KPMG Future Analytics

Environmental Impact Assessment Report (EIAR)

Volume 2
Main Body: Part 1
Chapters 1-10

In respect of

A Proposed Large-scale Residential Development at Ratoath, Co. Meath

On behalf of

Beo Properties Limited

June 2025

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1 Introduction

1.1 Overview

This Environmental Impact Assessment Report (EIAR) has been prepared by KPMG Future Analytics (KPMG FA) of 1 Stokes Place, Dublin 2, on behalf of Beo Properties Ltd., Unit 6, Argus House, Greenmount Office Park, Harold's Cross Road, Dublin 6W ("the Applicant") in respect of a proposed Large-scale Residential Development (LRD) on lands at Jamestown and Commons, Ratoath, Co. Meath.

The proposed Large-scale Residential Development (LRD) on a site of 12.58ha at Jamestown and Commons, Ratoath Co. Meath consisting of 364 no. residential units including 250 no. houses and 114 no. apartment / duplex units along with a creche, retail unit and café unit also includes the construction of a section of the Ratoath Outer Relief Road (RORR) from its current termination point to the existing Fairyhouse Road (R155). Please refer to the planning application form and statutory notices (newspaper and site notices) for a full and formal description of the proposed development

The subject site forms part of the wider Masterplan lands (MP 37), as identified in the consolidated Meath County Development Plan 2021-2027 (Variation 2). The site is located immediately to the south of the existing built area of Ratoath in County Meath within the townlands of Commons and Jamestown.

The purpose of this Environmental Impact Assessment Report (EIAR) is to assess the likely and significant direct and indirect environmental impacts of the proposed development. This, in turn, will enable the Competent Authority to carry out an EIA of the proposed development. Specifically, it will enable the Competent Authority to interpret and describe in detail these impacts, and scope how they can be minimised or ameliorated. The final output of the assessment is presented in the form of this Environmental Impact Assessment Report (EIAR) which accompanies the planning application for the development to the Competent Authority. In turn, the Competent Authority will carry out an EIA in order to reach a reasoned conclusion on the significant effects of the project on the environment.

1.2 Proposed Development

1.2.1 Statutory Notice

The Statutory Notice describing the proposed development is as set out below:

We, Beo Properties Limited, intend to apply to Meath County Council for a 7-year planning permission for a Large-scale Residential Development (LRD) at this site (12.58 ha) located on the southern edge of the settlement of Ratoath in County Meath, within the townlands of Commons and Jamestown. The subject site is generally bound to the north by Glascarn Lane, the rear of houses at Glascarn Lane, further existing residential dwellings and a permitted strategic housing development (SHD) scheme (Reg Ref: TA17/305196); to the east by the permitted SHD scheme (Reg Ref: TA17/305196); to the south by existing agricultural fields and by Glascarn Lane; and to the west by Fairyhouse Road (R155), the rear of houses on Fairyhouse Road, Cairn Court and Carraig na Gabhna, and existing agricultural fields.

The development will consist of the construction of 364 No. residential units, a Commercial Building (857.05 sq.m) containing a Creche, a Retail Unit and a Café and a section of the Ratoath Outer Relief Road (RORR) together with all associated ancillary accommodation, open space and site development works. The total overall gross floor area (GFA) of the development is 40,753.53 sq.m of which 39,881.14 sq.m is residential GFA and 872.39 sq.m is non-residential GFA.

The proposed development consists of 364 No. residential units including 250 No. houses and 114 No. apartment / duplex units.

The 250 No. houses will further consist of 38 No. 2-Bed, 151 No. 3-Bed, 50 No. 4-Bed and 11 No. 5-Bed units each with a private residential garden. In total, 500 No. car parking spaces are provided for the proposed houses. The proposed development consists of a mix of Detached, Semi-Detached and Mid-Terrace housing types ranging from 2- to 3-storeys in height.

The 114 No. apartment / duplex units will be provided within a total of 9 No. Blocks ranging from 2-4 storeys in height including 6 No. Apartment Blocks with a total of 91 No. apartments and 3 No. Duplex Blocks with a total of 23 No. duplex units. Each apartment / duplex unit will have a private balcony/terrace and access to communal open space totaling 0.118 ha.

The 114 No. apartment / duplex units will further consist of 32 No. 1-Bed units, 69 No. 2-Bed units and 13 No. 3-Bed units. Details of the Apartment and Duplex Blocks are provided on a block-by-block basis below:

Apartment Block 1 (3- & 4-Storey Building) will consist of 6 No.1-Bed units and 13 No. 2-Bed units

Apartment Block 2 (4-Storey Building) will consist of 2 No.1-Bed units and 10 No. 2-Bed units

Apartment Block 3 (4-Storey Building) will consist of 2 No.1-Bed units and 10 No. 2-Bed units

Apartment Block 4 (3-Storey Building) will consist of 5 No.1-Bed units and 10 No. 2-Bed units

Apartment Block 5 (4-Storey Building) will consist of 6 No.1-Bed units and 14 No. 2 Bed-units

Apartment Block 6 (2 & 3-Storey Building) will consist of 4 No.1-Bed units and 9 No. 2-Bed units

Duplex Block 1 (3-Storey Building) will consist of 2 No.1-Bed units, 1 No. 2-Bed unit and 4 No. 3-Beds units

Duplex Block 2 (3-Storey Building) will consist of 3 No.1 Bed-units, 1 No. 2 Bed-unit and 5 No. 3-Beds units

Duplex Block 3 (3-Storey Building) will consist of 2 No.1-Bed units, 1 No. 2-Bed unit and 4 No. 3-Beds units

In total, 152 No. car parking spaces are provided for the proposed apartment / duplex units comprised of 114 No. spaces for residents (including 25 No. EV spaces) and 38 No. spaces for visitors (including 7 No. EV spaces and 9 No. Accessible spaces). A total of 266 No. cycle parking spaces are provided for the apartment / duplex units including 209 No. spaces for

residents and 57 No. spaces for visitors. A total of 4 No. ancillary external bin stores (59.23 sq.m) are provided to serve the proposed apartment / duplex blocks.

The proposed development includes a 2-storey Commercial Building (857.05 sq.m) comprising of a Creche (total 692.8 sq.m) at ground level and first floor level with associated Creche outdoor play area at ground level (254.4 sq.m), a Retail Unit (93.5 sq.m) at ground level and a Café (63.13 sq.m) at ground level with associated outdoor seating area. In total, 24 No. car parking spaces are provided for the Commercial Building including 4 No. EV spaces, 1 No. Accessible space and 2 No. Set down spaces. A total of 8 No. cycle parking spaces are provided for the Commercial Building. 1 No. ancillary external bin store (15.34 sq.m) is provided to serve the proposed Commercial Building.

The proposed development will include the construction of the remaining section of the Ratoath Outer Relief Road (RORR) from its current temporary termination point to the east of the subject site to the existing Fairyhouse Road (R155) in the west. The proposed section of the RORR runs from a new proposed signalised junction on the R155, east along the southern boundary of the subject site for approximately 1.08km to the current RORR temporary termination point and for an additional 75m to put a new surface course on the adjoining constructed section of the RORR. A dedicated pedestrian

path and a segregated two-way cycle path is proposed along the northern side of the proposed road. 2 No. bus stop laybys are proposed along the proposed section of the RORR with 1 No. on the northern side and 1 No. on the southern side of the proposed carriageway. A grass verge is proposed to the north of the RORR and a soft margin is proposed along the south side of the RORR. A toucan controlled crossing is proposed along the RORR to the west of the proposed bus stop laybys to allow for safe access from the pedestrian/cycle infrastructure on the northern side of the RORR to the bus stop and Glascarn Lane on the southern side of the RORR.

The proposed road will provide access to the subject site in the form of two priority junctions on the northern side of the RORR. 3 No. agricultural site entrances and a new junction with Glascarn Lane are proposed on the southern side of the RORR. Dedicated pedestrian and shared pedestrian/cycle path connections are provided from the subject site to Fairyhouse Road (R155) to the west, Glascarn Lane to the north, and the RORR and Glascarn Lane to the south.

The proposed development includes the realignment of an existing section of Glascarn Lane (c. 270m in total) to facilitate the construction of the proposed section of the RORR. To the north of the RORR, an existing section of Glascarn Lane (c. 75m) will have vehicular traffic removed from it and be repurposed as an active travel shared surface. To the south of the RORR, an existing section of Glascarn Lane will be upgraded to a 2-lane road (c. 187m) with a 40m footpath along the eastern side of the carriageway.

A total of 1.59 ha landscaped public open space comprising a central public park area of 0.4 ha and a series of pocket parks featuring formal and informal play and amenity areas are also proposed and distributed throughout the development. Planning permission is also sought for an extension to the foul water network, surface water and watermain along the RORR required to facilitate the development and for all associated site development and infrastructural works, services provision, foul and surface water drainage, internal roads and pathways, parking infrastructure, lighting, substations, hard and soft landscaping, boundary treatments, green and blue infrastructure and associated signage.

An Environmental Impact Assessment Report has been prepared in respect of the proposed development.

The application including Environmental Impact Assessment Report, may be inspected online at the following website setup by the applicant: www.ratoathlrd.ie

The planning application together with the Environmental Impact Assessment Report may be inspected or purchased ***at a fee not exceeding the reasonable cost of making a copy****, at the offices of the Planning Authority during its public opening hours, and a submission or observation in relation to the application may be made in writing to the Planning Authority on payment of the prescribed fee (€20.00) within the period of 5 weeks beginning on the date of receipt by the Planning Authority of the application and such submissions or observations will be considered by the planning authority in making a decision on the application. The planning authority may grant permission subject to or without conditions or may refuse to grant permission.*

1.2.2 Location – Application Lands

The development proposal lands, referred to as Subject Site, are shown below (Figure 1.1). It is located directly south of the existing built area of Ratoath in County Meath within the townlands of Commons and Jamestown with the northern boundary of the lands adjacent to Glascarn Lane (Figure 1). The development proposal inclusive of the RORR extends over a total area of c. 12.58 hectares (red line boundary in Figure 1). The proposed scheme is intended to accommodate the future growth and sustainable expansion of Ratoath, enabled also by the completion of the final phase of the Ratoath Outer Relief Road (RORR). Additionally, it is supported by a Meath County Council (MCC) approved Masterplan as part of the wider masterplan lands (MP 37) and aligns with the framework plan for the future development of the White Lands to the south.

Figure 1.1: Subject Site Outlined in Red.

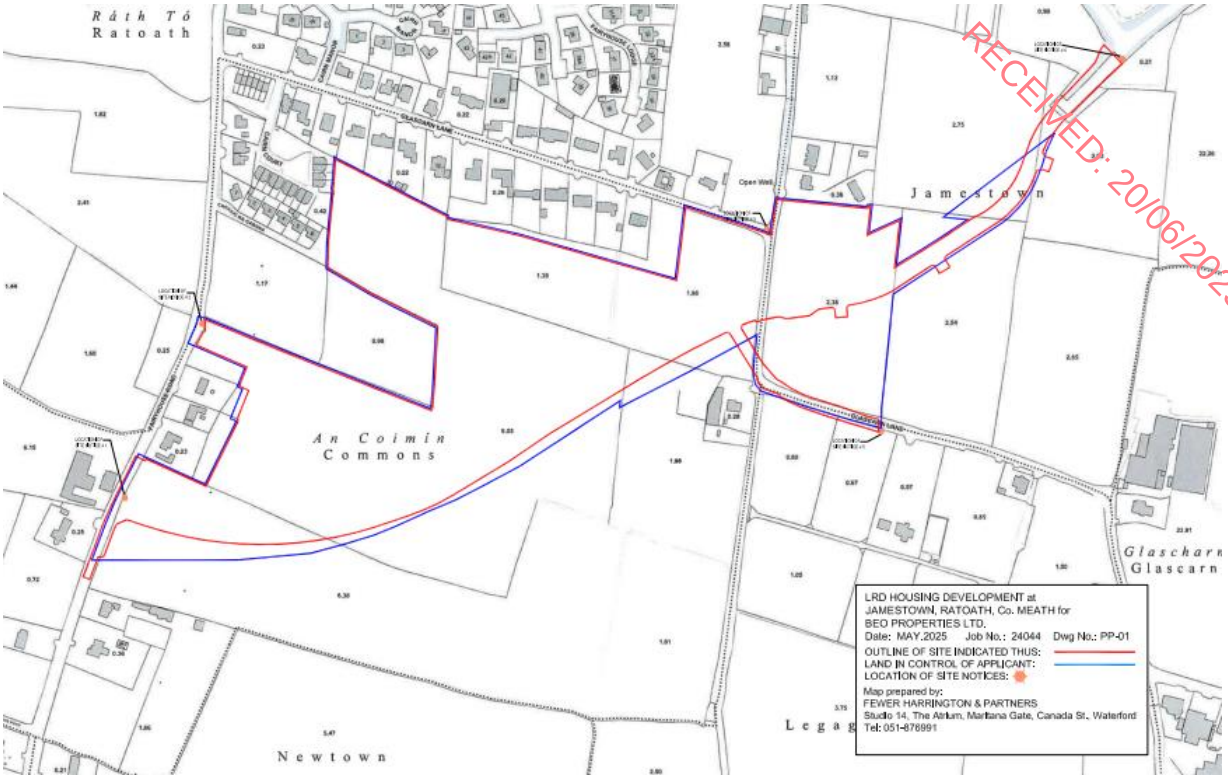

Figure 1.2: Site Location Map (Blue line: Ownership Boundary and Red line: Application Boundary)

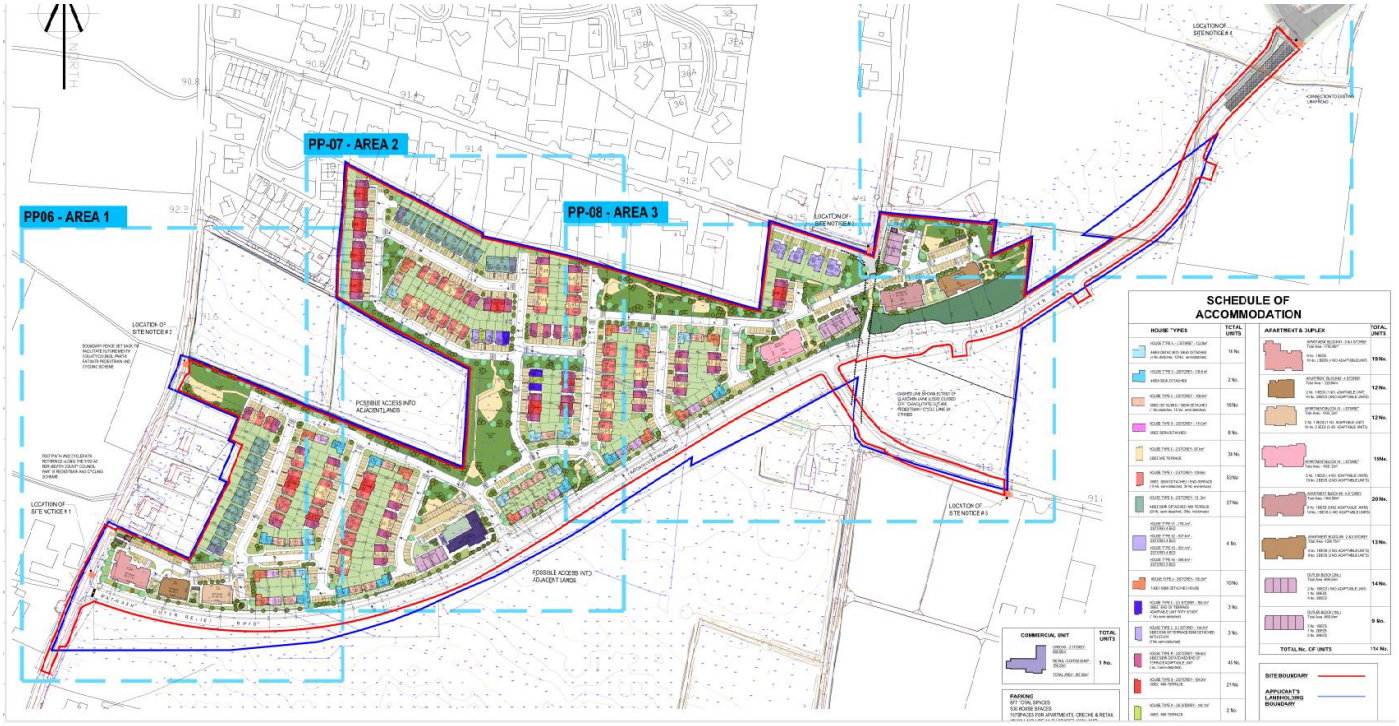

Figure 1.3: Site Layout Plan (Source: Fewer Harrington & Partners Architects)

1.3 EIAR Study Boundary

The EIA encompasses all land and development proposed within the red line application boundary denoted in Figure 1.4 below, and where relevant, surrounding areas. The study area for the purposes of this EIAR is defined on a chapter-by-chapter basis in alignment with the specific requirements / considerations of each environmental topic. The lands are primarily within the single ownership of the applicant, Beo Properties Ltd. – letters of consent are provided for areas within the application boundary that are outside the ownership of the applicant.

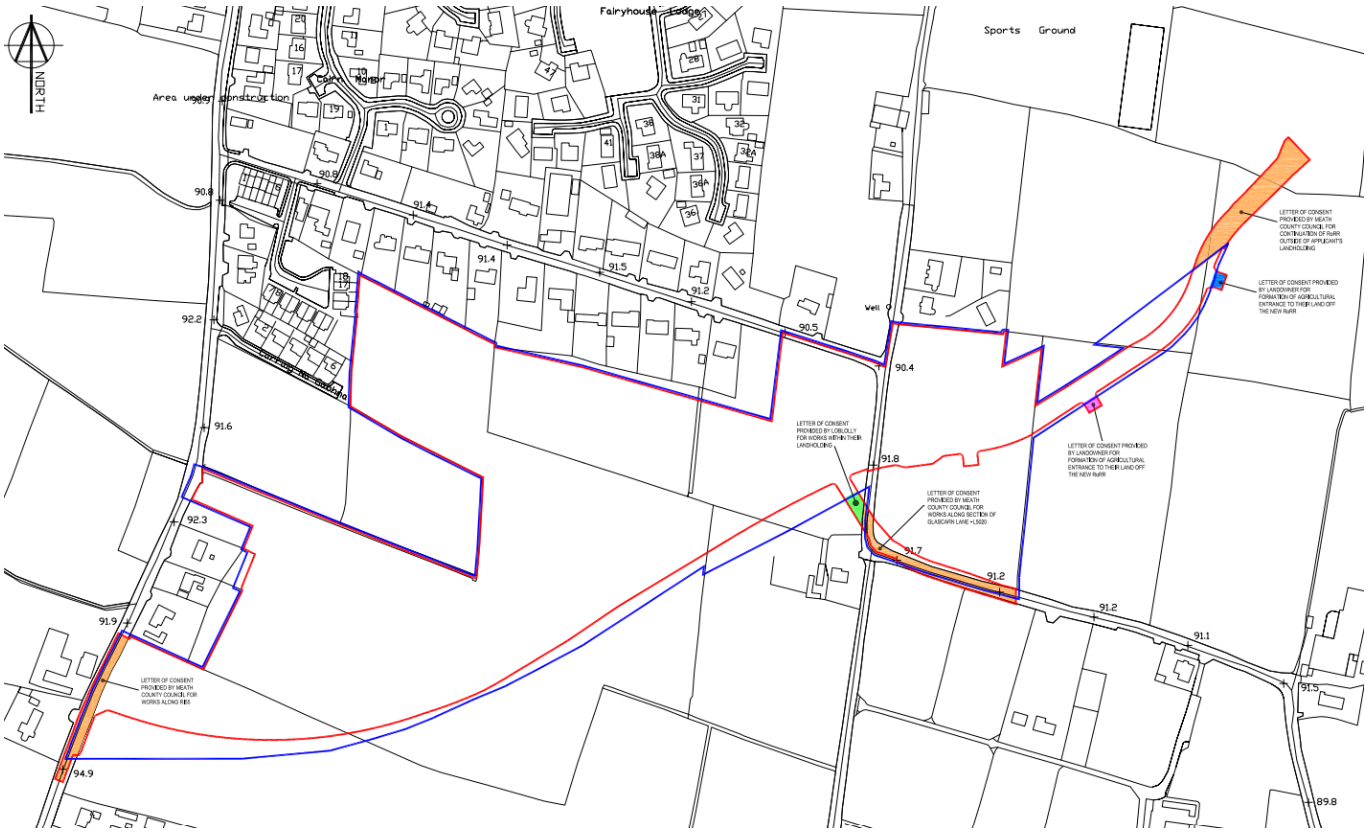

Figure 1.4: Land Ownership Map (available as separate enclosure to LRD application pack)

1.4 Definition of EIA

The 2014 EIA Directive (2014/52/EU) defines 'Environmental Impact Assessment' as a process consisting of the preparation of an environmental impact assessment report by the developer, for the examination of the competent authority to reach a reasoned conclusion on the significant effects of the project on the environment. EIA Directives have been transposed into the Irish law by way of the *Planning and Development Acts 2000 (As amended) and Planning and Development Regulations* 2001-2018.

As defined by Directive 2014/52/EU and restated within the *Guidelines for Planning Authorities* and A*n Bord Pleanála* on carrying out *Environmental Impact Assessment* by the Department of Housing, Planning and Local Government, 2018, it is a process consisting of:

(a) the preparation of an Environmental Impact Assessment Report (EIAR) by the developer

(b) the carrying out of consultations

(c) the examination by the competent authority of the EIAR, any supplementary information provided, where necessary, by the developer and relevant information received through consultations with the public, prescribed bodies and any affected Member States

(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 2017 Draft Guidelines on the information to be contained in an EIA by the EPA refers to the EIAR as *'a statement of the effect if any, which proposed development if carried out would have on the environment.'*

> *The EIAR is prepared by the developer and is submitted to a CA as part of a consent process. The CA uses the information provided to assess the environmental effects of the project and, in the context of other considerations, to help determine if consent should be granted. The information in the EIAR is also used by other parties to evaluate the acceptability of the project and its effects and to inform their submissions to the CA.*

This report prepared by or behalf of the developer on the environmental impact assessment is referred to as an Environmental Impact Assessment Report since the amended directive 2014/52/EU. It was previously referred to as Environmental Impact Statement (EIS).

The *Guidelines on the information to be contained in an EIA* by the EPA were since updated in May 2022. However, its reference to EIAR as above has not changed. Moreover, the updated Guidelines also deflect to the definition of EIAR in the Planning and Development Act 2000 (as amended), which is as follows:

"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"

1.5 Need for an EIAR

This EIAR document has been prepared in accordance with the European Union EIA Directive 85/337/EC as amended by 97/11/EC, 2003/4/EC, 2011/92/EU and Directive 2014/52/EU. The EIAR has also been prepared in accordance with the *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environment Impact Assessments* (2018) and the *Guidelines on the information to be contained in an EIA published by the EPA* (2022). The following key guidelines and guidance produced by EU and other government agencies were consulted in the preparation of this EIAR:

- EU Guidance on EIA Screening (European Commission 2001).
- EU Guidance on EIA Scoping (European Commission 2001).
- EIA Review Checklist (European Commission 2001).
- Guidelines on Information to be Contained in an Environmental Impact Statement (EPA 2002).
- Study on the Assessment of Indirect & Cumulative Impacts as well as Impact Interaction (DG Environment 2002)
- Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003).
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2003).
- Development Management Guidelines (DoEHLG, 2007).

- Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports
- (EPA 2017)
- Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems - Key Issues Consultation Paper (Department of Environment, Community and Local Government, 2017).
- Circular letter PL 1/2017 - Advice on Administrative Provisions in Advance of Transposition (Department of Housing, Planning and Local Government, 2017).
- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission 2017)
- Environmental Impact Assessment of Projects – Guidance on Screening (European Commission 2017)
- Environmental Impact Assessment of Projects – Guidance on Scoping (European Commission 2017)
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018)]
- Environmental Impact Assessment Screening Practice Note 02 (Office of Planning Regulator 2021)

Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA 2022)

1.6 EIA Legislation

1.6.1 EIA Screening

The 2017 *Environmental Impact Assessment of Projects: Guidance on Screening* published by the European Commission defines the screening as the stage that *'ascertains whether a projects effects on the environment are expected to be significant'*. Projects are required to undertake screening to determine whether an EIA is necessary. The Screening is carried out as per a case-by-case examination or by the thresholds set by the relevant Member State's Competent Authority. Mandatory legislative threshold requirements take into account the type and scale of the proposed development, and the sensitivity of the receiving environment.

Certain public and private projects that are likely to have significant effects on the environment are subject to EIA requirements derived from EIA Directive 85/337/EC (as amended by Council Directive 97/11/EC, Directive 2003/4/EC, Directive 2009/31/EC, Directive 2011/92/EU and recently Directive 2014/52/EU which amends EIA law in a number of respects by amending Directive 2011/92/EU) which are designed to ensure that projects likely to have significant effects on the environment are subject to a comprehensive assessment of environmental effects prior to development consent being given.

Article 2 of Directive 2014/52/EU provides that Member States shall bring into force the laws, regulations, and administrative provisions necessary to comply with the Directive by 16 May 2017.

The Department of Housing, Planning, Community and Local Government has brought forward amendments to the Planning and Development Act 2000, as amended, and the Planning and Development Regulations 2001- 2018 to provide for the transposition of the Directive into the Irish planning code. To this effect, *the European Union (Planning and Development) (Environmental Impact Assessment) Regulations* 2018 have now transposed the 2014 Directive into Irish law. The Department has also provided an update to the 2013 *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* to provide practical guidance on legal and procedural issues arising from the requirement to undertake EIA in accordance with Directive 2014/52/EU.

Annex I of the EIA Directive 85/337/EC requires as mandatory the preparation of an EIA for all development projects listed therein. Schedule 5 (Part 1) of the *Planning & Development Regulations*

2001 (as amended) transposes Annex 1 of the EIA Directive directly into Irish land use planning legislation. The Directive prescribes mandatory thresholds in respect to Annex 1 projects. Annex II of the EIA Directive provides EU Member States discretion in determining the need for an EIA on a case by- case basis for certain classes of project having regard to the overriding consideration that projects likely to have significant effects on the environment should be subject to EIA. Schedule 5 (Part 2) of the *Planning & Development Regulations* 2001 (as amended) set mandatory thresholds for each project class.

Class 10(b) (i) and (iv) addresses 'Infrastructure Projects' and requires that the following class of project be subject to EIA:
(b) (i) Construction of more than 500 dwelling units.

Furthermore, Category 10(b)(iv) refers to:
'*Urban development which would involve an area greater than 2 hectares in the case of business district, 10hectares in the case of other parts of a built-up area and 20 hectares elsewhere.'*

The subject site area is 12.8 ha which exceeds threshold of 10 ha applicable to a development within a built-up area. Although the proposed development does not exceed the above threshold of 500 dwelling units, the inclusion of an Environmental Impact Assessment Report with this application was considered a prudent measure given the scale of development which includes LRD and RORR. This approach was supported by Meath County Council at Pre-Application stage, where the EIA was subject to informal screening.

This EIAR has been prepared in accordance with Part 10 provisions of the Act. This EIAR describes the findings of the EIA process to the Planning Authority to help determine a decision on the proposed development. It also informs the relevant statutory consultees, interested parties and the public about the likely effects that the proposed development will have on the environment

1.6.2 Scoping of EIAR

The purpose of scoping is to identify the information to be contained within the EIAR and the methodology to be used in gathering and assessing the information. The current application has been subject to formal pre planning application consultation meetings with Meath County Council consisting of a section 247 pre planning meeting and an LRD meeting in accordance with section 32B of the Planning and Development (Large Scale Residential Developments) Act 2021. The application reflects and responds to the points of discussion during the course of the pre application consultations with Meath County Council. It has been further informed by advice received from the specialist team engaged to prepare the EIAR

An LRD Opinion issued by Meath County Council in February 2025 set out requirements for EIAR, summarised as follows:

The applicant is required to provide an Environmental Impact Assessment Report (EIAR) for the proposed development.

Having regard to the above, the application documentation shall address any aspect of the proposed development likely to have significant effects on the environment or on European Sites/ Natura 2000 Sites, their habitat and species. In particular, the potential impact of the proposed development on the European Sites listed shall be fully assessed in accordance with, 'Guidance on Appropriate Assessment for Planning Authorities (2009/ 2010)', 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out EIA (2018)', or other guidelines as appropriate.

In summary, the Planning Authority considers that insufficient details of the impact on European Sites and Significant Impacts on the Environment have been provided and thus require further consideration/ amendment to ensure the submitted documents constitute a reasonable basis on which to make an LRD application. Environmental impacts must be assessed in accordance with the aforementioned Guidelines/ Guidance documents.

All relevant Environmental Assessments (EIA, AA, Flood Risk Assessment, Ecological Impact Assessment etc.) to be carried out and submitted with the application.

(a) An EIAR will be submitted as part of the application.

(b) A Screening for AA and where relevant a Natura Impact Statement should be submitted. The applicant is requested to ensure that the full red line boundary is assessed in the AA documentation, that the ZOI is clearly outlined and mapped and details such as watercourse crossing methodology (method statement, etc.) are provided in a NIS (if so required).

(c) The design and location of development must be informed by the environmental assessments with mitigation incorporated into the final proposal. These reports are distinct and follow separate legislative requirements/ guidelines, however they should be consistent with each other.

(d) Details regarding the author(s) should be presented, outlining their qualifications and relevant experience, in addition to the length of experience. Where relevant, input from a range of authors with appropriate expertise may be required for the aspects of EIA, EcIA, AA, Hedgerow Survey, etc. A Strategy for dealing with Invasive Species onsite or import of same is also required.

(e) The applicant is advised to ensure that surveys are conducted in appropriate seasons and consider the need for Bat, other Mammal Surveys, Bird Surveys, Tree Survey/ Report, etc. and consider the objectives in the MCDP that trees be preserved, retention of hedgerows and promote the All-Ireland Pollinator Plan. Surface water drainage and landscaping proposals should also be assessed. Cumulative impacts of the proposed development alongside proposals within the Masterplan area should be assessed.

(f) Inland Fisheries Ireland (IFI) reference the poor condition of the Ratoath Stream and Broadmeadow River in its submission on the SHD application to An Bord Pleanála. The applicant is requested to consider the issues raised by IFI.

(g) Hedgerows should be assessed in accordance with the Hedgerow Appraisal System – Best Practice Guidance on Hedgerow Survey, Data Collection and Appraisal and that the applicants should have regard to Article 10 of the Habitats Directive and HER OBJ 60 Meath County Development Plan 2021-2027.

1.6.3 Consultation

The preparation of this EIAR has been informed by several pre-planning meetings with various departments of Meath County Council. The approach adopted in undertaking this EIAR was discussed and largely agreed in principle during these consultations. Issues raised in consultations have been taken on board and addressed in the compilation of this document. Where relevant, statutory bodies were consulted by the experts assigned to each topic assessed under this EIAR, details of which are provided in the relevant Chapters and captured in a non-exhaustive summary set out in Section 3 of the accompanying Planning Report to this application.

A dedicated website for the proposed development is established and the EIAR is available at: www.ratoathlrd.ie

Prior to the lodgement of this application, the full complete Environmental Impact Assessment Report has been uploaded to the Department of Housing, Planning and Local Governments EIA Portal. The

EIA portal is easily accessible by members of the public and provides a link and map of all planning applications that have been lodged with an accompanying EIAR

A copy of the application, including this EIAR and accompanying Appropriate Assessment (AA) may also be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, during public opening hours at the offices of the Planning Authority (Meath County Council, Buvinda House, Dublin Road, Navan County Meath) during public opening hours.

1.6.4 Risk of Major Accidents and Disasters

In accordance with Article 3(2) and Annex IV of the 2014 EIA Directive, the vulnerability of the project to risks of major accidents and/or disasters, as well as likely significant effects on the environment if it did occur, are considered.

Article 3(2) of the 2014 EIA Directive states that an EIAR should consider the following: -

> *'The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned'.*

In addition, an EIAR should also contain the following information prescribed in 5(d) of Annex IV of the 2014 EIA Directive:

- *"A description of the likely significant effects of the project on the environment resulting from, inter alia:(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);"*

The 2018 Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment sets out two key considerations to address this:

- "The potential of the project to cause accidents and/or disasters, including implications for human health, cultural heritage, and the environment.
- The vulnerability of the project to potential disasters/accidents, including the risk to the project of both natural disasters (e.g., flooding) and man-made disasters (e.g., technological disasters)."

During the construction phase, the risk of accidents and/ or disasters caused by the project, arising from the potential for construction accidents, are addressed under Health and Safety Regulations and other codes. When directly relevant to the planning and EIA process, certain mitigation measures are identified in order to prevent and/ or mitigate any significant effects.

During the operational phase, the risk of fire related accidents is addressed through the Building Regulations (Fire Safety) and is also addressed through mitigation measures, where applicable. Specifically, residual risks of fire and road traffic accidents will be managed by emergency services.

1.7 Structure and Content of EIAR

The content of this EIAR has been prepared as per the guidance provided in Article 5(1) and Annex IV of the amended Directive (2014/52/EU). Environmental Protection Agency's *Guidelines on the information to be contained in Environmental Impact Assessment Reports* describes what an EIAR is to contain in accordance with Article 5(1), as follows:

> a) *a description of the project comprising information on the site, design, size and other relevant features of the project;*
> *b) a description of the likely significant effects of the project on the environment;*
> *c) 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;
d) 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 option chosen, taking into account the effects of the project on the environment.
e) a non-technical summary of the information referred to in points (a) to (d); and
f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.

The EPA '*Guidelines on the information to be contained in Environmental Impact Assessment Reports*' describe inclusion of the following as good practice in the preparation of an EIAR:

- Key alternatives considered;
- Proposed project;
- Receiving environment;
- Likely significant effects; and
- Mitigation and monitoring measures and residual effects.

A non-technical summary is also required to be provided. This is provided as a separate volume, EIAR Volume 1. This section will provide core information of the assessments in a simpler language and condensed format to ensure that the public and local community are aware of the likely environmental impacts of the proposed development.

As per article 3(1) of Directive 2014/52/EU *the environmental impact assessment shall identify, describe, and assess in an appropriate manner, in the light of individual case, the direct and indirect significant effects of a project on the following factors:*

(a) population and human health;
(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
(c) land, soil, water, air and climate;
(d) material assets, cultural heritage and the landscape;
(e) the interaction between the factors referred to in points (a) to (d)

This EIAR includes all necessary technical studies to address the likely environmental impacts of the construction and operation of the proposed development. The disciplines identified for inclusion in this EIAR, along with the technical content, were determined based on a various site walkover surveys, completion of an environmental scoping exercise (to inform the content and extent of matters covered in the environmental information) and consultation with statutory bodies.

