, 2011). The terrestrial and/or aquatic habitats within or adjacent to the proposed development site were classified using the classification scheme provided in the Heritage council's *A Guide to Habitats in Ireland* (Fossitt, 2000), and cross referenced with Annex I Habitats where applicable.

A total of 8 no. macro habitats were identified within the study area (see **Figure 14.13**). The area consists of a mosaic of habitats ranging from low to high ecological value, with buildings and artificial surfaces (Fossitt habitat code: BL3) being the most prominent habitat. The ecological value of these habitats within the study area, along with their Fossitt (2000) classification codes, are provided in **Table 14.6**.

The ecological value of these habitats is determined according to the classification scheme outlined in the *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA, 2009a).

No rare or threatened plant species were recorded on, or in the vicinity of the site, nor are they expected to occur, given that the habitats within the study area are common and highly modified. While the habitats recorded within the site by Dixon Brosnan - Environmental Consultants (Main EIAR Chapter 11 - Biodiversity, Arup, 2017) were used as a general guide for this habitat survey, it was noted that although many habitats recorded at the time of this survey are comparable to those recorded in the previous surveys, other habitats are transitioning or have completely transitioned due to a lack of management.

The habitats identified within and in close proximity to the survey area are outlined below:

- Buildings and artificial surfaces (BL3)
- Mixed broadleaved/conifer woodland (WD2)
- Scrub (WS1)
- Dry meadows and grassy verges (GS2)
- Amenity grassland (improved) (GA2)
- Treelines (WL2)
- Recolonising bare ground (ED3)
- Stone walls and other stonework (BL1)

Table 14.6 Habitat Evaluation.

Habitat	Evaluation Rating (NRA Guidelines)	Rationale
Buildings and artificial surfaces (BL3)	Local Importance (lower value)	Provides negligible habitat value due to the lack of natural features and vegetation that could support significant biodiversity.
Mixed broadleaved/conifer woodland (WD2)	Local Importance (higher value)	Offers important habitats for a variety of local wildlife, including birds, insects, bats, and other mammals, due to the diversity of tree species and structure.
Scrub (WS1)	Local Importance (lower value)	Scrub can provide important habitats for local wildlife such as birds, insects and bats. However, the scrub habitat within the site is generally species poor with a high proportion of non-native species.
Dry meadows and grassy verges (GS2)	Local Importance (higher value)	Dry meadows and grassy verges provide valuable habitats for local wildlife, including birds, insects, and small mammals, due to the presence of native grasses and wildflowers.

Habitat	Evaluation Rating (NRA Guidelines)	Rationale
Amenity grassland (improved) (GA2)	Local Importance (lower value)	This grassland habitat within the proposed development site is relatively species poor due to current management practices.
Treelines (WL2)	Local Importance (lower value)	Treelines are important for local wildlife, including birds, insects, and bats, as they provide connectivity between habitats and offer potential nesting and roosting sites.
Recolonising bare ground (ED3)	Local Importance (lower value)	Of very little habitat value.
Stone walls and other stonework (BL1)	Local Importance (lower value)	Of limited habitat value, but may support lichens, mosses and ferns.

Buildings and artificial surfaces (BL3)

This habitat includes the remains of the convent and its associated paved areas. It is highly modified, with low species diversity, providing limited value for wildlife. Dense growth of the non-native shrub Butterfly-bush (*Buddleja davidii*) was observed throughout the site. The buildings, previously used by bats, may also provide suitable nesting/roosting opportunities for swift, swallow, house martin, barn owl, stock dove, and kestrel. While vegetation is generally sparse, in less disturbed areas, herb species were noted, including dandelions (*Taraxacum* spp.), hawkbits (*Leontodon* spp.), hedge bindweed (*Calystegia sepium*), pineappleweed (*Matricaria discoidea*), greater plantain (*Plantago major*), and willow-herbs (*Epilobium* spp.). Given its highly modified nature and low species diversity, this habitat is largely considered of *Local Importance (lower value)*.



Figure 14.5 Buildings and artificial surfaces (BL3) habitat present on site.

Mixed broadleaved/conifer woodland (WD2)

This relatively small mixed broadleaved/conifer woodland provides important habitats for local wildlife, including birds, insects, and mammals such as bats. The woodland within the proposed development site is primarily composed of non-native species, with only a limited number of native species present. Species observed include Copper Beech (*Fagus sylvatica* f. *purpurea*), Lime (*Tilia* spp.), Sycamore (*Acer pseudoplatanus*), Ash (*Fraxinus excelsior*), Holly (*Ilex aquifolium*), Cherry (*Prunus* spp.), Cypress (*Cupressus* spp.), Pine (*Pinus* spp.), and Cedar (*Cedrus* spp.).

Woodlands function as ecological corridors, linking fragmented habitats and facilitating the movement of species between areas. This connectivity is particularly important in urban and suburban landscapes, where green spaces are often isolated. Due to its ecological value, particularly in an urban context where such habitats are scarce, this habitat is considered of *Local Importance (higher value)*.

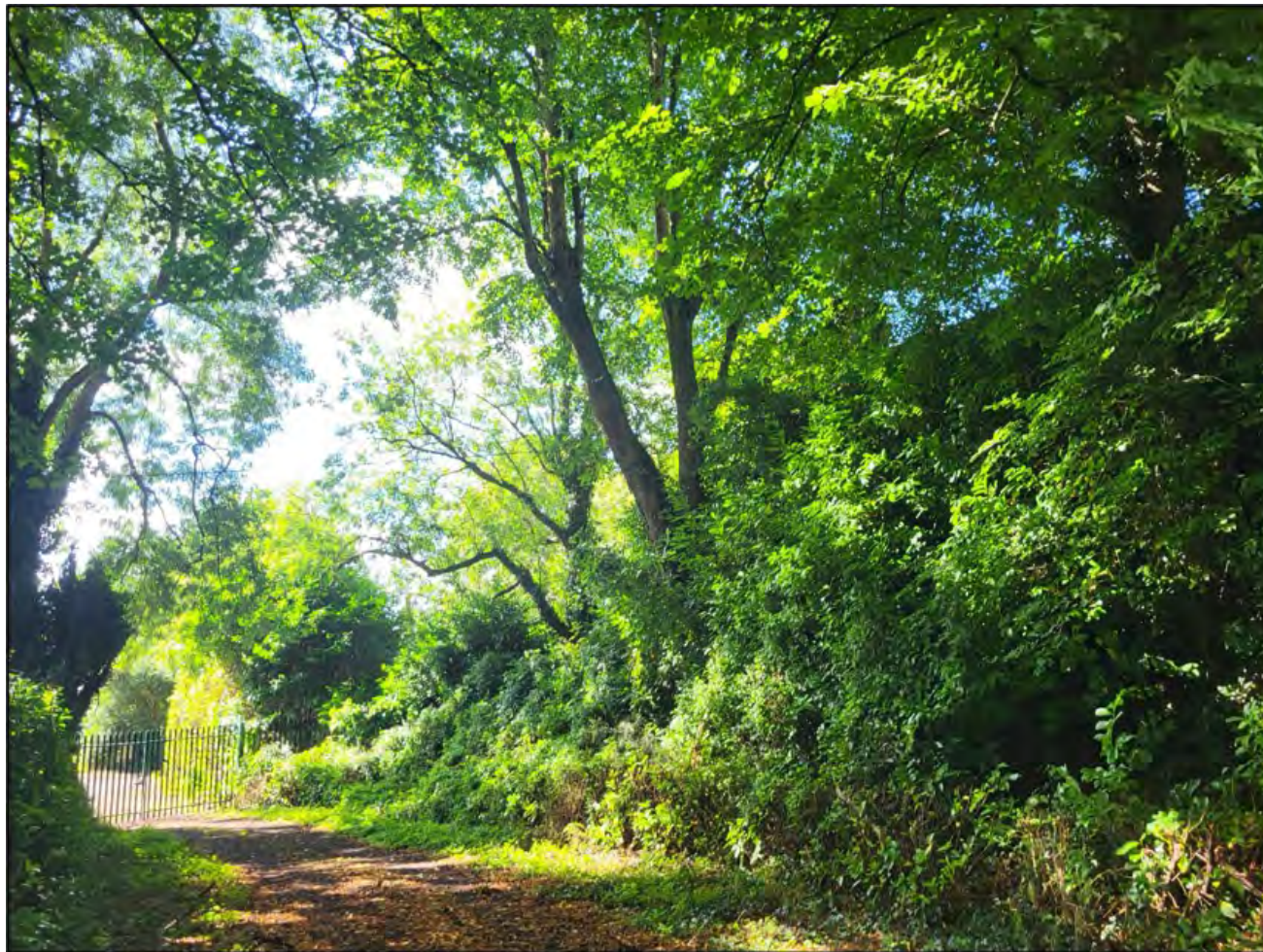


Figure 14.6 Mixed broadleaved/conifer woodland (WD2) habitat present on site.

Scrub (WS1)

Extensive areas of scrub habitat have developed across sections of the site, particularly along the western areas. This habitat is dominated by Bramble (*Rubus fruticosus* agg.), along with various willow (*Salix* spp.) and rose (*Rosa* spp.) species. Scrub provides valuable shelter, as well as nesting and feeding sites for a variety of insects, birds, and mammals. However, the predominance of non-native species such as Butterfly-bush (*Buddleja davidii*), and the relatively low species diversity, limit its overall ecological value. As a result, this habitat is considered of *Local Importance (lower value)*.



Figure 14.7 Scrub (WS1) habitat present on site.

Dry meadows and grassy verges (GS2)

This habitat type can be found throughout sections of the site, characterised by a high proportion of tall, coarse, tussocky grasses such as False Oat-grass (*Arrhenatherum elatius*) and Cock's-foot (*Dactylis glomerata*). Other grasses present include Yorkshire-fog (*Holcus lanatus*) and Smooth Meadow-grass (*Poa pratensis*). The habitat occurs in mosaics, but also in isolated patches, where it is transitioning towards scrub due to a lack of management. Dry meadow and grassy verge (GS2) corresponds to the Habitats Directive Annex I habitat: lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) (6510). However, the habitat on-site is common locally and does not represent a significant example of this Annex I habitat type.

This seminatural habitat is of some importance to seed-eating avifauna and is considered of *Local Importance (higher value)*.



Figure 14.8 Dry meadows and grassy verges (GS2) habitat present on site.

Amenity grassland (improved) (GA2)

This habitat on-site is relatively species-poor, and is managed for amenity, recreational, and landscaping purposes. This habitat occurs both in mosaics and isolated patches, with some areas transitioning towards dry meadows and grassy verges due to reduced management. The sward comprises a variety of grasses, as well as broadleaved herbs such as daisy (*Bellis perennis*), dandelion (*Taraxacum spp.*), clovers (*Trifolium spp.*) and plantains (*Plantago spp.*) common throughout. Given its current management, this habitat is considered of *Local importance (lower value)*.



Figure 14.9 Amenity grassland (improved) (GA2) habitat present on site.

Treelines (WL2)

Treelines can provide habitats for local wildlife and, as linear features within the wider landscape, serve as commuting routes for fauna. On-site, treelines occur along the boundaries, consisting of mature and semi-mature trees arranged in a loosely linear pattern. While not always forming a continuous line, these trees are of similar species and ages. Mature native trees are particularly valuable as they provide unique habitats and contribute viable pollen, ovules, and seeds to the ecosystem.

Ash (*Fraxinus excelsior*) is the dominant species along the treeline, with occurrences of, Sycamore (*Acer pseudoplatanus*), Lime (*Tilia* spp.), Beech (*Fagus sylvatica*), Cypress (*Cupressus* spp.), Pine (*Pinus* spp.), and Cedar (*Cedrus* spp.).

The treelines within the survey site are contain a high proportion of non-native species such as Lime and Sycamore, reducing their ecological value. Thus, these treelines are considered of *Local importance (lower value)*.



Figure 14.10 Treelines (WL2) habitat present on site.

Recolonising bare ground (ED3)

A relatively large area of this habitat exists within the site. To the north of the existing buildings, the area is primarily composed of artificial surfaces such as tarmac, concrete, and other man-made materials, which has been colonised by herbaceous plants.

The vegetation includes Nettle (*Urtica dioica*), Pineappleweed (*Matricaria discoidea*), Dandelion (*Taraxacum* spp.), willow-herbs (*Epilobium* spp.) and ragworts (*Senecio* spp.), with a high proportion of non-native species, such as Butterfly-bush (*Buddleja davidii*). Due to its highly modified nature and low species diversity, this habitat is considered of *Local Importance (lower value)*.



Figure 14.11 Recolonising bare ground (ED3) habitat present on site.

Stone walls and other stonework (BL1)

Although an artificial habitat, stone walls and other stonework provide important environments for plants, mosses, lichens, and invertebrate species. Older and more neglected structures are typically the most valuable for wildlife. Recorded vegetation includes Hart's-tongue (*Asplenium scolopendrium*), polypody (*Polypodium agg.*), and Ivy (*Hedera helix*) on certain sections. The boundary walls of the site also offer limited potential as roosting sites for bats, with large sections covered by dense ivy and featuring some suitable crevices.

The boundary wall is extensively covered by ivy in sections, which has formed a dense bush on much of the structure. Due to its limited floristic interest, it is considered of *Local importance (lower value)*.



Figure 14.12 Stone walls and other stonework (BL1) habitat present on site.



Figure 14.13 Habitat map of the proposed development site.

14.4.5 Flora

14.4.5.1 Desk Study

The desk study involved a review of data from the National Biodiversity Data Centre (NBDC) and the National Parks and Wildlife Service (NPWS) online database on rare and protected plants within the relevant 10km grid square. The search specifically targeted plant species listed under Annex II of the EU Habitats Directive, species protected by the Flora Protection Order species (FPO) (2022), and species listed in *The Irish Red Data Book* (Wyse Jackson, *et al.*, 2016) within the Ordnance Survey National Grid 10km hectad W67, which covers the study area.

A total of 499 no. flowering plant species are listed by the NBDC as present in the grid square W67. **Table 14.7** lists the threatened species, recorded within the 10km grid square W67. None of the species listed in **Table 14.7** were recorded within the study area.

Table 14.7 Rare and protected species listed as occurring within W67.

Grid Square	Species Name	Designation
W67	Allseed (<i>Radiola linoides</i>)	Near threatened
W67	Bur Chervil (<i>Anthriscus caucalis</i>)	Near threatened
W67	Chives (<i>Allium schoenoprasum</i>)	Flora (Protection) Order, 2022.
W67	Corncockle (<i>Agrostemma githago</i>)	Regionally Extinct
W67	Marigold Corn (<i>Glebionis segetum</i>)	Near threatened
W67	Little-robin (<i>Geranium purpureum</i>)	Endangered
W67	Pale Flax (<i>Linum bienne</i>)	Near threatened
W67	Round-leaved Crane's-bill (<i>Geranium rotundifolium</i>)	Endangered
W67	Meadow Barley (<i>Hordeum secalinum</i>)	Flora (Protection) Order, 2022.
W67	Annual Knawel (<i>Scleranthus annuus</i>)	Flora (Protection) Order, 2022.
W67	Killarney Hawkweed (<i>Hieracium argentatum</i>)	Flora (Protection) Order, 2022.
W67	Meadow Saxifrage (<i>Saxifraga granulata</i>)	Flora (Protection) Order, 2022.
W67	Heath Cudweed (<i>Omalotheca sylvatica</i>)	Flora (Protection) Order, 2022.

14.4.5.2 Invasive Plant Species

Non-native plants are defined as species introduced outside their native range by humans and their activities, either intentionally or accidentally. Invasive non-native species are so-called because they typically exhibit one or more of the following characteristics/features: (1) prolific reproduction through seed dispersal and/or re-growth from plant fragments; (2) rapid growth; and (3) resistance to standard weed control methods.

When a non-native species exhibits invasive qualities and is not properly managed, it can potentially: (1) outcompete native vegetation, affecting plant community structure and habitats for wildlife; (2) cause damage to infrastructure, including roads, footpaths, walls, and foundations; and, (3) negatively impact landscape quality.

Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 make it an offence to plant, disperse, allow dispersal, or cause the spread of certain species (e.g. Japanese knotweed and Rhododendron). It is also illegal to keep these plants for the purpose of sale, breeding, reproduction, propagation, distribution, introduction, or release, or to possess anything from which the plant can be reproduced or propagated without a granted licence. Additionally, the Wildlife (Amendment) Act 2000 states that anyone who plants or otherwise causes to grow in a wild state in any place in the State any species of (exotic) flora, or the flowers, roots, seeds or spores of (exotic) flora shall be guilty of an offence.

The NBDC online database lists 10 no. high-impact invasive species as present within grid square W67 (see **Table 14.8**).

Table 14.8 Non-native invasive plant species recorded in hectad W67.

Species Name	Designation
Canadian Waterweed (<i>Elodea canadensis</i>)	Invasive species - risk of High Impact
Cherry Laurel (<i>Prunus laurocerasus</i>)	Invasive species - risk of High Impact
Curly Waterweed (<i>Lagarosiphon major</i>)	Invasive species - risk of High Impact
Fallopia japonica x sachalinensis = F. x bohemica	Invasive species - risk of High Impact
Giant Hogweed (<i>Heracleum mantegazzianum</i>)	Invasive species - risk of High Impact
Giant-rhubarb (<i>Gunnera tinctoria</i>)	Invasive species - risk of High Impact
Indian Balsam (<i>Impatiens glandulifera</i>)	Invasive species - risk of High Impact
Japanese Knotweed (<i>Fallopia japonica</i>)	Invasive species - risk of High Impact
Nuttall's Waterweed (<i>Elodea nuttallii</i>)	Invasive species - risk of High Impact
Rhododendron (<i>Rhododendron ponticum</i>)	Invasive species - risk of High Impact
American Skunk-cabbage (<i>Lysichiton americanus</i>)	Invasive species - risk of Medium Impact
Brazilian Giant-rhubarb (<i>Gunnera manicata</i>)	Invasive species - risk of Medium Impact
Butterfly-bush (<i>Buddleja davidii</i>)	Invasive species - risk of Medium Impact
Canadian Fleabane (<i>Conyza canadensis</i>)	Invasive species - risk of Medium Impact
Common Broomrape (<i>Orobanche minor</i>)	Invasive species - risk of Medium Impact
Evergreen Oak (<i>Quercus ilex</i>)	Invasive species - risk of Medium Impact
Himalayan Honeysuckle (<i>Leycesteria formosa</i>)	Invasive species - risk of Medium Impact
Himalayan Knotweed (<i>Persicaria wallichii</i>)	Invasive species - risk of Medium Impact
Least Duckweed (<i>Lemna minuta</i>)	Invasive species - risk of Medium Impact
Narrow-leaved Ragwort (<i>Senecio inaequidens</i>)	Invasive species - risk of Medium Impact
Red Oak (<i>Quercus rubra</i>)	Invasive species - risk of Medium Impact
Russian-vine (<i>Fallopia baldschuanica</i>)	Invasive species - risk of Medium Impact
Sycamore (<i>Acer pseudoplatanus</i>)	Invasive species - risk of Medium Impact
Three-cornered Garlic (<i>Allium triquetrum</i>)	Invasive species - risk of Medium Impact
Traveller's-joy (<i>Clematis vitalba</i>)	Invasive species - risk of Medium Impact
Wall Cotoneaster (<i>Cotoneaster horizontalis</i>)	Invasive species - risk of Medium Impact
Spanish Bluebell (<i>Hyacinthoides hispanica</i>)	Non-native species - Low risk of Impact

14.4.5.3 Field Study

No rare plant species were recorded during the site survey, nor are any expected to occur, given that the habitats within the study area are common and highly modified.

Of the high-impact invasive species listed in **Table 14.8**, only Cherry Laurel (*Prunus laurocerasus*) and Giant-rhubarb (*Gunnera tinctoria*) were recorded within the proposed development site. Additionally, Rhododendron (*Rhododendron ponticum*) was previously recorded at the edge of the woodland area. Of these species, only Three-cornered Leek, Giant-rhubarb, and Rhododendron are listed on the Third Schedule of the 2011 European Communities (Birds and Natural Habitats) Regulations, where it is an offence to disperse, spread, or otherwise cause it to grow in any place.

Several other non-native invasive plant species were recorded within the study area, including Winter Heliotrope (*Petaistes fragrans*), Traveler's-joy (*Clematis vitalba*), Snowberry (*Symphoricarpos albus*), Sycamore (*Acer pseudoplatanus*), Japanese honeysuckle (*Lonicera japonica*), and Buddleia (*Buddleia davidii*), which were noted in multiple locations. While these species are not listed on the Third Schedule of the 2011 European Communities (Birds and Natural Habitats) Regulations, care should be taken to prevent the spread of these species, following the guidelines set out by the National Roads Authority, (2010), regarding the management and removal of invasive plant species.

14.4.6 Fauna

A desk study and field surveys were conducted to assess the usage of the proposed development site by protected/red-listed fauna species, as well as its potential to support them. The desk study compiled records of rare, threatened, or protected species, from the 10km and 2km grid squares overlapping the study area, using data from the National Biodiversity Data Centre’s online map viewer.

14.4.6.1 Non-volant Mammals

Desktop Study

A search of the NBDC database returned records of the following non-volant mammal species, protected under the EU Habitats Directive and/or Wildlife Acts within the 10km grid square that overlaps the proposed development site.

Table 14.9 Protected Mammal species recorded in 10km grid square W67.

Protected Non-volant Mammal Species recorded in 10km²	
Common Name/Scientific Name	Designations/Conservation Status
Eurasian Badger (<i>Meles meles</i>)	Protected Species: Wildlife Acts
Eurasian Pygmy Shrew (<i>Sorex minutus</i>)	Protected Species: Wildlife Acts
Eurasian Red Squirrel (<i>Sciurus vulgaris</i>)	Protected Species: Wildlife Acts
European Otter (<i>Lutra lutra</i>)	Annex II, Annex IV, Protected Species: Wildlife Acts
Sika Deer (<i>Cervus nippon</i>)	Invasive Species, Protected Species: Wildlife Acts
Irish Hare (<i>Lepus timidus subsp. hibernicus</i>)	Protected Species: Wildlife Acts
Irish Stoat (<i>Mustela erminea subsp. hibernica</i>)	Protected Species: Wildlife Acts
Hedgehog (<i>Erinaceus europaeus</i>)	Protected Species: Wildlife Acts

The proposed development site includes areas of mature treelines and woodland, habitats that are known to support several species listed in **Table 14.9** for foraging, commuting, and resting. Thus, it cannot be ruled out that these species may use the site for foraging and/or passageway between areas.

Field Survey Results

The site walkover surveys included an assessment of the presence and likely occurrence for protected non-volant mammal species within the proposed development site and its surroundings. Habitat assemblages within the proposed development site were assessed for field signs and patterns of usage by fauna including scat, spraint, droppings, hair, foraging tracks and paths, in addition to resting places and breeding sites.

Badger (*Meles meles*) and their setts are protected under the Wildlife Act 1976, (as amended), and it is an offence to intentionally, knowingly, or unknowingly kill or injure a protected species, or to wilfully interfere with or destroy the breeding site or resting place of a protected wild animal. Badger setts consist of complex networks of interlinked tunnels, and therefore works in proximity to setts can potentially cause damage to the species. No signs of badger or setts were recorded during the site visits.

Otters (*Lutra lutra*), along with their breeding and resting places, are protected under the Wildlife Act 1976, (as amended). They also receive additional protection through their inclusion in Annex II and Annex IV of the Habitats Directive, which has been transposed into Irish law. Otters are further listed under Appendix II of the Berne Convention on the Conservation of European Wildlife and Natural Habitats, and they are included in the Convention on International Trade in Endangered Species (CITES).

Although otters are rare in parts of Europe, they are widely distributed in Ireland, inhabiting both marine and freshwater environments. Otters are solitary and nocturnal or crepuscular, and as such are rarely seen. As a result, surveys for otters rely on detecting signs of their presence. These signs include spraints (faeces), anal gland secretions, paths, slides, footprints and remains of prey. Spraints are of particular value as they are used as territorial markers and are often found on prominent locations such as grass tussocks, stream junctions and beneath bridges. Moreover, spraints are relatively easy to identify.

A review of existing records within a 10km radius of the study area (hectad W67) showed that otter, or signs of otter, have been recorded on 217 no. occasions, with the most recent being in November 2023. However, no signs of otter were recorded during the recent site visits, and the proposed development site does not contain habitats suitable for otters.

Due to the absence of more suitable habitat types, it is considered unlikely that Irish Hare (*Lepus timidus subsp. hibernicus*) occurs within the proposed development site. In addition, given the limited size of the site, the presence of Red Squirrel (*Sciurus vulgaris*) is also considered unlikely. However, the habitats within the site boundary are utilised by species such as Pygmy Shrew (*Sorex minutus*), Hedgehog (*Erinaceus europaeus*), and Irish Stoat (*Mustela erminea subsp. Hibernica*), which could potentially be present. Notably, a dead Pygmy Shrew was recorded on-site on the 20th of August 2024.

The wildlife trail cameras, installed on 14th March 2025 and retrieved on 20th March 2025 (covering 6 days and 5 nights), recorded Red Fox, Song Thrush, and Blackbird, with Red Fox being the most frequently detected species. Camera Trap No. 1, located along trails in the grassland/scrub habitat in the southern section of the site, recorded Red Fox on 2 nights (3 registrations on 17th and 18th March), with most activity on the 17th. Camera Trap No. 2 recorded Red Fox on 15th March and Song Thrush and Blackbird on 16th March. No significant mammal presence was recorded, with trails confirmed as originating from Red Fox. No protected mammal species were captured on the cameras.

Direct evidence was observed for Wood Mouse (*Apodemus sylvaticus*), Brown Rat (*Rattus norvegicus*), and Pygmy Shrew (*Sorex minutus*). Additionally, Domestic cats (*Felis silvestris catus*) were frequently recorded. No other signs of terrestrial non-volant mammal activity were recorded within the proposed development site. However, the unmanaged grassland, woodland and treeline habitats within the site are considered to be potentially suitable habitat to support small mammal species, such as pygmy shrew (*Sorex minutus*) and hedgehog (*Erinaceus europaeus*). Therefore, the local small mammal populations are assessed as being of a Local importance (higher value).

14.4.6.2 Bats

Desktop Study

All bats, and their breeding and resting places, are protected under the Wildlife Act 1976, (as amended). All bat species are listed in Annex IV of the EU Habitats Directive, and the lesser horseshoe bat (*Rhinolophus hipposideros*) is additionally listed in Annex II. These species receive strict protection under the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011. According to the Ireland Red List No. 12: Terrestrial Mammals (Marnell *et al.*, 2019), all Irish bat species are classified as 'Least Concern'.

A search of the NBDC database returned the following records of bat species within a 10km radius of the study area (hectad W67), as listed in **Table 14.10**. It is important to note that other bat species, not included in this database, may also be present in the surrounding area.

Table 14.10 Protected Bat species recorded in 10km grid square surrounding the site.

Protected Bat Species recorded in 10km ²	
Common Name/Scientific Name	Designations/Conservation Status
Brown Long-eared Bat (<i>Plecotus auritus</i>)	Annex IV, Wildlife Acts
Common Pipistrelle (<i>Pipistrellus pipistrellus</i>)	Annex IV, Wildlife Acts
Daubenton's Bat (<i>Myotis daubentonii</i>)	Annex IV, Wildlife Acts
Leisler's Bat (<i>Nyctalus leisleri</i>)	Annex IV, Wildlife Acts
Natterer's Bat (<i>Myotis nattereri</i>)	Annex IV, Wildlife Acts
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	Annex IV, Wildlife Acts
Whiskered Bat (<i>Myotis mystacinus</i>)	Annex IV, Wildlife Acts

Given the habitats present in the surrounding environment, it is likely that bat roosts are located nearby. The proposed renovation and redevelopment of the site will include substantial work on existing buildings and the demolition of some minor structures. This will involve significant alterations and structural reinforcement of roofs, which could potentially impact bats if they are present. Veon Ecology conducted a bat survey and recommended mitigation measures to ensure the protection of bats during and after the proposed works.

The site features large mature trees with dense ivy cover along with some structural elements such as cracks and crevices that could support significant bat roosts. Additionally, stone walls along the external boundary with crevices and sections of dense ivy provide potential roosting habitat. However, no significant removal of mature trees or boundary walls is proposed.

Bat Landscapes

Bat Conservation Ireland (BCI) produced a landscape conservation guide for Irish bat species using their database of species records collated during the 2000-2009 survey seasons. An analysis of the habitat and landscape associations of all bat species resident in Ireland was conducted and reported in Lundy *et al.*, 2011⁵.

⁵ Lundy, M.G., Aughney, T., Montgomery, W.I., & Roche, N., (2011) Landscape conservation for Irish bats & species specific roosting characteristics. Bat Conservation Ireland.

The NBDC map viewer is a visualisation of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats. The maps are constructed using spatial units of the OSI National Grid. The index presented is for all species combined, in addition to the individual species' indices.

The different ratings for individual bat species are listed in **Table 14.11** below.

Table 14.11 Bat Suitability Index for the site and its surrounding area (NBDC, 2024).

Suitability index for different bat species:		
Common Name	Scientific Name	Suitability Score
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	47
Brown long-eared bat	<i>Plecotus auritus</i>	48
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	45
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	0
Leisler's bat	<i>Nyctalus leisleri</i>	46
Whiskered bat	<i>Myotis mystacinus</i>	40
Daubenton's bat	<i>Myotis daubentonii</i>	32
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	8
Natterer's bat	<i>Myotis nattereri</i>	36
Total Score for All Bat Species		33.56

Previous Bat Surveys

Bat surveys were previously carried out on-site by Dixon Brosnan (Main EIAR Chapter 11 - Biodiversity, Arup, 2017) in September 2005 and from August to October 2007 as part of an assessment for a proposed development of the site. Emergence surveys were carried out using a standard heterodyne detector (Batbox III) in 2005 and a heterodyne/frequency division detector (Batbox Duet) in 2007. Parts of the interior of the buildings were surveyed in October 2006, but no signs of bats were recorded.

Based on the information from these surveys, it was concluded that there were two small colonies of Common pipistrelle using the building complex, which were assumed to be maternity roosts. Additionally, it was concluded that the habitats noted on site were unlikely to be of significant value for feeding bats, and only very limited feeding activity was detected following emergence. However, the site is relatively close to the Lee River, which is extensively used by foraging bats.

In 2016, a further 4 no. nights of emergence surveys were conducted on the 20th, 24th, 26th and 29th of September using Batbox Duet bat detectors. Anabat passive bat monitors were deployed at two locations on-site beginning on 15th of September 2016. Data from these detectors were analysed using the AnaLookW software to identify each individual recording to species level, where possible.

The results from the 2016 survey were broadly similar to those from previous surveys, though fewer bats were noted roosting within the buildings, likely due to structural deterioration. The majority of the buildings on-site no longer have roofs and thus offer little value as potential roosting habitat. The results indicated that a small colony of Common pipistrelle (estimated at 10 no. bats) were emerging, from the second-floor window, from a part of the building where parts of the roof remained. However, the exact location of the roost could not be determined due to the condition of the building. Following emergence, the bats were recorded foraging within the site, and a small number of Leisler's Bats were also observed flying over the site.

Data from the passive detectors showed that Common pipistrelle was the most frequently recorded species, with a total of 1,122 no. individual recordings. Leisler's Bat was recorded 562 no. times, and Soprano Pipistrelle 293 no. times. Brown Long-Eared Bats were recorded 25 no. times. A total of 123 no. recordings could not be identified, most of which were due to the calls being too brief for species identification. No Lesser Horseshoe Bats, which are listed on Annex II of the Habitats Directive, were recorded. The passive detector results aligned with the emergence surveys, confirming Common Pipistrelle as the most frequently recorded species. Some activity from Leisler's Bat, Soprano Pipistrelle, and Brown Long-Eared Bat was also noted. It is important to note that each recording does not signify an individual bat, as individuals foraging in the area may be recorded multiple times. Given the limited size of the site and the proximity of the River Lee (c. 220m south), it is considered unlikely that the grounds provide a critical feeding resource for bats.

Field Survey Results

Bat surveys were carried out on-site by Veon Ecology in September 2024. Due to ongoing anti-social behaviour, several fires have occurred on-site since the previous bat surveys, resulting in further structural deterioration of the buildings. As a result, the site has become less suitable for roosting bats.

As part of the surveys a preliminary roost assessment (PRA) for bats was undertaken. This involved a walkover survey, to record whether there is suitability for roosting bats on site. The surveys followed guidance for bat surveys provided by the Bat Conservation Trust (BCT) in Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th Edition (Collins, 2023)⁶.

Bat surveys carried out within the proposed development site in September 2024 included the following:

- Preliminary Roost Assessment (PRA) Survey
- Emergence Survey

No. 1 emergence/activity survey was carried out in early September, utilising hand-held bat detectors (Wildlife Acoustics Echometer Touch 2 Bat Detector), while walking transects through the Site. The surveys began/ended at 19:45/22:00. Survey conditions were good throughout the surveys, with a starting temperature ranging from 10°C - 17°C, no wind - light breeze and little to no rain.

The following equipment was used during the PRA and activity surveys:

- Wildlife Acoustics Echometer Touch 2 Bat Detector (Android).
- High-powered Maglite® hand torch and LED head torch.
- Endoscope (Explorer Premium) Wireless inspection camera.

No bats were observed emerging from the buildings or trees within the proposed development site in 2024. The majority of the buildings on-site no longer have roofs and are in poor condition. Nonetheless, the buildings are adjacent to suitable foraging habitat and have been assessed as low to moderate suitability for roosting bats.

The trees within the site did not exhibit any Potential Roost Features (PRFs) that could support significant numbers of roosting bats.

The stone wall forming parts of the site boundary is densely vegetated with ivy in sections. Some narrow cracks were visible and inspected with an endoscope, with no signs or evidence of roosting bats detected. Thus, the stone wall is likely to be of low suitability for roosting bats. Although it contains some cracks and crevices, it lacks larger cavities that could accommodate significant numbers of bats. Nonetheless, the wall contains a few suitable cracks (some of which may be obscured by ivy), that could occasionally serve as day roosts for bats.

2 no. species of bat: Common pipistrelle (*Pipistrellus pipistrellus*) and Leisler's bat (*Nyctalus leisleri*), were identified during surveys of the proposed development site and its vicinity, foraging within or passing over the proposed development site. A low number (1-2) common pipistrelle bats were observed commuting across the site during the survey in September 2024. A single Leisler's bat was noted flying over the site on the same date in September. The two species (i.e., Common pipistrelle and Leisler's bat) recorded within the proposed development site are the most light-tolerant of the Irish bat species and tend to be associated with edge habitats (Roche *et al.*, 2014).

The habitats within the proposed development site are of low to moderate suitability for foraging bats. The woodland and grassland habitats within the proposed development site support a small population of common pipistrelle and Leisler's bat. Bats appear to avoid the southeastern boundary of the proposed development site, possibly due to the light spill from the adjacent public road and nearby residential dwellings.

The habitats within the site, particularly the woodland habitats, are suitable for foraging and commuting bats. Based on the assessment of the suitability of the proposed development site for roosting and foraging bats, and completion of bat activity surveys within the site, the local bat populations are considered to be of *Local importance (higher value)* for bats.

14.4.6.3 Avifauna

Desktop Study

The NBDC online database lists 156 no. bird species within the 10km grid square overlapping the site. Of these species, a number are listed under Annex I of the Birds Directive, i.e., Bar-tailed Godwit (*Limosa lapponica*), Common Kingfisher (*Alcedo atthis*), Dunlin (*Calidris alpina*), Golden Plover (*Pluvialis apricaria*), Little Egret (*Egretta garzetta*), Merlin (*Falco columbarius*), and Peregrine Falcon (*Falco peregrinus*).

A comprehensive desk study was undertaken by Veon Ecology prior to the surveys beginning in August 2024 to gather relevant information on species of conservation concern that may potentially use the study area. The assessment included a review of available ornithological data, including:

- On-line map viewer: National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC), Irish Wetland Bird Survey (I-WeBS), and Bird Watch Ireland (BWI).
- Bird Atlases: (Sharrock, 1976; Lack, 1986; Gibbons *et al.*, 1993; Balmer *et al.*, 2013).
- Birds of Conservation Concern in Ireland (BoCCI) 2020-2026 & 2014-2019 (Gilbert, Stanbury & Lewis, 2021; Colhoun & Cummins, 2013).
- I-WeBS: Results of Waterbird Monitoring in Ireland in 2016/17 and 2017/18 (Fitzgerald, Burke & Lewis, 2021).

The desk study aimed to collate information on bird species and their supporting habitats within the study area and the surrounding lands. Records of protected species in the environs of the proposed project were identified. This information was obtained by accessing the website of the National Parks & Wildlife Service (NPWS), and the database of the National Biodiversity Data Centre (NBDC).

Bird species listed in Annex I of the Birds Directive are considered a conservation priority. Certain bird species are listed by BirdWatch Ireland as Birds of Conservation Concern in Ireland (BOCCI). These are bird species suffering declines in population size. BirdWatch Ireland and the Royal Society for the Protection of Birds have identified and classified these species by the rate of decline into Red and Amber lists. Red-listed bird species are of high conservation concern, whose population or range has declined significantly over time, and who need urgent action to reduce threats faced and to maintain and support these vulnerable populations. Amber-listed species are species of medium conservation concern, whose population or range has been in decline over recent years, which makes them vulnerable/threatened species. Green-listed species are regularly occurring bird species whose conservation status is currently considered favourable.

⁶ Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn). The Bat Conservation Trust, London.

Peregrine Falcon (*Falco peregrinus*) is an Annex I bird species under the Birds Directive. This species is known to occur within the Cork City area, with potential breeding sites located across the city on a number of religious and municipal buildings.

Field Survey Results

Bird surveys for general bird usage were carried out in conjunction with the habitat/bat surveys in August and September 2024 within the entire development footprint. Additional observations from other survey dates were recorded where relevant. The surveys indicate that the site supports a bird community primarily composed of small passerine, corvid, and pigeon species, typical of urban landscapes and adjacent linear treelines. The proposed development will require localised earthworks, predominantly within improved grassland and built land. The internal boundaries on the site are generally of low to moderate value for nesting, roosting and feeding passerine birds.

Most birds recorded at the site were either large, mobile species or passerine species foraging in open, urban areas such as recently mown grass, or species associated with better vegetative cover provided by nearby woodland and treelines, bordering built-up areas and managed grassland. The number and diversity of birds associated with the internal treeline network was relatively low.

Bird activity within the proposed development site and its surrounding environs was typical for the habitat assemblages present, i.e., areas comprising of improved grassland, built land, scrub, linear treeline habitats, and woodland. To that end, the greatest levels of bird activity was associated with habitats affording suitable cover, i.e. treelines and areas of woodland/scrub. The open areas of improved grassland and built land, which makes up the majority of the proposed development footprint, are largely unsuitable for breeding passerine birds, ground nesting waders, and wildfowl.

Surveys conducted in August 2024 recorded a range of common bird species within the proposed development site and surrounding areas. The majority of species, identified singing, foraging, or roosting within the site, are green-listed on BoCCI. Birds were most frequently observed in or along the adjoining woodland, trees, and scrub habitats within the site.

Swallows (*Hirundo rustica*), an amber-listed species on the BoCCI and a summer migrant to Ireland, were observed foraging over the site in 2024. No nests for swallows or swifts (*Apus apus*), a red-listed species on the BoCCI, were identified within the proposed development site.

A broader range of bird species was observed flying over the proposed development site, including species associated with marine habitats in Cork Harbour to the east. Black-headed Gull (*Larus ridibundus*) was the most frequently observed gull species flying over the site. Herring gull (*Larus argentatus*) was also noted flying over the site in August 2024.

The avifauna of the proposed development site is typical of similar suburban settings. The site contains good-quality foraging and nesting habitats, e.g., grassland, scrub, and treelines. For this reason, the bird fauna at the site is of *Local importance (higher value)*.

Breeding Bird Surveys

During the breeding bird survey, all birds seen or heard within the proposed development site were recorded (see **Table 14.12**).

Table 14.12 Bird species recorded during the breeding bird survey March 2025 and April 2025.

Bird Species Recorded during Breeding Bird Surveys			
Common Name/ Scientific Name	Peak Counts	Highest Breeding Evidence Recorded	BoCCI Conservation Status
Blackbird (<i>Turdus merula</i>)	11	Male Singing	Green
Black-headed Gull (<i>Larus ridibundus</i>)	8	Flying over	Amber
Blue Tit (<i>Cyanistes caeruleus</i>)	11	Male Singing	Green
Bullfinch (<i>Pyrrhula pyrrhula</i>)	1	Suitable habitat	Green
Buzzard (<i>Buteo buteo</i>)	2	Carrying nest material	Green
Chaffinch (<i>Fringilla coelebs</i>)	8	Male Singing	Green
Chiffchaff (<i>Phylloscopus collybita</i>)	4	Male Singing	Green
Coal Tit (<i>Parus ater</i>)	3	Male Singing	Green
Dunnock (<i>Prunella modularis</i>)	4	Male Singing	Green
Feral Pigeon (<i>Columba livia f. domestica</i>)	35	Pairs present	Green
Goldfinch (<i>Carduelis carduelis</i>)	4	Male Singing	Green
Great Tit (<i>Parus major</i>)	8	Male Singing	Green
Greenfinch (<i>Chloris chloris</i>)	1	Male Singing	Green
Herring Gull (<i>Larus argentatus</i>)	6	Flying over	Amber
Hooded Crow (<i>Corvus cornix</i>)	4	Pairs present	Green
House Sparrow (<i>Passer domesticus</i>)	6	Male Singing	Amber
Jackdaw (<i>Corvus monedula</i>)	15	Pairs present	Green
Jay (<i>Garrulus glandarius</i>)	1	Bird calling	Green
Kestrel (<i>Falco tinnunculus</i>)	1	Female Calling	Red
Lesser Black-backed Gull (<i>Larus fuscus</i>)	3	Flying over	Amber
Long-tailed Tit (<i>Aegithalus caudatus</i>)	2	Suitable habitat	Green
Magpie (<i>Pica pica</i>)	8	Pairs present	Green
Mallard (<i>Anas platyrhynchos</i>)	1	Flying over	Amber
Pied Wagtail (<i>Motacilla alba yarrellii</i>)	3	Suitable habitat	Green
Robin (<i>Erithacus rubecula</i>)	6	Male Singing	Green
Rook (<i>Corvus frugilegus</i>)	12	Pairs present	Green
Stock Dove (<i>Columba oenas</i>)	8	Pairs present	Red
Woodpigeon (<i>Columba palumbus</i>)	13	Pairs present	Green
Wren (<i>Troglodytes troglodytes</i>)	8	Male Singing	Green

A total of 29 no. bird species were recorded during the breeding bird survey in March and April 2025. No Annex I species were recorded on-site. 2 no. red-listed species, Kestrel and Stock Dove, were recorded, as well as 5 no. amber-listed species: Black-headed Gull, Lesser Black-backed Gull, Herring Gull, Mallard, and House Sparrow. However, only 3 no. of these BOCCI listed species, Kestrel, Stock Dove, and House Sparrow, were recorded interacting with the proposed development site. The avifauna of the proposed development site is typical of similar suburban settings. The site contains good-quality foraging and nesting habitats, e.g., grassland, scrub, and treelines. For this reason, the bird fauna at the site is of Local importance (higher value) for terrestrial bird species that are relatively common in the Irish countryside. While Special Conservation Interest (SCI) gull species, i.e., Lesser Black-backed Gull, and Black-headed Gull were regularly recorded overflying the site during the surveys, the habitats at the site do not provide regular roosting or foraging grounds for these or any other SCI species of the Cork Harbour SPA.

14.4.6.4 Reptiles & Amphibians

Desktop Study

A search of the NBDC database returned the following records of reptile and amphibian species protected under the EU Habitats Directive and/or Wildlife Acts within 10km of the proposed development site:

Table 14.13 Protected Reptile & Amphibian species recorded in hectad W67.

Protected Reptile & Amphibian Species recorded in 10km²	
Common Name/Scientific Name	Designations/Conservation Status
Common Frog (<i>Rana temporaria</i>)	Annex V, Wildlife Acts
Common Lizard (<i>Zootoca vivipara</i>)	Wildlife Acts

Field Survey Results

The Wildlife Acts provide protection to Ireland’s only native terrestrial reptile species, the common lizard (*Zootoca vivipara*), and three amphibian species: the common frog (*Rana temporaria*), the natterjack toad (*Epidalea calamita*), and the smooth newt (*Lissotriton vulgaris*). These species are listed as ‘least concern’ (King *et al.*, 2011).

The suitability of habitats within and immediately adjacent to the proposed development, were assessed for breeding and/or hibernating reptile species, specifically the common lizard (*Zootoca vivipara*), as part of the initial surveys undertaken in August 2024. No species-specific surveys were carried out, as no evidence of the common lizard, or its preferred habitat was recorded within the proposed development site. Similarly, the suitability of habitats within and immediately adjacent to the proposed development site, were assessed for breeding and/or hibernating amphibian species, including the common frog (*Rana temporaria*) and the smooth newt (*Lissotriton vulgaris*). No species-specific surveys were undertaken, as no evidence of these protected species or their preferred habitat was recorded within the proposed development site.

The proposed development site is of low suitability for the common lizard. Although there are potential basking and sheltering locations, the species was not observed during any surveys conducted in 2024. As a result, the common lizard is considered to be of *Local importance (lower value)*.

Amphibians require access to aquatic habitats, including ephemeral ponds, for breeding. No common frogs or smooth newts were observed on the site during the surveys. The proposed development site lacks aquatic habitat features and therefore, does not provide suitable habitat for breeding amphibians. Although local populations of common frogs and smooth newts are of *Local importance (higher value)*, they are not considered to be key ecological receptors due to the lack of suitable habitat, provided that there are no indirect off-site effects.

14.4.7 Summary of Ecological Evaluation

Table 14.14 below summarises all identified Key Ecological Receptors (KERs). KERs have been identified as at risk of potentially significant impacts via a source-pathway-receptor link. KER’s are valued as *Local importance (higher value)* or above, according to the criteria set out in Section 14.3.4.

Table 14.14 Ecological evaluation of Key Ecological Receptors.

Ecological Receptor	Ecological Evaluation	KER
Designated Sites		
European Sites	International	No
Proposed Natural Heritage Areas (pNHAs)	National	No
Habitats		
Buildings and artificial surfaces (BL3)	Local Importance (lower value)	No
Mixed broadleaved/conifer woodland (WD2)	Local Importance (higher value)	Yes
Scrub (WS1)	Local Importance (lower value)	No
Dry meadows and grassy verges (GS2)	Local Importance (higher value)	Yes
Amenity grassland (improved) (GA2)	Local Importance (lower value)	No
Treelines (WL2)	Local Importance (lower value)	No
Recolonising bare ground (ED3)	Local Importance (lower value)	No
Stone walls and other stonework (BL1)	Local Importance (lower value)	No
Fauna Species		
Non-volant Mammals	Local importance (higher value)	Yes
Bats	Local importance (higher value)	Yes
Avifauna	Local Importance (higher value)	Yes
Reptiles & Amphibians	Local Importance (higher value)	No - due to lack of suitable habitat

14.5 Do Nothing Scenario

The proposed development site is primarily zoned for residential development and is also located within an Area of High Landscape Value (AHLV) and an Architectural Conservation Area (ACA). In the absence of this proposal, a similar development is likely to proceed in line with the national policy for compact growth. In a development scenario, the impacts would likely be comparable to those described in this chapter.

In the absence of development, the site is likely to remain derelict and undeveloped, becoming a focus for further antisocial behaviour.

Most of the habitats likely to be affected by the proposed development have been significantly altered from their natural state by human activity. In areas left unmanaged, scrub encroachment is occurring. The natural succession from scrub and patches of grassland to woodland is expected to continue. In the absence of development, the unused areas of the site would likely succeed into woodland with a mix of native and non-native species over time. Additionally, if not actively controlled, Three-cornered Leek, Rhododendron, Giant Rhubarb, Buddleia, and Cherry Laurel are likely to spread.

14.6 Evaluation of Potential Impacts

In accordance with the relevant guidelines, potential significant impacts have been assessed for key ecological receptors (KERs), as listed in **Table 14.14** above. An impact is considered ecologically significant if it is predicted to affect the integrity or conservation status of a KER at a specified geographical scale. All impacts are described in the absence of mitigation. Additionally, the definitions of duration are applied as follows:

Parameter	Description
Duration	Temporary – effects lasting less than a year
	Short-term – effects lasting 1 to 7 years
	Medium term – effects lasting 7 to 15 years
	Long term – effects lasting 15 to 60 years
	Permanent – effects lasting over 60 years

14.6.1 Construction Phase

The proposed development at the former Good Shepherd Convent site in Sunday’s Well, Cork City, will involve the construction of new stand-alone apartment blocks. The proposed project will include the renovation, conservation, and extension of some existing structures, as well as the addition of several new residential buildings. The existing Gate House, Bake House, and Coach House will be refurbished.

Vehicle access to the site will be via the existing Gate House entrance from Convent Avenue. The site will be landscaped to maintain the existing trees along the internal avenue, and green amenity areas will be created.

14.6.1.1 Potential Impacts on Designated Sites

There are no European Designated Sites (Natura 2000 sites) located within or immediately adjacent to the proposed development site. Additionally, there is no source-pathway connectivity between the Site and any Natura 2000 Site(s) (i.e. via surface water, groundwater, or other environmental vectors).

The proposed development site does not comprise of any habitats that are important to the species designated as Qualifying Interests (QIs) of the relevant European sites. There are no Annex I habitats listed under the EU Habitats Directive within the site boundary. Additionally, no botanical species protected under the Flora (protection) Order, 2022, listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded within the survey area.

There is no ecological or hydrological connectivity between the proposed development and any European site(s). Therefore, the proposed development, either alone or in-combination with other plans or projects, will not result in any significant adverse effects on any European designated site or any of their designated features of interest.

14.6.1.2 Potential Impacts on Habitats and Flora

14.6.1.2.1 Habitat loss, Disturbance and Fragmentation

Habitats will be disturbed and lost under the proposed development footprint. Habitats adjacent to and surrounding the proposed development site primarily consist of amenity grassland and built land, all of which are habitats of low botanical diversity and of low biodiversity value and low ecosystem functionality.