Within the main body of the EIAR, Chapter 1 sets out the Introduction and Methodology, Chapter 2 describes the proposed development and background to the scheme, Section 3 outlines the Planning Policy Context and Chapter 4 describes Alternatives. The environmental topics where there is potential for significant impacts to arise are addressed in Chapters 5 to 16 as follows:

Chapter 5	Air Quality
Chapter 6	Climate Factors
Chapter 7	Noise & Vibration
Chapter 8	Biodiversity
Chapter 9	Archaeological, Architectural & Cultural Heritage
Chapter 10	Landscape & Visual
Chapter 11	Land, Soils, and Geology
Chapter 12	Water

Chapter 13 Population & Human Health
Chapter 14 Material Assets - Traffic & Transport
Chapter 15 Material Assets - Waste Management
Chapter 16 Material Assets - Utilities

Chapter 17 provides an overview of interactions between the environmental topics assessed and Chapter 18 provides a Summary of Mitigation Measures. In addition, residual and cumulative impacts for all relevant disciplines are addressed in each chapter.

Where appropriate, each of the main sections of this report are structured in the same general format, as follows:

- An introduction describing the purpose of the section and setting out the qualifications and
- experience of the author;
- A description of the methodology used in the section;
- A description of the aspects of the existing environment relevant to the environmental topic
- under consideration;
- Characteristics of the proposed development under consideration;
- An assessment of the impact of the proposed development on the environmental topic;
- Recommendations for mitigation measures to reduce or eliminate any significant negative
- impacts identified; and,
- An assessment of the residual impact that will remain, assuming that recommended mitigation
- measures are fully and successfully implemented.
- Cumulative impacts;
- Summary of interactions, where identified;
- Monitoring measures, where relevant;
- References.

Further details of the methodology and discipline specific best practice and guidance are presented in the relevant Chapters included within this report.

1.8 General EIAR Methodology

1.8.1 Introduction

The methodology adopted for the preparation of this EIAR comprised a systematic analysis of the impact of the Proposed Project in relation to the existing environment. The overall methodology for preparation of the EIAR is discussed under the following headings;

- Basis for assessment;
- Impact assessment and mitigation; and
- Significance of environmental issues.

1.8.2 Basis for Assessment

The impact assessment examines the existing environmental conditions within the study area for each element of assessment and then determines the potential impacts associated with the Proposed Project during its construction and operational phases.

The study area considered within this EIAR differed for each environmental aspect and extended to incorporate all areas where there was potential for significant impact (i.e. any sensitive areas which could be affected by this development were included in the study area). Further information on the

extent of the study area considered for each topic is addressed in the relevant corresponding EIAR chapter.

1.8.3 Impact Assessment and Mitigation

The preparation of the EIAR was an iterative process, linking into the design development process. The approach adopted in the impact assessment and preparation of the EIAR was based on the recommendations in the *Guidelines on information to be contained in Environmental Impact Assessment Reports (EPA, 2022)*.

The proposed design was developed and the potential impacts of the proposal on the receiving environment was identified. Mitigation measures, once identified and assessed, have been incorporated into the design, where possible.

1.8.4 Residual Impacts

Residual impacts relate to environmental change(s) which will occur after the proposed mitigation measures have been put in place and taken effect. Although there may be some residual impacts which arise from any development, these impacts are usually considered to be minimal in nature.

1.8.5 Significance of Environmental Issues

The glossaries contained in the EPA Guidelines on the information to be contained in EIAR describe an impact as '*change resulting from the implementation of project*.'

The following factors were considered when determining the significance of the impact (both positive and negative) of the Proposed Project on the receiving environment:

- The quality and sensitivity of the existing/baseline receiving environment;
- The relative importance of the environment in terms of national, regional, county, or local importance;
- The degree to which the quality of the environment is enhanced or impaired;
- The scale of change in terms of land area, number of people impacted, number and population of species affected, including the scale of change resulting from cumulative impacts;
- The consequence of that impact/change occurring;
- The certainty/risk of the impact/change occurring;
- Whether the impact is temporary or permanent; and
- The degree of mitigation that can be achieved.

The criteria outlined in the EPA Guidelines have also been followed when quantifying the duration and magnitude of impacts. The quality of the impact is described as 'negative', 'neutral' or 'positive'. Consideration is also given to whether significant impacts are 'Direct' or 'Indirect'. Further information on the specific methodologies utilised for the assessment of each environmental aspect are included in the relevant EIAR chapters.

Where no impact or a positive impact was predicted to occur, the design of the Proposed Project remained unchanged. Where significant adverse impacts are predicted, mitigation measures are proposed to avoid or minimise impacts. Where feasible, these measures were then incorporated into the design of the Proposed Project.

In terms of the assessment of the significance of potential environmental effects, The EPA Guidelines sets out that the assessment of significance should be based on clear and unambiguous criteria, and

that significance should be defined in a way that reflects what is valued in the environment by public and private stakeholders. A common approach to this would be the application of multi-criteria analysis. Common criteria used to evaluate significance include the magnitude of the predicted effect and the sensitivity of the receiving environment:

- *'Magnitude' considers the characteristics of the change (**timing**, **scale**, **size**, and **duration of the impact**) which would probably affect the target receptor as a result of the proposed Project.*
- *'Sensitivity' is understood as the sensitivity of the environmental receptor to change, including its capacity to accommodate the changes the Projects may bring about.*

The EC guidelines also notes that significance is always context-specific and hence, a tailored criteria should be developed for each Project and its settings.

The EC Guidelines on Scoping states that all assessment methods should define clear thresholds or criteria for determining whether an impact is significant, based on the characteristics of an impact, in a clear and unambiguous manner.

The assessment method, hence, follows the commonly used approach of the 'multi-criteria analysis' to evaluate significance – which includes consideration of the magnitude of the predicted effects and the sensitivity of the receiving environment.

In order to scale and weigh the two criteria (on sensitivity and magnitude), a matrix similar to that set out in the EPA Guidelines (2022), has been considered to evaluate the significance of effects:

Table 1.1 Matrix of Significance

Impact Magnitude	**Environmental Sensitivity**			
	High	**Medium**	**Low**	**Negligible**
High	Profound	Very Significant or Significant	Significant or Slight	Slight
Medium	Very Significant or Significant	Significant	Slight	Slight or Non-Significant
Low	Significant or Slight	Slight	Slight or Non-Significant	Slight or Non-Significant
Negligible	Slight	Slight or Non-Significant	Slight or Non-Significant	Imperceptible

Generalised definitions of the above scale of effects, as provided within the EPA Guidelines (2022), is represented below in Table 1.2.

Table 1.2 Description of Significance of Effects (as per the EPA Guidelines 2022)

Terminology Describing Significance of Effects	
Imperceptible	An effect capable of measurement but without significant consequences
Non-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 Effects	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.

In line with the above, the Section on Impact Assessment through each Chapter, has set out in detail the impacts resulting from the Development as a whole and the extent of their significance on the receiving environment.

The construction of the development will be undertaken in accordance with the conditions of any forthcoming planning approval received for the scheme. Any further modification to the Proposed Project to improve/reduce environmental impacts will only occur where such modifications are minor/points of detail. The final Proposed Project design and construction will comply with all relevant statutory approvals.

Following on from a grant of planning permission, the proposed project will progress to construction stage. All mitigation measures set out within this EIAR, and which are applicable to construction of the project and operation of the development, will be adhered to. This includes any mitigation measures contained in such planning permission, as may be granted.

1.9 Contributors/Subject Matter Experts: EIAR Team

This EIAR has been prepared by KPMG Future Analytics (Chartered Town Planning and Development Consultants) along with various competent specialist sub-consultants on behalf of the Beo Properties Ltd. The list below presents the subject matter experts who contributed to the preparation of the report and their qualifications:

Table 1.3 Qualifications of EIAR Specialists

Environmental Aspect	Company Name	Person Responsible	Qualification
EIAR Manager	KPMG Future Analytics	Maria Rochford	BA (Hons) MRUP MIPI
EIAR Reviewer	KPMG Future Analytics	Stephen Purcell	BSc. (Hons) MRUP MSc. MIPI FSCSI FRICS
Air Quality	AWN	Tanmay Gojamgunde	BTech Environmental Engineering MSc. Air Pollution
Climate Factors	AWN	Dr. Avril Challoner	BEng (Hons) in Environmental Engineering HDip in Statistics PhD in Environmental Engineering (Air Quality) CEnv, CSci
Noise and Vibration	AWN	Alistair Maclaurin	BSc PgDip MIOA
Biodiversity	Altemar	Bryan Deegan Jeff Boyle	MSC Environmental Science BSc (Hons) Applied Marine Biology NCEA National Diploma in Applied Aquatic Science NCEA National Certificate in Science (Aquaculture MCIEEM Member BSc (Hons) Environmental Management
Archaeological, Architectural & Cultural Heritage	ACSU	Donald Murphy Magda Lyne	M.A. (Archaeology)
Landscape and Visual Impact	Purser	Seamus Purser	BAgrSc Landscape Architecture, MRUP ILI IPI RTPI
Lands, Soils, and Geology	OCSC	Aideen O'Rourke Glenda Barry	BSc. Environmental Bioscience BSc. Geosciences MSc. Environmental Marine Science IGI, EurGeol, EFG
Water	OCSC	Mark Killian	CEng MSc BSc

Population and Human Health	KPMG Future Analytics	Maria Rochford	BA (Hons) MRUP MIPI
Material Assets – Traffic and Transport	OCSC	Wian Marais	BEng (Civil), BEng Hons (Transportation), CEng MIEI
Material Assets – Waste Management	OCSC	Anthony Horan	B Eng. Chartered Engineer, MIEI, P Grad. Cert. Road Safety, P. Grad. Dip Proj. Man., FCONSEI
Material Assets - Utilities	BBSC	Barry O'Neill	Tech Eng. Dip. Eng. BEng. CEng. MCIBSE MIEI.

Further detail on the background and experience of subject matter experts is set out in the introductory sections to relevant chapters.

1.10 Difficulties Encountered During the Study

Difficulties encountered in the preparation of the EIAR are outlined in each chapter as they relate to the various environmental topics.

1.11 References

- EPA (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- European Union (2018) The European Union (Planning and Development) (Environmental Impact Assessment) Regulations
- European Union (1999) European Communities (Environmental Impact Assessment) (Amendment) Regulations (S.I. No. 93 of 1999)
- Irish Statute (2000) The Planning and Development Act (No. 30 of 2000), as amended
- Irish Statute (2001) Planning and Development Regulations (S.I. No. 600 of 2001) as amended European Commission, (2001) Guidance on EIA – Scoping
- EPA (2017) Draft Guidelines on preparation of Environmental Impact Assessment Reports
- Department of the Environment, Community and Local Government (DoECLG), (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment
- EPA (2002) Guidelines on the Information to be contained in Environmental Impact Statements
- EPA (2003) Advice Notes on Current Practice in the Preparation of Environmental Impact Statements
- EPA (2015) Draft Revised Guidelines on the Information to be contained in Environmental Impact Statements
- EPA (2015) Draft Revised Advice Notes on Current Practice in the Preparation of Environmental Impact Statements
- EPA (2015) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports;
- Department of Housing Planning and Local Government (2018) EIA Portal. Available from: https://www.housing.gov.ie/planning/environmental-assessment/environmental-impactassessment-eia/eia-portal.

2 Background to the Scheme

2.1 Introduction

This section of the EIAR provides background to the proposed development and the wider context, in accordance with the requirements set out within the EIA legislation and guidance on preparation and content of EIAR. This chapter has been prepared by Maria Rochford, MRUP MIPI, Associate Director (Planning) at KPMG Future Analytics. Maria has 15 years' experience in the preparation and project management of EIARs.

2.2 Subject Lands

The proposed development is situated on an irregular shaped site of 12.58ha located to the southern edge of the settlement of Ratoath, Co. Meath, within the townlands of Commons and Jamestown (Figure 2.1). The application site is a greenfield area c.1 km south of the centre of Ratoath and c. 1km north of Fairyhouse racecourse. The lands are currently in use agricultural grassland. Mature hedgerows form the boundaries and define each field within the application area. There is a bridle path towards the eastern most end of the site which connects the lands directly north to those to the south. A drainage ditch within the north-west of the site. A row of single detached dwelling bound the site along Glascarn Lane to the north and northwestern boundary.

Figure 2-1 LRD and RORR Application Site

2.3 Site Context

The site is generally bound to the north and north-east by Glascarn Lane along which there are several low-rise, one- to two-story detached homes with rear gardens towards north and western side (there is a linear plot behind some of these houses separating the application site from the rear of the Glascarn Lane properties). Carraig Na Gabhna and Cairn Court Developments are situated to the north-west. Directly north-east of the subject site, a scheme of 228no. homes, a creche and associated development is curently under construction (as permitted under planning reg. ref. SH305196). The eastern portion of the application lands is the intended location of the new Ratoath Outer Relief Road (hereafter referred to as 'RORR'). The remainder of the eastern boundary, southern and western boundary are adjoined primarily by neighbouring agricultural lands, interspersed with detached housing on Fairyhouse Road (R155). There is a bus stop located along the Fairyhouse Road and Ratoath College Secondary school is located c.300m north-east of the site. There is a concentration of retail services and community facilities within Ratoath town centre approximately 1km to the north.

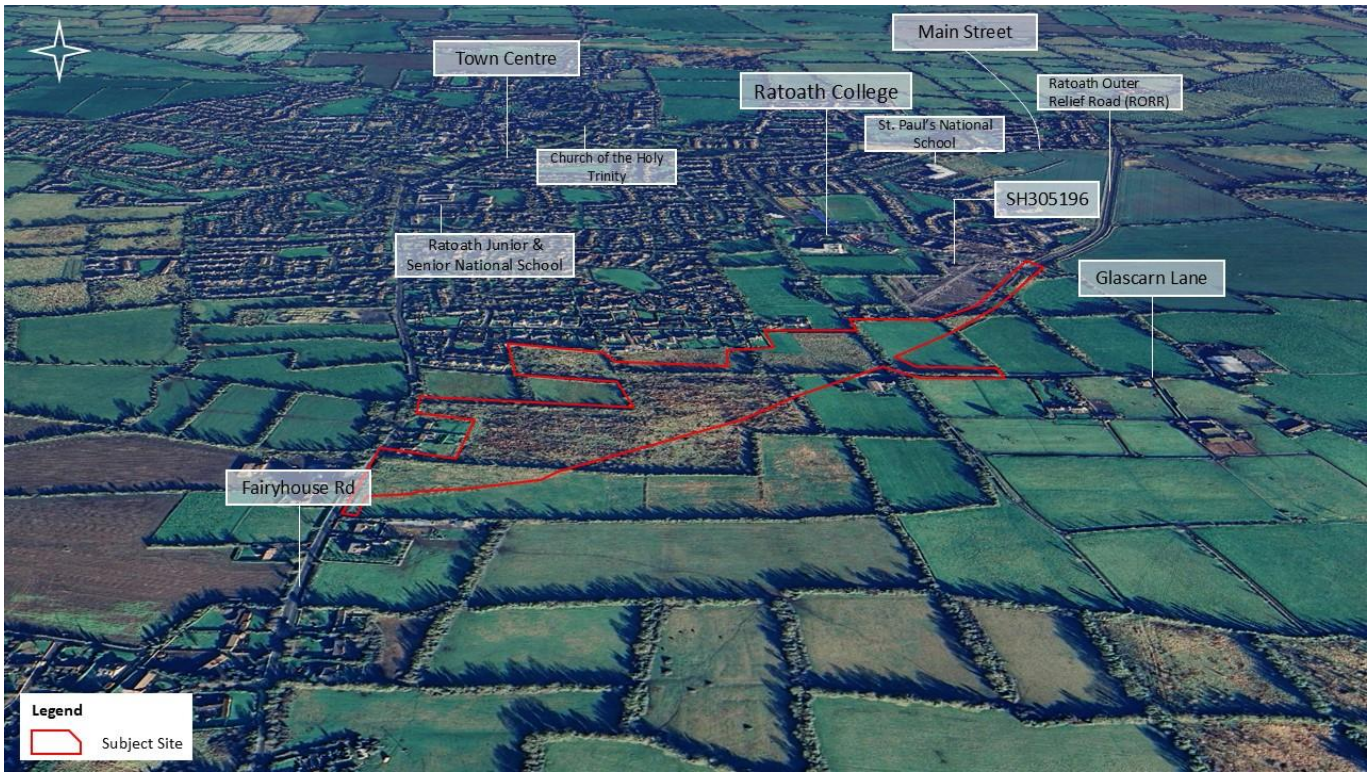

Figure 2-2 Subject Site in context with surrounding land uses

The settlement of Ashbourne is located to the east of the subject site and Dunshaughlin is located to the west. The popular tourist attraction of Emerald Park is situated approximately 4km north of Ratoath town and Fairyhouse racecourse is located 1km south of the subject site. The site is within walking distance of Ratoath town centre which offers a broad range of retail, personal and professional services and a variety of social infrastructure facilities.

The site is easily accessible and connectivity to the lands will be formalised via the completed RORR. The road will also serve as a key connection to Fairyhouse Road and the Main Street which currently connect Ratoath to the M34 and M35.

The are several recreational facilities that are within walking distance to the subject site such as a playground, Tesco Express, Hannon's Supervalu Ratoath, St Paul's National School, and Ratoath College, as described in Chapter 13 Population and Human Health and in the Planning Report accompanying this application pack. There are also links to local playgrounds and GAA pitches for

young children and the Fairyhouse Forest and Garden. A survey of social infrastructure available within the area, submitted as the SIA report with the application, demonstrates the variety of the local offer which includes 75 no. social infrastructure facilities and services within the locality. Figures 2.2 and 2.3 demarcates the Development Site in context with the surrounding area.

These strategically position, underutilised lands are formally recognised in Meath County Development 2021-2027, by way of zoning objectives, Masterplan status (MP37) and various policies and objectives for sustainable and sequential development and compact growth, as ideally suited to accommodate a new residential community. The Core Strategy for the county identifies 72 extant units not yet built in Ratoath and the capacity for 803 residential units and over the plan period, part of which would be delivered on 'A2 New Residential' zoned lands such as the application site.

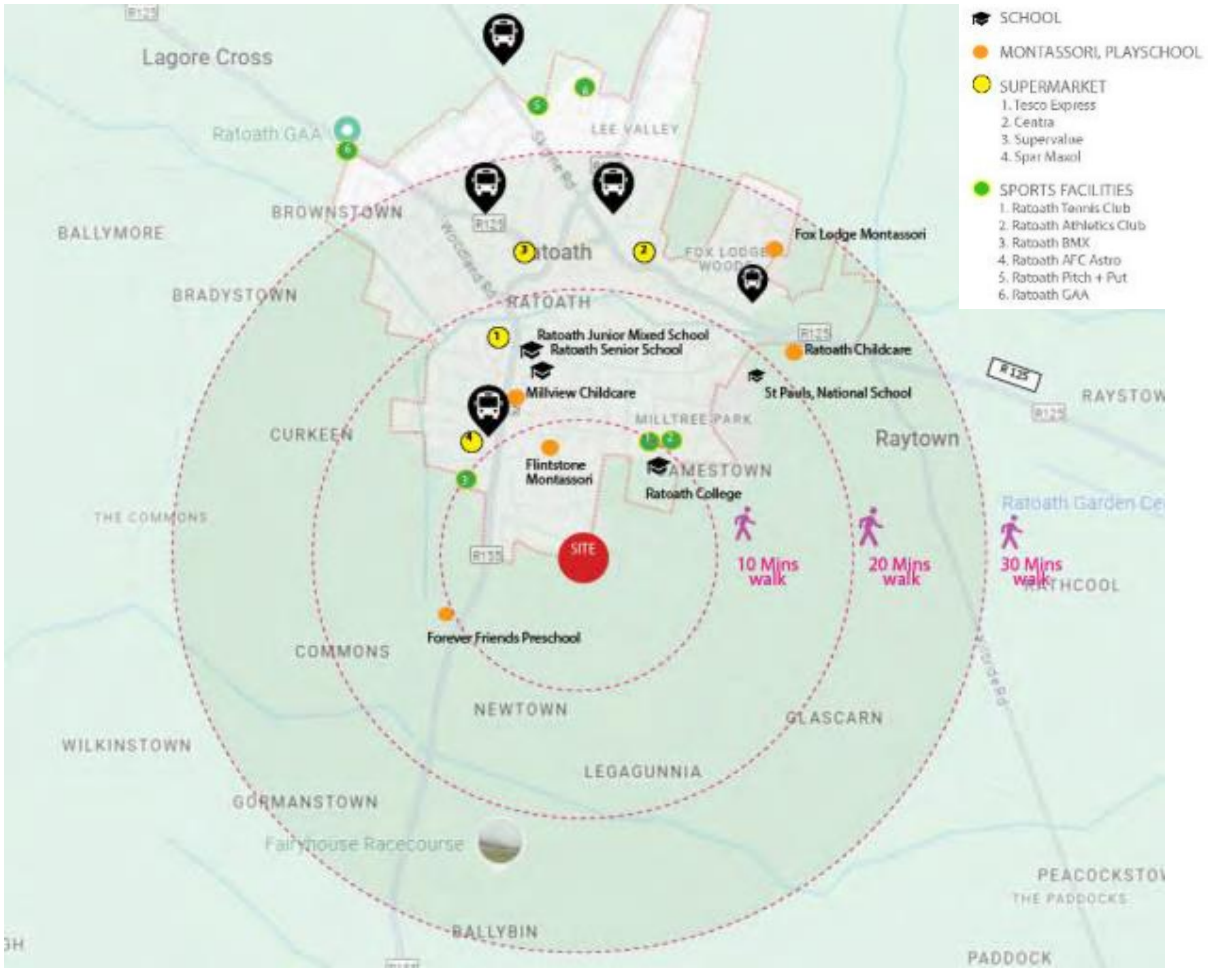

Figure 2.3 Surrounding amenities (Source: Architectural Design Statement)

2.4 Accessibility of the subject site

The subject site is approximately 1.3km from Ratoath town centre. In terms of access to the public transport, the site is located proximate to an existing bus stop on Fairyhouse Rad which is served by serval bus routes, including a link to Dunboyne Rail Station (with Park & Ride). The Dunboyne Parkway Railway station is only a 10-minute drive away, providing direct access to Dublin' Connolly Station. The routes featured provide a high frequency of public transport services to other employment and service centres within the Greater Dublin Area. Public transport options directly accessible to the lands are set out in Table 2.1 with transport networks and options for the wider east Meath region shown in Figure 2.2

Table 2-1: Public Transport Accessible by the Subject Site in 2024. (Source: Bus Eireann)

Route	Description	Weekday Frequency	Weekend Frequency	Operation Length
103	Dublin City - Ratoath	52 services (20 – 30min interval)	Saturday: 42 services (20 – 30min interval) Sunday: 24 services (1hr interval)	1 hr 7 min
105	Drogheda – Blanchardstown via Ratoath	30 services (30min – 1hr interval)	Saturday: 30 services (30min – 1hr interval) Sunday: 12 services (1 – 2hr interval)	1 hr 47 min
105X	Fairyhouse Road – Ratoath – Dublin	3 services (15min interval)	No services Sat-Sun	1 hr 23 min
109A	DCU – Kells via Ratoath	26 services (45min – 1hr interval)	Saturday: 24 services (1hr interval) Sunday: 24 services (1hr interval)	1 hr 20 min

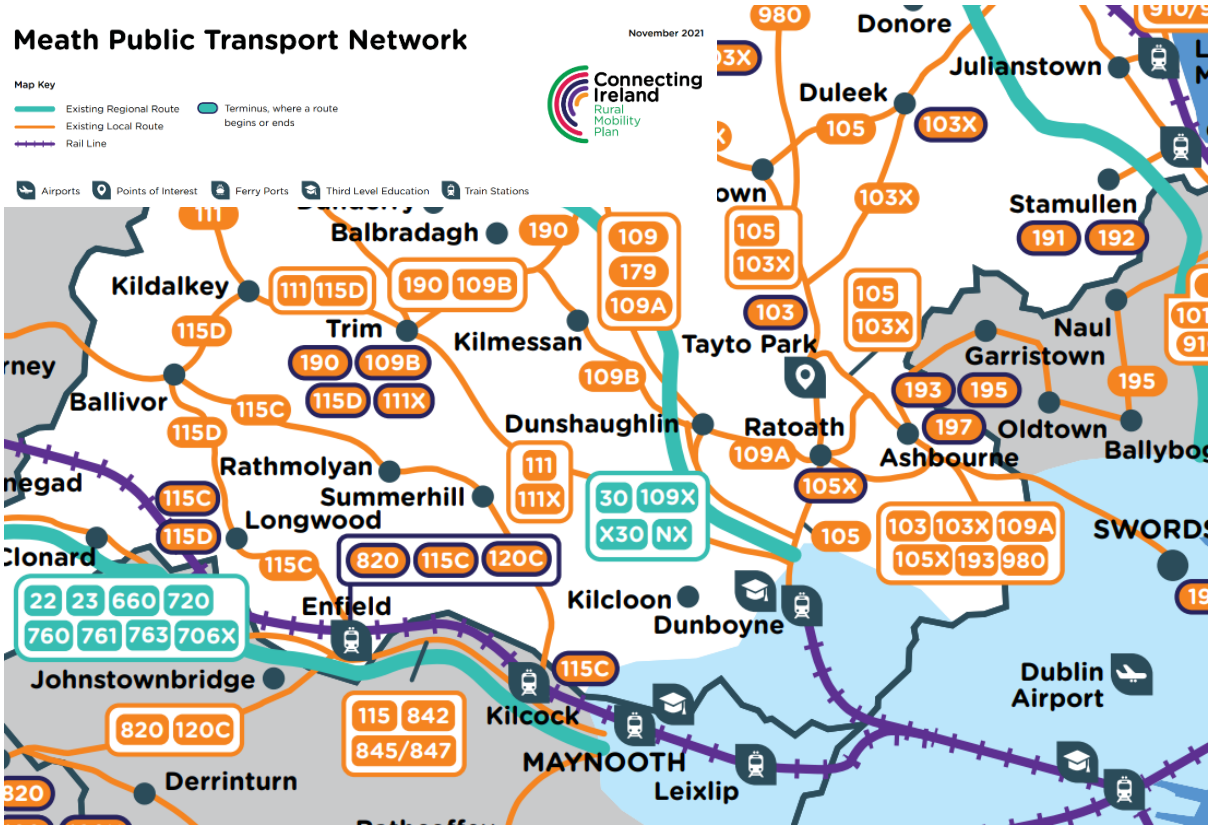

Figure 2.4: Public Transport Network for Meath in November 2021. (Source: NTA)

2.5 Land Use Zoning for subject lands

The subject site forms part of the wider master plan lands (MP 37) of Ratoath as identified in the consolidated Meath County Development Plan 2021-2027 (Variation 2).

<u>All of the LRD residential development and ancillary residential development</u> is situated on 'A2 New Residential' zoned lands with an objective:

"A2 New Residential - To provide for new residential communities with ancillary community facilities, neighbourhood facilities as considered appropriate."

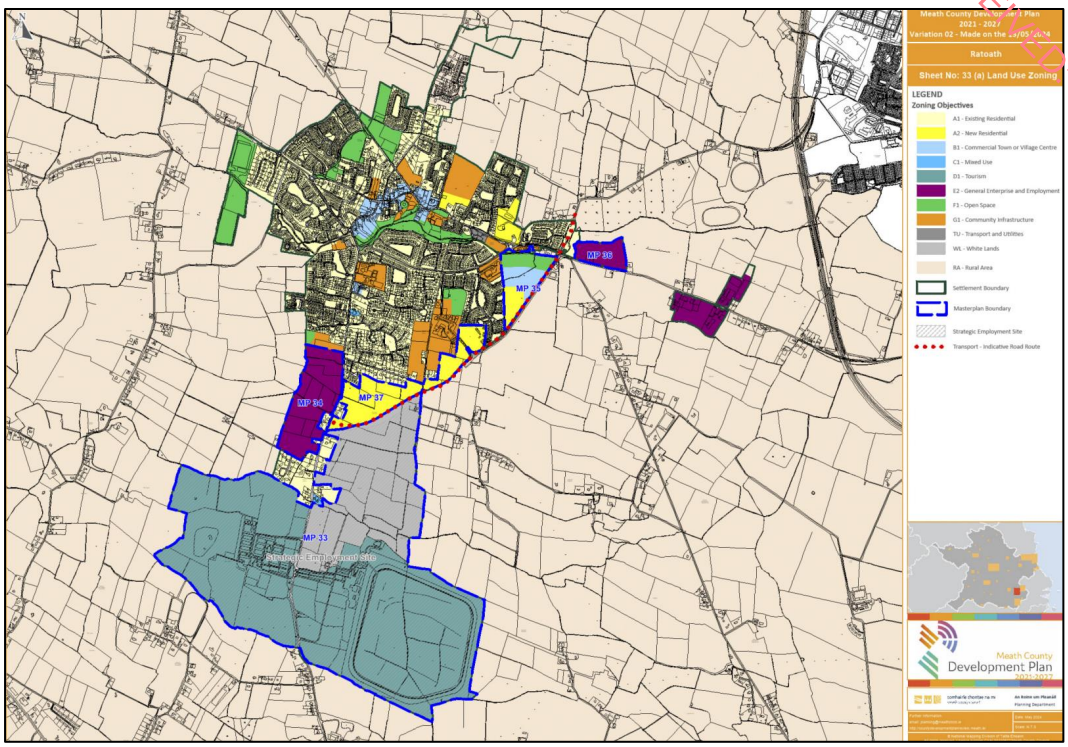

Figure 2.5: Land Use Zoning – Subject Site shown by Red Star (Source: MCDP 2021-2027)

There is no residential or ancillary residential element located on RA lands or on WL lands (Figure 2.3) -as shown on Figure 2.6. The RORR corridor falls across RA, WL and A2 zones.

"RA Rural Area - To protect and promote in a balanced way, the development of agriculture, forestry and sustainable rural-related enterprise, community facilities, biodiversity, the rural landscape, and the built and cultural heritage."

"WL White Lands - To protect strategic lands from inappropriate forms of development which would impede the orderly expansion of a strategic urban centre."

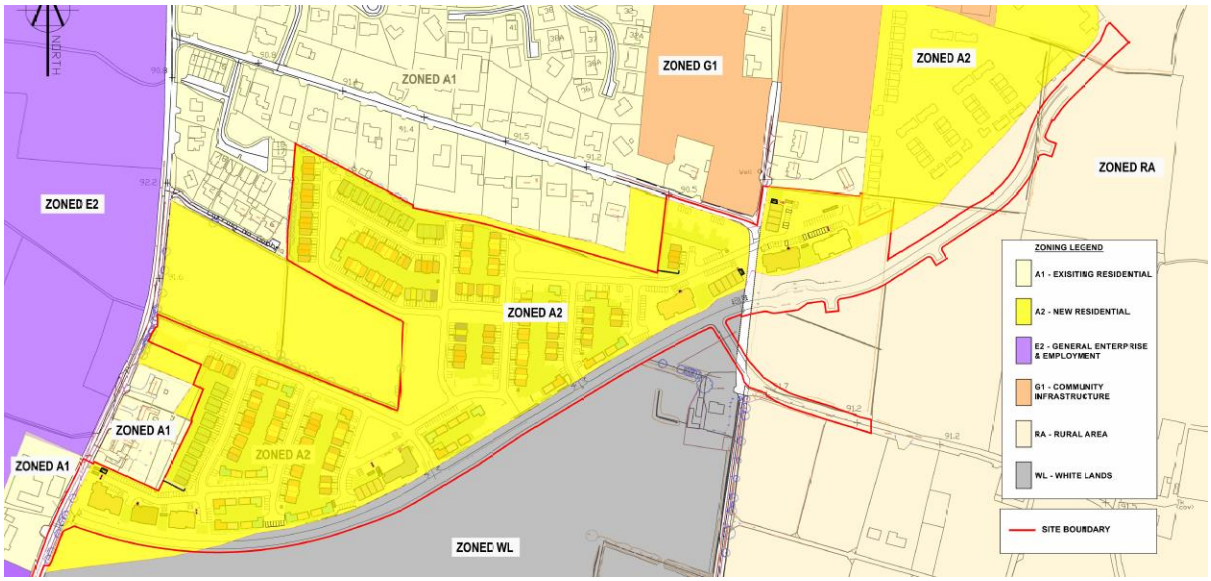

Figure 2.6 Zoning Map overlaid with Proposed Scheme

2.6 Cumulative Impacts

The cumulative impact assessment requires (1) assessment of the relevant interacting elements of the project as per EC guidance; and (2) the impact of the project in combination with other permitted plans and projects. Each Chapter of the EIAR includes a cumulative impact assessment of the proposed development with other existing, permitted, and planned projects in the immediate area.

The potential cumulative impacts primarily relate to traffic, dust, noise and other nuisances from the construction of the development, with other planned or existing projects, and each of the following EIAR chapters has regard to these in the assessment and mitigation measures proposed.

A summary of cumulative impacts identified is provided in Table 2.2.

Table 2-2 Summary of Cumulative Impacts

No.	Chapter Title	Summary of Cumulative Impacts
5	Air Quality	Construction Phase: Short-term, negative and imperceptible. Operational Phase: Long-term, imperceptible and neutral impact
6	Climate	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
7	Noise & Vibration	Construction Phase: Potential short term negative impacts. Operational Phase: Negative, imperceptible to not significant and long-term effect
8	Biodiversity	Construction Phase: Water quality - negative, imperceptible, unlikely Invasive species - neutral, imperceptible and unlikely. Habitat loss - neutral and not significant in the long-term Operational Phase: Water quality: negative, imperceptible and unlikely. Invasive species - neutral, imperceptible and unlikely. Habitat loss - neutral and not significant in the long-term
9	Archaeological & Cultural Heritage	No cumulative effects on the cultural heritage or archaeological resource.
10	Landscape & Visual	Construction Phase: short-term, moderate negative cumulative landscape and visual effects Operational Phase: Medium magnitude but positive cumulative effect
11	Land, Soils & Geology	Construction Phase: Negative, imperceptible, and permanent Operational Phase: Not significant, permanent negative impacts
12	Water	Construction Phase: Mostly moderate, imperceptible and Long-term Operational Phase: Cumulative impact of new developments in the vicinity of the subject development would likely have a moderate but sustainable impact on the receiving environment.
13	Population & Human Health	Construction Phase: Likely, adverse, slight and temporary. Operational Phase: Likely, positive, significant and permanent
14	Material Assets - Traffic & Transport	Construction Phase: Likely, adverse, moderate, and temporary. Operational Phase: Likely, positive, moderate, and permanent.
15	Material Assets - Waste Management	Construction Phase: Negative, not significant permanent residual impact. Operational Phase: Negative, imperceptible permanent residual impact.
16	Material Assets - Utilities	No significant cumulative impacts identified.

Interactions are set out in Chapter 17.

2.7 The Proposed Scheme

Overview

The proposed development comprises a Large-scale Residential Development (LRD) on a site of 12.58ha within the townlands of Jamestown and Commons in Ratoath Co. Meath. The proposal is for a vibrant new residential scheme that prioritises the health and wellbeing of residents by providing a high-quality public realm area for residents to enjoy, exercise and socialise in.

This strategically located site to the south of the built-up area of Ratoath is prioritised for the continued residential expansion of Ratoath and is an optimal location on which to deliver a quality housing scheme that can respond to the ongoing demand for homes in Meath. An overview of key development statistics is set out in the table below.

Table 2-3: Key Development Statistics

KEY DEVELOPMENT STATISTICS	
Total Site Area	12.58 ha
Net Site Area	9.65 ha
Gross Floor Area (Residential)	39,881.14 sq.m
Gross Floor Area (Non-Residential)	872.39 sq.m
Density	Net Site Density: 37.7 Units/Ha
Plot Ratio	0.32
Site Coverage	13.5%
Height	2 - 4 storeys
Total No. of units	364 no. Units *(82 of these units are universal design units, for which represents approximately 22.52% of the total proposed units)*
RESIDENTIAL	
Apartment	Total 91 no. units 1-bed: 25 no. units 2-bed: 66 no. units
Duplex	Total 23 no. units 1-bed: 7 no. units 2-bed: 3 no. units 3-bed: 13 no. units
House	Total 250 no. units 2-bed 4p: 38 no. units (15.2%) 3-bed: 151 no. units (60.4%) 4-bed: 50 no. units (20%) 5-bed: 11 no. units (4.4%)
Unit Mix Overall **(Houses, Apartments, Duplexes)**	1-bed: 32 no. units (8.8%) 2-bed 3p: 6 no. units (1.6%) 2-bed 4p: 101 no. units (27.7%) 3-bed: 164 no. units (45.1%) 4-bed: 50 no. units (13.7%) 5-bed: 11 no. units (3%)
OPEN SPACE	
Public Open Space	15,887 sq.m (16.47%)
Communal Open Space	1,183 sq.m (0.93%)
NON-RESIDENTIAL	
Crèche facility	692.8 sqm
Retail	93.5 sq.m
Cafe	63.13 sq.m
PARKING	

Car Parking Provision	Total 676 no. spaces Residential: 652 no. spaces Commercial: 24 no. spaces
Bicycle Parking	Total 274 no. spaces Residential: 266 no. spaces Commercial: 8 no. spaces

Design and buildings proposed

The proposed development will principally consist of the construction of 364 no. residential units including 250 no. houses and 114 no. apartment / duplex units along with a creche, retail unit and café unit all with associated car and cycle parking and bin stores. Proposed building heights range from 2 no. to 4 no. storeys. Public open space is proposed across the site consisting of a central public park area and pocket parks featuring formal and informal play and amenity areas. The Architectural Design Statement and full range of drawings prepared by Fewer Harrington and Partners architects demonstrate the design rationale and advantages of the proposed layout, dwelling types and finishing materials. The construction phase of the proposed scheme is discussed in detail within the Construction and Environment Management Plan (CEMP) prepared by O'Connor Sutton Cronin (OCSC) Engineers.

Figure 2.7: CGI of housing units proposed

Unit Mix

The 364 homes proposed provide for a balanced mix and range of dwelling types, offering a choice of homes that responds to the predicted population growth across all age cohorts, and which is reflective of the diverse requirements of the property market. Houses, duplexes, and apartments blocks are strategically sited with apartments focused along the western boundary of the proposed RORR. The breakdown of the proposed mix of the houses, duplexes and apartments are set out in the series of tables below:

Figure 2.8: Unit Mix (Source: Architectural Design Statement)

Table 2-4 Unit Mix breakdown

Unit Type / Size	No.	%	GFA m²
Unit Mix – Houses			
5-bed	11	4.4%	2,085.6
4-bed	50	20%	6,868.8
3-bed	151	60.4%	16,042.9
2-bed 4p	38	15.2%	3,701.2
Sub-total	**250**	**100%**	**28,698.5 m²**
Unit Mix - Apartments + Duplexes			
3-bed	13	11.4%	1,492.42
2-bed 4p	63	55.2%	5,229.39
2-bed 3p	6	5.3%	495.9
1-bed	32	28.1%	1,961.18
Sub-total	**114**	**100%**	**9,178.89 m²** [7]
Unit Mix – Overall (Houses, Apartments + Duplexes)			
5-bed	11	3.0%	2,085.6
4-bed	50	13.7%	6,868.8
3-bed	164	45.1%	17,535.32
2-bed 4p	101	27.8%	8,930.59
2-bed 3p	6	1.6%	495.9
1-bed	32	8.8%	1,961.18
Total	**364**	**100%**	**37,877.39 m²** [7]

Commercial and Community Uses

The development proposal includes a créche facility that has been designed to respond to the childcare requirements generated by future occupants of the scheme. Alongside the créche, there will be a café and retail unit with outdoor seating area which will provide basic, neighbourhood level services to the new community. The créche, retail and café unit will act as a hub for residents to connect and socialise – strengthening the identity and sense of place and helping to anchor the scheme as an important, vibrant new community within Ratoath.

Figure 2.9: CGI of proposed entrance to scheme with retail, café and créche unit

RORR

The proposed development will include the construction of the remaining section of the Ratoath Outer Relief Road (RORR) from its current temporary termination point to the east of the subject site to the existing Fairyhouse Road (R155) in the west. The proposed section of the RORR runs from a new proposed signalised junction on the R155, east along the southern boundary of the subject site for approximately 1.08km to the current RORR temporary termination point and for an additional 75m to put a new surface course on the adjoining constructed section of the RORR.

A dedicated pedestrian path and a segregated two-way cycle path is proposed along the northern side of the proposed road. Two bus stop laybys are proposed – one on the northern side and one on the southern side of the proposed carriageway. A grass verge is proposed to the north of part of the RORR and a soft margin is proposed along the south side of the RORR.

The proposed road will provide access to the proposed development in the form of two priority junctions on the northern side of the RORR. Three agricultural site entrances and a new junction with Glascarn Lane (south) are proposed on the southern side of the RORR.

Dedicated pedestrian and shared pedestrian/cycle path connections are provided from the site to Fairyhouse Road (R155) to the west, Glascarn Lane (north) to the north, and the RORR and Glascarn Lane (south) to the south.

The proposed development includes the realignment of an existing section (c. 270m) of Glascarn Lane to facilitate the construction of the proposed section of the RORR. To the north of the proposed RORR, an existing section of Glascarn Lane (c. 75m) will have vehicular traffic removed from it and be repurposed as an active travel shared surface. To the south of the proposed RORR, an existing section of Glascarn Lane (c. 187m) will be upgraded to a 2-lane road with a 40m footpath along the eastern side of the carriageway. A toucan controlled crossing is proposed to the west of the proposed bus stop laybys to allow for safe access from the pedestrian/cycle infrastructure on the northern side of the RORR to the bus stop and Glascarn Lane to the south of the RORR.

Landscaping and Infrastructure

The landscape proposal for the scheme includes 15,887 sq.m. of public open space and 1,183 sq.m. communal amenity space. The primary central Open Space of 0.4ha serves as the heart of the community, offering a variety of active and passive recreational opportunities. It encompasses provision for kick open areas (exceeding 800sqm), natural play areas, seating and gathering spaces that allow for socialising and recreation. In time, and on completion of a residential scheme on the neighbouring lands directly west, the central open space has been designed to connect onto the adjacent lands to create a community park of circa 0.7ha, in line with the provisions of Masterplan 37.

The interconnected secondary spaces complement this vision, ensuring diverse uses for ease of accessibility and functionality.

Shared pedestrians and cycleways, amenity, informal play spaces and SuDs features form part of an integrated landscaping and open space solution which are distributed in an integrated way throughout the scheme. In doing so, a connected linear spine of public open space is formed. A Landscape Design Rational Report and accompanying drawings prepared by Studio Glásu set out the full details on the landscape response to the site, the planting proposed and boundary treatments.

The proposed scheme will be accessible via the completed Ratoath Outer Relief Road (RORR), with proposed future connections extending from its current termination point in the northeast to the existing Fairyhouse Road (R155) in the southwest of the subject site.

A SuDS surface water management system is proposed – details of all ancillary infrastructural works, services provision, foul and surface water drainage is provided in the reports and drawings prepared by project engineers, O'Connor Sutton Cronin (OCSC) and enclosed with this pack.

Figure 2.10 Landscape Design – (Source: Studio Glásu Landscape Design Rational)

2.8 Phasing Plan

The Development on the subject site, will be delivered across four Phases, the location of which is shown in Figure 2.11. An overview of housing, commercial development and key infrastructure to be delivered across each of the four phases is set out in Table 2-5. Phase 1 encompasses the delivery of

key supporting infrastructure including the créche, retail and café unit and crucially the full extent of the RORR which will be fully completed and in place prior to the occupancy of any residential unit.

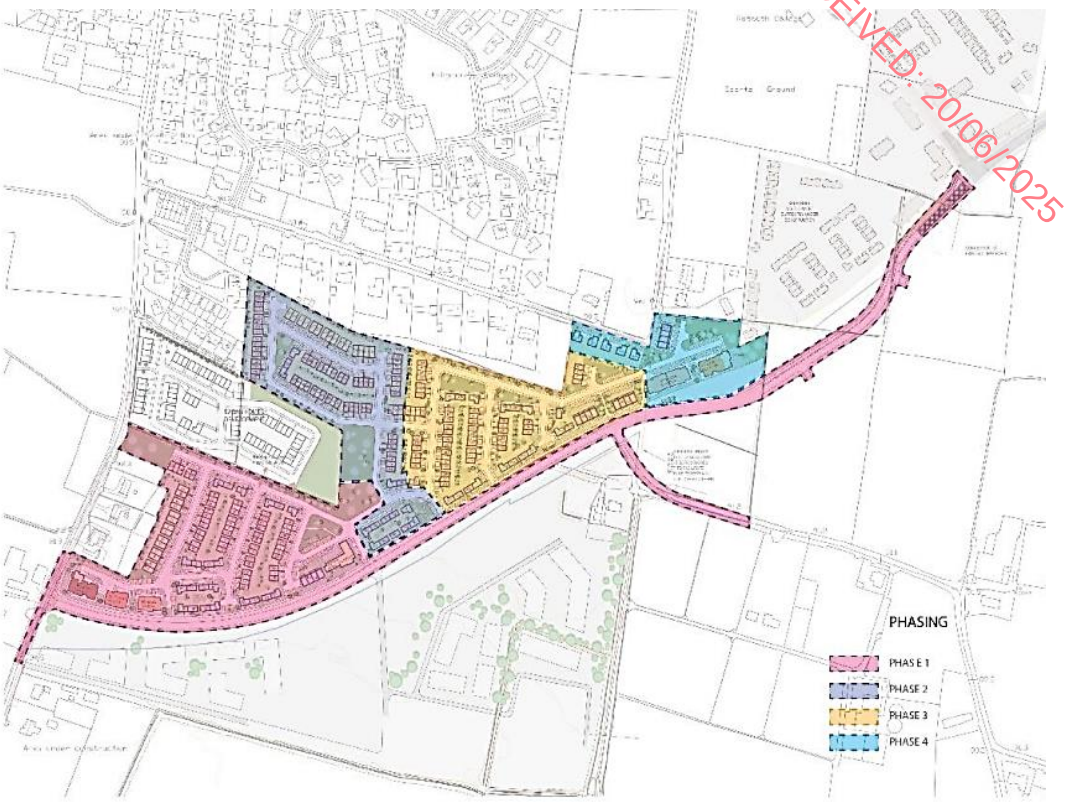

Figure 2.11 Phasing Plan for the delivery of the Proposed Development on subject site (Source: Fewer Harrington & Partners Architects)).

Table 2-5 Break down of typology of residential units proposed in Phases 1 to 4 of the Development

Phase 1	Phase 2
87 No. Houses, including: • 12 No. 2 bed houses • 49 No. 3 bed houses • 22 No. 4 bed houses • 4 No. 5 bed houses 43 No. Apartments including: • 10 No. 1 bed apartments • 33 No. 2 bed apartments 7 No. Duplexes including: • 2 No. 1 bed apartments • 1 No. 2 bed apartments • 4 No. 3 bed apartments Creche Café and Retail Unit Approx. 492m² communal open space and 4396m² public open space External Roads – Entire RORR starting from R155 at the west side including the Glascarn	92 No. Houses, including: • 12 No. 2 bed houses • 58 No. 3 bed houses • 20 No. 4 bed houses • 2 No. 5 bed houses Approx. 3980m² public open space Drainage & watermain infrastructure within Phase 2 as shown in the drawing PP-05/C. Communications infrastructure Car parking = 186 no. spaces No accessible spaces No EV spaces No Cycle parking.

Lane and further connected to the exiting tie-in at the East side. Phase 2 Internal Roads as shown in the drawing PP-05/C. Drainage and watermain infrastructure within Phase 1 and along route of the RORR. Communications infrastructure Car parking = 255 no. spaces comprising: 5 no. accessible spaces 18 no. EV spaces with associated infrastructure Cycle parking = 125 no. spaces	
Phase 3	**Phase 4**
67 No. Houses, including: • 14 No. 2 bed houses • 44 No. 3 bed houses • 5 No. 4 bed houses • 4 No. 5 bed houses 15 No. Apartments including: • 5 No. 1 bed apartments • 10 No. 2 bed apartments 9 No. Duplexes including: • 3 No. 1 bed apartments • 1 No. 2 bed apartments • 5 No. 3 bed apartments Approx. 311m² communal open space and 4817m² public open space Phase 3 Internal Roads as shown in the drawing PP-05/C. Drainage and watermain infrastructure within Phase 3 as shown in the drawing PP-05/C. Communications infrastructure Car parking = 180 no. spaces comprising: 2 no. accessible spaces 6 no. EV spaces with associated infrastructure Cycle parking = 57 no. spaces.	4 no. Houses, including: • 3 No. 4 bed houses • 1 No. 5 bed houses 33 No. Apartments including: • 10 No. 1 bed apartments • 23 No. 2 bed apartments 7 No. Duplexes including: • 2 No. 1 bed apartments • 1 No. 2 bed apartments • 4 No. 3 bed apartments Approx. 380m² communal open space and 2694m² public open space Phase 4 Internal Roads as shown in the drawing PP-05/C. Drainage and watermain infrastructure within Phase 4 as shown in the drawing PP-05/C. Communications infrastructure Car parking = 55 no. spaces comprising: 3 no. accessible spaces 12 no. EV spaces with associated infrastructure Cycle parking = 92 no. spaces.

2.9 Need for the Scheme

The subject lands are strategically located to the immediate south of the Ratoath settlement and present an opportunity to facilitate the natural expansion of the town core on underutilised lands zoned for residential development. Directing growth towards such lands will strengthen the social fabric of the town and create a population base capable of supporting services and employment opportunities.

This proposal will bring a strategically located, undeveloped and underutilised site into a positive, beneficial use. The proposed scheme has been carefully planned and designed to respond appropriately and with sensitivity to the mixed urban and natural elements that comprise the surrounding environment.

The level of population growth provides justification for and validation of the development proposal for new housing. Population and housing are intrinsically linked. An increase in population influences housing by creating demand. The availability of housing influences house and rental prices and can have a significant influence on who can potentially migrate into an area, affecting total population.

The scheme is brought forward against a socio-economic context that places a high value on the availability of well designed, sustainable, accessible, and affordable homes that can help to satisfy the ongoing demand for housing in Meath. The scheme will have significant positive impacts for the local community of Ratoath by providing well-designed units to facilitate and support population growth, social integration, and inclusion, bringing this strategic landbank into functional use. By opening up accessibility, the ambitions for the bridle path and for the RORR set out in local planning policy, will be achieved and in doing so, will bring a notable community gain to the area.

With rapid population growth and a deepening housing crisis, the appropriate siting, distribution and delivery of homes, is a critical function of the local planning system over the next few years and of paramount importance. With active land management and compact growth principles in place, there is now, perhaps more than ever before, an impetus to support the delivery of housing proposals that align with strategic planning policy and that can respond to the population growth predicted for the area, such as the current proposal brought forward by Beo Properties Ltd.

The Core Strategy sets out the population growth that is expected to take place over the Plan period which will determine the levels of housing needed to accommodate this growth. As shown below, the Plan has projected that Ratoath's population would increase by 1,500 persons to 11,033 by 2027.

Table 2-6: Population in Ratoath (Source: MCDP 2021-2027)

	2011 Population	2016 Population	2011-2016 Change (#)	2011-2016 Change (%)	Projected Population 2027
Ratoath Population	9,043	9,533	490	5.4%	11,033

Since the Plan was adopted, Census 2022 data has been published confirming that Ratoath's population is currently at 10,077 persons which is consistent with the growth rates of the settlement since 2011.

Further, the recent publication of the National Planning Framework, First Revision (April 2025) and the introduction of new housing targets, 300,000 units nationally by 2030, brings into sharp focus the criticality of supporting the delivery of new homes on zoned, serviced, accessible lands. The subject lands represent a prime example of optimally positioned and zoned lands that benefit not only from essential utility infrastructure connections but also a broad range of social and community infrastructure in the immediate surrounding areas.

The Development Plan highlights how A2 zoned lands are designated as the primary source of land to accommodate new residential development. The subject site represents the largest consolidated land bank of A2 zoned land within the Ratoath settlement and should therefore be prioritised for the delivery

of housing. The proposed development is compliant with the zoning objective ascribed to the lands and represents a strategic approach to the sustainable expansion of the Ratoath settlement and meet ever increasing demand for housing.

The subject site is part of a designated Masterplan boundary (MP37). The Development Plan states that:

"Additional lands identified to deliver the completion of the R125 and R155 link road amount to approximately 3.8 hectares and shall include the provision of a public landscaped park of circa 0.7 hectares with appropriate recreational facilities to be agreed with the planning authority. This facility shall be delivered as part of the overall development proposal. The public park can be provided as part of the overall open space requirement on site. The first phase of development shall include the construction of the adjoining section of the Ratoath Outer Relief Road. Any planning application made for development on these lands shall be accompanied by a Master Plan (MP 37), detailing development proposals for the full extent of the lands. This shall include details of the overall site and building layout for the lands, building height and design principles, mix of uses, open space and recreational provision, traffic impact assessment and management proposals and service."

The design and layout of the proposed development has been carefully considered in the context of the wider Masterplan lands ensuring the holistic and coordinated redevelopment of the fuller land bank in accordance with the above principles. The scheme has incorporated sufficient set back distances from neighbouring plots within the wider MP lands and has respected the prevailing heights of the area to ensure that the proposed development will not unduly impede the future redevelopment of other lands with the MP boundary. Furthermore, it is considered that the proposed development has the potential to act as a catalyst for the future development of the wider masterplan lands through direct connectivity with the town centre and the Strategic Employment Lands to the south, which will be further enhanced with the delivery of the proposed RORR.

The proposed development includes the provision of the second phase of the RORR that will run along the southern boundary of the site completing the connection to the R155 Fairyhouse Road. The RORR itself is a distributor road and will facilitate greater connectivity for all of the Ratoath settlement. The Road will be delivered in tandem with residential development, as envisaged in the Development Plan and set out in the phasing plans submitted with this application. The RORR is a vital piece of infrastructure outlined in the MCDP and has been designed to connect with the Fairyhouse Road (R155) to the south-west. There is a specific reference to the long-term ambition to complete the RORR recognising that:

"There is an opportunity to maximise the investment in this LIHAF funded infrastructure by facilitating the completion of this Outer Relief Road and complete the link between the R125 and R155. This will be achieved by zoning additional lands for residential development and requiring that the remainder of this link road is delivered as part of the development of these lands."

It is envisaged that this road will be developed in tandem with the proposed LRD and thus will comply with the policy:

RA OBJ 6 – *"To facilitate the development of the Ratoath Outer Relief route in tandem with development. "*

The location of the proposed section of the RORR included in this application was informed and guided by the principles of permeability and connectivity and the need to connect to existing infrastructure.

The proposed level of development has been based on a review of strategic planning policy and following extensive consultation with Meath County Council and is considered appropriate for the subject site. The development proposal responds to a range of policy objectives at national, regional and local level that advocate for the sustainable growth and consolidation of existing settlements, at appropriate densities in line with a sequential approach alongside and integrated with surrounding built context and residential communities. This approach is promoted across a broad range of documents,

e.g. Sustainable Urban Housing: Design Standards for New Apartments (2023), The Urban Development and Building Height Guidelines for Planning Authorities 2018, Sustainable Residential Development in Urban Areas (2009) / Urban Design Manual (2009) Guidelines, Sustainable Residential Development and Compact Settlements Guidelines (2024), as well as Meath County Development Plan 2021-2027, as further detailed in Chapter 3.

2.10 References

- Guidelines on the Information to be contained in Environmental Impact Assessment Report (Environmental Protection Agency, May 2022);
- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Environmental Protection Agency, Draft August 2017);
- Advice Notes for Preparing Environmental Impact Statements, Draft September 2017;
- Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2002); and
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2002)
- Meath County Development Plan 2021-2027, available at:—Consolidated Meath County Development Plan 2021-2027 (incl. Variations 1, 2 & 3) | Meath County Council Online Consultation Portal
- The Central Statistics Office (CSO), available at: Home - CSO - Central Statistics Office

3 Planning Policy Context

3.1 Introduction

The proposed development has been prepared in the context of relevant local, regional, and national policies and objectives. The accompanying planning report included as part of this planning application provides a detailed review and statement of consistency with all relevant policies and objectives. For the purposes of the EIAR, a summary of the relevant policies and objectives is provided within this section.

3.2 Policy Context

This chapter is a summary of the relevant policies and objectives pertaining to the proposed development.

3.3 National Planning Framework First Revision (2025)

The National Planning Framework (NPF) is the Government's high-level strategic plan for shaping the future growth and development of the country out to the year 2040. The NPF was, in April 2025, formally revised and updated to take account of changes that have occurred since 2018 and to build on the existing framework. Since its original publication in 2018 there have been a number of significant and critical developments in relation to planning policy, guidance, and legislation, as well as governance and institutional change. Also, within this time, unprecedented, unforeseen events have occurred with ongoing consequences, such as the impacts of Covid-19 particularly in relation to trends in commuting patterns and the emergence of blended home-office working.

The Revised NPF reflects updated projections on population growth, which will increase to approximately 5.7 million by 2030 and to 6.1 million by 2040, based on demographic and econometric modelling undertaken by the Economic and Social Research Institute (ESRI). In order to meet projected population and to manage economic growth patterns, as well as increased household formation, an increase in annual housing output to approximately 50,000 homes per annum to 2040 is needed.

The NPF places a major policy **emphasis on the renewal and development of existing settlements**, as opposed to the continual expansion and sprawl of cities and towns. A shared set of goals for every community across the country, expressed in the Framework as the National Strategic Outcomes, are set out. One of the key goals is to achieve '*compact growth'* and this is reflected throughout the NPF and through its policies and objectives. Compact growth can be achieved by:

> **NPO 1:** *Ensure that all plans, projects and activities requiring consent arising from the National Planning Framework are subject to the relevant environmental assessment requirements including SEA, EIA, SFRA and AA, as appropriate.*
>
> **NPO 7:** *Deliver at least 40% of all new homes nationally, within the built-up footprint of existing settlements and ensure compact and sequential patterns of growth.*
>
> **NPO 42:** *To target the delivery of housing to accommodate approximately 50,000 additional homes per annum to 2040.*
>
> ***NPO 44:*** *Support the provision of lifetime adaptable homes that can accommodate the changing needs of a household over time.*
>
> ***NPO 45:*** *Increase residential density in settlements, through a range of measures including reductions in vacancy, re-use of existing buildings, infill development schemes, area or site-based regeneration, increased building height and more compact forms of development.*

Figure 3-1: National Strategic Outcomes: The National Planning Framework

Policy Objectives NPO 11 and NPO33 are of particular relevance to the proposed application outlining the importance of encouraging new developments within existing settlements and highlighting the need to ensure that residential developments are designed at an appropriate scale that can be successfully integrating into the receiving environment.

NPO 11: 'In meeting urban development requirements, there will be a presumption in favour of development that can encourage more people and generate more jobs and activity within existing cities, towns and villages, subject to meeting appropriate planning standards and achieving targeted growth.'

NPO 33: 'Prioritise the provision of new homes at locations that can support sustainable development and at an appropriate scale of provision relative to location.'

The NPF expands on the above objectives, describing that:

'*Ireland's future homes will be located in our smaller towns, villages and rural areas, including the countryside, but at an appropriate scale that does not detract from the capacity of our larger towns and cities to deliver homes more sustainably…'*

Historically, low-density housing development has been a feature of Ireland's housing landscape and has often resulted in inefficient and unsustainable use of strategic accessible lands. Such trends can impact the viability of infrastructure, public transport, and commercial developments by failing to provide a critical mass to support such infrastructure and facilities. In order to avoid creating urban sprawl and the pressure that it puts on both the environment and infrastructure demands; it is important to deliver increased residential densities within established built up urban areas.

The application site, positioned at the edge of the Ratoath settlement, will deliver much needed residential units bringing the much planned for housing stock which is needed to accommodate the growth of Ratoath. The proposed residential-led scheme has been designed at a scale that is

appropriate to the prevailing pattern of development in the area and can successfully integrate with its surrounding environment. Furthermore, the delivery of the RORR in tandem with a new residential community will contribute to creating the infrastructure and population base needed to unlock the Strategic Employment Lands to the south of the application site.

3.4 Project Ireland 2040: National Development Plan 2021-2030

The National Development Plan 2021-2030 (or "NDP") was published in 2021 as an updated version of the previous National Development Plan 2018-2027. As part of Project Ireland 2040, the NDP sets out the Government's over-arching investment strategy and budget for the period 2021-2030.

It is an ambitious plan which places a major focus on improving the delivery of infrastructure projects to ensure both speed of delivery and value for money across all projects. The Document sets out funding to underpin key Government priorities, including allocations which will support the realization of critical goals laid out in *Housing for All* – a New Housing Plan for Ireland (September 2021). The NDP underpins the overarching message of the National Planning Framework ("NPF").

Given the location of the subject site and its close proximity to existing services such as public transport and amenities, it is considered that the proposals align with the principles outlined in the National Development Plan. Moreover, the development also aligns with the principles and objectives of the Housing for All – a New Housing Plan for Ireland (see below).

3.5 Housing for All, A New Housing Plan for Ireland

Housing for All - a New Housing Plan for Ireland published in 2021 sets out the Government's housing plan to 2030. The Government's overall objective is that every citizen in the State should have access to good quality homes to purchase or rent at an affordable price built to a high standard and in the right place offering a high quality of life.

The National Housing Plan is being updated with a new plan committed under the Programme for Government in January 2025 and which will reflect the higher housing targets set in the revised NPF. The government is committed to increasing housing provision through accelerating supply and affordability, and the measures outlined in Housing for All will continue to be implemented. The new Plan once published will build on the momentum generated by the Housing for All plan to achieve the revised NPF target of delivering more than 300,000 new homes by the end of 2030. Under the Programme for Government 2025 and the revised NPF, the housing target which Housing for All policies will support is now 50,000 additional homes per annum to 2040.

The Plan identifies that new homes need to satisfy demand across four tenures – affordable, social, private rental and private ownership and be constructed within the context of specific development targets for the five cities and major towns.

Housing for All sets out a series of actions across four pathways aimed at addressing the housing crisis by delivering homes every year underpinned by the following objectives:

- Supporting Homeownership and Increasing Affordability.
- Eradicating Homelessness, Increasing Social Housing Delivery and Supporting Social Inclusion.
- Increasing New Housing Supply; and
- Addressing Vacancy and Efficient Use of Existing Stock.

Each pathway contains a number of measures to help achieve these objectives through enabling a framework of a more sustainable housing system that will meet current and future housing needs. Pathways 1 and 3 are of particular relevance to the proposed development as detailed below.

Pathway 1: Supporting Home Ownership and Increasing Affordability

Issues with housing affordability are well commentated on as house prices continue northward with more and more people being pushed out of the market. Whilst the Plan outlines a suite of policy and financial measures aimed at increasing affordability, it is imperative that supply of high-quality residential accommodation on serviced lands is promoted by Local Authorities, particularly schemes that seek to deliver affordable housing. House prices in the area have rapidly increased which is reflective of a contracting housing market where demand, owing to significant population growth is outstripping supply accentuating the need to deliver housing development at scale to meet this demand. The proposed development will boost housing supply in the area and will contribute to improving affordability for prospective purchasers in the area.

Pathway 3: Increasing New Housing Supply

The Plan notes the important role that increasing housing supply will play on reducing pressures on an already constrained market. The Plan further recognises the need to encourage the activation of planning permissions to assist in achieving the objective of increasing new housing supply.

The Plan also highlights how viability and costing issues have impacted upon the implementation of extant planning permissions that could otherwise provide a significant contribution to country's housing stock.

The proposed development will consolidate an already established residential community. The completion of the RORR will act as a catalyst for development of the wider area. The addition of 364 no. units will improve the overall viability and vibrancy of the Ratoath area and result in a continuum of housing options to meet varying needs of future occupiers.

3.6 Sustainable Residential Development and Compact Settlements: Guidelines for Planning Authorities 2024

The Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities 2024 was adopted on the 15th of January 2024 and sets out policy and guidance in relation to the planning and development of urban and rural settlements with a focus on sustainable residential development and the creation of compact settlements.

The Guidelines provide a summary overview of the emerging approach from a planning policy perspective in relation to residential density, housing standards and quality design and how these can be used to prioritise compact growth. The intention is that these Section 28 Guidelines, will provide a national policy framework that supports the delivery of more compact and diverse housing typologies, in light of the overall objective of increasing housing supply.

The Guidelines have replaced the 2009 Sustainable Residential Development in Urban Areas Guidelines and provide a renewed focus on existing settlements and on the interaction between density, housing standards and quality urban design to support sustainable and compact growth.

3.6.1 Settlement, Place and Density

Chapter 3 of the Guidelines sets out the policy approach in relation to growth priorities for each settlement tier in the national settlement hierarchy with a particular focus on residential densities. The Guidelines have acknowledged the NPF prioritisation for compact growth and reflect the variety of settlement contexts. As such, the proposed policy approach is to expand on the density ranges outlined in the 2009 Guidelines above to enable Planning Authorities to adopt a more assessment-based approach when determining an appropriate scale of development for a particular site.

Table 3.5 of the Compact Settlement Guidelines sets out the density ranges that are applicable to Ratoath which with its population falls under the category of 'Key Towns and Large Towns (5,000+ population)'. The subject site is located on residential zoned greenfield lands at the edge of the existing built-up are of Ratoath, which is defined as 'Suburban/Urban Extension' under the Guidelines. Table 3.5 of the Guidelines notes that:

"It is a policy and objective of these Guidelines that residential densities in the range 30 dph to 50 dph (net) shall generally be applied at suburban and urban extension locations of Key Towns and Large Towns, and that densities of up to 80 dph (net) shall be open for consideration at 'accessible' suburban / urban extension locations (as defined in Table 3.8)."

The development proposal achieves a net density of 37.7dph in alignment with the CSG Guideline for a town of the size of Ratoath.

3.6.2 Urban Design and Quality Placemaking

The Guidelines highlight the key role that Development Plans play in setting the strategy for the creation of sustainable and compact settlements across the plan area, as part of the core strategy. The role and function of settlements at all levels in the settlement hierarchy and the interactions, interdependencies, and connections between settlements are discussed. For larger settlements, the strategy should support the creation of strong and vibrant centres surrounded by an integrated network of well-designed mixed-use neighbourhoods.

The Guidelines recognise the important role that housing quality and design plays in improving health and wellbeing and the contribution that it makes to sustainable development and placemaking. The intention of the Guidelines is to provide greater flexibility in design standards to allow for more compact growth and improved housing choice. **The fundamental strategy behind the proposed development is to contribute to achieving a more compact form of growth, improve housing options for future residents and deliver a new connected and integrated community within the heart of Ratoath, as espoused in the CSGs.**

These Guidelines promote a move away from segregated land use areas (residential, commercial and employment) that have reinforced unsustainable travel in favour of mixed- use neighbourhoods. Ensuring that there is a good mix and distribution of activities around a hierarchy of centres has many benefits in terms of reducing the need to travel and creating active and vibrant places. Section 'Mix and Distribution of Uses' in Chapter 4 of the Guidelines states.

c) *In areas that are less central, the mix of uses should cater for local services and amenities focused on a hierarchy of local centres that support residential communities and with opportunities for suitable non-residential development throughout.*
d) *In all urban areas, planning authorities should actively promote and support opportunities for intensification. This could include initiatives that support the more intensive use of existing buildings (including adaption and extension) and under-used lands (including for example the repurposing of car parks at highly accessible urban locations that no longer require a high level of private car access).*
e) *It will be important to align the integration of land uses and centres with public transport in order to maximise the benefits of public transport.*
f) *The creation of sustainable communities also requires a diverse mix of housing and variety in residential densities across settlements. This will require a focus on the delivery of innovative housing types that can facilitate compact growth and provide greater housing choice that responds to the needs of single people, families, older people, and people with disabilities, informed by a Housing Needs Demand Assessment (HNDA) where possible. Development plans may specify a mix for apartment and other housing developments, but this should be further to an evidence-based Housing Needs and Demand Assessment.*

The section 4.3 of the Guidelines specifies that "*In the case of a planning application, the site layout and design statement will need to show how the development proposal has evolved in response to the surrounding context and demonstrate how it is consistent with any statutory masterplan that has been prepared for the area. The design and placemaking process for the application should be detailed in the urban design statement submitted in support of a planning application".*

Policy and Objective 4.*1 "It is a policy and objective of these Guidelines that planning authorities implement the principles, approaches and standards set out in the Design Manual for Urban Roads and Streets, 2013 (including updates) in carrying out their functions under the Planning and Development Act 2000 (as amended) and as part of an integrated approach to quality urban design and placemaking."*

3.6.3 Housing Standards

A detailed overview of how the scheme complies with Special Planning Policy Requirements (SPPR) of the Compact Settlement Guidelines (CSG) in provided in the CSG Compliance Report prepared by Fewer Harrington Partners (FHP) and enclosed with this application. Please also refer to the Planning Report and Statement of Consistency enclosed with this application.

3.6.4 Sustainable Urban Housing Design Standards for New Apartments Guidelines for Planning Authorities (2023)

The *Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities* was published by the Government in July 2023 as an update to the previous Guidelines to specifically remove BTR as a distinct development type, with specific design standards. The remainder of the Guidelines remain unchanged from previous iterations and provide a consistent set of national design standards for apartment developments.

The guidelines recognise that apartment development will be crucial to meet forecast housing needs in a sustainable manner while avoiding further urban sprawl as targeted by the NPF. The NPF signals a clear shift in Government policy towards securing more compact and sustainable urban development, to enable people to live nearer to jobs and services.

The guidelines state that a dramatic increase in apartment development is required in order to significantly increase housing supply and meet housing demand across the Country. The need for additional apartment development is driven by a variety of other factors including: a long-term move towards smaller average household size, an ageing and more diverse population, with greater labour mobility, and a higher proportion of households in the rented sector.

Section 3 of the Guidelines sets out the design standards that apply to apartment developments for floor area, dual aspect ratios, floor to ceiling height, lift and stair cores, internal storage, private amenity space and security considerations. Section 4 establishes the standards for communal facilities in apartments schemes including access and services, refuse storage, communal amenity space, children's play space, and car / bicycle parking.

Section 4.20 of the Apartments Guidelines 2023 states that *"The quantum of car parking or the requirement for any such provision for apartment developments will vary, having regard to the types of location in cities and towns that may be suitable for apartment development, broadly based on proximity and accessibility criteria".*

The Design Standards prescribe "*a general minimum standard of 1 cycle storage space per bedroom shall be applied. For studio units, at least 1 cycle storage space shall be provided. Visitor cycle parking shall also be provided at a standard of 1 space per 2 residential units",* allowing deviation from this standard may be justified "*with respect to factors such as location, quality of facilities proposed, flexibility for future enhancement/enlargements, etc".*

A detailed overview of how the scheme complies with the Apartment Guidelines is provided the Planning Report and Statement of Consistency enclosed with this application.