The proposed development will involve the removal of a small area of KER habitats, with sections of the Dry meadows and grassy verges (GS2) required for removal to facilitate the proposed development. The Mixed broadleaved/conifer woodland (WD2) will be largely retained, except for certain trees marked for removal. No significant removal of the boundary walls is proposed.

Treelines and mature trees within and adjoining the proposed development site will be avoided and retained intact. Overall impacts on these areas will be reduced through modified design and sensitivity during construction. Any trees and treelines along the approach road and planned site access tracks will be retained unless felling is unavoidable.

In the absence of mitigation, there is potential for damage to trees and stone walls designated for retention. While the treeline and woodland habitats are being retained within the proposed development, there remains a risk of damage to these habitats during construction. This could occur through activities such as driving vehicles and storing materials within the Root Protection Zones (RPZ), or through accidental machinery strikes to branches or trunks. In a worst-case scenario, these impacts could lead to damage, degradation, and death of trees.

Construction activities may also result in increased noise and disturbance and could inadvertently spread invasive species such as Three-cornered Leek (*Allium triquetrum*), Giant-rhubarb (*Gunnera tinctoria*), Cherry Laurel (*Prunus laurocerasus*), and Rhododendron (*Rhododendron ponticum*).

Overall, the loss, disturbance and fragmentation of habitats under the footprint of the proposed development are considered negative at the local scale, contributing to slight negative impacts to habitats of *Local importance (lower value)*. However, these impacts are expected to be reversed or offset as proposed habitat rehabilitation and enhancement measures are established. The development includes plans for additional planting of native trees species. Existing treelines will be gapped up, and any trees that are required to be removed will be replaced where necessary. These landscape improvements will provide additional foraging habitat for local species.

No Annex I habitats or other high-value terrestrial habitats will be directly or indirectly affected by the proposed development, and no rare flora were recorded at the site.

Table 14.15 Predicted impacts on habitats as a result of the proposed development.

Habitat	Ecological value (NRA Guidelines)	Potential Impact Prediction Assessment
Buildings and artificial surfaces (BL3)	Local importance (lower value)	This habitat will be altered as part of the proposed development. Negative, imperceptible, long-term.
Mixed broadleaved/ conifer woodland (WD2)	Local importance (higher value)	This habitat will be largely retained with the exception of certain trees marked for removal. Negative, imperceptible, long-term.
Scrub (WS1)	Local importance (lower value)	This habitat will be lost under the proposed development footprint. Negative, slight, long-term.
Dry meadows and grassy verges (GS2)	Local importance (higher value)	This habitat will be lost under the proposed development footprint. Negative, Moderate, long-term.
Amenity grassland (improved) (GA2)	Local importance (lower value)	Small areas of these low value habitats will be altered or disturbed during the construction phase. This area will be permanently reinstated following works. Negative, slight, long-term.
Treelines (WL2)	Local importance (lower value)	The site comprises a number of existing treelines which are proposed to be retained where possible. Further, it is proposed to gap up existing treelines and replace any trees to be removed where necessary. Positive, slight, long-term.
Recolonising bare ground (ED3)	Local importance (lower value)	This habitat will be lost under the proposed development footprint. Negative, imperceptible, long-term.
Stone walls and other stonework (BL1)	Local importance (lower value)	This habitat will be avoided where possible. No impact.

14.6.1.2.2 Non-native & Invasive Species

Following best practice guidance, invasive alien plant species (IAPS), including Three-cornered Leek, Rhododendron, Giant-rhubarb, Cherry Laurel, Buddleia, and Winter Heliotrope, can be effectively managed through standard eradication/control methods. If left unmanaged, these invasive species are likely to further spread into adjacent semi-natural habitats and disturbed ground associated with construction activities, leading to long-term landscape maintenance issues and associated costs. Given the widespread presence of Sycamore (*Acer pseudoplatanus*) in the Irish landscape, it is not considered practical to include this species in the site’s management plan.

Due to their highly invasive nature and potential for significant ecological impacts, Three-cornered Leek (*Allium triquetrum*), Rhododendron (*Rhododendron ponticum*), Giant-rhubarb (*Gunnera tinctoria*), and Cherry Laurel (*Prunus laurocerasus*) are of particular concern.

In Ireland, *Prunus laurocerasus* is classified as a High-Impact Invasive Species with a Risk Assessment Score of 18. *Gunnera tinctoria* has a slightly higher Risk Assessment Score of 19, while *Allium triquetrum* has a lower score of 15. *Rhododendron ponticum* is considered one of the most problematic species, with a Risk Assessment Score of 20, reflecting its significant invasive potential.

The potential impacts from Three-cornered Leek, Rhododendron, Giant-rhubarb, and Cherry Laurel are dependent on whether a proactive or passive approach is taken. In a proactive (‘do something’) scenario, all high-impact species would be eradicated prior to the construction phase of the proposed development. In a passive (‘do nothing’) scenario, the infestations would continue to spread through seed dispersal and vegetative propagation. However, given the relatively small size of the site, no significant challenges in removing or preventing the regeneration of these invasive species have been identified.

Management Approach

An effective management approach for Three-cornered Leek, Rhododendron, Cherry Laurel, and Giant-rhubarb requires a combination of manual, mechanical, and chemical methods. Eradication is challenging due to the ability of these species to spread through seeds and/or vegetative fragments.

Manual Control

Smaller infestations can be dug out using hand tools. Monitoring for regrowth is necessary within the following year to prevent recolonisation.

Mechanical Control

For larger infestations, heavy machinery can be used to remove plants, ensuring complete extraction of root systems. Proper disposal of plant material must be considered to prevent regrowth.

Chemical Control

Herbicide application is an effective method, especially in late growing seasons. Herbicides can be sprayed or injected into the plants, with follow-up treatments required to ensure complete eradication.

Disposal

Plant material should be carefully disposed of, either through deep burial, containment in plastic for decay, or burning, to prevent further spread of these invasive species.

Machinery should always be cleaned before entering the Site to avoid transport of alien invasive species. In addition, all machinery and equipment used in water should be treated as to prevent spread of disease (Check/Clean/Dry or disinfection).

It is important to note that the use of herbicides should be done by a qualified professional to ensure the safety of the environment and people. The complexity of IAPS control requires expertise to minimise risks and achieve successful management.

Butterfly-bush (*Buddleja davidii*) is not included in the Third Schedule of the Birds and Natural Habitats Regulations 2011 (SI 477 of 2011). Therefore, its presence at the site does not have the potential to lead to an offence under the Birds and Natural Habitats Regulations 2011 (S.I. 477 of 2011). Butterfly-bush has been assessed as having a Medium Risk of impact as an invasive species by the NBDC (Invasiveness Risk Score of 15). There is no statutory obligation to remove Butterfly-bush. However, should it be concluded that this species should be removed, mitigation measures have been outlined below.

Measures to Control & Eradicate Butterfly-bush

Option 1: Physical control

Physical removal of butterfly-bush is only suitable for very small infestations. If this is the chosen method of removal, care should be taken to remove all parts of the plant as branches are capable of re-rooting from cuttings. The plants should not be removed when in seed as there would be a risk of spreading the seeds further. Where removal of mature plants is not immediately feasible, the flower heads should be removed in June or even July, before they go to seed. It is essential to replant the area with native species immediately following removal to prevent new seedlings taking hold.

Option 2: Chemical control

It is recommended that plants are cut back to a stump during active growth (late spring to early summer) and then immediately treated with a systemic weed killer (brushed on). Foliar application of herbicide may be adequate for smaller infestations of younger plants but must be followed up on a 6-monthly basis.

14.6.1.3 Potential Impacts on Fauna

14.6.1.3.1 Disturbance & Displacement of Fauna

Disturbance to fauna will primarily occur during the construction phase of the proposed development. Localised earthworks and excavation required during the construction phase will occur predominantly on improved grassland, scrub, and built land, all of which are habitats of low botanical value and of little ecological importance for local fauna. These habitats are largely unsuitable to support important breeding or resting habitats for fauna. Therefore, the proposed development is unlikely to contribute direct impacts to protected fauna. Additionally, appropriate buffers will be established around any identified breeding or resting sites to further mitigate potential impacts. Construction works may lead to temporary indirect disturbance to fauna using the site for commuting or foraging. These impacts are expected to be indirect, temporary and imperceptible.

14.6.1.3.2 Mammals (Non-volant)

The grassland, treeline, and woodland habitats within the proposed development site are likely to support small mammal species such as the pygmy shrew and hedgehog. Given the relatively low numbers of individuals of each species that are likely to be affected, and that they are highly mobile species, construction at the site is unlikely to result in injury or mortality that would affect the species' conservation status.

The proposed works may cause short-term displacement of mammal species due to increased human presence, noise, and vibration. This displacement could affect both breeding and resting sites, as well as foraging habitats. However, given the short duration of the disturbance and the relatively small number of individuals the habitats are likely to support, significant short-term effects on the local mammal population or their conservation status are extremely unlikely. Therefore, disturbance/displacement during construction is unlikely to result in a significant negative effect, at any geographic scale.

No protected terrestrial mammals were recorded on site, except for a single dead pygmy shrew. Habitat loss and fragmentation may affect some common mammalian species. The site walkover survey did not identify any badger activity within the proposed development site. No setts or other evidence of breeding or residing badgers were found within the study area. Historic records for badger are all outside the footprint of the project area. The proposed development

site and its wider surrounds provide limited suitable badger foraging and commuting habitat. The loss of habitats on site are considered to result in temporary, imperceptible, minor negative, impacts on badgers at the local scale. The availability of suitable foraging and commuting habitats in the lands surrounding the proposed development site are likely to offset any impacts realised to badger over the short term.

The site walkover surveys did not identify otter activity within the proposed development site. No evidence of breeding, feeding, or resting sites for otters were recorded within the study area. Historic records for otter are all located outside the footprint of the project area.

Overall, the impact on local non-volant mammals in habitats adjoining the proposed development site is predicted to be negative, not significant, long-term.

14.6.1.3.3 Bats

Bats, along with their breeding and resting places, are strictly protected under the Birds and Habitats Regulations and the Wildlife Acts. It is an offence under this legislation to intentionally kill or injure bats or to interfere with or destroy their breeding or resting places. Within the site, potential roosting locations were limited to sections of the old convent building where parts of the roof remain, a few suitable cracks, and sections of dense ivy along the stone wall surrounding the site. The majority of the trees on site were considered to have negligible suitability for roosting bats. No roosting bats were found during the 2024 activity surveys.

The loss of scrub and grassland habitat will result in the permanent loss of foraging habitat for bat species within the proposed development area. However, the more significant feeding habitats and linear commuting routes within the wider landscape will be retained. As such the proposed development will not result in fragmentation of suitable foraging habitat. While potential roosting habitat within the old convent building will be permanently lost, replacement roosting sites will be provided. It is therefore predicted that, despite any temporary effects, the loss of foraging/commuting habitat associated with the proposed development is unlikely to affect the conservation status of the local bat population and will not result in a likely significant negative effect at any geographic scale, given that common pipistrelle (*Pipistrellus pipistrellus*) and Leisler's bat (*Nyctalus leisleri*) are known to have a widespread distribution across the region and in Ireland (Roche *et al.*, 2014) and both species are showing an increase in their population trends.

An increase in existing light levels during the construction phase within and adjacent to the proposed development site may potentially impact bat species that use the site for foraging and/or commuting. However, given the residential and urban nature of the surrounding environment the local bat population is expected to be habituated to artificial light spill. The species recorded within the proposed development site, Leisler's bat and common pipistrelle bat, are among the least sensitive species to artificial light. Additionally, any effects associated with artificial lighting during construction of the proposed development, are likely to be short-term. Considering the protection afforded bats and given that the site is known to be used by a number of bat species for commuting/foraging purposes a precautionary approach has been adopted and mitigation measures have been provided in **Section 14.7.3** below to address any potential impacts as a result of light spill. Therefore, despite any short-term effects, disturbance from artificial lighting associated with construction of the proposed development is unlikely to affect the conservation status of the local bat population and will not result in a likely significant negative effect at any geographic scale.

14.6.1.3.4 Avifauna

The surveys carried out at the site have established that the proposed development area supports a bird community characterised primarily by small passerine, corvid, and pigeon species typical of urban landscapes and adjacent linear treelines. The proposed development will require localised earthworks, predominantly within grassland and built land habitat. The internal site boundaries are generally of low to moderate value for nesting, roosting and feeding passerine birds.

Certain species recorded in the NBDC database for hectad W67 may use the site only for occasional foraging (e.g., Black-headed Gull) and are unlikely to be affected by the proposed development. However, other species may also breed in or near the Zone of Influence such as Buzzard, Swift, Stock Dove, Barn Owl, and Kestrel, the latter of which is known to breed regularly on-site (NPWS Conservation Ranger pers. comm.). While significant negative effects are unlikely, they cannot be entirely ruled out. No confirmed breeding, nests, or juveniles were recorded during the surveys. However, given the number of historic sightings and the suitable foraging/breeding habitat within the site, these species are considered to have probable breeding status within the proposed development site or its immediate vicinity. In light of the protection afforded to these species and their known use of the site, a precautionary approach has been adopted. Mitigation measures to address any potential impacts are outlined in **Section 14.7.3** below.

The proposed construction works will temporarily make the site relatively unattractive for many of the small passerine species currently using the site. However, the proposed biodiversity enhancement measures are expected to improve the site's suitability for a range of bird species.

The sections of scrub and grassland within the site boundary that will be removed to facilitate the development are likely to provide low to moderate value nesting habitat for birds. Due to their small size and absence of tree cover, these areas are unlikely to provide significant nesting opportunities for local bird species. Although the development will result in the loss of common bird foraging habitats, such as grassland, these habitats are considered to have low to moderate ecological value for birds.

Some displacement of feeding birds may occur during construction due to increased noise and disturbance. Disturbance can cause sensitive species to deviate from their normal, preferred behaviour, resulting in stress, increased energy expenditure, and, in some cases, mortality. It is important to note that the operational lighting has been designed in accordance with wildlife lighting guidelines and the Cork County Council Public Lighting Manual and Product Specification 2023⁷ to minimise impacts of lighting on wildlife.

The area surrounding the proposed development site is already subject to disturbance from existing dwellings and roads; thus, any birds that utilise the area are likely to be habituated to moderate levels of daytime disturbance. Given the availability of similar habitats in the surrounding area and the ability of birds to move away from disturbance, the overall impact on local avifauna is predicted to be slight. During the operational phase, activity levels are anticipated to stabilise, allowing birds in the surrounding landscape additional habitat at the site. As trees and shrubs mature, they will provide nesting and foraging habitats for common bird species. As a result, the impact on avifauna, in habitats adjoining the proposed development site is predicted to be negative, slight, and long-term.

14.6.1.3.5 Other Species

The proposed development site is expected to primarily support common invertebrate species. The use of native tree planting and pollinator-friendly species will enhance invertebrate activity in the newly planted areas during the operational phase. Given that the site is likely to support only common invertebrate species, the overall impact on invertebrate populations is anticipated to be neutral.

There are no mapped EPA watercourses or drainage ditches within or immediately adjacent to the proposed development site. Additionally, no other receptors, such as turloughs or ephemeral ponds, were identified or are mapped within the site or its immediate vicinity. Therefore, there will be no direct surface water discharges to local watercourses, and no significant effects on aquatic invertebrates or fish populations are predicted.

The planting of native trees and shrubs is expected to provide potential habitat for amphibians. However, as this area is unlikely to hold standing water, its use is likely to be limited to adult Common Frog (*Rana temporaria*) and it would not provide breeding habitat for amphibians. Overall impacts on amphibians are predicted to be neutral.

No habitat suitable for reptiles was recorded on site. The site is not expected to support these species. As no suitable habitats for reptiles are present and only small areas of relatively common habitats will be affected, any potential impact on reptiles is expected to be negligible.

14.6.1.4 Potential Impacts on Water Quality

During the construction phase, there may be an increased risk of silt discharging from the proposed development site. In the absence of appropriate design and mitigation measures, high levels of silt in surface water run-off could theoretically occur.

The proposed development site is located within the Lee, Cork Harbour and Youghal Bay catchment, the Lee[Cork]_SC_060 sub-catchment and the LEE (CORK)_090 Water Framework Directive (WFD) River sub-basin. There are no mapped EPA watercourses or drainage ditches within or immediately adjacent to the proposed development site. No other receptors such as turloughs or sinkholes were identified or are mapped within or in the immediate vicinity of the site. The nearest watercourse, according to the EPA mapping, is the north channel of the River Lee (WFD Transitional waterbody code: IE_SW_060_0950; Segment code 19_2148), which is located c. 220m south of the proposed development site. This watercourse is transitional and forms part of the Lee (Cork) Estuary Upper transitional waterbody which flows into the Lee (Cork) Estuary Lower and Lough Mahon transitional waterbody.

Construction activities have the potential to contribute surface water impacts to the receiving and surrounding environment, in the absence of mitigation. Such impacts include the risk of pollution from fuel spillages, oil leakages, release of particulate matter, and other accidents with potential to lead to serious impacts causing the contamination of surface water run-off and the degradation of water quality in the vicinity of the site, consequently impacting the habitats and species present in any affected waterbody.

Although not anticipated, the potential exists for a range of pollutants (petrol, diesel and oils from machinery) to enter watercourses during the construction phase of the development, that may have a significant impact on the habitats and species downstream.

Without mitigation, the stripping of vegetation, ground disturbance and storage of stripped soils and aggregates near watercourses or drainage channels increase the risk of materials being washed into watercourses during periods of heavy or prolonged rainfall or flood events. This could impact water quality through increased turbidity levels and sedimentation, as well as the potential mobilisation of a variety of substances that may be contained within the soils. Additionally, construction activities have the potential to cause alterations to localised groundwater levels and surface water flows through extraction activities and discharge of water.

However, given the existing site layout and proposed mitigation measures, no significant impact on local water quality from surface water run-off and/or risks of flooding is predicted to occur. The impact on local water quality is predicted to be imperceptible in the short and long term.

7 Cork County Council (2023). Public Lighting Manual and Product Specification. Available at: <https://www.corkcoco.ie>.

14.6.2 Operational Phase

While potential impacts are more likely to occur during the construction phase of the proposed development, additional impacts associated with the operational phase are also outlined below. The primary impacts associated with the operational phase of the proposed development are impacts on water quality via wastewater/foul effluent discharge and surface-water run-off.

14.6.2.1 Potential Impacts on Designated Sites

There are no European Designated Sites (Natura 2000 sites) located within or immediately adjacent to the proposed development site. Additionally, there is no source-pathway connectivity between the Site and any Natura 2000 Site(s) (i.e. via surface water, groundwater, or other environmental vectors).

The proposed development site does not comprise of any habitats that are important to the species designated as Qualifying Interests (QIs) of the relevant European sites. There are no Annex I habitats listed under the EU Habitats Directive within the site boundary. Additionally, no botanical species protected under the Flora (protection) Order, 2022, listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded within the survey area.

There is no ecological or hydrological connectivity between the proposed development and any European site(s). Therefore, the proposed development, either alone or in-combination with other plans or projects, will not result in any significant adverse effects on any European designated site or any of their designated features of interest.

All foul water generated on-site will be collected and discharged into the existing combined sewer on Convent Avenue. The proposed development is not expected to have any measurable impact on water quality in Cork Harbour, as the foul water discharges generated from the proposed development during operation would equate to a very small percentage of the overall discharge volumes sent to the relevant wastewater treatment plant (WWTP) for treatment.

14.6.2.2 Potential Impacts on Habitats and Flora

This section outlines the potential for the proposed development to result in likely significant effects on habitats within the site during the operational phase.

The composition of the site will change, with some trees, grassland, and scrub habitat being removed to facilitate the proposed development. However, the landscaping design will enhance the site by replanting the removed trees (where possible) and supplementing them with native species such as Yew (*Taxus baccata*), Oak (*Quercus* spp.), Scots Pine (*Pinus sylvestris*), and Birch (*Betula* spp.). A long-term Tree Management Plan, along with new tree planting, is proposed. All open spaces and green areas on site will be shared and maintained by a management company. The proposed development is not predicted to have any significant negative impacts on habitats during operation at any geographic scale.

14.6.2.3 Potential Impacts on Fauna

14.6.2.3.1 Disturbance & Displacement of Fauna

As with the construction phase, changes in water quality due to wastewater and surface-water run-off during the operational phase could lead to the displacement of fauna identified as Key Ecological Receptors (KERs) by reducing prey abundance present or through habitat deterioration. Indirect disturbance/displacement as a result of changes in water quality during the operational phase is expected to have temporary to short-term, slight negative effects.

The operational phase will not have the same level of impact on fauna identified as KERs as the construction phase, given that there will be no significant alteration to current conditions, particularly in terms of human activity and vehicular traffic. While some temporary increases in disturbance or displacement due to noise and human activity from periodic maintenance work may occur, these impacts are anticipated to be temporary to short-term, slight negative effects.

During the operation and occupancy of the dwellings, noise and disturbance are likely to increase. However, given the absence of significant habitats suitable for protected species within the proposed development site and treelines and woodland habitats will be retained, no significant disturbance effects are expected during the operational phase.

Overall, the operational phase of the proposed development is not anticipated to contribute significant disturbance impacts to fauna.

14.6.2.3.2 Mammals (Non-volant)

This section describes the potential for the proposed development to result in likely significant effects on terrestrial mammals (non-volant) that may use the site during the operational phase.

In addition to displacement effects associated with increased human presence, the operation of the proposed development could potentially displace mammal species from their breeding/resting places and foraging habitats. However, given the relatively low number of individuals that the on-site habitats are likely to support, it is extremely unlikely to result in any short-term effects on the local mammal population or their conservation status. Therefore, disturbance or displacement during operation is unlikely to have significant negative effects at any geographic scale.

14.6.2.3.3 Bats

This section describes the potential for the proposed development to result in likely significant effects on bat populations that may use the site during the operational phase.

Disturbance and displacement effects may arise from the introduction of artificial lighting, noise, and increased human activity during operation. As discussed in **Section 14.4.6.2**, bat species recorded on site, such as common pipistrelle (*Pipistrellus pipistrellus*) and Leisler's bat (*Nyctalus leisleri*), are associated with sub-urban and urban environments and are considered to be tolerant of disturbances such as lighting and noise in these environments. Additionally, the proposed planting will provide a visual barrier between the development and areas likely to be used by commuting and foraging bats. Therefore, the proposed development is not predicted to result in a significant negative impact on local bat populations during operation at any geographic scale.

Considering the protection afforded to bats and given that the site is used by a number of bat species for commuting/foraging purposes a precautionary approach has been adopted. Mitigation measures to address potential impacts from light spill are detailed in **Section 14.7.3** below.

Lighting

During the operational phase of the proposed development, increased light levels have the potential to disturb or displace bat species that use the site. Higher light levels can delay emergence from roosts and restrict foraging and commuting activity to darker areas. It is noted that many areas within the surrounding area are already permanently lit by artificial lighting and under light spillage given that the project site is within an urban environment, therefore it can be assumed that bat species utilising the site are accustomed to this level of lighting disturbance. Nonetheless, it is likely that the increased lighting during the operational phase will result in long-term slight to moderate negative effects on bat species.

14.6.2.3.4 Avifauna

This section describes the potential for the proposed development to result in likely significant effects on birds that may use the proposed development site during the operational phase.

The loss of foraging/nesting habitat for birds during the operational phase is not considered significant at any geographic scale, given the areas of retained treeline and woodland habitats and the suitability of the surrounding habitats beyond the proposed development site for foraging/nesting birds.

It is possible that birds currently using habitats within the site and its environs may be disturbed due to increased noise and human activity levels during the operational phase. A range of bird species utilise the habitats within the site, and while there is some potential for short-term disturbance at the early stage of operation, it is anticipated that birds will acclimatise to human presence. This is because the site is located in an urban environment, and the bird species recorded are generally associated with gardens and other urban habitats that are frequented by people.

Overall, the development is not predicted to result in a significant impact on birds during the operational phase at any geographic scale.

14.6.2.4 Potential Impacts on Water Quality

14.6.2.4.1 Wastewater & Foul Effluent

The release of effluent into the aquatic environment can lead to increased nutrient levels and a deterioration in water quality. Wastewater and foul effluent from the proposed development will be discharged via a connection into the existing combined sewer on Convent Avenue, for treatment at Cork City wastewater treatment plant (WWTP), Carrigrennan. The Carrigrennan WWTP ultimately discharges at the primary emission point into Cork Harbour, at the Lough Mahon transitional waterbody. This emission point does not discharge directly into the Cork Harbour SPA or Great Island Channel SAC, which are Natura 2000 sites linked with Lough Mahon transitional waterbody. Although the transitional nature of Lough Mahon and its tidal interactions with other waterbodies in Cork Harbour could potentially result in increased nutrient levels impacting water quality in these designated Natura 2000 sites, the location of the WWTP’s primary emission point in Lough Mahon ensures sufficient dilution of discharge entering the aquatic environment. In addition, discharge from the WWTP does not have an observable negative impact on water quality (Irish Water, 2022).

The potential impacts from the proposed development will be negligible given the current operating conditions of the Irish Water network(s) infrastructure. Therefore, no impact on water quality from wastewater discharges is predicted to occur.

14.6.2.4.2 Surface-Water Run-off

As in the construction phase, high levels of silt in surface water run-off could theoretically occur during the operational phase in the absence of appropriate design and mitigation measures.

There are no mapped EPA watercourses or drainage ditches within or immediately adjacent to the proposed development site. No other receptors, such as turloughs or sinkholes, were identified or are mapped within or in the immediate vicinity of the site. According to the EPA mapping, the nearest watercourse is the north channel of the River Lee (WFD Transitional waterbody code: IE_SW_060_0950; Segment code 19_2148), located c. 220m south of the proposed development site.

During the operational phase, the primary pollutants at risk of entering watercourses via surface-water run-off are hydrocarbons and oils from vehicles. The introduction of such pollutants can impact water quality of aquatic habitats. This risk is particularly notable in areas with hardstanding elements, such as car-parking facilities, where pollutant-laden surface water is more likely to flow into nearby watercourses rather than percolate into the ground. The car-parking facilities for the proposed development are situated c. 220m from the nearest watercourse, the north channel of the River Lee.

Although it is highly unlikely, there is a potential for temporary to short-term slight negative effects on the habitats and species within and downstream of the proposed development, depending on the frequency and intensity of uncontrolled surface-water run-off.

Overall, the development is not predicted to result in a significant impact on water quality during the operational phase at any geographic scale.

14.6.3 Potential Cumulative/In-combination Effects

Cumulative effects are defined by EPA Guidelines (EPA, 2022) as: ‘The addition of many minor significant effects, including the effects of other projects, to create larger, more significant effects.’ In-combination and cumulative impacts of the project and plans within the project Zone of Influence (Zoi) are considered below. The proposed development has been assessed in combination with other plans and projects in the locality to assess potential cumulative and in-combination effects

Cumulative impacts on fauna primarily relate to increased noise and activity levels. In-combination impacts from noise/disturbance are likely to be most pronounced during the construction phase. This is a short-term, localised impact. During operation, a localised increase in traffic and noise is predicted. Given its setting in an urban area, the proposed development is not predicted to significantly increase long term noise and disturbance levels. Therefore, no significant cumulative impacts have been identified.

14.6.3.1 Licensed Emissions

A search for relevant licensed emissions was carried out on 18/09/2024 using the Environmental Protect Agency (EPA) website. The following Industrial Emissions Licence (IEL), Integrated Pollution Control (IPC), and Integrated Pollution Prevention Control (IPPC) facilities were identified within the vicinity of the project area.

Table 14.16 Relevant Industrial Licenced Facilities.

Name	Licence Type	Licence Number	Category
Heineken Ireland Limited	IPC	P0445-01	Industry
Electricity Supply Board (Marina)	IEL	P0578	Industry

14.6.3.2 Wastewater Treatment Plants

Several wastewater treatment plants (WWTPs) serve Cork City and its surrounding suburbs. The Cork City WWTP, located at Carrigrennan, Little Island, Co. Cork, is part of the Cork Main Drainage Scheme. The Carrigrennan WWTP services Cork City and discharges into Cork Harbour at Lough Mahon transitional waterbody. Irish Water has completed an upgrade at Carrigrennan, which now includes phosphorus removal. The WWTP serving Carrigtwohill and its environs also discharges into the Lough Mahon transitional waterbody. Through the Cork Main Drainage Scheme, effluent from Ringaskiddy, Passage West and Monkstown is treated at the Shanbally WWTP located in Ringaskiddy, prior to discharging into Cork harbour. The final phase of the Cork Lower

Harbour Main Drainage Project was completed in 2021 with the Cobh Networks Contract. Raw sewage from Cobh Town is now collected and transferred via the Estuary Crossing to Monkstown and subsequently to the Shanbally WWTP for treatment before being discharged to Cork Harbour. Additionally, the WWTP servicing North Cobh ultimately discharges into the Lough Mahon transitional waterbody at Carrigtoole.

14.6.3.3 Land-use and Ongoing Activities

The proposed development site, located on The Former Good Shepherd Convent site in Sunday's Well, Cork City, is situated in an urban environment characterised by buildings, artificial surfaces, and high levels of human activity. The current land-use in and around the site includes public amenities, residential developments, and car-parking facilities. Sections of the site boundary are already illuminated at night due to light spill from street lighting.

Given the existing conditions, it can be assumed that local fauna present within and in proximity to the proposed development are habituated to background noise and artificial lighting. Any increases in noise-related or light-related disturbance are likely to occur during the construction phase of the proposed development. Therefore, cumulative impacts in terms of faunal disturbance due to noise and light disturbances are considered to be temporary, slight-moderate negative effects.

14.6.3.4 Planning Applications & Permissions

The Former Good Shepherd Convent site has a long history of planning applications, having been the subject of four separate redevelopment proposals by different owners, including University College Cork, Derinacarah Limited, Frinailla Developments Limited and Moneda Developments Limited.

There are other proposed and permitted developments in the general vicinity of the proposed project. As all of these relevant developments have been assessed by the Appropriate Authority, it has been determined that they are not likely to result in likely significant effects on any designated European site(s) or notable Ecological Features. Similarly, as it can be shown objectively that the proposed project, will not have a likely significant effect on any European site(s) or notable Ecological Features, it can be concluded that the proposed development will not contribute to any likely significant cumulative effects when considered in combination with the other developments in the wider area.

In addition, related projects are accompanied by Appropriate Assessment (AA) Statements and Construction and Environmental Management Plans (CEMP), as appropriate. These documents aim to identify and mitigate potential impact sources to the relevant European Sites or notable Ecological Features within the project's Zone of Influence.

All proposed developments considered within the Zone of Influence of the proposed development are subject to the statutory planning process. Where required, they are accompanied by the appropriate planning and environmental assessment documentation, including Appropriate Assessment (AA), Ecological Impact Assessment (EclA), and Environmental Impact Assessment (EIA) reports. Therefore, other projects, programmes, and plans within the project Zone of Influence have been designed with careful consideration of potential impacts on the receiving and surrounding environment. These projects are tasked with avoiding and minimising such impacts through the AA and EIA processes.

Provided that the overarching policies and objectives of the plans and programmes are adhered to, and that best practices and mitigation measures are implemented for individual projects, there is no potential for the relevant plans and projects to have a cumulative impact on features of biodiversity interest in combination with the proposed development.

There are a number of other proposed developments within the surrounding area. These developments combined will likely reduce the open spaces and habitat availability in the locality, thereby cumulatively impacting local bird and mammal populations. However, with the implementation of the proposed mitigation measures the most ecologically important parts of the site will be retained and enhanced, as appropriate.

If construction works for other projects, particularly within the Sunday's Well area, run concurrently with the proposed development, there could be slight, short-term, cumulative disturbance effects on local fauna.

A range of mitigation measures will be implemented during construction to effectively prevent adverse effects on water quality. These measures will control any significant discharges of hydrocarbons or excess silt, ensuring that no in-combination impacts occur. Additionally, operational design measures, including stormwater and foul water management measures, will ensure there are no impacts on water quality or flooding risk, and therefore no in-combination impacts from operational surface water discharges will occur.

As the proposed development is not predicted to cause a significant increase in long-term noise, disturbance levels, or adversely impact water quality, no significant cumulative impacts have been identified.

With the full implementation of the mitigation measures detailed in **Section 14.7**, it is not anticipated that there will be any significant cumulative effects. The risk of cumulative impacts from other local projects and schemes is considered not significant due to the scale and location of the proposed project.

The proposed development will not result in any significant residual effects on ecological receptors or designated sites. Therefore, there is no potential for the proposal to contribute to any significant cumulative impacts when considered in combination with other plans and projects.

14.7 Collated Mitigation Measures

This section outlines the mitigation measures that will be implemented during the construction and operation of the proposed development to avoid or reduce the potential impacts on the receiving environment.

The likelihood of success for the proposed mitigation measures is high, either in their current form or as they are adapted on-site to achieve the desired result. These measures have been developed in accordance with current best practices and include avoiding sensitive habitats at the design stage. It is evident that the mitigation measures are designed to lower or reduce the risk of impacts to acceptable levels. While the proposed methods of mitigation may be amended or supplemented, the risk that the proposed mitigation measures will not function effectively in preventing significant ecological impacts is low.

All of the proposed mitigation measures will be implemented in full and are best practice, tried and tested effective control measures to protect the receiving environment. In order to avoid and protect the existing ecological features on Site and the surrounding area, the following mitigation measures are recommended below.

14.7.1 Design Phase Mitigation

As part of the proposed development, sensitive habitats will be avoided where possible to minimise ecological disturbance. The project footprint will be kept to a minimum, ensuring that construction and operational activities are confined to the least sensitive areas. Additionally, existing treelines and stonewalls will be preserved where possible through the implementation of appropriate exclusion zones.

A detailed CEMP will be prepared by MMOS as part of this application. This plan will outline the proposed construction and operational methodologies and provide a framework for implementing mitigation measures and conducting environmental monitoring. The CEMP will ensure that the changes resulting from the proposed development comply with environmental quality standards and project objectives. It will specify responsibilities and timelines for the implementation of measures and management controls across all relevant environmental disciplines addressed in the planning application.

14.7.1.1 Mitigation by Avoidance & Design

The following measures are integrated into the proposed project design to reduce impacts on designated sites, flora, and fauna through avoidance and design:

- The hard-standing area of the proposed development has been kept to the minimum necessary for the project and associated infrastructure, including all site clearance works, to minimise land take of habitats and flora.
- The site design and layout deliberately avoided direct impacts on conservation sites.
- The proposed development layout has been selected to avoid land take of potentially sensitive habitats.
- Care has been taken to ensure that sufficient buffers are in place between project infrastructure and hydrological features such as rivers, streams, and drains.
- The design of the project was carried out with cognisance to ecological features.
- The project design and layout has been selected to avoid instream works and associated indirect effects, such as siltation.
- Site lighting has been designed to minimise light pollution and potential disturbance to wildlife.
- Stormwater and foul water management systems are included in the design to prevent runoff and protect local water quality.
- Construction access routes and site layout have been planned to minimise disruption to surrounding areas and avoid impacting sensitive ecological zones.

14.7.2 Construction Phase Mitigation

14.7.2.1 Protection of Habitats

To prevent incidental damage to trees and habitats designated for retention during the site clearance stage, these areas will be securely fenced early in the construction phase. The fencing will be made clearly visible to machine operators to ensure effective protection.

To mitigate the risk of Japanese Knotweed (*Fallopia japonica*) being inadvertently introduced to the site, the contractor will be required to inspect vehicles before they are used on-site, with particular attention to caterpillar tracks and areas where trucks and dumpers are stored. The supplier of any fill material will need to provide a guarantee that the fill does not contain invasive alien species. Additionally, the fill will be inspected for signs of invasive alien species before being imported to the site.

The inspection of topsoil and fill material will follow the guidelines set out in the British Standard Specification for topsoil, as detailed in BS 3882:2015, which provides requirements for the inspection and use of topsoil. Guidance from the Invasive Non-Native Specialists Association (INNSA) Code of Practice for Managing Japanese Knotweed (INNSA, 2017) should also be adhered to. In Ireland, the procedures for managing invasive species, are also informed by Ireland's Invasive Alien Species Soil and Stone Pathway Action Plan 2023–2027. This plan outlines specific actions to prevent the spread of invasive species through soil and stone movements and should be adhered to ensure compliance with national regulations and best practices.

14.7.2.2 Protection of Soil, Surface Waters & Groundwater

The implementation of good construction management practices will minimise the risk of pollution to soil, stormwater run-off, surface water, and groundwater.

Pollution management measures will be implemented to prevent contamination by machinery pollutants, such as fuels, oils, and lubricants during construction and operational activities. These measures will be informed by guidance provided in relevant documents, such as the CIRIA guides to environmental good practice on site.

Best practice construction methodologies and mitigation measures have been designed to minimise any potential risk of impacts on soil and water quality. Mitigation measures relating to soil, surface waters, and groundwater are provided in Chapter 5 (Land, Soils & Geology), and Chapter 6 (Hydrology & Hydrogeology) of this EIAR.

14.7.2.3 Dust Control

The proposed development has the potential to generate dust during construction works, which could affect vegetation in habitats and fauna within and adjacent to the proposed development site. Best practice construction methodologies and mitigation measures have been designed to minimise construction generated dust and to contain it within the site boundary. Mitigation measures relating to construction dust are provided in Chapter 7 (Air Quality).

14.7.2.4 Noise & Vibration Control

To mitigate disturbance and / or displacement to wildlife from noise and vibration activities, the relevant mitigation measures, as described in Chapter 9 (Noise & Vibration) will be implemented by the appointed contractor.

A monitoring regime shall be implemented and recorded as required for various elements of the works.

This monitoring regime shall include the following:

- Noise Monitoring
- Vibration Monitoring

Noise levels will be kept to a minimum to comply with BS5228: Noise control on construction and open sites - Part 1 Code of practice for basic information and procedures for noise control and Appendix 1, Schedule D: Code of Practice for noise and air pollution control.

During the construction works, the Main Contractor will adhere to current regulations, codes of practice, and guidelines for noise and vibration monitoring. Risk assessments will be undertaken to assess the potential noise levels for building operatives. Noise arising from activities on site will be controlled in accordance with the requirements of British Standard BS5228.

The following noise control measures for generated noise shall be implemented during the construction works:

- Instructions shall be given to ensure that vehicles and plant arriving and leaving the site comply with the stated site hours.
- Machines in intermittent use shall be shut down or throttled down to a minimum when not in use.
- Plant shall be maintained in good working order so that extraneous noise is kept to a minimum.
- Compressors and generators shall be sited in areas least likely to give rise to nuisance.
- Care shall be taken to reduce noise when loading or unloading vehicles or moving materials etc.

- All contractors will ensure that the plant and construction methods employed are the quietest available for the required purpose, insofar as practicable.
- All contractor vehicles will use existing site access roads and construction compound areas (surfaces of hard standing).
- Site roads will be maintained in a clean condition and a site speed limit of 20km/h will be adhered to.
- Engines, vehicles, and equipment will be switched off when not in use.
- Machinery with rotating parts will be serviced according to supplier recommendations to prevent friction induced sound.
- Materials should be lowered, not dropped, insofar as practicable and safely.
- Minimise drop heights for materials or ensure resilient material underlies drop zones.
- As far as is reasonably practicable, sources of significant noise should be enclosed or screened.
- Limit the hours during which site activities likely to generate high noise levels are permitted.
- The activities that create the most noise should be scheduled for when the fewest people and neighbouring businesses/residential dwellings will be affected.
- Use low vibration level equipment.
- Selection of plant with low inherent noise generation potential.
- Placement of plant as far as possible from sensitive receptors, within site constraints.
- Properly balance plant items with rotating parts to reduce noise.
- Use alternative reversing alarm systems on plant machinery to reduce noise impact.
- Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Appoint a site representative responsible for noise management.
- Monitor typical noise levels during critical periods and at sensitive locations.
- Liaison with the public should be maintained.

Noise Control at Source:

All items of plant should be subject to regular maintenance. This maintenance can prevent unnecessary increases in plant noise and help prolong the effectiveness of noise control measures. Construction activities related to the proposed development are expected to occur during normal working hours.

Wherever possible, noise should be controlled at source:

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Minimise drop height of materials.
- Start-up plant and vehicles sequentially rather than all together.

14.7.2.5 Considerate Construction

Prior to construction commencing, the pollution preventative measures outlined above will be inspected and certified by the site Environmental Manager or an appropriately qualified person appointed by the client. This person shall have overall responsibility for implementation of environmental protection measures. On appointment and prior to commencement of construction works the name and contact details for this person shall be supplied to Cork City Council (CCC).

A site Liaison Officer (LO) should be appointed for the project as part of the site management team. The LO will act as a single point of contact to engage with the local community and respond to concerns, while keeping local residents informed via email of progress and timing of particular construction activities that may impact them. The Project Manager will be charged with the responsibility of keeping people informed of progress and by setting down procedures for dealing with complaints.

The Main Contractor should remain conscious that the development is adjacent to an existing cemetery and from time to time there may be remembrances taking place. Every effort will be made to restrict works during such times, although it may not always be feasible to halt operations. The Main Contractor should promote and encourage a safe, considerate, clean and responsible construction site.

14.7.2.6 Waste Management

The Main Contractor will effectively manage, and control waste generated by the project in line with the Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects (EPA (2021).

Best practice methodologies and mitigation measures have been designed to minimise any potential risk of impacts associated with waste generation and management. Mitigation measures relating to waste handling, storage, and disposal are provided in Chapter 11 (Waste Management) of this EIAR.

14.7.2.7 Refuelling

- Construction plant and equipment shall only be parked over-night within the construction compound. Construction plant and equipment shall be checked daily for any visual signs of oil or fuel leakage, as well as wear and tear.
- Fuels stored on-site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the duration of the construction phase.
- For any liquid other than water, this shall include storage in suitable tanks and containers which shall be housed in the designated area surrounded by bund walls of sufficient height and construction so as to contain 110 per cent (110%) of the total contents of all containers and associated pipework. The floor and walls of the bunded areas shall be impervious to both water and oil.
- All liquids, solids and powder containers will be clearly labelled and stored in sealable containers.
- Where contractors are required to refuel vehicles on-site, this will be carried out at the designated refuelling location by competent personnel. All refuelling areas will be on areas of hard standing at designated areas agreed by an appropriately qualified person. Spill kits will be provided in all areas where liquids are stored and at any refuelling areas.
- The local authority shall be informed immediately of any spillage or pollution incident that occurs on-site during the construction phase.
- All small plant, such as generators and pumps, will be stood in drip trays capable of holding 110% of their tank contents.
- All small plant will be positioned as far as practicable from the relevant watercourses.
- Waste oils, empty oil containers, and other hazardous wastes will be disposed of in accordance with requirements of the Waste Management Act, 1996.

14.7.2.8 Site Tidiness & Housekeeping

A 'good housekeeping' policy will be employed by the Main Contractor at all times. The site induction will communicate the importance of site housekeeping and tidiness. In addition to measures outlined in the previous sections, the following measures shall be implemented to maintain site tidiness.

- Construction works will be carried out according to a defined schedule agreed upon with the client and the relevant contractors, with regard to the specified hours of work. Any delays or extensions required will be communicated to the client and contractors at the earliest opportunity.
- Contractors will ensure that road edges and footpaths are swept on a regular basis, this includes the local roadways adjacent to the proposed development site. A road sweeper will be deployed if required.
- All contractors shall be responsible for the clearance of their plant, equipment and any temporary buildings upon completion of construction. The site will be left in a safe condition.
- All mobile equipment brought to the site shall be thoroughly power washed and cleaned prior to arrival at site, to avoid transport of alien invasive species.
- Ensure general maintenance of working areas and cleanliness of welfare facilities and storage areas.
- Provide a site layout map showing key areas such as first aid posts, material storage, spill kits, material and waste storage, welfare facilities, etc.
- Display details of site managers, contact numbers (including out of hours contacts), and public information signs (including warning signs) at the boundaries of the working areas.
- Keep the construction compound, access routes and designated parking areas free of excess dirt, rubbish piles, scrap wood, etc. at all times.
- Ensure provision of adequate welfare facilities for site personnel.
- Provide appropriate waste management facilities and arrange regular collections.
- Implement effective measures to prevent infestation from pests or vermin, including arrangements for regular disposal of food and materials that may attract pests.
- Maintain public rights of way, diversions, and entry/exit areas around working sites for car users, pedestrians and cyclists where practicable, and to ensure inclusive access, as necessary.
- Material handling and/or stockpiling of materials, where permitted, will be appropriately located to minimise exposure to wind.
- Maintain self-contained wheel washing facilities at the construction compound and other contaminant measures as required.
- Open fires will be prohibited at all times.
- All flammable waste materials, such as timber, should be removed regularly to reduce risk of fire.

14.7.3 Protection of Flora and Fauna

Measures will be implemented to ensure that there is no negative ecological impact on the site and its surrounding environs. This will include protocols and procedures to prevent contamination of groundwater and watercourses through the implementation of sediment control, temporary mounding, cut off trenches, and water monitoring, as necessary. All chemicals will be stored securely in appropriate bunded areas. Fire and emergency procedures and controls will be established, and spill kits will be readily available to facilitate immediate action. Disposal of any chemical or oil will be removed and disposed of at an approved hazardous waste facility.

The contractor will appoint a suitably qualified person to act as Ecological Clerk of Works (ECoW) to oversee the implementation of measures for the prevention of pollution to the receiving environment.

Excavated inert material may be temporarily stockpiled in a designated area for later reuse within the development. This material will be reused where possible within the development site. Stockpiled material is to be located a minimum of 50m from any drainage route off-site.

There will be on-going monitoring of wildlife in the vicinity of the construction site. Any unusual species, dead species or damaged habitats should be reported immediately to the Construction Manager and/or Environmental Officer. This will be co-ordinated with the appointed Ecologist for the project.

Good working practices concerning environmental factors affecting ecology will be maintained during the construction phase. For example, construction noise and construction phase lighting will be kept to a minimum.

The spread and introduction of invasive species and noxious weeds will be prevented by implementing mitigation measures in accordance with guidance issued by the NRA (2010) and Transport Infrastructure Ireland (TII) (2020) on the management and removal of invasive plant species.

If unexpected ecological habitats are uncovered, site contractors must adhere to the habitat protection protocol. This protocol is designed to ensure that ALL personnel working on the construction site are fully aware of their legal obligations under the Wildlife Act 1976, as amended. This Act affords protection to a range of wildlife in Ireland, including wild birds, animals, and plants. Where a project has received permission to proceed, this does not override certain laws that prevent wilful harm to protected species.

Trees designated for retention will be protected in accordance with BS 5837: (2012) *Trees in Relation to Design, Demolition and Construction*. Tree root systems can be damaged during site clearance and groundworks. Therefore, no materials should be stored within the root protection areas of mature trees. Materials, especially soil and stones, can prevent air and water circulating to the roots. Retention of the existing networks of treelines that form the external boundaries of the site will provide natural screening and help to maintain biodiversity.

The following measures are applicable to the proposed development site:

- Should the removal of scrub, hedgerow, tree felling, or delimbing be required, this will be carried out outside of the bird breeding season (1st March to 31st August inclusive). A pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent.
- All birds, along with their eggs, nests and young - with the exception of certain species - are protected under the Wildlife Acts. Any areas of the site found to contain nests will be cordoned off to a distance of 20m from the nests, and all plant and construction activities will remain outside of this cordon until the young have fledged (left the nest entirely). The 20m radius will be centred on the nest site, and each nest would be protected by an equivalent circle. All other areas are safe for operations.
- Sufficient on-site cleaning of vehicles prior to arrival and upon leaving the site, as well as on nearby roads, will be carried out, particularly during groundworks. Contractor's vehicles and equipment will be thoroughly cleaned and then dried using high-pressure steam cleaning, with water >65 °C, in addition to the removal of all vegetative material.
- Following cleaning, all equipment and vehicles will be visually inspected to ensure that all adherent material and debris have been removed manually.
- No removed material or run-off will be allowed to enter a waterbody of any sort.
- For any material entering the Site, the supplier must provide an assurance that it is free of invasive species.
- Ensure all site users are aware of invasive species management, biosecurity and treatment methodologies. This can be achieved through 'toolbox talks' before works begin on the Site.
- Adequate site signage, hoarding and fencing will be erected in relation to the management of non-native invasive species as required.
- Plant and equipment to be used during works, will be in good working order, fit for purpose, regularly serviced/maintained, and have no evidence of leaks or drips.
- Any recommendations laid out by Inland Fisheries, shall be implemented to ensure the protection of the relevant watercourses, associated aquatic fauna, and any fisheries hydrologically connected to the site.

- Weather conditions shall be considered during all construction operations, and no plant will enter within 100 metres of the relevant watercourses during or following heavy rain or other conditions likely to lead to large-scale or additional water flow that would carry soil or silt into the watercourses.
- Recent surveys did not identify any bat roosts within the site footprint. Contractors may discover bat roosts and if any bats are found, the Construction Manager and/or Environmental Officer are to be contacted immediately.
- Treelines and stone walls along the site boundaries should be retained where possible, as they provide a commuting and foraging network (and possible roosting opportunities) for bats within the wider landscape.

14.7.3.1 Mammals (non-volant)

The following measures shall be implemented to prevent impacts on non-volant mammals:

- Stringent and robust mitigation measures are proposed for the avoidance of impacts affecting water quality.
- A site speed limit of 20 km/h will be strictly enforced to prevent vehicular traffic fatalities.
- Monitoring will continue throughout the construction phase.
- It is recommended that a pre-construction survey be undertaken no later than 6 months prior to construction and ideally immediately prior to the commencement of works within the study area to reconfirm the existing environment and survey results.
- Implement any mitigation and monitoring identified as being required following pre-construction mammal survey (if carried out).
- In general, works close to badger setts may only be conducted under the supervision of a qualified expert and under licence from the NPWS.
- No heavy machinery will be used within 30m of badger setts (unless carried out under licence); 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.
- Fencing will be maintained and regularly checked to ensure effectiveness throughout the construction phase.
- As best-practice, all construction-related rubbish on site (e.g., plastic sheeting, netting, etc.) should be kept in a designated area on-site and off the ground level to protect Hedgehogs and other small mammals (e.g., Pygmy Shrew) from entrapment and death.
- Works likely to cause disturbance during Hedgehog hibernation – for example removal of hibernation habitats such as log piles and dense scrub –should not take place from November to March.
- Vegetation will be removed in sections, working in a consistent direction to prevent entrapment of protected fauna that may be present.
- An ecologist will supervise areas where vegetation, scrub and hedgerow removal will occur prior to and during construction as appropriate (e.g., an ecologist may be required during some clearance works of areas where vegetation is too dense to check beforehand).
- Construction operations will take place during the hours of daylight to minimise disturbances to faunal species at night.
- Vehicular traffic during the construction phase along the site access roads may result in fatalities, however, this is not expected to be significant due to the mainly diurnal requirement for access and speed restrictions which will be in place.
- During construction, open trenches/excavations must incorporate facilities for badgers (and other wildlife, such as otters, foxes, hedgehogs etc.) to escape, by means of gently sloping earth inclines to be left at the end of each workday at each end of any open trenches/excavations.

- An emergency response procedure must be implemented if signs of otter are discovered. All works must cease if animals or their shelters are found until appropriate measures are taken.
- In the event that an issue arises, the NPWS will be updated and consulted with, relevant guidelines shall be followed and any licences/amendments to licences will be sought from NPWS.

14.7.3.2 Bats

A bat survey of the proposed development site was conducted by Veon Ecology. The on-site trees were assessed for the presence of Potential Roost Features (PRFs) and their potential use as commuting and/or foraging routes. Prior to undertaking any future tree removal, a robust assessment of the affected trees for bat potential should be completed.

Recent surveys did not identify any bat roosts within the site footprint. However, contractors may discover bat roosts and if any bats are found, the Construction Manager and/or Environmental Officer must be contacted immediately.

The removal of roofs and other identified potential roosting habitats within the study area should take place outside the bat breeding season (i.e., 1st October to 31st March) to minimise the risk of disturbance to roosting bats. Once scaffolding or other lifting equipment is in place, an endoscope survey will be carried out to more accurately assess usage. Any identified roosting sites and crevices will be blocked off with bubble wrap or similar materials to prevent bats from re-entering. Nets may also be employed for larger areas. Care shall be taken during the removal roofs and other identified potential roosting habitats. If bats are identified in structures during works, the local NPWS Conservation Ranger shall be contacted to facilitate safe translocation.

Bat boxes will be installed under ecological supervision before works commence to provide alternative roosting habitats. Their placement will consider both the immediate needs of bats during construction and the long-term objective of maintaining a viable bat population on-site. Recommended options from NHBS include the Improved Roost-Maternity Bat Box, Schwegler 2F, and Woodcrete Schwegler 1FF (available at <https://www.nhbs.com>). Bat boxes will be installed on buildings, structures, or trees, positioned away from artificial lighting and disturbance, in accordance with Bat Conservation Ireland's *Bats & Bat Boxes: Guidance Notes for Agri-environmental Schemes* (2015) and the NRA's, Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. Bat boxes shall be inspected, maintained and relocated (if required) following NRA/TII guidelines.

Recommended units:

- 2 no. Improved Roost-Maternity Bat Boxes (to be hung on external walls).
- 4 no. 2F Schwegler Bat Boxes (General Purpose) (to be hung on external walls or trees facing in different directions).
- 2 no. 1FF Schwegler Bat Box with Built-in Wooden Rear Panel (to be hung on external walls or trees).

As this is a large-scale project likely to extend over the bat breeding season, ongoing bat surveys will be carried out to confirm whether bats establish roosts within the main structures during the works period. If bats are found roosting within the works area, all activities in that area will cease until the issue can be addressed in consultation with the NPWS.

External lighting should be kept to a minimum at locations where it is likely to disturb bats, and where possible will follow the Bat Conservation Ireland's *Guidance Notes for: Planners, engineers, architects and developers* on bats and lighting (BCI, 2010).

Any sections of stone wall to be removed should be searched using an endoscope for bats prior to works commencing.

For any affected Trees of ‘Moderate/High’ or ‘High’ bat potential, the following actions should be undertaken:

- Conduct a pre-felling bat survey the night before any tree felling, along with the felling methodology outlined below.
- If bats are found to be using the trees surveyed, or other trees noticed during a survey, then a bat derogation licence from the National Parks and Wildlife Service (NPWS) will be required, and any felling postponed until a licence is acquired with justification for same.
- If Trees of ‘High’ Potential are affected in the future by remedial works, they will require a survey.
- If a tree has an existing Bat Box and requires felling, this will need a bat derogation licence from the NPWS if bats are present prior to felling.

For felling and removal of trees, hedgerow, or woodland, the following methodology should be implemented:

- Tree-felling should be undertaken from late August to late October. During this period, bats are capable of flight, which may mitigate risks associated with tree-felling.
- Felling during the winter months should be avoided, as this creates the additional risk that bats may be in hibernation and unable to escape from the tree being felled. Additionally, disturbance during winter may reduce the likelihood of survival, as the bats’ body temperature is too low, and they may need to consume excessive body fat to survive.
- Tree-felling should be undertaken using heavy plant and chainsaws. A wide range of equipment is available that is both heavy and stable enough to safely fell a tree. Typically, trees are pushed over, with a need to excavate and sever roots in some cases. In order to ensure the optimum warning for any roosting bats that may still be present, an affected tree should be pushed lightly two to three times, with a pause of approximately 30 seconds between each push to allow bats to become active. The tree should then be pushed to the ground slowly and should remain in place for a period of at least 48 hours to allow bats, if present, to escape.
- Trees that have been felled should NEVER be immediately sawn up or mulched, to avoid harming any protected wildlife that may be present.
- Trees used for future landscaping should comprise of a high percentage of semi-mature native Irish species.
- To ensure continuity of treelines/hedgerows for commuting and foraging bats, a gap of less than 10m should be used. Larger gaps may negatively impact bat flight dynamics.
- It is recommended to cut back heavy ivy on trees to be retained, as excessive ivy can cause suppression of the crown and increase the wind sail area, making the tree more vulnerable to wind damage. Where necessary, ivy should be cut at ground level allowing it to die off and gradually fall from the tree over time. The proposed actions – pruning, felling, and ivy cutting, are preliminary and will need to be reviewed once the site landscape plan is finalised. Where works are deemed unnecessary, these measures will not be implemented.
- **All tree works will be reviewed on site prior to being carried out, in consultation with the project ecologist/bat specialist,** taking on board their recommendations on the management of these trees and wildlife.

Lighting for Bats

Lighting should only be installed where it is needed, illuminated during the required time period, and set to levels that enhance visibility. Artificial light shining on bat roosts, their access points, and the flight paths leading to and from the roost must be avoided.

In order to preserve the commuting/foraging potential of all treelines and hedgerows to be retained and to minimise disturbance to bats utilising the site in general, the lighting and layout of the proposed development will be designed to

minimise light-spill onto habitats potentially used by the local bat population, foraging or commuting. This will be achieved by ensuring that the design of lighting is in accordance with the guidelines presented in the Bat Conservation Trust and Institute of Lighting Professionals ‘Bats and Lighting in the UK’⁸.

The ILP and BCT (2023)⁹ guidelines provide a list of recommendations in relation to luminaire design, which is based on extensive research completed to-date on the potential impact of lighting on bats, and therefore provides best practice mitigation measures.

Bat activity within the site was primarily recorded along the mature treelines and woodland fringes. These areas should not be illuminated; however, where lighting is unavoidable, the design strategy should aim to reduce the potential impact of lighting on bats by incorporating the following measures:

- The avoidance of direct lighting of existing trees or proposed areas of habitat creation/landscape planting.
- Do not provide excessive lighting. Use only the minimum amount of light needed for safety.
- Minimise light spill. Eliminate any bare bulbs and any upward pointing light. The spread of light should be kept near to or below the horizontal. Flat cut-off lanterns are best.
- Use narrow spectrum bulbs to lower the range of species affected by lighting. Use light sources that emit minimal ultra-violet light and avoid the white and blue wavelengths of the light spectrum to avoid attracting lots of insects. Lighting regimes that attract lots of insects result in a reduction of insects in other areas, like parks and gardens, that bats may use for foraging.
- Lights should peak higher than 550 nm¹⁰ or use glass lantern covers to filter UV light. White LED lights do not emit UV but have still been shown to disturb slow-flying bat species.
- Reduce the height of lighting columns. Light at a low level reduces impact. However, higher mounting heights allow lower main beam angles, which can assist in reducing glare.
- For pedestrian lighting, use low level lighting that is as directional as possible and below 3 lux at ground level, but preferably below 1 lux.
- Increase the spacing of lanterns.
- Use embedded lights to illuminate paths.
- Limit the times that lights are on to provide some dark periods.
- Use lighting design software and professional lighting designers to predict where light spill will occur.
- Avoid using reflective surfaces under lights.

14.7.3.3 Avifauna

The following measures shall be implemented to prevent impacts on birds:

- Any clearance of vegetation should be carried out outside the main breeding season, i.e., 1st March to 31st August, in compliance with the Wildlife Act 2000. Should any vegetation removal be required during this period, the NPWS will be consulted, and instruction taken from them.

To mitigate daytime noise disturbance, the following measures will be implemented:

- Select plant with low inherent potential for generating noise.
- Site plant as far away from sensitive receptors as permitted by site constraints.
- Avoid unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Properly balance plant items with rotating parts.

⁸ BCT (2008) Bats and Lighting in the UK. Bats and the Built Environment Series.

⁹ Bat Conservation Trust and Institute of Lighting Professionals (2023) Guidance Note 08/23: Bats and artificial lighting in the UK. ILP, Rugby.

¹⁰ Van Langevelde, F *et al.*, 2011. Effect of spectral composition of artificial light on the attraction of moths. Biol. Conserv. doi:10.1016/j.biocon.2011.06.004

- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.
- Use alternative reversing alarm systems on plant machinery.
- Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Limit the hours during which site activities likely to create high levels of noise are permitted.
- Appointing a site representative responsible for matters relating to noise.
- Monitor typical noise levels during critical periods and at sensitive locations.

The following general dust control measures will be followed for the duration of the construction phase of the proposed development to ensure no significant dust related impacts occur to nearby sensitive receptors, including local faunal species:

- In situations where the source of dust is within 25m of sensitive receptors, screens (permeable or semi-permeable) will be erected.
- Haulage vehicles transporting gravel and other similar materials to the site will be covered by a tarpaulin or similar.
- Access and exit of vehicles will be restricted to certain access/exit points.
- Vehicle speed restrictions of 20km/h will be in place.
- Bowsters will be available during periods of dry weather throughout the construction period.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowster will operate to ensure moisture content is high enough to increase the soil stability, thereby reducing the amount of dust.
- Stockpiles will be stored in sheltered areas of the site, covered, and watered regularly, or as needed if exposed during dry weather.
- Gravel should be used at site exit points to remove caked-on dirt from tyre tracks.
- Equipment will be washed at the end of each workday.
- Hard surfaced roads will be wet swept to remove any deposited materials.
- Unsurfaced roads will be restricted to essential traffic only.
- If practical, wheel-washing facilities should be located at all exits from the construction site.
- Dust production as a result of site activity will be minimised by regular cleaning of the Site access roads using vacuum road sweepers and washers. Access roads should be cleaned at least 0.5km on either side of the approach roads to the access points.
- Public roads outside the site will be regularly inspected for cleanliness, at a minimum daily, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.
- The frequency of cleaning will be determined by the site agent and is weather and activity dependent.
- The height of stockpiles will be kept to a minimum, and slopes should be gentle to avoid windblown soil dust.

The following will be dampened during dry weather:

- Unpaved areas subject to traffic and wind
- Stockpiles
- Areas where there will be loading and unloading of dust-generating materials

Under no circumstances will wastewater from equipment, wheel, or surface cleaning be allowed enter the surface water drainage network.

Nesting Birds

Scrub and vegetation removal during the breeding season may not be possible, as verifying the absence of nests in these habitats is extremely difficult. Therefore, the preferred mitigation is to leave scrub and vegetation in place until after the bird nesting season. At the end of the season, it is important to continue checking for birds, as some species continue to nest after the recognised season (March to August incl.) ends. Where this seasonal restriction cannot be observed, a check for active nests will be carried out immediately prior to any site clearance by an ECoW and repeated as required to ensure compliance with legislative requirements. This applies to all potential nesting habitats, including buildings, scrub, and other vegetation. If a breeding bird and an active nest are found, the nest will be protected, and no further works will take place in the vicinity of the nest until the young have fledged. Where continuation of works is critical, the NPWS will be consulted, and a derogation licence, if necessary, will be obtained prior to continuing works.

For green-listed species, a buffer zone of c. 10m-20m, or an ECoW determined buffer, shall be installed for all nests found. For red- and amber-listed species, appropriate buffers of c. 50m to 200m shall be determined by the ECoW.

All project personnel should receive an environmental induction on a scale relevant to their work activities. This induction should include specific considerations for avifauna, focusing on the potential impacts of construction activities on the relevant bird species and their habitats.

A Barn Owl (*Tyto alba*) was recorded within the site boundary during previous surveys by Dixon Brosnan - Environmental Consultants in 2016. Given the current condition of the buildings, which are largely inaccessible, it is not possible to confirm whether this species is breeding or roosting within the structures on site. Prior to the commencement of site works, the building will be surveyed to confirm the absence of active nests or roosting sites. Additionally, as a precautionary measure, 2 no. Barn Owl nest boxes will be installed in suitable locations within the site before works commence, in line with the recommendations of the local NPWS Conservation Ranger.

The key considerations are:

- 1) Ensuring the nest box is placed in a suitable location and is of appropriate design and dimensions.
- 2) Confirming the site contains suitable habitat for Barn Owls.
- 3) Implementing appropriate rodent control measures to minimise the risk of secondary poisoning to Barn Owls.

Barn Owl nest boxes (2 no.) will be installed in either an interior space (e.g., inside a quiet outbuilding on site) or an exterior space (e.g., on the outside of a suitable building or tree). The chosen location will determine whether an interior or exterior nest box design is used. Their placement will consider both immediate needs during construction and the long-term objective of maintaining a viable breeding population on-site. If no suitable interior space is available, an exterior box can be installed on a building or a mature tree, at least 4 metres above the ground, facing open land, away from roads and prevailing weather conditions (i.e., not south-west), and with clear flight lines to the nest box. The box should be located in a disturbance-free area and securely mounted to support its weight (Lusby *et al.*, 2022).

The site also includes suitable habitat for kestrel, and the species is considered to have a probable breeding status within the proposed development site or its immediate vicinity. Similar to the measures outlined for Barn Owls, prior to the commencement of site works, a survey will be conducted to confirm the absence of active nests or roosting sites. Additionally, as a precautionary

measure, 2 no. kestrel nest boxes will be installed in suitable locations within the site before works commence, in line with the recommendations of the local NPWS Conservation Ranger. These nest boxes will be installed under ecological supervision to provide alternative breeding and roosting opportunities.

Kestrel nest boxes (2 no.) will be installed on-site following similar provisions as those for Barn Owls. They should be positioned 3-5 metres above ground on buildings, structures, or trees, away from artificial lighting and disturbance, with a clear flight path free from overhanging branches. The box opening should be oriented away from the prevailing wind. All nest boxes shall be inspected (under licence), maintained, and relocated if necessary. They should also be registered with BirdWatch Ireland and monitored in consultation with the NPWS.

New planting and the enhancement of existing semi-natural grassland will be undertaken to provide alternative hunting areas for barn owl and kestrel. To reduce the negative impacts and risks associated with rodenticide exposure, an Integrated Pest Management (IPM) approach will be adopted. IPM is an effective and environmentally sensitive method of pest control that relies on a combination of common-sense practices. Effective long-term control of rodent activity is best achieved by making the site unattractive to rodents by limiting access to food, water, and shelter, with ongoing site maintenance to prevent conditions that support rodent populations.

Stock Dove nest boxes (2 no.) will also be installed on-site, following similar provisions as those for Barn Owl and kestrel nest boxes. These will be placed on suitable mature trees at the woodland edge within the site boundary.

As a further enhancement measure, 3 no. externally mounted Swift nest boxes should be fitted to an existing building within the site or, alternatively, in-built commercial Swift nest bricks should be installed on new structures. There is no upper limit for the height of a swift nest, but nest boxes installed c. 5m or more from the ground should lead to higher occupancy rates. It is essential to ensure a clear flyway of at least 5m in front of the nest boxes, avoiding obstructions such as trees etc. Playing audio recordings of swift calls can accelerate the uptake process. The Genesis Externally Fixed Triple Entry Swift Nest Boxes are recommended by BirdWatch Ireland. Alternatively, Swift nest bricks are available in a variety of sizes, shapes, and colours, allowing for easy integration into the proposed development.

If the ecologist determines, based on their experience and/or site conditions, that a particular artificial or man-made breeding or resting location is unsuitable at the predetermined site, they may, at their discretion, relocate it to a more appropriate location.

To further reduce potential disturbance impacts on breeding birds, the development will be carried out in phases where possible, to minimise disruption to nesting and foraging activities. Phasing construction works will allow ecologists to monitor breeding activity throughout the project and adjust mitigation measures as needed. This approach will help maintain suitable conditions for birds on-site while ensuring compliance with wildlife protection legislation.

14.7.3.4 Biosecurity

There is a potential risk that terrestrial and/or aquatic invasive species (e.g., Japanese knotweed or Giant hogweed) or pathogens (e.g., crayfish plague, ash dieback) could be accidentally introduced to a location via contaminated vehicles and/or equipment, in particular tracked vehicles, which have previously been used in areas containing invasive species. .

Biosecurity measures will be strictly adhered to throughout the proposed works. Measures will be in accordance with IFI (2010) Biosecurity Protocol for Field Survey Work.

The following best practice avoidance measures will help contain and/or prevent the introduction of invasive species:

- Prior to arrival on site, the contractors' vehicles and equipment will be thoroughly cleaned and then dried using high-pressure steam cleaning, with water >65°C, in addition to the removal of all vegetative material. Items that are difficult to soak/spray will be wiped down with a suitable disinfectant (e.g., solution of 1% Virkon® Aquatic).
- Evidence that all machinery has been cleaned must be maintained and available for review by the statutory authorities. The level of evidence required of the contractor will be registration plates of vehicles on-site and a register detailing when, how, and where each of these were cleaned before they arrived on site.
- Visual inspections will be carried out on all machinery and equipment to check for attached plant or animal material, or adherent mud or debris. Any attached or adherent material will be removed before entering or leaving the site and securely stored (away from traffic) for removal to an appropriate waste storage area at the end of the workday.
- No removed material or run-off will be allowed to enter a waterbody of any sort.
- Following cleaning, all equipment and vehicles will be visually inspected to ensure that all adherent material and debris has been removed manually.
- Each field vehicle must carry a 'disinfection box' as appropriate. This will contain Virkon Aquatic or another proprietary disinfectant, a spraying mechanism, cloths or sponges, a scrubbing brush and protective gloves. Protective gloves must be worn when using any disinfectant solution.
- Spot checks on the adequacy of cleaning will be carried out by the ECoW.
- Disinfectants must be used strictly in accordance with the manufacturer's instructions. They must be disposed of safely and never close to open waters such as drains etc.
- For any material entering the site, the supplier must provide an assurance that it is free of invasive species.
- Ensure all site users are aware of the invasive species management plan, biosecurity and treatment methodologies (as appropriate). This can be achieved through 'toolbox talks' before works begin on site.
- Ensure that all operatives are familiar with the relevant non-native invasive species. A comprehensive list and details can be found on the Inland Fisheries Ireland website at: <https://www.fisheriesireland.ie>.
- Adequate site signage, hoarding and fencing will be erected in relation to the management of non-native invasive species.

14.7.3.5 Invasive Plant Species Management

The invasive species Three-cornered Leek, Rhododendron, Cherry Laurel, and Giant-rhubarb will be eradicated from the site in accordance with the relevant codes of practice and guidelines: Best Practice Management Guidelines Rhododendron (*Rhododendron ponticum*) and Cherry Laurel (*Prunus laurocerasus*) – Invasive Species Ireland (Maguire et al., 2008), and the Giant Rhubarb (*Gunnera tinctoria*) Invasive Species Action Plan – Invasive Species Ireland (Armstrong et al., 2009). No significant barriers to the effective eradication of these invasive species from the site, via either mechanical or chemical methods, have been identified. Once completed the landscape management plan will provide for the elimination of any regrowth of Three-cornered Leek, Rhododendron, Cherry Laurel, and Giant-rhubarb, as well as for the removal of Winter Heliotrope and Buddleia.

With regards to the proposed development, the following steps will be taken in order to prevent the introduction and spread of invasive plant species:

- A pre-construction survey for invasive species should be carried out to confirm the extent of infestations as identified in previous surveys and to determine whether any new infestations have been established in the intervening period.
- To prevent Japanese Knotweed or other invasive species from outside the site being inadvertently brought into the site, the contractor will be required to inspect, clean, and wash down vehicles within a designated area before using them on-site.

- Prior notification will be given to all contractors that parts of the site are contaminated with invasive plant species. They must adhere to this protocol to avoid the spread of high-risk invasive species within and more importantly, outside of the works area. This includes any site investigation works in advance of commencement of excavation works.
- All stands of Three-cornered Leek, Rhododendron and Giant-rhubarb will be clearly delineated with hazard tape in a manner visible to machine operators prior to the commencement of works. Appropriate signage will be put in place to deter any entrance by people or machinery into areas where these species are growing.
- Where Three-cornered Leek, Rhododendron and Giant-rhubarb removal is required to facilitate the construction of the proposed development, an Invasive Species Management Plan (ISMP) should be prepared by an invasive species specialist. It must be noted the removal of contaminated material from the site will require a license from the National Parks and Wildlife Service in advance of any removal, in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477).

14.7.4 Operational Phase Mitigation

The operational phase of the project is anticipated to generate minimal waste. Any debris resulting from maintenance or cleaning activities will be promptly removed from the site by the contractor. Waste disposal will be conducted in strict adherence to the Waste Management Act, 1996 (as amended), ensuring proper handling and processing of all waste materials.

The new lighting proposed for the project will be carefully managed to prevent any adverse impacts on local wildlife, in particular bats.

Boundary vegetation, including treelines, which are to be retained will be allowed to develop naturally throughout the operational phase. These areas will be carefully managed to maintain their ecological value and contribute to the site's overall environment. Any necessary arboricultural or horticultural interventions will be minimised to protect existing botanical communities and promote ecological stability. The woodland within the site boundary will be actively managed as part of a landscape management plan.

14.8 Residual Impacts

Overall, the development will primarily affect low-value, highly modified habitats. There will be a net loss of a small number of non-native trees. No impact on aquatic habitats is predicted. No significant difficulties in the effective implementation of the prescribed mitigation measures have been identified.

With the exception of localised impacts and short-term impacts during construction, no significant impacts on fauna are anticipated. It is anticipated that bats will utilise the newly provided roosting habitat, and bird boxes will be provided for barn owl, kestrel, stock dove and swift. The spread of invasive species will be controlled, and any impact on air quality will be negligible. No adverse impact on designated sites or their conservation objectives will occur.

Provided that the recommended mitigation measures set out in **Section 14.7** are implemented in full and remain effective throughout the construction and operational phases of the proposed development, the potential for significant residual impacts related to disturbance/displacement of fauna and the loss or alteration of habitats identified as Key Ecological Receptors (KERs) are not anticipated.

14.9 Worst Case Scenario

In a worst-case scenario, the release of contaminated surface water runoff or an accidental spillage/pollution event into any surface water features during construction or operation could affect local bird and mammal species that commute and forage in the surrounding area. This potential degradation of water quality (either alone or in combination with other pressures) could lead to the deterioration of any downstream sensitive habitats, which, in turn, could negatively impact bird and mammal species that rely on these habitats for foraging, breeding, and/or roosting. It could also reduce the quantity and quality of prey available to these populations.

While a pollution event of such magnitude is considered unlikely to occur during construction or operational phases, if it were to occur, it would likely be temporary in nature. Nonetheless, a precautionary approach has been adopted in assessing the potential risks to water quality. Consequently, detailed mitigation measures are proposed to further minimise the risk of contaminated surface water runoff and/or an accidental spillage/pollution event having any perceptible effect on water quality during construction or operation.

In the absence of mitigation, there is some potential for invasive alien species to spread or be introduced during the construction phase, potentially outcompeting native species and altering the composition and physical structure of habitats. However, it is unlikely that these invasive species could spread or be introduced into protected sites located a significant distance from the development, and separated by large transitional water bodies (i.e., Lee (Cork) Estuary Upper and Lough Mahon). As a precautionary measure, mitigation has been designed to avoid any potential impacts (see **Sections 14.7.2** and **14.7.3**).

Increased disturbance and artificial lighting within suitable habitats may result in avoidance behaviour by bats, potentially preventing them from accessing adjacent foraging areas or roosts and/or result in bats abandoning nearby roosts. Given the urban context of the site, the limited foraging resources in the existing environment, and the survey results to date, bats in the area are not expected to be present in large numbers and are likely habituated to some level of disturbance and artificial lighting.

The increase in artificial lighting within the site boundaries may reduce the value of retained habitats for local wildlife, particularly bats. However, operational lighting, combined with additional landscape planting, has been designed to reduce impacts on foraging bats and other nocturnal wildlife. There will be no significant light spillage onto retained treelines/woodland or the proposed biodiversity enhancement areas/features. As newly landscaped habitats mature, they are likely to provide additional foraging areas for birds and bats. Therefore, the proposed development is unlikely to affect the conservation status of the local bat population and will not result in a likely significant negative effect at any geographic scale. As such, in a worst-case scenario, disturbance impacts are considered significant at the local level only.

Similar to bats, increased disturbance and artificial lighting within suitable habitats may cause avoidance behaviour in birds, potentially preventing them from accessing foraging areas, breeding sites, or roosts, and/or resulting in their abandonment of these areas. The proposed development will result in the loss of potential breeding bird nesting and foraging habitats within the site footprint, including areas of scrub, dry meadows and grassy verges, and amenity grassland. While most of these habitats are not KERs due to their limited botanical value, they may still provide nesting and/or foraging habitat for birds. Some buildings and structures on-site may also provide nesting and/or roosting habitat for birds, which could be lost or obstructed during construction.

The magnitude of this effect will largely depend on various unquantifiable factors, such as future land use changes and whether the local habitat resource has reached its carrying capacity for breeding bird species. For species with larger home ranges during the breeding season, such as peregrine, barn owl, and kestrel (which hunt within c. 2km of their nest sites), habitat loss at the scale of the proposed development is unlikely to significantly affect breeding success or population dynamics at any geographic scale.

Through the incorporation of green areas, habitat connectivity for these species will be maintained, and any potential negative effects will be mitigated. Furthermore, all mature trees within the site will be retained, providing temporary refuge for birds during the construction phase.

None of the habitat areas to be lost are unique to the locality. Individually or collectively, they are unlikely to support a significant proportion or the only population of any given breeding bird species locally. While a temporary decline in overall breeding bird abundance could occur at the local level (i.e., within the footprint of the proposed development), this is unlikely to significantly affect the local range of breeding bird species or the ability of these populations to maintain their local presence in the long term. Mitigation and enhancement measures will be implemented to reduce the effects of habitat loss on breeding birds locally (see **Sections 14.7.2** and **14.7.3**).

14.10 Conclusion

A comprehensive ecological impact assessment was undertaken to evaluate the layout, nature, and construction methods of the proposed development, as well as all associated activities during both the construction and operational phases. This assessment thoroughly examined the potential for adverse effects on the local ecology in detail.

The key findings of the ecological impact assessment of the proposed development are summarised below:

- The layout and design of the proposed development have been carefully planned with consideration for the terrestrial and aquatic ecology of the existing environment. By limiting direct/indirect impacts from disturbance and water pollution events, such as siltation and run-off of suspended solids, the potential for adverse effects on ecological features in the vicinity of the proposed development will be significantly reduced.
- A total of 8 no. macro habitats were identified within the proposed development site, 2 no. of which were classified as Key Ecological Receptors (KERs). The most prominent habitat on the site is Buildings and Artificial Surfaces (BL3), although several higher-value habitats, such as Mixed broadleaved/conifer woodland (WD2) and Dry meadows and grassy verges (GS2), are also present within the project boundary.
- Faunal species were recorded during surveys conducted for the development, from previous studies within the site, and from the NBDC database for hectad W67, which includes the project site. Key Ecological Receptors (KERs) identified include non-volant mammals, bats, and avifauna.
- The proposed development site does not support significant habitats or species that are classified or recognised as rare or restricted and none of the habitats or associated species are considered to be evaluated as being county, regional, national or International (European) importance.
- There are no European sites within or directly adjacent to the boundaries of the proposed development site; therefore, it does not form part of any European site. There is 1 no. SAC (Great Island Channel SAC) and 1 no. SPA (Cork Harbour SPA) within c. 15km of the proposed development site. The closest European site to the proposed development is Cork Harbour SPA (Site code: 004030), situated c. 4.4km to the south-east at its nearest point. Given the distance from the proposed development and the lack of a hydrological connection, it has been determined that the proposed development, individually or in combination with other plans or projects (given the implementation of best codes of practice) would not be likely to have a significant effect on any European site, in view of the site's Conservation Objectives.
- Given the distance from the proposed development and the lack of a hydrological connection, it has been determined that no adverse impacts on the 16 no. pNHAs within 15 km of the proposed development are anticipated.
- While no likely significant negative impacts were identified related to habitat loss during the construction phase of the proposed development, disturbance and displacement of species, particularly bats, were noted. Mitigation measures will be implemented to further reduce any potential impacts.

- Potentially significant negative impacts were identified regarding water quality due to pollutants such as sediments, cementitious materials, fuels, oils, and chemicals during the construction phase of the proposed development. These impacts could result in the disturbance or displacement of fauna and the loss or alteration of habitats identified as Key Ecological Receptors. However, with appropriate mitigation measures in place, including the development of a CEMP that incorporates all pollution control recommendations within the EIAR, these impacts are considered unlikely to be significant.
- The increase in artificial lighting within the site boundaries may reduce the value of retained habitats for local wildlife, in particular bats. However, operational lighting alongside additional landscape planting has been designed to reduce impacts on foraging bats (and other nocturnal wildlife). There will be no significant light spillage onto retained treelines/woodland or along the proposed biodiversity enhancement area(s). As newly landscaped habitats mature, they are likely to create additional foraging areas for birds and bats.
- During construction, there will be increased noise and disturbance which could potentially affect birds and mammals. However, these impacts will be short-term and not significant. Given the availability of alternative habitats in the vicinity, any impacts on birds, mammals, and other wildlife are likely to be slight and short-term.
- Cumulative impacts from other plans, projects, and activities in the wider environment were assessed and could potentially result in significant impacts in combination with the proposed development. However, with the implementation of appropriate mitigation measures and adherence to best practice guidelines, significant cumulative impacts are not anticipated.
- No significant residual ecological impacts are anticipated as a result of the construction and operational phases of the proposed development.
- It can be concluded that the proposed development will not result in any adverse effects on the integrity of any ecological features, provided best practice guidance is followed, and specific mitigation measures are implemented. Both the construction and operational phases will be carried out to avoid adverse effects on water quality, habitats, flora, fauna, and all other relevant ecological features.
- Following the construction of the proposed development, it should be possible to establish and maintain a range of biodiversity enhancement measures that utilise and enhance the existing ecological features within and surrounding the site, such as treelines and woodland.

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CHAPTER FIFTEEN

BUILT HERITAGE

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CHAPTER FIFTEEN | Built Heritage

15.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on architectural heritage.

This chapter of the EIAR provides information on the existing buildings of architectural, historical, social or other interest within the proposed development site at the former Good Shepherd Convent in Sunday’s Well. JCA Architects have prepared this chapter which provides an evaluation of the quality and importance of the structures located on this site. In addition, the following information also contains an assessment of the implications of the development for the special character of significant historic structures within the vicinity of the development when compared to the extant permitted development ABP-300690-18 / PA Reg Ref. 1737279. This assessment highlights how the elements of this character (those which contribute to the special architectural, historical, archaeological, artistic, cultural, scientific, social and/or technical interest) would be materially altered by the development.

JCA Architects were appointed at the initial stage of this project to work with an integrated design team to redevelop the Good Shepherd Convent and have carried out a full conservation assessment of all the structures on the site, which has been used to inform the approach to the reuse of the site.

It should be read in conjunction with JCA Architects’ Conservation Report and Matrix of Significance.

15.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Jessie Castle, BA, MUBC, Katherine McClatchie BA, MUBC, and Gareth O’Callaghan, BArch, MRIAI, RIAI Grade 1 Conservation Architect, all of JCA Architects, RIAI Conservation Grade 1 Architects.

Jessie Castle, Katherine McClatchie and Gareth O’Callaghan have each over 20 years’ experience in the provision of architectural conservation consultancy services and been involved in the preparation of EIARs for the following projects:

- Project Opera, Limerick
- AQ2, Albert Quay, Cork
- The Metropole Hotel, Cork

15.3 Proposed Development

The full description of the proposed development is outlined in Chapter 2 ‘Development Description’ of this EIAR.

15.4 Methodology

The site was visited on several occasions between 2016 and 2025 and the existing buildings on the site were examined, photographed and recorded. The grounds were also inspected, including the graveyard, and a number of retained landscape features identified. The buildings are in very poor condition which limited access, particularly to the former convent building (central block), and the grounds are very overgrown, but it was possible to view and inspect most areas.

Once information resulting from the historical analysis and physical inspection of the buildings and site were compiled, the character of the historic buildings and potential risks to their character were determined. This information was summarised and compiled into the Matrix of Significance document. This understanding of the site informed the understanding of the significance of the existing former Good Shepherd Convent buildings and allowed for the formulation of mitigation measures which would help to protect the special character of these buildings and their setting within an Architectural Conservation Area.

This impact assessment entails six stages:

1. A desk-top review of relevant documents relating to the site’s history.
2. A field survey of the buildings now surviving within the proposed development area.
3. An evaluation of the architectural heritage significance of these buildings.
4. An assessment of the impact of the proposed development on buildings of special heritage significance.
5. The mitigation of any potential negative impacts upon that heritage
6. A prediction of the residual impacts of the proposed development after the mitigation measures have been enacted.

Desktop Study

The historical aspects of the site’s development were ascertained using a range of primary documentary sources such as Ordnance Survey maps, valuation books, photographs and newspapers, as well as publications on the architectural history of Ireland in general and Cork in particular. Contemporary newspaper articles dating to the time of the construction of the complex were sourced, providing detailed information on the construction, materials, design and individual use of the original buildings. These sources are fully itemised in the References section.

Field Survey

An initial full survey of the site was carried out by JCA in 2016, with later surveys by JCA in 2024-5. This entailed the examination, description and photographing of all buildings within the development site for three reasons: (1) to verify what was already known about its built heritage, (2) to update this information to take account of any physical alterations to the site’s buildings, and (3) to fill in any gaps in our knowledge of the site, such as previously unrecorded features.

15.4.1 Relevant Legislation & Guidance

The former Good Shepherd complex was constructed as a convent, Magdalene Laundry home and orphanage. It is a protected structure on the current Cork City Development Plan (RPS No. PS721). It is also included on the National Inventory of Architectural Heritage’s survey for Cork City (Reg. No. 20862019) where it has been awarded architectural, artistic, historical and social categories of special interest.

In addition to the individual protected status of the former convent buildings, the site is located within an Architectural Conservation Area in the current Cork City Development Plan. This area is identified as Sunday’s Well Conservation Area, Sub-Area D: Former Institutional Lands. This sub-area is described as being of architectural and historical interest. It contains two large institutions, the former Gaol (located immediately west of the Good Shepherd grounds) and the former Good Shepherd convent, laundry and home, both institutions laid out on very large sites at a time when the sub-area was on the edge of the city.

Under current legislation (Part IV of the Planning and Development Act 2000) all extant structures (and parts of the structure), the interior of the structures, any structures lying within the curtilage of the structures and their interiors, and all fixtures and

features which form part of the interior or exterior of the structures included within the site boundaries of the former Good Shepherd Convent are afforded protection by its inclusion on the Record of Protected Structures.

Architectural Conservation Area (ACA) legislation may be used to protect groups of structures of distinctiveness, visual richness or historical importance, the setting and appearance of structures of special interest, the setting of a protected structure (including a setting which is more extensive than the curtilage of the building), and designed landscapes (Architectural Heritage Protection Guidelines for Local Authorities, DoEHLG 2004).

In addition, the following sections of the current Cork City Development Plan (2022-2028) are relevant:

Record of Protected Structures

8.21

A Protected Structure is a structure which is considered to be of special interest from an architectural, historical, archaeological, artistic, cultural, scientific, social, or technical point of view. The Record of Protected Structures (RPS) is a list of the buildings held by a local authority which contains buildings considered to be of special interest in its operational area.

8.28

Development which would not conflict with the general planning objectives for the area in which a Protected Structure is located will be considered on its merits and on the impact such development would have on the character of the Protected Structure.

Objective 8.17

Conservation of the City's Built Heritage

- a. To seek to ensure the conservation of Cork City's built heritage.*
- b. To ensure that Cork's Built Heritage contributes fully to the social and economic life of the city and to pursue actions that ensure Cork's built heritage will benefit from good custodianship and building occupation.*

Objective 8.18

Reuse & Refurbishment of Historic Buildings

- a. The City Council will actively encourage the re-use of historic buildings in the interests of conservation and environmental sustainability to minimise waste and optimise on the embodied energy in existing buildings.*
- b. Uses which will have a minimal impact on the character of historic structures will be encouraged.*
- c. Alterations will adhere to best practice conservation standards.*

- d. The reinstatement of lost features and removal of unsympathetic additions will be encouraged where appropriate.*
- e. It is recognised that the protection and retention of historic buildings within the medieval city, has the dual advantage of protecting the rich archaeological resource and the Recorded Monument of the City Wall.*

Objective 8.19

Record of Protected Structures

To maintain a Record of Protected Structures (RPS) which shall include structures or parts of structures which are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest, and which it is an objective to protect.

- a. Any changes or alterations to the character of a Protected Structure which would in the opinion of Cork City Council, have a material effect on the character of the structure, will require planning permission;*
- b. Cork City Council will have regard to the relevant statutory guidance issued by the central government department responsible for the built heritage, including the Architectural Heritage Protection Guidelines*
- c. Proposals for demolition of a Protected Structure shall not be permitted except in exceptional circumstances and where it can be shown that a greater public interest will be served which outweighs the loss to the architectural heritage;*
- d. Any alteration or demolition of a Protected Structure shall require the preparation of a full drawn and photographic record to Best Conservation Practice;*
- e. A broad range of uses will be considered for the regeneration / reuse of protected structures that are derelict / underutilised;*
- f. Where the planning authority accepts the principle of demolition a detailed written and photographic inventory of the building will be made and sent to the Cork City & County Archives and the Irish Architectural Archive for record purposes;*
- g. Where a planning application is being granted for development within the curtilage of a Protected Structure, the conservation of the protected structure will be prioritised as the first phase of the development to prevent endangerment, abandonment and dereliction.*

Sub-Area D: Former institutional lands

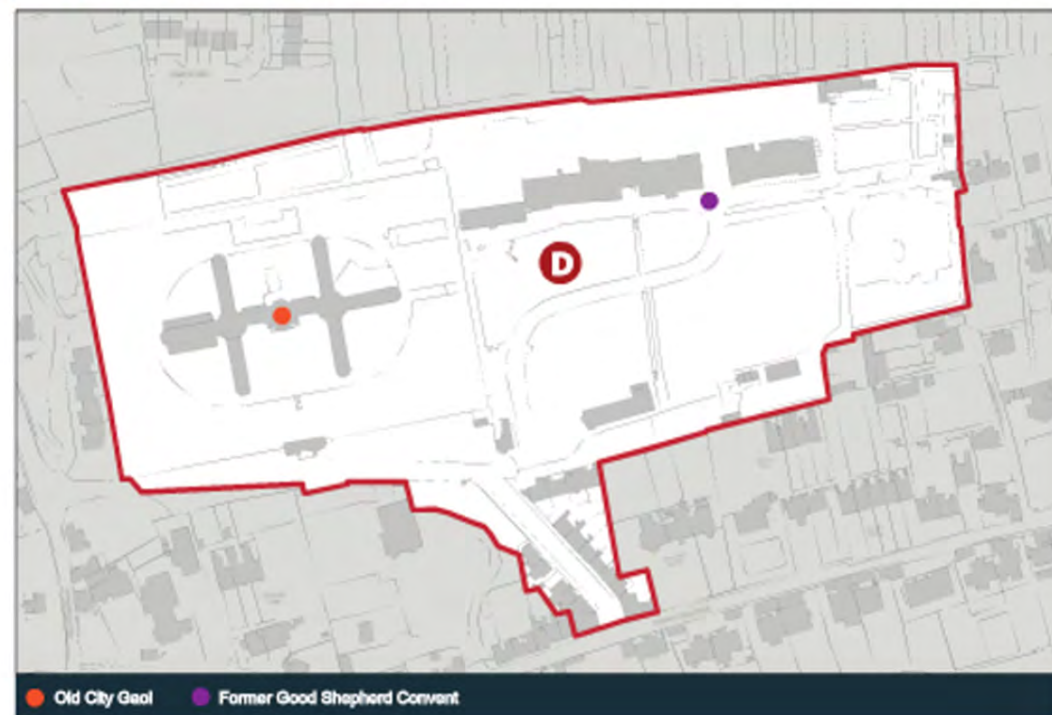


Figure 15.1 Extract from current Cork City Development Plan, showing boundary of Architectural Conservation sub-Area.

15.5 Difficulties Encountered

Information was freely circulated among the design team and no difficulties were encountered with regard to access of required information relating to the proposed scheme for the site.

The structural condition of the buildings has in some cases worsened and for a number of buildings full access was not possible in order to update the records of the existing buildings, particularly with regard to the upper floors. However, all buildings had been previously inspected in full by the authors, and a full assessment of the significance of each building was possible. Due to further fire damage, the condition of the structures had in some cases worsened since last inspected, with loss to the amount of historic fabric surviving to each building although the level of significance of the structures has not changed.

15.6 Baseline Environment

15.6.1 Receiving Environment and its Historical Context

The former Good Shepherd complex of buildings is located in the Sunday's Well area, a suburb of the city located to the west of the city and overlooking the River Lee to the south. The complex is located on a south facing sloping site which lies adjacent to the former City Gaol, which pre-existed the establishment of the Good Shepherd Convent. The site associated with the Good Shepherd buildings is over 3 hectares in size, on which several historic buildings are retained. These include

the three main, multiple storey buildings constructed as a convent, Magdalene laundry and orphanage / industrial school. The gate lodge which serviced the entrance to this complex, located on Convent Avenue, is also retained. In addition there is a small coach house, on to which a bake house was constructed in the 20th century. The laundry buildings, chapel and other associated outbuildings formerly located to the rear (north) of the main buildings have all been demolished. As a result of two devastating fires, the convent building and the Magdalene laundry have lost their roofs entirely and all internal floors and finishes are lost. To the south of the site there is a number of small agricultural buildings. One of two cemeteries associated with the Good Shepherd is located within the development site.

The 19th century saw the development of the Sunday's Well area as a fashionable alternative to city centre living, with large, detached villas set amid extensive grounds which enjoyed a south facing aspect. The first edition Ordnance Survey map (surveyed 1841-42) depicts this pattern of development clearly, illustrating the substantial gardens of the houses located along the hillside on the north side of the River Lee.

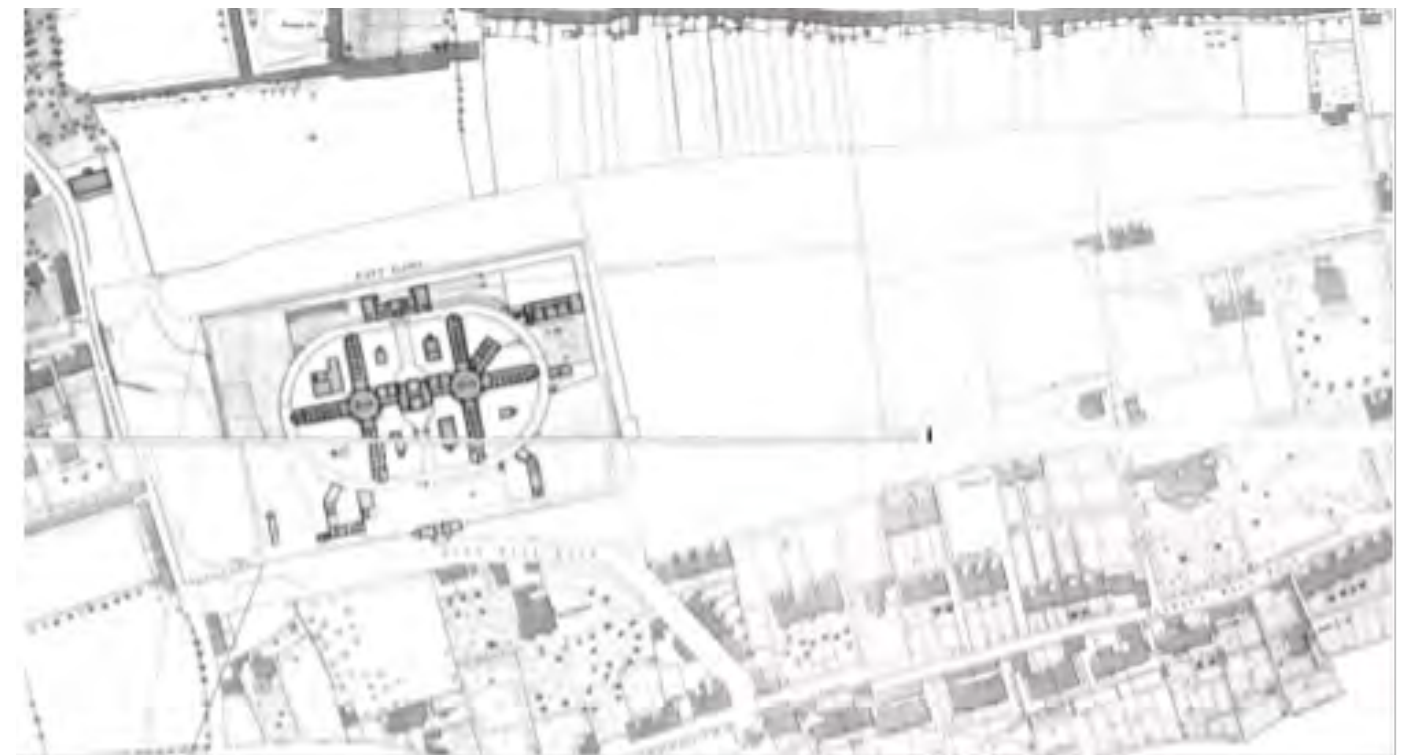


Figure 15.2: Composite sheets of 1:1056 scale Ordnance Survey map, surveyed 1869.

Apart from these private dwellings, a new Cork City Gaol was constructed in Sunday's Well to the design of William Robertson (and finished by Thomas Deane) and completed by 1824. The building of this gaol began a period of construction of large institutional buildings in the area, which included William Atkin's Our Lady's Hospital Lunatic Asylum to the west opened in 1852, the Good Shepherd Convent immediately to the east begun in 1870, and the Presentation Brothers Training School to the north which was complete by 1894. This building typology, of large institutional buildings, has been recognised in the current Cork City Development Plan by the inclusion of a proposed Architectural Conservation Area for Sunday's Well. Within this ACA, six distinct sub-areas have been recognised, with Sub-Area D comprising former institutional lands and including the City Gaol and the former Good Shepherd Convent. In addition, the area has been designated an Area of High Landscape Value (Vol 1/Chapter Policy 10.5).

The 1:1056 Ordnance Survey maps prepared for Cork city in 1869 show a high level of detail for both buildings and the landscape features associated with gardens, grounds and parks. Begun in 1870, the Good Shepherd Convent does not appear on this first edition, and the site on which the convent was shortly afterwards to be constructed is indicated as a clear site, free of any pre-dating structures or landscape features. (Figure 15.2)

By the time the 1:1056 OS map was revised in 1892, the Good Shepherd Convent, Magdalene Home, orphanage, gate lodge and all associated buildings had been constructed and are clearly depicted. (Figure 15.3) The chapel was also completed to the rear (north) of the convent by this time, as were extensive laundry buildings and a chimney adjoining the Magdalene home.



Figure 15.3: Composite sheets of Ordnance Survey map of 1892 (revision of 1869 1:1056 scale)

The first building occupied by the Good Shepherd sisters after their arrival to Cork in 1870 was a cottage on three acres on Buckston Hill, adjacent to the eastern boundary of the current site. This property was donated by James Hegarty, a building contractor and former Mayor of Cork. Hegarty constructed a residence and school on this site for the Order and to accommodate ninety children. This property was always intended as a temporary arrangement as the foundation stone for the Good Shepherd convent was laid on the 2nd of October 1870 in a ceremony attended by the Mayor. The Cork Examiner of 3rd October 1870 reported this event, noting that 'the work is already in active progress, the lines of the building being raised some feet above the ground.'

The Good Shepherd Convent and Magdalene home (known at the time as St. Finbarre's New Magdalene Asylum) was commissioned by Dr. Delany, Bishop of Cork and designed by George Coppinger Ashlin (1837-1921), an architect born in Cork. Ashlin was a pupil of Edward Welby Pugin in the 1850s and later went into partnership with Pugin, who gave him the responsibility of establishing a Dublin branch of the practice. From that time based in Dublin, the majority of Ashlin's commissions were for the Catholic churches, convents and monasteries throughout the country, first with the practice of Ashlin & Pugin, and later under his own name. The commission to design a convent and Magdalene asylum for the Order of the Good Shepherd in Cork came shortly after the partnership with Pugin was dissolved in late 1868. The convent and Magdalene asylum were constructed concurrently, on a seven acre site acquired in addition to the original three acres on Buckston Hill. (Much of this additional site was also donated by James Hegarty who also made the largest donation to the cost of the building work).