3.7 Climate Action Plan 2025

This Climate Action Plan 2025 is the third Plan to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021 and fifth overall Plan that provides latest assessment and measurement of targets achieved in the previous year and sets out actions for 2025, to take on the challenges of the second carbon budget period 2026-2030.

Key Housing Provisions in CAP 25:

- The expansion of Retrofitting scheme - to retrofit half a million homes by 2030, deploy district heating at scale in dense urban areas, and improve energy performance standards in commercial buildings. Retrofitted homes to achieve a B2 Building Energy Rating (BER) standard by 2030.
- Continue roll-out of Social Housing National Retrofitting Programme with 2,500 retrofitted properties required to reach the BER B2 equivalent in 2025 (BE/25/10).
- Expand the existing suite of NZEB/Retrofit training provision through the development of new micro-qualifications.
- To phase out fossil fuel boilers to align with Energy Performance of Buildings Directive requirements as part of the National Building Renovation Plan.

Key Transport Provisions/Actions in CAP 25:

- Target is to achieve 50% reduction in transport emissions by 2030.
- Prioritise the delivery of further phases of the BusConnects Network Design Plan (TR/25/23).
- In 2024, a range of policies were published, including the National En-Route EV Charging Plan and the Regional and Local EV Charging Network Plan 2024- 2030. The vision set out in these documents, and in the overarching National EV Charging Infrastructure Strategy, envisages a 300% increase in charging capacity by 2025.
- In 2024, sanction was provided to local authorities to recruit staff for the roll-out of public EV charging infrastructure to meet growing demand for destination and residential charging. Local authorities are working closely with Zero Emission Vehicles Ireland (ZEVI) and the new capacity is expected to come to full fruition over 2025.

The revision of the National Planning Framework presents an opportunity to re-emphasise the cross-linkages between land-use and spatial planning and the transport system. The policy pathway for cutting transport emissions centres around the 'Avoid-Shift-Improve' approach and specifically, Compact Growth Transport Orientated Development, improved 'Active Travel' infrastructure, better public realm and planning consents for alternative fuel, and EV charging infrastructure.'

Local authorities have an integral and critical role in decarbonising transport, through the spatial and land-use planning system, promoting public transport-oriented development, ensuring permeability for active modes, implementing and requiring sustainable parking policies, delivering public realm improvements, developing appropriate demand management measures, and provision of EV charging and alternative fuels infrastructure. The Department of Transport and its agencies will continue to work closely with local authorities to support them in their role.

Information on the ways in which the proposed development responds to measures and requirements set out in the CAP is set out in Chapter 6 Climate of this EIAR and also in the the Energy and Climate Action Statement and the Building Lifecycle Report enclosed with this application.

3.8 Design Manual for Urban Roads and Streets (DMURS) (2019)

Design Manual for Urban Roads and Streets (DMURS) was published by the Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Government in 2013 and last updated in 2019. DMURS provides guidance relating to the design of urban roads and streets with the aim to put well designed streets at the heart of sustainable communities. DMURS will focus on shifting the emphasis of designers, as appropriate, from more conventional approaches that are concerned with the movement of traffic to more sustainable approaches concerned with multi-modal movement and streets as places.

Whilst the movement of traffic is still a key issue, DMURS notes that there are several others, including the 'sense of place', which are of core significance to the creation of safe and more integrated street designs. The guidance document notes that four interlinked characteristics influence the sense of place within a street, including:

- Connectivity: The creation of vibrant and active places requires pedestrian activity. This in turn requires walkable street networks that can be easily navigated and are well connected.
- Enclosure: A sense of enclosure spatially defines streets and creates a more intimate and supervised environment. A sense of enclosure is achieved by orientating buildings toward the street and placing them along its edge. The use of street trees can also enhance the feeling of enclosure.
- Active Edge: An active frontage enlivens the edge of the street creating a more interesting and engaging environment. An active frontage is achieved with frequent entrances and openings that ensure the street is overlooked and generate pedestrian activity as people come and go from buildings.
- Pedestrian Activity/Facilities: The sense of intimacy, interest and overlooking that is created by a street that is enclosed and lined with active frontages enhances a pedestrian's feeling of security and well-being. Good pedestrian facilities (such as wide footpaths and well-designed crossings) also make walking a more convenient and pleasurable experience that will further encourage pedestrian activity.

A DMURS Compliance Statement has been prepared by OCSC and accompanies this planning application. The statement demonstrates how the design of the proposed residential development incorporates the key design principles as set out within the DMURS. The statement also shows how the proposed development is consistent with the objective set out in the DMURS to create better street designs that encourage people to walk or use public transport over their car.

3.9 Regional Spatial and Economic Strategy for the Eastern and Midlands Region (RSES) 2019-2031

The Regional Spatial and Economic Strategy (RSES) (2019-2031) for the Eastern Midlands region was adopted in 2020 and provides a high-level development framework for the region that supports the implementation of the NPF. It is a 12-year strategic regional development framework which identifies regional assets, opportunities and challenges and provides appropriate policy response in the form of Regional Policy Objectives (RPOs). It is the regional tier of the national planning process, established to ensure coordination between the City and County Development Plans (CCDP) and Local Enterprise and Community Plans (LECP) of the local authorities in the Region.

The primary aim of this regional framework is to support the delivery of the programme for change, set out in Project Ireland 2040, the National Planning Framework (NPF) and the National Development Plan 2018-2027 (NDP). In line with the NPF, the RSES also focuses on supplementing the growth of the society, environment, economy, and land-use in a planned, productive, and sustainable manner.

The RSES vision for the Eastern Region is led by the need for transformative change building on the Region's strengths and potential to make it more prosperous, sustainable, climate resilient and attractive, while also accommodating expanded growth and development, achieving economic prosperity, and improving quality of life for all the citizens.

The primary strategies of the RSES, in achieving its objectives and aligning with national policy and the NPF, include:

'*Compact Growth*' achieved by –

- *Strengthening and growing cities and metropolitan areas.*
- *Harnessing the combined strength of the 3 cities as a counterbalance to the Greater Dublin Area, though quality development.*
- *Regeneration and compact growth.*
- *Building on the strong network of towns and supporting villages and rural areas. (pg. 23)*

'*Strengthened Rural Economies and Communities*' achieved by

- *Strengthening the role of and improving quality of life in the Region's diverse rural areas and communities and valuing rural Region as dynamic, resilient, and outward looking. (pg. 23)*

The RSES acknowledges that affordability of housing is one of the main challenges facing the Region, noting that "*continued growth rates of household formation coupled with a severe slowdown in the development of new housing stock during the economic recession, resulting in housing supply and affordability pressures in both sale and rental markets, particularly in Dublin and urban areas but affecting all of the Region".*

Chapter 5 contains the Dublin Metropolitan Area Strategic Plan (MASP) which provides a 12 - 20-year strategic planning and investment framework for the area. The MASP is aligned with a number of Regional Strategic Outcomes consistent with the NPF which include sustainable and compact growth, regeneration of cities, better use of under-used land and integrated transport and land use. The MASP identifies a number of Guiding Principles for the sustainable development of the Dublin Metropolitan Area which include:

- *"Compact sustainable growth and accelerated housing delivery – To promote sustainable consolidated growth of the Metropolitan Area, including brownfield and infill development, to achieve a target of 50% of all new homes within or contiguous to the built-up area of Dublin City and suburbs, and at least 30% in other settlements. To support a steady supply of sites and to accelerate housing supply, in order to achieve higher densities in urban built up areas, supported by improved services and public transport."*
- *"Integrated Transport and Land use – To focus growth along existing and proposed high quality public transport corridors and nodes…"*

The subject site represents a highly sustainable location for new residential development given its location within the existing community of Ratoath. It is also strategically located between both the M2 and M3 transport corridors. This connects Ratoath to other growth centres such as Navan and Dunshaughlin, but also to larger employment and service centres such as Dublin, Drogheda, and Dundalk.

3.10 Meath County Development Plan 2021-2027

The Meath County Development Plan 2021-2027 is the statutory land-use plan governing the subject site and came into effect on 3rd November 2021. The original Meath County Development Plan 2021-2027 has then been superseded by this Consolidated version of the Meath County Development Plan 2021-2027 (incl. Variations 1 & 2) adopted on the 13th of May 2024.

3.10.1 Core Strategy and Settlement Strategy

Chapter 2 of the Development Plan sets out the Core Strategy for the future spatial development of the County over the Plan period. The purpose of the Core Strategy is to demonstrate alignment with national planning policy and ensure that the future growth of the County is based on the principles of sustainable development to deliver a high-quality living environment. The Strategy also establishes the settlement hierarchy across the County and identifies where future growth is to be distributed in a progressive manner.

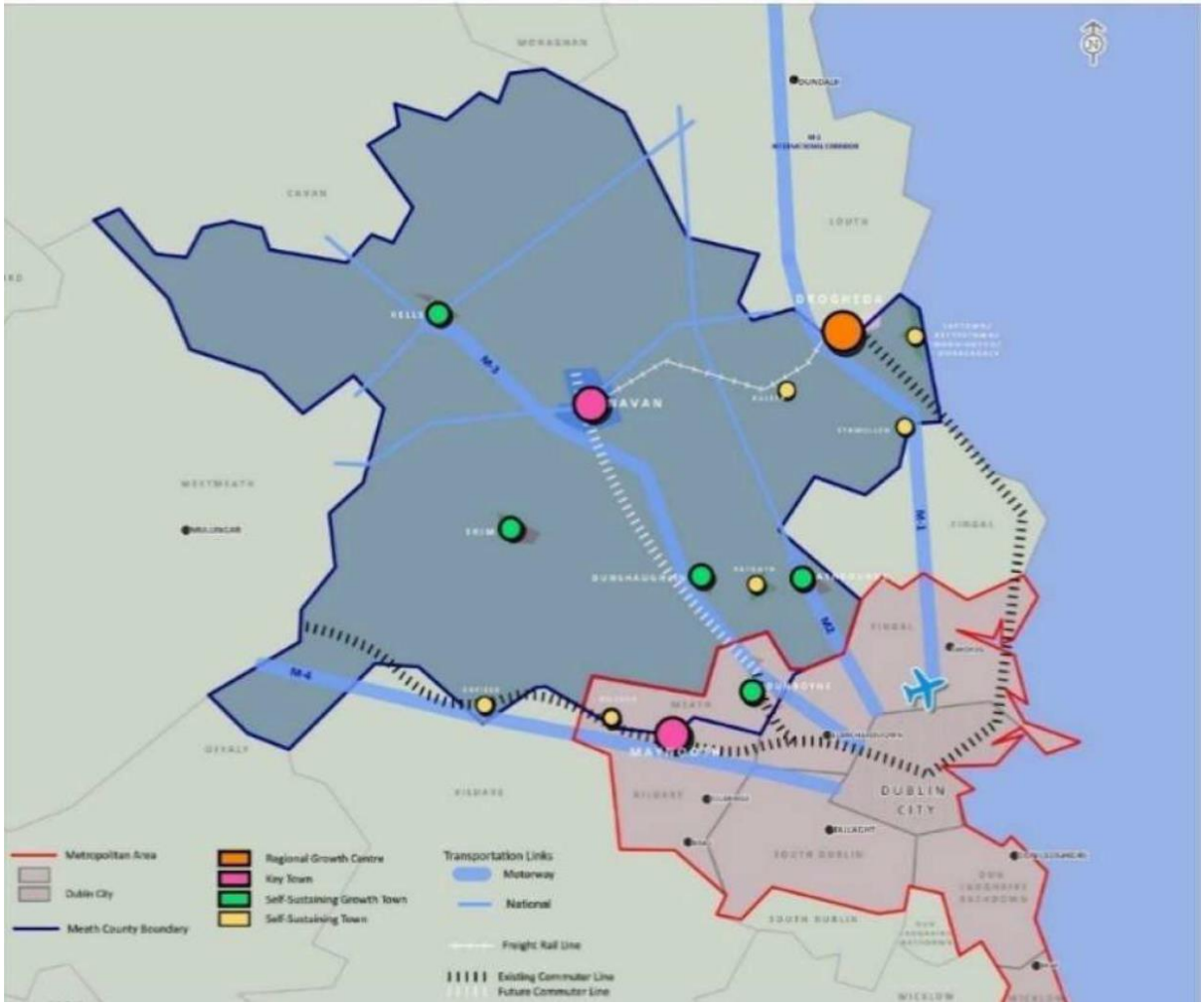

Figure 3-2: Core Strategy Map (Source: Meath County Development Plan 2021-2027)

As per the Core Strategy and illustrated above, Ratoath is designated as a Self-Sustaining Town with a high level of population growth and weak employment base which requires targeted catch-up investment to become more self-sustaining. The Core Strategy for the county identifies 72 extant units not yet built and the capacity for 803 residential units over the plan period, part of which would be delivered on 'A2 New Residential' zoned lands, such as the application site. Since the Plan came into effect in late 2021, and on review (in June 2025) of the Construction Information System (CIS) database, a total of 238 units have been approved in Ratoath built up area (BUA), as shown in Figure 3.3.

As such, there is a realistic concern that the housing targets needed to achieve the growth ambitions set out in the Plan for the settlement may not be realised. **The proposed development will make an invaluable contribution to achieving these targets and directly respond to plug up housing demand which is impacting housing affordability in the area and surrounding environs.**

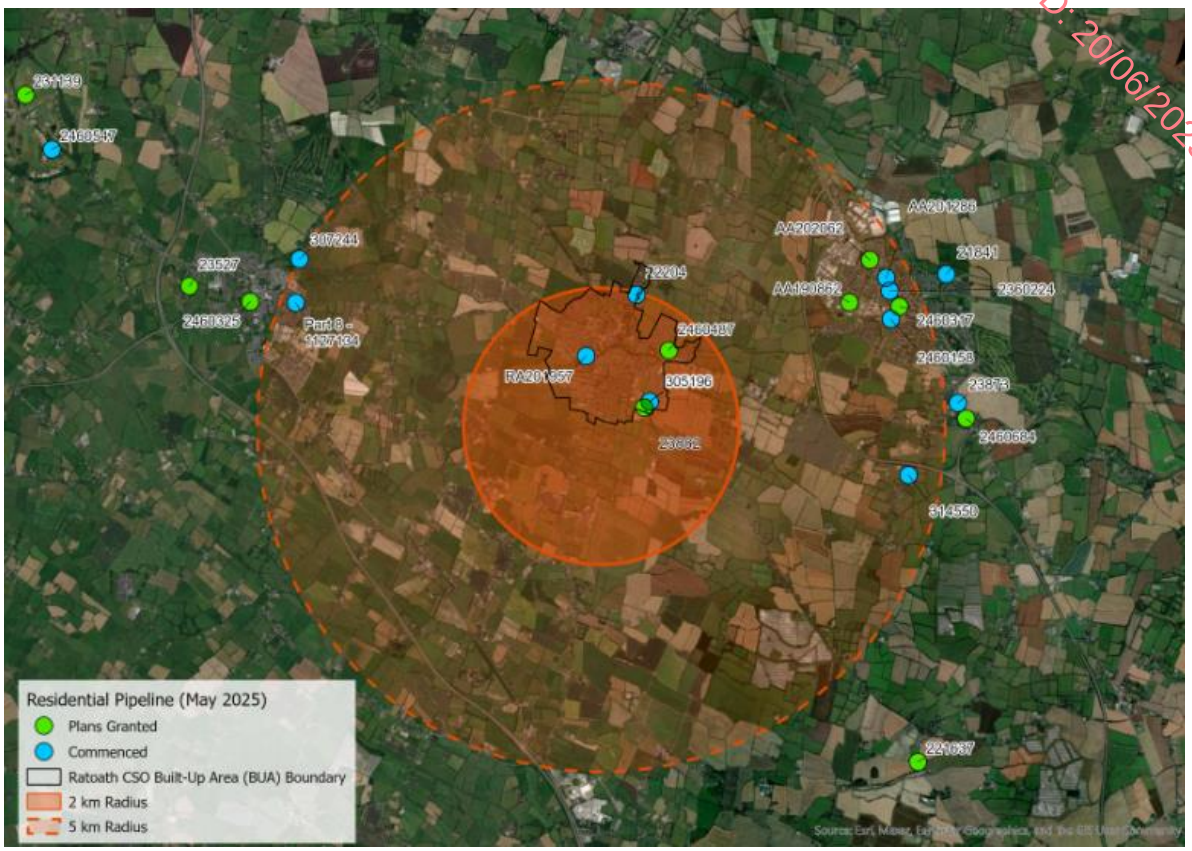

Figure 3-3 Residential schemes approved in Ratoath BUA and wider area since 2021

Policy Objective CS POL 1 states that it is the policy of the Council to:

> ***Policy CS POL 1 -*** *"To promote and facilitate the development of sustainable communities in the County by managing the level of growth in each settlement to ensure future growth is in accordance with the Core Strategy and County Settlement Hierarchy in order to deliver compact urban areas and sustainable rural communities."*

Policy Objective CS OBJ 1 highlights the Authority's ambitions to focus growth and development towards designated settlements stating that the Authority will:

> ***Policy CS OBJ1 - "To*** *secure the implementation of the Core Strategy and Settlement Strategy, in so far as practicable, by directing growth towards designated settlements, subject to the availability of infrastructure and services."*

Policy Objective CS OBJ 4 states that it is an objective of the Authority:

> ***Policy CS OBJ4 - "****To achieve more compact growth by promoting the development of infill and brownfield/ regeneration sites and the redevelopment of underutilised land within and close to the existing built-up footprint of existing settlements in preference to edge of centre locations."*

The Development Plan outlines two key drivers that will influence the approach to residential development in the town over the Plan period. The first is the targeted housing allocation of 803 no. residential units to accommodate future growth and increasing demand for housing, The second is the

delivery of the Ratoath Outer Relief Road (RORR) which will facilitate the construction of residential units in the south-eastern part of the town.

The Plan identifies the opportunities that lands such as the application site present in terms of achieving sustainable and targeted growth and facilitate the natural and planned expansion of a settlement rather than sporadic urban sprawl. Making better use of underutilised lands in urban areas such as the subject site, is key to creating attractive and accessible neighbourhoods where future residents will benefit from direct and easy access to a range of community and social infrastructure. Developing schemes at appropriate densities will have the added benefits of improving the vitality and economic wellbeing of Ratoath, and the future development of Strategic Employment Lands thus providing an improved return on capital investment programmes including public transport initiatives and infrastructure such as the RORR.

3.10.2 Land Use Zoning

The subject site is zoned 'A2 New Residential' with an objective,

> *"A2 New Residential - To provide for new residential communities with ancillary community facilities, neighbourhood facilities as considered appropriate."*

The entire LRD scheme is situated on A2 New Residential zoned lands. There is no residential or ancillary residential element located on Rural Area (RA) lands or on White Lands (WL) lands.

The RORR corridor falls across *Transport – Indicative Road Route,* RA, WL and A2 residential zonings. The parcel of land zoned as 'RA – Rural Area' within the application area contains the proposed RORR grass verge, which is allowable under the RA range of permitted uses as a 'utility structure'. To re-iterate, there is no residential or ancillary residential development located on this parcel of land zoned 'RA'.

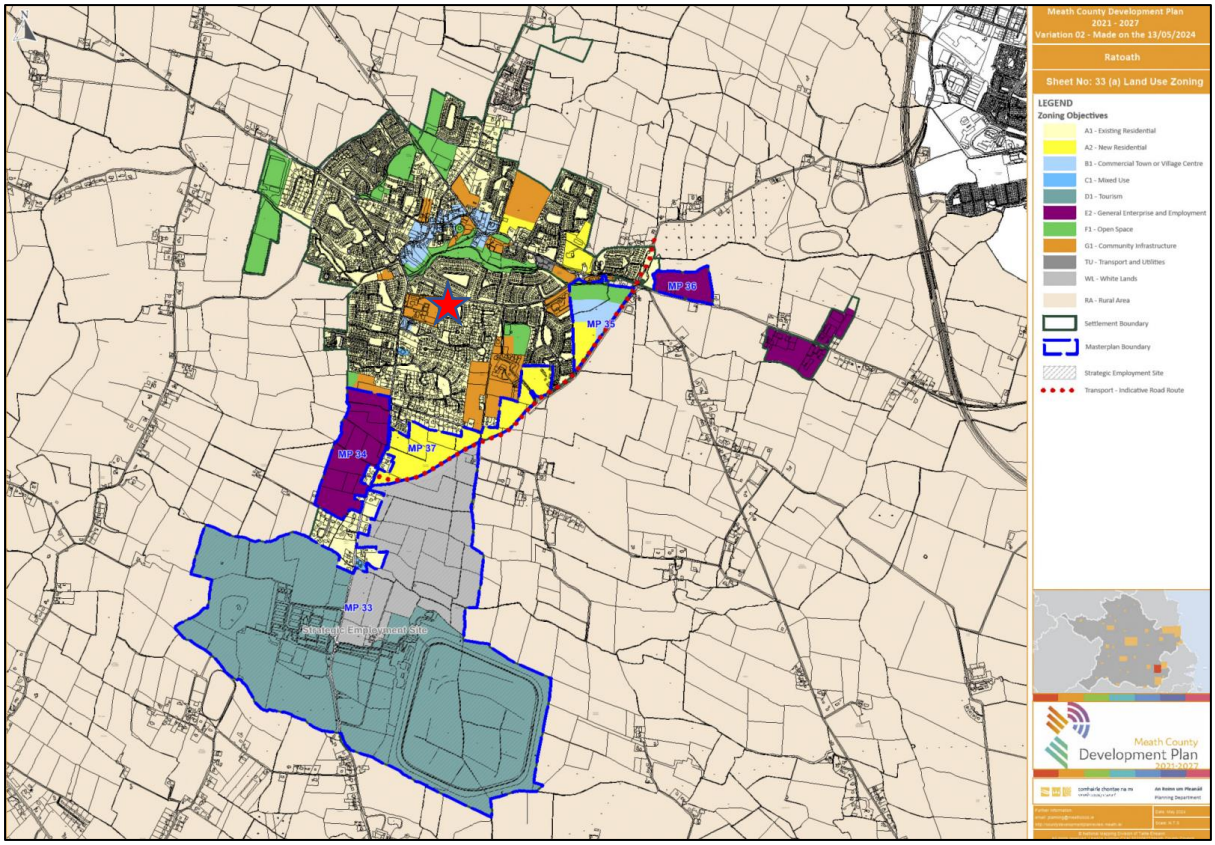

Figure 3-4 Land Use Zoning – Subject Site shown by Red Star (Source: MCDP 2021-2027)

The various 'Permitted' and 'Open for Consideration' uses for the subject site are detailed in Table 3.1 below.

Table 3-1: Permitted and Open for Consideration Uses for the Subject Site.

Zoning	Permitted Uses	Open for Consideration Uses
A2 New Residential	**Residentia**l / Sheltered Housing, B & B / Guest House, Bring Banks, Community Facility / Centre, **Childcare Facility**, **Convenience Outlet**, Children Play / Adventure Centre, Education (Primary or Second Level), Halting Site / Group Housing, Home Based Economic Activities, Leisure / Recreation / Sports Facilities, Retirement Home / Residential Institution / Retirement Village, Utilities.	Betting Office, Caravan Park, Cultural Facility, Education (Third Level), Enterprise Centre, Health Centre, Healthcare Practitioner, Hotel / Motel / Hostel, Offices <100m (not for visiting members of the public), Place of Public Worship, Bar/ Restaurant / **Café**, Take-Away / Fast Food Outlet, Veterinary Surgery.
RA Rural Area	Agriculture, Agricultural Buildings, Agri-Tourism, Boarding Kennels (Where the use is ancillary to the use of the dwelling as a main residence), Burial Grounds, Extractive Industry/Quarrying, Equestrian, Farm Shop (Only where the bulk of the produce is produced on the farm), Forestry related activities, Horticulture, Caravan and Camping Park (No static mobile homes or permanent structure unless ancillary to the operation of the campsite shall be permitted), Golf Course, Open Space, Research and Development (Rural related research and development only), Residential (Subject to compliance with the Rural Settlement Strategy), Restaurant/Café (Only where ancillary to tourism uses or conversion of protected or vernacular structures), Sustainable Energy Installations, **Utility Structures.**	Community Facility, Cultural Facility, Education, Garden Centre, Micro Businesses (Refer to the Economic Chapter), Playing Fields, Recreational Facility, Sports Club, Telecommunication Structures, Workshop (only where ancillary to an existing dwelling where it is demonstrated that the proposed activity is carried out by a resident of the dwelling, with no visiting members of the public), Veterinary Clinic.

The proposed development, comprising 364 no. residential units, is compliant with the A2 zoning designation and will support the creation of a vibrant and viable community with an appropriate mix of uses. The proposed commercial unit includes a 2-storey creche, a retail unit and a coffee shop on the ground floor. It is considered that these uses will be complimentary to the existing town centre uses in the settlement core and will not adversely impact the vitality and viability of the town centre but rather adopt an ancillary function to the primary residential use. The proposed commercial and creche facility have been appropriately scaled to accommodate demand arising directly from the proposed residential element of the scheme thus contributing to the creation of a sustainable community.

The Development Plan highlights how A2 zoned lands are designated as the primary source of land to accommodate new residential development. **The subject site represents the largest consolidated land bank of A2 zoned land within the Ratoath settlement and should therefore be prioritised for the delivery of housing. The proposed development is compliant with the zoning objective ascribed to the lands and represents a strategic approach to the sustainable expansion of the Ratoath settlement and meet ever increasing demand for housing.**

3.10.3 Masterplan Designation

As indicated in Figure 2, the subject site is part of a designated Masterplan boundary (MP37). The Development Plan states that:

"Additional lands identified to deliver the completion of the R125 and R155 link road amount to approximately 3.8 hectares and shall include the provision of a public landscaped park of circa 0.7 hectares with appropriate recreational facilities to be agreed with the planning authority. This facility shall be delivered as part of the overall development proposal. The public park can be provided as part of the overall open space requirement on site. The first phase of development shall include the construction of the adjoining section of the Ratoath Outer Relief Road. Any planning application made for development on these lands shall be accompanied by a Master Plan (MP 37), detailing development proposals for the full extent of the lands. This shall include details of the overall site and building layout for the lands, building height and design principles, mix of uses, open space and recreational provision, traffic impact assessment and management proposals and service."

This submission is accompanied by a Masterplan prepared by FHP Architects which includes a vision for the redevelopment of the Masterplan lands. The lands encompass the subject site on which this LRD application is proposed and also two other major landbanks which are suitable for large residential schemes. The first of these, to the northeast of the lands, received planning permission in 2020 for an SHD scheme which is currently under construction (Ref: SHD305196) and approximately mid-way to completion. The other major land bank is directly west of the subject lands. There are several other smaller plots and landowners within the MP37 lands which are also designated for residential purposes.

The design and layout of the proposed development has been carefully considered in the context of the wider Masterplan lands ensuring the holistic and coordinated redevelopment of the fuller land bank in accordance with the above principles. The scheme has incorporated sufficient set back distances from neighbouring plots within the wider MP lands and has respected the prevailing heights of the area to ensure that the proposed development will not unduly impede the future redevelopment of other lands with the MP boundary. The central open space proposed in the LRD scheme will, on development and occupation of a future residential scheme on the lands immediately adjacent to the west, open out onto the neighbouring site to allow unimpeded access to a shared community park of 0.7hectares in line with the vision set out in MP37 and the MCDP.

Furthermore, it is considered that the proposed development has the potential to act as a catalyst for the future development of the wider masterplan lands through direct connectivity with the town centre and the Strategic Employment Lands to the south, which will be further enhanced with the delivery of the proposed RORR.

The design development process has strategically considered the RORR corridor, as well as the existing built forms and under-construction schemes surrounding the subject site, to respect and integrate with the existing built environment of Ratoath. The layout provides meaningful separation distances to safeguard the privacy and safety of neighbouring properties, while also allowing for future development potential on adjacent lands (Phase 3 of the MP 37). This approach ensures a balanced transition between the new and existing urban fabric.

A comprehensive approach has been taken to incorporate key urban design and landscape principles from the Masterplan MP37 principals, including building height and density, unit mix, character areas, permeability, and connectivity. The layout also reflects a clear street hierarchy and integrates a well-defined landscaping and infrastructure strategy. These elements contribute to a context-sensitive and cohesive design that supports both functionality and visual quality.

3.10.4 The Ratoath Outer Relief Road

Chapter 3 of the Ratoath Written Statement outlines the vision for the settlement, part of which involves the promotion of sustainable movement through the completion of the Ratoath Outer Relief Road (RORR).

The proposed development includes the provision of the second phase of the RORR that will run along the southern boundary of the site connecting the site to the R155 and the neighbouring Jamestown SHD (Ref. ABP. 305196). The RORR itself is a distributor road and will facilitate greater connectivity for all of the Ratoath settlement. The Road will be delivered in tandem with residential development as envisaged in the Development Plan.

A section of the Relief Road is proposed as part of this development, which will result in the completion of the RORR originally permitted under the applications Reg Ref: RA150993 and Reg Ref: RA190724. The section of the RORR proposed as part of this development runs from a new junction with the R155 east to the end of the site boundary.

The RORR is a vital piece of infrastructure outlined in the MCDP and has been designed to connect with the Fairyhouse Road (R155) to the south-west. There is a specific reference to the long-term ambition to complete the RORR recognising that:

> *"There is an opportunity to maximise the investment in this LIHAF funded infrastructure by facilitating the completion of this Outer Relief Road and complete the link between the R125 and R155. This will be achieved by zoning additional lands for residential development and requiring that the remainder of this link road is delivered as part of the development of these lands."*

It is envisaged that this road will be developed in tandem with the proposed LRD and thus will comply with the policy:

> *RA OBJ 6 – "To facilitate the development of the Ratoath Outer Relief route in tandem with development. "*

The location of the proposed section of the RORR included in this application was informed and guided by the principles of permeability and connectivity and the need to connect to existing infrastructure. The location of the road offers the potential for future connections to the White Lands to the south via a junction across the RORR, and towards Fairyhouse Racecourse via the existing bridle path.

Whilst it is acknowledged that there is a slight deviation in the layout of the road and its alignment from that shown on the Ratoath Land Use Zoning Map (Sheet 33a) as extracted in Figure 2, the location of the route is indicative only and deviations are permissible. The location proposed on the zoning maps has not considered granular site level detail and specific constraints that inform and guide finalised location and layout. This position has been accepted by the Planning Inspector in assessing the refused SHD application who confirmed that they are *"satisfied that the objective further provides flexibility in relation to the alignment of the RORR."*

3.11 References

- The National Planning Framework: Project Ireland 2040, First Revision (April 2025)
- Project Ireland 2040: National Development Plan 2021-2030
- Housing for all, A New Housing Plan for Ireland
- Sustainable Residential Development and Compact Settlements: Guidelines for Planning Authorities 2024
- Sustainable Urban Housing Design Standards for New Apartments Guidelines for Planning Authorities (2023)
- Urban Development and Building Heights Guidelines for Planning Authorities (2018)
- Climate Action Plan 2023
- Regional Spatial and Economic Strategy for the Eastern and Midlands Region (2019)
- Meath County Development Plan 2021-2027

4 Alternatives Considered

4.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) has been prepared by KPMG Future Analytics and provides a description of the feasible alternatives considered during the development of the scheme design as per the following -

- Section of 3.4 of EIARs by Environmental Protection Agency in 2022 (EPA, 2022),
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment 2018.

EIA Directive 2014/52/EU sets out requirements for Environmental Impact Assessment Reports to include

> *"The environmental impact assessment report to be provided by the developer for a project should include a description of reasonable alternatives studied by the developer which are relevant to that project, including, as appropriate, an outline of the likely evolution of the current state of the environment without implementation of the project (baseline scenario), as a means of improving the quality of the environmental impact assessment process and of allowing environmental considerations to be integrated at an early stage in the project's design."*

The Article 5(1)(d) of Directive 2014/52/EU (amending Directive 2011/92/EU) states,

> *"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 option chosen, taking into account the effects of the project on the environment;"*

Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment 2018 specifies,

> *"Scoping should consider information on "reasonable alternatives" provided by the developer. These may include options for project design, technology, locations, size and scale, etc. Alternatives may end up becoming part of the project's final design, or its method of construction or operation, in order to avoid, reduce, prevent or remedy environmental effects. Any recommendation to study reasonable alternatives should focus on alternatives that are relevant to the specific development proposed and the likely effects of the development on the environment."*

The project architect and developer has considered various alternatives as a part of design evolution and requirement of EIA process. This section of the EIAR outlines the primary alternatives considered during the design and consultation stages of the project. It explains the key reasons for selecting the proposed development, taking into account a comparison of the environmental impacts associated with the main alternatives.

According to the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022), alternatives should be considered,

- Alternative Locations and Land Uses
- Do-Nothing' Alternative
- Alternative Processes
- Alternative Layouts and Designs

4.2 Alternative Locations and Land Uses

Proposed LRD Location

Pursuant to Section 3.4.1 of the 2022 EPA Guidelines, the consideration of alternatives 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' for the upgrading of an existing road but there may be alternative design options."*

The development of this site for residential purposes is key to completing the vision for Masterplan MP37 lands, the extension of the Ratoath Outer Relief Road and meeting the Core Strategy Housing allocation over the course of the current Development Plan. It will also enable the delivery of the adjoining section of the Ratoath Outer Relief Road which forms the southern boundary of the site and is a key driver influencing the approach to residential development in the town. The consolidated Meath County Development plan 2021 -2027 including variations 1,2 and 3 states that,

> *"The Council has received funding for the construction of a Distributor Road in Navan that will release lands with a potential to deliver 1,600 units and* ***a section of an Outer Relief Road in Ratoath that will open up lands with a potential to deliver 370 units***."

The subject proposal addresses the A2 residential zoning objective and housing potential in this location with the construction 364 no. residential units including 250 no. houses and 114 no. apartment/ duplex units along with a creche, retail unit, café unit. All residential facilities are proposed with associated car and cycle parking, bin stores, associated open space, access road, service infrastructure on greenfield land available to the developer that is zoned 'New Residential' under the Meath County Development Plan 2021-2027.

The site forms a significant portion of an identified Masterplan area (MP37) that forms a natural extension to the south of the built-up area of Ratoath Town and is the largest tract of residential-zoned land in the vicinity. The proposed project will also support the completion of the RORR and provide access to MP 33, as well as facilitate the development of the designated future strategic employment site as shown in Figure 4.1 below. In this way, MP37 and the delivery of the RORR are crucial enablers for the unlocking of future employment centred lands to the south of Ratoath. As such, it was not deemed appropriate or necessary to consider alternative locations or land uses for the proposed development.

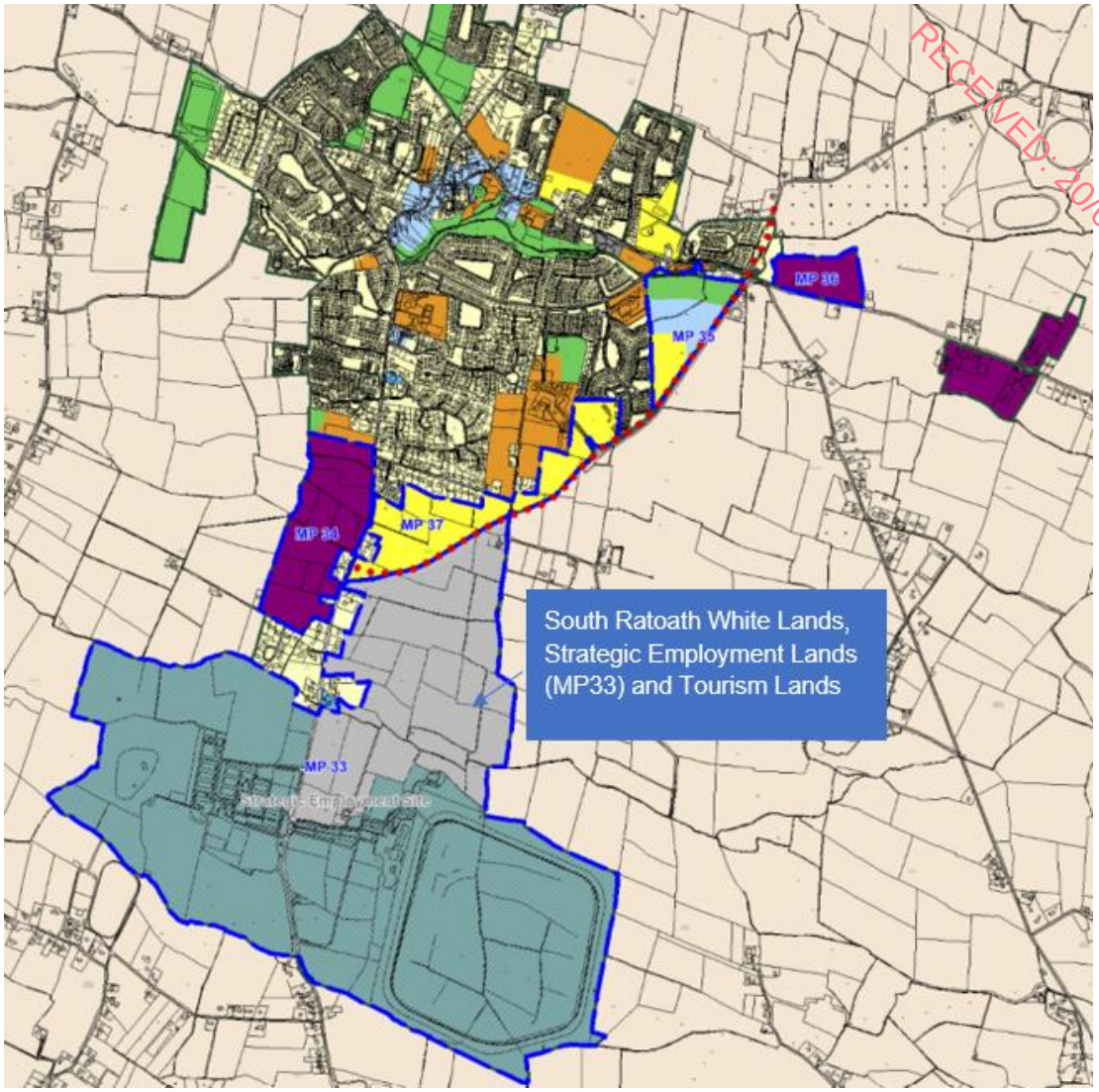

Figure 4-1 Zoning Map – MP37 & RORR in context with Ratoath South new employment lands

Proposed RORR Location

The location of the proposed section of the RORR included in this application was informed and guided by the principles of permeability and connectivity and the need to connect to existing infrastructure. The location of the road offers the potential for future connections to the White Lands to the south via a junction across the RORR, and towards Fairyhouse Racecourse via the existing bridle path.

Whilst it is acknowledged that there is a slight deviation in the layout of the road and its alignment from that shown on the Ratoath Land Use Zoning Map (Sheet 33a) as extracted in Figure 4.1, the location of the route is indicative only and deviations are permissible. The location proposed on the zoning maps has not considered granular site level detail and specific constraints that inform and guide finalised location and layout. This position has been accepted by the Planning Inspector in assessing the refused SHD application who confirmed that they are *"satisfied that the objective further provides flexibility in relation to the alignment of the RORR."*

4.3 Do Nothing Alternative

The 'Do-Nothing' scenario will be 'not to develop the proposed project' and to leave the existing land and surrounding environment as it is. Do Nothing would have a significant setback, extending from the plot level to the county scale. Without development on this site, the delivery of Masterplan MP 37 would

remain incomplete, directly undermining the strategic proposals outlined in the Meath County Development Plan 2021–2027, which has been further briefed in this section.

To address the County level targets, the Meath County Council Development Plan 2021-2027 provides the following in relation to the subject and surrounding lands:

> *"Additional lands identified to deliver the completion of the R125 and R155 link road amount to approximately 3.8 hectares and shall include the provision of a public landscaped park of circa 0.7 hectares with appropriate recreational facilities to be agreed with the planning authority. This facility shall be delivered as part of the overall development proposal. The public park can be provided as part of the overall open space requirement on site. The first phase of development shall include the construction of the adjoining section of the Ratoath Outer Relief Road. Any planning application made for development on these lands shall be accompanied by a Master Plan (MP 37), detailing development proposals for the full extent of the lands. This shall include details of the overall site and building layout for the lands, building height and design principles, mix of uses, open space and recreational provision, traffic impact assessment and management proposals and service."*

The Meath County Council Development Plan 2021-2027 also states one of two key drivers influencing the approach to residential development in the town will be:

> *"Outer Relief Road - Ratoath has received LIHAF funding to assist in the delivery of a section of the Outer Relief Road. This will facilitate the construction of residential units in the south-eastern part of the town. There is an opportunity to secure the completion of this road in this Plan by zoning additional residential lands to the southwest. This would complete the link between the R125 and the R155 and would ensure the maximum return on the investment in this piece of infrastructure."*

As mentioned in the Section 3 – Planning Policy Context of this report, the Development Plan outlines two key drivers that will influence the approach to residential development in the town over the Plan period. The first is the targeted housing allocation of 803[1] no. residential units in Ratoath to accommodate future growth and increasing demand for housing, The second is the delivery of the Ratoath Outer Relief Road (RORR) which will facilitate the construction of residential units in the south-eastern part of the town.

At the plot level, the proposed site is the largest land parcel under single ownership within the defined MP37 boundary and shares the proposed Ratoath Outer Relief Road (RORR) corridor as direct boundary. This strategic position and size provide a unique opportunity to deliver a substantial portion of the targeted housing supply for the locality, complete the construction of the adjoining section of the RORR and deliver on a public landscaped park of circa 0.7ha with appropriate recreational facilities to be agreed with the planning authority.

The figure below shows that the central shared open space supports the delivery of a well-structured neighbourhood and the completed RORR corridor that respects the masterplan's vision, including the provision of pedestrian and cycleway connections, public open spaces, and transport links, all in accordance with the strategic goals of the county plan.

Without development on the subject site, the Masterplan MP 37 will remain incomplete, following the delivery of the Ratoath Outer Relief Road (RORR) will also be disrupted. Absence of both Masterplan -MP37 and the Ratoath Outer Relief Road (RORR) will significantly undermine efforts to meet the County's housing targets.

Further the County's housing targets are directly aligned with national objectives, as outlined in the revised National Planning Framework (NPF). The revised NPF targets "*to meet projected population and to manage economic growth patterns, as well as increased household formation, an increase in annual housing output to approximately 50,000 homes per annum to 2040 is needed.*" The non-delivery

[1] Consolidated Meath County Development Plan 2021-2027 (incl. V1, V2 & V3) – Table 2.12

of the proposed development would adversely affect efforts to tackle Meath's and Ireland's housing crisis, undermining both local and national strategies aimed at addressing critical housing needs.

The absence of the RORR would also result in a failure to provide essential local transport infrastructure, an integrated active travel network, and much-needed community facilities. Furthermore, it would hinder efforts to alleviate traffic congestion in Ratoath, impacting both quality of life and sustainable mobility objectives.

The absence of the proposed scheme, MP37 and RORR would hinder sustainable growth and the development of MP33 lands which will be served by the RORR.

4.4 Alternative Processes

Alternative processes are not considered relevant to this Environmental Impact Assessment Report given the nature of the proposed development.

4.5 Alternatives Designs and Layouts

4.5.1 Design Evolution

The first step in considering the proposed development was to reflect on the previous Strategic Housing Development (SHD) proposal submitted in 2022 for 452 no. residential units (150 no. houses, 302 no. apartments), creche and associated site works (ABP-313658-22) for the lands. At initial concept design stage for the proposed development, the refusal reasons of the SHD scheme were carefully considered. The design team sought to address and learn from all reasons and observations made by the Board in its assessment of that scheme. The proposed scheme now also has the benefit of Masterplan 37 in place which has provided important cues and guidelines on the proposed LRD scheme design.

4.5.2 Former SHD scheme on the subject site

As stated, the starting point for the design and planning of the proposed development was to consider the earlier SHD scheme refused on the lands. This scheme was refused planning permission in September 2023 for the following reasons, in summary:

1. The proposed residential development presents a poor design and layout due to the high proportion of apartments and maisonettes, quality of private and communal open space and the relationship between the scheme and wider context. The proposed development would be contrary to Meath County Development Plan 2021–2027 and Ministerial Guidelines.

2. The applicant failed to prove that the entire development lies within 'A2 New Residential' zoned land, raising concerns about potential encroachment onto 'WL White Lands' where residential use is not permitted, potentially breaching the zoning objectives of the Meath County Development Plan 2021–2027.

Further, the assessment of the SHD was addressed under Land-Use Zoning Objectives; Development Principles; Density; Urban Design; Impacts on Neighbouring Amenities; Residential Amenities and Development Standards; Traffic and Transportation; Services and Drainage; Material Contraventions. The findings of the SHD assessment were carefully considered and were instrumental in guiding the LRD scheme now proposed, and as detailed below.

Learning from the refusal reasons, several decisions were made at the outset of the proposed LRD application now brought forward. These included:

- The LRD scheme and all ancillary uses are entirely located on A2 Residential lands – no part of the residential or associated elements encroach onto 'White Lands -WL' or any other land use zones.

- Major change in overall design layout. In SHD scheme, 12 clustered neighbourhood blocks were planned.
- Current Site Coverage is 13.5% as opposed to 17.2% in failed SHD.
- A substantial reduction in the number of residential units proposed overall from 452 no. units under the failed SHD scheme to 364 no. units now proposed.
- A substantial reduction in the number apartments and maisonettes from 302 no. proposed under the failed SHD scheme to 114 apartments and duplexes now proposed.
- The balance has now been significantly tipped towards housing units with 68% of total residential scheme or 250 housing units now proposed under the LRD scheme.
- In current scheme, a more varied unit mix is included as compared to previous SHD scheme
- Enhanced provision of Universal Design Units 81 (22.25% of the total units)
- A substantial reduction in retail floor space. The previous SHD proposed four proposed commercial / local retail units with a total floor area amounting to 534sq.m. The LRD now proposed has a more appropriately scaled retail unit of 93.5sqm to provide a basic level of convenience retail offer to the new residents without detracting from existing or future retail within the town centre.
- Clear definition on the use of the ancillary to residential commercial units as créche, café and convenience retail unit.
- A more restrained building height strategy than proposed under the refused SHD. Notably the proposed LRD building heights which now range from 2-4 storeys as opposed the 2-6 storeys proposed under the refused SHD.
- More generous set-back space to buildings.
- Introduction of 2.5 storey high houses across the scheme to provide height variation.
- Buffer between existing houses on Glascarn Lane and proposed development (open space and rear gardens)
- Continuation of the vernacular style at the end of Glascarn Lane with the provision of 4 No. Detached dwellings rather than terraced housing.
- Reduction in the number of cul-de-sacs.
- Provision of bus-stops along the RORR.
- Increased permeability throughout the scheme.

Figure 4-2: Site Layout Plan - 2022 SHD Application

4.5.2.1 First Iteration

On reflection of SHD learnings, the first iteration of the scheme now proposed involved the following elements:

The scheme centres around a connected greenway network, linking Ratoath Town to the north and potential future development to the south. Permeable neighbourhood boundaries encourage movement and interaction across the site.

A main loop road, accessed from two points on the RORR, leads to a central park which was envisioned as the heart of the community, providing recreational and local commercial facilities.

Neighbourhoods are linked by green corridors that incorporate walking, cycling, and sustainable drainage within buffer zones along existing hedgerows. These form a greenway spine connecting the

site to the R155, Glascarn Lane, the Jamestown SHD, and potentially Ratoath College.

Figure 4-3: Prepared as part of an LRD Application Process by RKD Architects

4.5.2.2 Second Iteration

The second iteration of the design introduced a centralised pocket park, strategically positioned to act as a focal point and gathering space within the development – this is an essential feature set out in MP37 landscape plans. It allows for the creation of a shared park that will expand out onto neighbouring site directly west on completion of a future scheme on that site. This central green space is connected to a series of smaller pocket parks distributed throughout the neighbourhood, creating a network of accessible open spaces that enhance local amenity, promote walkability, and strengthen community identity. In parallel, the revised layout along the RORR incorporates varied building heights, carefully composed to provide visual interest and a more dynamic streetscape. This variation in scale also helps to define key frontages and improve the transition between the development and the surrounding context.

Figure 4-4: Prepared as part of an LRD Application Process by Fewer Harrington & Partners

4.5.2.3 *Third Iteration*

The third iteration of the design introduced a more varied unit mix, offering a wider range of housing types to accommodate diverse household needs. The number of adaptable units was also increased, promoting inclusivity and ensuring homes can respond to changing lifestyle or accessibility requirements over time.

Revisions to the apartment blocks enhanced the development's urban edge, particularly along key frontages, helping to define the public realm and create a stronger, more coherent street presence. Building heights within the development were also refined to establish focal points at key locations, improving legibility, wayfinding, and the overall sense of place. The varied building heights along the RORR create a visually engaging frontage and strong urban edge.

The layout of the central open space was adjusted along its southern boundary as part of the MP37 discussions with the owner of the adjoining MP37 lands to the west. This adjustment allowed for attenuation of the southern boundary of the neighbouring lands while still achieving the 0.7ha shared open space for MP37 (0.4ha of which is to be delivered as part of the proposed development).

Figure 4-5: Prepared as part of an LRD Application Process by Fewer Harrington & Partners

4.5.3 Proposed Site Layout

The final iteration, as per the proposed scheme has been carefully developed as a direct and considered response to the site's unique context, topography, and existing connections both physical and social. The scheme has evolved on consideration of the failed SHD proposed on the lands and key insights on the layout, design and functionality provided by the competent authority on that scheme. The scheme also evolved in alignment with the principles for design and layout set out in MP37.

The design approach recognises the opportunity to create a high-quality, sustainable residential development that integrates seamlessly with the surrounding urban fabric, while enhancing the amenity and character of existing neighbouring communities.

By respecting the scale and rhythm of nearby residential areas, the scheme maintains a sense of continuity with the established townscape, while also introducing a contemporary architectural language that reflects the evolving needs of Ratoath's growing population. The layout prioritises permeability and legibility, providing clear, well-connected routes that link new and existing streets, pedestrian paths, and public open spaces.

Central to the concept is the ambition to support community life. The development incorporates a mix of housing types, high-quality public realm, and accessible green spaces that encourage interaction, activity, and inclusivity. The design also places strong emphasis on sustainable movement, promoting walking and cycling through a compact, walkable layout that reduces car dependency and fosters healthier lifestyles.

This context-driven approach ensures the scheme not only delivers much-needed housing but also contributes meaningfully to the long-term vitality and resilience of the Ratoath community.

The final scheme as now proposed has been engineered to include ample provision for nature-based Sustainable Drainage Systems and a higher level than proposed in the initial failed SHD scheme and in earlier iterations of the LRD design. The final scheme, as now proposed, also integrates an existing local drainage ditch as a key element of the surface water management strategy for the lands.

The scheme also evolved to allow for connection to MCC's proposed Part 8 Cycle Scheme and to provide for bus stops along the RORR enhancing the public transport provision for future residents of the scheme. Finally, the scheme updates earlier RORR designs to allow provision of protected junctions, and compliance with National Cycle Manual.

Figure 4-6: Site Layout

4.6 Environmental Impacts of Design Evolution

The evolution of the scheme from Iteration 1 through to Iteration 3 were primarily driven by design considerations rather than environmental reasons. The proposed scheme strikes a careful balance in ensuring viability of the scheme alongside safeguarding the local environment and ensuring the delivery of a sustainable new community.

An Appropriate Assessment Screening Report was prepared for the subject site which concluded that there is no possibility of significant impacts on European sites, features of interest or site-specific conservation objectives. This EIAR documents the assessment of potential impacts on environmental topics and baseline conditions of the lands arising from the proposed scheme at both construction and operation phase. A series of mitigation measures are proposed to be implemented that will reduce any likely significant effects to not significant, as per the residual impacts section set out in each chapter of this EIAR. A summary of mitigation measures that will be taken at both construction and operational (on occupation) phases of development are provided in Chapter 18.

5 Air Quality

5.1 Introduction

This chapter identifies, describes and assesses the likely air quality impacts associated with the proposed residential development and RORR at Ratoath, Co. Meath.

This chapter was completed by Tanmay Gojamgunde. Tanmay is an Environmental Consultant in the Air Quality & Climate section of AWN Consulting, a Trinity Consultants Company. He holds a MSc in Air Pollution Management and Control from the University of Birmingham and has also completed BTech in Environmental Engineering. During master's he worked on 'The Impact of bus fleet electrification on air quality in Birmingham' while utilising the advanced dispersion modelling tools and emission inventory toolkit. He has also worked on several projects in India like the Delhi's first air quality monitoring programme (ASMAN), IIT Kanpur Traffic Planning for improving air quality, EIAR for the industrial district in Kanpur. He also specialises in conducting air dispersion modelling assessments of emissions, emission inventories, R programming and other aspects of environmental engineering.

The authoring of the chapter was assisted by Dr. Avril Challoner, a Principal Environmental Consultant in the Air Quality and Climate section of AWN Consulting with 12 years' experience in Air Quality and Climate Consulting. She holds a BEng (Hons) in Environmental Engineering from the National University of Ireland Galway, HDip in Statistics from Trinity College Dublin and has completed a PhD in Environmental Engineering (Air Quality) in Trinity College Dublin. She is a Chartered Environmentalist (CEnv), Chartered Scientist (CSci), Member of the Institute of Environmental Management and Assessment, Member of the Institute of Air Quality Management and specialises in the fields of air quality, climate assessment, EIA and air dispersion modelling.

5.2 Methodology

5.2.1 Criteria for Rating of Impacts

Ambient Air Quality Standards

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

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 supersedes 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* (CAFE Directive) and it 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.

The Ambient Air Quality Standards Regulations 2022 (S.I. 739 of 2022) (the Air Quality Standards Regulations 2022) further transposed the CAFE Directive and revoked the Air Quality Standards Regulations 2011, as amended. 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 (NO_2) and particulate matter (as PM_{10} and $PM_{2.5}$) are outlined in Table 5-1 . 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 5-1: Air Quality Standards Regulations

	Directive 2008/50/EC		Directive (EU) 2024/2881	
Pollutant	**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/m³	Hourly limit for protection of human health - not to be exceeded more than 3 times/year	200 µg/m³
	n/a	n/a	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	50 µg/m³
	Annual limit for protection of human health	40 µg/m³	Annual limit for protection of human health	20 µg/m³
NO_X	Annual limit for protection of vegetation	30 µg/m³	Annual limit for protection of vegetation	30 µg/m³
Particulate Matter (as PM_{10})	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m³	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	45 µg/m³
	Annual limit for protection of human health	40 µg/m³	Annual limit for protection of human health	20 µg/m³
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/m³
	Annual limit for protection of human health	25 µg/m³	Annual limit for protection of human health	10 µg/m³

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 (shown in Table 5-2), the IT4 targets by 2030 and the final targets by 2040 (shown in Table 5-2). 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 NO_2*".

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 5-2: WHO Air Quality Guidelines 2021

Pollutant	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO2	24-hour limit for protection of human health	-	-	25 µg/m3
	Annual limit for protection of human health	20 µg/m3	-	10 µg/m3
PM (as PM10)	24-hour limit for protection of human health	75 µg/m3	50 µg/m3	45 µg/m3
	Annual limit for protection of human health	30 µg/m3	20 µg/m3	15 µg/m3
PM (as PM2.5)	24-hour limit for protection of human health	37.5 µg/m3	25 µg/m3	15 µg/m3
	Annual limit for protection of human health	15 µg/m3	10 µg/m3	5 µg/m3

The applicable air quality limit values for the purposes of this assessment are those set out in Table 5Table **5-1**. 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 2027 for the proposed development. The limit values stipulated by Directive (EU) 2024/2881 are applicable for the design year 2042 for the proposed development.

Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust that are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$). The EU ambient air quality standards outlined in Table 5-1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regard 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/m^2/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/m^2/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.

Air Quality & Traffic Significance Criteria

Human Receptors

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 5-3 below. These criteria have been adopted for the proposed development to predict the impact of NO_2, PM_{10} and $PM_{2.5}$ emissions as a result of the proposed development.

Table 5-3: 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: TII (2022) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

As per Table 5-3 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 (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 (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 5-3 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).

5.2.2 Construction Phase

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 (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 in order 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 (2024) to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Track out (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 5-4; these are based on the IAQM guidance (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 5-4: IAQM Criteria to Determine Dust Emissions Magnitude

Dust Emission Magnitude		
Small	**Medium**	**Large**
Demolition		
• total building volume <12,000 m^3 • 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 m^3 • potentially dusty construction material • demolition activities 6 – 12 m above ground level	• total building volume >75,000 m^3 • potentially dusty construction material (e.g. concrete) • on-site crushing and screening • demolition activities >12 m above ground level
Earthworks		

Dust Emission Magnitude		
Small	**Medium**	**Large**
• total site area <18,000 m^2 • 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 m^2 - 110,000 m^2 • 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 m^2 • 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
Construction		
• total building volume <12,000 m^3 • construction material with low potential for dust release (e.g. metal cladding or timber)	• total building volume 12,000 - 75,000 m^3 • potentially dusty construction material (e.g. concrete) • on-site concrete batching	• total building volume >75,000 m^3 • 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 (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 5-5.

Table 5-5: 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

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 5 m or greater.

OCSC Consulting have prepared a Traffic and Transportation Assessment (TTA) for the proposed development, enclosed separately. It has been determined that the construction stage traffic will not increase by 1,000 AADT, or 200 HDV AADT, and 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.

5.2.3 Operational Phase Methodology

Operational Phase Traffic Assessment

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 5.2.2 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air dispersion modelling assessment. OCSC Consulting have prepared a Traffic and Transportation Assessment for the proposed development enclosed separately and have prepared Chapter 14 (Material Assets – Traffic and Transport). The traffic data provided for the operational phase assessment has included traffic associated with site of the development. While the traffic associated with each individual site in isolation is below the above screening criteria, when assessed in combination with all proposed sites there is a greater than 1,000 AADT increase on a small number of road links. As a result, an assessment of traffic related emissions was conducted. Additionally, traffic associated with other cumulative developments in the vicinity of the proposed development was included in the figures supplied to ensure a full cumulative assessment was conducted. See Traffic and Transportation Assessment and Chapter 14 (Material Assets – Traffic and Transport) for further details.

The impact of traffic emissions on air quality is assessed for both human and ecological receptors within 200 m of impacted roads as per the TII PE-ENV-01106 guidance (TII, 2022). The following sections describe the methodology for each assessment.

The impact to air quality as a result of changes in traffic is assessed at sensitive human receptors in the vicinity of affected roads. These are discussed in further detail within Section 5.5.2 and shown graphically in Figure 5-2:

The TII guidance (2022) states that modelling should be conducted for NO_2, PM_{10} and $PM_{2.5}$ for the Base, Opening and Design Years for both the Do Minimum (Do Nothing – i.e. assuming the proposed development is not in place) and Do Something (with the proposed development in place) scenarios. Modelling of operational NO_2, PM_{10} and $PM_{2.5}$ concentrations has been conducted for the Do Nothing and Do Something scenarios using the TII Road Emissions Model (REM) online calculator tool (TII, 2024).

The following inputs are required for the REM tool: receptor locations, light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy-duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type, project county location and pollutant background concentrations. The *Default* fleet mix option was selected along with the *Intermediate Case* fleet data base selection, as per TII Guidance (TII, 2024). The *Intermediate Case* assumes a linear interpolation between the *Business as Usual* case – where current trends in vehicle ownership continue and the *Climate Action Plan (CAP)* case – where adoption of low emission light duty vehicles occurs.

Using this input data the model predicts the road traffic contribution to ambient ground level concentrations at the identified sensitive receptors using generic meteorological data. The TII REM uses county-based Irish fleet composition for different road types, for different European emission standards from pre-Euro to Euro 6/VI with scaling factors to reflect improvements in fuel quality, retrofitting, and technology conversions. The TII REM also includes emission factors for PM_{10} emissions associated with brake and tyre wear (TII, 2024). The predicted road contributions are then added to the existing background concentrations to give the predicted ambient concentrations. The ambient concentrations are then compared with the relevant ambient air quality standards to assess the compliance of the proposed development with these ambient air quality standards.

The TII guidance (2022) also states that impacts to sensitive ecology due to traffic emissions should be considered. Consideration should be given to designated sites within 2km of the proposed development. However, a detailed assessment is only required at a local level, where there is a designated site within 200m of impacted road links. The TII guidance (TII, 2022) notes that only sites that are sensitive to nitrogen and acid deposition need to be included in the assessment. It is not necessary to include sites for example that have been designated as a geological feature or water course. There are no

designated ecological sites within 200m of the site or impacted road links and therefore no assessment was required as there is no potential for significant impacts to the designated sites due to changes in air quality.

Traffic Data used in Modelling Assessment

Traffic flow information is detailed in Table 5-6 as obtained from OCSC Consulting for the purposes of this assessment. Data for the Base Year 2023 and the Do Nothing and Do Something scenarios for the Opening Year 2027 and Design Year 2042 were provided. The traffic data included traffic associated with the development site and other cumulative sites as relevant (see Chapter 14 Material Assets – Traffic and Transport for further details).

The modelling assessment has been undertaken for road links that were within 200 m of receptors. Background concentrations have been included as per Section 5.3.2 of this chapter based on available EPA background monitoring data (EPA, 2024).

Table 5-6: Traffic Data used in Operational Phase Air Quality Assessment

Road Name	Speed (kph)	Base Year	Opening Year		Design Year	
			Do Nothing	Do Something	Do Nothing	Do Something
		LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
Moulden Bridge (R125)	50	9,744 (344)	12,083 (2)	11,540 (1026)	12,920 (577)	13,400 (577)
Ratoath Outer Relief Road (Glascarn Lane Junction)	50	0 (0)	0 (0)	3,302 (232)	0 (0)	3,483 (319)
Fairyhouse Road (R155 Woodland's road junction)	50	7,944 (290)	9,378 (335)	9,972 (370)	10,382 (486)	11,011 (486)
Ratoath Outer Relief Road (east)	50	0 (0)	1,363 (72)	1,257 (747)	1,359 (94)	1,966 (201)
Fairyhouse Road (R155 North towards Main Street)	50	4,191 (181)	4,740 (224)	4,858 (215)	5,283 (304)	5,421 (274)
Ratoath Outer Relief Road (West)	50	0 (0)	0 (0)	3,596 (235)	0 (0)	3,781 (319)
Milltree Park (R125)	50	8,095 (256)	10,227 (317)	8,361 (192)	11,275 (429)	9,300 (260)

5.3 Baseline Environment

5.3.1 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, 2021). 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 PM_{10}, 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 Dublin Airport meteorological station, which is located approximately 16 km south-east of the site. Dublin Airport met data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 5). For data collated during five representative years (2020 – 2024), the predominant wind direction is westerly to south-westerly with a mean wind speed of 5.3 m/s over the 30-year period of 1991 – 2020 (Met Éireann, 2025).

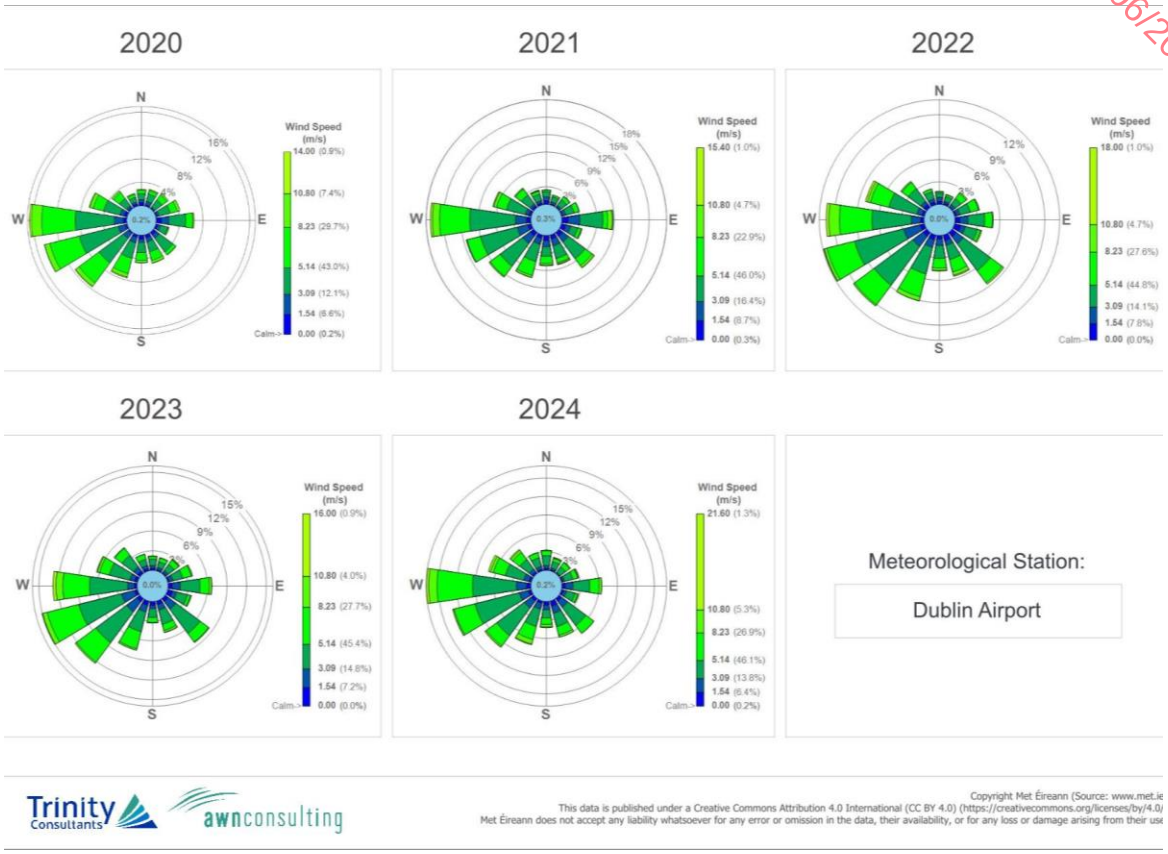

Figure 5.1: Dublin Airport Windroses 2020 – 2024

5.3.2 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) 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 D (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.).

NO_2

Long-term NO_2 monitoring was carried out at the representative Zone D suburban background locations of Castlebar, Edenderry, Emo and Kilkitt for the period 2019 – 2023 (see Table 5-7) (EPA, 2024). Long

term average concentrations are significantly below the current annual average limit of 40 µg/m³. Average results range from 2 – 9 µg/m³ for the suburban background locations. Additionally, there were no exceedances of the hourly limit value of 200 µg/m³.

The average annual mean concentration for the suburban background monitoring sites over the 5-year period is 9 µg/m³. Based on the above information, a conservative estimate of the current background NO_2 concentration for the region of the proposed development is 9 µg/m³.

Table 5-7: Trends in Zone D Air Quality – NO_2

Station	Averaging Period	Year				
		2019	2020	2021	2022	2023
Castlebar	Annual Mean NO_2 (µg/m³)	8	6	6	8	7
	1-hr Mean NO_2 values >200 µg/m³	-	0	0	0	0
Kilkitt	Annual Mean NO_2 (µg/m³)	5	2	2	2	2
	1-hr Mean NO_2 values >200 µg/m³	-	0	0	0	0
Emo	Annual Mean NO_2 (µg/m³)	4	3	4	3	2
	1-hr Mean NO_2 values >200 µg/m³	-	0	0	0	0
Edenderry	Annual Mean NO_2 (µg/m³)	-	-	9	7	9
	1-hr Mean NO_2 values >200 µg/m³	-	-	0	0	0

PM_{10}

Continuous PM_{10} monitoring was carried out at four representative Zone D locations from 2019 – 2023; Castlebar, Claremorris, Edenderry and Kilkitt. Annual average PM_{10} concentrations across the sites ranged from 7 – 18 µg/m³ over the 2019 – 2023 period (see Table 5-8). There was at most 10 exceedances daily limit of 50 µg/m³. There are up to 35 exceedances are permitted within the limit value per year (EPA, 2024). The EPA monitoring data indicates an average annual mean PM_{10} concentration over this 5-year period of 11 µg/m³. Based on the EPA data, an estimate of the current background PM_{10} concentration in the region of the proposed development is 11 µg/m³.

Table 5-8: Trends in Zone D Air Quality – PM_{10}

Station	Averaging Period	Year				
		2019	2020	2021	2022	2023
Castlebar	Annual Mean PM_{10} (µg/m³)	16	14	10	11	10
	24-hr Mean > 50 µg/m³ (days)	1	2	1	0	-
Kilkitt	Annual Mean PM_{10} (µg/m³)	7	8	8	9	7
	24-hr Mean > 50 µg/m³ (days)	1	0	-	0	0
Claremorris	Annual Mean PM_{10} (µg/m³)	11	10	10	8	8
	24-hr Mean > 50 µg/m³ (days)	0	0	0	0	0
Edenderry	Annual Mean PM_{10} (µg/m³)	-	-	18	18	16
	24-hr Mean > 50 µg/m³ (days)	-	-	4	10	-

$PM_{2.5}$

Average $PM_{2.5}$ concentrations in the suburban background monitoring stations of Claremorris over and Edenderry the period 2019 – 2023 (see Table 5-9). ranged from 4 – 18 µg/m³ (EPA, 2024). The overall annual average concentration for this 5-year period is 6 µg/m³. Based on this information, a conservative estimate of the background $PM_{2.5}$ concentration in the region of the proposed development is 8 µg/m³.

Table 5-9: Trends in Zone D Air Quality – $PM_{2.5}$

Station	Averaging Period	Year				
		2019	2020	2021	2022	2023
Claremorris	Annual Mean $PM_{2.5}$ (µg/m³)	4	5	8	6	5
	24-hr Mean > 25 µg/m³ (days)	-	1	0	2	-
Cavan	Annual Mean $PM_{2.5}$ (µg/m³)	-	6	7	7	6
	24-hr Mean > 25 µg/m³ (days)	-	2	6	7	-

Summary

Based on the above information the air quality in the suburban Meath 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 the majority of monitoring sites are also in compliance with the 2030 limit values set out in Directive (EU) 2024/2881. However, 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 NO_2 with the potential for breaches in the annual NO_2 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 (PM_{10} 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).