The Magdalene asylum was completed by July 1872 and the convent by May 1873. Initially children were housed in the asylum building in areas partitioned off for the purpose, but in 1874 construction began on a purpose built orphanage and industrial school located to the east side of the convent, also designed by George Ashlin. This was completed in 1875. In 1879 construction began on a chapel to the rear of the convent (believed to also have been designed by George Ashlin) which was completed in 1881. All of the construction work up to this time was completed by O' Flynn's contractors.

Other structures on the site include the gate lodge which is likely to have been constructed as part of Ashlin's scheme, an addition to the west end of the Magdalene asylum building dating to the 1950s (but replacing two earlier phases of dormitory and probationary home buildings, see Figure 15.5), and the bake house to the northeast of the orphanage / industrial school building which was constructed c.1910. All other structures, which once adjoined the rear (north) of the building have been demolished, including the chapel. These included laundry buildings associated with the Magdalene asylum which were originally part of Ashlin's scheme (with later alterations) and an infirmary to the rear of the orphanage (1889). (Figure 15.4)

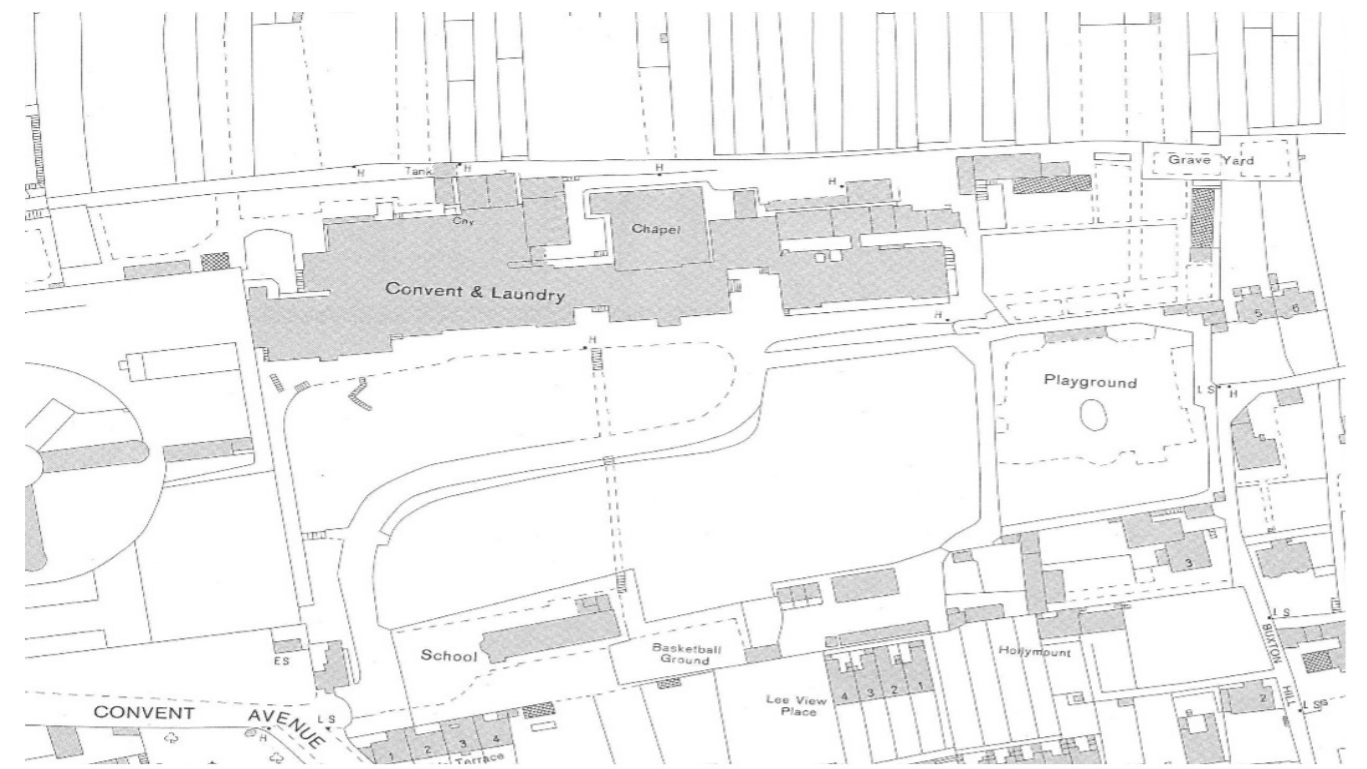


Figure 15.4: Ordnance Survey map surveyed 1974, showing all the Boyd Barrett infill buildings and reconstructed laundry west of the Magdalene home. Note the northwest cemetery is not indicated as a graveyard from the time of this OS edition. Also on this map, to the southern boundary, east of the gate lodge, is a new building marked 'School': a Hostel designed by Richard Boyd Barrett c. 1969



Figure 15.5: Post 1894 photograph of the Good Shepherd showing the recently constructed dormitory (and probably probationary home, completed by 1889). (NLI)



Figure 15.6: Undated photograph, most likely early 20th century (NLI).

Chronological Development

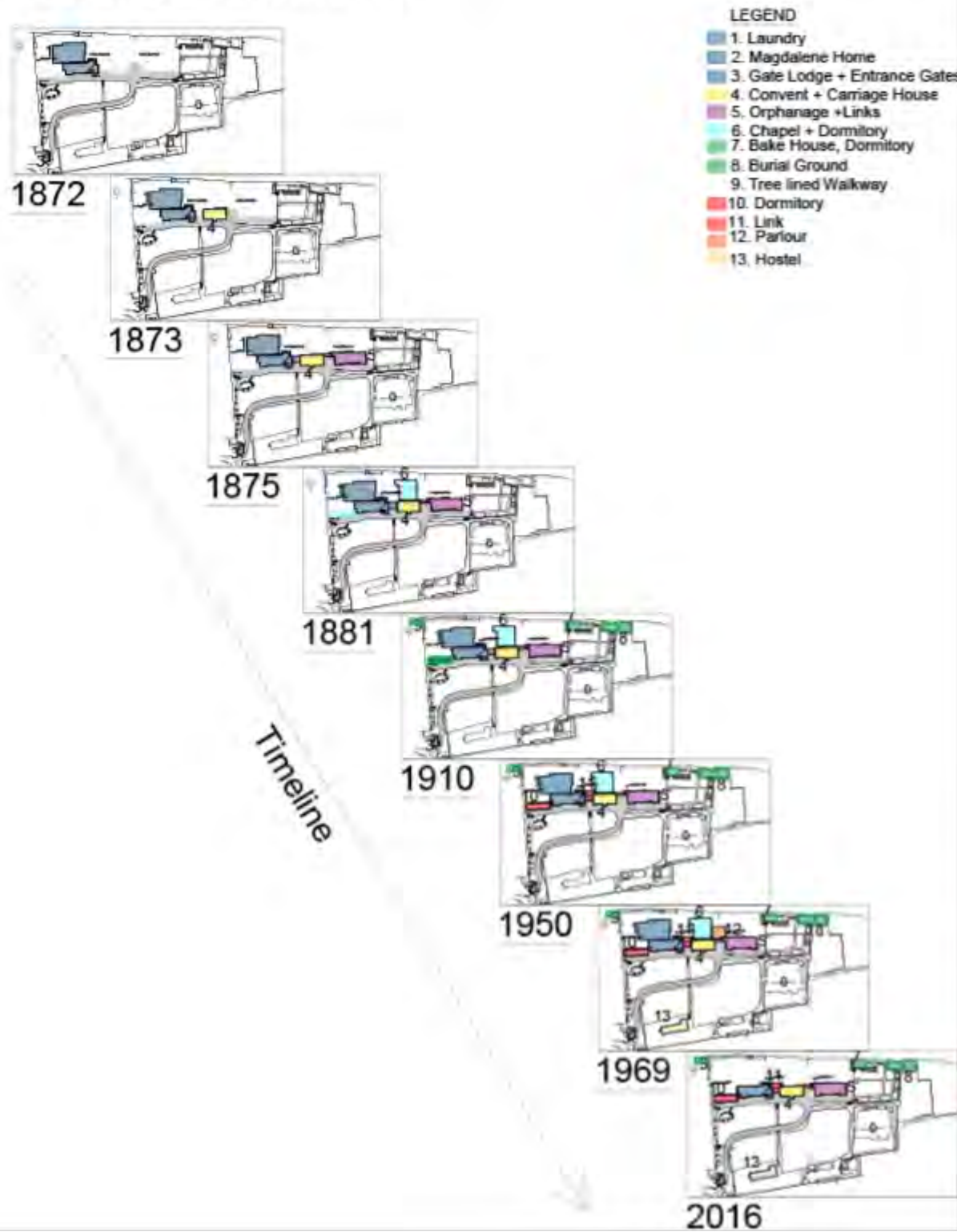


Figure 15.7: Chronological Development Drawing (JCA)

15.6.2 Description of Existing Structures on the Site

While the orphanage at the Good Shepherd was in use in the 1970s, the other buildings on the site were only finally vacated in the 1990s. As noted above, there have been a number of extensive fires at the Good Shepherd complex of buildings which have completely gutted first the convent building and chapel (2003) and then the former Magdalene Home (2012). Following the fire in 2003 the remains of the chapel building and all laundry and other buildings situated to the rear (north) of the main blocks were demolished. Subsequent fires leading up to 2025 have resulted in substantial loss of roof fabric to both the gate lodge and to the former orphanage.

The fires destroyed all floors, roofs, joinery, staircases, and interior finishes and fittings to the Magdalene home and to the convent and chapel. A large amount of this internal fabric was cleared out and disposed of following the fire (with the exception of some of the convent building due to inaccessibility). Therefore, the external walls and some elements of structural internal walls are retained to these two buildings.

The orphanage and industrial school building was not affected by fire until 2023 and 2024, although prior to this it retained the majority of its original fabric. Even before the recent fire damage, however, lack of use and maintenance over many years had led to a high level of water ingress which has resulted in extensive rot to the timbers of the roof, floors, staircases etc. The plan form of this building is largely as per the original design. Refer to JCA Conservation Report for further detail.

Originally linked by passageways, the three main building blocks were further joined in the mid-20th century by the construction of infill buildings between the blocks. That to the western end was single storey only and is largely demolished, while that to the eastern end is four-storey and remains intact. In addition to the main buildings the original gate lodge is retained, as is a small carriage house and adjoining bake house of the 20th century. The extensive accompanying grounds had two cemeteries, one of which is located within the boundary of the proposed development site.

The gate lodge roof and internal fabric suffered significant loss resulting from fire damage in 2023-4.

Individual Building Descriptions Photographs are contained in Appendix 15.1

1. Magdalene Home (originally St Finbarre’s New Magdalene Asylum)

Architect George Coppinger Ashlin

Date Begun in 1870, foundation stone laid 2nd October 1870, and complete by summer 1872.

Location on Site West of Convent

Photographs Figs. 15.23 – 15.56

Description of Building Fabric

Multiple-bay three-storey structure, having gable-fronted end bays with triple windows, and a full height single bay bell tower to the west end comprising the main entrance. The building is constructed of coursed rubble limestone which is brick faced to the south, east and west elevations, having cut limestone facing to the rear elevation. Window sills and string courses are of cut limestone with architectural details picked out in either cut limestone or contrasting brick.

Surviving windows comprise timber single pane sashes in camber-headed or pointed arch openings. The top floor windows in the gable-fronted end bays comprise carved limestone mullions in the form of columns supporting a traceried overlight with a large rose window with some stained glass surviving.

Internally the building has been almost completely gutted by the fire which occurred in 2012. One original large cast iron staircase is retained to the refectory on the ground floor, and a large tiled surround to the kitchen which would originally have housed a cooking stove. One double leaf timber door with chamfer-edged panels survives to the party wall with the mid-20th century extension to the west. The walls of the ground and first floor had timber dado panelling (now lost) with plastered and painted walls above. The floors were timber, with the exception of the ground floor which was tiled (original tiles were replaced in the 20th century).

Historic Function

Built as a Magdalene Asylum, with a purpose-built laundry adjoining to the rear (north), intended to be operated by the women who lived in the asylum. 175 women were recorded as being resident in the asylum in 1889 (Irish Examiner, December 14th, 1889). For the first few years, prior to the construction of the orphanage, children were also accommodated in this building (those who attended the industrial school on Buckston Hill, built for the Order on their arrival to Cork). The building was subdivided by internal walls and the women and children were not allowed to mix at any time, apart from in the chapel. This chapel was located on the ground floor of the asylum until the purpose-built chapel was added to the rear (north) of the convent in 1880-1881.

Plan Arrangement

Four large rooms on the ground floor accessed from a rear (north) corridor which ran the full extent of the building. Two staircases, one on the western end and one to the north, provided access to the upper floors. The kitchen and refectory were located on the ground floor, with the laundry and associated areas connecting to the north side of the ground floor passage, but these buildings have been demolished. The first floor had the highest floor to ceiling heights (being described in the Irish Examiner, 17th July 1872, as ‘peculiarly lofty, being nineteen feet clear’), and comprised the classrooms and workrooms and the infirmary. The dormitories for the women were located on the second floor.

Level of Significance

The building is of both architectural significance (having been designed to a high standard by G.C. Ashlin) and of historical and social significance. It also displays a high level of craftsmanship in the construction techniques and decorative detailing. The building was considered exemplary at its time of construction, with the Irish Examiner describing it in 1872 as a ‘model institution, every improvement which experience has been able to suggest having been employed’. (17th July 1872, p.2). These ‘improvements’ included natural light, ventilation, washing conveniences, and a hot and cold water supply. However, the loss of all of the interior of the building and all of the roof structure following a fire in late 2012 has had a high impact on the architectural significance of the surviving building.

Current Condition

Poor. Almost no internal fabric survived the fire, and the external walls suffered fire damage. In addition, exposure to weathering for several years has accelerated decay, particularly in exposed areas such as the gables and wall tops. Historic weathering is also evident to the brickwork of the elevations, where the issue has been exacerbated by historic pointing with an inappropriate hard pointing mix.

2. Good Shepherd Convent

Architect George Coppinger Ashlin

Date Begun 1870, Completed 1873

Location on Site Central position, with Magdalene Asylum to the west and Orphanage to the east.

Photographs Figs. 15.62 – 15.74

Description of Building Fabric

Five-bay three-storey building, built over a basement and with dormer attic and projecting central bay in the form of a tower. The building is constructed of coursed rubble limestone which is brick faced to the south, east and west elevations, having cut limestone facing to the rear elevation. Quoins, windows surrounds, window sills and string courses are of cut limestone, with carved decorative details to the limestone dentil cornice. Additional architectural details are picked out in contrasting brick, and there is a carved tympanum with a statue of St Joseph above the second floor window of the tower.

No window frames have survived the fire to this building, but they can be seen in early photographs to have been single pane timber sash windows, set in the stone surrounds, which have carved limestone pilasters and tympana to the ground floor. The small rosette windows to the gabled dormer attic windows were leaded with coloured glass panes. A decorative overlight is retained above the entrance door on the east elevation.

The interior of the building was gutted by an extensive fire in 2003. Some tiled walls survive at basement level in the pantries.

Historic Function

Constructed as a convent for the Good Shepherd Order sisters who oversaw the running of the Magdalene Laundry and the Orphanage. The convent contained residential accommodation for the sisters as well as reception rooms and kitchens and associated pantries etc. to the basement.

Plan Arrangement

The main entrance door to the convent is located to the east elevation and leads to a large open plan entrance hall and stair hall, divided by a stone arcade. There was originally a second doorway in the west elevation of the convent which was removed when the infill building was constructed in the mid-20th century. The stair was located towards the rear (north) of the building. When the chapel was added to the rear (north) of the convent c. 1880, it was accessed from the large hallway at the ground floor level of the convent. The main reception rooms were located to the ground floor, with the nuns' cells to the upper floors. There is a small two- storey annex to the northeast corner of the convent, which is a later addition. This is accessed by way of an ornate cast iron spiral staircase, which survived the fire.

Level of Significance

The building is of both architectural significance (having been designed to a high standard by G.C. Ashlin) and of historical and social significance. The convent building received the most decorative treatment of the buildings in the complex, and originally had highly ornate roofs, cast iron ridge cresting and finials. In addition to the cast iron details, the decorative

carved stonework to the front façade displays a high level of craftsmanship and detail typical of the Victorian period. It is likely, given Ashlin's design of the exterior and ornate interior of the chapel (no longer surviving) that the convent interior was executed to a high standard which included decorative joinery and possibly plasterwork. However, as with the Magdalene Asylum, the complete loss of the roof and of all of the interior has affected the significance of the surviving building.

Current Condition

Poor. The fire which occurred in 2003 also damaged the fabric of the external walls, particularly with regard to the limestone window surrounds and mullions which are shattered across the internal faces. The wall tops, gables and chimneys have been exposed to weathering for many years since the loss of the roofs, and are in a very vulnerable condition. Historic weathering is also evident to the brickwork of the elevations, where the issue has been exacerbated by historic pointing with an inappropriate hard pointing mix.

3. Orphanage and Industrial School

Architect George Coppinger Ashlin

Date Begun 1874, completed 1875

Location on Site East of Convent

Photograph Figs. 15.77 – 15.91

Description of Building Fabric

Multiple-bay three-storey structure over half-basement, having gable-fronted end bays with triple windows to central floors. The building is constructed of coursed rubble limestone which is brick faced to the south, east and west elevations, having a rendered finish to the rear (north) elevation. Window sills and string courses are of cut limestone with architectural details picked out in either cut limestone or contrasting brick. The half-basement level is defined by a cut limestone plinth to all elevations (with the exception of the rear where the plinth is of rubble limestone). The main door to the building to the front of the orphanage appears to have originally been located in the single storey wing which joined the convent to this building (rebuilt in the mid-20th century).

Pitched slate roof survives. Small chimney stacks laterally placed to north side of gables. Large multiple flu laterally placed chimney stack which originally stood to the western elevation no longer survives. Many of the window frames survive in situ, and these are single pane timber sash windows in camber-headed or pointed arched openings.

There was a large fire in this building in December 1921 which appears to have caused extensive damage to the roof and top floor. The Irish Examiner of the 24th of December 1921 writes ‘..with the exception of the roof and top floor, the valuable set of buildings has been saved.’

Historic Function

Designed by G.C. Ashlin as an orphanage and industrial school. The building contained a kitchen and refectory at basement level, with classrooms and work rooms to the ground and first floors, and a large dormitory to the top floor. At the end of the 19th century a separate infirmary was added to the rear (north) of the building, but this is no longer extant. The Irish Examiner of December 24th 1924, reporting on the fire, notes that there were 170 children (all girls) resident in the orphanage at the time.

Plan Arrangement

Large, open-plan rooms occupy the majority of each floor. The basement level has a separate kitchen, while the floors above have large multi-functional rooms which may originally have been sub-dividable using timber folding doors. There is a vestibule to the northwest corner associated with the entrances to this area. The staircase is located in a stairwell to the rear of the building. An extension was added externally to the east side of the stairwell which provides an additional room on each floor.

Level of Significance

The building is of both architectural significance (having been designed to a high standard by G.C. Ashlin) and of historical and social significance. It is the later of the three original buildings on the site but was always intended (with temporary accommodation made for the children in the Magdalene home while it was being constructed). It does not have the same standard of external finish to the rear (the other two buildings have cut stone rear elevations), which probably reflects a lack of sufficient funds towards the end of the scheme.

Current Condition

Although disused for many years, this building was relatively intact until the most recent fires in 2023/4. About two-thirds of the pitched slate roof has been destroyed by fire. The building interior had previously suffered from severe water ingress, causing both wet and dry rot to badly affect the timbers. The surviving timber sash windows are badly broken and mainly without their glazing. The main timber staircase, which had been largely intact, has now been lost to fire, resulting in substantial loss to internal floors due to fire spread. Other internal elements such as timber dado panelling and other joinery items are badly decayed. This building also suffers from weathering of the brickwork, as found on the Magdalene asylum and the convent.

4. Extension to the West of the Magdalene Asylum

Architect James R.E. Boyd Barrett

Date 1952-54 (including reconstruction of laundry and laundry packing room, now demolished).

Location on Site Adjoining west end of Magdalene Asylum

Photographs Figs. Figs. 15.7 – 15.22**Description of Building Fabric**

Five-bay two-storey red brick structure having hipped slate roof. Random rubble and blockwork to rear wall. Centrally placed entrance having large overlight. Additional doorways to western elevation and to rear. Cast iron wheel guard to southeast corner of building stamped R. Foley, Cork.

Tripartite windows to ground and first floors of front (south) elevation having single pane timber sash windows. Small square window openings to rear (north) elevation to first floor only.

Plan Arrangement

Building is one room deep, having a series of rooms interconnecting with the laundry to the rear (north) which is no longer extant. First floor level connection with original Magdalene Asylum through party wall to east.

Historic Function

New packing room for laundry with dormitory accommodation to first floor. This building replaced two phases of 19th century additional dormitories and a probationary home.

Level of Significance

This building is of mid-20th century construction and is functional in terms of its architectural design and detailing. Not considered to be of high architectural or historical value.

Current Condition

Fair. Roof is intact and external brickwork is in good condition. However timber rot internally is extensive. Laundry building originally adjoining rear now demolished.

5. 20th Century Infill Buildings

Architect James R.E. Boyd Barrett

Date 1952 (extension) 1960 (new parlour)

Location on Site Between Magdalene Asylum and Convent Between Convent and Orphanage (parlour)

Photographs Figs. 15.57 – 15.61, 15.75 – 15.76.**Description of Building Fabric**

Five-bay four-storey brick extension located between the convent and the Magdalene asylum building, having limestone plinth. Large entrance to front (south) elevation with cut limestone architrave accessed by way of steps. Flat roof. Single pane timber sash windows.

Historic Function

The extension appears to have been constructed as additional accommodation to the convent, as it is interlinked with this building on each floor (but not with the Magdalene Asylum). The majority of the building comprises individual bedrooms.

The single storey building between the convent and orphanage was constructed for use as a parlour. This may have been an area used by visitors to the site. It involved the reconstruction of the single storey corridor link between the convent and the orphanage which had incorporated the main front entrance to the orphanage.

Plan Arrangement

The infill building has an entrance hall and staircase to the northwest corner which serves all floors. Upper floors comprise individual bedrooms leading off a central corridor.

The parlour was single storey with a flat roof having large rooflight, no longer extant.

Level of Significance

Neither of these buildings are considered to be of high architectural or historical value.

Current Condition

The infill building suffered some fire damage to the upper floor as a result of the convent fire. External brickwork in good condition. No internal access.

The front wall (south) of the parlour only is now retained.

6. Coach House and Bakery

Architect Unknown. Original coach house likely to have been part of Ashlin’s scheme, with later alterations at the time of addition of Bake house.

Date Coach house: 1870-1890 (likely to date to the original complex). Bake house: 1910

Location on Site Northeast of orphanage, to northern boundary.

Photographs Figs. 15.114 – 15.136**Description of Building Fabric**

The coach house is a narrow two-storey brick building built on a north-south access, having a carriage arch with large window above to the south elevation. Pitched roof with corrugated iron cladding. The northern elevation appears to have been rebuilt, with earlier fabric retained to the remainder of the building. Timber casement window.

The bake house is a single storey brick structure on a raised concrete foundation. Main doorway by way of steps having large overlight. Timber sash windows in pointed arch openings having contrasting brick voussoirs. Pitched slate roof with chimney stack to east end. Original oven clad in glazed tiles is retained, manufactured by the Cork based Hive Iron Works.

Historic Function

The coach house accommodated a coach (and possibly later van) to the ground floor with associated storage above.

The bake house was constructed as a working bakery with storage for the bread produced there.

Plan Arrangement

The coach house has an open plan space to each floor.

The bake house is divided into two internal spaces, with the bakery located to the east.

Level of Significance

The coach house is likely to have been designed as part of the original complex but has undergone alterations including the reconstruction of the front elevation. The bake house is not associated with Ashlin’s original scheme but has social and historical significance, in addition to the industrial archaeological value of the surviving oven.

Current Condition

The original roof has been lost to the coach house which is now partially clad in corrugated iron. The timber board floor is intact but in poor condition.

The bake house has substantial ivy growth to the external walls and to the chimney stack. Windows have been removed and the openings blocked up. The oven is retained to the interior of the main room (with damage to one area). Timber floors and timber panelled doors and cupboards are retained, as is the open truss roof.

7. Gate Lodge

Architect George Coppinger Ashlin

Date c. 1870-74

Location on Site Southwest of the main buildings, on Convent Avenue. Entrance to the site.

Photographs Figs. 15.92 – 15.113**Description of Building Fabric**

Three-bay single storey gate lodge with dormer attic and gabled entrance porch. Pitched slate roof with tall, centrally placed brick chimney stack. Brick faced building having coloured brick banding and architectural detailing. Limestone plinth. Brick curtain walls to gateway with cut limestone piers and plinth.

Historic Function

Gate lodge and entrance way to the Good Shepherd complex. This building is likely to have been constructed as part of the original scheme which would have required a gate lodge and is constructed using the same materials and decorative detailing as found on the Magdalene Asylum.

Plan Arrangement

Two rooms at ground floor level with a single-storey extension to rear, with two small dormer bedrooms accessed directly off staircase. Porch to front door having entrance on both sides.

Current Condition

Poor. Roof was badly damaged / lost by recent fires, windows boarded up with timber sashes retained. Some internal elements retained, with further recent fire damage, but water ingress in many places due to roof damage.

8. Nun’s Cemetery

Architect N/a

Date First indicated on 1899-1900 OS map.

Location on Site Northeast cemetery: northeast corner of the garden, in small piece of additional land acquired just outside northeast corner of the original boundary of the site.

Photographs Figs. 15.146 – 15.148

Description

Northeast cemetery: high masonry walls to north and east, low rendered plinth walls to remaining boundaries. Cast iron railings and gate.

Historic Function

The northeast cemetery was the second cemetery on the site (the earlier cemetery is located to the northwest corner of the site and is the location of burials associated with the Magdalene laundry) and contains burials of members of the Good Shepherd Order with uniform gravestones marking the individual plots. In addition, there are monuments to the first and second Mother Superiors of the convent, to Ellen and James Hegarty, and the grave marker and statue for the grave of Little Nellie. Several of the graves of the sisters predate the identification of this area as a cemetery on OS maps, which may indicate that they were relocated from the earlier burial ground.

Plan Arrangement

N/A

Level of Significance

The graveyard is of high social and historical significance

9. Agricultural Buildings

Architect Unknown

Date Some buildings indicated on OS map c.1900, with additional buildings shown on mid-20th century maps.

Location on Site Near the southern boundary of the grounds.

Photographs Figs. 15.143 – 15.145

Description of Building Fabric

A number of single storey outhouses located within an enclosed yard surrounded by stone and brick walls. Gateway in north wall which leads to path to main convent buildings, structures of rendered masonry and galvanised roofs. One building to the southwest corner of the yard has corrugated iron walls and pitched roof, with double leaf sheeted timber doors and appears to have had a garage function or similar.

Historic Function

Some of the buildings appear to be of an agricultural nature (to house poultry or pigs). All buildings appear to have been constructed as outbuildings and not to have had domestic uses.

Plan Arrangement

Varies depending on the building and building’s function. Some are subdivided by full height walls, others by low partitions to provide stalls etc.

Level of Significance

These buildings are not considered of architectural significance.

Current Condition

Varies. A number of the buildings are very overgrown and inaccessible. Others have collapsed areas of corrugated roof covering. Largest building of rendered masonry walls with corrugated roof (to house animals or hens) is structurally sound. All openings are boarded up.

10. Grounds and Garden Features

Architect N/A

Date From 1870s

Location on Site Whole development site

Photographs Figs. 15.137 – 15.142

Description of Building Fabric

The Good Shepherd complex is enclosed by high random rubble stone walls, with the entrance located on Convent Avenue comprising stone piers and flanking walls adjacent to the gate lodge containing cast iron gates. This was the only entrance to the complex.

Remnants of a gazebo type structure are retained to the eastern boundary of the site in very poor condition. This structure appears to be of modern construction.

A pond is shown on 20th century OS maps situated to the eastern side of the gardens. This area has been largely covered with rubble from the buildings demolished on the site, and is heavily overgrown. However, the pond appears to have been retained.

A statue of Christ, badly damaged, is located on the upper walkway to the north of the site. This retains a plaque reading ‘Pray for the donors Mr. and Mrs. O Meara, Queenstown’.

The original avenue, and remnants of historic walkways are retained to the grounds although heavily overgrown. These include the upper walkway (with access steps now removed), a short walkway along the western boundary with steps intact, and a path from the centre of the site to the eastern boundary wall, with a ramp leading to the higher terrace.

Historic Function

An avenue leading from the entrance gates to the convent building and terraced grounds were laid out at the time of construction of the Good Shepherd complex. This tree lined avenue, an upper walkway, a cemetery (northwest corner), high stone walls, and a formal garden to the northeast corner are all indicated on late-19th century OS maps. 20th century OS maps indicate the pond and an area to the east of the grounds named as a playground. The ground north of the avenue, in front of the Magdalene Home, appears to always have been planted with trees.

Plan Arrangement

N/A

Level of Significance

The grounds of the former Good Shepherd convent are significant as they form the setting for the buildings. The terraces were constructed to cope with the steeply sloping site, the tree lined avenue appears to have been part of the original concept, and the series of pathways and walks relate to the specific functions of the various buildings.

Current Condition

The majority of smaller elements appear to have been lost (for example additional statues recorded in previous reports and other small garden structures). The grounds are heavily overgrown and have been damaged by the large amount of building rubble which has been dumped on the site. Excavations following the demolition of the chapel and laundry buildings have removed access to the upper walkway.

11. Hostel

Architect JRE Boyd Barrett

Date The exact date of construction of the building is unknown, but available evidence suggests a date between 1969 and 1974. This is based on OS map evidence and drawings held in the Boyd Barrett Murphy O’Connor Architects drawings collection in the Irish Architectural Archive.

Location on Site At the southern boundary of the grounds, east of the gate lodge.

Photographs Figs. 15.137 – 15.142

Description of Building Fabric

Detached, multiple-bay with projecting end bay to west, two-storey former Hostel building. Hipped roof with tiled covering. Single-storey projecting bay to east end with entrance door and hipped roof. Brick external walls.

Historic Function

The building was constructed to provide residential accommodation, most likely for residents of the industrial school here.

Plan Arrangement

South-facing principal rooms arranged off northern corridor at ground floor. Bedrooms to north and south of central corridor at first floor level with bathrooms to east.

Level of Significance

The building is of a relatively functional design but is the work of a known architect, JRE Boyd Barrett, whose drawings for the hostel survive at the Irish Architectural Archive, which provides the building with local architectural significance.

Current Condition

Good. The building remained in use as residential accommodation until recently.

15.6.3 Significance of the Good Shepherd Site

The significance of individual elements on the site of the former Good Shepherd Convent are detailed in section 15.6.2. The original buildings in the complex, designed by G.C. Ashlin, are clearly of architectural significance. The buildings were considered exemplary at the time of construction, with the contemporary newspaper articles describing the Magdalene Laundry as a ‘..model institution, every improvement which experience has been able to suggest having been employed.’(Irish Examiner 17th July 1872, p.2). The ‘improvements’ included natural light, ventilation, washing conveniences, and a hot and cold-water supply. The design of the buildings is also discussed in contemporary articles where the Venetian style of Gothic architecture chosen by George Ashlin is described as simple in character but thought to have a ‘very effective appearance’. (Irish Examiner October 3rd, 1870, p.2). G. C. Ashlin is remembered for his contribution to the architectural heritage of the country during the second half of the nineteenth century and is particularly regarded for the number of buildings he designed for the Catholic community in the form of churches, convent buildings, friaries and schools, culminating in the commission for Cobh cathedral in partnership with E.W. Pugin. The architectural significance of Ashlin’s buildings at the Good Shepherd and the high quality of construction and craftsmanship is recognised by their inclusion in the Record of Protected Structures, and by the Architectural and Artistic categories of special interest awarded by the National Inventory of Architectural Heritage.

This complex of buildings also forms an integral part of the Architectural Conservation Area, identified as Sub-Area D: Former institutional lands in the current Development Plan. This sub-area ACA is made up of the former Good Shepherd buildings, the former City Gaol and a small number of houses on Convent Avenue only and therefore contributes very significantly from an architectural perspective.

In addition to their architectural significance, the history and former uses of the buildings on the site as a Magdalene laundry and orphanage have contributed to the historical and social significance associated with the former Good Shepherd convent. While originally conceived as a philanthropic endeavour to deal with a very real crisis in the city and to provide charitable accommodation for both women and children in desperate need, the associations with the institution today are often of a much more negative nature, following revelations of the conditions suffered by some of the residents of the Good Shepherd and other such institutions throughout the country, particularly in the 20th century. Today there is much sadness and resentment associated with the institution which for many people outweighs any architectural significance which might be associated with the structures themselves.

Finally, the northeast cemetery of the Good Shepherd, located within the development site, includes the grave and associated memorial of Ellen Organ, a child who became known as Little Nellie of Holy God, a child who had come to the orphanage at the Good Shepherd following the death of her mother. Ellen Organ died from tuberculosis and other complications at the age of 5

and was buried in St Joseph's Cemetery in Cork. She was thought to have shown an unusual understanding of Catholic doctrine and faith for her very young age and was therefore allowed to receive Holy Communion at the age of four and a half. Her life story is said to have influenced Pope Pius X in his decision to lower the age for receiving Communion from 12 to seven. Her body was later reburied within the grounds of the Good Shepherd convent in the cemetery used for members of the Good Shepherd order and her grave here became a place of pilgrimage and is still visited by some today. The social significance of this grave and the importance of access to this cemetery are recognised in addition to the more obvious architectural and historical significance of the site.

For more information see JCA's *Matrix of Significance*.

15.7 The 'Do Nothing' Scenario

The existing buildings on the site have for the most part been unoccupied for many years. A lack of maintenance has caused the buildings' external envelopes to decay, with resulting water ingress and damage to building interiors. This medium-term decay process has been significantly exacerbated by a series of fires, which have caused widespread significant damage and loss to buildings and to their interiors.

The short to medium term outlook in a 'do nothing' scenario would be further deterioration and loss of historic building fabric due to damage to roofs and building envelopes. The site would continue to be vulnerable to damage and loss as a result of fire.

15.8 Potential Significant Effects

15.8.1 Assessment Criteria:

The significance of the individual buildings on the site was assessed according to the Architectural Heritage Protection Guidelines for Planning Authorities (DOE 2004) which provides guidance on Part IV of the Planning and Development Act 2000.

The impact assessment will highlight how the elements of the historic structures' special character (those which contribute to their special architectural, historical, archaeological, artistic, cultural, scientific, social and/or technical interest) would be materially altered by the development.

The above eight criteria are used by the National Inventory of Architectural Heritage (NIAH) for the evaluation of buildings and structures. They are set out in *Architectural Heritage Protection: Guidelines for Planning Authorities* (Dublin: Department of Arts, Heritage & the Gaeltacht, 2011), as detailed below (italicisation denotes the exact wording in the *Guidelines*):

Architectural interest

The characteristics of architectural interest may be attributed to a structure or part of a structure with such qualities as the following:

(a) A generally agreed exemplar of good quality architectural design;

(b) The work of a known and distinguished architect, engineer, designer or craftsman;

(c) An exemplar of a building type, planform, style or styles of any period but also the harmonious interrelationship of differing styles within one structure;

(d) A structure which makes a positive contribution to its setting, such as a streetscape or a group of structures in an urban area, or the landscape in a rural area;

(e) A structure with an interior that is well designed, rich in decoration, complex or spatially pleasing.

Historical interest

The notion of historical interest underpins a general belief that it is worthwhile to preserve and conserve structures, sites and information from past centuries. The level of importance of the historical connection and its relationship to the existing fabric of the structure should be assessed. The historical interest relating to a structure or parts of a structure may be identified in various ways.

(a) A structure may have historical interest as the location of an important event that occurred in, or is associated with it, or by its association with a historic personality.

(b) A structure may have influenced, or been influenced by, an historic figure.

(c) Historical interest can be attributed where light is thrown on the character of a past age by virtue of the structure's design, plan, original use, materials or location.

(d) A structure may be a memorial to a past event;

(e) A structure itself may be an example of the effects of change over time. The design and fabric of the structure may contain evidence of its former use or symbolic meaning.

(f) Some fixtures and features may survive, for example in consistory courts and courts of law, that are important evidence of former liturgical or legal practice and may have special historical interest for that reason.

(g) Some unusual structures may have historical or socio-historical interest, for example, early electricity substations, 'Emergency' era military pillboxes or sentry-boxes. Although not yet of popular heritage significance, such structures can nonetheless have special historical and social interest.

(h) Special historical interest may exist because of the rarity of a structure. Either few structures of an identifiable type were built at a particular time, or few have survived. In either case, the extant structure may be one of the few representative examples of its time that still exists in the national, regional or local area. The rarity of surviving examples of a building type can ensure that special historical interest accrues to them. A planning authority should give careful consideration to protecting any examples of rare structures in its area, bearing in mind the degree to which past interventions may have altered their character.

Archaeological interest

Special archaeological interest is essentially defined by the degree to which material remains can contribute to our understanding of any period or set of social conditions in the past. The characteristic of archaeological interest in the context of the RPS must be related to a structure. Structures of special archaeological interest may also be protected under the National Monuments Acts.

Artistic interest

Special artistic interest may be attributed to a structure itself, or to a part of a structure, for its craftsmanship, design or decoration.

Cultural interest

The characteristic of cultural interest permeates the architectural heritage and can, in the broadest terms, include aesthetic, historical, scientific, economic or social values of past and present generations. Special cultural interest apply to:

(a) Those structures to which the Granada Convention refers as 'more modest works of the past that have acquired cultural significance with the passing of time';

(b) Structures that have literary or cinematic associations, particularly those that have a strong recognition value;

(c) Other structures that illustrate the development of society, such as early schoolhouses, library buildings, swimming baths or print works.

Scientific interest

The scientific interest, or research value, of a structure will depend on the importance of the data involved and on its rarity and/or quality. Its scientific interest should also be assessed as to how well it represents the area of research in question and the degree to which the structure may contribute further objective information.

Technical interest

Special technical interest in a structure relates to the art of the structural engineer in devising solutions to problems of spanning space and creating weatherproof enclosures. It may be found in structures which are important examples of virtuoso, innovative or unusual engineering design or use of materials. A structure may be of special technical interest for one or more of the following reasons:

(a) It displays structural or engineering innovation evidenced in its design or construction techniques such as the use of cast- or wrought- iron prefabrication or an early use of concrete;

(b) It is the work of a known and distinguished engineer;

(c) It is an exemplar of engineering design practice of its time. For example, a bridge may be a masonry arch, an iron suspension or a concrete span;

(d) It displays technically unusual or innovative construction or cladding materials, such as early examples of glazed curtain walling, prefabricated concrete plank cladding or Coade stone;

(e) Contains innovative mechanical fixtures, machinery or plant or industrial heritage artefacts that describe the character of production processes. The specifically industrial aspect of some sites like mill buildings, mill- ponds, tailings or derelict mines can often have a technical heritage value;

(f) Purely special technical interest can be ascribed to the innovative engineering qualities of a structure, as distinct from the building's appropriateness for use, or its appearance or form.

Social interest

The characteristic of special social interest embraces those qualities for which a structure, a complex or an area has become a focus of spiritual, political, symbolic or other sentiment to any group of people. A community may have an attachment to a place because it is an essential reference point for that community's identity, whether as a meeting place or a place of tradition, ritual or ceremony.

The configuration, disposition or layout of a space or group of structures, where they facilitate behaviour that would otherwise be difficult or impossible, may be of social interest.

This category of special interest may sometimes not be directly related to the physical fabric of a particular structure or structures and may survive physical alteration. Care should be taken to recognise the pattern or internal relations of the parts of the structure that constitute its special interest, in order to ensure that they be conserved.

Assessment of Impact Methodology

Using the above NIAH criteria, the heritage values of all the upstanding buildings within the proposed development were assessed in order to highlight those of special significance. In this context, 'special' is taken to mean buildings which are above the ordinary in terms of their evaluated attributes. Each building was accorded one of five possible heritage values:

Very High: Of international interest and very limited potential for substitution.

High: Of national interest and limited potential for substitution.

Medium: Of regional interest and limited potential for substitution.

Low: Of local interest only, with some potential for substitution.

Negligible: Of very low or no heritage interest whatsoever.

An evaluation was made of the likely impacts of the proposed development upon the heritage characteristics of all the buildings within the site. Changes to their physical attributes could potentially arise from:

- Indirect disturbance to upstanding buildings, e.g. vibrations from construction traffic, stockpiling of earth, and overshadowing by new buildings.
- Direct physical interventions to upstanding buildings, e.g. piecemeal demolitions, new extensions, and the replacement of existing fabric, fixtures and fittings

The magnitude of these impacts can range from 'major' in the case of drastic alterations or demolitions, to 'negligible' or 'none' where little no or change will ensue as a result of the impact. Such impacts can either be 'beneficial' or 'adverse' depending on whether the heritage character of the feature being impacted upon is enhanced or degraded as a result. A 'neutral' impact will be neither beneficial nor adverse.

- Major: *Beneficial* - Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality. *Adverse* - Loss of resource and/or quality and integrity of resource; severe damage to key attributes.
- Moderate: *Beneficial* - Benefit to, or addition of, key attributes; improvement of attribute quality. *Adverse* - Loss of resource, but not adversely affecting integrity; partial loss of/damage to key attributes.
- Minor: *Beneficial* - Minor benefit to, or addition of, one or several key attributes; some beneficial impact on attribute or a reduced risk of negative impact occurring. *Adverse* - Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one or several key attributes.
- Negligible: *Beneficial* -Very minor benefit to or positive addition of one or more attributes. *Adverse* -Very minor loss or detrimental alteration to one or more attributes.
- None: No loss or alteration of attributes; no observable impact, ie neither beneficial nor adverse.

The *significance* of an impact will depend on its magnitude and the heritage value of the feature being impact upon. It can range from 'neutral', through 'moderate' to 'very large'. Thus, a major negative impact on a feature of very high heritage value will have a significantly large adverse effect, whereas the same impact on a feature of negligible value will be relatively insignificant. For the purposes of this analysis, the levels of impact significance are defined as follows:

- Very large: Only very adverse effects are normally assigned this level of significance. They are generally, but not exclusively, associated with sites of international, national or regional importance that are likely to suffer a most damaging impact and loss of integrity. However, a major change in a site or feature of local importance is not precluded from this category.
- Large: These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the planning process.
- Moderate: These beneficial or adverse effects may be important but are not likely to be key factors in the planning process. Their cumulative effects may, however, be relevant if they lead to an increase in the overall adverse effect on a particular feature.
- Slight: These beneficial or adverse effects may be raised as local factors but are unlikely to be critical issue in the planning process.
- Neutral: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

The various permutations of 'magnitude of impact' and 'heritage value' will result in the following impact significances:

Heritage Value	Magnitude of Impact				
	None	Negligible	Minor	Moderate	Major
Very High	Neutral	Slight	Moderate/ Large	Large/Very Large	Very Large
High	Neutral	Slight	Slight/Moderate	Moderate/Large	Large/Very Large
Medium	Neutral	Neutral/Slight	Slight	Moderate	Moderate/Large
Low	Neutral	Neutral/Slight	Neutral/ Slight	Slight	Slight/Moderate
Negligible	Neutral	Neutral	Neutral/ Slight	Neutral/ Slight	Slight

The duration of the impact is also of relevance. Short-term impacts upon a site's built heritage may arise during the construction phase of a development. There is likely to be long-term residual impacts as well once the development is completed and the site operational.

15.8.2 The Proposed Scheme

It is proposed to develop both the existing historic buildings and part of the grounds associated with the former Good Shepherd Convent.

Bellmount Good Shepherd Ltd. are applying for planning permission for the development of the former Good Shepherd Convent site including the former nuns' residence on Convent Avenue, Sunday's Well. The proposed development relates to the provision of high-quality Purpose-Built Student Accommodation (PBSA). It comprises cluster apartments, individual studios, common amenity area and convenience retail facilities as well as open space recreational amenity space.

The proposed development includes the retention, refurbishment and re-use of the existing George Ashlin designed buildings. In addition, development is proposed in the northern part of the site which is concentrated to the sides and rear of the three main existing buildings - the Home, Convent and Orphanage. Development to the southern part of the site is also proposed in a manner which respects the existing buildings and the LPZ.

The proposed development includes an appropriate landscape response which respects and enhances the site's unique characteristics for the enjoyment of residents and for the benefit of the wider area.

The following sections will assess the likely impacts, both physical and visual, of this proposed development on the existing historic buildings to be retained on the site, on the historic curtilage of these buildings, and on the Proposed Conservation Area, sub-Area D.

Conservation Strategy

Development Strategy for the Site

The current scheme generally adopts the same conservation approach as the permitted scheme except where fire damage to the orphanage and gate lodge, in the period between initial inspection in 2016 and the revised scheme in 2025, has resulted in the majority of roofs and internal fabric being lost to both buildings.

Due to the extensive loss of fabric to the original buildings, particularly with regard to the fire damaged blocks, a full reinstatement of the buildings and full restoration of facades, roofs and interiors was not considered to be feasible. Upstanding wall masonry with remnants of plaster linings and charred remains of joist ends and windows are all that remain of the Magdalen home and convent buildings. Scars of dado panelling, charred door frames and shattered limestone corbels which supported floor beams remain as remnants on walls but none to a sufficient enough degree to allow a meaningful restoration of interiors.

The convent contains fire damaged collapsed debris preventing access. The Magdalen home building has been cleared of debris revealing ground floors to be predominantly concrete with some areas of damaged clay and encaustic / mosaic tiling apparent. The convent building contains a number of vulnerable arched dividing walls running north-south which are vulnerable and unrestrained. In the home building north-south dividing arch walls remain and are temporarily propped to prevent collapse. Prolonged weather exposure has resulted in vegetative growth on wall tops and gables and can be assumed has further weaken the binder in mortars and washed out finer mortars leaving much of the masonry remains unconsolidated. Of most concern are

window and door openings that don't retain relieving arches. Efforts have been made to frame the openings of the ground floor of the home building.

Although not initially subjected to fire damage, the orphanage building is now in very poor condition due to recent fire damage and prolonged water ingress. Externally roof timbers are lost and those remaining insitu are extensively charred and the majority of slates are missing. Windows are broken and rainwater goods damaged or missing, causing high levels of water to affect the interior fabric. Timber floors contain substantial holes and the main staircase has now been lost to fire damage. All areas display extensive rot. However, some internal walls, internal arcades and some of the floor beams/ wall corbels of this building survive albeit poor condition.

Due to the architectural and historical significance of the Good Shepherd buildings, and their location within an Architectural Conservation Area which is highly visible from the many parts of the city, the removal of all surviving buildings and parts of buildings was not recommended. Instead, it was advised that the primary surviving elements of the main three buildings be retained and restored, with the focus of restoration primarily on the front elevations and the reinstatement of rooflines sympathetic to the historic buildings. Interventions to the interior and extensive additions to the rear to allow for circulation and additional accommodation could be provided without losing the special architectural character of the main blocks as viewed from the south and southeast. With regard to other elements on the site, the full retention and restoration of the gate lodge and bake house is recommended in addition to significant historical landscape features.

Approach to the Repair of Existing Fabric (Principal Retained Buildings):

Description of Existing Building Fabric with Assessment of Condition

Magdalen Home (A2)

The external walls are all that survives of the building. These are rubble stone construction with an outer brickwork facing.

The loss of all of the interior of the building and all of the roof structure following a fire in late 2012 has had a high impact on the architectural significance of the surviving building.

The surviving elements essentially comprise the external walls (with a number of internal walls standing, or partially standing). In addition to significant fire damage, the fabric of the external walls, especially the wall plates and gable ends, have been fully exposed to weathering which has exacerbated their vulnerable condition.

Convent (A3)

As with the Magdalen Asylum, the complete loss of the roof and of all of the interior has affected the significance of the surviving building. All interior fixtures, fittings and finishes were lost in the fire, and neither of the timber staircases survived.

However, while the roof was lost in its entirety, the external elevations to the front, east and west have survived, including the central tower and the gables to the main elevation, which allows the original form of the building to be clearly read. The northern elevation survived the fire but is not in its original form, having undergone several later additions and phases of alteration.

While the stone lined window openings are generally extant, the limestone has been severely damaged by the fire in many places. In addition to significant fire damage, the fabric of the external walls, especially the wall plates and gable ends, have been fully exposed to weathering which has exacerbated their vulnerable condition.

Orphanage (A4)

While this building has retained elements of roof and internal floors extensive fire damage and water ingress due to loss of roof slating and fenestration has resulted in significant loss and deterioration of surviving fabric which has resulted in the loss of the main staircase and floors.

Both wet and dry rot are evident causing instability of floors and access is currently dangerous.

Strategy / Method Statement for Fabric Repair

Magdalen Home (A2)

External Walls: Retained surviving external elevations will include the front (south) elevation in its entirety, western entrance bay and gable ends. Brickwork will be retained and areas of damaged brickwork will be repaired with proprietary repair mortars or replacement brick units where bricks have deteriorated significantly. Areas of pointing loss will be repointed with lime based mortars.

There is concern that the existing walls due to their ongoing exposure to fire and weather, will not be suitable to take the load of reinstated floors and roof and a more sustainable conservation approach would be to tie these walls back to a new structure allowing stone and brick conservation to unfold without adding extra weight and stress to this fabric. In consultation with the structural engineer, the design team feel the most viable option considering both damage and the passage of time, is to construct an independent frame within this building which can then independently carry the weight of all new floor structures and roof. Original floor levels will generally be matched with the new floors, thereby allowing some of the original room qualities to be captured in the new development.

External Opes: Retain and repair existing window openings to the front elevation, including cut stone details/decorative brickwork. The stonework dressings to some windows has deteriorated due to exposure to heat generated by the fire. These can be repaired using proprietary repair mortars.

Replacement windows will be timber sashes as per original. An appropriate window with a glazing bar arrangement will be compatible with the presentation of this historic building.

Roof: As the roof structure is lost in it's entirety, a new roof form and intervention in the form of horizontal glazing is considered preferable to reconstructing the original roofscape. The new will, however, generally match the original in terms of pitch and material finishes which will be slate.

Internal Layout: As no internal fabric survives it is agreeable to remodel internally as required; ie. no significant interior structural elements or staircases are retained.