The current estimated background concentrations have been used in the operational phase air quality assessment for both the Opening and Design Year as a conservative approach to predict future pollutant concentrations. This is in line with the TII methodology (TII, 2022).

5.3.3 Sensitive receptors

Construction Phase

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (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.

The sensitivity of the area is assessed in relation to dust soiling, dust-related human health effects and dust-related ecological effects. Table 5-10, Table 5-11 and Table 5-12 outline the IAQM criteria for establishing the sensitivity of the area.

Table 5-10: 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

Table 5-11: 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/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	< 24 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	< 24 µg/m^3	>1	Low	Low	Low	Low

Table 5-12: Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

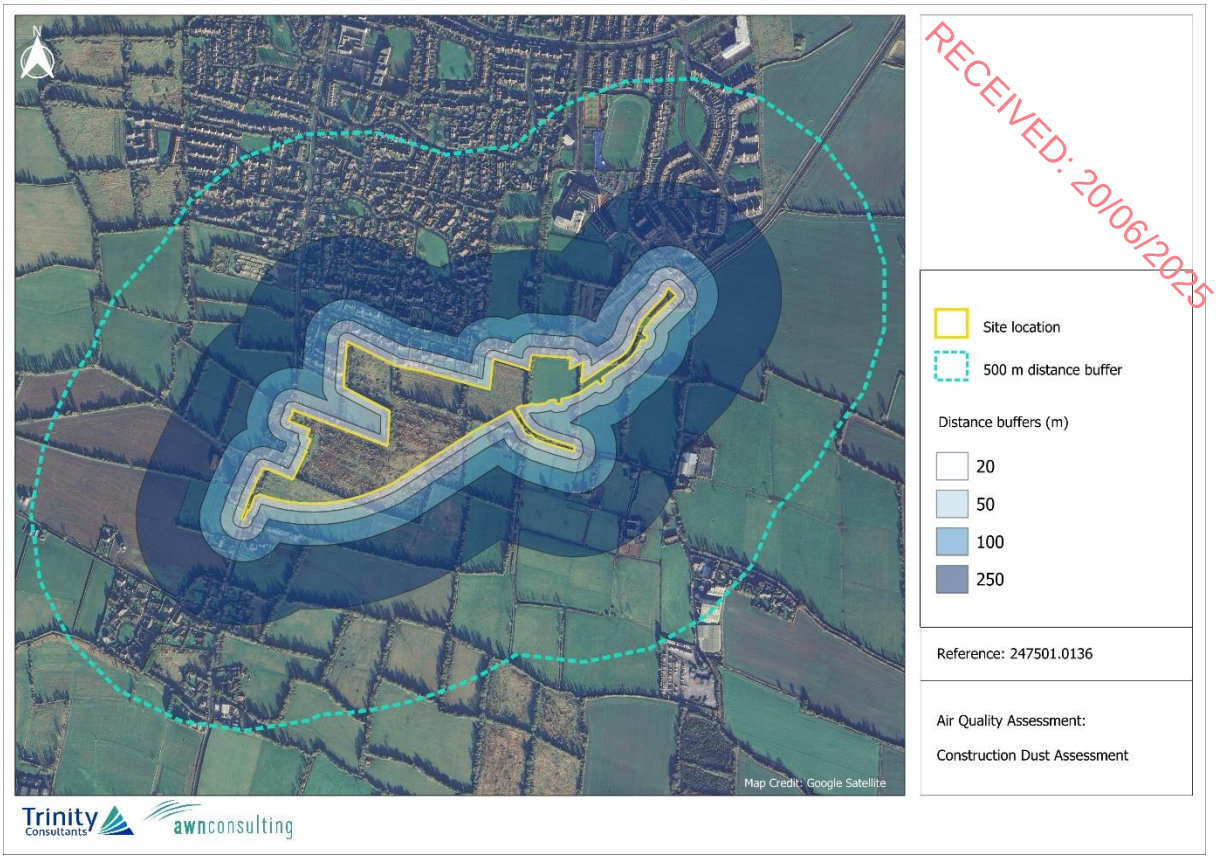

Figure 5-1: Sensitive Receptors within 20m, 50m, 100m and 250m of Site

Summary of the Sensitivity of the Area to Dust Impacts

Table 5-13 details a summary of the sensitivity of the proposed development in relation to potential construction dust impacts. There is a high sensitivity for dust soiling, low sensitivity for human health and as there is no ecology in proximity to the site, the potential for impact is scoped out.

Table 5-13: Sensitivity of the Area of Construction Dust Impacts

Category	Site
Dust Soiling	High Sensitivity
Dust-Related Human Health Effects	Low Sensitivity
Dust-Related Ecological Effects	N/A

Operational Phase

The impact to air quality due to changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. As the air quality assessment of traffic emissions has included all sites within the proposed development the sensitive receptors chosen to have been based on the proposed development as a whole rather than the specific sites.

The TII guidance (2022) states that a proportionate number of representative receptors, which are located in areas which will experience the highest concentrations or greatest improvements because of the proposed development, are to be included in the modelling. The TII criteria state that receptors

within 200 m of impacted road links should be assessed; roads which are greater than 200 m from receptors will not impact pollutant concentrations at that receptor (TII, 2022). The TII guidance (2022) defines sensitive receptor locations for the purposes of modelling annual mean pollutant concentrations as: residential housing, schools, hospitals, care homes and short term-accommodation such as hotels, i.e. locations where members of the public are likely to be regularly present for 24 hours. A total of 8 no. high sensitivity receptors which included residential six receptors and two schools (R4-R6) were included in the modelling assessment (see Figure 5-2:).

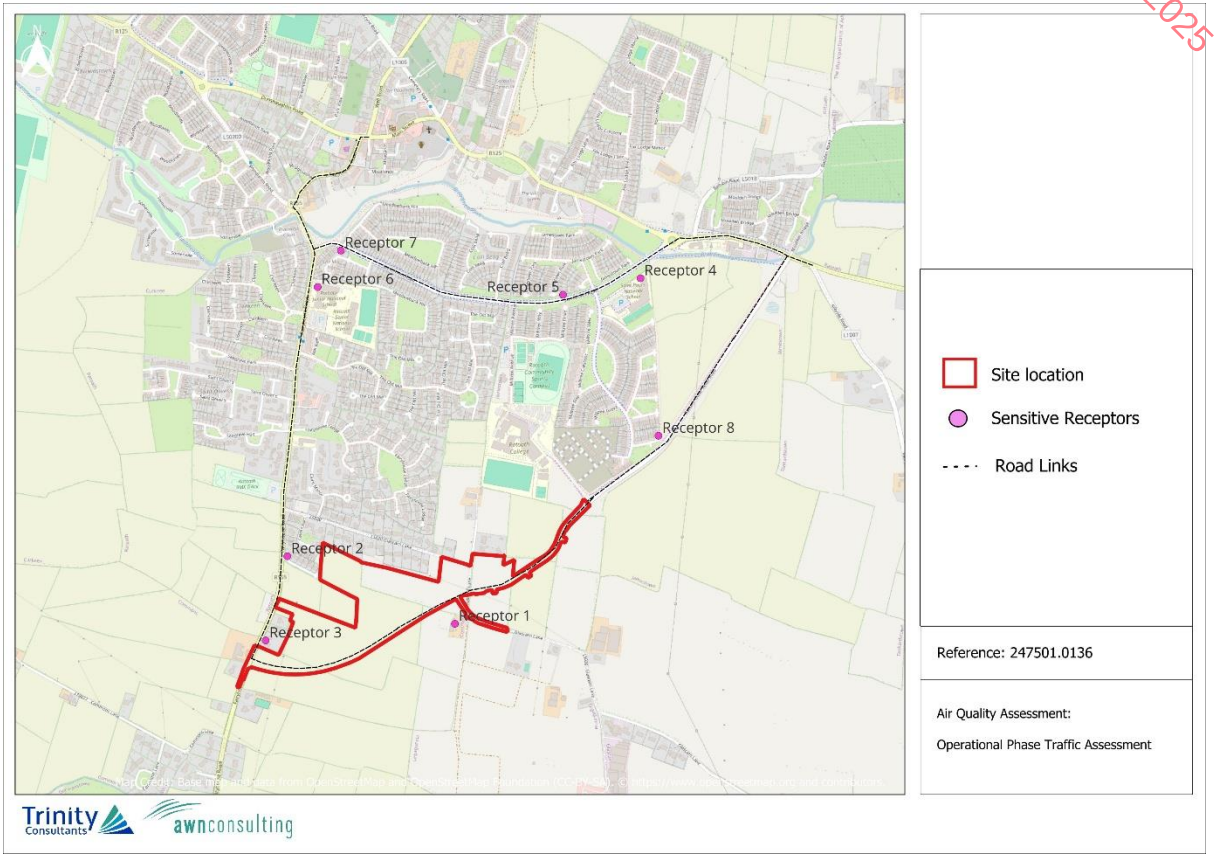

Figure 5-2: Sensitive Receptors Included in Operational Phase Air Quality Modelling Assessment

5.4 Characteristics of the Proposed Development

The proposed development comprises a Large-scale Residential Development (LRD) on a site of 12.58ha within the townlands of Jamestown and Commons in Ratoath Co. Meath. The proposed development will principally consist of the construction of 364 no. residential units including 250 no. houses and 114 no. apartment / duplex units along with a creche, retail unit and café unit all with associated car and cycle parking and bin stores. Proposed building heights range from 2 no. to 4 no. storeys. Public open space is proposed across the site consisting of a central public park area and pocket parks featuring formal and informal play and amenity areas.

The proposed development also includes the construction of a section of the Ratoath Outer Relief Road (RORR) which will be continued from its current termination point in the northeast of the subject site to the existing Fairyhouse Road (R155) in the southwest. Access to the development is proposed via 2 no. vehicle access points from the new RORR. A series of pedestrian and cycle connections are proposed to site from the Fairyhouse Road (R155), Glascarn Lane and the new RORR.

Please refer to the planning application form and statutory notices (newspaper and site notices) for a full and formal description of the proposed development.

5.4.1 Construction Phase

During the construction stage, the main source of air quality impacts will be due to fugitive dust emissions from site activities. Dust emissions will primarily occur as a result of site preparation works, earthworks, construction of proposed buildings and the movement of trucks on site and exiting the site.

5.4.2 Operational Phase

During the operational phase, air quality may be affected by increased traffic accessing the site. This can be attributed to a higher number of vehicles and the potential rise in vehicle exhaust emissions. Operational phase impacts will have a long-term impact on air quality.

5.5 Potential Impact of the Proposed Development

5.5.1 Construction Phase

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 250m 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 Dublin Airport meteorological indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature (Section 5.3). 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 Dublin Airport indicates that on average 200 days per year have rainfall over 0.2 mm (Met Éireann, 2025a). Therefore, it can be determined that over 54% of the time dust generation will be reduced.

In order 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 (see Section 5.3.3). The major dust generating activities are divided into four types within the IAQM (2024) guidance to reflect their different potential impacts. These are: demolition, earthworks, construction and trackout (movement of heavy vehicles).

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 Section 5.2.1.

Table 5-14: Dust Emission Magnitude for Proposed Development

Dust Emission Category	Site
Demolition	Small: minor demolition works, total building volume <12,000 m^3
Earthworks	Large: site area > 110,000 m^2
Construction	Large: total volume of buildings to be constructed > 75,000 m^3

Trackout	Medium: Between 20 - 50 outward HGV movements per day during peak construction

Determining the Risk of Dust Impacts

Once the dust emission magnitude has been determined the next step, according to the IAQM guidance (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 (see Section 5.3.3). The level of risk associated with each activity is determined using the criteria in Table 5-5 and is shown in Table 5-15 the proposed development.

There is at most a high risk of dust soiling impacts and a low risk of dust-related human health impacts associated with site.

Table 5-15: Dust Emission Risk for Proposed Development

Type of Impact	Sensitivity of the Area	Activity	Dust Emission Magnitude	Dust Emission Risk
Dust Soiling	High	Demolition	Small	Medium Risk
		Earthworks	Large	High Risk
		Construction	Large	High Risk
		Trackout	Medium	Medium Risk
Human Health	Low	Demolition	Small	Negligible Risk
		Earthworks	Large	Low Risk
		Construction	Large	Low Risk
		Trackout	Medium	Low Risk
Ecology	N/A	N/A	N/A	N/A

Construction Phase Traffic Assessment

There is also the potential for traffic emissions to impact air quality with respect to human health and ecology 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 satisfies the TII assessment criteria in Section 5.2.2.

It can therefore be determined that the construction stage traffic will have an imperceptible, neutral, short-term and not significant impact on air quality.

5.5.2 Operational Phase

Operational Phase Traffic Assessment

The potential impact of the proposed development has been assessed by modelling emissions from the traffic generated as a result of the development. The traffic data includes the Do Nothing and Do Something scenarios. The impact of NO_2, PM_{10} and $PM_{2.5}$ emissions for the Opening Year 2029 and

Design Year 2044 was predicted at the nearest sensitive receptors to the impacted road links. This assessment allows the significance of the development, with respect to both relative and absolute impacts, to be determined.

The TII guidance PE-ENV-01106 (TII, 2022a) details a methodology for determining air quality impact significance criteria for TII road schemes and infrastructure projects. However, this significance criteria can be applied to any development that causes a change in traffic. The degree of impact is determined based on both the absolute and relative impact of the proposed development. Results are compared against the 'Do-Nothing' scenario, which assumes that the proposed development is not in place in future years, to determine the degree of impact.

Operational Phase Traffic Assessment – Human Receptors

Traffic related air emissions have the potential to impact air quality which can affect human health. The following details the results of the air dispersion modelling assessment of traffic emissions to determine the impact to human health. The predicted pollutant concentrations have been compared against the ambient air quality limit values set out in Table 5-1. The limit values set out in Directive 2008/50/EC and the Ambient Air Quality Standards Regulations 2022 are applicable to the Opening Year 2029. The limit values set out under Directive (EU) 2024/2881 are applicable to the Design Year 2044. As part of the proposed project the Ratoath Outer Relief Road (RORR) will be constructed connecting the Fairyhouse Road(R155) to Ratoath Road (R125). This road is partly in operation, however, does not currently fully extend to the Fairy House Road (R155). Further details can be found in Chapter 14 Material Assets – Traffic and Transport. The connection of this road allows traffic to avoid the centre of Ratoath.

NO_2

The results of the NO_2 modelling are shown in Table 5-16. In the Opening Year 2029, predicted annual mean concentrations of NO_2 are in compliance with the annual mean limit value of 40 µg/m^3 set out under Directive 2008/50/EC, reaching at most 28% of the limit. In addition, the TII guidance (2022a) states that the hourly limit value for NO_2 of 200 µg/m^3 is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m^3. As predicted NO_2 concentrations are significantly below 60 µg/m^3 (Table 5-16), it can be concluded that the short-term NO_2 limit value will be complied with at all receptor locations. Some increases in NO_2 concentrations are predicted at the worst-case receptor assessed in the Opening Year when compared with the Do-Nothing scenario (see Table 5-16). Concentrations are predicted to increase by at most 0.15 µg/m^3 at receptor R8. When comparing the change in concentration with the air quality limit value, it results in a maximum change of 0.37% at receptor R8. All other receptors in the area will experience similar or lesser impacts and all increases are considered 'neutral' as per the TII criteria in Table 5-3. There are also beneficial impacts at some receptors, including an improvement in annual mean concentrations of NO_2 of 0.38 µg/m^3 at Receptor 5. This is due to the rerouting of traffic when the extended Ratoath Outer Relief Road opens.

In the Design Year 2044, predicted annual mean NO_2 concentrations are in compliance with the limit value of 20 µg/m^3 set out under Directive (EU) 2024/2881, at the worst-case receptor assessed, reaching at most 52% of the limit. The proposed development will result in at most 'neutral' increases in NO_2 concentrations according to the TII significance criteria in Table 5-3, with concentrations increasing by at most 0.09 µg/m^3 as a result of the proposed development (at receptor R8, see Table 5-16 which is an increase of 0.45% when compared with the applicable annual mean limit value for NO_2. There are also beneficial impacts at some receptors in the design year, including an improvement in annual mean concentrations of NO_2 of 0.21 µg/m^3 at Receptor 5.

Table 5-16: Predicted Annual Mean NO_2 Concentrations (µg/m^3)

Receptor	Impact Opening Year						
	DM	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	9.0	23%	9.1	23%	0.13	0.33%	Neutral
R2	11.3	28%	11.2	28%	-0.07	-0.18%	Neutral

Receptor	Impact Opening Year						
	DM	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R3	11.3	28%	11.3	28%	0.03	0.07%	Neutral
R4	10.2	26%	10.0	25%	-0.23	-0.58%	Neutral
R5	10.5	26%	10.1	25%	-0.38	-0.95%	Neutral
R6	10.8	27%	10.7	27%	-0.07	-0.18%	Neutral
R7	10.8	27%	10.5	26%	-0.36	-0.90%	Neutral
R8	9.1	23%	9.3	23%	0.15	0.37%	Neutral
Receptor	**Impact Design Year**						
	DM	**% of AQLV**	**DS**	**% of AQLV**	**DS-DN**	**% Change of AQLV**	**Description**
R1	9.0	45%	9.1	45%	0.07	0.35%	Neutral
R2	10.4	52%	10.4	52%	-0.07	-0.35%	Neutral
R3	10.4	52%	10.4	52%	0.01	0.05%	Neutral
R4	9.7	49%	9.6	48%	-0.14	-0.70%	Neutral
R5	9.9	49%	9.7	48%	-0.21	-1.05%	Neutral
R6	10.1	51%	10.1	50%	-0.05	-0.25%	Neutral
R7	10.1	50%	9.9	49%	-0.20	-1.00%	Neutral
R8	9.1	45%	9.2	46%	0.09	0.45%	Neutral

PM_{10}

The results of the PM_{10} modelling can be seen in Table 5-17 for the Opening Year 2029 and Design Year 2044.

In the Opening Year 2029, annual mean PM_{10} concentrations are in compliance with the annual mean limit value of 40 µg/m^3 set out under Directive 2008/50/EC reaching at most 34% of the limit. In the Design Year 2044, the annual PM_{10} concentrations are also in compliance with the annual mean limit value of 20 µg/m^3 set out under Directive (EU) 2024/2881 reaching at most 69% of the limit. In addition, the proposed development will not result in any days of exceedance of the daily PM_{10} limit value (Table 5-1) in both the opening and design years.

The changes in PM_{10} concentrations as a result of the proposed development can be assessed relative to the 'Do Nothing' (DN) levels. In the Opening Year 2029 annual PM_{10} concentrations will increase by at most 0.16 µg/m^3 at receptor R8; this is a 0.40% increase when compared with the annual mean limit value of 40 µg/m^3, however at majority of the receptors the air quality is observed to be improved. All other receptors in the area will experience lesser impacts and all increases are considered 'neutral' as per the TII criteria in Table 5-3. There are also beneficial impacts at some receptors, including an improvement in annual mean concentrations of NO_2 of 0.37 µg/m^3 at Receptor 5. This is due to the rerouting of traffic when the extended Ratoath Outer Relief Road opens.

In the Design Year 2044 the proposed development will result in a maximum increase of 0.17 µg/m^3 at receptor R8, which is a 0.85% increase when compared with the annual mean limit of 20 µg/m^3. The changes in concentrations in the Design Year are considered 'neutral' based on the TII criteria in Table 5-17. There are also beneficial impacts at some receptors in the design year, including an improvement in annual mean concentrations of NO_2 of 0.32 µg/m^3 at Receptor 5.

Table 5-17: Predicted Annual Mean PM_{10} Concentrations (µg/m³)

Receptor	Impact Opening Year						
	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	11.0	28%	11.1	28%	0.14	0.35%	Neutral
R2	13.5	34%	13.3	33%	-0.13	-0.33%	Neutral
R3	13.4	33%	13.4	33%	0.00	0.00%	Neutral
R4	12.3	31%	12.0	30%	-0.26	-0.65%	Neutral
R5	12.5	31%	12.1	30%	-0.37	-0.93%	Neutral
R6	12.9	32%	12.8	32%	-0.11	-0.27%	Neutral
R7	12.9	32%	12.5	31%	-0.35	-0.87%	Neutral
R8	11.1	28%	11.3	28%	0.16	0.40%	Neutral
Receptor	**Impact Design Year**						
	DN	**% of AQLV**	**DS**	**% of AQLV**	**DS-DN**	**% Change of AQLV**	**Description**
R1	11.0	55%	11.2	56%	0.15	0.75%	Neutral
R2	13.8	69%	13.6	68%	-0.19	-0.95%	Neutral
R3	13.7	69%	13.7	68%	-0.04	-0.20%	Neutral
R4	12.4	62%	12.1	61%	-0.28	-1.40%	Neutral
R5	12.5	63%	12.2	61%	-0.32	-1.60%	Neutral
R6	13.2	66%	13.0	65%	-0.15	-0.75%	Neutral
R7	13.0	65%	12.6	63%	-0.32	-1.60%	Neutral
R8	11.1	56%	11.3	57%	0.17	0.85%	Neutral

$PM_{2.5}$

In relation to changes in $PM_{2.5}$ concentrations as a result of the proposed development, the results of the assessment can be seen in Table 5-18 for the modelled Opening Year 2029 and Design Year 2044.

In the Opening Year 2029, predicted annual mean concentrations of $PM_{2.5}$ are in compliance with the annual mean limit value of 25 µg/m³ set out under Directive 2008/50/EC reaching at most 37% of the limit. There is predicted to be an increase in $PM_{2.5}$ concentrations at the worst-case receptor assessed in the Opening Year when compared with the Do-Nothing scenario (see Table 5-18). Concentrations are predicted to increase by at most 0.09 µg/m³ at receptor R8 with reductions at Receptor 5 of up to 0.21 µg/m³. At majority of the receptors the air quality is observed to be improved. When comparing the change in concentration with the air quality limit value, it results in a maximum adverse change of 0.36% at receptor R8. All other receptors in the area will experience similar or lesser impacts and all increases are considered 'neutral' as per the TII criteria in Table 5-3.

In the Design Year 2044, predicted annual mean $PM_{2.5}$ concentrations are in compliance with the limit value of 10 µg/m³ set out under Directive (EU) 2024/2881 at all receptors assessed. Concentrations reach at most 95% of the annual mean limit value, with concentrations increasing by at most 0.10 µg/m³ as a result of the proposed development (at receptor R8, see Table 5-18), which is an increase of 1% when compared with the annual mean limit value of 10 µg/m³ for $PM_{2.5}$. There are also beneficial impacts at some receptors, including an improvement in annual mean concentrations of NO_2 of 0.18 µg/m³ at Receptor 5. This is due to the rerouting of traffic when the extended Ratoath Outer Relief Road opens. The proposed development will result in at worst 'neutral' to 'Slight Beneficial' increases in $PM_{2.5}$ concentrations according to the TII significance criteria in Table 5-3.

Table 5-18: Predicted Annual Mean $PM_{2.5}$ Concentrations (µg/m³)

Receptor	Impact Opening Year						
	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	8.0	32%	8.1	32%	0.08	0.32%	Neutral
R2	9.4	37%	9.3	37%	-0.07	-0.28%	Neutral
R3	9.3	37%	9.3	37%	0.01	0.04%	Neutral
R4	8.7	35%	8.6	34%	-0.14	-0.56%	Neutral
R5	8.8	35%	8.6	34%	-0.21	-0.84%	Neutral
R6	9.1	36%	9.0	36%	-0.06	-0.24%	Neutral
R7	9.0	36%	8.8	35%	-0.20	-0.80%	Neutral
R8	8.1	32%	8.2	33%	0.09	0.36%	Neutral
Receptor	**Impact Design Year**						
	DN	**% of AQLV**	**DS**	**% of AQLV**	**DS-DN**	**% Change of AQLV**	**Description**
R1	8.0	80%	8.1	81%	0.08	0.80%	Neutral
R2	9.5	95%	9.4	94%	-0.10	-1.00%	Slight Beneficial
R3	9.5	95%	9.5	95%	-0.02	-0.20%	Neutral
R4	8.8	88%	8.6	86%	-0.15	-1.50%	Slight Beneficial
R5	8.9	89%	8.7	87%	-0.18	-1.80%	Slight Beneficial
R6	9.2	92%	9.1	91%	-0.08	-0.80%	Neutral
R7	9.1	91%	8.9	89%	-0.17	-1.70%	Slight Beneficial
R8	8.1	81%	8.2	82%	0.10	1.00%	Neutral

Significance of Predicted Changes in NO_2, PM_{10} and $PM_{2.5}$ Concentrations

As outlined in Section 5.2.1, the TII guidance (2022) states that significance of effects should be assessed based on the opening year only. Non-significant effects 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 (2022) states that these must be considered in the context of the project and 'moderate' or 'substantial' increases are not necessarily always significant effects.

In relation to NO_2, PM_{10} and $PM_{2.5}$ the predicted changes in concentrations are all 'neutral' at the worst-case receptors assessed however there are also some slight beneficial impacts in the design year due to the opening of the full length of the Ratoath Outer Relief Road. This allows traffic to diverge away from the Ratoath centre, which reduces concentrations at several receptors. According to the TII criteria as outlined in Section 5.2.1, the impact is not significant.

For the purposes of this assessment, it has been assumed that the current estimated background pollutant concentrations are applicable for both the opening and design years, with no decreases in future background concentrations allowed for. There will be some decreases in background concentrations in future years. However, at present there is no guidance-based methodology available for estimating future year background concentrations and therefore, as a conservative approach, the current estimated background concentrations have been applied to future years.

Due to the large uncertainty in future improvements in fleet composition and emissions, such as projected changes to vehicle registration and electric vehicle uptake, the future year emission rates utilised by the REM do not account for the full implementation of these measures. Predicted design year concentrations are therefore currently overly conservative as future emissions improvements are not fully taken into account, as well as no improvement in background concentrations being assumed.

As a result, the opening year predicted concentrations are the most appropriate for determining the significance of effects as Section 5.2.1.

It can be concluded that the impact of traffic emissions on air quality and human health during the operational phase ranges from ***long-term, direct, localised, neutral, imperceptible*** and ***not significant*** in EIA terms.

The measures set out in the *Clean Air Strategy for Ireland* (Government of Ireland 2023) aim to work towards solutions to ensure that air pollution concentrations are reduced in order to comply with the future changes in limit values. Ireland will need to continue to implement and develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved. The estimated background concentrations used in the assessment are the largest contribution to predicted pollutant concentrations, rather than pollutant contributions associated with the proposed development. Strategies to improve air quality at a national level in future years will contribute to reducing background concentrations and therefore it is envisioned that air quality will improve in the future.

5.6 Potential Cumulative Impact

5.6.1 Construction Phase

According to the IAQM guidance (2024) should the construction phase of the proposed development coincide with the construction of any other permitted developments within 250m of the site then there is the potential for cumulative dust impacts to the nearby sensitive receptors. A review of recent planning permissions for the area was conducted and it was found that there were a number of relevant sites for which cumulative impacts may occur should their construction phase and that of the proposed development overlap. These include the residential developments at Jamestown (SH305196), Ratoath, Raystown & Tankardstown, Ratoath, Co Meath (planning ref. DA120765) and at Jamestown, Ratoath, Co. Meath (planning ref. 305196). In addition, there is the potential for cumulative dust impacts from the BMX track removal and extension to Fairyhouse road (24/60924).

There is the potential for cumulative construction dust impacts should the construction phases overlap with that of the proposed development. However, the dust mitigation measures outlined in Section 5.7.1 will be applied throughout the construction phase of the proposed development 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 are deemed short-term, negative and imperceptible.

According to the IAQM guidance (2024) site traffic, plant and machinery are unlikely to have a significant impact on climate. Therefore, cumulative impacts are not predicted.

5.6.2 Operational Phase

Cumulative impacts have been incorporated into the traffic data supplied for the operational stage air modelling assessment where such information was available (see Section 5.2.3). The results of the modelling assessment (Section 5.5.2) show that there is a long-term, imperceptible and neutral impact to air quality during the operational stage.

5.6.3 Do Nothing Scenario

Under the Do-Nothing Scenario no construction works will take place and the previously identified impacts of fugitive dust and particulate matter emissions and emissions from equipment and machinery will not occur. The 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 new developments in the surrounding area, changes in road traffic, etc.). Impacts from increased traffic volumes and associated air emissions will also not occur. The Do-Nothing scenario, in relation to the operational phase, was included in the dispersion modelling assessment (see Section 5.4.2) and was found to be neutral in

relation to air quality. Therefore, the overall Do-Nothing scenario can be considered imperceptible and neutral in terms of air quality.

5.7 Mitigation Measures

5.7.1 Construction Phase

The proposed development has been assessed as having at most a high risk of dust soiling impacts and a low risk of dust related human health impacts and a medium risk of dust-related ecological impacts during the construction phase as a result of demolition, earthworks, construction and trackout activities (see Section 5.5.1). 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 high 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 overall 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 actives 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

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

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 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.

5.7.2 Operational Phase

The impact of the operational traffic associated with proposed development on air quality is predicted to be imperceptible and neutral with respect to the operational phase in the long term. Therefore, no site-specific mitigation measures are required other than those set out in Section 8.4.2 in relation to operational phase energy usage.

5.8 Risks to Human Health

5.8.1 Construction Phase

Dust emissions from the construction phase of the proposed development have the potential to impact human health through the release of PM_{10} and $PM_{2.5}$ emissions. As Section 5.3.3, PM_{10} emissions can occur within 250 m of the site for a development of this scale. There are a number of high sensitivity receptors bordering the site to the north along Glascarn Lane, a small number of which are within 20 m of the site boundary and therefore more exposed to potential impacts from construction dust.

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active 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 of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development will be negative, short-term and imperceptible with respect to human health.

5.8.2 Operational Phase

Traffic related air emissions have the potential to impact air quality which can affect human health. However, air dispersion modelling of traffic emissions has shown that levels of all pollutants are below the ambient air quality standards set for the protection of human health. It can be determined that the impact to human health during the operational stage is long-term, neutral and imperceptible and therefore, no mitigation is required.

5.9 Residual Impact

5.9.1 Construction Phase

Once the dust minimisation measures outlined in Section 5.8 and Section 5.2.2 are implemented, the impact of the proposed development in terms of dust soiling will be short-term, negative, localised and imperceptible at nearby receptors.

5.9.2 Operational Phase

Air dispersion modelling of operational traffic emissions associated with the proposed development was carried out using the TII REM tool. The modelling assessment determined that the change in emissions of NO_2 at nearby sensitive receptors as a result of the proposed development will be neutral to slight beneficial. Therefore, the operational phase effect to air quality is long-term, direct, localised, neutral, imperceptible and not significant EIA terms.

5.10 Interactions

5.10.1 Air Quality and Population & Human Health

5.10.1.1 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 be 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.

5.10.1.2 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, direct, localised, neutral*** and ***not significant*** in EIA terms.

5.10.2 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.

5.10.3 Air Quality and Land & Soils

5.10.3.1.1 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.

5.10.3.1.2 Operational Phase

There are no potentially significant interactions identified between Air Quality, and Land & Soils during the operational phase.

5.10.4 Air Quality and Biodiversity

5.10.4.1 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 5.7. 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.

5.10.4.2 Operational Phase

There are no potentially significant interactions identified between Air Quality, and Biodiversity during the operational phase.

5.10.5 Air Quality and Material Assets – Traffic & Transport

5.10.5.1 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.

5.10.5.2 Operational Phase

The impact of the interactions between Traffic and Air Quality are considered to be ***long-term, direct, localised, neutral*** and ***not significant*** during the operational phase.

5.11 Monitoring

5.11.1 Construction Phase

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m_2*day) during the monitoring period of 30 days (+/- 2 days).

5.11.2 Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts to air quality and climate are predicted to be imperceptible.

5.12 Difficulties Encountered

There were no difficulties encountered when compiling this assessment.

5.13 References

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 (2015) Advice Notes for Preparing Environmental Impact Statements – Draft

Environmental Protection Agency (2024) Air Quality in Ireland 2023 Report (and previous reports 2019 - 2022)

Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment 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) (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

Transport Infrastructure Ireland (2024) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107

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 (2006) Air Quality Guidelines - Global Update 2005 (and previous Air Quality Guideline Reports 1999 & 2000)

World Health Organisation (2021) Air Quality Guidelines 2021

6 Climatic Factors

6.1 Introduction

This chapter assesses the likely climate impacts associated with the proposed residential development in Ratoath, Co. Meath.

The proposed development comprises a Large-scale Residential Development (LRD) on a site of 12.58ha within the townlands of Jamestown and Commons in Ratoath Co. Meath. The proposed development will principally consist of the construction of 364 no. residential units including 250 no. houses and 114 no. apartment / duplex units along with a creche, retail unit and café unit all with associated car and cycle parking and bin stores. Proposed building heights range from 2 no. to 4 no. storeys. Public open space is proposed across the site consisting of a central public park area and pocket parks featuring formal and informal play and amenity areas.

The proposed development also includes the construction of a section of the Ratoath Outer Relief Road (RORR) which will be continued from its current termination point in the northeast of the subject site to the existing Fairyhouse Road (R155) in the southwest. Access to the development is proposed via 2 no. vehicle access points from the new RORR. A series of pedestrian and cycle connections are proposed to site from the Fairyhouse Road (R155), Glascarn Lane and the new RORR.

Please refer to the planning application form and statutory notices (newspaper and site notices) for a full and formal description of the proposed development.

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 greenhouse gas (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.

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6.2 Methodology

6.2.1 Relevant Guidance, Legislation and Policy

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 EPA Guidelines) (Environmental Protection Agency, 2022); and

- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (hereafter referred to as the EU Guidance) (European Commission, 2017).

The assessment has referred 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);
- TII GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2024a);
- 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).

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*" (section 3(1)). 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 CAP 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 CAP 2019 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 CAP in November 2021 (Government of Ireland, 2021a) with further updated CAPs in December 2022 (Government of Ireland, 2022) and December 2023 (DECC, 2023a). The fifth and most recent CAP, was published in April 2025 (Government of Ireland, 2025).

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 Climate Action and Low Carbon Development (Amendment) Act 2021 (Government of Ireland, 2021) (hereafter referred to as the 2021 Climate Act) was enacted on 23 July 2021, giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act 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 three sequential budget periods, as shown in Table 6-1. 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 ceilings, 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 sectorial emission ceilings for 2030 were published in CAP24 (DECC, 2023a) and are shown in

Table 6-2.

Table 6-1: 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2025

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO_2e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO_2e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO_2e	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 6-2: Sectoral Emissions Ceilings 2030

Sector	Baseline ($MtCO_2e$)	Carbon Budgets ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	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	-

Sector	Baseline ($MtCO_2e$)	Carbon Budgets ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	Indicative Emissions % Reduction in Final Year of 2025 – 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

Policy

Greenhouse Gas Policy

In 2024, the Government published its *Long-Term Strategy on Greenhouse Gas Emissions Reductions* (DECC, 2024). 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 CAP.