Convent (A3)

External Walls: Retain surviving external elevations to include the front (south) elevation, western entrance bay and gable ends. Brickwork will be retained and areas of damaged brickwork will be repaired with proprietary mortars or replacement brick units where bricks have deteriorated significantly. Areas of pointing loss will be repointed with lime based mortars.

There is concern that the existing walls due to their ongoing exposure to fire and weather, will not be suitable to take the load of reinstated floors and roof and a more sustainable conservation approach would be to tie these walls back to a new structure

allowing stone and brick conservation to unfold without adding extra weight and stress to this fabric. In consultation with the structural engineer, the design team feel the most viable option considering both damage and the passage of time, is to construct an independent frame within this building which can then independently carry the weight of all new floor structures and roof. Original floor levels will generally be matched with the new floors, thereby allowing some of the original room qualities to be captured in the new development.

External Opes: Retain and repair existing window openings to the front elevation, including cut stone details/decorative brickwork. The stonework dressings to some windows have deteriorated due to exposure to heat generated by the fire. These can be repaired using proprietary repair mortars. Replacement windows will be timber sashes as per original.

Roof: The existing roof structure is lost in it's entirely. However the new roof will generally match the original in terms of configuration, height and pitch. The south facing gable fronts will be retained and the turret roof reinstated. The new material finish will be slate. The two decorative stone chimney stacks will be retained and repaired.

Internal Layout: As no internal fabric survives it is agreeable to remodel internally as required; ie. no significant interior structural elements or staircases are retained.

Orphanage (A4)

External Walls: Retain surviving external elevations to include the front (south) elevation and side elevations. Brickwork will be retained and areas of damaged brickwork will be repaired with proprietary mortars or replacement brick units where bricks have deteriorated significantly. Areas of pointing loss will be repointed with lime based mortars.

There is concern that the existing walls due to their ongoing exposure to fire and weather, will not be suitable to take the load of reinstated floors and roof and a more sustainable conservation approach would be to tie these walls back to a new structure allowing stone and brick conservation to unfold without adding extra weight and stress to this fabric. In consultation with the structural engineer, the design team feel the most viable option considering both damage and the passage of time, is to construct an independent frame within this building which can then independently carry the weight of all new floor structures and roof. Original floor levels will generally be matched with the new floors, thereby allowing some of the original room qualities to be captured in the new development.

External Opes: Retain and repair existing window openings to the front elevation, including cut stone details/decorative brickwork. Replacement windows could be timber sashes as per original, or a contemporary alternative (eg. coated aluminium frames. No uPVC).

An appropriate window with a glazing bar arrangement will be compatible with the presentation of this historic building.

Roof: The intention is to retain and repair the principal roof trusses supplemented by a new roof structure. The existing pitch and roof configurations will be retained. Finishes will be slate. Notwithstanding the extensive recent fire damage the design team will endeavour to salvage sound principal roof timbers (trusses and purlins) of the West gable which are more extant and in better condition than the central portion of roof. The decorative arcaded screens at first floor level which act as bracing cross walls will be retained alongside the floor principal structure of corbel/beam support.

Internal Layout: The principal upper floor beams and corbels will be retained where they are deemed to be in good condition. They will be supplemented by additional compatible structure in timber and steel. Similarly the arcaded dividing walls running north-south will be retained and repaired.

Form and materials:

ASHLAR STONEWORK/MASONRY GENERALLY: Decorative stone will be repaired using mortar repair / stitching repairs as required. Where structural failure has occurred to stone elements new indents will be made with matching stone. Window embrasures, cill and string courses refer. Chimneys and vulnerable gables will be retrained and possibly tied back to a new independent structural floor and column system. This will reduce the burden of the loadbearing requirement of existing masonry walls.

BRICKWORK: Bricks to be repaired using mortar 'plastic' repair techniques using stabilising heli-bar stitching where required.

SLATING WORKS: Original roof forms to be reinstated utilising gable pitches as a guide. A natural slate to be used.

REPOINTING WORKS: All repaired masonry will be fully repointed with lime based mortars. Existing mortars will be analysed to inform replication mortars.

WINDOWS: All windows will be timber to match historic fragments and photographic evidence. They will be traditional sashes held in box frames with narrow (max 21mm) glazing bars matching original fenestration pattern.

RAINWATER GOODS: Any surviving decorative elements such as hoppers and holderbats will be retained and reused in conjunction with new cast iron.

The materials of the new extensions to the Protected Structures are chosen to harmonise with existing limestone and brick of the retained facades. Butler Cammoranesi design statement proposed that these extensions be "in light coloured brickwork with pre-weathered metal panels introduced to reduce the mass of the brick, much like the contrasting brick and stone coursing of the existing buildings."

The choice of materials of all new elements on the site, whether new build or interventions to protected Structures have been made by the design architects in conjunction with the conservation architects.

The design statement states "the proposed design takes cues from the existing buildings in terms of the limited palette of materials used".

Continuous dormer windows will be incorporated into the restored roof forms of A2 Home and A4 Orphanage. These will be detailed in dark colour powder coated metal to harmonise with the natural slate finishes.

Method Statement for Demolition

The walls of the Magdalen Home and Convent are considered vulnerable as they are not benefitting from lateral stability that would be provided from floors and roof structures.

Removal of sections of the rear walls (north) of both the Magdalen Home and Convent is considered the only viable option for allowing safe access for personnel and plant to enable the building works to proceed. This strategic decision will allow and facilitate the visible and more decorative facades to be retained, repaired to conservation best practice and incorporated in the new proposals.

A lower level of demolition is envisaged for the Orphanage as it retains its roof and floors structures and although in poor condition the intention is that any sound elements will be retained.

15.8.3 Demolition Phase

1. Magdalene Home (originally St Finbarre’s New Magdalene Asylum)

Proposed Works:

Partial rebuilding of existing building, former Magdalene home, and extension at rear to northwest corner. Provision of additional level of accommodation to the attic space. New six storey PBSA accommodation block with student amenity space at ground floor to the rear (north). All identified as Building A2.

Demolition Phase Impacts:

The stone gables to the rear of the Home building are to be retained. The remaining structure / external wall between the rear gables will be demolished, as previously permitted, to facilitate access for construction of the new elements.

This building is extensively fire damaged. All interiors, floors, roof and staircases are lost. There will be minimal loss of fabric as a result of the proposed works to the principal facades which will be retained and consolidated, including the gable ends to the front elevation.

Proposed work will involve a higher level of intervention to the rear elevation against part of which it is proposed to attach a new building. This proposal will mainly affect the northwest corner of the rear elevation. Removal of the later 20th century lift shaft to the rear elevation will have a positive impact on the building.

Existing internal walls comprise primarily two spine walls and will be retained to support the front elevation where condition allows.

2. Good Shepherd Convent

Proposed Works:

It is proposed to retain the principal facades of the building, with some elements reconstructed if necessary and to extend the existing building at the northeast corner. The original form of the roof, including the principal chimney stacks, will be reinstated. A new five storey building is proposed to the rear of the convent with PBSA apartments to the upper floors and parking to the ground floor level. All identified as Building A3.

Demolition Phase Impacts:

The building is extensively fire damaged with external walls and a number of (damaged) internal walls only retained. All finishes, stairs and roof have been lost in their entirety. There will be minimal impact on the principal facades which will be retained and consolidated.

The rear elevation has undergone several phases of work, with the chapel (one gable end wall only retained) added some years after the original convent was built, and a two-storey extension which survived the fire also of later construction. Removal of a later 20th century lift shaft will have a positive impact on the building’s appearance. The proposed new apartment block will adjoin this building to the rear elevation at the northwest corner, necessitating some loss of fabric in this area. The rear elevation will undergo some rearrangement to reflect the new apartment use. This will involve the removal of the remaining wall of the chapel which was demolished following the fire.

Existing internal walls are largely lost, following the fire to the building, and now comprise mainly partial elements to the ground floor. Elements of this structure will be retained if condition allows.

3. Orphanage & Industrial School

Proposed Works:

Retention of existing building and conversion to PBSA use, with extension to northwest corner. New six storey building proposed to north (rear) of existing building to accommodate apartments over five storeys with student amenity space to the ground floor. All identified as Building A4.

Demolition phase Impacts:

This building has suffered significant loss to its roof as a result of fires in 2023, leading to severe water ingress, leaving many of the timbers structurally unsound. The proposal is to work with the existing structure, including the internal arcades found to the principal floors. The form of the roof will be retained, with alterations made to the front pitch to incorporate a continuous south facing dormer to light the attic level accommodation which will result in some loss of existing fabric.

4. Extension to the West of the Magdalene Asylum

Proposed Works:

Demolition of existing building and replacement with new PBSA accommodation block (A1).

Demolition Phase Impacts:

The existing building will be removed in its entirety. This building is not considered to be of architectural significance and therefore the impact is expected to be neutral.

5. 20th Century Infill Buildings

Proposed Works: Demolition of the existing 20th century infill buildings.

Demolition Phase Impacts: Removal of existing buildings. Where these later infill buildings are attached to the historic buildings the fabric of the historic buildings will be made good. These 20th century infill buildings are not considered of architectural significance.

This demolition will have a positive visual impact as the demolition of these later buildings will re-establish G.C. Ashlin’s original building form and setting.

6. Coach House and Bakery

Proposed Works:

Retain and refurbish existing buildings for communal use for residents as meeting rooms and potential exhibition space. Identified as Building A6.

Demolition Phase Impacts:

The proposed use will necessitate the conservation and refurbishment of the buildings resulting in a positive physical and visual impact on the structure, currently in poor condition.

7. Gate Lodge

Proposed Works:

Retain and refurbish the existing building with extension to rear (north) to provide a crèche facility.

Demolition Phase Impacts:

The building will be retained, including roof structure and porch. Existing fabric to be conserved and interior refurbished. Proposed extension to rear will have minimised physical impact at the point of connection (to north elevation).

8. Nun’s Cemetery

Proposed Works:

Retain and restore cemetery.

Demolition Phase Impacts:

None. All historic elements to be retained, including decorative railings to perimeter and religious statues within the graveyard. Graves and existing grave markers to be retained, including the grave of Ellen Organ (Little Nellie of Holy God).

9. Agricultural Buildings

Proposed Works:

Demolition of buildings for construction of blocks B5.

Demolition Phase Impacts:

Loss of all existing buildings. These single storey outbuildings are not considered to be of architectural or other significance. These existing buildings appear to date from the 20th century and do not contribute to the architectural significance of the site and therefore the impact is considered neutral.

10. Grounds and Garden Features

Proposed Works:

Landscaping associated with proposed new apartment blocks, additional vehicular and pedestrian access, parking and amenity areas.

Demolition Phase Impacts:

Existing avenue to be retained. Existing upper walkway and cemetery to northeast corner of site to be retained. Additional hard landscaping for vehicular and pedestrian access. Landscape Preservation Zone to be retained (to front of former Magdalene home). Former pond in area of 20th century playground will be removed to accommodate new blocks B1 and B2 and associated landscaping.

The grounds are currently in poor condition and many smaller items such as religious statues, flower beds, etc. are no longer extant or have been covered by building rubble taken from the demolition of the laundry and chapel buildings.

The existing stone boundary walls which surround the site will be retained.

11. Hostel (Building B7)

Proposed Works:

Demolish Hostel and replace with a new three-storey mixed use building including convenience retail and café at ground floor and PBSA apartments on the upper levels.

Demolition Phase Impacts:

Loss of existing building. The existing Hostel is a late 20th-century building of modest architectural significance which does not make a substantial contribution to the architectural significance of the site. Given this low heritage value, the impact of its demolition may be regarded as Slight.

15.8.4 Construction Phase

1. A2 Magdalene Home (originally St Finbarre’s New Magdalene Asylum)

Proposed Works:

Partial rebuilding of existing building, former Magdalene home, and extension at rear to northwest corner. Provision of additional level of accommodation to the attic space. New six storey PBSA accommodation block with student amenity space at ground floor to the rear (north).

Construction Phase Impacts:

The proposal to retain the principal facades and to reinstate the original form of the roof will retain the architectural character of the building in all principal views from the south. In order to light the proposed apartments at dormer attic level it is proposed to insert a continuous south facing dormer window to the front ridge of the roof. This dormer window will be inserted as a contemporary element into the historic form of the roof and while it will have a visual impact, it will not negatively affect the special character of the building.

Original window openings to the front elevation, and to the southernmost bays of the side elevations, will be retained. New windows, to a design to be agreed, will re-enliven the facades.

It is proposed to retain the stone gables to the rear of the Home building and to reconstruct the intervening rear (north) elements of this building using the materials selected for the new residential block to the rear which will be physically linked to the existing Magdalene home building. The block which links the two elements will be of a reduced height, therefore allowing the retained historic building to retain its own form and identity.

The reinstatement of the roof and restoration of the principal elevations, currently in a ruinous state, will have a long term positive visual impact on this building and the complex of historic buildings on the site.

2. A3 Good Shepherd Convent

Proposed Works:

It is proposed to retain the principal facades of the building, with some elements reconstructed if necessary and to extend the existing building at the northeast corner. The original form of the roof, including the principal chimney stacks, will be reinstated. A new five storey building is proposed to the rear of the convent with PBSA accommodation to the upper floors and student amenity space to the ground floor level.

Construction Phase Impacts:

The proposal to retain the principal facades and to reinstate the original form of the roof will retain the architectural character of the building in all principal views from the south.

The proposed extension to the Convent building is placed axially to the existing building. The axial placement of the extension to the Convent building mirrors the previously lost convent chapel and is more sensitive to the existing buildings than the previously permitted layout. The ground floor has been extended to the east & west in-line with outline of the former chapel to provide a central amenity space for student use.

Original window openings to the front elevation, and to the southernmost bays of the side elevations, will be retained. New windows, to a design to be agreed, will re-enliven the facades which lost all of their timber sash windows following the fire.

It is proposed to reconstruct the rear (north) elevation of this building using the materials selected for the new student accommodation block to the rear. The former convent building and the new block will be physically linked.

The reinstatement of the roof and restoration of the principal elevations, currently in a ruinous state, will have a long term positive visual impact on this building and the complex of historic buildings on the site.

3. A4 Orphanage & Industrial School

Proposed Works:

Retention of existing building and conversion to PBSA residential use, with extension to northwest corner. New six storey building proposed to north (rear) of existing building to accommodate apartments over five storeys with student amenity space to the ground floor.

Construction Phase Impacts:

It is proposed to retain all existing elevations and the existing roof form (with large dormer insertion to the front pitch) which will conserve the architectural character of the building to a high degree. The continuous dormer attic proposed to the roof will be inserted as a contemporary element and while it will have a visual impact, it will not negatively affect the special character of the building.

The form of the rear elevation will be retained, with the new residential block adjoining to the northwest corner of the building. This linking element will be of a lower height than the existing historic building which will allow the original form of the former orphanage building to remain legible. Furthermore, the render finish of the north elevation of the existing building will be clearly distinguishable from the architectural panels of the new build element which adjoins it.

Original window openings to the front elevation, and to the southernmost bays of the side elevations, will be retained. New windows, to a design to be agreed, will re-enliven the facades where historic timber sashes are either missing or in poor condition.

The restoration of the roof and external facades, currently in poor condition, will have a long term positive visual impact on this building and the complex of historic buildings on the site.

Home (A2), Convent (A3) & Orphanage (A4) Buildings

The extent of the rear extensions to the existing buildings has been reduced by comparison to the previously permitted scheme and set back from the higher-level ground and path along the northern boundary at the rear wall and gardens of the houses on Blarney Street.

Previously proposed GF amenity accommodation, running east-west between the extensions and enclosing the courtyards of the Home, Convent & Orphanage has been omitted. This will serve to improve the overall quality of the courtyard spaces.

It is proposed that new building extensions about the existing buildings within the profile of the rear gable walls as shown in section and outline massing views.

Construction Phase Impacts:

The visual impacts of these amendments will be positive by comparison with the permitted scheme.

The reduction of the rear extensions represent a positive comparative impact to the previously permitted scheme as there will be greater space between the extensions and the rear boundary of the site.

The omission of the permitted GF amenity accommodation will have a positive comparative impact to the previously permitted scheme as the new geometry is more sensitive to the historic buildings.

The containment of new building extensions within the profile of the rear gable walls will have a positive comparative impact to the previously permitted scheme, representing a more sensitive transition from the existing retained massing to the new element to the rear.

4. Extension to the West of the Magdalene Asylum

Proposed Works:

Demolition of existing building and replacement with new student accommodation block (A1).

Construction Phase Impacts:

The proposed new building will have a narrower front elevation than the existing building, as it will not adjoin the existing Magdalene home building. A landscaped area is proposed between the west end of the Magdalene home and the proposed new block (A1) which will have a positive visual impact on the historic building.

6. Coach House and Bakery

Proposed Works:

Retain and refurbish existing buildings for communal use for residents as meeting rooms and potential exhibition space. Identified as Building A6.

Construction Phase Impacts:

The tiled bake oven to the bake house building will be retained, as will existing principal roof timbers (bakehouse) and sheeted timber doors where condition allows. The retention and repair of these elements will have a positive impact.

7. Gate Lodge

Proposed Works:

Retain and refurbish the existing building with extension to rear (north) to provide a café space and a security management office space.

Construction Phase Impacts:

Limited visual impact as the proposed extension is single storey and located to the rear of the building. It will not negatively affect views of the gate lodge as seen on approach to the entrance.

8. Nun’s Cemetery

Proposed Works:

Retain and restore cemetery.

Construction Phase Impacts:

Positive visual impact. Rubbish currently in this location will be removed. The setting of the cemetery will be enhanced by the proposed landscape works which include new walkways and easier access to the cemetery. Amenity lawns and an orchard are also proposed in the immediate vicinity.

9. Grounds and Garden Features

Proposed Works:

Landscaping associated with proposed new apartment blocks, additional vehicular and pedestrian access, parking and amenity areas.

Construction Phase Impacts:

No development is proposed to the Landscape Preservation Zone located to the front of the Magdalene home and Convent buildings where there is an area of mature trees, with the exception of vehicular access immediately to the south of the westernmost blocks. The existing line of the avenue will also be retained, therefore there will be no visual impact to this area of the site as a result of proposed landscaping works.

There will be a higher level of visual impact towards the centre and east of the site, where new apartment blocks are proposed. This area (with the exception of the single storey farm buildings) currently and historically has no structures in this location. Green areas will be retained between the new apartment blocks, and green screens are also proposed in the vicinity of each proposed apartment block, which, given the steeply sloping site, will mitigate the visual impacts of the buildings when viewed from the south.

The historic upper-level walkway along the northern boundary of the site will be retained and restored, resulting in a positive visual impact. The areas immediately to the rear of the three main blocks (Magdalene Home, Convent and Orphanage) will be landscaped, resulting in a further positive visual impact on an area which was previously filled with single storey laundry and outbuildings.

15.8.5 perational Phase

Operational Phase Impacts for Architectural Heritage:

The retained historic building elements will be protected from further deterioration and loss by the proposed reinstatement of the roof and repairs to building fabric. This will have a long-term positive impact on the architectural heritage of the site.

15.8.6 Summary

The following Table summarises the identified likely significant effects during the construction and demolition phase of the proposed development before mitigation measures are applied.

Table 15-1 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Damage to existing historic building fabric during construction and demolition process	Negative	Significant	Existing historic fabric to be retained	Likely	Long-term	Cumulative

15.9 Mitigation Measures

15.9.1 Incorporated Design Mitigation

The proposed scheme has been developed by Butler Cammoranesi Architects in consultation with Jack Coughlan Architects, who are acting as conservation architects. The following mitigation measures are considered to be attainable outcomes of the scheme, although the extent of existing fabric it will be feasible to retain and restore to the historic buildings will only be ascertained fully following detailed condition surveys.

The proposals comprise the reuse of the existing historic structures on the site, including the former Magdalene home, convent, orphanage/industrial school, coach house/bake house and gate lodge. Landscape features of significance such as historic pathways and the stone boundary walls are also to be retained.

The historic entrance and avenue approach to the buildings is to be retained, in addition to the mature planted area to the south of the Magdalene home, to reinforce the Landscape Protection Zone in this area.

15.9.2 Demolition Phase Mitigation

The proposed removal of the 20th century infill blocks between the 19th century buildings will re-establish the architectural character of the original scheme.

The historic buildings or building elements to be retained will be protected during demolition works. Detailed method statements for this protection should be prepared by the conservation architect prior to the commencement of works.

The gates, entrance and gate lodge will be protected from damage by construction vehicles during the course of the works. If necessary, gates should be removed and subsequently reinstated following the completion of works.

15.9.3 Construction Phase Mitigation

The new PBSA blocks will be located to the rear (north) of the existing 19th century buildings and towards the south and southeast of the site, in order to maintain the existing views of the historic buildings from the south.

All conservation works to be carried out to historic buildings, structures or building elements will be agreed and specified by the conservation architect prior to the commencement of works and will follow best conservation practice. Where new elements (such as replacement windows, doors, etc.) are to be introduced to historic fabric these interventions will be discussed and agreed between the design architects and the conservation architects.

The fires to the Convent, Magdalene home and Orphanage have had a serious impact on the condition of the stone and brickwork, which has been exacerbated by prolonged exposure to the elements. Detailed surveys of the condition of fabric to the areas of the structures to be retained will be required in order to establish the extent of surviving fabric which can be conserved and/or restored.

A detailed condition survey is also required for the orphanage/industrial school building in order to establish the extent of timber rot and other issues of condition. Based on the results of this, all original internal elements to be retained as part of the refurbishment should be identified.

Restoration or conservation repair work to historic fabric to be retained should be carried out by specialist contractors with relevant experience of working with historic buildings. The repair of brick to the front elevations, and particularly conservation works to the fire damaged fabric will require a high level of expertise.

The nuns' cemetery to the northeast of the site, in which Ellen Organ's (Little Nellie) grave is located, will be retained including all existing grave markers and monuments. Access will be provided to this cemetery for both residents and visitors to the site. A landscaped zone will be maintained in the vicinity of the graveyard to provide a contemplative area for residents and visitors.

The cemetery associated with the Magdalene home, located to the northwest of the grounds, lies outside the boundary of the development site. Notwithstanding, an access route from the grounds will be restored to this area which will follow the high-level walkway along the northern boundary wall. A second route will run along the western boundary wall and lead up steps to the location of the entrance to this cemetery.

15.9.4 Operational Phase Mitigation

A maintenance plan for the roofs and external envelopes of the retained historic buildings should be developed by the operators of the PBSA development in order to prevent future loss of historic building fabric.

15.10 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

15.10.1 Demolition Phase

The rear elevations of the three main historic blocks will be partially demolished or substantially rebuilt, as will part of the side elevations of these buildings and some internal walls. This will result in an irreversible loss of historic fabric and have a long-term impact on part of the historic buildings. However, the extremely fragile condition of the remains of these buildings following a number of fires has severely compromised their options for reuse.

Removal and replacement of internal fabric to the orphanage/industrial school will also result in a loss of historic fabric and a long-term impact on the historic structure. This can be mitigated by the retention of significant elements where condition allows.

15.10.2 Construction Phase

The restoration of the principal facades of the three main historic buildings, and the retention and restoration of the gate lodge and carriage house/bake house, will have a long term positive physical and visual impact on the protected structures.

The construction of new PBSA blocks to the rear (north), south and southeast of the existing historic structures will impact on the setting and curtilage of the former convent buildings and to a lesser extent, on the setting of the City Gaol complex. These visual impacts will be long term and follow the pattern of intensification of development in the surrounding area since these institutional buildings were first developed on what was, at the time, the outskirts of the city.

The proposals for the site include for conservation and protection of the nun's graveyard located to the northeast corner of the site. This area is currently at risk of damage from vandalism and lack of maintenance. The proposed work will have a positive long-term impact on this area and will also provide universal access to both residents on the site and visitors. In addition, the proposed landscaping scheme facilitates access to the (currently inaccessible) second graveyard to the northwest corner of the site (outside of the development site).

The building which formerly comprised a bake house and carriage house is to be retained and restored resulting in a positive long-term impact. This building will be available for a variety of uses which may include exhibitions, talks or the provision of information relating to the difficult past history of the use of this site and in recognition of the high social significance associated with the buildings and cemeteries to be retained as part of the proposed scheme.

15.10.3 Operational Phase

Summary of Post-mitigation Effects

The following Table summarises the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

Table 15-3 Summary of Construction Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Restoration of principal facades of three main historic buildings and retention and restoration of gate lodge	Positive	Very Significant	Three principal historic buildings and gate lodge/gates.	Likely	Long-term	Cumulative
Construction of new PBSA blocks to rear (north), south and south-east of existing historic building	Adverse	Moderate	Entire site	Likely	Long-term	Cumulative

15.10.5 Cumulative Residual Effects

The proposals for the former Good Shepherd site will result in the re-use and continued life and upkeep of historic structures, in additional to providing access to the cemeteries and a space to meaningfully acknowledge and engage with the history of the site.

15.11 Risk of Major Accidents or Disasters

This is not relevant to this chapter

15.12 Worst Case Scenario

If no changes take place and the site continues to remain disused and therefore vulnerable to ongoing decay and further fire damage, the historic buildings would ultimately be lost.

15.13 Interactions

Archaeology

15.14 Monitoring

Ongoing monitoring of the historic building fabric and roofs will need to be carried out in line with the Maintenance Plan to be developed, as outlined in Section 15.9.4

15.15 Conclusion

The present proposal is based on an understanding of the history of the site and its evolution. On the basis of this understanding, the existing historic buildings recognised to be of greatest significance are to be retained, conserved and re-used. Extensive fire damage and a long period of disuse has meant that much historic building fabric is in very poor condition, but the proposed scheme has been guided by a principle of retention of historic fabric where feasible to do so.

The restoration of the principal facades of the three main historic buildings, and the retention and restoration of the gate lodge and carriage house/bake house, will have a long term positive physical and visual impact on the protected structures.

The construction of new PBSA blocks to the rear (north), south and southeast of the existing historic structures will impact on the setting and curtilage of the former convent buildings and to a lesser extent, on the setting of the City Gaol complex. These visual impacts will be long term and follow the pattern of intensification of development in the surrounding area since these institutional buildings were first developed on what was, at the time, the outskirts of the city.

The proposals for the former Good Shepherd site will result in the re-use and continued life and upkeep of historic structures, in additional to providing access to the cemeteries and a space to meaningfully acknowledge and engage with the history of the site.

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Numerous 19th century and early 20th century photographs in the collection of the National Library of Ireland, available to view at: <http://catalogue.nli.ie/>



CHAPTER SIXTEEN

ARCHAEOLOGY

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CHAPTER SIXTEEN | Archaeology

16.1 Introduction

This chapter assesses the potential impacts that the proposed Large-scale Residential Development (LRD) within the site of the former Good Shepherd Convent may have on the archaeological heritage resource and based on this assessment; it presents appropriate mitigation measures. The chapter assesses the archaeological context of the site and its environs and a separate assessment of the extant architectural heritage resource within the site is presented in **Chapter 15**.

16.2 Expertise & Qualifications

This chapter was prepared by John Cronin and David Murphy of John Cronin and Associates. Mr. Cronin holds qualifications in Archaeology (B.A.; University College Cork (UCC) 1991) and Regional and Urban Planning (MRUP; University College Dublin (UCD) 1993) as well as a postgraduate qualification in Urban and Building Conservation (MUBC; UCD 1999). Mr. Murphy holds a primary degree in Archaeology (B.A.; UCC 2003) and is also a licence-eligible archaeologist. These individuals each have extensive experience in the compilation of archaeological and cultural heritage impact assessments. Mr Cronin has prepared numerous archaeological impact assessments for Large-scale Residential Developments and large-scale infrastructural projects including:

- Large-scale Residential Development (LRD) at Dunkettle, Cork City (for the O’Flynn Group)
- Large-scale Residential Development (LRD) at Castlelands, Mallow, County Cork (for Hallmark Developments)
- Luas Finglas – the proposed extension of the Luas Green Line from Broombridge to Charlestown, County Dublin (for Transportation Infrastructure Ireland (TII))

16.3 Proposed Development

The full description of the proposed development is outlined in Chapter 2 ‘Development Description’ of this EIAR.

16.4 Methodology

The assessment was based on a programme of desktop research combined with a field survey, geophysical survey and targeted archaeological testing of the proposed development lands which were carried out in 2017 (for a previous planning application) in order to identify any features of archaeological, architectural or cultural heritage significance likely to be impacted by the proposed development. The recorded and potential archaeological heritage resource within a study area encompassing the proposed development lands along with surrounding lands extending for 500 metres in all directions from the boundary of the development site. This study area was reviewed in order to compile a comprehensive archaeological heritage context for the location of the proposed development and surrounding lands.

The guidelines relevant to the assessment include the *Framework and Principles for the Protection of Archaeological Heritage* (Department of Arts, Heritage, Gaeltacht and the Islands 1999). The assessment was also informed by the Environmental Protection Agency (EPA 2022) *Guidelines for Information to be Contained in EIAR* and the International Council on Monuments and Sites (ICOMOS 2011) *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*.

The following sections present an overview of the methodology applied to determine the baseline archaeological heritage resource within the study area and the assessment of potential effects on this resource.

16.4.1 Desktop Research

Documentary research on the recorded and potential cultural heritage resource within the study area was carried out in order to identify any recorded archaeological and other cultural heritage sites and features. This information has provided an insight into the development of the study area over time and also assisted in an evaluation of the potential presence of hitherto unrecorded cultural heritage sites or features within the proposed development site.

The principal sources reviewed for the assessment of the recorded archaeological resource were the Sites and Monuments Record (SMR) and the Record of Monuments and Places (RMP) maintained by the National Monuments Service of the Department of Housing, Local Government and Heritage.

Other sources consulted as part of the assessment included the following:

- Cork City Development Plan 2022-2028 – This publication outlines the Council’s policies for the protection of the archaeological and architectural heritage resource within the city.
- UNESCO designated World Heritage Sites and Tentative List: A review was undertaken of the locations of the two world heritage sites in Ireland and other significant sites included in a Tentative List (2022) nominated by Ireland for inclusion.
- The Database of Irish Excavation Reports: This database contains summary accounts of licensed archaeological excavations carried out in Ireland (North and South) from 1970 to present. Current data was accessed via www.excavations.ie in July 2024.
- Archaeological Inventory of County Cork – This five-volume series was published between 1992 and 2010 presents summary descriptions of the known archaeological sites within the county at that time. A review of current SMR datasets published on the Historic Environment Viewer was carried out in April 2025 to ascertain if any archaeological sites have been identified within the study area identified since the publication of the inventory.
- Heritage Council’s Heritage Map Viewer: This online mapping source (www.heritagemaps.ie) collates various cultural heritage datasets sourced from, among others, the National Monuments Service, National Museum of Ireland, local authorities and the Office of Public Works.
- Literary Sources: Published literary sources consulted to assess the archaeological and historical record of the study area are listed in **Section 16.16** of this chapter.
- Cartographic sources: Available cartographic depictions of the study area dating from the 17th century onward were reviewed.
- Aerial/Satellite/LiDAR imagery: A review of publicly accessible imagery from Tailte Éireann, Google Earth, and Bing Maps was carried out to appraise whether they revealed evidence for any unrecorded archaeological sites within the proposed development site or its environs.
- Placenames Database of Ireland: This online database (www.logainm.ie) provides a comprehensive management system for data, archival records and place names research conducted by the State.

16.4.2 Field Inspection

All greenfield areas within the site were subject to a programme of systematic field-walking in 2016 and 2017 by the authors. Supplementary fieldwork and site inspection was undertaken in 2025, and no access constraints were encountered. The lands were assessed in terms of existing land use, any remnants of historic structures or landscaped features, vegetation cover and the potential for the presence of previously unrecorded archaeological and architectural heritage sites/features.

16.4.3 Geophysical Surveys

Target Geophysics conducted a geophysical survey, utilising Ground Penetrating Radar (GPR), of areas of proposed development within the curtilage of the wider development site that were suitable for survey. The GPR survey was undertaken in July 2017 (Detection Licence ref. 17R0115) following consultation with Cork City Council's Executive Archaeologist, Ms Ciara Brett.

16.4.4 Archaeological Test Excavation

Following the completion of the GPR survey and consultation with Cork City Council, a programme of archaeological test trenching was conducted between the 28th of September and the 9th of October 2017 that targeted all anomalies of potential interest identified in the geophysical survey as well as a representative sample of returns identified in the survey as being of less interest. The testing programme also consisted of linear test trenching of other areas of proposed development within the subject site that were not suitable for geophysical survey but are accessible and suitable for the mechanical excavation of archaeological test trenches. The proposed programme of archaeological testing was primarily focused on identifying any possible undocumented burial places or graves within the proposed development areas of the development site, however, the testing programme concurrently investigated for the presence of any unrecorded archaeological features, artefacts or deposits within these areas. In summary, the testing revealed no artefacts, features, deposits or remains of archaeological or cultural significance. The results are detailed in **Section 16.6.1** of this chapter.

16.4.5 Consultation

The archaeological content contained in Cork City Council's LRD opinion on the proposed development was reviewed as part of this assessment. This content includes items related to archaeological impact assessment, mitigation measures and reporting requirements which are addressed in this chapter. In addition, telephone consultation with Ms Ciara Brett, Executive Archaeologist of Cork City Council was conducted in April 2025 (following from a request to do so in the Planning Authority's LRD Opinion).

16.4.6 Impact Assessment

The methodology used for the assessment of potential impacts has been informed by the Environmental Protection Agency (EPA) *Guidelines for Information to be Contained in EIAR* (2022), in accordance EIA requirements of codified EU Directive 2011/92/EU as amended by EU Directive 2014/52/EU, per current Planning Legislation, concerning EIA assessment: Planning and Development Act, 2000 (as amended) (Part X) and in Part 10 of the Planning and Development Regulations, 2001 (as amended). The following summation of the criteria used to assess impacts is provided to concisely outline the methodology specifically applied to the cultural heritage resource. Assessment is achieved by a consideration of the duration, quality, type, value and magnitude of effect(s) on the cultural heritage resource:

Duration of Effect is assessed based on the following criteria:

- Momentary (seconds to minutes)
- Brief < 1 day
- Temporary <1 year
- Short-term 1-7 years
- Medium Term 7-15 years

- Long Term 15-60 years
- Permanent > 60 years
- Reversible: Effects that can be undone, for example through remediation or restoration

Quality of Effect on the cultural heritage resource can be positive, neutral or negative.

- Positive: a change which improves the quality of the cultural heritage environment (e.g. increasing amenity value of a site in terms of managed access, signage, presentation etc. or high-quality conservation and re-use of an otherwise vulnerable derelict structure).
- Neutral: no change or effects that are imperceptible, within the normal bounds of variation for the cultural heritage environment.
- Negative: a change which reduces the quality of the cultural heritage resource (e.g. visual intrusion on the setting of an asset, physical intrusion on features/setting of a site)

Type of Effect on the cultural heritage resource can be described as follows.

- Direct Effect – where a cultural heritage site is physically located within the footprint of the Project, which will result in its complete or partial removal;
- Indirect Effect – Effects on the cultural heritage environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway;
- Cumulative Effect -The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects;
- 'Do-nothing Effects' - The cultural heritage environment as it would be in the future should the Project not be carried out;
- 'Worst-case' Effects - The effects arising from a Project in the case where mitigation measures substantially fail;
- Indeterminable Effects - When the full consequences of a change in the environment cannot be described;
- Irreversible Effects - When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost; or
- Residual Effects - The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

The *Magnitude of Effect* is based on the degree of change, incorporating any mitigation measures, and is based on a consideration of the character, duration, probability and consequences (**Table 16.1**). The magnitude can be negative or positive and is ranked without regard to the value of the asset according to the following scale: High; Medium; Low and Negligible. The descriptions of magnitudes presented in Table 16.1 are based on guidance published in *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS 2011, 16-7).

Table 16.1 Magnitudes of Effect on Cultural Heritage Assets

Magnitude	Description
High	Most or all key archaeological or architectural materials affected such that the resource is totally altered Comprehensive changes to setting Changes to most or all key historic landscape elements, parcels or components; extreme visual effects; fundamental changes to use or access; resulting in total change to historic landscape character Major changes to area that affect Intangible Cultural Heritage activities or associations or visual links and cultural appreciation
Medium	Changes to many key archaeological or historic building materials/elements such that the resource is clearly/significantly modified. Considerable changes to setting that affect the character of the archaeological asset. Changes to the setting of a historic building, such that it is significantly modified. Change to many key historic landscape elements, parcels or components, visual change to many key aspects of the historic landscape, considerable changes to use or access, resulting in moderate changes to historic landscape character. Considerable changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.
Low	Changes to key archaeological materials/historic building elements, such that the resource is slightly altered/slightly different. Slight changes to setting of an archaeological monument. Change to setting of a historic building, such that it is noticeably changed. Change to few key historic landscape elements, parcels or components; slight visual changes to few key aspects of historic landscape; slight changes to use or access; resulting in limited change to historic landscape character Changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.
Negligible	Very minor changes to key archaeological materials or setting. Slight changes to historic building elements or setting that hardly affect it. Very minor changes to key historic landscape elements, parcels or components; virtually unchanged visual effects; very slight changes to use or access; Very minor changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.

Value/Sensitivity Criteria: While various national and local authority legal designations exist for elements of the Irish cultural heritage resource (see **Section 16.2.2**), there is no formal criteria for grading the value of individual constraints. The evaluations used in this assessment have been informed by guidelines presented in the *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS 2011). The evaluation of the values of cultural heritage assets is, therefore, not intended as definitive but rather as an indicator which contributes to a wider judgment based on the individual circumstances of each asset. The application of values included a consideration of their legal designations (e.g., National Monuments in State Care), condition/preservation; documentary/historical significance, group value, rarity, visibility in the landscape, vulnerability and amenity value on a case-by-case basis. Archaeological sites which possess little, or no surface expressions may retain low-medium sensitivity to effects on their wider setting while levelled archaeological sites that retain no visible surface traces are typically not sensitive to any setting effects. It is noted that archaeological

monuments, whether extant or levelled, have the potential to possess sub-surface attributes, including artefacts and other archaeological remains, which may possess values that cannot be discerned without recourse to archaeological excavation but are unlikely to be affected in the absence of direct negative effects. The values of known or potential cultural heritage assets are ranked according to the following scale as defined by ICOMOS: Very High; High; Medium; Low, Negligible and Unknown (**Table 16.2**). The values assigned to the identified constraints within the study area were determined following the completion of desktop research and site inspections and are outlined in **Section 16.2** of this chapter.

Table 16.2 Guidance Criteria Used For Assessing Values of Cultural Heritage Assets

Indicative Value	Examples of Asset Types
Very High (International Significance)	World Heritage Sites (including Tentative List properties) Sites, buildings or landscapes of acknowledged international importance Intangible associations with individuals or innovations of global significance
High (National Significance)	Nationally designated sites, buildings and landscapes of significant quality, rarity, preservation and importance Undesignated assets of the quality and importance to be designated Assets that can contribute significantly to acknowledged national research objectives Archaeological Landscapes with significant group value Intangible associations with individuals or innovations of national significance
Medium (Regional Significance)	Designated or undesignated assets that can contribute significantly to regional research objectives, including buildings that can be shown to have exceptional qualities in their fabric or historical associations Conservation Areas and historic townscapes containing buildings that contribute significantly to its historic character Intangible associations with individuals or innovations of regional significance
Low (Local Significance)	Assets compromised by poor preservation and/or poor survival of contextual associations Assets of limited value, but with potential to contribute to local research objectives Historic Townscape or built-up areas of limited historic integrity in their buildings and settings Intangible associations with individuals or innovations of local significance
Negligible	Assets with very little or no surviving archaeological interest Landscapes little or no significant historical interest Buildings or urban areas of no architectural or historical note; buildings of an intrusive character
Unknown Potential	Assets whose importance has not been ascertained Buildings with some hidden (i.e., inaccessible) potential for historic significance

The *Significance of Effects* is assessed based on a consideration of the Magnitude of the Impact (graded from High to Negligible, based on a consideration of character, duration, probability and consequences) combined with the Value (graded from High to Negligible, based on a consideration of significance/sensitivity) of the cultural heritage asset. The significance can be described as Profound, Very Significant, Significant, Moderate, Slight, Not Significant or Imperceptible (**Table 16.3** and **Table 16.4**).

Table 16.3 Description of Significance of Effects (per EPA EIAR Guidelines 2022)

Significance	Description
Imperceptible	An effect capable of measurement but without significant consequences
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences
Slight	An effect which causes noticeable changes in the character of the environment but without affecting its sensitivities
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
Profound	An effect which obliterates sensitive characteristics

Table 16.4 Significance of Effects Matrix (based on EPA EIAR Guidelines 2022)

Magnitude of Impact	High	Not Significant/ Slight	Moderate/ Significant	Significant/ Very Significant	Very Significant/ Profound
	Medium	Not Significant	Slight	Moderate/ Significant	Significant/ Very significant
	Low	Not Significant/ Imperceptible	Slight/ Not Significant	Slight	Moderate
	Negligible	Imperceptible	Not Significant/ Imperceptible	Not Significant/ Slight	Slight
		Negligible	Low	Medium	High
Value/Sensitivity of Asset					

16.4.7 Relevant Legislation & Guidance

The management and protection of cultural heritage in Ireland is achieved through a framework of national laws and policies which are in accordance with the provisions of the Valetta Treaty (1995)¹ (formally the European Convention on the Protection of the Archaeological Heritage, 1992) ratified by Ireland in 1997; the European Convention on the

Protection of Architectural Heritage (Granada Convention, 1985)², ratified by Ireland in 1997; and the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, 2003, ratified by Ireland in 2015.

The EIA Directives (from 1985 to 2014) set out the requirement for an EIA in European law. This assessment has been prepared in accordance EIA requirements of codified Council Directive 2011/92/EU as amended by EIA Council Directive 2014/52/EU, per current Planning Legislation, concerning EIA assessment: Planning and Development Act, 2000 (as amended) (Part X) and in Part 10 of the Planning and Development Regulations, 2001 (as amended). Ireland has transposed EU Directive 2014/52/EU by way of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 which came into operation on 1 September 2018. The Regulations provide for the transposition of the 2014 EIA Directive and give further effect to the 2011 EIA Directive by way of extensive amendments to existing planning law.

The national legal statutes and guidelines relevant to this assessment include:

- Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023;
- National Monuments Act 1930 (as amended);
- Heritage Act 1995 (as amended);
- National Cultural Institutions Act 1997;
- Architectural Heritage (National Inventory) and Historic Monuments (Misc) Provisions Act (1999);
- Planning and Development Act 2000 (as amended);
- Department of Arts, Heritage, and Gaeltacht (2011) Architectural Heritage Protection: Guidelines for Planning Authorities;
- Department of Arts, Heritage, Gaeltacht, and the Islands (1999) Framework and Principles for the Protection of Archaeological Heritage;
- International Council on Monuments and Sites (2011) Guidance on Heritage Impact Assessments for Cultural World Heritage Properties;
- Office of the Public Regulator (2022) A Guide to Architectural Heritage;
- Office of the Public Regulator (2021) Archaeology in the Planning Process;
- Environment Protection Agency (2022) Guidelines on the information to be contained in EIARs;
- Department of Housing, Planning and Local Government (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment; and
- European Union (2017) Environmental Impact Assessment of Projects: Guidance on the Preparation on the Environmental Impact Assessment Report.

The following section presents a summary of the legal and policy frameworks designed to protect the Irish cultural heritage resource and further information is available in the *Framework and Principles for the Protection of the Archaeological Heritage* (Department of Arts, Heritage, Gaeltacht and the Islands (1999) and the *Architectural Heritage Protection Guidelines for Local Authorities* (Department Arts, Heritage and the Gaeltacht 2011).

The administration of national policy in relation to archaeological heritage management is the responsibility of the National Monuments Service (NMS) which is currently based in the Department of Housing, Local Government and Heritage (DHLGH).

The Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 was signed into law in October 2023. The DHLGH

1 <https://www.coe.int/en/web/culture-and-heritage/valletta-convention>

2 <https://www.coe.int/en/web/culture-and-heritage/granada-convention>

published an online guidance document in relation to this Act in November 2023³ which provides an overview of its current status. While the Act is now law most of its provisions will not enter into force until the Minister has made one or more “Commencement Orders”. This means that section 7 of the Act (which provides for the repeal of the National Monuments Acts 1930 (as amended) and related legislation) has not entered into force. Accordingly, the National Monuments Acts 1930 (as amended) remain fully in force and will continue to do so for the time being. The Act contains transitional provisions which will, if necessary, enable certain aspects of the existing National Monuments Act 1930 (as amended) to continue in operation notwithstanding their repeal post-commencement of the Act while successor provisions are being brought fully into operation. This includes provisions enabling the Record of Monuments and Places to continue to have effect pending the establishment of a new Register of Monuments.

The National Monuments Act of 1930 (as amended), therefore, remains the primary means of ensuring the protection of the archaeological resource and includes a number of provisions that are applied to secure the protection of archaeological monuments. These include the designations of nationally significant sites as National Monuments as well listing sites in the Register of Historic Monuments, the Record of Monuments and Places, the Sites and Monuments Record as well as the placing of Preservation Orders and Temporary Preservation Orders on endangered sites.

Section 2 of the National Monuments Act, 1930 defines a National Monument as ‘a monument or the remains of a monument, the preservation of which is a matter of national importance’. The State may acquire or assume guardianship of National Monuments through agreement with landowners or under compulsory orders. The prior written consent of the Minister is required for any works at, or in proximity to, a National Monument in the ownership or guardianship of the State, the Minister or a local authority, or those which are subject to a Preservation Order. There are no National Monuments or archaeological sites subject to Preservation Orders located within the study area.

The locations of World Heritage Sites (Ireland) and the Tentative List of World Heritage Sites submitted by the Irish State to UNESCO in 2022 were also reviewed and none are located within the vicinity of the study area.

The National Monuments (Amendment) Act, 1994 made provision for the establishment of the Record of Monuments and Places (RMP) which comprises the known archaeological sites within the State. The RMP, which is based on the earlier Register of Historic Monuments (RHM) and Sites and Monuments Record (SMR), provides county-based lists of all recorded archaeological sites with accompanying location maps. All archaeological sites listed in the RMP receive statutory protection under the National Monuments Act 1930 (as amended) and the DHLGH must be given two months’ notice in advance of any works proposed at their locations.

The *Cork City Development Plan 2022-2028* includes a range of objectives in relation to the protection of the archaeological resource within the Cork City Council administrative area and these comprise: Objective 8.1 (Strategic Archaeology Objective), Objective 8.2 (Protection of the Archaeological Resource), Objective 8.3 (The Value of Archaeological Knowledge), Objective 8.4 (Protection of the Medieval Historic Core), Objective 8.5 (Protection of Cork’s Medieval City Wall and Defences), Objective 8.6 (Objective 8.6 (Protection of Burial Grounds), Objective 8.7 (Industrial Archaeology) Objective 8.8 (Underwater Archaeology), Objective 8.9 (Preservation of Archaeology within Open Space in Developments) and Objective 8.10 (Archaeological Management Strategy for the City).

The full descriptions of each of these archaeological planning objectives are available at <https://www.corkcity.ie/en/cork-city-development-plan/volume-1-written-statement/> (pages 272-274).

16.5 Difficulties Encountered

There were no difficulties encountered during the compilation of this assessment.

16.6 Baseline Environment

The assessment was based on a programme of desktop research combined with field surveys. The assessment has been informed by the results of a geophysical/GPR survey and targeted archaeological test trenching undertaken within the proposed development site in 2017.

There are no recorded archaeological sites within the proposed development site but there are three examples located within 500 metres of the site boundaries. (The Historic Environment Viewer of the Department of Housing, Local Government and Heritage (available at www.archaeology.ie) records stone slabs that are classified as monuments that are held in the Cork Public Museum; while the museum is located within 500 metres of the development site, these archaeological items will not be impacted from the proposed development.)

Table 16.5 Recorded archaeological sites located within 500 metres of the proposed development site

Mon. No.	Townland	National Grid	Classification
CO074-05401-	Sunday’s Well	16561, 07172	Shell Midden
CO074-05402-	Sunday’s Well	16561, 07172	Holy Well
CO074-092---	Carrignaveagh	16610, 07187	Country House

The western limit of the medieval core of Cork City (CO074-122---) is located c. 600m to the east of the proposed development site and contains several recorded archaeological monuments associated with the development of the city since the medieval period. While the subject site is located in a suburban area that has developed in recent centuries, a summary of the origins and development of the medieval city is presented below in order to provide overall contextual information.

Until the recent identification of Palaeolithic human remains within samples recovered in the early 20th century from a cave site in County Clare, the earliest recorded evidence for human settlement in Ireland dated to the Mesolithic period (7000–4000 BC) when groups of hunter-gatherers lived on the heavily forested island. While these Mesolithic groups did not construct settlements or monuments that have left any above ground traces, their sites can often be identified during ground excavations and by scatters of worked flints in ploughed fields. The Neolithic period (4000-2400 BC) began with the arrival and establishment of agriculture as the principal form of economic subsistence, which resulted in more permanent settlement patterns. As a consequence of the more settled nature of agrarian life, new site-types, such as more substantial rectangular timber houses and various types of megalithic tombs, begin to appear in the archaeological record during this period. Metalworking arrived in Ireland with the advent of the Bronze Age period (c. 2400–500 BC). This new technology introduced a new artefactual assemblage into the Irish archaeological record and this period was also associated with the construction of new monument types such as standing stones, stone rows, stone circles and fulachta fiadh. The development of new burial practices meant that the construction of funerary monuments such as cairns, barrows, boulder burials and tumuli or cists was fairly common during this period. The later first millennium BC and the early centuries AD, which comprise the Irish Iron Age, form the most obscure period in the Irish archaeological record. While, there is general agreement that the transition to an iron-working technology was a significant factor in the eventual demise of bronze working and was associated with societal changes, the nature of this transition in Ireland is far from clear.

3 <https://www.archaeology.ie/news/enactment-of-historic-and-archaeological-heritage-and-miscellaneous-provisions-act-2023-and>

While there are no recorded prehistoric sites within close vicinity to the proposed development, its setting on a south-facing slope above a river valley is a location type that has been commonly settled since the earliest known arrival of human community on the island. As noted above, the settlement sites of the prehistoric periods were timber-built and leave no above ground traces but sub-surface remains are often uncovered during ground works during developments. The discovery of the foundations of Bronze Age structures beneath the topsoil on the route of the Ballingcollig Bypass indicates a strong settlement pattern within the lands to the west of the area now occupied by Cork city during this period.

The early medieval period in Ireland began with the introduction of Christianity and continued up to the arrival of the Anglo-Normans in the 12th century (c. 400–1169 AD). The establishment of the Irish church was to have profound implications for political, social and economic life on the island and is attested to in the archaeological record by the presence of church sites and associated features such as formal burial sites and holy wells. The early medieval church sites were morphologically similar to ringforts but are often differentiated by the presence of features such as church buildings, graves, stone crosses and shrines. A number of the townland names in the suburbs to the west of the city record historical associations with early ecclesiastical activity, e.g. Bishops-Mill-Land, Ballinanaspig, Shanakiel and Gillabbey. While this period saw the emergence of the first phases of urbanisation around both the large monasteries and Hiberno-Norse ports the dominant settlement pattern of the period remained rural-based. The beginning of the urban settlement appears to have developed around an ecclesiastical centre close to the present-day location of St. Finbarr's Cathedral. The earliest mention of the monastery in the annals is in AD 682 when the death of Suibne, the abbot of the monastery, was recorded. The first account of Viking raiders in Cork dates to AD 821 and by the middle of the 9th century they had established a settlement centred on the river banks around the South Gate area. Over the course of the following centuries the Viking settlers inter-married with the native Irish and can be more accurately described as Hiberno-Norse as the period progressed. The settlement had already begun to expand into a trading port by the time the Anglo-Normans arrived in 1177 AD.

The arrival of the Anglo-Normans in the late 12th century broadly marks the advent of the Irish late medieval period, which continued up until the beginning of the post-medieval period in c.1550. The Anglo-Normans began construction of a city wall in the decades following their arrival in Cork. The medieval walled city gradually incorporated two riverine islands on the footprint of the present day North and South Main Streets, which comprised the central spine of the medieval city. The walled city was accessed by timber bridges at the North and South Gates and these were gradually replaced by stone bridges during the 18th century. After the siege of 1690 the Cork walls were allowed to fall into disrepair and sections began to be actively demolished. The RMP records a number of individual archaeological sites within the medieval city and the entire settlement is encompassed under the entries for the 'historic town' (CO074-034001-) and the 'town defenses' (CO074-034002-). While the walls no longer physically delimited the city by the start of the 18th century, the settlement was still concentrated in the overcrowded medieval core of North and South Main Streets although suburbs had begun to extend up the hillsides, initially in the areas now occupied by Shandon to the north and Barracks Street to the south.

The recorded site of a holy well and a shell midden is located c. 250m to the south-west of the proposed development site (see **Table 16.5**). Both sites were discovered within the townland of Sunday's Well in 1946 during road widening operations. The shell midden (CO074-05401-) extended from the west side of the well (CO074-05402-) for 'forty feet' and contained oyster shells, ox, sheep and pig bones; and 'sherds of glazed pottery typical of the seventeenth and eighteenth centuries AD' (O'Kelly 1946, 65). O'Kelly (ibid.) suggests '*because of the stratigraphic relationship of the midden to the well, it is possible that refuse was left behind by pilgrims who came to make "rounds" here*'. A stone tablet on a building which was built over the well had the inscription '*I.H.S. Sunday's Well 1644*' attached to it.

While a settlement in the Sunday's Well area was recorded in the 18th century, the majority of the existing streetscape dates to the 19th century. The Sunday's Well environs developed as a wealthy residential area in the nineteenth century and is characterised by a large number of fine nineteenth century villas. It is also the location of a number of striking

public and religious buildings. These include, the former Vincentians (1851-6) to the east, the former City Gaol (1820s), adjacent to the west, St. Mary's Shandon (1870s), to the southwest of Shanakiel, and somewhat further to the west on the Lee Road, the City Waterworks (1850s) and former Cork Asylum (1840s – 50s). Following the prosperity of the previous centuries, the area surrounding the proposed development site became a prosperous residential area and a suburb of the merchant trading city. This is demonstrated by a range of country houses, including two designated as archaeological monuments: 'Woodlawn House' (CO074-092---) located c. 175m to the south and 'Mardyke' house located c. 0.5km to the southeast (CO074-093---) on the opposite bank of the river. The expanding suburb was connected to the lands on the south banks of the River Lee during the 19th century following the construction of St. Vincent's footbridge at the city end and Wellington Bridge at the western end.

The Good Shepherd complex is located on an artificially constructed terrace on the south-facing hillslope above Sundays Well Road and overlooks the River Lee to the south. The layout and development of the buildings within the site are described in the architectural heritage assessment (**Chapter 15**) and a summary follows hereafter. The complex of extant structures and other features within the property consist of the Good Shepherd Convent; Magdalene Home; Orphanage and Industrial School; Infill Buildings; Coach House; Bake House; Gate and Gate Lodge; Agricultural outhouses and yard; garden features (walls, fountain, gazebo, statues); a convent graveyard and a Magdalene graveyard (outside the site). There was also a chapel and a number of ancillary service buildings, including laundries and an isolation ward, to the rear of the convent, home and orphanage. These were destroyed by fire on 7th July 2003 and their remains were subsequently demolished. The site is accessed from Sunday's Well Road via Convent Avenue, formerly known as Gaol Road. The Good Shepherd Order founded their first convent, Magdalene home and industrial school in Cork in 1870. They had been invited to do so by the "Catholic citizens of the city" in an attempt to tackle the "shocking immorality and which disturbs and infests our streets". On 28 March 1870, the first Good Shepherd sisters arrived in Cork: Sr. Teresa Devereux (Mother Superior), Sr. Josephine Nolan, Sr. Teresa of the Cross and Sr. Mary of the name Mary Halloran. Their first convent was accommodated in a cottage and three acres on Buckston Hill, to the east of the present site, which was donated to the order by Mr James Hegarty, building contractor and former Mayor of Cork. Within seven weeks a school/residence had been built to accommodate ninety children, into which fifty-two children were admitted in the first three months.

Later in the same year a further five-acre green-field site was acquired and the 1869 Ordnance Survey map (published 1871) of the area indicates that there were no pre-existing structures on this site. The construction of the present Magdalene home and convent building began in 1870 and were occupied by July, 1872 and May, 1873 respectively. The costs of building the home and convent were £6,000 and £8,500 respectively (Cork Examiner July 17, 1872). The Cork Examiner for July 17, 1872, gives a detailed account of the structures and draws particular attention to the fact that the home was well-ventilated and equipped with a hot and cold-water supply.

In 1874 work began on the orphanage and industrial school building and these were completed in 1875. Up until this time the children and women were housed in the same building, the Magdalene home, but were strictly segregated by internal dividing walls within the structure. The chapel to the rear of the convent was begun in 1879 and completed in 1881. It was built by O'Flynn contractors and replaced a temporary chapel which appears to have occupied a ground-floor room of the asylum building (Cork Examiner July 17, 1872, and April 28, 1880). The convent, home, orphanage and chapel were designed by George C. Ashlin, and it is likely that the present gate-lodge and coach-house were also part of his scheme and thus belong to the earliest phase of building on the site. The laundries to the rear of the home were also part of the original conception (Cork Examiner October 3, 1870) and are likely to have been built shortly after the home itself as their operation was essential to the financial upkeep of the institution. By the early 1890s the laundries had been extended to include a folding room and were well equipped with up-to-date machinery including gas-powered ironers and washers (Finnegan 2001, 223).

In April 1880, the convent was briefly visited by the Duke of Edinburgh (Cork Examiner April 12, 1880) and it was noted that one hundred and forty-five children were then resident in the orphanage where they were trained in knitting, crochet, and book-binding. The number of nuns in residence was indicated as twenty-five and "reclaimed women" as one hundred and sixty-five. It is interesting to note that as well as the laundry, the women were engaged in "knitting, netting and crocheting... the making of

vestments, and ...the making of fine boots, shoes and slippers" (ibid.). A dairy is also mentioned where milk and butter were produced for the community.

By 1889, one hundred and seventy-five penitents were in residence and an additional "dormitory" as well as a "probationary home" had been newly erected (Cork Examiner December 14, 1889). In 1899 a building was erected at the rear of the orphanage/industrial school as an infirmary or isolation ward for children with contagious diseases. In 1910 the bakehouse was added to the complex through a donation by Countess Murphy. A plaque on the building records the date 1911 but convent records indicate that it was already in operation in late 1910. Further building took place up to the mid-twentieth century with infill buildings being added between the three original blocks and a large extension being added to the west of the Magdalene home.

The complex appears to have been occupied to some extent until the early 1990s when it was sold to University College Cork. It remained undeveloped and was used as a temporary store. It was subsequently sold to Hegarty's in 2000.

As well as having associations with the architect George Coppinger Ashlin and receiving donations from members of society who were part of the 'public domain' in Cork city (e.g. James Hegarty, Mr Hamilton White, W. Green, Countess Murphy, etc.) the Good Shepherd complex also attained international significance for religious reasons associated with "Little Nellie of Holy God". Nellie was a young child who was housed in the orphanage and is said to have displayed signs of religious devotion before her death at almost four years of age, to such an extent that she requested (and received) First Holy Communion. Her international significance lies in the fact that her story much influenced Pope Pius X and was important in his decision to lower the age at which children could receive First Communion. She was buried in St Joseph's Cemetery in 1908 and her grave became a shrine for many. A year later, her remains were transferred to the convent cemetery at the Good Shepherd where they still provide a focus for believers.

16.6.1 Excavations Database

The Excavation Database contains summary accounts of all licensed archaeological investigations carried out in Ireland (North and South) from 1970 to the present day. The database contains numerous summaries of archaeological excavations within Cork City and includes a summary of a programme of archaeological testing (under Licence no. 17E0460) that was undertaken in late September and early October 2017 (by David Murphy, co-author of this EIAR chapter). The summary of the excavation⁴ was as follows:

In response to a request for further information from Cork City Council (Planning ref. no. 17/37279) in relation to a proposed development at the site of the former Good Shepherd Convent, Sunday's Well, Cork, a programme of archaeological testing was carried out at the site between 28 September and 9 October 2017. Testing was primarily focused on the identification of any possible undocumented burial places or graves within the proposed development areas of the site, however, the testing programme concurrently investigated for the presence of any unrecorded archaeological features, artefacts or deposits within these areas.

Test trenching was undertaken in four areas of the development site: Area 1 in the north-east corner; Area 2 in the south-east corner; Area 3 in the south-centre; Area 4 in the south-west corner. Prior to the testing programme, Areas 1 and 3 were subject to geophysical (GPR) survey, undertaken by Target Geophysics (17R0115); surface conditions in Areas 2 and 4 were not suitable for geophysical surveying. The trenching strategy targeted any discrete reflectors of possible interest in the surveyed Areas 1 and 3, while the strategy was designed to target a minimum of 15% of Areas 2 and 4 through the excavation of linear test trenches. Test trenches totalling an area of c.850m² were excavated across Areas 1, 2, 3 and 4; this represents 16.5% of the combined area of 5140m² which was available and suitable for testing within the development areas.

In Area 1, testing revealed that significant amounts of infill material, most likely sourced from the scarping of the hillside to the north of the site, was introduced in order to build up the ground level and negate the natural gradient of the terrain in the area. This was particularly evident along the southern margin of Trenches 3 and 4 where between 1m and 1.5m of introduced fill underlay the upper 'garden soil' of the kerbed garden plots within which the trenches were excavated. Cast iron water pipes and their associated excavations were evident within the infill layers. The upper humic layer contained frequent inclusions of late 19th- and early 20th-century ceramics, metal, plastic, brick and significant amounts of animal bone indicating that the kerbed plots of Trenches 3 and 4 (T.3, T.4) were regularly used as depositories of both organic and inorganic waste. Significantly less frequent amounts of inclusions were noted in Trenches 1 and 2 to the north of T.3 and T.4. On each occasion that bone fragments were revealed, machine excavation was halted, the surrounding area was cleaned back manually and the bone fragments were examined by the attending osteoarchaeologist. Machine excavation only resumed once the bone fragments were identified as being non-human and were retrieved from the soil.

A number of agricultural linear features were evident truncating the natural subsoil at the base of the trenches within Area 1, demonstrating the agricultural nature of the site prior to the development and expansion of the convent complex. All of the features were also manually investigated and generally proved to be shallow and ephemeral in nature.

Area 2 proved to be heavily disturbed by deposits of debris relating to the demolition of structures subsequent to the fires which occurred on the site in the 2000s. All seven trenches excavated across Area 2 revealed significant deposits of construction stone, brick, slate, metal, timber, plastic etc. Between 1m and 1.5m of this material was present across much of this area. Occasional animal bone inclusions were contained within the debris material, all identified bone was examined by the attending osteoarchaeologist.

Across much of the area, the original topsoil and upper subsoil levels were truncated prior to the deposition of the demolition debris in order to accommodate the material. This was indicated by the lack of an underlying sod/topsoil layer below the modern material and also the general absence of agricultural features at natural subsoil level. A tarmac surface was subsequently laid across much of the area, overlying the demolition debris and at the same level as the extant fountain feature which was in existence while the convent complex was in operation.

Area 3, in which ten targeted test trenches were excavated, was less disturbed with varying depths of topsoil and a 'B-Horizon' transitional type soil layer overlying natural subsoil across the area. The transitional soil layer may have formed naturally as a result of 'hill-wash' or alternatively may have been spread across the area in order to reduce the natural gradient of the slope. It was relatively sterile, containing fewer inclusions than the overlying topsoil which contained modern ceramic sherds, glass, metal and moderate amounts of animal bone. In the eastern portion of Area 3 the combined depth of the soil overlying natural subsoil was up to 1m deep in places. Generally shallow and ephemeral agricultural and cultivation linears, some of which contained late 19th-century pottery, were evident truncating the 'B-Horizon' layer within a number of the excavated trenches. Any disturbances which were evident in the natural subsoil were manually investigated and consistently proved to be caused by tree pitting and root action, as well as natural variations in the subsoil.

A probable back-filled geo-technical trial pit was uncovered in Trench 9, this was excavated to its full depth of c.3m, it contained no inclusions.

Testing within Area 4, which entailed the excavation of four short linear test trenches across the footprint of a proposed attenuation tank, proved to be uncomplicated with a shallow topsoil and underlying transitional layer directly overlying a largely sterile subsoil. Any disturbances evident on the surface of the natural subsoil were manually investigated with all proving to be the result of natural processes.

⁴ <https://excavations.ie/report/2017/Cork/0026016/>

Discrete deflectors of possible interest identified during the GPR survey and any additional ground disturbances identified during the testing programme within Areas 1, 2, 3 and 4 proved to be the result of modern non-archaeological disturbances, post-medieval agricultural activity or soil variations caused by natural processes. All identified disturbances were manually investigated. No artefacts, features, deposits or anything of archaeological or cultural significance was revealed during archaeological testing. The location of a possible sub-surface tank was investigated to the rear of the extant convent structures (Area 6), investigations proved no tank existed at the location.

16.6.2 Placenames

The boundaries and nomenclature of the Irish townlands were recorded and standardised by the Ordnance Survey of Ireland during the 19th century. The Irish roots of townland names often refer to natural topographical features but some name elements may also give an indication of the presence of past human activity within the townland, e.g. dun, lios, rath indicate the presence of a ringfort while names such as *temple*, *saggart*, *termon*, or *kill* suggest an association with a church site. The name of the townland immediately to the west of the subject site may indicate the presence of an early ecclesiastical site, i.e. Shanakiel ('old church'). The proposed development site is located within Carrignaveagh townland, which translates from the Irish *Charraig na bhFiach* as the "rock of the ravens". The Sunday's Well area takes its name from a well site reputedly located on the hillside formerly occupied by woodland known as *Sionnach-Coill* (foxes wood). While a settlement in the Sunday's Well area was recorded in the 18th century, the majority of the existing streetscape dates to the 19th century.

16.6.3 Summary of Baseline Environment

There are no recorded archaeological sites located within the boundary of the proposed development and no potential unrecorded sites were identified during the programmes of geophysical survey, archaeological test trenching and site inspections that have informed this assessment.

16.7 The 'Do Nothing' Scenario

A 'Do Nothing Scenario' will see to the continued preservation of the known and potential cultural heritage resource, including any potential unrecorded, sub-surface archaeological remains, located within the study area.

16.8 Potential Significant Effects

The proposed development site does not contain any recorded or identifiable potential archaeological remains. There are no recorded archaeological sites within the subject site and the proposed development will have a **negligible effect** on the recorded archaeological resource.

The earliest detailed map of the proposed development site is the first edition 6-inch OS map which shows the area of the proposed development site as undeveloped fields, interspersed with trees, which were extensively disturbed by the construction of the Good Shepherd complex in the 1870s.

The ground levels in the northern end of the proposed development site were extensively excavated in the second half of the 19th century in order to create a level building platform for the construction of the Good Shepherd complex buildings. Similarly, the area along the eastern boundary has been subject to change since the 19th century as it was utilised largely

as a garden area with associated landscaping, while the area located along the southern boundary was also developed during the convent era.

The central area of the proposed development site appears to have remained as undeveloped ground and consists of a gently sloping, south-facing, well-drained area of former pasture.

The ground surface within the north-western area is likely to have been disturbed by tree root activity and the construction of the access avenue. This portion of the site is indicated as an area of tree growth since the first edition 6-inch OS map.

The overgrown convent graveyard located in the north-eastern area of the proposed development site will be properly maintained as part of the proposed development and access to this graveyard will be facilitated. The Magdalene burial ground to the northwest is located outside the development boundary (and in separate private ownership). The proposed development includes the retention of the full length of the existing high-level walkway to the northern boundary which leads to this graveyard, and the provision of access to this walkway will facilitate future pedestrian access to this area. The proposed development will, therefore, have a neutral impact on this graveyard.

The hostel that was built in the latter half of the 20th century was constructed on a terrace formed in the southwestern portion of the development site. The original ground level was reduced and, as a result, the potential for archaeological remains in that portion of the site is negligible.

16.8.1 Demolition Phase

There are no archaeological sites listed in the SMR/RMP located within the boundary of the proposed development and the demolition works will, therefore, have no predicted direct adverse effects on the known archaeological resource.

16.8.2 Construction Phase

There are no archaeological sites listed in the SMR/RMP located within the boundary of the proposed development and the construction phase will, therefore, have no predicted direct adverse effects on the known archaeological resource. The programmes of geophysical survey and archaeological test trenching carried out in 2017 did not reveal any previously unrecorded, sub-surface archaeological remains within boundary of the proposed development.

16.8.3 Operational Phase

There are no recorded archaeological sites located within the boundary of the proposed development and no potential unrecorded archaeological sites or features were identified during the geophysical survey and test trenching investigations carried out in 2017 and no operational effects on the archaeological resource are predicted. There is limited intervisibility between the proposed development site and the archaeological sites listed in the RMP/SMR within the surrounding 500-metre study area. The proposed development will, therefore, result in no predicted indirect adverse effects on the setting of the recorded archaeological resource within the surrounding study area during the operational phase.

16.8.4 Cumulative Effects

The development will not result in any predicted significant cumulative direct or indirect effects on the archaeological heritage resource

16.8.5 Summary

The proposed development will not result in any predicted significant construction, operational or cumulative effects on the archaeological heritage resource.

16.9 Mitigation Measures

16.9.1 Incorporated Design Mitigation

The design of the proposed development was informed by the desktop studies and previous archaeological site investigations undertaken in 2017.

16.9.2 Demolition Phase Mitigation

No archaeological mitigation measures are recommended during the demolition phase.

16.9.3 Construction Phase Mitigation

Following the localised programme of ground penetrating radar survey and subsequent extensive programme of archaeological testing, the potential for archaeological remains and/or features being encountered the course of development is considered to be *very low*. However, following consultation with the Executive Archaeologist with Cork City Council, it proposed that **a programme of archaeological monitoring be undertaken by an appointed Project Archaeologist within any previously untested greenfield areas that will be impacted by the proposed development.** Furthermore, an archaeological watching brief is recommended during ground reduction works and sub-surface excavations within the immediate vicinity of the former convent buildings and hostel. In the event that any archaeological features are uncovered the Project Archaeologist will consult with the National Monuments Service and the Cork City Council's Executive Archaeologist in order to determine the appropriate mitigation strategy to be enacted. The Project Archaeologist will arrange for the services of a qualified osteo-archaeologist to be retained in the event that any human remains are encountered.

All maintenance works, including vegetation clearance, within the overgrown convent graveyard located inside the boundary of the proposed development site, will be supervised by the Project Archaeologist, in consultation with the Cork City Council's Executive Archaeologist, in order to ensure that the works comply with the NMS/Heritage Council guidelines as published in the *Guidance for the Care, Conservation and Recording of Historic Graveyards* (O'Brien 2011).

16.9.4 Operational Phase Mitigation

Following the successful implementation of the archaeological mitigation measures presented in Section 15.9, the operational phase of the proposed development will not result in any predicted effects on the archaeological resource that will require mitigation.

16.10 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

16.10.1 Demolition Phase

No predicted residual impacts on archaeological heritage will arise from the demolition phase.

16.10.2 Construction Phase

No predicted residual impacts on archaeological heritage will arise from the construction phase.

16.10.3 Operational Phase

No predicted residual impacts on archaeological heritage will arise during the operational phase.

16.10.4 Summary of Post-mitigation Effects

The indirect and direct effect is predicted to be negligible in magnitude and imperceptible in significance.

16.10.5 Cumulative Residual Effects

No cumulative residual effects on archaeological heritage are predicted

16.11 Risk of Major Accidents or Disasters

No predicted risks of major accidents or disasters are predicted to arise from any potential adverse effects on the archaeological heritage resource.

16.12 Worst Case Scenario

If the proposed development were to proceed without the implementation of the mitigation measures outlined above, then construction phase ground works will have the potential to result in direct adverse effects on any unrecorded, sub-surface archaeological remains that may exist within the proposed development site.

16.13 Interactions

The architectural heritage aspect of the environment assessed in this EIAR will have the potential to interact with the assessment of effects on the archaeological heritage resource. The architectural heritage assessment detailed in Chapter 15 of the EIAR was, therefore, reviewed during the compilation of this assessment.

16.14 Monitoring

A programme of geophysical survey (ground penetrating radar (GPR)) followed by archaeological test trenching was carried out in 2017 to assess archaeological potential of the development site. These site investigations revealed nothing of archaeological significance. It is recommended that, subject to grant of planning permission, that groundworks associated with the construction of the development be subject to a programme of archaeological monitoring. The requirement for archaeological monitoring of ground works was discussed with the Executive Archaeologist with Cork City Council (Ms Ciara Brett) following the issuing of the Planning Authority's LRD Opinion.

16.15 Conclusion

There are no recorded archaeological sites located within the boundary of the proposed development site and the programmes of geophysical survey and archaeological test trenching carried out within the development site in 2017 revealed nothing of archaeological significance.

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CHAPTER SEVENTEEN

SCREENING FOR MAJOR ACCIDENTS

CHAPTER SEVENTEEN

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CHAPTER SEVENTEEN | Screening for Major Accidents

17.1 Introduction

This chapter of the EIAR assesses the vulnerability of the proposed development to be affected by major accidents and disasters (MA&D). It includes an assessment of the potential of the proposed development to cause an increased risk of MA&D, and the likely significant adverse effects arising from potential MA&D.

In assessing likely potential and predicted impacts, account has been taken of both the importance of the attributes and the predicted scale and duration of the likely impacts. Section 8 of Annex IV of the EIA Directive specifies that the EIAR must include:

“A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies”.

A major accident can be defined as an acute or chronic accident or disaster, of human or natural origin, which occurs either as a consequence of, or which interacts with, the construction or operation of the proposed Scheme, and which has substantial consequences for people or the environment.

The Seveso III Directive (2012/18/EU) also requires Member States to apply land-use or other relevant policies to ensure that appropriate distances are maintained between residential areas, areas of substantial public use and the environment, including areas of particular natural interest and sensitivity and hazardous establishments (commonly referred to as Seveso sites). For existing establishments, Member States are required to implement, if necessary, additional technical measures so that the risk to persons or the environment is maintained at an acceptable level.

The Health and Safety Authority (HSA) is the Competent Authority in Ireland as defined by Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015, (COMAH Regulations 2015) which implements the Seveso III Directive in Ireland. The HSA is responsible for ensuring that the impacts of facilities which fall within the remit of this legislation are taken into account with respect to land use planning. This

The HSA does not currently consider the proposed development to be a COMAH facility. However, in order to ensure a comprehensive assessment of potential environmental effects due to risks of major accidents and/or disasters as relevant to the development, this chapter presents a review of the characteristics of the proposed development and of the project location to consider potential for accident scenarios that do not fall under COMAH reporting requirements.

17.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Saoirse Kavanagh, Executive Planning Consultant of McCutcheon Halley Planning Consultancy. Saoirse holds a Bachelor’s degree in Arts (International), majoring in Geography, and a Master’s in Planning and Sustainable Development. She has over 5 years’ experience working with multi-disciplinary teams and

has provided input into a variety of projects. In particular, she has co-ordinated the preparation of the following Environmental Impact Assessment Reports (EIARs) including the completion of the Introduction, Alternatives, and Population and Human Health chapters.

- Dunboyne Phases 1 and 2 Large Scale Residential Development, Dunboyne, Co. Meath
- Rathgowan Large Scale Residential Development, Mullingar, Co. Westmeath
- Castlelands Large Scale Residential Development, Mallow, Co. Cork.

17.3 Proposed Development

The full description of the proposed development is outlined in Chapter 2 ‘Development Description’ of this EIAR.

17.4 Methodology

In the EIA assessment, consideration is given to both the importance of an attribute and the magnitude of the potential environmental impacts of the proposed activities on that attribute.

The principal attributes (and impacts) to be assessed include the following:

- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any).
- Potential Seismic Activity (if any).
- Proximity to any COMAH/SEVESO sites.

COMAH/Seveso sites are defined as industrial sites that, because of the presence of dangerous substances in sufficient quantities, are regulated under the Seveso II Directive.

Impacts will be assessed with regard to the terminology in Table 3.3 of the EPA Guidelines (Table 1-2) of this EIAR.

17.4.1 Legislative Context and/or Source of Guidance

The assessment has been carried out generally in accordance with the following guidelines:

- EPA ‘Guidelines on the Information to be contained in Environmental Impact Assessment Reports’ (2022),
- EPA ‘Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements’ (2015), and;
- National Roads Authority (NRA) ‘Guidelines on Procedures for the Assessment and Treatment of Hydrology for National Road Schemes’ (2009).

17.4.2 Site Surveys/Investigation

The collection of baseline regional data was undertaken by reviewing the following sources:

- Office of Public Works (OPW) flood mapping data (www.floodinfo.ie).

Site specific data was derived from the following sources:

- Engineering reports prepared by MMOS Consulting Engineers.
- Site plans and drawings prepared and submitted with the planning application.

17.4.3 Consultation

The Health Safety Authority (HSA) were contacted in January 2025 regarding the proposed development and were notified that an EIAR was being completed. The Authority did not provide any feedback in relation to the proposed development or the content of the EIAR.

17.4.4 Difficulties Encountered

There were no difficulties encountered during the compilation of this chapter.

17.5 Description of Existing Environment

The description of the site context and proposed development is presented in detail in Chapter 2 – Project Description.

17.5.1 Site Description

The subject site is located in Cork City, to the west of the City Centre.

The site contains the buildings associated with the Former Good Shepherd Convent which are currently derelict and are falling into disrepair. Several fires on site have negatively impacted on the structural integrity of the buildings with elements of the buildings no longer in existence.

The site has a steep topography with the levels raising steeply from south to north. The main convent buildings are located at the highest point of the site and overlook the city to the south.

17.5.2 Flood Risk

A desktop study of the flood history at this site was carried out by MMOS Consulting Engineers.

The OPW Flood Maps show that there have been no flood incidents recorded at the site.

The River Lee is located c. 300m south of the site and has been impacted by various flooding events. The most significant recent flooding event occurred in 2009 – the extents of this flooding is shown in the maps below.

Due to the steep topography to the north of the river, the site and the immediate surroundings have not been impacted by past flood events. The site is therefore within Flood Zone C and is considered suitable for vulnerable residential development. The risk of fluvial, pluvial, and tidal flooding on the site is considered low.

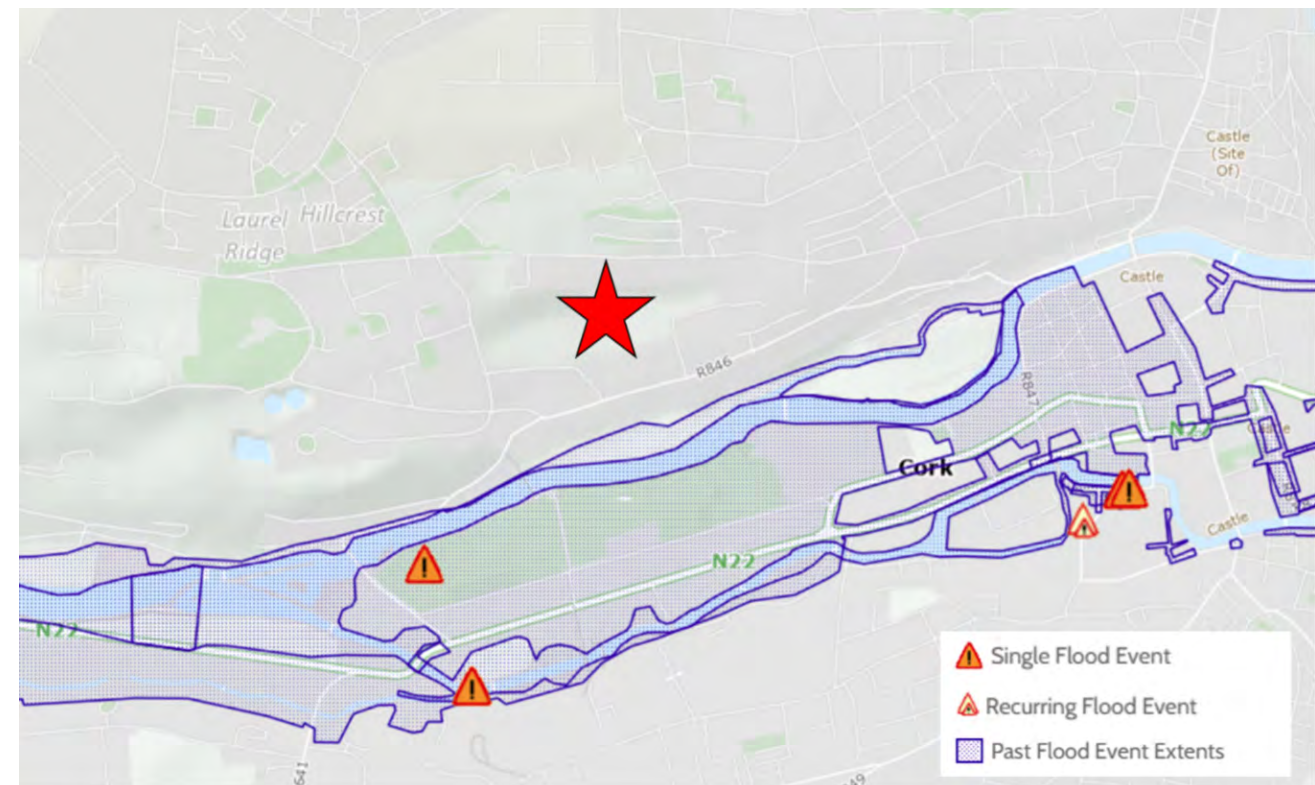


Figure 17.1 Extract from Flood Maps showing site (red star) in relation to past flood events

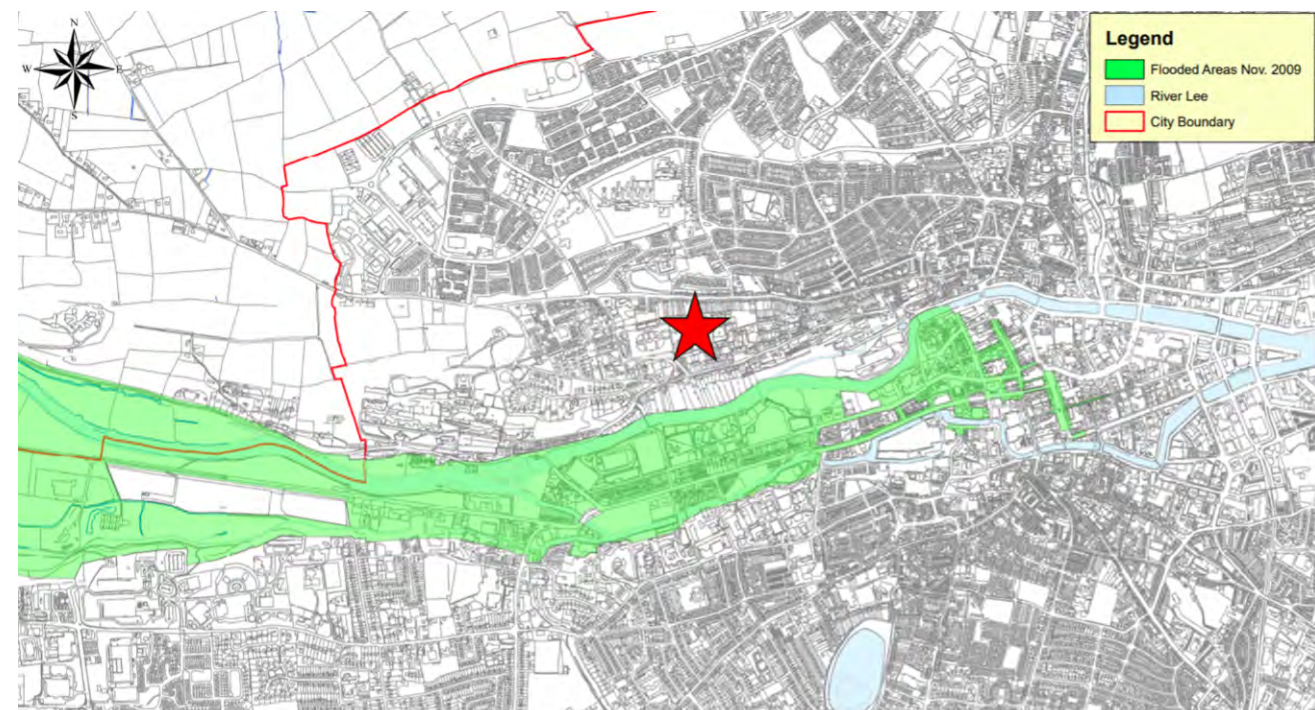


Figure 17.2 Extract from 2009 Flood Extents Map with Site shown by red star

17.5.3 Seismic Activity

Much of the Earth’s surface is covered by unconsolidated sediments which can be especially prone to instability. Water often plays a key role in lubricating the slope failure. Instability is often significantly increased by man’s activities in building houses, roads, drainage and agricultural changes. Landslides, mud flows, bog bursts (in Ireland) and debris flows are a result.

In general, Ireland suffers few landslides. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff landslides and falls lead to recession of the cliffs. Landslides have also occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics, Dublin Institute for Advanced Studies (DIAS) has been recording seismic events in Ireland since 1978. The station configuration has varied over the years. However, currently there are five permanent broadband seismic recording stations in Ireland including IWEX on Carrickbyrne Hill, Co. Wexford, running from 01/01/2011 and operated by DIAS. The seismic data from the stations comes into DIAS in real-time and are studied for local and regional events.

As can be seen in Figure 17.1 below, the principal events have occurred along/ beyond the east, south-east, south, and north east of Ireland with seismic movements generally up to 2.9 Magnitude recorded on land with no large seismic events recorded in the immediate vicinity of the subject site.

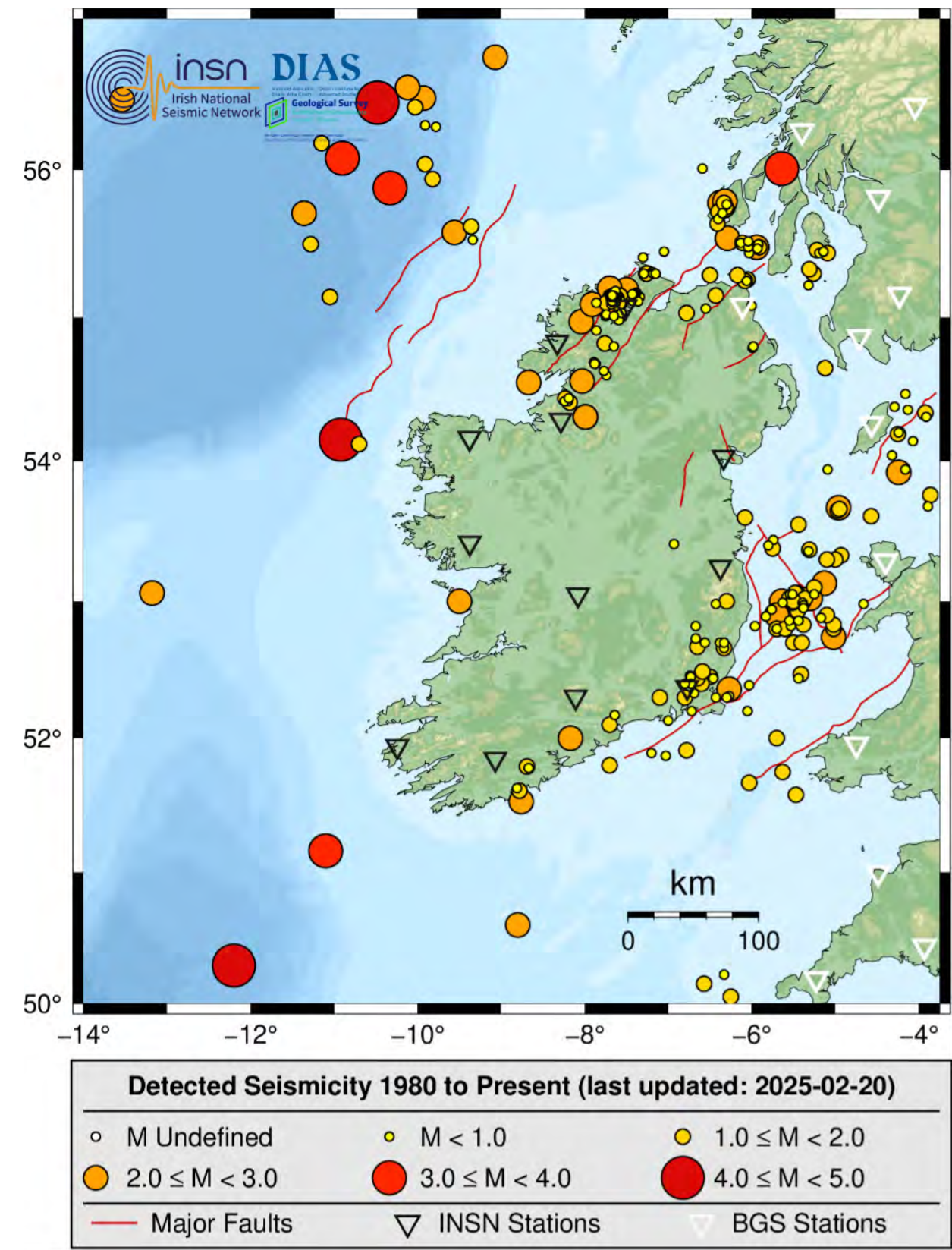


Figure 17.3 Seismic Movements. Source: Irish National Seismic Network

17.5.4 COMAH/SEVESO Sites

The Seveso Directive (Directive 82/501/EEC, Directive 96/82/EC, Directive 2012/18/EU) was developed by the EU after a series of catastrophic accidents involving major industrial sites and dangerous substances. Such accidents can give rise to serious injury to people or serious damage to the environment, both on and off the site of the accident. The Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the “COMAH Regulations”), implement the latest Seveso III Directive (2012/18/EU).

The purpose of the COMAH Regulations is to transpose the Seveso Directive into Irish law and lay down rules for the prevention of major accidents involving dangerous substances, and to seek to limit as far as possible the consequences for human health and the environment of such accidents, with the overall objective of providing a high level of protection in a consistent and effective manner.

There are two tiers of establishment, which are related to the quantities of dangerous substances present. Depending on quantity, an establishment may be upper-tier or lower-tier. Upper-tier establishments have greater quantities of dangerous substances present and therefore are obliged to comply with additional requirements specified in the Regulations. Lower-tier establishments have lower quantities of dangerous substances present.

There are 6 no. SEVESO sites in the Cork City administrative area – 3 no. upper tier and 3 no. lower tier. None of which are in close proximity to the subject site.

The closest to the site is the Grassland Agro which is located c. 2.5km west of the site. It is identified as an ‘upper tier establishment’ in the Cork City Development Plan 2022-2028 but it has been recently reclassified as a ‘lower tier establishment’ on the HSA website.

The next closest establishment is the Goulding Chemicals Ltd is a ‘lower tier establishment’ and is located 3km east of the site.

Given the ‘lower tier’ nature of these establishments and the distance to the proposed development, it is not considered a concern for the proposed development at construction or operational phase.

The proposed development has been designed in accordance with the Safety, Health and Welfare at Work Act 2005 (S.I. 10 of 2005) as amended and the Safety, Health and Welfare at Work (General Application) Regulations 2007 to 2016 (S.I. 299 of 2007, S.I. 445 of 2012, S.I. 36 of 2016) as amended and associated regulations.

17.6 Predicted Impacts

The potential impacts of the construction and operational phases of the Proposed Development are outlined below.

17.6.1 Do Nothing Scenario

The site will remain as a vacant derelict site and the existing buildings will continue to fall into disrepair.

17.6.2 Demolition and Construction Phase

No scenarios of concern have been identified during the demolition and construction phase. As such the predicted impact is considered to be short term, imperceptible and neutral.

17.6.3 Operational Phase

The proposed development is not located in an area prone to flooding or an area prone to seismic events or within close proximity to a COMAH/Seveso site. As such, these accident scenarios are not of concern.

Therefore, the impact is considered to be long term, imperceptible and neutral.

17.6.4 Cumulative Effects

Cumulative impacts are considered imperceptible and neutral.

17.7 Mitigation Measures

17.7.1 Demolition and Construction Phase

No mitigation measures necessary.

17.7.2 Operational Phase

Mitigation measures have been designed into the proposal. No further mitigation measures necessary.

17.7.3 Monitoring

No monitoring proposed.

17.8 Residual Impacts

17.8.1 Demolition and Construction Phase

No scenarios of concern have been identified during the demolition and construction phase. As such the predicted impact is considered to be short term, imperceptible and neutral.

17.8.2 Operational Phase

The proposed development is not located in an area prone to flooding or an area prone to seismic events or within close proximity to a COMAH/Seveso site. As such, these accident scenarios are not of concern.

Therefore, the impact is considered to be long term, imperceptible and neutral.

17.8.3 Cumulative Impact

Cumulative impacts are considered imperceptible and neutral.

17.9 References

- EPA 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2022).
- EPA 'Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (2015).
- National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Hydrology for National Road Schemes' (2009).
- Office of Public Works (OPW, www.floodinfo.ie).
- Irish National Seismic Network (INSN, www.insn.ie)
- Engineering Reports prepared by MMOS Consulting Engineers.
- Flood Risk Assessment prepared by ARUP.



CHAPTER EIGHTEEN

SIGNIFICANT INTERACTION OF IMPACTS

CHAPTER EIGHTEEN

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CHAPTER EIGHTEEN | Significant Interaction of Impacts

18.1 Introduction

The construction, operational and cumulative impacts of the proposed development have been assessed within each chapter of the EIAR. This chapter considers the significant interactions of impacts between each of the separate disciplines.

In practice many impacts have slight or subtle interactions with other disciplines. This chapter highlights in **Table 18.1** (located at the end of this section) those interactions which are considered to potentially be of a significant nature. Discussions of the nature and effect of the impact is primarily undertaken within each of the relevant chapters, while this chapter identifies the most important potential interactions.

This chapter was prepared by Saoirse Kavanagh of McCutcheon Halley Chartered Planning Consultants with input from the lead author of each assessment.

18.2 Population and Human Health

Chapter 4 assesses the likely impacts to Population and Human Health arising from the proposed development. During the construction phase, the following aspects would interact with Population and Human Health and in the absence of mitigation may give rise to significant effects.

- **Traffic and Transport:** Construction traffic has the potential to negatively impact local residents and create a safety risk for pedestrians and cyclists through increased delays. The construction traffic also has a potential risk of increasing pollutants which may affect air quality and potential impacts on health and safety.
- **Land, Soil, and Geology:** Site clearance has the potential to result in increased dust and particulate emissions to air as well as the potential to release contaminated soils to the local environment.
- **Material Assets: Waste:** The improper removal, handling and storage of hazardous waste could negatively impact on the health of construction workers.
- **Hydrology:** Site clearance and demolition has the potential to release contaminated soils to the local environment.
- **Noise and Vibration:** Increased levels of noise and vibration during demolition and construction phase may result in negative impacts to the amenity of local residents.
- **Air Quality:** Construction activities may result in a decrease in local air quality due to high levels of dust which has the potential to negatively impact on human health.
- **Landscape and Visual Impact:** There will be visual changes associated with the construction phase due to emerging plant and machinery.

During the operational phase, the potential interactions are:

- **Landscape and Visual Impact:** There will be permanent visual changes to the landscape which may impact the residential dwellings surrounding the proposed development.
- **Traffic and Transportation:** Increased traffic once the development is fully operational has the potential to negatively impact local residents and temporary receptors.

The potential significant impacts to Population and Human Health have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative impacts are predicted.

18.3 Land, Soils and Geology

Chapter 5 assesses the likely impacts on Land, Soils and Geology arising from the proposed development. During the construction phase, the following aspects would interact with Land, Soil and Geology and in the absence of mitigation may give rise to significant effects.

- **Hydrology and Hydrogeology:** The construction phase of the proposed development has the potential to result in increased sediment runoff which has the potential to interact negatively on groundwater and surface water quality. The proposed construction phase mitigation outlined in Section 6.10 - Chapter 6 – Hydrology and Hydrogeology of the EIAR, means that the proposed development will not result in significant negative impact on groundwater and surface water quality in the local area. The interaction is considered to be neutral, Imperceptible, and short term.
- **Biodiversity:** In the absence of standard mitigation measures to control the construction phase there is potential for silt laden material or pollution to enter nearby surface waterbodies (and impact on local biodiversity and European sites downstream from the works. Furthermore, dust emissions from exposed earthworks have the potential to settle on plants causing impacts to local ecology. The interaction is considered to be neutral, Imperceptible, and short term.
- **Air Quality:** Demolition and construction phase activities such as excavations and stockpiling of materials etc. have the potential for interactions between air quality and the land and soils environment in the form of dust emissions. Mitigation measures are proposed to prevent fugitive dust emissions from construction activities including excavation of soils. The interaction is considered to be neutral, Imperceptible, and short term.
- **Waste:** During the construction phase, excavated soil and stone (c. 40,329 m³) will be generated from the excavations required to facilitate site levelling, construction of new foundations and installations of site services. It is currently envisaged that all clean excavated soil will be reused on-site. If material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 11 (Waste), Chapter 9 (Land and Soils) and the requirements of the RWMP (Appendix 11.1), will ensure the effect is long-term, imperceptible and neutral.

During the operational phase, the potential interactions are:

- **Hydrology and Hydrogeology:** The operational phase of the proposed development has the potential to interact negatively on groundwater and surface water quality via the proposed surface water network. The proposed operation phase mitigation outlined in Section 6.10 - Chapter 6 – Hydrology and Hydrogeology of the EIA, means that the proposed development will not result in significant negative impact on groundwater and surface water quality in the local area. The interaction is considered to be neutral, Imperceptible, and short term.
- **Biodiversity:** The proposed work is expected to have no significant impact on the local designated areas and their conservation objectives. The interaction is considered to be long-term, imperceptible and neutral.

The potential significant impacts to Lands, Soils and Geology have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative impacts are predicted.

18.4 Hydrology and Hydrogeology

Chapter 6 assess the likely impacts of Hydrology and Hydrogeology arising from the proposed development. Hydrology and Hydrogeology attributes interact with other environmental attributes are summarised as follows:

- **Population and Human Health:** Potential impacts on the receiving hydrology and hydrogeology environment could also impact on human health. However, the mitigation measures described in Chapter 6 – Hydrology and Hydrogeology, and those relevant in Chapter 4 – Population and Human Health will ensure that this will not occur.
- **Land, Soil and Geology:** Potential impacts on the receiving hydrology and hydrogeology environment could also impact on land, soils and geology conditions present. However, the mitigation measures described in Chapter 6 – Hydrology and Hydrogeology, and those relevant in Chapter 5– Land, Soils and Geology will ensure that this will not occur.

- **Biodiversity:** Any negative impacts on water quality as a result of excavations and discharge of silt, sediment or pollutants to surface waters may result in impacts to biodiversity downstream of the site. Potential impacts on the receiving hydrology and hydrogeology environment could also impact on biodiversity conditions present. However, the mitigation measures described in Chapter 6 – Hydrology and Hydrogeology, and those relevant in Chapter 14 – Biodiversity will ensure that this will not occur.
- **Air Quality and Climate:** Potential impacts on the receiving hydrology and hydrogeology environment could also impact on air quality conditions present. However, the mitigation measures described in Chapter 6 – Hydrology and Hydrogeology, and those relevant in Chapter 7 - Air Quality & Chapter 8 Climate will ensure that this will not occur.
- **Material Assets Service Infrastructure and Utilities:** Potential impacts on the receiving hydrology and hydrogeology environment could also impact on material assets. However, the mitigation measures described in Chapter 6 – Hydrology and Hydrogeology, and those relevant in Chapter 13– Material Assets will ensure that this will not occur.

The potential significant impacts to Hydrology and Hydrogeology have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative impacts are predicted.

18.5 Air Quality

Chapter 7 assesses the likely potential impacts on Air Quality arising from the proposed development. During the construction phase, the following aspects would interact with Air Quality and in the absence of mitigation may give rise to significant effects.