As noted above, CAP25 was published in April 2025 (Government of Ireland, 2025). CAP25 builds on the progress of the previous four iterations of the CAP, with CAP23 first publishing 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. 2025 is the last year in the first 5-year carbon budget period. During the initial 5-year budget period the average annual reduction required was 4.8%, this increases to 8.3% in the second budget period (2026-2030). CAP25 states that the decarbonisation of Ireland's manufacturing industry is key for Ireland's economy and future competitiveness. Actions in CAP25 focus on cement and construction decarbonisation, carbon-neutral heating in Industry, and encouraging more efficient use of energy. While there is a reducing trend in industry, more action is needed to achieve construction decarbonisation. A key target for the industry sector is to reduce emissions associated with the use of concrete and there remains scope for the construction industry to use more timber in construction. In 2022, 24% of new construction in Ireland was built using timber frames to satisfy the demand for housing. Public bodies are now required under the Public Sector Mandate to use best practice project design to reduce embodied carbon; procure concretes with clinker replacements (lower carbon); and require that large construction projects produce a whole life cycle GHG emissions assessment.

The Meath County Council (MCC) Climate Action Plan 2024 – 2029 (MCC, 2024) outlines MCC's goals to mitigate GHG emissions and plans to prepare for and adapt to climate change. Meath County Council has nine decarbonisation zones which have focused emissions inventories prepared for them. The Climate Action Plan sets out a range of actions across the five theme areas:

- Governance & Leadership
- Built Environment & Transport
- Natural Environment & Green Infrastructure
- Communities: Resilience &Transition
- Sustainability & Resource Management

The plan is aligned to the Government's overall National Climate Objective, which seeks to pursue and achieve, by no later than the end of 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy. MCC has set an action to an appropriate monitoring and reporting protocol on the implementation of low carbon construction in public tenders and grant schemes.

Climate Change Vulnerability Policy

The second National Adaptation Framework (NAF) (DECC, 2024) was published in June 2024, in line with the five-year requirement of the 2015 Act, as amended. 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).

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 therefore the greatest requirement for adaptation.

These scenarios align with a conservative approach to the assessment of risks to Ireland and assume that 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); and
- Long term (~2100).

The MCC Climate Action Plan highlights the risks that climate change poses to infrastructure, individuals, communities, and business sectors (such as agriculture, tourism and transport), with risks

mainly associated with extreme weather events. This includes increases in the frequency of fluvial (river) and pluvial (surface water) flooding and increases in the frequency and intensity of summer heat waves, extreme temperatures and drought.

6.2.2 Criteria for Rating of Impacts

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 Guidelines (EPA, 2022).

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. The significance of a project's emissions should therefore 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.
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

Determining the significance of effects is 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 or National Climate Objective). 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. In line with IEMA Guidance (IEMA, 2022), TII state 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 6-3 (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 6-3: 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 has 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 Plans, 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.

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 6-4 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. According to the TII guidance (TII, 2022a), an assessment of construction phase CCRA impacts is only required if a detailed CCRA is required.

Table 6-4: 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

6.2.3 Construction Phase 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 6.3.1).

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, 2024a). 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, 2024a) has been commissioned by TII to assess GHG emissions associated with road or rail projects in Ireland. The TII Carbon Tool (TII, 2024a) 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.

The use of the TII Carbon Tool was not considered suitable for the building elements of the proposed development. As the TII Carbon Tool was developed for road and infrastructure projects, the material types within the tool are specific to these types of developments. These material types are not fully appropriate for assessing the embodied carbon associated with the construction of buildings. The

roads within the projects have been considered qualitatively, with a focus on mitigation of potential impacts to ensure impacts are minimised.

The carbon impact of the buildings was carried out based on a review of a reference case study, commissioned by Unilin Insulation (Unilin Insulation, 2022). This case study utilised the same construction build up as the proposed development and was completed using OneClick LCA tool. OneClickLCA 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. Use of tools such as OneClick LCA 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 review of the case-study was completed in detailed consultation with the Project Architect. Mitigation measures from the case-study have been applied to the design of the proposed development in order to reduce and improve capital carbon emissions.

Reasonable conservative estimates have been used in this assessment where necessary to provide an estimate of the GHGs associated with the proposed development.

6.2.4 Operational Phase Greenhouse Gas Assessment

Traffic Emissions

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO_2) 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:

- 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.

While the guidance is specific to infrastructure projects, the approach can be applied to any development that causes a change in traffic.

The traffic data provided for the operational phase assessment has included traffic associated with the proposed development and the Ratoath Outer Relief Road (RORR) completion, which will be done in association with the proposed development. is the traffic associated with the proposed development in combination with the RORR will result in a greater than 1000 AADT increase on a small number of road links. As a result, a detailed assessment of traffic related carbon dioxide equivalent (CO_2e) emissions was conducted. Additionally, traffic associated with other cumulative developments in the vicinity of the proposed development was included in the figures supplied to ensure a full cumulative assessment was conducted. See Traffic and Transport Assessment and Chapter 14 (Material Assets – Transportation) for further details.

PE-ENV-01104 (TII, 2022a) states that road traffic related emissions information should be obtained from an Air Quality Practitioner (i.e. the air quality EIAR chapter author) to show future user emissions during operation without the development in place. The Air Quality Practitioner calculated the traffic related emissions through the use of the TII REM tool (TII, 2024b) which includes detailed fleet predictions for age, fuel technology, engine size and weight based on available national forecasts. The *Default* fleet mix option was selected along with the *Intermediate Case* fleet data base selection,

as per TII Guidance (TII, 2024b). The Intermediate Case assumes a linear interpolation between the Business as Usual case – where current trends in vehicle ownership continue and the Climate Action Plan (CAP) case – where adoption of low emission light duty vehicles occurs.

The output is provided in terms of CO_2e for the base year 2023, Opening Year 2029, and Design Year 2044. Both the Do Nothing (i.e. assuming the proposed development is not in place in future years) and Do Something (i.e. assuming the proposed development is constructed) scenarios are quantified in order to determine the degree of change in emissions as a result of the proposed development. Traffic data was obtained from the traffic consultant on the project for the purpose of this assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy-duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type, and project county location. The traffic data used in the operational phase modelling assessment is detailed in Chapter 5 (Air Quality) Table 5.8.

Operational Phase Energy Use

The EU Guidance (European Commission, 2013) also states that indirect GHG emissions as a result of a development must be considered, which include emissions associated with energy usage. An Energy and Climate Action Statement was prepared by BBSC. These documents are submitted separately with this planning application. These reports outline a number of measures which 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.

6.2.5 Climate Change Risk Assessment

The Climate Change Risk Assessment (CCRA) involves determining the vulnerability of the proposed development to climate change. This requires 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 6.3, 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.

6.3 Baseline Environment

PE-ENV-01104 (TII, 2022a) states that a baseline climate scenario should identify GHG emissions without the project for both the current and future baseline, consistent with the study area for the project. Climate impacts are assessed at a national level and in relation to national targets and sectoral emission ceilings. The study area for climate is the Republic of Ireland and the baseline is determined in relation to this study area.

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.

6.3.1 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 CO_2e. However, the 2023 was the first time that Ireland's emissions 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 CO_2e by 2030, on an average baseline of 2016 to 2018. The EPA estimate that 2023 total national GHG emissions, excluding Land Use, Land-use Change and Forestry (LULUCF), have decreased by 6.8% on 2022 levels to 55.01 Mt CO_2e, with a 2.2 Mt CO_2e (-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 CO_2e 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 CO_2e (EPA, 2024), as shown in Table 6-5.

The provisional 2023 figures indicate that Ireland has used 63.9% of the 295 Mt CO_2e Carbon Budget for the five-year period 2021-2025.

Table 6-5: Trends in Total National GHG Emissions 2022 – 2023

Category	2022 Emissions (Mt CO_2eq)	2023 Emissions (Mt CO_2eq)	% Total 2023 (Including LULUCF)	% Change 2022-2023
Agriculture	21.795	20.782	34%	-4.6%
Transport	11.760	11.791	19%	0.3%
Energy Industries	10.003	7.845	13%	-21.6%
Residential	5.753	5.346	9%	-7.1%
Manufacturing Combustion	4.334	4.133	7%	-4.6%
Industrial Processes	2.288	2.155	4%	-5.8%
F-Gases	0.741	0.699	1%	-5.7%
Commercial Services	0.751	0.732	1%	-2.5%
Public Services	0.696	0.677	1%	-2.7%
Waste	0.881	0.846	1%	-4.0%
LULUCF	3.983	5.614	9%	40.9%
Total excluding LULUCF	**59.003**	**55.007**	91%	-6.8%
Total including LULUCF	**62.986**	**60.620**	100%	-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).

6.3.2 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 CAP25, 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 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.

6.3.3 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 Dublin 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 Dublin Airport meteorological 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 Dublin Airport meteorological station were November and December, and the driest month on average was June (Met Éireann, 2025a). July was the warmest month with a mean temperature of 15.4 Celsius. January was the coldest month with a mean temperature of 5.2 Celsius.

Met Éireann's 2023 Climate Statement (Met Éireann, 2024b) 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 6-1).

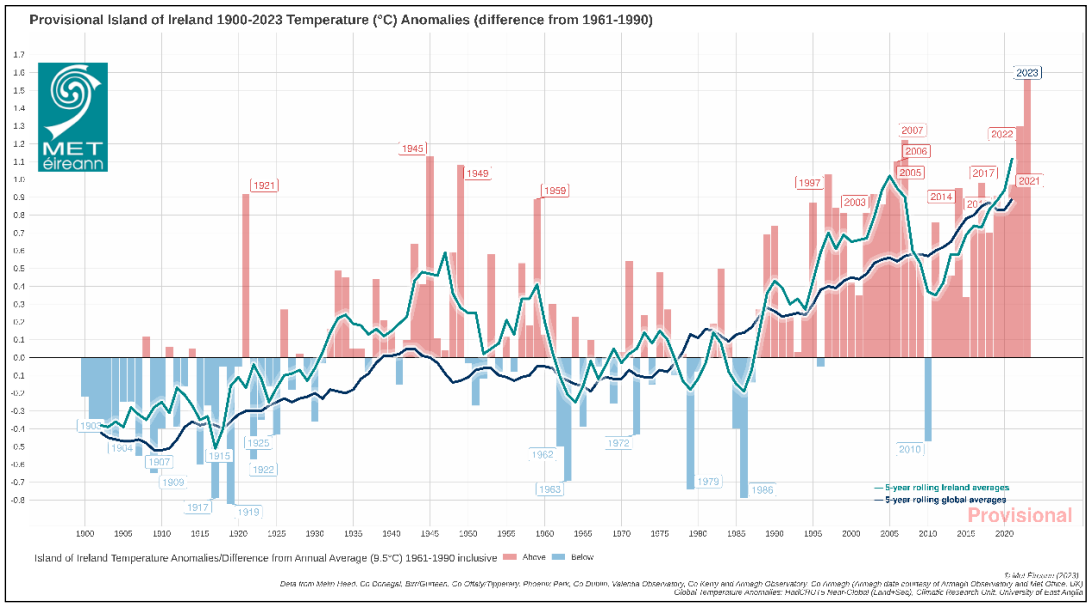


Figure 6-1: 1900-2023 Temperature (°C) Temperature Anomalies (differences from 1961-1990)

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 June 2023. This marine heatwave contributed to the record rainfall in July.

Met Éireann's 2024 *Climate Statement* (Met Éireann 2025b) states that 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 mean 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 will occur 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.

6.3.4 Future CCRA Baseline

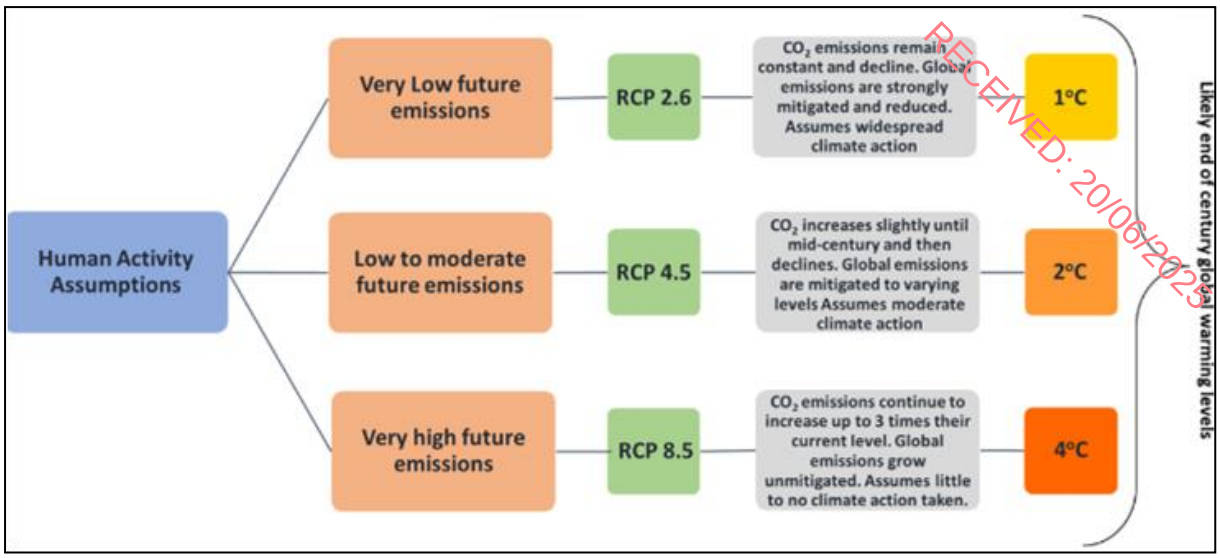
Impacts as a result of climate change will evolve with a changing future baseline. Changes have the potential to include increases in global temperatures and increases in the number of rainfall days per year. Therefore, it is expected that the baseline climate will evolve over time and consideration is needed with respect to this within the design of the proposed development.

Ireland has seen increases in 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. RPC4.5 is considered moderate, while RPC8.5 is considered high. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken.

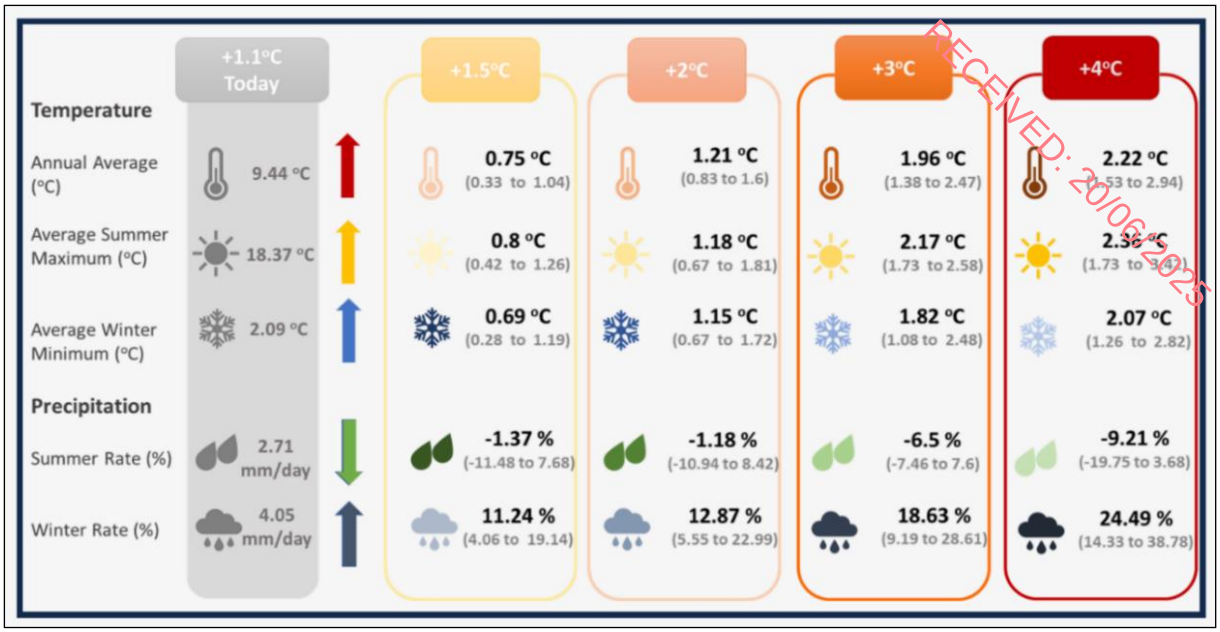
The National Framework for Climate Services (NFCS) was founded in June 2022 to streamline the provision of climate services in Ireland and will be led by Met Éireann. The aim of the NFCS is to enable the co-production, delivery and use of accurate, actionable and accessible climate information and tools 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, 2025c) 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 6-2.



*Source: TRANSLATE project storymap (*Met Éireann *2025c)*

Figure 6-2:Representative Concentration Pathways associated emission levels

TRANSLATE (Met Éireann, 2025c) 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, 2025c). 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 6-3). 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, *2025c)*

Figure 6-3 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 temperature 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 affecting 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 and 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.

6.4 Predicted Impacts

6.4.1 Greenhouse Gas Assessment

Construction Phase

The most significant proportion of GHG emissions tends to occur during the construction phase as a result of embodied carbon in construction materials and emissions from construction activities associated with the buildings on site. 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 6.2.3

- Sequestered Carbon
- Product stage (A1 – A3);
- Transportation to site (A4);
- Site operations (construction activities) (A5);
- Use Phase (Operational Energy) (B1);
- Maintenance (B2);
- Repair (B3);
- Material replacement and refurbishment (B4 – B5);
- End of Life Stage (C1 to C4).

The construction phase GHG emissions comprise stages A1 – A5, which include 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 of the buildings on site.

The carbon assessment highlights the areas where the highest embodied carbon emissions occur, specifically as a result of building materials. The below sections detail the results of the GHGA for each property type of the Proposed Development with embedded design mitigation in place, this mitigation will be further discussed in Section 6.5.

The materials were based on a case-study using the same build-up (as advised by the project architect) as the proposed development, this case-study provided example mitigation measures that the project design team have integrated into the design.

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 budgets, which are detailed in Table 6-2. The relevant sectoral emissions for the proposed development comparison include the Industry sector, Transport sector, Electricity 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.

The results of the GHGA are shown in Table 6-6. Construction materials make up the majority of GHG emissions for the proposed development, accounting for approximately 72% of the total construction phase GHG emissions. Material replacement makes up the second highest contribution at 7% of the total. Material transport and construction activities make up the approximately 6% of the GHG emissions.

TII (TII 2025) published a road carbon benchmarking research project in their document RE-ENV-01109. Within this assessment a carbon benchmark for lifecycle phases A1-A5, B2-B5 and B6 in a “business as usual” scenario is 918 tCO_2e per km per lane for a mainline road with no structures. If roadworks are excluded this 502 tCO_2e per km per lane for a mainline road. Earthworks have a significant influence on the assessment due to the intensive nature of construction activities. Given the nature of local topography and design of the proposed development, there is not extensive earthworks required for internal roads and the RORR.

Internal site roads and the RORR will consider the RE-ENV-01109 (TII 2025) as a ceiling carbon level. The construction of the roads and pavements shall therefore focus on mitigation, to ensure alignment with significance criteria set out in Section 6.2.2. This significance criteria is not based on a quantification of carbon but instead the level of mitigation taking place and alignment with net zero by 20250. Mitigation is the crux of the GHG assessment and is discussed in Section 6.5.1. Internal roads and the RORR completion will deploy low carbon and circular economy principles. Active and public transport has been considered within the design in order to ensure that it connects to current and proposed facilities within the area.

Table 6-6: GHG Assessment Results

House / Apartment Type	Building Type	Total Area Per Unit (m^2)	Sequestered Carbon	A1 to A3 Combined	A4 Transport from the gate to the site	A5 Assembly	B1 Use Phase	B2 Maintenance	B3 Repair	B4 & B5 Replacement	C1 to C4 End of Life Stage	Total $kgCO_2e$	Total $kgCO_2e/m^2$
House Type A 2 storey 4 bed	Semi-Detached House	132.8	-14,443	75,159	1,684	4,478	24,050	14,318	3,580	41,073	30,377	194,719	886
House Type B 2 storey 4 bed	Semi-Detached House	134.8	-19,684	76,291	1,709	4,546	24,413	14,534	3,634	41,691	30,835	197,652	900
House Type C 2 storey 3 bed	Semi-Detached House	108.8	-15,888	61,576	1,380	3,669	19,704	11,730	2,933	33,650	24,888	159,529	726
House Type D 2 storey 3 bed	Semi-Detached House	111.0	-16,209	62,821	1,407	3,743	20,102	11,968	2,992	34,330	25,391	162,755	741
House Type E 2 storey 2 bed	Mid Terrace House	97.4	-13,025	29,317	654	1,988	10,585	7,077	1,770	19,226	17,774	88,391	650
House Type F 2 storey 3 bed	Semi-Detached House	100.6	-14,544	56,935	1,276	3,392	18,219	10,846	2,712	31,114	23,012	147,506	671
House Type G 2 storey 4 bed	Semi-Detached House	131.3	-18,954	74,310	1,665	4,428	23,779	14,156	3,539	40,609	30,034	192,520	876

House / Apartment Type	Building Type	Total Area Per Unit (m^2)	Sequestered Carbon	A1 to A3 Combined	A4 Transport from the gate to the site	A5 Assembly	B1 Use Phase	B2 Maintenance	B3 Repair	B4 & B5 Replacement	C1 to C4 End of Life Stage	Total $kgCO_2e$	Total $kgCO_2e/m^2$
House Type H 2 storey 5 bed	Detached House	261.4	-17,539	76,104	1,782	4,578	12,578	12,113	3,028	33,830	33,882	177,897	1,744
House Type H1 2 storey 5 bed	Detached House	176.2	-16,286	51,299	1,201	3,086	8,479	8,165	2,041	22,804	22,839	119,914	1,176
House Type H2 2 storey 5 bed	Detached House	207.6	-19,659	60,440	1,416	3,636	9,990	9,620	2,405	26,868	26,909	141,283	1,385
House Type H3 2 storey 5 bed	Detached House	261.4	-23,899	76,104	1,782	4,578	12,578	12,113	3,028	33,830	33,882	177,897	1,744
House Type J 3 storey 5 bed	Semi-Detached House	190.1	-27,789	107,588	2,410	6,410	34,428	20,496	5,124	58,795	43,485	278,736	1,269
House Type K 2.5 storey 3 bed	Semi-Detached House	152.7	21,583	86,421	1,936	5,149	27,654	16,463	4,116	47,227	34,930	223,898	1,019
House Type L 2.5 storey 2 bed	Semi-Detached House	143.9	-20,225	81,441	1,825	4,852	26,061	15,515	3,879	44,506	32,917	210,995	960
House Type M 2 storey 3 bed	Semi-Detached House	106.6	-15,026	60,331	1,352	3,595	19,305	11,493	2,874	32,969	24,384	156,303	711

House / Apartment Type	Building Type	Total Area Per Unit (m^2)	Sequestered Carbon	A1 to A3 Combined	A4 Transport from the gate to the site	A5 Assembly	B1 Use Phase	B2 Maintenance	B3 Repair	B4 & B5 Replacement	C1 to C4 End of Life Stage	Total $kgCO_2e$	Total $kgCO_2e/m^2$
House Type N 2 storey 3 bed	Mid Terrace House	100.3	-13,561	30,190	673	2,047	10,900	7,288	1,822	19,798	18,304	91,022	669
House Type O 2.5 storey 3 bed	Mid Terrace House	143.5	-18,332	43,193	963	2,929	15,595	10,426	2,607	28,326	26,187	130,226	958
House Type P 2 storey 4 bed	Semi-Detached House	133.8	-15,026	75,725	1,697	4,512	24,231	14,426	3,607	41,382	30,606	196,185	893
Apartment Block 1 4/3 storey	Apartment	1,750.4	-46589	525,544	16,850	23,859	27,139	97,781	24,446	174,325	112,291	1,002,235	11,681
Apartment Block 2 4 storey	Apartment	1,223.8	-32152	367,437	11,781	16,681	18,975	68,364	17,091	121,880	78,508	700,717	8,167
Apartment Block 3 4 storey	Apartment	1,200.7	-31767	360,501	11,558	16,366	18,616	67,073	16,769	119,580	77,027	687,491	8,013
Apartment Block 4 3 storey	Apartment	1,455.7	-37937	437,063	14,013	19,842	22,570	81,318	20,330	144,976	93,385	833,497	9,714
Apartment Block 5 4 storey	Apartment	1,940.9	-50590	582,741	18,684	26,455	30,093	108,422	27,106	193,297	124,511	1,111,310	12,952
Apartment Block 6 2/3 storey	Apartment	1,290.7	-33647	387,523	12,425	17,593	20,012	72,101	18,026	128,543	82,800	739,022	8,613
Duplex Type 1 3 storey	Apartment	695.6	-41552	208,849	6,696	9,481	10,785	38,858	9,715	69,276	44,624	398,283	4,642

House / Apartment Type	Building Type	Total Area Per Unit (m^2)	Sequestered Carbon	A1 to A3 Combined	A4 Transport from the gate to the site	A5 Assembly	B1 Use Phase	B2 Maintenance	B3 Repair	B4 & B5 Replacement	C1 to C4 End of Life Stage	Total $kgCO_2e$	Total $kgCO_2e/m^2$
Duplex Type 2 3 storey	Apartment	869.5	-41551	261,061	8,370	11,852	13,481	48,572	12,143	86,595	55,780	497,854	5,803
Duplex Type 3 3 storey	Apartment	696.6	-41552	209,149	6,706	9,495	10,801	38,913	9,729	69,376	44,688	398,856	4,649
Commercial Unit	Commercial	857.0	-41551	257,308	8,250	11,681	13,287	47,874	11,969	85,350	54,978	490,697	5,719
Average $kgCO_2e/m^2$													**611**

Table 6-7: Estimated GHG Emissions Relative to Sectoral Budgets and GHG Baseline

Emissions	Annualised Development GHG Emissions ($kgCO_2e$)	Annualised % of Relevant Sectoral Budget	Relevant Sector for Carbon Budget Comparison
A1 to A3 Combined	75.68	0.0019%	Industry
A4 Transport from the gate to the site	2.34	0.00004%	Transport
A5 Assembly	3.82	0.0001%	Industry
B1 Use Phase	-	-	Electricity
B2 Maintenance	3.81	0.0001%	Industry
B3 Repair	0.95	0.0000%	Industry
B4 & B5 Replacement	7.22	0.0002%	Industry
C1 to C4 End of Life Stage	10.59	0.0011%	Waste

The total predicted GHG emissions (as shown in Table 6-6 and) can be averaged over the full lifespan (60 years) of the proposed development to give the predicted annual emissions to allow for direct comparison with national annual emissions and targets.

In Table 6-7, GHG emissions have been compared against the carbon budget for the industry, transport, electricity and waste sectors in 2030 (DECC, 2024). The estimated total GHG emissions, when annualised over the 60-year proposed development lifespan, are equivalent to 0.002% of the 2030 industry budget, and Transport use emissions are 0.002% of the Transport sector budget. With no annualisation of the totals (i.e. all emissions are assumed to occur in a single year) the emissions increase to 0.002% of the 2030 industry budget, and Transport use emissions are 0.002% of the Transport sector budget.

Operational Stage

Operational Energy Usage

The proposed development has been designed to reduce the impact to climate where possible. The use of heat pumps and solar panels on the proposed development results in a zero-energy building requirement for the operational phase. 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 6.5 and are based on information provided within the various Energy and Climate Action Statement prepared in relation to the proposed development.

Operational Traffic Emissions

There is the potential for increased traffic volumes to impact climate during the operational phase. To provide for a worst-case assessment and to assess potential cumulative impacts, the traffic data has included traffic associated with the proposed development and the Ratoath Outer Relief Road (RORR). As part of the proposed development, the RORR will be extended to connect the Fairyhouse Road (R155) to Ratoath Road (R125). This road is partly in operation, however, does not currently fully extend to the Fairy House Road (R155). Further details can be found in Chapter 14 (Material Assets – Traffic and Transport). The connection of this road allows traffic to avoid the centre of Ratoath village and results in a redistribution of traffic in the area.

The predicted concentrations of CO_2e for the future years of 2029 and 2044 are detailed in Table 6-8. These are significantly less than Ireland's national 2029 and 2030 targets set out under EU legislation (targets beyond 2030 are not available) and the 2030 sectoral emissions ceilings. It is predicted that in 2024 the proposed development will increase CO_2 emissions by 129 tonnes CO_2e. This equates to

0.0004% of the 2029 national emission ceiling or 0.002% of the 2030 Transport sector emissions ceiling (see Table 6-8). Similarly, low increases in CO_2 emissions are predicted to occur in 2044, with emissions increasing by 86 tonnes CO_2e. This equates to 0.0003% of the 2030 national emission ceiling or 0.001% of the 2030 Transport sector emissions ceiling (see Table 6-8).

While there are increases in the local transport network due to the RORR, it will also improve active travel in the area and future modal shift. The active travel within the proposed development is designed to join with the active travel facilities being put forward by Meath County Council linking the Fairyhouse Road with the centre of Ratoath. Aligning these facilities, connects key community such as schools and ensures a larger active travel network and increased potential for modal shift. Bus stops to facilitate public transport journeys will be provided as part of the RORR.

Table 6-8: Traffic Emissions GHG Impact Assessment

Year	Scenario	CO_2e (tonnes/annum)
2029	Do Nothing	1,713
	Do Something	1,843
2044	Do Nothing	1,693
	Do Something	1,780
Increment Change in 2029		129
National Emission Ceiling 2029 (Tonnes) Note 1		**34,503,322**
Impact in 2029 (as % of national emissions ceiling)		0.0004%
Transport Sector 2030 Emission Ceiling		**6,000,000**
Impact in 2029 (as % of transport sector emissions ceiling)		0.002%
Increment Change in 2044		86
National Emission Ceiling 2030 (Tonnes) Note 1		**27,722,000**
Impact in 2044 (as % of national emissions ceiling)		0.0003%
Impact in 2044 (as % of transport sector emissions ceiling)		0.001%

Note 1 Target under Commission Implementing Decision (EU) 2020/2126 of 16 December 2020 on setting out the annual emission allocations of the Member States for the period from 2021 to 2030 pursuant to Regulation (EU) 2018/842 of the European Parliament and of the Council.

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 6.5 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 6.2.2 and Table 6-3, 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***.

6.4.2 Climate Change Risk Assessment

Construction Stage

A detailed CCRA of the construction phase has been scoped out, as discussed in Section 6.2.5, on the basis 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 6.5:

- 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.

During the Construction Phase, consideration will be given to the project's vulnerability to climate impacts. During construction, the appointed 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. Temperatures can affect the performance of some materials, which will require consideration during construction. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures.

Operational Phase

To determine the vulnerability of the proposed project to climate change, the sensitivity and exposure of the development to various climate hazards must first be determined. The following climate hazards have been considered in the context of the proposed development:

- Flooding (coastal, pluvial, fluvial);
- Extreme heat;
- Extreme cold;
- Wildfire;
- Drought;
- Extreme wind; and
- Lightning, hail, landslides and fog.

Wildfire and landslides were not considered relevant to the proposed development due to the project location and have been screened out of the assessment.

The sensitivity of the proposed development to the above climate hazards is assessed irrespective of the project location. Table 6-9 and Table 6-10 details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1) for RCP4.5 and RCP8.5. RCP4.5 is considered the most likely future scenario. Scoring is detailed in Section 6.2.2. Once the sensitivity has been established, the exposure of the proposed development to each of the climate hazards is determined. This is the likelihood or exposure 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 6-9 and Table 6-10. These were calculated after meetings with project Engineers to discuss potential vulnerability. The results of the vulnerability assessment are detailed in Table 6-9 and Table 6-10 below.

Table 6-9: Climate Change Vulnerability Assessment in Mid-End Future Scenario (RCP4.5)

Sensitive Receptors (Project Assets)	Sensitivity to Climate Hazards - RCP4.5										
	Flooding - Coastal	**Flooding - Fluvial**	**Flooding - Pluvial**	**Extreme Heat**	**Extreme Cold**	**Drought**	**Wind**	**Fog**	**Lightning & Hail**	**Soil Stability**	**Coastal Erosion**
Drainage	1	1	1	1	1	1	1	1	1	1	1
Access Roads	1	1	1	1	1	1	1	1	1	1	1
Buildings	1	1	1	1	1	1	1	1	1	1	1
Utilities	1	1	1	1	1	1	1	1	1	1	1
Landscaping	1	1	1	1	1	1	1	1	1	1	1
Pavements	1	1	1	1	1	1	1	1	1	1	1
Climate Hazards Exposure - RCP4.5											
	Flooding - Coastal	**Flooding - Fluvial**	**Flooding - Pluvial**	**Extreme Heat**	**Extreme Cold**	**Drought**	**Wind**	**Fog**	**Lightning & Hail**	**Soil Stability**	**Coastal Erosion**
RCP4.5	1	1	1	2	2	2	2	1	1	1	1
Assets	**Vulnerability - RCP4.5**										
	Flooding - Coastal	**Flooding - Fluvial**	**Flooding - Pluvial**	**Extreme Heat**	**Extreme Cold**	**Drought**	**Wind**	**Fog**	**Lightning & Hail**	**Soil Stability**	**Coastal Erosion**
Drainage	1 (Low risk)	1 (Low risk)	1 (Low risk)	2 (Low risk)	2 (Low risk)	2 (Low risk)	2 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)
Access Roads	1 (Low risk)	1 (Low risk)	1 (Low risk)	2 (Low risk)	2 (Low risk)	2 (Low risk)	2 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)
Buildings	1 (Low risk)	1 (Low risk)	1 (Low risk)	2 (Low risk)	2 (Low risk)	2 (Low risk)	2 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)
Utilities	1 (Low risk)	1 (Low risk)	1 (Low risk)	2 (Low risk)	2 (Low risk)	2 (Low risk)	2 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)
Landscaping	1 (Low risk)	1 (Low risk)	1 (Low risk)	2 (Low risk)	2 (Low risk)	2 (Low risk)	2 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)
Pavements	1 (Low risk)	1 (Low risk)	1 (Low risk)	2 (Low risk)	2 (Low risk)	2 (Low risk)	2 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)

Table 6-10: Climate Change Vulnerability Assessment in Mid-End Future Scenario (RCP8.5)

Sensitive Receptors (Project Assets)	Sensitivity to Climate Hazards – RCP8.5										
	Flooding - Coastal	**Flooding - Fluvial**	**Flooding - Pluvial**	**Extreme Heat**	**Extreme Cold**	**Drought**	**Wind**	**Fog**	**Lightning & Hail**	**Soil Stability**	**Coastal Erosion**
Drainage	1	1	1	1	1	1	1	1	1	1	1
Access Roads	1	1	2	1	1	1	1	1	1	1	1
Buildings	1	1	2	1	1	1	1	1	1	1	1
Utilities	1	1	2	1	1	1	1	1	1	1	1
Landscaping	1	1	2	1	1	1	1	1	1	1	1
Pavements	1	1	1	1	1	1	1	1	1	1	1
Climate Hazards Exposure – RCP8.5											
	Flooding - Coastal	**Flooding - Fluvial**	**Flooding - Pluvial**	**Extreme Heat**	**Extreme Cold**	**Drought**	**Wind**	**Fog**	**Lightning & Hail**	**Soil Stability**	**Coastal Erosion**
RCP8.5	1	1	2	3	1	3	3	1	1	1	1
Assets	**Vulnerability – RCP8.5**										
	Flooding - Coastal	**Flooding - Fluvial**	**Flooding - Pluvial**	**Extreme Heat**	**Extreme Cold**	**Drought**	**Wind**	**Fog**	**Lightning & Hail**	**Soil Stability**	**Coastal Erosion**
Drainage	1 (Low risk)	1 (Low risk)	2 (Low risk)	3 (Med risk)	1 (Low risk)	3 (Med risk)	3 (Med risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)
Access Roads	1 (Low risk)	1 (Low risk)	4 (Med risk)	3 (Med risk)	1 (Low risk)	3 (Med risk)	3 (Med risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)
Buildings	1 (Low risk)	1 (Low risk)	4 (Med risk)	3 (Med risk)	1 (Low risk)	3 (Med risk)	3 (Med risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)
Utilities	1 (Low risk)	1 (Low risk)	4 (Med risk)	3 (Med risk)	1 (Low risk)	3 (Med risk)	3 (Med risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)
Landscaping	1 (Low risk)	1 (Low risk)	4 (Med risk)	3 (Med risk)	1 (Low risk)	3 (Med risk)	3 (Med risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)
Pavements	1 (Low risk)	1 (Low risk)	2 (Low risk)	3 (Med risk)	1 (Low risk)	3 (Med risk)	3 (Med risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)	1 (Low risk)

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.