- **Population and Human Health:** Dust and emissions from the construction phase of the proposed development have the potential to impact on the local population and human health.
- **Traffic:** Emissions from the construction traffic may result in a decrease in local air quality.
- **Climate:** Increased greenhouse gas emissions from the construction traffic may contribute to climate change

The potential significant impacts to Air Quality have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative impacts are predicted.

18.6 Climate

Chapter 8 assesses the likely potential impacts on the climate arising from the proposed development. Climate interacts with the following environmental aspects:

- **Lands, Soils, Geology and Hydrology:** Increased rainfall and flooding events as a result of climate change have the potential to impact the proposed development.
- **Air Quality:** Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts.
- **Traffic and Transportation:** There is the potential for interactions between climate and traffic with vehicles accessing the proposed development producing CO₂ emissions.
- **Waste:** Improper disposal of waste can increase the amount of waste entering a landfill which has a higher associated embodied carbon emissions than other waste management.

The potential significant impacts of climate have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative impacts are predicted.

18.7 Noise and Vibration

Chapter 9 assesses the likely potential noise and vibration impacts resulting from the proposed development. Noise and vibration interacts with the following aspects:

- **Population and Human Health:** Construction noise and vibrations have the potential to impact on the local residents during the construction phase. The implementation of the appropriate mitigation measures will limit this impact.
- **Traffic and Transport:** Construction phase traffic will result in additional noise and vibration, the impact of which will be limited following the implementation of mitigation measures.
- **Biodiversity:** Construction phase noise and vibration have the potential to impact on local biodiversity. The mitigation measures outlined in Chapter 14 will be implemented to reduce these potential impacts.

18.8 Landscape and Visual

Chapter 10 assesses the likely potential impacts on Landscape and any visual impacts arising from the proposed development.

- **Biodiversity:** Changes to the landscape associated with the proposed development have the potential to impact the local biodiversity.
- **Cultural Heritage:** Changes to the landscape associated with the proposed development have the potential to impact the local cultural heritage and archaeology.

No other potential significant interactions have been identified other than those already described. The potential significant impacts of Landscape and any visual impacts have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative impacts are predicted.

18.9 Waste Management

Chapter 11 assesses the likely impacts on Waste Management arising from the proposed development. The most significant Waste Management interaction are as follows:

- **Land and Soils:** During the construction phase, excavated soil and stone (c. 40,329 m³) will be generated from the excavations required to facilitate site levelling, construction of new foundations and installations of site services. It is currently envisaged that all clean excavated soil will be reused on-site. If material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 11, Chapter 5 (Land, Soils & Geology) and the requirements of the RWMP (Appendix 11.1), will ensure the effect is long-term, imperceptible and neutral.
- **Traffic and Transport:** Local traffic and transport will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the proposed Development. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movements will be imperceptible in the context of the overall traffic and transportation increase. Traffic-related impacts during the construction and operational phases are addressed in Chapter 12 (Material Assets: Traffic & Transport). Provided the mitigation measures detailed in Chapter 12 and Chapter 11 are adhered to, the predicted effects are short to long-term, imperceptible and neutral.
- **Population and Human Health:** The potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and

adherence to the project specific RWMP and mitigation measures in Chapter 4 (Population & Human Health) and Chapter 11, will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be long-term, imperceptible and neutral.

The potential significant impacts to Waste Management have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative impacts are predicted.

18.10 Material Assets: Traffic and Transport

Chapter 12 assesses the likely impacts on Traffic and Transport arising from the proposed development. Traffic and Transportation interacts with other environmental attributes as follows:

- Air Quality: Particulates and gaseous emissions from traffic (both on and off-site) and residual dust dispersal associated with traffic movements could negatively impact the local air quality.
- Climate: Increased emissions due to the burning of fossil fuels generates impacts on the climate.
- Noise: Increased traffic levels associated with the proposed development will increase noise levels in the area.

The potential significant impacts of Traffic and Transport have been considered within the relevant discipline and mitigation measures outlined where required. No other significant interactions have been identified, other than those discussed above. With mitigation measures in place, no significant residual negative impacts are predicted.

18.11 Material Assets: Built Services

Chapter 13 assesses the likely impacts on Material Assets arising from the proposed development. The potential significant impacts to Built Services have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative impacts are predicted.

18.12 Biodiversity

Chapter 14 assesses the likely impacts on Biodiversity arising from the proposed development. The potential significant impacts to Biodiversity have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative impacts are predicted.

18.13 Built Heritage

Chapter 15 assesses the likely potential impacts on built heritage arising from the proposed development. The potential significant impacts to Cultural Heritage and Archaeology have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative impacts are predicted.

18.14 Archaeology

Chapter 16 provides an assessment of the impact on archaeology resulting from the proposed development. Archaeology interacts with built heritage and the potential impacts are considered limited once the appropriate mitigation measures are implemented.

Table 18-1 below provides an overview of the above interactions. Potential interactions are represented by an 'X'. Calles without an 'X' indicate that no interaction is expected. 'X' in the columns headed 'C' represent interactions expected in the construction phase while an 'X' in the columns headed 'O' represent interactions expected in the operational phase.

Table 18.1 Summary of Interactions

Interaction	Population & Human Health		Land & Soils		Hydrology		Air Quality		Climate		Noise & Vibration		Landscape		Waste		Traffic and Transport		Built Services		Biodiversity		Built Heritage		Archaeology	
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O
Population & Human Health			X		X		X				X		X	X			X	X								
Land & Soils					X	X	X								X						X	X				
Hydrology	X		X				X		X										X		X					
Air Quality	X								X								X	X								
Climate			X				X	X							X	X	X	X								
Noise & Vibration	X	X															X	X			X					
Landscape and Visual	X	X																					X	X		
Waste	X	X	X						X	X							X	X								
Traffic	X	X					X	X	X	X	X	X														
Built Services				X																						
Biodiversity			X	X	X						X															
Built Heritage													X	X											X	X
Archaeology																							X	X		
C - Construction Phase O - Operational Phase X - Potential Significant Interaction																										



CHAPTER NINETEEN

SUMMARY OF PROPOSED MITIGATION MEASURES

CHAPTER NINETEEN

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CHAPTER NINETEEN | Summary of Proposed Mitigation Measures

19.1 Introduction

A key objective of the Environmental Impact Assessment process is to identify likely significant environmental impacts at the pre-consent stage and where necessary to propose measures to mitigate or ameliorate such impacts. This chapter of the EIAR summarises the proposed mitigation measures set out in Chapters 4 to 17.

All the mitigation measures proposed within the individual specialists’ assessments will be incorporated into the Construction and Environmental Management Plan (CEMP) prior to works commencing on-site.

Table 19.1 Incorporated Design Mitigation Measures

Aspect	Incorporated Design Mitigation Measures
Population & Human Health	The proposed development complies with the Building Regulations which provide for the safety and welfare of people in and about buildings. The Building Regulations cover matters such as structure, fire safety, sound, ventilation, conservation of fuel and energy, and access, all of which safeguard users of the buildings and the health of occupants. The proposed design provides for the segregation of pedestrians and bicycle traffic from motorised traffic. The design also incorporates the principles of universal design and the requirements of Part M of the Building Regulations so that the development will be readily accessible to all, regardless of age, ability or disability. An assessment of the potential effects of the construction and operation of the proposed scheme in relation to climate forms part of the Climate Chapter of this EIAR. The assessment found that any impacts would be insignificant. The integration of energy efficient measures into the design will provide for healthier living standards for future occupants, less dependence on fossil fuels and associated improved air quality. The availability of on the doorstep public open space, amenity spaces, and a highly accessible layout across the scheme will encourage sustainable modes of outdoor access for a wide age group.
Land, Soils & Geology	These measures include appropriate design measures such as the proper storage and containment of hazardous substances and proper drainage systems in line with best practice, standard details, policies and guidelines already incorporated into the proposed design.
Hydrology & Hydrogeology	This section outlines the measures that will be employed in order to ensure the project has minimal adverse effects on the surrounding environment, in this case hydrogeology and hydrology. These measures include appropriate design measures such as the proper storage and containment of hazardous substances and proper drainage systems in line with best practice, standard details, policies and guidelines. For further information on design refer to Engineering Planning Report – Good Shephard (MMOS, 2025). <i>Surface Water Quality and Drainage</i> The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Cork City Development Plan 2022-2028 specifies that “all planning applications for new developments incorporate SuDS in so far as possible.” Such proposals shall be accompanied by a comprehensive SuDS assessment including run-off quantity, run off quality, and impacts on habitat and water quality. As such, SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the application of nature-based solutions (NBS) which, whilst providing temporary water retention, will also allow for the integration of green infrastructure within this development. • The installation of Tree Pits along sections of the development is proposed due to the relative sizing of such installations. Tree Pits will be provided in conjunction with the landscaping design where surface water will be directed to the tree pits to provide temporary attenuation, infiltration, and surface water cleaning. An overflow pipe back to the main surface water runs will be provided to prevent against flooding in scenarios where the tree pits are overwhelmed during periods of excessive rainfall. Due the inability to calculate soil infiltration rates following soakaway testing, it is recommended that these tree pits mainly serve as enhanced storage as opposed to infiltration measures. There exists potential for the tree pits to filter out pollutants from runoff, thus reducing the potential pollutant loadings within receiving systems. Further environmental benefits may be experienced through the promotion of biodiverse habitats associated with the introduction of tree pits. • Blue and green roof configurations are proposed for portions of this development where suitable to provide storage at source. This allows for effective stormwater management through the use and integration of green and blue infrastructure within the development whilst promoting biodiversity gains. • Rainwater harvesting is proposed for this development where suitable which will involve the provision of a rainwater storage system. This will provide some temporary water storage; however, it will also promote the sustainability of the development by relieving additional demand on the watermain supply for landscaping purposes during the summer months. Soakaways are not proposed or recommended for this development as a result of the poor soil infiltration rates. As a result of these constraints, an attenuation tank is proposed for the management of surface water from roofed, road, and paved areas within the development. The drainage network will consist in 1 catchment attenuating to the runoff using a flow control device (hydrobrake) from the site. Any localised car leaks will therefore discharge to the combined drainage network and be treated the proposed Class 1 Hydrocarbon Interceptor. Therefore, the risk of accidental discharge has been adequately addressed through design.

Aspect	Incorporated Design Mitigation Measures
	<i>Foul Water Drainage</i> A new network of foul sewers will be installed to serve the proposed development, discharging to existing connections to the existing combined sewer system. There will be no direct or indirect foul water discharge into Lee (Cork) Estuary Upper, Ballinhassig GBW or the Cork Harbour SPA. <i>Potential Impacts on Water Framework Directive Status</i> The following design mitigation measures have been incorporated in the design to mitigate potential impacts have taken account of the potential impacts of the development. • Provision of SuDS measures such as tree pits, blue and green roof, rainwater harvesting and attenuation system with petrol interceptors and hydrobrake included. Therefore, the risk of accidental discharge has been adequately addressed through design. • All surface and foul water will be discharged to the existing combined sewer system.
Air Quality	No incorporated design mitigation measures.
Climate Change	A number of measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change (Section 8.7.2.2). Landscaping planting elements have been chosen with consideration for climate change impacts in future years. In relation to operational energy usage information from the project building engineers has been used to inform this assessment. The incorporated design measures in relation to operational energy are outlined below: • The development will be in compliance with the requirements of the Near Zero Energy Building (NZEB) Standards. • The development is targeting a Building Energy Rating (BER) of A3. • High efficiency air to water heat pumps will be installed to provide both heating and hot water to each apartment unit. • The ventilation system will be Central Mechanical Extract Ventilation (CMEV) systems which will continuously extract from wet rooms and kitchens while providing fresh air via trickle vents in all habitable rooms in accordance with both Part F and Part L of the Building Regulations. • The thermal performance of the building will meet or exceed the current Part L back stop values including floors, walls, windows and roofs. These identified measures will aid in reducing the impact to climate during the operational phase of the proposed development in line with the goals of the Climate Action Plan.
Noise & Vibration	No incorporated design mitigation measures.
Landscape & Visual	The most effective mitigation in the case of the proposed development is that which is incorporated into the design. This consists of the site layout which avoids disturbing the key area of mature tree canopy within the southwestern portion of the site, which is also associated with a High Value Landscape designation of the Cork City Development Plan. The landscape masterplan for the proposed development also incorporates replacement tree planting within this area in the long term, which will see new tree planting take over the canopy as older trees decline. Incorporated mitigation is also evident in the considered design of the proposed apartment buildings, which are subordinate in height and placement to the convent building allowing the heritage structure to continue to dominate the site in an austere manner. The design, finish and light tone of the apartment blocks also seeks differentiation and subordination to the convent building, whilst being of a high architectural standard. The height and placement of the apartment buildings is also cognisant of maintaining vast elevated views for surrounding residents above the site and keeping the roof profile out of view behind the convent building when viewing north across the Rive Lee from the southwestern suburbs of the city. There is also an incremental step-up in scale from the boundary to afford an appropriate transition from surrounding residential development.
Waste Management	This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment. The concept of the 'Waste Hierarchy' and 'Circular Economy' is employed when considering all mitigation measures. The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. The circular economy principle aims to keep materials, components, and products in-use in the economy for as long as possible. In circularity, the key objective is to design consumption and production systems to create and retain value. Both principles have been applied and will further be applied during the detailed design, construction and operational phases.
Material Assets: Traffic & Transport	The design incorporates enhanced pedestrian crossings, and traffic calming measures in line with DMURS (2019).

Aspect	Incorporated Design Mitigation Measures
Material Assets: Built Services	<i>Drainage</i> The permanent works services design will be independent of the temporary works services for construction. The connection and installation of the permanent works services are therefore designed to have no impact on the temporary services. <i>Electrical supply services</i> The following measures shall be implemented in relation to Electrical Supply services: • ESB Networks will be consulted prior to commencement of the works • A quality management plan shall be created and implemented to ensure that the works are executed to deliver the permitted Electrical Supply System free of significant defects. <i>Telecommunications services</i> The following measures shall be implemented in relation to Telecommunication Supply services: • Openair will be consulted prior to commencement of the works • A quality management plan shall be created and implemented to ensure that the works are executed to deliver the permitted Telecommunications Supply System free of significant defects.
Biodiversity	As part of the proposed development, sensitive habitats will be avoided where possible to minimise ecological disturbance. The project footprint will be kept to a minimum, ensuring that construction and operational activities are confined to the least sensitive areas. Additionally, existing treelines and stonewalls will be preserved where possible through the implementation of appropriate exclusion zones. A detailed CEMP will be prepared by MMOS as part of this application. This plan will outline the proposed construction and operational methodologies and provide a framework for implementing mitigation measures and conducting environmental monitoring. The CEMP will ensure that the changes resulting from the proposed development comply with environmental quality standards and project objectives. It will specify responsibilities and timelines for the implementation of measures and management controls across all relevant environmental disciplines addressed in the planning application. <i>Mitigation by Avoidance & Design</i> The following measures are integrated into the proposed project design to reduce impacts on designated sites, flora, and fauna through avoidance and design: • The hard-standing area of the proposed development has been kept to the minimum necessary for the project and associated infrastructure, including all site clearance works, to minimise land take of habitats and flora. • The site design and layout deliberately avoided direct impacts on conservation sites. • The proposed development layout has been selected to avoid land take of potentially sensitive habitats. • Care has been taken to ensure that sufficient buffers are in place between project infrastructure and hydrological features such as rivers, streams, and drains. • The design of the project was carried out with cognisance to ecological features. • The project design and layout has been selected to avoid instream works and associated indirect effects, such as siltation. • Site lighting has been designed to minimise light pollution and potential disturbance to wildlife. • Stormwater and foul water management systems are included in the design to prevent runoff and protect local water quality. • Construction access routes and site layout have been planned to minimise disruption to surrounding areas and avoid impacting sensitive ecological zones.
Built Heritage	The proposed scheme has been developed by Butler Cammoranesi Architects in consultation with Jack Coughlan Architects, who are acting as conservation architects. The following mitigation measures are considered to be attainable outcomes of the scheme, although the extent of existing fabric it will be feasible to retain and restore to the historic buildings will only be ascertained fully following detailed condition surveys. The proposals comprise the reuse of the existing historic structures on the site, including the former Magdalene home, convent, orphanage/industrial school, coach house/bake house and gate lodge. Landscape features of significance such as historic pathways and the stone boundary walls are also to be retained. The historic entrance and avenue approach to the buildings is to be retained, in addition to the mature planted area to the south of the Magdalene home, to reinforce the Landscape Protection Zone in this area.
Archaeology	The design of the proposed development was informed by the desktop studies and previous archaeological site investigations undertaken in 2017.
Screening for Major Accidents	No necessary incorporated design measures

Table 19.2 Demolition and Construction Phase Mitigation

Aspect	Demolition and Construction Phase Mitigation
Population & Human Health	An Outline Construction and Environmental Management Plan (CEMP), Outline Resource Waste Management Plan (RWMP) and Operational Waste Management Plan (OWMP) for the proposed development have been prepared for this application. The CEMP, RWMP & OWMP will be further updated by the contractor, agreed with Cork City Council prior to commencement, and implemented by the selected contractor after any consent is received. All construction personnel will be required to understand and implement the requirements of the CEMP and RWMP and shall be required to comply with all legal requirements and best practice guidance for construction sites. The CEMP provides for a construction phase management structure to ensure that environmental protection and mitigation measures are put in place. The CEMP requires that these measures will be checked, maintained to ensure adequate environmental protection. The CEMP also requires that records will be kept and reviewed as required to by the project team and that the records will be available on site for review by the planning authority. All construction personnel will attend induction and training classes as required to ensure that the CEMP is effectively implemented. The CEMP will comply with all appropriate legal and best practice guidance for construction sites. A full summary of construction phase mitigation measures are presented in Chapter 19 of this EIAR.
Land, Soils & Geology	Demolition To facilitate the development, demolition works are required. The demolition works of the proposed development are limited to surface-level activities and do not involve any excavation works. As a result, the impact on the land and soils is minimal. The demolition process focuses on dismantling and removing structures, buildings and infrastructure to accommodate the new development and facilitation works, without disturbing the underlying soil or altering the landscape. This approach ensures that there are no significant effects on the land's composition, stability, or fertility. The absence of excavation works means that there is no disturbance to the natural soil structure, preventing potential soil erosion or compaction. In addition, all waste materials will be dealt with in accordance with regional and national legislation, time and resources will be dedicated to ensuring efficient waste management practices and waste arisings will be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. Refer to Chapter 11 – Waste of the EIA for further information on predicted on demolition phase mitigation in terms of off-site reuse, recycle and disposal rates for demolition waste. Construction In order to reduce impacts on the land, soils and geological environment, a number of mitigation measures will be adopted as part of the construction works on site. The measures will address the main activities of potential impact which include: • Control of soil excavation and export from site; • Sources of fill and aggregates for the proposed development; • Fuel and chemical handling, transport and storage; and • Control of water during construction. Construction Environmental Management Plan The project engineer (MMOS) have prepared a Construction Environmental Management Plan (CEMP) that is included with the application documentation. The main purpose of a CEMP is to provide a mechanism for implementation of the various mitigation and monitoring measures which are described in the EIAR. The CEMP demonstrates the applicant's commitment to implementing the proposed development in such a way as to avoid or minimise the potential environmental effects arising from construction activities. All personnel will be required to understand and implement the requirements of the plan. Construction works and the proposed mitigation measures outlined in the CEMP are informed by best practice guidance on the prevention of pollution during development projects including but not limited to: • Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532); • Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016); • Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741); • Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005); and • Guidelines for the crossing of watercourses during the construction of national road schemes (National Roads Authority; 2008).

Aspect	Demolition and Construction Phase Mitigation
	The CEMP will be implemented and adhered to by the construction contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager, Resource Manager and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures. The CEMP sets out the proposed procedures and operations to be utilised on the proposed construction site. All mitigation measures outlined here, and within the CEMP will be implemented during the construction phase, as well as any additional measures required pursuant to consent conditions which may be imposed. During the project planning phase, a comprehensive emergency response plan will be developed by the construction contractor. This plan will outline a well-defined procedure for effectively managing emergencies as they arise. Furthermore, it's imperative to disseminate this emergency protocol to all site personnel during the site induction process. This plan will include for events such as: • Pollution incidents: These may involve spillages, the malfunction of temporary structures, embankment collapse, acts of vandalism, fires, and other related events. • Extreme weather occurrences: Events such as heavy rainfall, flooding, are important factors to consider due to their potential impact on the construction process. The construction contractor will be required to implement emergency response procedures that align with industry best practice guidance. All personnel working on the site will be informed of the emergency procedures in place. <i>Soil Excavation, Removal and Infill</i> There will be soil and stones excavated to facilitate construction of new foundations and the installation of underground services. The project engineers (MMOS) have estimated that c. 40,329 m³ of material will need to be excavated to do so. It is currently envisaged that there will be an opportunity to reuse all clean excavated soil on site for use in landscaping and fill. In the case that any excavated soil is tested and deemed contaminated and unfit for reuse on-site, it will need to be removed offsite. This will be taken for appropriate offsite reuse, recovery, recycling and / or disposal. Material that is exported from site, if not correctly managed or handled, could impact negatively on human beings (onsite and offsite) as well as water and soil environments. Contractors should prepare and adhere to a method statement indicating the extent of the areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works. Stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil stripping and stockpiling will be mitigated through the implementation of an appropriate earthworks handling protocol during construction. Dust suppression measures (e.g. damping down during dry periods), vehicle wheel washes, road sweeping, and general housekeeping will ensure that the surrounding environment are free of nuisance dust and dirt on roads. Any excavation works should be carefully monitored by a suitably qualified person to ensure any potentially contaminated soil is identified and segregated from clean/inert soil. In the unlikely event that any potentially contaminated soils are encountered, the soil will be tested and classified as hazardous or non-hazardous in accordance with the EPA <i>Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous</i> publication, HazWasteOnline tool or similar approved method. The material will then need to be classified as inert, non-hazardous, stable non-reactive hazardous or hazardous in accordance with <i>EC Decision 2003/33/EC</i>. It should then be removed from site by a suitably permitted waste contractor to an authorised waste facility. <i>Sources of Engineering Fill and Aggregates</i> All imported fill and aggregate that may be required for the proposed development will be sourced from reputable suppliers. All suppliers will be vetted for: • Aggregate compliance certificates/declarations of conformity for the classes of material specified for the proposed development; • Environmental Management status; and • Regulatory and Legal Compliance status of the Company <i>Fuel and Chemical Handling</i> The following mitigation measures will be taken at the construction stage in order to prevent any spillages to ground of fuels and prevent any resulting soil and/or water quality impacts: • Designation of a bunded refuelling areas on the site if refuelling cannot be undertaken off site; • Provision of spill kit facilities across the site; • Where mobile fuel bowzers are used the following measures will be taken: • Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use; • The pump or valve will be fitted with a lock and will be secured when not in use; • All bowzers to carry a spill kit; • Operatives must have spill response training; and • Drip trays used on any required mobile fuel units.

Aspect	Demolition and Construction Phase Mitigation
	In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted: • Secure storage of all containers that contain potential polluting substances in a dedicated internally bundled chemical storage cabinet unit or inside a concrete bunded area; • Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage; • All drums to be quality approved and manufactured to a recognised standard; • If drums are to be moved around the site, they will be secured and on spill pallets; and • Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment. All contractors will be required to implement mitigation measures discussed above. All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash-down and washout of concrete transporting vehicles will take place at a designated wash out point on site. <i>Environmental Procedures</i> There will be comprehensive emergency response procedures and standard operating procedures to respond to chemical spillage all types. All employees will be provided with such equipment, information, training and supervision as is necessary to implement the emergency response procedures and standard operating procedures. The predicted impact on land and soils during the construction phase is neutral, imperceptible and short-term, the magnitude of impact is considered negligible. Monitoring <i>Demolition</i> The demolition works of the proposed development are limited to surface-level activities and do not involve any excavation works. The absence of excavation works means that there is no disturbance to the natural soil structure, preventing potential soil erosion or compaction. In addition, all waste materials will be dealt with in accordance with regional and national legislation, time and resources will be dedicated to ensuring efficient waste management practices and waste arisings will be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. Therefore, no monitoring is required. <i>Construction</i> During construction phase the following monitoring measures will be implemented: • Regular inspection of surface water run-off and sediments controls (e.g., silt traps); • Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off; • Excavation works to be monitored to record any signs of potentially contaminated soil; • Regular inspection of construction / mitigation measures outlined in the CEMP should be adhered to during the construction phase. (e.g., concrete pouring, refuelling, etc); and • Soil sampling of excavated soils and monitoring of surface water run off will be required in case of accidental discharges to underlying geology.

Aspect	Demolition and Construction Phase Mitigation
Hydrology & Hydrogeology	Demolition The development contains existing buildings to be demolished. These structures were originally constructed such that they rely on internal elements such as columns beams and cross walls for their overall stability. The likelihood of significant effects on the hydrology and hydrogeology during the demolition phase is minimal due to the demolition works of the proposed development being limited to surface-level activities and do not involve any excavation works. The absence of excavation works means that there is no disturbance to the natural soil structure, preventing potential soil erosion or compaction. As a result, the impact on the land and soils is minimal and no significant effects on the land's composition, stability, or fertility are anticipated. Refer to Chapter 11– Waste of this EIAR for further information on predicted on and off-site reuse, recycle and disposal rates for demolition waste. Overall, no mitigation measures are required during the demolition phase in relation to hydrogeology and hydrology due to the surface level nature of the works. The surface-level demolition works will have a negligible impact on hydrogeology and hydrology, preserving their integrity and minimizing any potential environmental consequences. Construction In order to reduce impacts on the hydrogeological and hydrological environment, a number of mitigation measures will be adopted as part of the construction works on site. The measures will address the main activities of potential impact which include: • Control of soil excavation and export from site; • Sources of fill and aggregates for the proposed development; • Fuel and chemical handling, transport and storage; and • Control of water during construction. <i>Outline Construction Environmental Management Plan</i> In order to reduce impacts on the land, soils and geological environment, a number of mitigation measures will be adopted as part of the construction works on site. The measures will address the main activities of potential impact which include: • Control of soil excavation and export from site; • Sources of fill and aggregates for the proposed development; • Fuel and chemical handling, transport and storage; and • Control of water during construction. <i>Construction Environmental Management Plan</i> The project engineer (MMOS) have prepared a Construction Environmental Management Plan (CEMP) that is included with the application documentation. The main purpose of a CEMP is to provide a mechanism for implementation of the various mitigation and monitoring measures which are described in the EIAR. The CEMP demonstrates the applicant’s commitment to implementing the proposed development in such a way as to avoid or minimise the potential environmental effects arising from construction activities. All personnel will be required to understand and implement the requirements of the plan. Construction works and the proposed mitigation measures outlined in the CEMP are informed by best practice guidance on the prevention of pollution during development projects including but not limited to: • Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532); • Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016); • Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741); • Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005); and • Guidelines for the crossing of watercourses during the construction of national road schemes (National Roads Authority; 2008).

Aspect	Demolition and Construction Phase Mitigation
	The CEMP will be implemented and adhered to by the construction contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager, Resource Manager and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures. The CEMP sets out the proposed procedures and operations to be utilised on the proposed construction site. All mitigation measures outlined here, and within the CEMP will be implemented during the construction phase, as well as any additional measures required pursuant to consent conditions which may be imposed. During the project planning phase, a comprehensive emergency response plan will be developed by the construction contractor. This plan will outline a well-defined procedure for effectively managing emergencies as they arise. Furthermore, it's imperative to disseminate this emergency protocol to all site personnel during the site induction process. This plan will include for events such as: • Pollution incidents: These may involve spillages, the malfunction of temporary structures, embankment collapse, acts of vandalism, fires, and other related events. • Extreme weather occurrences: Events such as heavy rainfall, flooding, are important factors to consider due to their potential impact on the construction process. The construction contractor will be required to implement emergency response procedures that align with industry best practice guidance. All personnel working on the site will be informed of the emergency procedures in place. <i>Surface Water Run-Off</i> As there is low potential for run-off to enter/discharge into to the Lee (Cork) Estuary Upper transitional Waterbody located c. mitigations will be put in place to manage run-off during the construction phase as follows: • Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. • Should any discharge of construction water be required during the construction phase, discharge will be to the combinedsewer. Therefore, there will be no interaction between silt laden construction water and surface water quality combined with Pre-treatment and silt reduction measures on site and hydrocarbon interceptors. All refuelling will be carried out at adequate distances away from waterbodies from doubled skinned bowzers and spill kits will be available at all times. • Any minor ingress of groundwater and collected rainfall in the excavation will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low and limited to localised perched water. It is therefore proposed that the water be discharged via the existing combined sewer network. The use of slit traps and an oil interceptor (if required) will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to the sewer. There shall be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavations are kept relatively dry, however this is expected to be low due to the low permeability of the subsoils and the relative shallow nature for excavations. Likewise, infiltration to the underlying aquifer is not anticipated. • Run-off water containing silt will be contained on site via settlement tanks/lagoons and treated to ensure adequate silt removal. Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks and settlement tanks/ponds). • The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted and / or backbucketed to reduce runoff and graded to aid in runoff collection. This will prevent any potential negative impact on the stormwater drainage and the material will be stored away from any surface water drains. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust. Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations. Soil from works will be stored away from existing drainage features to remove any potential impact. • Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site and the suitable distance of topsoil piles from surface water drains will be maintained. <i>Fuel and Chemical Handling</i> The following mitigation measures will be taken at the construction stage in order to prevent any spillages to ground of fuels and prevent any resulting soil and/or groundwater quality impacts: • Designation of a bundled refuelling areas on the site • Provision of spill kit facilities across the site; • Where mobile fuel bowzers are used the following measures will be taken: • Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use; • The pump or valve will be fitted with a lock and will be secured when not in use; • All bowzers to carry a spill kit; • Operatives must have spill response training; and • Bowzers to be double skinned.

Aspect	Demolition and Construction Phase Mitigation
	In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted: • Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area; • Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage; • All drums to be quality approved and manufactured to a recognised standard; • If drums are to be moved around the site, they will be secured and on spill pallets; and • Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment. All contractors will be required to implement mitigation measures discussed above. All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash-down and washout of concrete transporting vehicles will take place at an appropriate facility offsite. <i>Cement/ concrete works</i> Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with Uisce Éireann. The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures. <i>Soil Removal and Compaction</i> There will be soil and stones excavated to facilitate construction of new foundations and the installation of underground services. The project engineers (MMOS) have estimated that c. 40,329 m³ of material will need to be excavated to do so. It is currently envisaged that there will be an opportunity to reuse all clean excavated soil on site for use in landscaping and fill. In the case that any excavated soil is tested and deemed contaminated and unfit for reuse on-site, it will need to be removed offsite. This will be taken for appropriate offsite reuse, recovery, recycling and / or disposal. During the construction phase of the proposed development, several mitigation measures will be implemented to effectively manage and mitigate the effects of soil compaction and its associated negative consequences. • Excavated soil and stone surplus to requirements on-site will be taken for appropriate offsite reuse, recovery, recycling and/or disposal. • Temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment. The material will be stored away from any surface water drains and surface waterbodies (Carlingford Lough). Movement of material will be minimised to reduce degradation of soil structure and generation of dust. • All excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor. <i>Environmental Procedures</i> There will be comprehensive emergency response procedures and standard operating procedures to respond to chemical spillage all types. All employees will be provided with such equipment, information, training and supervision as is necessary to implement the emergency response procedures and standard operating procedures. <i>Human Health and Populations</i> It has been established (Section 6.6.33) that there are no recorded Recreational Waters, Bathing Waterbodies, or Drinking Water Rivers, located in the vicinity of the proposed development site. On a precautionary basis, the mitigation measures set out in Section 6.10.3 will be implemented during the construction works for the protection of human health and populations. Furthermore, as stated in Section 6.10.3.6 all excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

Aspect	Demolition and Construction Phase Mitigation
	<i>Potential Impacts on Water Framework Directive Status</i> There is a potential of accidental discharges during the construction phase (as set out in Section 6.9.1.1). However, these are temporary short-lived events that will not impact on the status of the Lee Estuary Upper, Ballinhassig GBW or the Cork Harbour SPA in the long-term. As such the proposed development will not cause any significant deterioration or change in water quality status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the third cycle river basin management plan (2022-2027) i.e. Water Action Plan 2024 - A River Basin Management Plan for Ireland. Therefore, there is no potential for impacts on water framework directive status based on the current understanding of the proposed development during construction. On a precautionary basis, the mitigation measures set out in Section 6.10.3 will be implemented during the construction works for the protection of surface water quality. Monitoring <i>Demolition</i> The demolition works of the proposed development are limited to surface-level activities and do not involve any excavation works. The absence of excavation works means that there is no potential for increasing the groundwater vulnerability to contamination in case of accidental spills or discharges. In addition, all waste materials will be dealt with in accordance with regional and national legislation, time and resources will be dedicated to ensuring efficient waste management practices and waste arisings will be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. Hence, eliminating the risk of contaminated runoff to surface or groundwater. <i>Construction</i> During construction phase the following monitoring measures will be considered: • Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 20 m from surface water receptors. • Regular inspection of surface water run-off and sediments controls will be implemented throughout the construction phase and full adherence to the Outline Construction Environmental Plan will be maintained.. • Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life. • Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off; and • Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). • Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network.

Aspect	Demolition and Construction Phase Mitigation
Air Quality	The proposed development has been assessed as having a medium risk of dust soiling impacts and a low risk of dust related human health impacts during the construction phase as a result of demolition, earthworks, construction and trackout activities (see Section 7.7.1.1). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a medium risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The mitigation measures draw on best practice guidance from Ireland (DCC (2018), DLRCC (2022)), the UK (IAQM (2024), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site. The measures are divided into different categories for different activities. <u>Communications</u> Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses. The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details. <u>Site Management</u> During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension therefore mitigations must be implemented if undertaking dust generating activities during these weather conditions. A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out. <u>Preparing and Maintaining the Site</u> Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. Avoid site runoff of water or mud. Keep site fencing, barriers and scaffolding clean using wet methods. Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. Cover, seed or fence stockpiles to prevent wind whipping. Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period. <u>Operating Vehicles / Machinery and Sustainable Travel</u> Ensure all vehicles switch off engines when stationary - no idling vehicles. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable. Impose and signpost a maximum-speed-limit of 15 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate). Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing) <u>Operations</u> Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. Use enclosed chutes and conveyors and covered skips. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. <u>Waste Management</u> Avoid bonfires and burning of waste materials. <u>Measures Specific to Demolition</u> Prior to demolition blocks should be soft striped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). During the demolition process, water suppression should be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction should be used. Drop heights from conveyors, loading shovels, hoppers and other loading equipment should be minimised, if necessary fine water sprays should be employed. Avoid explosive blasting, using appropriate manual or mechanical alternatives. <u>Measures Specific to Earthworks</u> Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. Only remove the cover in small areas during work and not all at once. During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Aspect	Demolition and Construction Phase Mitigation
	Measures Specific to Construction Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust. <u>Measures Specific to Construction</u> Avoid scabbling (roughening of concrete surfaces) if possible. Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. <u>Measures Specific to Trackout</u> A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles. Avoid dry sweeping of large areas. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. Record all inspections of haul routes and any subsequent action in a site log book. Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. Access gates to be located at least 10 m from receptors where possible. <u>Monitoring</u> Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. Monitoring The following monitoring measures are proposed to ensure the dust mitigation measures are working satisfactorily: Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

Aspect	Demolition and Construction Phase Mitigation
Climate Change	Demolition Embodied carbon of demolition waste materials will be the primary source of climate impacts during the demolition phase. The following measures will aid in reducing the embodied carbon impact of the demolition wastes: • Creating a demolition and construction program which allows for sufficient time to determine reuse and recycling opportunities for demolition wastes. • Appointing a suitably competent demolition contractor who will undertake a pre-demolition audit detailing resource recovery best practice and identify materials/building components that can be reused/recycled. • Materials will be reused on site within the new build areas where possible. Construction Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. The following measures to reduce the embodied carbon of the construction works are: • Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled. • Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods. • Ensure all plant and machinery are well maintained and inspected regularly. • Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site. • Sourcing materials locally where possible to reduce transport related CO₂ emissions. • Target embodied carbon rates for detailed design (LETI, 2020). In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements. Throughout detailed design and construction phase, guidance documents to inform with design detail decisions shall be reviewed e.g. the EU Commission <i>Technical Guidance on Adapting Buildings to Climate Change</i> (European Commission (2021a)), LETI emergency design guide (LETI, 2020), and the latest IPCC report.

Aspect	Demolition and Construction Phase Mitigation
Noise & Vibration	The assessment detailed in Section 9.4.3.1 of Chapter 9 has determined that construction activities can operate within the adopted construction noise threshold levels at NSLs 50m and beyond for the Site Clearance and Preparation phase and 20m and beyond for the general construction phase of the proposed development. At NSLs situated close to the site there is a high potential for the CNT to be exceeded during both phases of works. Vibration levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in Table 9.3 to avoid any cosmetic damage to buildings. A suite of noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid exceedance of the adopted construction noise threshold values at the nearest NSLs. The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to: • Selection of quiet plant; • Noise control at source; • Screening, and; • Liaison with the Public Further comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, hours of work and noise monitoring, where required. <i>Selection of Quiet Plant</i> The potential for any item of plant to result in exceedance of construction noise thresholds will be assessed prior to the item being brought onto the site. The least noisy item of plant will be selected wherever practicable (e.g., plant items with sound attenuation incorporated). Should a particular item of plant already on the site be found to exceed the construction noise thresholds, the first action will be to identify whether the item can be replaced with a quieter alternative. The appointed contractor will evaluate the choice of excavation, breaking, piling or other working methods taking into account various ground conditions and site constraints. Where alternative lower noise generating equipment are available that will provide equivalent structural / excavation results, these will be selected to control noise within the relevant thresholds, where it is practicable to do so. <i>Noise Control at Source</i> The following measures will be implemented, by the appointed contractor to control noise at source. These measures relate to specific site considerations: • For mobile plant items such as dump trucks, cranes, excavators and loaders, the installation of an acoustic exhaust, utilising an acoustic canopy to replace the normal engine cover and / or maintaining enclosure panels closed during operation can reduce noise levels by up to 10 dB. Mobile plant will be switched off when not in use and not left idling. • For percussive tools such as pneumatic concrete breakers and tools a number of noise control measures include fitting a muffler or sound reducing equipment to the breaker ‘tool’ and ensuring any leaks in the air lines are sealed; • Where compressors, generators and pumps are located in proximity to NSLs and have the potential to exceed the construction noise thresholds, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation; and • Resonance effects in panel work or cover plates can be reduced through stiffening or the application of damping compounds, while other noise nuisance can be controlled by fixing resilient materials in between the surfaces in contact. • For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials. <i>Piling</i> Piling programmes will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on a site at the same time as other works of construction or demolition that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time. During consultation the planner, developer, architect and engineer, as well as the local authority, should be made aware of the proposed method of working of the piling contractor. The piling contractor will in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results. Noise reduction will be achieved by enclosing the driving system in an acoustic shroud. Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either to the source of noise (as with stationary plant) or to the listener. Removal of a direct line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in location, having due regard also for access routes. When appropriate, screens or enclosures will be provided for such equipment. Contributions to the total site noise can also be anticipated from mobile ancillary equipment, such as handling cranes, dumpers, front end loaders etc. These machines may only have to work intermittently, and when safety permits, their engines will be switched off (or during short breaks from duty reduced to idling speed) when not in use.

Aspect	Demolition and Construction Phase Mitigation
	<i>Screening</i> Screening is an effective method of reducing CNLs at a receiver location and can be used successfully as an additional measure to other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen, its mass, and its position relative to both the source and receiver. Standard construction site hoarding (2.4 m in height) with a mass per unit of surface area greater than 7 kg/m2 can provide adequate sound insulation. This is recommended, as a minimum around all site boundaries of the proposed development site. Erection of localised demountable enclosures or screens will be used around particularly noisy equipment as required, when in operation in proximity to NSLs with the potential to exceed the construction noise thresholds. Annex B of BS 5228–1 (Figures B1, B2 and B3) provide typical details for temporary and mobile acoustic screens, sheds and enclosures that can be constructed on-site from standard materials. A well placed and designed mobile temporary screen around a pile, breaker or excavation can effectively reduce noise emissions by 10 dB(A). In addition, careful planning of the construction site layout will also be considered. The placement of site buildings such as offices and stores between the site and sensitive locations can provide a good level of noise screening. <i>Hours of Work</i> Working hours will be restricted to 08:00 to 18:00 Monday to Friday & 08:00 to 14:00 on Saturdays. Sunday or Bank Holiday work will only take place periodically at the agreement with Cork County Council. Similarly, any other out of hours working will be only permitted by arrangement with site management and Cork County Council. <i>Liaison with the Public</i> A designated Community Liaison Officer (CLO) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to particularly noisy construction activity, the CLO will inform the nearest noise sensitive locations of the time and expected duration of the noisy works. <i>Monitoring</i> Where required, construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion. Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: <i>Acoustics – Description, measurement and assessment of environmental noise</i>. Vibration monitoring stations should continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with BS ISO 4866: 2010: <i>Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures</i>. <i>Vibration Control</i> On review of the likely vibration levels associated with construction activities, construction activities associated with the proposed development are not expected to give rise to vibration that is either significantly intrusive or capable of giving rise to structural or cosmetic damage to buildings. Vibration from construction activities will be limited to the values set out in Table 9-3 of Chapter 9 to avoid any form of potential cosmetic damage to buildings and structures. Monitoring will be undertaken at sensitive buildings, where proposed works have the potential to be at or exceed the vibration limit values in Table 9-3 of Chapter 9.
Landscape & Visual	There is no specific landscape and visual mitigation proposed or considered necessary during the demolition and construction phases. The site perimeter hoarding, which has many purposes will aid in the screening of ground based activity and the clutter of stored materials and welfare facilities. However, it will be inconsequential for the main construction phase activities relating to the apartment buildings rising from the sloping site. The key consideration for construction stage landscape and visual effects is that they will be short-term in duration. There are no specific landscape and visual mitigation measures proposed or considered necessary in this instance and thus, there is no requirement for ongoing mitigation and monitoring.

Aspect	Demolition and Construction Phase Mitigation
Waste Management	Demolition The following mitigation measures will be implemented during the demolition phase of the proposed development: As previously stated, a project specific RWMP has been prepared in line with the requirements of EPA Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects’ (2021) and is included as Appendix 11.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition phase of the proposed development. • Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 11.1) in agreement with CCC and in compliance with any planning conditions, or submit an addendum to the RWMP to CCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream. • The Contractor will implement the RWMP throughout the duration of the proposed demolition phase and should treat the document as outlined in the guidance as a live document. In addition, the following mitigation measures will be implemented: • On-site segregation of waste materials will be carried out where possible to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated: • Concrete, Bricks, Tiles, Ceramics • Plasterboard • Metals, and • Timber • Any suitable demolition materials to be re-used on-site, where possible; • All waste materials will be stored in skips or other suitable receptacles in designated areas of the site; • Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required); • A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the demolition works; • All staff will be provided with training regarding the waste management procedures; • All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal; • All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and • All waste leaving the site will be recorded and copies of relevant documentation maintained. These mitigation measures will ensure that the waste arising from the demolition phase of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated <i>Regulations and the Litter Pollution Act 1997</i>, the NWMPCE (2024). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources. Construction The following mitigation measures will be implemented during the excavation and construction phase of the proposed development: As previously stated, a project specific RWMP has been prepared in line with the requirements of the EPA Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects’ (2021) and is included as Appendix 11.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development. • Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 11.1) in agreement with CCC and in compliance with any planning conditions, or submit an addendum to the RWMP to CCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream. • The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases and should treat the document as outlined in the guidance as a live document. A quantity of topsoil and sub soil will need to be excavated to facilitate the proposed development. The project design team have estimated that all clean excavated soil can be reused on-site. In the event that any excavated soil is found to be contaminated it will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. In addition, the following mitigation measures will be implemented: • Building materials will be chosen to ‘design out waste’;

Aspect	Demolition and Construction Phase Mitigation
	- On-site segregation of waste materials will be carried out where possible to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated: - Concrete rubble (including ceramics, tiles and bricks); - Plasterboard; - Metals, and - Timber. - Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; - All waste materials will be stored in skips or other suitable receptacles in designated areas of the site; - Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required); - A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works; - All construction staff will be provided with training regarding the waste management procedures; - All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal; - All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and - All waste leaving the site will be recorded and copies of relevant documentation maintained. Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Regulation 27 of the EC (Waste Directive) Regulations (2011-2020). EPA approval will be obtained prior to moving material as a by-product. These mitigation measures will ensure that the waste arising from the construction phase of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, the NWMPCE (2024). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources. Monitoring The management of waste during the construction phase will be monitored by the Contactor’s appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation. The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation, demolition and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting schedule targets. The RWMP specifies the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the demolition phase of the proposed Development will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future developments.

Aspect	Demolition and Construction Phase Mitigation
Material Assets: Traffic & Transport	A detailed traffic management plan will be implemented during demolition, including restricted delivery hours to avoid peak periods and advance notification of road users. During construction, mitigation measures will include a construction traffic management plan, optimised routing of HGVs, and temporary parking solutions for construction workers. Traffic impacts during the construction phase will be minimised through the implementation of a Construction Traffic Management Plan (CTMP), which will be agreed upon with CCC. A Framework CTMP, outlining the key principles to be followed, is included as part of the application package. The following measures will help minimise the impact of HGV traffic on Convent Avenue: • Scheduled Deliveries: HGV deliveries will be planned, as much as possible, outside of peak traffic periods, which have been identified as 08:00 – 09:00 and 16:30 – 17:30. • Dust and Debris Control: Wheel washing facilities will be provided on site to reduce the transfer of dust and debris onto local roads. Additionally, a road sweeper will be deployed as needed to ensure the local road network remains clear. • Warning Signage: Signs will be placed along Convent Avenue to alert all road users and local residents of the presence of slow-moving and turning HGV traffic. Further warning signs will be installed ahead of the Site Access junction to notify drivers approaching from both directions. Any works on the public road, such as service connections, will require the submission of a Road Opening Licence application by the contractor to the Local Authority. This application will include a detailed Construction Traffic Management Plan, prepared in accordance with Chapter 8 of the Traffic Signs Manual, for pre-approval by the Local Authority. Construction vehicle movements will be minimised through the following measures: • Consolidation of delivery loads to and from the site, with larger deliveries scheduled outside peak traffic hours. • Use of precast or prefabricated materials where feasible. • Provision of adequate on-site storage space to prevent any impact on public streets or areas. The contractor will also implement best practice mobility management measures to encourage site staff to access the site via modes other than private cars. These measures will be considered by the appointed contractor before work commences on site.
Material Assets: Built Services	<i>Demolition Phase</i> The following mitigation measures are proposed for the demolition phase of the development with respect to Material Assets: • The proposed development should comply with the provisions of the Construction Waste Management Plan with respect to construction waste. • The proposed development will comply with the provisions of the Construction Environmental Management Plan. • Water metering will be provided during the demolition phase to record consumption. • Hazardous materials to be stored and banded appropriately. • All new services will be constructed and provided in strict accordance with the relevant codes of practice. <i>Construction Phase</i> The following mitigation measures are proposed for the construction phase of the development with respect to Material Assets: • The proposed development should comply with the provisions of the Construction Waste Management Plan with respect to construction waste. • The proposed development will comply with the provisions of the Construction Environmental Management Plan. • Water metering will be provided during the construction phase to record consumption. • Hazardous materials to be stored and banded appropriately. • All new services will be constructed and provided in strict accordance with the relevant codes of practice.

Aspect	Demolition and Construction Phase Mitigation
Biodiversity	<i>Protection of Habitats</i> To prevent incidental damage to trees and habitats designated for retention during the site clearance stage, these areas will be securely fenced early in the construction phase. The fencing will be made clearly visible to machine operators to ensure effective protection. To mitigate the risk of Japanese Knotweed (<i>Fallopia japonica</i>) being inadvertently introduced to the site, the contractor will be required to inspect vehicles before they are used on-site, with particular attention to caterpillar tracks and areas where trucks and dumpers are stored. The supplier of any fill material will need to provide a guarantee that the fill does not contain invasive alien species. Additionally, the fill will be inspected for signs of invasive alien species before being imported to the site. The inspection of topsoil and fill material will follow the guidelines set out in the British Standard Specification for topsoil, as detailed in BS 3882:2015, which provides requirements for the inspection and use of topsoil. Guidance from the Invasive Non-Native Specialists Association (INNSA) Code of Practice for Managing Japanese Knotweed (INNSA, 2017) should also be adhered to. In Ireland, the procedures for managing invasive species, are also informed by Ireland’s Invasive Alien Species Soil and Stone Pathway Action Plan 2023–2027. This plan outlines specific actions to prevent the spread of invasive species through soil and stone movements and should be adhered to ensure compliance with national regulations and best practices. <i>Protection of Soil, Surface Waters & Groundwater</i> The implementation of good construction management practices will minimise the risk of pollution to soil, stormwater run-off, surface water, and groundwater. Pollution management measures will be implemented to prevent contamination by machinery pollutants, such as fuels, oils, and lubricants during construction and operational activities. These measures will be informed by guidance provided in relevant documents, such as the CIRIA guides to environmental good practice on site. Best practice construction methodologies and mitigation measures have been designed to minimise any potential risk of impacts on soil and water quality. Mitigation measures relating to soil, surface waters, and groundwater are provided in Chapter 5 (Land, Soils & Geology), and Chapter 6 (Hydrology & Hydrogeology) of this EIAR. <i>Dust Control</i> The proposed development has the potential to generate dust during construction works, which could affect vegetation in habitats and fauna within and adjacent to the proposed development site. Best practice construction methodologies and mitigation measures have been designed to minimise construction generated dust and to contain it within the site boundary. Mitigation measures relating to construction dust are provided in Chapter 7 (Air Quality). <i>Noise & Vibration Control</i> To mitigate disturbance and / or displacement to wildlife from noise and vibration activities, the relevant mitigation measures, as described in Chapter 9 (Noise & Vibration) will be implemented by the appointed contractor. A monitoring regime shall be implemented and recorded as required for various elements of the works. This monitoring regime shall include the following: • Noise Monitoring • Vibration Monitoring Noise levels will be kept to a minimum to comply with BS5228: Noise control on construction and open sites - Part 1 Code of practice for basic information and procedures for noise control and Appendix 1, Schedule D: Code of Practice for noise and air pollution control. During the construction works, the Main Contractor will adhere to current regulations, codes of practice, and guidelines for noise and vibration monitoring. Risk assessments will be undertaken to assess the potential noise levels for building operatives. Noise arising from activities on site will be controlled in accordance with the requirements of British Standard BS5228. The following noise control measures for generated noise shall be implemented during the construction works: • Instructions shall be given to ensure that vehicles and plant arriving and leaving the site comply with the stated site hours. • Machines in intermittent use shall be shut down or throttled down to a minimum when not in use. • Plant shall be maintained in good working order so that extraneous noise is kept to a minimum. • Compressors and generators shall be sited in areas least likely to give rise to nuisance. • Care shall be taken to reduce noise when loading or unloading vehicles or moving materials etc. • All contractors will ensure that the plant and construction methods employed are the quietest available for the required purpose, insofar as practicable. • All contractor vehicles will use existing site access roads and construction compound areas (surfaces of hard standing). • Site roads will be maintained in a clean condition and a site speed limit of 20km/h will be adhered to. • Engines, vehicles, and equipment will be switched off when not in use. • Machinery with rotating parts will be serviced according to supplier recommendations to prevent friction induced sound.

Aspect	Demolition and Construction Phase Mitigation
	• Materials should be lowered, not dropped, insofar as practicable and safely. • Minimise drop heights for materials or ensure resilient material underlies drop zones. • As far as is reasonably practicable, sources of significant noise should be enclosed or screened. • Limit the hours during which site activities likely to generate high noise levels are permitted. • The activities that create the most noise should be scheduled for when the fewest people and neighbouring businesses/residential dwellings will be affected. • Use low vibration level equipment. • Selection of plant with low inherent noise generation potential. • Placement of plant as far as possible from sensitive receptors, within site constraints. • Properly balance plant items with rotating parts to reduce noise. • Use alternative reversing alarm systems on plant machinery to reduce noise impact. • Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate. • Appoint a site representative responsible for noise management. • Monitor typical noise levels during critical periods and at sensitive locations. • Liaison with the public should be maintained. <i>Noise Control at Source:</i> All items of plant should be subject to regular maintenance. This maintenance can prevent unnecessary increases in plant noise and help prolong the effectiveness of noise control measures. Construction activities related to the proposed development are expected to occur during normal working hours. Wherever possible, noise should be controlled at source: • Avoid unnecessary revving of engines and switch off equipment when not required. • Minimise drop height of materials. • Start-up plant and vehicles sequentially rather than all together. <i>Considerate Construction</i> Prior to construction commencing, the pollution preventative measures outlined above will be inspected and certified by the site Environmental Manager or an appropriately qualified person appointed by the client. This person shall have overall responsibility for implementation of environmental protection measures. On appointment and prior to commencement of construction works the name and contact details for this person shall be supplied to Cork City Council (CCC). A site Liaison Officer (LO) should be appointed for the project as part of the site management team. The LO will act as a single point of contact to engage with the local community and respond to concerns, while keeping local residents informed via email of progress and timing of particular construction activities that may impact them. The Project Manager will be charged with the responsibility of keeping people informed of progress and by setting down procedures for dealing with complaints. The Main Contractor should remain conscious that the development is adjacent to an existing cemetery and from time to time there may be remembrances taking place. Every effort will be made to restrict works during such times, although it may not always be feasible to halt operations. The Main Contractor should promote and encourage a safe, considerate, clean and responsible construction site. <i>Waste Management</i> The Main Contractor will effectively manage, and control waste generated by the project in line with the <i>Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects</i> (EPA (2021)). Best practice methodologies and mitigation measures have been designed to minimise any potential risk of impacts associated with waste generation and management. Mitigation measures relating to waste handling, storage, and disposal are provided in Chapter 11 (Waste Management) of this EIAR.

Aspect	Demolition and Construction Phase Mitigation
	<i>Refuelling</i> • Construction plant and equipment shall only be parked over-night within the construction compound. Construction plant and equipment shall be checked daily for any visual signs of oil or fuel leakage, as well as wear and tear. • Fuels stored on-site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the duration of the construction phase. • For any liquid other than water, this shall include storage in suitable tanks and containers which shall be housed in the designated area surrounded by bund walls of sufficient height and construction so as to contain 110 per cent (110%) of the total contents of all containers and associated pipework. The floor and walls of the bunded areas shall be impervious to both water and oil. • All liquids, solids and powder containers will be clearly labelled and stored in sealable containers. • Where contractors are required to refuel vehicles on-site, this will be carried out at the designated refuelling location by competent personnel. All refuelling areas will be on areas of hard standing at designated areas agreed by an appropriately qualified person. Spill kits will be provided in all areas where liquids are stored and at any refuelling areas. • The local authority shall be informed immediately of any spillage or pollution incident that occurs on-site during the construction phase. • All small plant, such as generators and pumps, will be stood in drip trays capable of holding 110% of their tank contents. • All small plant will be positioned as far as practicable from the relevant watercourses. • Waste oils, empty oil containers, and other hazardous wastes will be disposed of in accordance with requirements of the Waste Management Act, 1996. <i>Site Tidiness & Housekeeping</i> A ‘good housekeeping’ policy will be employed by the Main Contractor at all times. The site induction will communicate the importance of site housekeeping and tidiness. In addition to measures outlined in the previous sections, the following measures shall be implemented to maintain site tidiness. • Construction works will be carried out according to a defined schedule agreed upon with the client and the relevant contractors, with regard to the specified hours of work. Any delays or extensions required will be communicated to the client and contractors at the earliest opportunity. • Contractors will ensure that road edges and footpaths are swept on a regular basis, this includes the local roadways adjacent to the proposed development site. A road sweeper will be deployed if required. • All contractors shall be responsible for the clearance of their plant, equipment and any temporary buildings upon completion of construction. The site will be left in a safe condition. • All mobile equipment brought to the site shall be thoroughly power washed and cleaned prior to arrival at site, to avoid transport of alien invasive species. • Ensure general maintenance of working areas and cleanliness of welfare facilities and storage areas. • Provide a site layout map showing key areas such as first aid posts, material storage, spill kits, material and waste storage, welfare facilities, etc. • Display details of site managers, contact numbers (including out of hours contacts), and public information signs (including warning signs) at the boundaries of the working areas. • Keep the construction compound, access routes and designated parking areas free of excess dirt, rubbish piles, scrap wood, etc. at all times. • Ensure provision of adequate welfare facilities for site personnel. • Provide appropriate waste management facilities and arrange regular collections. • Implement effective measures to prevent infestation from pests or vermin, including arrangements for regular disposal of food and materials that may attract pests. • Maintain public rights of way, diversions, and entry/exit areas around working sites for car users, pedestrians and cyclists where practicable, and to ensure inclusive access, as necessary. • Material handling and/or stockpiling of materials, where permitted, will be appropriately located to minimise exposure to wind. • Maintain self-contained wheel washing facilities at the construction compound and other contaminant measures as required. • Open fires will be prohibited at all times. • All flammable waste materials, such as timber, should be removed regularly to reduce risk of fire.

Aspect	Demolition and Construction Phase Mitigation
	<i>Protection of Flora and Fauna</i> Measures will be implemented to ensure that there is no negative ecological impact on the site and its surrounding environs. This will include protocols and procedures to prevent contamination of groundwater and watercourses through the implementation of sediment control, temporary mounding, cut off trenches, and water monitoring, as necessary. All chemicals will be stored securely in appropriate bunded areas. Fire and emergency procedures and controls will be established, and spill kits will be readily available to facilitate immediate action. Disposal of any chemical or oil will be removed and disposed of at an approved hazardous waste facility. The contractor will appoint a suitably qualified person to act as Ecological Clerk of Works (ECoW) to oversee the implementation of measures for the prevention of pollution to the receiving environment. Excavated inert material may be temporarily stockpiled in a designated area for later reuse within the development. This material will be reused where possible within the development site. Stockpiled material is to be located a minimum of 50m from any drainage route off-site. There will be on-going monitoring of wildlife in the vicinity of the construction site. Any unusual species, dead species or damaged habitats should be reported immediately to the Construction Manager and/or Environmental Officer. This will be co-ordinated with the appointed Ecologist for the project. Good working practices concerning environmental factors affecting ecology will be maintained during the construction phase. For example, construction noise and construction phase lighting will be kept to a minimum. The spread and introduction of invasive species and noxious weeds will be prevented by implementing mitigation measures in accordance with guidance issued by the NRA (2010) and Transport Infrastructure Ireland (TII) (2020) on the management and removal of invasive plant species. If unexpected ecological habitats are uncovered, site contractors must adhere to the habitat protection protocol. This protocol is designed to ensure that ALL personnel working on the construction site are fully aware of their legal obligations under the Wildlife Act 1976, as amended. This Act affords protection to a range of wildlife in Ireland, including wild birds, animals, and plants. Where a project has received permission to proceed, this does not override certain laws that prevent wilful harm to protected species. Trees designated for retention will be protected in accordance with BS 5837: (2012) <i>Trees in Relation to Design, Demolition and Construction</i>. Tree root systems can be damaged during site clearance and groundworks. Therefore, no materials should be stored within the root protection areas of mature trees. Materials, especially soil and stones, can prevent air and water circulating to the roots. Retention of the existing networks of treelines that form the external boundaries of the site will provide natural screening and help to maintain biodiversity. The following measures are applicable to the proposed development site: • Should the removal of scrub, hedgerow, tree felling, or delimbing be required, this will be carried out outside of the bird breeding season (1st March to 31st August inclusive). A pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent. • All birds, along with their eggs, nests and young - with the exception of certain species - are protected under the Wildlife Acts. Any areas of the site found to contain nests will be cordoned off to a distance of 20m from the nests, and all plant and construction activities will remain outside of this cordon until the young have fledged (left the nest entirely). The 20m radius will be centred on the nest site, and each nest would be protected by an equivalent circle. All other areas are safe for operations. • Sufficient on-site cleaning of vehicles prior to arrival and upon leaving the site, as well as on nearby roads, will be carried out, particularly during groundworks. Contractor's vehicles and equipment will be thoroughly cleaned and then dried using high-pressure steam cleaning, with water >65 °C, in addition to the removal of all vegetative material. • Following cleaning, all equipment and vehicles will be visually inspected to ensure that all adherent material and debris have been removed manually. • No removed material or run-off will be allowed to enter a waterbody of any sort. • For any material entering the Site, the supplier must provide an assurance that it is free of invasive species. • Ensure all site users are aware of invasive species management, biosecurity and treatment methodologies. This can be achieved through 'toolbox talks' before works begin on the Site. • Adequate site signage, hoarding and fencing will be erected in relation to the management of non-native invasive species as required. • Plant and equipment to be used during works, will be in good working order, fit for purpose, regularly serviced/maintained, and have no evidence of leaks or drips. • Any recommendations laid out by Inland Fisheries, shall be implemented to ensure the protection of the relevant watercourses, associated aquatic fauna, and any fisheries hydrologically connected to the site. • Weather conditions shall be considered during all construction operations, and no plant will enter within 100 metres of the relevant watercourses during or following heavy rain or other conditions likely to lead to large-scale or additional water flow that would carry soil or silt into the watercourses. • Recent surveys did not identify any bat roosts within the site footprint. Contractors may discover bat roosts and if any bats are found, the Construction Manager and/or Environmental Officer are to be contacted immediately. • Treelines and stone walls along the site boundaries should be retained where possible, as they provide a commuting and foraging network (and possible roosting opportunities) for bats within the wider landscape.

Aspect	Demolition and Construction Phase Mitigation
	<i>Mammals (non-volant)</i> The following measures shall be implemented to prevent impacts on non-volant mammals: • Stringent and robust mitigation measures are proposed for the avoidance of impacts affecting water quality. • A site speed limit of 20 km/h will be strictly enforced to prevent vehicular traffic fatalities. • Monitoring will continue throughout the construction phase. • It is recommended that a pre-construction survey be undertaken no later than 6 months prior to construction and ideally immediately prior to the commencement of works within the study area to reconfirm the existing environment and survey results. • Implement any mitigation and monitoring identified as being required following pre-construction mammal survey (if carried out). • In general, works close to badger setts may only be conducted under the supervision of a qualified expert and under licence from the NPWS. • No heavy machinery will be used within 30m of badger setts (unless carried out under licence); 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. • Fencing will be maintained and regularly checked to ensure effectiveness throughout the construction phase. • As best-practice, all construction-related rubbish on site (e.g., plastic sheeting, netting, etc.) should be kept in a designated area on-site and off the ground level to protect Hedgehogs and other small mammals (e.g., Pygmy Shrew) from entrapment and death. • Works likely to cause disturbance during Hedgehog hibernation – for example removal of hibernation habitats such as log piles and dense scrub –should not take place from November to March. • Vegetation will be removed in sections, working in a consistent direction to prevent entrapment of protected fauna that may be present. • An ecologist will supervise areas where vegetation, scrub and hedgerow removal will occur prior to and during construction as appropriate (e.g., an ecologist may be required during some clearance works of areas where vegetation is too dense to check beforehand). • Construction operations will take place during the hours of daylight to minimise disturbances to faunal species at night. • Vehicular traffic during the construction phase along the site access roads may result in fatalities, however, this is not expected to be significant due to the mainly diurnal requirement for access and speed restrictions which will be in place. • During construction, open trenches/excavations must incorporate facilities for badgers (and other wildlife, such as otters, foxes, hedgehogs etc.) to escape, by means of gently sloping earth inclines to be left at the end of each workday at each end of any open trenches/excavations. • An emergency response procedure must be implemented if signs of otter are discovered. All works must cease if animals or their shelters are found until appropriate measures are taken. • In the event that an issue arises, the NPWS will be updated and consulted with, relevant guidelines shall be followed and any licences/amendments to licences will be sought from NPWS. <i>Bats</i> A bat survey of the proposed development site was conducted by Veon Ecology. The on-site trees were assessed for the presence of Potential Roost Features (PRFs) and their potential use as commuting and/or foraging routes. Prior to undertaking any future tree removal, a robust assessment of the affected trees for bat potential should be completed. Recent surveys did not identify any bat roosts within the site footprint. However, contractors may discover bat roosts and if any bats are found, the Construction Manager and/or Environmental Officer must be contacted immediately. The removal of roofs and other identified potential roosting habitats within the study area should take place outside the bat breeding season (i.e., 1st October to 31st March) to minimise the risk of disturbance to roosting bats. Once scaffolding or other lifting equipment is in place, an endoscope survey will be carried out to more accurately assess usage. Any identified roosting sites and crevices will be blocked off with bubble wrap or similar materials to prevent bats from re-entering. Nets may also be employed for larger areas. Care shall be taken during the removal roofs and other identified potential roosting habitats. If bats are identified in structures during works, the local NPWS Conservation Ranger shall be contacted to facilitate safe translocation. Bat boxes will be installed under ecological supervision before works commence to provide alternative roosting habitats. Their placement will consider both the immediate needs of bats during construction and the long-term objective of maintaining a viable bat population on-site. Recommended options from NHBS include the Improved Roost-Maternity Bat Box, Schwegler 2F, and Woodcrete Schwegler 1FF (available at https://www.nhbs.com). Bat boxes will be installed on buildings, structures, or trees, positioned away from artificial lighting and disturbance, in accordance with Bat Conservation Ireland's <i>Bats & Bat Boxes: Guidance Notes for Agri-environmental Schemes</i> (2015) and the NRA's, Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. Bat boxes shall be inspected, maintained and relocated (if required) following NRA/TII guidelines.

Aspect	Demolition and Construction Phase Mitigation
	Recommended units: • 2 no. Improved Roost-Maternity Bat Boxes (to be hung on external walls). • 4 no. 2F Schwegler Bat Boxes (General Purpose) (to be hung on external walls or trees facing in different directions). • 2 no. 1FF Schwegler Bat Box with Built-in Wooden Rear Panel (to be hung on external walls or trees). As this is a large-scale project likely to extend over the bat breeding season, ongoing bat surveys will be carried out to confirm whether bats establish roosts within the main structures during the works period. If bats are found roosting within the works area, all activities in that area will cease until the issue can be addressed in consultation with the NPWS. External lighting should be kept to a minimum at locations where it is likely to disturb bats, and where possible will follow the Bat Conservation Ireland’s <i>Guidance Notes for: Planners, engineers, architects and developers on bats and lighting</i> (BCI, 2010). Any sections of stone wall to be removed should be searched using an endoscope for bats prior to works commencing. For any affected Trees of ‘Moderate/High’ or ‘High’ bat potential, the following actions should be undertaken: • Conduct a pre-felling bat survey the night before any tree felling, along with the felling methodology outlined below. • If bats are found to be using the trees surveyed, or other trees noticed during a survey, then a bat derogation licence from the National Parks and Wildlife Service (NPWS) will be required, and any felling postponed until a licence is acquired with justification for same. • If Trees of ‘High’ Potential are affected in the future by remedial works, they will require a survey. • If a tree has an existing Bat Box and requires felling, this will need a bat derogation licence from the NPWS if bats are present prior to felling. For felling and removal of trees, hedgerow, or woodland, the following methodology should be implemented: • Tree-felling should be undertaken from late August to late October. During this period, bats are capable of flight, which may mitigate risks associated with tree-felling. • Felling during the winter months should be avoided, as this creates the additional risk that bats may be in hibernation and unable to escape from the tree being felled. Additionally, disturbance during winter may reduce the likelihood of survival, as the bats’ body temperature is too low, and they may need to consume excessive body fat to survive. • Tree-felling should be undertaken using heavy plant and chainsaws. A wide range of equipment is available that is both heavy and stable enough to safely fell a tree. Typically, trees are pushed over, with a need to excavate and sever roots in some cases. In order to ensure the optimum warning for any roosting bats that may still be present, an affected tree should be pushed lightly two to three times, with a pause of approximately 30 seconds between each push to allow bats to become active. The tree should then be pushed to the ground slowly and should remain in place for a period of at least 48 hours to allow bats, if present, to escape. • Trees that have been felled should NEVER be immediately sawn up or mulched, to avoid harming any protected wildlife that may be present. • Trees used for future landscaping should comprise of a high percentage of semi-mature native Irish species. • To ensure continuity of treelines/hedgerows for commuting and foraging bats, a gap of less than 10m should be used. Larger gaps may negatively impact bat flight dynamics. • It is recommended to cut back heavy ivy on trees to be retained, as excessive ivy can cause suppression of the crown and increase the wind sail area, making the tree more vulnerable to wind damage. Where necessary, ivy should be cut at ground level allowing it to die off and gradually fall from the tree over time. The proposed actions – pruning, felling, and ivy cutting, are preliminary and will need to be reviewed once the site landscape plan is finalised. Where works are deemed unnecessary, these measures will not be implemented. • All tree works will be reviewed on site prior to being carried out, in consultation with the project ecologist/bat specialist, taking on board their recommendations on the management of these trees and wildlife. <i>Lighting for Bats</i> Lighting should only be installed where it is needed, illuminated during the required time period, and set to levels that enhance visibility. Artificial light shining on bat roosts, their access points, and the flight paths leading to and from the roost must be avoided. In order to preserve the commuting/foraging potential of all treelines and hedgerows to be retained and to minimise disturbance to bats utilising the site in general, the lighting and layout of the proposed development will be designed to minimise light-spill onto habitats potentially used by the local bat population, foraging or commuting. This will be achieved by ensuring that the design of lighting is in accordance with the guidelines presented in the Bat Conservation Trust and Institute of Lighting Professionals ‘Bats and Lighting in the UK’¹. The ILP and BCT (2023)² guidelines provide a list of recommendations in relation to luminaire design, which is based on extensive research completed to-date on the potential impact of lighting on bats, and therefore provides best practice mitigation measures.

1 BCT (2008) Bats and Lighting in the UK. Bats and the Built Environment Series.
2 Bat Conservation Trust and Institute of Lighting Professionals (2023) Guidance Note 08/23: Bats and artificial lighting in the UK. ILP, Rugby.

Aspect	Demolition and Construction Phase Mitigation
	Bat activity within the site was primarily recorded along the mature treelines and woodland fringes. These areas should not be illuminated; however, where lighting is unavoidable, the design strategy should aim to reduce the potential impact of lighting on bats by incorporating the following measures: • The avoidance of direct lighting of existing trees or proposed areas of habitat creation/landscape planting. • Do not provide excessive lighting. Use only the minimum amount of light needed for safety. • Minimise light spill. Eliminate any bare bulbs and any upward pointing light. The spread of light should be kept near to or below the horizontal. Flat cut-off lanterns are best. • Use narrow spectrum bulbs to lower the range of species affected by lighting. Use light sources that emit minimal ultra-violet light and avoid the white and blue wavelengths of the light spectrum to avoid attracting lots of insects. Lighting regimes that attract lots of insects result in a reduction of insects in other areas, like parks and gardens, that bats may use for foraging. • Lights should peak higher than 550 nm³ or use glass lantern covers to filter UV light. White LED lights do not emit UV but have still been shown to disturb slow-flying bat species. • Reduce the height of lighting columns. Light at a low level reduces impact. However, higher mounting heights allow lower main beam angles, which can assist in reducing glare. • For pedestrian lighting, use low level lighting that is as directional as possible and below 3 lux at ground level, but preferably below 1 lux. • Increase the spacing of lanterns. • Use embedded lights to illuminate paths. • Limit the times that lights are on to provide some dark periods. • Use lighting design software and professional lighting designers to predict where light spill will occur. • Avoid using reflective surfaces under lights. <i>Avifauna</i> The following measures shall be implemented to prevent impacts on birds: • Any clearance of vegetation should be carried out outside the main breeding season, i.e., 1st March to 31st August, in compliance with the Wildlife Act 2000. Should any vegetation removal be required during this period, the NPWS will be consulted, and instruction taken from them. To mitigate daytime noise disturbance, the following measures will be implemented: • Select plant with low inherent potential for generating noise. • Site plant as far away from sensitive receptors as permitted by site constraints. • Avoid unnecessary revving of engines and switch off plant items when not required. • Keep plant machinery and vehicles adequately maintained and serviced. • Properly balance plant items with rotating parts. • Keep internal routes well maintained and avoid steep gradients. • Minimise drop heights for materials or ensure a resilient material underlies. • Use alternative reversing alarm systems on plant machinery. • Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate. • Limit the hours during which site activities likely to create high levels of noise are permitted. • Appointing a site representative responsible for matters relating to noise. • Monitor typical noise levels during critical periods and at sensitive locations.

3 Van Langevelde, F *et al.*, 2011. Effect of spectral composition of artificial light on the attraction of moths. Biol. Conserv. doi:10.1016/j.biocon.2011.06.004

Aspect	Demolition and Construction Phase Mitigation
	The following general dust control measures will be followed for the duration of the construction phase of the proposed development to ensure no significant dust related impacts occur to nearby sensitive receptors, including local faunal species: • In situations where the source of dust is within 25m of sensitive receptors, screens (permeable or semi-permeable) will be erected. • Haulage vehicles transporting gravel and other similar materials to the site will be covered by a tarpaulin or similar. • Access and exit of vehicles will be restricted to certain access/exit points. • Vehicle speed restrictions of 20km/h will be in place. • Bowsers will be available during periods of dry weather throughout the construction period. • During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the soil stability, thereby reducing the amount of dust. • Stockpiles will be stored in sheltered areas of the site, covered, and watered regularly, or as needed if exposed during dry weather. • Gravel should be used at site exit points to remove caked-on dirt from tyre tracks. • Equipment will be washed at the end of each workday. • Hard surfaced roads will be wet swept to remove any deposited materials. • Unsurfaced roads will be restricted to essential traffic only. • If practical, wheel-washing facilities should be located at all exits from the construction site. • Dust production as a result of site activity will be minimised by regular cleaning of the Site access roads using vacuum road sweepers and washers. Access roads should be cleaned at least 0.5km on either side of the approach roads to the access points. • Public roads outside the site will be regularly inspected for cleanliness, at a minimum daily, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris. • The frequency of cleaning will be determined by the site agent and is weather and activity dependent. • The height of stockpiles will be kept to a minimum, and slopes should be gentle to avoid windblown soil dust. The following will be dampened during dry weather: • Unpaved areas subject to traffic and wind • Stockpiles • Areas where there will be loading and unloading of dust-generating materials Under no circumstances will wastewater from equipment, wheel, or surface cleaning be allowed enter the surface water drainage network. <i>Nesting Birds</i> Scrub and vegetation removal during the breeding season may not be possible, as verifying the absence of nests from these vegetation types is extremely difficult. Therefore, the preferred mitigation is to leave scrub and vegetation in place until after the bird nesting season. At the end of the season, it is important to continue checking for birds, as some species continue to nest after the recognised season (March to August incl.) ends. Grassland areas are to be carefully walked by the Ecological Clerk of Works (ECoW) to check for ground nesting birds prior to the commencement of works. Any wet grassland areas are a priority for these inspections. For green-listed species, a buffer zone of c. 10m-20m, or an ECoW determined buffer, shall be installed for all nests found. For red- and amber-listed species, appropriate buffers of c. 50m to 600m shall be determined by the ECoW. All project personnel should receive an environmental induction on a scale relevant to their work activities. This induction should include specific considerations for avifauna, focusing on the potential impacts of construction activities on the relevant bird species and their habitats. A Barn Owl (<i>Tyto alba</i>) was recorded within the site boundary during previous surveys by Dixon Brosnan - Environmental Consultants in 2016. Given the current condition of the buildings, which are largely inaccessible, it is not possible to confirm whether this species is breeding or roosting within the structures on site. Prior to the commencement of site works, the building will be surveyed to confirm the absence of active nests or roosting sites. Additionally, as a precautionary measure, 2 no. Barn Owl nest boxes will be installed in suitable locations within the site before works commence, in line with the recommendations of the local NPWS Conservation Ranger.

Aspect	Demolition and Construction Phase Mitigation
	The key considerations are: 1) Ensuring the nest box is placed in a suitable location and is of appropriate design and dimensions. 2) Confirming the site contains suitable habitat for Barn Owls. 3) Implementing appropriate rodent control measures to minimise the risk of secondary poisoning to Barn Owls. Barn Owl nest boxes (2 no.) will be installed in either an interior space (e.g., inside a quiet outbuilding on site) or an exterior space (e.g., on the outside of a suitable building or tree). The chosen location will determine whether an interior or exterior nest box design is used. Their placement will consider both immediate needs during construction and the long-term objective of maintaining a viable breeding population on-site. If no suitable interior space is available, an exterior box can be installed on a building or a mature tree, at least 4 metres above the ground, facing open land, away from roads and prevailing weather conditions (i.e., not south-west), and with clear flight lines to the nest box. The box should be located in a disturbance-free area and securely mounted to support its weight (Lusby <i>et al.</i>, 2022). The site also includes suitable habitat for kestrel, and the species is considered to have a probable breeding status within the proposed development site or its immediate vicinity. Similar to the measures outlined for Barn Owls, prior to the commencement of site works, a survey will be conducted to confirm the absence of active nests or roosting sites. Additionally, as a precautionary measure, 2 no. kestrel nest boxes will be installed in suitable locations within the site before works commence, in line with the recommendations of the local NPWS Conservation Ranger. These nest boxes will be installed under ecological supervision to provide alternative breeding and roosting opportunities. Kestrel nest boxes (2 no.) will be installed on-site following similar provisions as those for Barn Owls. They should be positioned 3-5 metres above ground on buildings, structures, or trees, away from artificial lighting and disturbance, with a clear flight path free from overhanging branches. The box opening should be oriented away from the prevailing wind. All nest boxes shall be inspected (under licence), maintained, and relocated if necessary. They should also be registered with BirdWatch Ireland and monitored in consultation with the NPWS. New planting and the enhancement of existing semi-natural grassland will be undertaken to provide alternative hunting areas for barn owl and kestrel. To reduce the negative impacts and risks associated with rodenticide exposure, an Integrated Pest Management (IPM) approach will be adopted. IPM is an effective and environmentally sensitive method of pest control that relies on a combination of common-sense practices. Effective long-term control of rodent activity is best achieved by making the site unattractive to rodents by limiting access to food, water, and shelter, with ongoing site maintenance to prevent conditions that support rodent populations. Stock Dove nest boxes (2 no.) will also be installed on-site, following similar provisions as those for Barn Owl and Kestrel nest boxes. These will be placed on suitable mature trees at the woodland edge within the site boundary. As a further enhancement measure, 3 no. externally mounted Swift nest boxes should be fitted to an existing building within the site or, alternatively, in-built commercial Swift nest bricks should be installed on new structures. There is no upper limit for the height of a swift nest, but nest boxes installed c. 5m or more from the ground should lead to higher occupancy rates. It is essential to ensure a clear flyway of at least 5m in front of the nest boxes, avoiding obstructions such as trees etc. Playing audio recordings of swift calls can accelerate the uptake process. The Genesis Externally Fixed Triple Entry Swift Nest Boxes are recommended by BirdWatch Ireland. Alternatively, Swift nest bricks are available in a variety of sizes, shapes, and colours, allowing for easy integration into the proposed development. If the ecologist determines, based on their experience and/or site conditions, that a particular artificial or man-made breeding or resting location is unsuitable at the predetermined site, they may, at their discretion, relocate it to a more appropriate location. To further reduce potential disturbance impacts on breeding birds, the development will be carried out in phases where possible, to minimise disruption to nesting and foraging activities. Phasing construction works will allow ecologists to monitor breeding activity throughout the project and adjust mitigation measures as needed. This approach will help maintain suitable conditions for birds on-site while ensuring compliance with wildlife protection legislation. <i>Biosecurity</i> There is a potential risk that terrestrial and/or aquatic invasive species (e.g., Japanese knotweed or Giant hogweed) or pathogens (e.g., crayfish plague, ash dieback) could be accidentally introduced to a location via contaminated vehicles and/or equipment, in particular tracked vehicles, which have previously been used in areas containing invasive species. Biosecurity measures will be strictly adhered to throughout the proposed works. Measures will be in accordance with IFI (2010) Biosecurity Protocol for Field Survey Work. The following best practice avoidance measures will help contain and/or prevent the introduction of invasive species: • Prior to arrival on site, the contractors’ vehicles and equipment will be thoroughly cleaned and then dried using high-pressure steam cleaning, with water >65°C, in addition to the removal of all vegetative material. Items that are difficult to soak/spray will be wiped down with a suitable disinfectant (e.g., solution of 1% Virkon® Aquatic). • Evidence that all machinery has been cleaned must be maintained and available for review by the statutory authorities. The level of evidence required of the contractor will be registration plates of vehicles on-site and a register detailing when, how, and where each of these were cleaned before they arrived on site. • Visual inspections will be carried out on all machinery and equipment to check for attached plant or animal material, or adherent mud or debris. Any attached or adherent material will be removed before entering or leaving the site and securely stored (away from traffic) for removal to an appropriate waste storage area at the end of the workday. • No removed material or run-off will be allowed to enter a waterbody of any sort. • Following cleaning, all equipment and vehicles will be visually inspected to ensure that all adherent material and debris has been removed manually.

Aspect	Demolition and Construction Phase Mitigation
	• Each field vehicle must carry a ‘disinfection box’ as appropriate. This will contain Virkon Aquatic or another proprietary disinfectant, a spraying mechanism, cloths or sponges, a scrubbing brush and protective gloves. Protective gloves must be worn when using any disinfectant solution. • Spot checks on the adequacy of cleaning will be carried out by the ECoW. • Disinfectants must be used strictly in accordance with the manufacturer's instructions. They must be disposed of safely and never close to open waters such as drains etc. • For any material entering the site, the supplier must provide an assurance that it is free of invasive species. • Ensure all site users are aware of the invasive species management plan, biosecurity and treatment methodologies (as appropriate). This can be achieved through ‘toolbox talks’ before works begin on site. • Ensure that all operatives are familiar with the relevant non-native invasive species. A comprehensive list and details can be found on the Inland Fisheries Ireland website at: https://www.fisheriesireland.ie • Adequate site signage, hoarding and fencing will be erected in relation to the management of non-native invasive species. <i>Invasive Plant Species Management</i> The invasive species Three-cornered Leek, Rhododendron, Cherry Laurel, and Giant-rhubarb will be eradicated from the site in accordance with the relevant codes of practice and guidelines: <i>Best Practice Management Guidelines Rhododendron (Rhododendron ponticum)</i> and Cherry Laurel (<i>Prunus laurocerasus</i>) – Invasive Species Ireland (Maguire <i>et al.</i>, 2008), and the Giant Rhubarb (<i>Gunnera tinctoria</i>) <i>Invasive Species Action Plan</i> – Invasive Species Ireland (Armstrong <i>et al.</i>, 2009). No significant barriers to the effective eradication of these invasive species from the site, via either mechanical or chemical methods, have been identified. Once completed the landscape management plan will provide for the elimination of any regrowth of Three-cornered Leek, Rhododendron, Cherry Laurel, and Giant-rhubarb, as well as for the removal of Winter Heliotrope and Buddleia. With regards to the proposed development, the following steps will be taken in order to prevent the introduction and spread of invasive plant species: • A pre-construction survey for invasive species should be carried out to confirm the extent of infestations as identified in previous surveys and to determine whether any new infestations have been established in the intervening period. • To prevent Japanese Knotweed or other invasive species from outside the site being inadvertently brought into the site, the contractor will be required to inspect, clean, and wash down vehicles within a designated area before using them on-site. • Prior notification will be given to all contractors that parts of the site are contaminated with invasive plant species. They must adhere to this protocol to avoid the spread of high-risk invasive species within and more importantly, outside of the works area. This includes any site investigation works in advance of commencement of excavation works. • All stands of Three-cornered Leek, Rhododendron and Giant-rhubarb will be clearly delineated with hazard tape in a manner visible to machine operators prior to the commencement of works. Appropriate signage will be put in place to deter any entrance by people or machinery into areas where these species are growing. • Where Three-cornered Leek, Rhododendron and Giant-rhubarb removal is required to facilitate the construction of the proposed development, an Invasive Species Management Plan (ISMP) should be prepared by an invasive species specialist. It must be noted the removal of contaminated material from the site will require a license from the National Parks and Wildlife Service in advance of any removal, in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477).

Aspect	Demolition and Construction Phase Mitigation
Built Heritage	<i>Demolition Phase</i> The proposed removal of the 20th century infill blocks between the 19th century buildings will re-establish the architectural character of the original scheme. The historic buildings or building elements to be retained will be protected during demolition works. Detailed method statements for this protection should be prepared by the conservation architect prior to the commencement of works. The gates, entrance and gate lodge will be protected from damage by construction vehicles during the course of the works. If necessary, gates should be removed and subsequently reinstated following the completion of works. <i>Construction Phase</i> The new PBSA blocks will be located to the rear (north) of the existing 19th century buildings and towards the south and southeast of the site, in order to maintain the existing views of the historic buildings from the south. All conservation works to be carried out to historic buildings, structures or building elements will be agreed and specified by the conservation architect prior to the commencement of works and will follow best conservation practice. Where new elements (such as replacement windows, doors, etc.) are to be introduced to historic fabric these interventions will be discussed and agreed between the design architects and the conservation architects. The fires to the Convent, Magdalene home and Orphanage have had a serious impact on the condition of the stone and brickwork, which has been exacerbated by prolonged exposure to the elements. Detailed surveys of the condition of fabric to the areas of the structures to be retained will be required in order to establish the extent of surviving fabric which can conserved and/or restored. A detailed condition survey is also required for the orphanage/industrial school building in order to establish the extent of timber rot and other issues of condition. Based on the results of this, all original internal elements to be retained as part of the refurbishment should be identified. Restoration or conservation repair work to historic fabric to be retained should be carried out by specialist contractors with relevant experience of working with historic buildings. The repair of brick to the front elevations, and particularly conservation works to the fire damaged fabric will require a high level of expertise. The nuns’ cemetery to the northeast of the site, in which Ellen Organ’s (Little Nellie) grave is located, will be retained including all existing grave markers and monuments. Access will be provided to this cemetery for both residents and visitors to the site. A landscaped zone will be maintained in the vicinity of the graveyard to provide a contemplative area for residents and visitors. The cemetery associated with the Magdalene home, located to the northwest of the grounds, lies outside the boundary of the development site. Notwithstanding, an access route from the grounds will be restored to this area which will follow the high-level walkway along the northern boundary wall. A second route will run along the western boundary wall and lead up steps to the location of the entrance to this cemetery.
Archaeology	Following the localised programme of ground penetrating radar survey and subsequent extensive programme of archaeological testing, the potential for archaeological remains and/or features being encountered the course of development is considered to be very low. However, following consultation with the Executive Archaeologist with Cork City Council, it proposed that a programme of archaeological monitoring be undertaken by an appointed Project Archaeologist within any previously untested greenfield areas that will be impacted by the proposed development. Furthermore, an archaeological watching brief is recommended during ground reduction works and sub-surface excavations within the immediate vicinity of the former convent buildings and hostel. In the event that any archaeological features are uncovered the Project Archaeologist will consult with the National Monuments Service and the Cork City Council’s Executive Archaeologist in order to determine the appropriate mitigation strategy to be enacted. The Project Archaeologist will arrange for the services of a qualified osteo-archaeologist to be retained in the event that any human remains are encountered. All maintenance works, including vegetation clearance, within the overgrown convent graveyard located inside the boundary of the proposed development site, will be supervised by the Project Archaeologist, in consultation with the Cork City Council’s Executive Archaeologist, in order to ensure that the works comply with the NMS/Heritage Council guidelines as published in the Guidance for the Care, Conservation and Recording of Historic Graveyards (O’Brien 2011).
Screening for Major Accidents	No mitigation measures necessary

Table 19.3 Operational Phase Mitigation

Aspect	Operational Phase Mitigation
Population & Human Health	The proposed development is of a high-quality design that incorporates generously sized units with integrated energy efficiency measures and an abundance of open space. The impact assessment section did not identify likely significant negative environmental impacts on population and human health arising from the operational phase of the proposed development. Accordingly, mitigation measures are not proposed.
Land, Soils & Geology	The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Cork City Development Plan 2022-2028 specifies that “all planning applications for new developments incorporate SuDS in so far as possible.” Such proposals shall be accompanied by a comprehensive SuDS assessment including run-off quantity, run off quality, and impacts on habitat and water quality. As such, SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the application of nature-based solutions (NBS) which, whilst providing temporary water retention, will also allow for the integration of green infrastructure within this development. The drainage network will consist in 1 catchment attenuating to the green-field runoff using a flow control device (hydrobrake) from the site. Any localised car leaks will therefore discharge to the stormwater drainage and be treated the proposed Class 1 Hydrocarbon Interceptor. Therefore, the risk of accidental discharge has been adequately addressed through design. The predicted impact on land and soils during the operation phase is <i>neutral, imperceptible</i> and <i>short-term</i>, the magnitude of impact is considered <i>negligible</i>. Monitoring Maintenance of the surface water drainage system, including hydrobrake, separators / interceptors, and foul sewers is recommended to minimise any accidental discharges to soil or groundwater. Monitoring of surface water runoff will be required in case of accidental discharges to underlying geology

Aspect	Operational Phase Mitigation
Hydrology & Hydrogeology	<i>Surface Water Quality</i> The design has taken account of the potential effects of the development on surface water quality and measures have been incorporated in the design to mitigate these potential effects, as outlined in Section 6.10.1. The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Cork City Development Plan 2022-2028 specifies that “all planning applications for new developments incorporate SuDS in so far as possible.” Such proposals shall be accompanied by a comprehensive SuDS assessment including run-off quantity, run off quality, and impacts on habitat and water quality. As such, SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the application of nature-based solutions (NBS) such as tree pits, blue and green roofs, rainwater harvesting and attention system. The design of the attenuation storage system has been carried out for the 1 in 100-year event with a 20% allowance for climate change. There is no discharge to ground proposed as part of the surface water drainage strategy. Surface water will be discharged to the combined sewer system. <i>Foul Water Drainage</i> The site is serviced by an existing 300mm diameter combined sewer at the main site entrance. This combined sewer connects to an existing combined culvert on Convent Avenue before finally discharging to the existing 750mm diameter interceptor sewer which runs along the south side of the Sunday’s Well area. A new network of foul sewers will be installed to serve the proposed development, discharging to the existing combined sewer system. There will be no direct or indirect foul water discharge into Lee Estuary Upper. All generated foul water will be sent the Atlantic Pond pumping station, from there it goes to the first stage of treatment at a plant in Ballinure, Mahon and finally to the Cork city Wastewater treatment plant in Little Island. According to Uisce Éireann’s (Irish Water) Wastewater Treatment Capacity Register (June 2023), there is capacity available at Cork City WWTP. Therefore, as there are no effects on the hydrogeology and hydrogeology at the proposed development, no mitigation is required. <i>Human Health and Populations</i> On a precautionary basis, the operational mitigation measures for Water & Hydrology set out in Section 6.10.4 of the EIAR will be implemented during the operational phase for the protection of human health and populations. There are no proposed discharges to ground as part of the surface water drainage strategy and all surface and foul water discharge is sent to the combined sewer network. Therefore, as there are no effects on the hydrogeological and hydrological environment at the proposed development, no mitigation is required. <i>Potential Impacts on Water Framework Directive Status</i> The design mitigation measures included in section 6.10.1 have taken account of the potential impacts of the development on surface water quality; measures have been incorporated in the design to mitigate these potential impacts. The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Cork City Development Plan 2022-2028 specifies that “all planning applications for new developments incorporate SuDS in so far as possible.” Such proposals shall be accompanied by a comprehensive SuDS assessment including run-off quantity, run off quality, and impacts on habitat and water quality. As such, SuDS implementation is at the core of the proposed surface water drainage strategy for this development to allow for the application of nature-based solutions (NBS) such as tree pits, blue and green roofs, rainwater harvesting and attention system. The design of the attenuation storage system has been carried out for the 1 in 100-year event with a 20% allowance for climate change. There is no discharge to ground proposed as part of the surface water drainage strategy. Surface water will be discharged to the combined sewer system No further mitigation is required. <i>Monitoring</i> Oil separators will be maintained and cleaned out in accordance with the manufacturer’s instructions. Maintenance of the surface water drainage system and foul sewers is recommended to minimise any accidental discharges to surface water.
Air Quality	No site-specific mitigation measures are proposed for the operational phase as impacts are predicted to be not significant. There is no monitoring recommended for the operational phase of the proposed development as impacts to air quality are predicted to be imperceptible.
Climate Change	The proposed development has been designed to reduce the impact on climate as a result of energy usage during operation. These measures are outlined in Section 8.8.1 above as incorporated design mitigation. No further operational phase mitigation is proposed.

Aspect	Operational Phase Mitigation
Noise & Vibration	<i>Traffic Along Surrounding Road Network</i> Changes to traffic flows will result in a not significant increase in noise level in the surrounding environment. Therefore, no mitigation measures are necessary in this case. <i>Building Services Noise</i> With consideration at the detailed design stage, the selection and location of plant items within the proposed development and associated buildings will ensure that noise emissions from any mechanical and electrical building services plant do not exceed the relevant noise criteria within Section 9.9.2.1 , therefore no further mitigation is required. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements. Once operational noise emissions are controlled within the development site, there will be no perceptible noise impact at sensitive receivers off-site. <i>Outdoor Activity</i> The developer will implement in full the following noise management policy throughout the operational phase of the development to minimise further any noise impact from the amenity areas. The implementation of this policy will ensure that noise from the amenity areas will be minimised. The noise management policy outlines the following measures: • The external amenity area opening hours will be 07:00hrs to 23:00hrs with no activity at night except for circulation as required. • Members of staff will conduct regular checks of the external area at all times. The area will also be subject to CCTV coverage. Coverage will operate for 24 hours with images retained for 30 days. • Signage will be erected in the external area and by all exits to the premises to remind students of the need to respect the rights of our neighbours to the quiet enjoyment of their homes, businesses and other activities. • If on occasion students are found to be making excessive noise a member of staff will take immediate action to rectify the situation, e.g. ask the student to talk more quietly or if problems persist, ask them to return inside the premises. • A telephone number will be circulated to residents to allow any complaints as to noise from the premises or as to any other elements of its operation to be communicated easily. • If any complaints of noise disturbance are received immediate steps will be taken to prevent a recurrence of the situation. • The premises management will ensure that all residents and staff are made aware of the need to respect the rights of our neighbours to the quiet enjoyment of their homes, businesses and other activities. • Regular residents meetings will be convened unless it is apparent that attendance at such meetings means they may no longer be necessary. The meetings will allow any issues which arise from the operation of the premises to be discussed. <i>Inward Noise Impact</i> The site is considered a negligible noise risk in relation to ProPG. Therefore, no mitigation measures are necessary in this case.
Landscape & Visual	The only specific operational phase mitigation of note for landscape and visual effects that is not otherwise covered by incorporated design mitigation will be the planting and establishment over time of new trees within and around the site. However, in the context of a site already containing and preserving substantial mature tree canopy cover this will not have a material bearing on assessed landscape and visual impacts except potentially in relation to localised property scale effects around the perimeter of the site. There are no specific landscape and visual mitigation measures proposed or considered necessary in this instance and thus, there is no requirement for ongoing mitigation and monitoring.

Aspect	Operational Phase Mitigation
Waste Management	The following mitigation measures will be implemented during the operational phase of the proposed development: All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins, skips or other suitable receptacles in a designated, easily accessible areas of the site. • The Staff / Facilities Management of the Site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – for the authoring and implementation of an Operational Waste Management Strategy, ensuring a high level of recycling, reuse and recovery at the site of the proposed development. • The Staff/ Facilities Management will regularly audit the onsite waste storage facilities and infrastructure and maintain a full paper trail of waste documentation for all waste movements from the site. • The following mitigation measures will be implemented: • The Residents/ Staff / Facilities Management will ensure on-Site segregation of all waste materials into appropriate categories, including (but not limited to): • Organic waste; • Dry Mixed Recyclables; • Mixed Non-Recyclable Waste; • Glass; • Cardboard; • Plastic; • Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment; • Waste Electrical and Electronic Equipment • Cooking oil; • Cleaning chemicals (paints, adhesives, resins, detergents, etc.); • Furniture (and from time-to-time other bulky waste); and • Abandoned bicycles • The Staff / Facilities Management will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials; • The Staff / Facilities Management will ensure that all waste collected from the site of the proposed development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and • The Staff / Facilities Management will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities. These mitigation measures will ensure the waste arising from the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997, the NWMPCE (2024) and the CCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved. Monitoring The management of waste during the operational phase will be monitored by the Operator / Buildings Manager to ensure effective implementation of the mitigation measures outlined in Section 11.9 internally and by the nominated waste contractor(s). During the operational phase, waste generation volumes should be monitored by the Operator / Buildings Management. There may be opportunities to reduce the number of bins and equipment required in the Waste Storage Area (WSA's), where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contactor costs.

Aspect	Operational Phase Mitigation
Material Assets: Traffic & Transport	A Mobility Management Plan has also been developed by MHL and supplements the Traffic and Transportation Assessment submitted as part of the planning application. This plan serves as a ‘best practice’ measure to accompany the application. The purpose of the Mobility Management Plan is to reduce the percentage of single-occupancy vehicle trips and address the anticipated transport impacts on the end-users of the site. These mobility measures will also support residents who may choose to live ‘car-free’ by providing a range of sustainable transportation options, thus eliminating the need for car ownership. The measures primarily focus on promoting walking, cycling, and public transport use and can be broadly categorised into the following groups: • Appointing a Mobility Manager. • Providing a Welcome Travel Pack for students/ residents. • Implementing measures to encourage walking, such as clear signage and maps throughout the site. • Implementing measures to promote cycling, including bike hire hubs on site and cycling signage and maps that indicate travel times to key destinations. • Encouraging public transport use by collaborating with local bus operators to improve bus scheduling, routes, and school travel options. • The development will be designed to complement and support future transport initiatives such as these proposed cycle routes, which will provide cyclists with a safer and more efficient means of connectivity with The Shakey Bridge and further connectivity to UCC.
Material Assets: Built Services	<i>Drainage</i> • All new foul and surface water drainage pipes to be pressure tested and CCTV surveyed to identify any possible defects. • Water conservation measures to be implemented, which include water metering, recycling vehicle wash waters, rainwater capture, low flush, waterless urinals, spray taps, efficiency attachments. • Ensure that all Hydrobrakes are designed to limit the flow of water from the development to the combined sewer. All watermain pipes to be pressure tested in accordance with Irish Water details. <i>Electrical supply services</i> The operational electricity demand of the proposed development has already been calculated and agreed at 12KVa per unit. The connection to the existing network to supply the site will form part of the customer Agreement with ESB Networks. ESB Networks will take charge of their system on completion and will be responsible for the ongoing maintenance and operation of the service. <i>Telecommunications services</i> The operational telecommunications requirement of the proposed development has already been calculated and agreed. The connection to the existing network to supply the site will form part of the customer Agreement with Openair. Openair will take charge of their system on completion and will be responsible for the ongoing maintenance and operation of the service.
Biodiversity	The operational phase of the project is anticipated to generate minimal waste. Any debris resulting from maintenance or cleaning activities will be promptly removed from the site by the contractor. Waste disposal will be conducted in strict adherence to the Waste Management Act, 1996 (as amended), ensuring proper handling and processing of all waste materials. The new lighting proposed for the project will be carefully managed to prevent any adverse impacts on local wildlife, in particular bats. Boundary vegetation, including treelines, which are to be retained will be allowed to develop naturally throughout the operational phase. These areas will be carefully managed to maintain their ecological value and contribute to the site's overall environment. Any necessary arboricultural or horticultural interventions will be minimised to protect existing botanical communities and promote ecological stability. The woodland within the site boundary will be actively managed as part of a landscape management plan.
Built Heritage	A maintenance plan for the roofs and external envelopes of the retained historic buildings should be developed by the operators of the PBSA development in order to prevent future loss of historic building fabric.
Archaeology	Following the successful implementation of the archaeological mitigation measures presented in Section 15.9 of Chapter 15, the operational phase of the proposed development will not result in any predicted effects on the archaeological resource that will require mitigation.
Screening for Major Accidents	Mitigation measures have been designed into the proposal. No further mitigation measures necessary.