Flooding

The site is deemed to be in Flood Zone C (less than a 1:1000 (0.1% AEP) year event). A Site Specific Flood Risk Assessment (FRA) Report by OCSC notes that existing site levels within the development lands are between 90.5m and 94.50mAOD. The FRA notes that there is no coastal risk to the proposed development due to the location approximately 20km west from the Dublin coastline, in addition fluvial flood risk is scoped out due to the location of the site away from potential sources. A review of a low probability flood event (1 in a 1000) for the mid-end future scenario (rainfall of 20% and sea level rise of 500 mm (20 inches)) does not show any flooding for either the Catchment Flood Risk Assessment and Management (CFRAM) river and coastal flooding and the National Indicative Fluvial Mapping (NIFM) River Flood Extents (OPW, 2025). The high-end future scenario data is not currently available for this location however given the location of the closest flood risk in the low probability flood event it is unlikely to affect the site.

The design of the storm water drainage network and SUDS allow for 1 in 100-year events with an additional 20% to account for climate change, which aligns with designing for RCP4.5. The finished floor levels (FFL) have been set in accordance with FRA requirements, incorporating freeboard allowances to mitigate against extreme events. Stormwater requirements will increase with climate change with more intense rainfall events occurring over concentrated time periods. There is some residual risk in RCP8.5 in 2100, as the network is designed for +20% rather than +30% for climate change. +20% is commonly used for RCP4.5, while +30% is used for designing to RCP8.5. However, as they are designed for a 1 in 100 event which does reduce the potential impact, even if the sensitivity increases due to the drainage network not having capacity for RCP8.5. Further mitigation may be required during the operational phase to ensure resilience should climate projections indicate that the most likely future scenario aligns with RCP8.5.

Extreme Wind, Fog, Lightning & Hail

The residential properties with proper design are not considered highly sensitivity to wind loading. The design will be updated in accordance with the latest design standards and wind loading during detailed design to ensure this remains correct. Exposure to wind events, which will become more extreme with climate change. However, projections are not yet available from Met Eireann. All buildings will be designed to accommodate the higher wind loadings which are likely to occur in both RCP4.5 and RCP8.5. Where additional information becomes available, such as updated Eurocodes of design practices these will be followed during detailed design to ensure the proposed development is robust in its residual climate vulnerability.

Landscape maintenance will include surveys to confirm the condition of trees which have defects which may require felling, tree surgery or monitoring to ensure no damage is caused during a wind event. The landscape design also mitigates the impact of stronger storms and frequent wind events by incorporating strategically placed windbreaks. These include a combination of trees, shrubs, hedges, and mounding to serve as protective buffers, reducing wind speeds, enhancing privacy, and minimizing wind erosion. Plant selection prioritizes species known for their wind tolerance.

Hazards due to fog and hail are not deemed to pose an unusual risk to the assets.

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 Meath area. This means that there is between a 10% to 50% chance of experiencing weather that may cause disruptions and low but tangible risk of 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 suburban area surrounded by managed agricultural land, the risk of wildfire is significantly lessened and it can be concluded that the proposed development is of low vulnerability to wildfires.

Landslides

The Geological Society of Ireland (GSI) landslide susceptibility mapping database (GSI, 2025) was reviewed to determine the risk from landslides at the proposed development. It can be concluded that landslides are not a risk to the proposed development site. The landslide susceptibility mapping indicates the site has a low susceptible classification. Future climate change drought/flood cycles have the potential to increase the potential for landslides and, therefore, the risk associated with landslides. However, given the low risk, the exposure likelihood remains low.

Extreme Temperatures (Heat & Cold) & Drought

When considering the sensitivity of the proposed development to extreme temperatures, both hot and cold conditions, a range of -10 to +35 degrees Celsius has been considered. This temperature range is in line with projections made by Met Eireann. The design team have confirmed that with respect to the operational phase the materials will not be significantly impacted by fluctuations within this range. High quality, durable building materials will be selected for the proposed development which reduce their sensitivity. The materials used in traditional construction (block walls with render finish or brick outer leaf, standard timber roof construction with tile roof finish, etc.), are not considered to be sensitive to temperature variations within the projected range. When sourcing materials sensitivity to temperature variations will be confirmed with suppliers as part of the procurement and on-site storage process. Within the design, careful consideration has been given to window areas in the proposed development to avoid excessive heat loss and excessive solar gain.

Access roads and car parks have the potential to have some limited impacts during heat waves as damage to pavement, e.g. softening, traffic-related rutting, migration of liquid asphalt, roadway buckling, is known to occur at approximately 32 degrees Celsius. Such temperatures are more likely to occur in RCP8.5. However, given the low speeds that vehicles using the access roads will be travelling the sensitivity is considered low to medium. Damage due to such high temperature events will be managed within the proposed developments operational management plan.

The landscape design aims to create microclimates through strategic tree placement, using taller trees and hedgerows to provide shade and reduce heat stress. Deciduous trees play a key role by offering cooling shade in summer while allowing sunlight penetration in winter. These measures help mitigate the urban heat island effect and ensure comfortable outdoor spaces. The design also reflects the potential for drier conditions choosing drought-resistant species such as native wildflowers, grasses, and shrubs. Periodic reassessment of planting performance will inform necessary adjustments, such as replacing species that struggle under evolving climatic conditions. Phased planting strategies provide opportunities to introduce new, more resilient plant varieties as needed, ensuring the landscape remains functional and thriving over the project's lifespan.

Summary

Overall, the proposed development has at most low vulnerabilities to the identified climate hazards provided detailed design includes for the impact of climate change under RCP4.5 up to 2100. There remains some medium risk in RCP8.5 due to an increased exposure to extreme rainfall events, high temperatures, droughts and high windspeeds in this scenario. This residual medium risk will be further considered during detailed design in order to further add resilience into the design.

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 *slight*, which is overall *not significant* in EIA terms.

Do Nothing Impact

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). The Do-Nothing scenario is considered neutral in terms of the climate assessment.

As the site is zoned for development, in the absence of the proposed development it is likely that a development of a similar nature would be constructed in the future in line with national policy and the development plan objectives. Therefore, the construction and operational phase impacts outlined in this assessment are likely to occur in the future even in the absence of the implementation of the proposed development.

6.4.3 Cumulative

The cumulative impact of the proposed development has been considered in the above sections. With respect to the requirement for a cumulative assessment with additional developments 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.

6.5 Mitigation Measures

6.5.1 Proposed Development

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. Mitigation of embodied carbon of materials include:

- Creating a construction program which allows for sufficient time to determine reuse and recycling opportunities for wastes;

- During detailed design, the embodied carbon will be a key consideration and principals from IEMA (IEMA, 2020b) and LETI (LETI, 2020) will be put in place to ensure that the project's GHG impacts are mitigated through 'good practice' measures;
- The project design will be reviewed to ensure it complies with existing and emerging policy requirements with respect to GHG emissions; and
- Where possible, adoption of the methods set out in the Construction Industry Federation 2021 report Modern Methods of Construction.

A number of mitigation measures have been incorporated into the design of the development to reduce the impact on climate wherever possible. An Energy and Climate Action Statement was prepared by BBSC as part of the proposed development.

The proposed development has the potential to be a Zero Energy Building (ZEB), which goes above the requirement for a Nearly Zero Energy Building (NZEB) in accordance with the 2022 Part L requirements and the relevant sustainability policies within the Meath County Development Plan 2022-2029 and Climate Action Plan 2025. The ZEB standard is reached by ensuring a low energy demand for heating by a tight building envelope and use of a heat pumps, with the energy supplied though solar panels. The residential and commercial units will aim to achieve a minimum Building Energy Ratio (BER) of A2. The dwellings shall include several energy conservation measures to achieve a high energy rating for each dwelling:

- Heat pumps;
- Use of solar panels;
- High-performance thermal envelope with low U-values for the fabric;
- Low thermal bridging construction details;
- Airtight construction;
- Energy efficient ventilation system;
- Energy efficient heating and hot water generation system; and
- Energy efficient lighting to be used throughout.

During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Construction and detailed design of the proposed development will align with the most recent national and local Climate Action Plans;
- During detailed design the most recent Technical Guidance and Standards with respect to material recommendations for pavements and roads will be considered, with a particular emphasis on low carbon choices.
- 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. A construction waste management plan will be implemented to minimise construction waste sent to landfills. Subsoils will be reused within the development rather than becoming a waste product, this includes as base layers under footpaths. Recycling of materials will be promoted to and reduce the environmental footprint of the site. All topsoil will be reused within the proposed development.
- Where feasible precast concrete will be utilised rather than on-site pours. This reduces potential for wastage rates significantly.

- Recycled aggregates, preferably sourced on-site, will be used where feasible. Use of recycled crushed concrete, pulverised fuel ash, or blast furnace slags will replace other non-recycled aggregates where feasible.
- Reclaimed rather than recycled steel will be used where feasible.
- Sourcing materials locally will be prioritised. This will help to reduce transport related CO_2 emissions and helps support local suppliers, further promoting economic sustainability.
- Material choices and quantities will be reviewed during detailed design, to identify and implement any lower embodied carbon options, where feasible. For example, a 70% GGBS clinker replacement in cement is proposed to be utilised for building elements where feasible, this goes above and beyond the 30% requirements for public bodies. For roads and pavements, a low carbon concrete with a minimum of 30% clinker replacement will be utilised**,** consistent with IS EN 206. Exceptions apply where a technical justification is made by a suitably qualified professional.
- Hot mix bituminous material will be replaced with warm or cold mix across the Proposed Development.
- Onsite lighting for roads will be LED.
- High-carbon CEM I cement products will not be used.
- Detailed design will review design with respect to the TII mitigation hierarchy (see figure 3.1 of PE-ENV-01105 (TII 2022b)). Where feasible, the aim will be to design out and eliminate potential carbon impacts completely. Where this is not practicable, mitigation measures were considered to reduce effects (i.e. choice of materials).

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.

In addition, active travel has been facilitated by proving cycle parking to provide facilities for residents and visitors to the development. This alongside the facilitation of 10% electric car charging across the proposed development will reduce the requirement for fossil fuel use. The active travel within the proposed development is designed to join with the active travel facilities being put forward by Meath County Council linking the Fairyhouse Road with the centre of Ratoath. Aligning these facilities ensures a larger active travel network and increased potential for modal shift. Bus stops to facilitate public transport journeys will be provided as part of the RORR. The promotion of public and active travel journeys aligns with CAP25 transport principles.

During the operational phase the proposed developments operational management plan will ensure that potential effects of future climate change are monitored and where action is required (i.e. maintenance of trees, drains or structures).

6.6 Residual Impacts

The effect on climate as a result of a proposed development must be assessed as a whole for all phases. This is detailed when 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".

Therefore, the residual effect is considered under the operational phase for the lifespan of the development alone rather than under the construction and operational stages separately.

During the construction stage, the main source of climate impacts will be as a result of GHG emissions and embodied carbon associated with the proposed construction and operation of the proposed development, as discussed in Section 6.4.1 and 6.4.2. The criteria for significance is set out in Section 6.2.2 which specifies that significance is primarily determined using the criteria outlined in Table 6-3 (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.

There is no potential for significant impacts to climate as a result of traffic related to the proposed development in the construction or operational phases. The proposed development has committed to additional consideration of embodied carbon and operational carbon during the detailed design phase to ensure the proposed project is in alignment with a trajectory towards net zero by 2050. The development aims to achieve a minimum of an "A2" rated building with respect to energy performance and carbon performance BER scale. The residential buildings will meet or exceed legislative and planning requirements, aim for the buildings at least achieve Zero Energy Buildings standards.

During detailed design, the proposed development is committing to implement additional mitigation measures to ensure the embodied and operational carbon will be a key consideration for the entire LRD including the portion of the RORR to be constructed under this planning application. The principals from Guidance documents including IEMA (IEMA, 2020b) and LETI (LETI, 2020) will be put in place to ensure that the project's GHG impacts are mitigated through 'good practice' measures. In addition, the proposed development design will be reviewed to ensure it complies with existing and emerging policy requirements with respect to GHG emissions.

The vulnerability of the proposed development in relation to future climate change was also considered with respect to potential for significant effects. The assessment in Section 6.4.2 takes account of design mitigation that is embedded within standards and regulations, as well as the choice of materials and landscaping plans. The site is located in Flood Zone C which reduces the potential for significant effects with respect to flood risk. The site is not considered to have high or medium risks for RCP4.5 but there are some medium risks for RCP8.5 which require further mitigation to avoid a significant effect in the long term (2100). Further mitigation can be implemented through management plans and detailed design.

As per the assessment criteria in Table 6-3, the residual 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.

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*** in the most likely future scenario (RCP4.5), which is overall ***not significant*** in EIA terms.

6.7 Worst-Case Assessment

Conservative assumptions have been made throughout the assessment. Specifically, as part of the GHG assessment, where specific materials were not available conservative equivalent material types were used instead. Additionally, in places, where exact material types were not known for the GHG assessment, the standard average material was assumed which can have a higher embodied carbon associated with it. Therefore, the assessment has been conservative in nature and is likely worst-case.

6.8 Difficulties Encountered

There were no significant difficulties encountered in relation to climate.

6.9 Interactions

As discussed above, climate change has the potential to increase flood risk over time. However, adequate attenuation and drainage have been provided for to account for increased rainfall in future years, as part of the design of the proposed development.

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.

During the construction and operational phase, there is the potential for interactions between climate and traffic. Vehicles accessing the site during construction will result in emissions of CO_2, 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.

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. A Construction and Demolition Waste Management Plan (CDWMP) will be put in place in order to ensure the impacts of waste on climate are minimised.

6.10 Monitoring

Monitoring and reporting of the embodied carbon in the construction phase will be conducted. The aim of monitoring will be to seek further ways to minimise climate impacts. Monitoring will include contractual obligations, in line with the most recent Climate Action Plan and sectoral targets, for the successful tenderer to ensure that the proposed development stays in line with updated aims. Commitments to monitor GHG emissions during the construction phase will also be secured through the final CEMP. The contractor will undertake monitoring including: embodied carbon of construction materials, water usage, power and fuel usage, and waste generation (including reuse and recycling rates). Where monitoring shows that the proposed development is not meeting its targets, further mitigation will be put in place.

Monitoring will also be conducted by the contractor to include the ongoing management of adaptation and mitigation to measure their effectiveness. If monitoring of adaptation measures and mitigation measures indicates that the measures are not effectively minimising embodied carbon then they should be reviewed and updated.

6.11 References

Civil Engineering Standard Method of Measurement (CESSM) (2013) Carbon and Price Book database.

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European Commission (2013) Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment

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Institute of Environmental Management & Assessment (IEMA) (2020b) GHG Management Hierarchy

Institute of Environmental Management & Assessment (IEMA) (2022) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance

Meath County Council (MCC) (2024) Meath County Council Climate Action Plan 2024 – 2029

Met Éireann (2025a). Ireland's 30-year Climate Averages. Available from: https://www.met.ie/climate/30-year-averages

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Met Éireann (2025c) TRANSLATE: One Climate Resource for Ireland. [Online] Available at: https://www.met.ie/science/translate

The Geological Society of Ireland (GSI) (2025) Landslide Susceptibility Mapping Database

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 (2024a) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document

Transport Infrastructure Ireland (2024b) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107

Unilin Insulation (2022) An Overview of The Calculation of Embodied Carbon

7 Noise and Vibration

7.1 Introduction

This chapter assesses the likely noise and vibration impacts associated with the proposed development at Ratoath, Co. Meath.

The proposed development comprises a Large-scale Residential Development (LRD) on a site of 12.58ha within the townlands of Jamestown and Commons in Ratoath Co. Meath. The proposed development will principally consist of the construction of 364 no. residential units including 250 no. houses and 114 no. apartment / duplex units along with a creche, retail unit and café unit all with associated car and cycle parking and bin stores. Proposed building heights range from 2 no. to 4 no. storeys. Public open space is proposed across the site consisting of a central public park area and pocket parks featuring formal and informal play and amenity areas.

The proposed development also includes the construction of a section of the Ratoath Outer Relief Road (RORR) which will be continued from its current termination point in the northeast of the subject site to the existing Fairyhouse Road (R155) in the southwest. Access to the development is proposed via 2 no. vehicle access points from the new RORR. A series of pedestrian and cycle connections are proposed to site from the Fairyhouse Road (R155), Glascarn Lane and the new RORR.

Please refer to the planning application form and statutory notices (newspaper and site notices) for a full and formal description of the proposed development.

This section of the EIAR has been prepared by AWN Consulting in the context of current relevant standards and guidance. This assessment has been prepared by Alistair Maclaurin BSc PgDip MIOA, Senior Consultant at AWN Consulting who has prepared multiple EIS and EIAR documents and has been an acoustic consultant since 2012.

7.2 Assessment Methodology

The following methodology has been prepared based on the requirements of the EPA document *Guidelines on the information to be contained in Environmental Impact Assessment Reports*, May 2022 and on our experience of preparing the noise & vibration chapters for similar developments. The assessment has been undertaken using the following methodology:

- Baseline noise monitoring has been undertaken in the vicinity of the proposed 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 relating to construction phase impacts have been undertaken at the nearest sensitive locations to the development site;
- Predictive calculations have been performed to assess the potential impacts associated with the operation of the development at the most sensitive locations surrounding the proposed development, and within the development itself;
- A schedule of mitigation measures has been incorporated, to reduce, where necessary, the identified potential outward impacts relating to noise and vibration from the proposed development, and;
- The inward impact of noise in the surrounding environment into the proposed buildings has also been assessed to determine the requirements, for additional noise mitigation, where required, to provide suitable residential amenity.

7.2.1 Construction Noise

7.2.1.1 Transport Infrastructure Ireland Fixed Noise Thresholds

Overall acceptable levels of construction noise for large construction projects are set out in the Transport Infrastructure Ireland (TII) publication Guidelines for the Treatment of Noise and Vibration in National Road Schemes. Given the construction of the Ratoath Outer Relief Road forms a part of this

project the TII construction noise thresholds are deemed relevant here. These levels should not be exceeded at noise sensitive locations during the construction phase of the development. **Table 7-1** sets out these levels.

Table 7-1 - Maximum permissible noise levels at the façade of dwellings during construction

Days and Times	Noise Levels (dB re. 2x10-5 Pa)	
	$L_{Aeq(1hr)}$	L_{AsMax}
Monday to Friday 07:00 to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60*	65*
Saturdays 08:00 to 16:30hrs	65	75
Sundays & Bank Holidays 08:00 to 16:30hrs	60*	65*

*Note * Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the relevant local authority.*

7.2.1.2 Adopted Criteria

Taking the above into account it is considered appropriate to adopt a construction noise limit at sensitive receptors of **70 dB $L_{Aeq,1hr}$** Monday to Friday 07:00 to 19:00hr and Saturday 08:00 to 14:00hr.

7.2.2 Construction Vibration

In terms of vibration, British Standard BS 5228-2:2009+A1:2014 *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Vibration* recommends that, for soundly constructed residential properties and similar 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. The standard also notes that below 12.5 mm/s peak particle velocity (PPV) the risk of damage tends to zero. It is therefore common, on a cautionary basis to use this lower value. Taking the above into consideration the vibration criteria in Table 7-2 are recommended for nearby properties.

Table 7-2 - Transient Vibration Guidance Values for Avoidance of Cosmetic 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 15 Hz	15 to 40 Hz	40 Hz and above
12 mm/s	20 mm/s	50 mm/s

7.2.3 Operational Phase – Additional Traffic on Existing Public Roads

In order to consider the potential noise impact associated with the proposed development introducing additional traffic onto the existing road networks and given that vehicle movements on public roads are assessed using a different parameter (the ten-percentile noise level; LA10), it is appropriate to consider the increase in traffic noise level that arises as a result of vehicular movements associated with the development in terms of the L_{A10} parameter.

In order to assist with the interpretation of the noise associated with vehicular traffic on public roads, Table 7-3 offers guidance as to the likely impact associated with any change in traffic noise level (Source DMRB).

Table 7-3 - Likely Impact Associated with Change in Traffic Noise Level

Change in Sound Level (dB L_{A10})	Subjective Reaction	DMRB Magnitude of Impact	EPA Classification Magnitude of Impact

0	Inaudible	No Change	Neutral
0.1 – 2.9	Barely Perceptible	Negligible	Imperceptible
3 – 4.9	Perceptible	Minor	Slight
5 – 9.9	Up to a doubling of loudness	Moderate	Moderate
10+	Doubling of loudness and above	Major	Significant

7.2.4 Operational Phase – Operational of the Ratoath Outer Relief Road

There are no statutory guidelines or standards relating to the assessment of road traffic noise in Ireland. For new national roads in Ireland, it is standard practice to adopt the traffic noise design goal contained within the TII document *Guidelines for the Treatment of Noise and Vibration in National Road Schemes 2004* and Guidance contained within the TII's *Good Practice Guide for the Treatment of Noise during the Planning on National Road Schemes* (2014). Both documents note the use of a traffic noise design goal of 60 dB L_{den} (free field residential façade criterion) for new national roads.

The following three conditions must be satisfied under the TII guidelines in order for noise mitigation to be provided:

a) the combined expected maximum traffic noise level, i.e. the relevant noise level, from the proposed road scheme together with other traffic in the vicinity is greater than the design goal of 60dB L_{den};

b) the relevant noise level is at least 1 dB more than the expected traffic noise level without the proposed road scheme in place, and;

c) the contribution to the increase in the relevant noise level from the proposed road scheme is at least 1 dB.

It should be noted that the Design Goal is applicable to new national road schemes only. In the case of this proposed development, which is a regional link road, it would not strictly fall under the requirements for noise design goals set within the TII's guidance document. In the absence of other design standards for road traffic noise relating to new roads, however, the TII operational noise design criterion has been used as a guide for this project. It is acknowledged that it may not always be sustainable to achieve the 60 dB L_{den} design goal. In such circumstances, nevertheless, a structured approach should be taken in order to ameliorate as far as practicable road traffic noise through the consideration of mitigation measures which aid in reducing the overall potential noise impact of the road scheme.

7.2.5 Operational Phase – Mechanical Plant and Services

Once a development of this nature becomes fully operational, a variety of electrical and mechanical plant will be required to service the development. Most of this plant will be capable of generating noise to some degree. Some of this plant may operate 24 hours a day, and hence would be most noticeable during quiet periods (i.e. overnight). Noisy plant with a direct line-of-sight to noise sensitive properties would potentially have the greatest impact. Plant contained within plantrooms has the least potential for impact once consideration is given to appropriate design of the space.

British Standard BS 4142:2014+A1:2019 *Methods for Rating and Assessing Industrial and Commercial Sound* 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, 4dB where it is clearly perceptible, and 6 dB where it is highly perceptible.

The following definitions as discussed in BS 4142 as summarised below:

"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.

7.2.6 Operational Phase – Residential Inward Noise Impact

The *Professional Guidance on Planning & Noise* (ProPG) document was published in May 2017. The document was prepared by a working group comprising members of the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH). Although not a government document, since it's adoption it has been generally considered as a best practice guidance and has been widely adopted in the absence of equivalent Irish guidance.

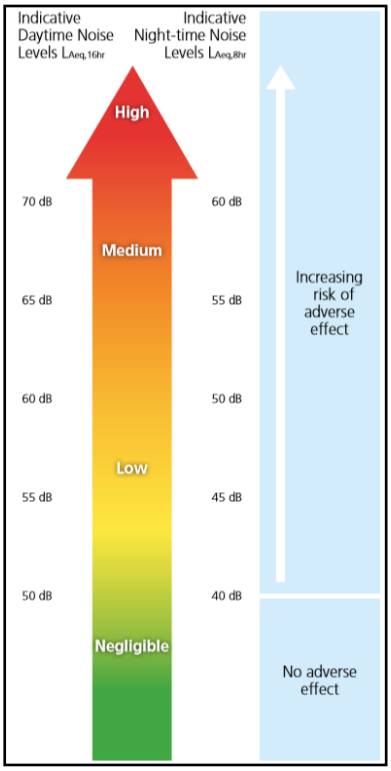
The ProPG outlines a systematic risk based 2-stage approach for evaluating noise exposure on prospective sites for residential development. The two primary stages of the approach can be summarised as follows:

- Stage 1 - Comprises a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels; and,
- Stage 2 – Involves a full detailed appraisal of the proposed development covering four "key elements" that include:
    - Element 1 - Good Acoustic Design Process;
    - Element 2 - Noise Level Guidelines;

- Element 3 - External Amenity Area Noise Assessment;
- Element 4 - Other Relevant Issues

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 7-1 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.

Figure 7-1 - ProPG Stage 1 - Initial Noise Risk Assessment



It should be noted that a site should not be considered a negligible risk if more than 10 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 document sets out recommended internal noise targets derived from *BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings.* The recommended indoor ambient noise levels are set out in Table 7-4 and are based on annual average data, that is to say they omit occasional events where higher intermittent noisy events may occur.

Table 7-4 – ProPG Guideline Internal Noise Levels

Activity	**Location**	**(07:00 to 23:00 hrs)**	**(23:00 to 07:00 hrs)**
Resting	Living Room	35 dB $L_{Aeq, 16hr}$	-
Dining	Dining Room/Area	40 dB $L_{Aeq, 16hr}$	-
Sleeping (Daytime Resting)	Bedroom	35 dB $L_{Aeq, 16hr}$	30 dB $L_{Aeq, 8hr}$ 45 dB L_{AFmax}*

*Note The document comments that the internal $L_{AFmax,T}$ noise level may be exceeded no more than 10 times per night without a significant impact occurring.

In addition to these absolute internal noise levels, ProPG 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.

ProPG provides the following advice with regards to external noise levels for amenity areas in the development:

> *"The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$."*

7.2.7 Operational Phase – Vibration Criteria

There are no expected sources of vibration associated with the operational phase, therefore, vibration criteria are not specified for this phase.

7.3 Baseline Environment

7.3.1 Proposed Development and Surrounding Environment

The proposed development is located at the south side of Ratoath. Please refer to the development description within the statutory notices for a complete description of the proposed development.

To the west of the site is the R155, Fairyhouse Road. To the north of the site are residential estates. To the south lie sporadic single residential dwellings.

7.3.2 Survey Methodology

An environmental noise survey has been conducted at the site in order to quantify the prevailing noise environment. The survey was conducted in general accordance with *ISO 1996-2:2017 Acoustics - Description, Measurement and Assessment of Environmental Noise - Determination of Environmental Noise Levels*. Specific details are set out as follows.

7.3.3 Survey Locations

An unattended survey location (U1) was selected to determine noise levels within the development site and at the rear of houses on Glascarn Lane and Cairn Court.

In addition to the unattended location, three attended locations were selected to further characterise the noise environment at sensitive receptors surrounding the site as follows:

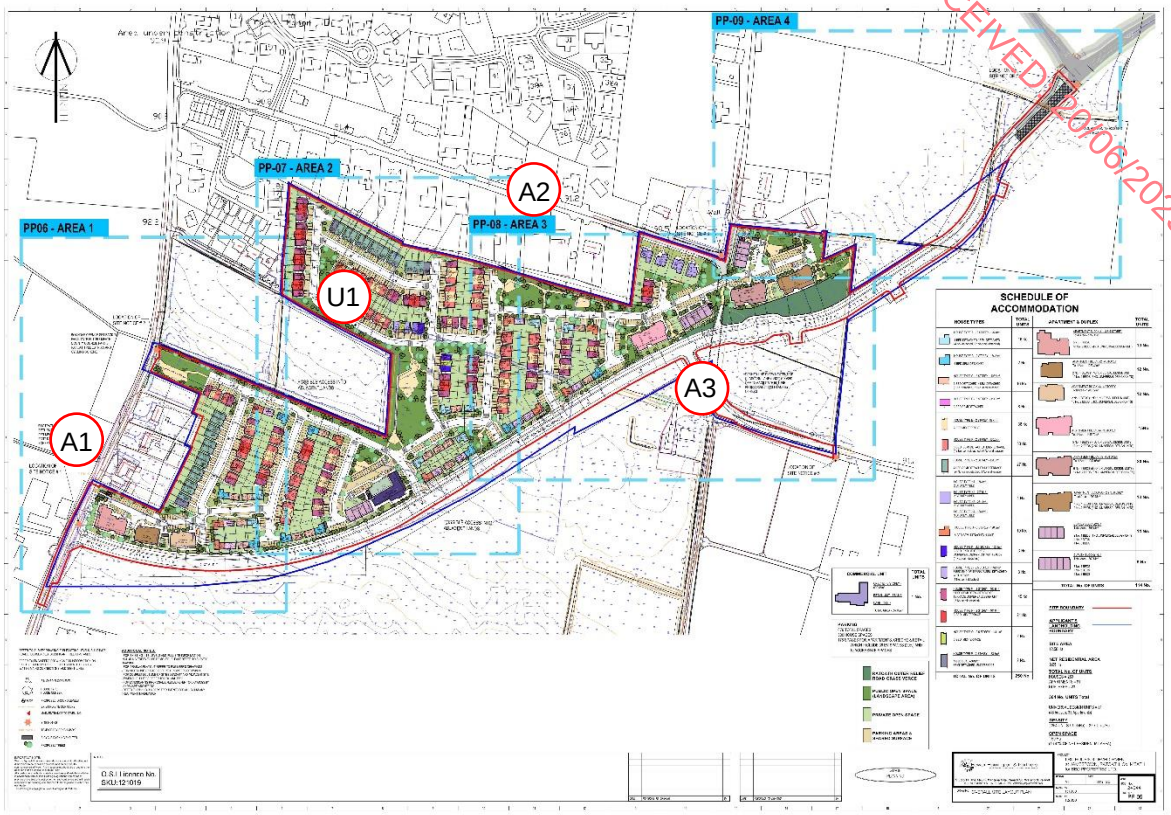
Location A1 – Representative of receptors on Fairyhouse Road, and also the western most boundary of the development site.

Location A2 - Representative of receptors facing on to Glascarn Lane.

Location A3 – Representative of receptors at the eastern boundary of the development site, on Glascarn Lane.

Figure 7-2 presents the noise monitoring locations.

Figure 7-2 - Noise Survey Locations



7.3.4 Procedure

Survey equipment was installed at measurement Location U1 between 11:29hrs on Wednesday 13th April to 13:14hrs on Friday 15th April 2022.

Sample periods for the noise measurements were 15 minutes.

Attended measurements at locations A1 – A3 were undertaken on 13th April 2022.

7.3.5 Instrumentation

Noise measurements were conducted using a Rion Type NL-42 Sound Level Meter for unattended survey locations and a Brüel & Kjær 2250L was used during the attended surveys. The measurement apparatus was check calibrated both before and after each survey using a Brüel & Kjær Type 4231 Sound Level Meter Calibrator.

7.3.6 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_{A90} is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

L_{AFmax} is the instantaneous fast time weighted maximum sound level measured during the sample period.

The "A" suffix 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 $2x^{10-5}$ Pa.

7.3.7 Measurement Results

Location U1

The results of the baseline noise survey at location U1 is presented in Table 7-5.

Table 7-5 - Measurement Results at Location U1

Date	Period	Measured Ambient Noise Levels, dB		
		$L_{Aeq,T}$	L_{AFmax}	$L_{A90,T}$
13/04/22	Day (07:00 – 23:00)	53	76	45
	Night (23:00 – 07:00)	53	78	31
14/04/22	Day (07:00 – 23:00)	55	78	47
	Night (23:00 – 07:00)	52	76	31
15/04/22	Day (07:00 – 23:00)	56	78	46

Location A1

The results of the baseline noise survey at location A1 is presented in Table 7-6.

Table 7-6 - Measurement Results at Location A1

Date	Time	Measured Ambient Noise Levels, dB		
		$L_{Aeq,T}$	L_{AFmax}	$L_{A90,T}$
13/04/22	11:43	74	89	45
	12:58	75	88	49
	13:55	74	87	50

The noise environment at Location A1 was dominated by road traffic from the R155. Distant aircraft noise was also audible.

Location A2

The results of the baseline noise survey at location A2 is presented in Table 7-7.

Table 7-7 - Measurement Results at Location A2

Date	Time	Measured Ambient Noise Levels, dB		
		$L_{Aeq,T}$	L_{AFmax}	$L_{A90,T}$
13/04/22	12:15	60	81	41
	13:19	62	81	40
	14:14	63	85	41

The noise environment at Location A2 was dominated by road traffic on the local road network. Pedestrians and bird song also contributed to the noise environment at this location.

Location A3

The results of the baseline noise survey at location A3 is presented in Table 7-8

Table 7-8 Measurement Results at Location A3

Date	Time	Measured Ambient Noise Levels, dB		
		$L_{Aeq,T}$	L_{AFmax}	$L_{A90,T}$
13/04/22	12:38	52	71	43
	13:37	54	73	41
	14:31	52	73	42

The noise environment at Location A3 was dominated by road traffic on the local road network. Pedestrians and bird song also contributed to the noise environment at this location.

7.4 Predicted Impacts

There are two particular elements to the construction phase:

- the construction of the various buildings and local roads within the proposed development
- the construction of the Ratoath Outer Relief Road.

A variety of items of plant will be in use for the purposes site clearance and construction of the development. The type and number of equipment will vary between the varying construction phases depending on the phasing of the works. There will be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for the generation of elevated levels of noise.

The closest receptor locations are identified in Figure 7-3. In terms of distances to construction works, some properties are located at 20m distance to the construction works (e.g. properties in area A and the properties along the southern section of area B, however most are located at distances in excess of 30m from the development).

Figure 7-3 - Receptor Locations

7.4.1 Construction of the Main Site Buildings and Local Roads

The construction of the buildings and local roads will require site clearance, building construction works and landscaping works (excavators, loaderspi, dozers, concreting works, mobile cranes, generators). Noise source levels for these activities are quoted in the range of 70 to 80 dB L_{Aeq} at distances of 10m within BS 5228-1. For the purposes of this assessment, a combined sound power value of 87 dBA at 10m has been used for construction noise calculations. This would include, for example, 5 no. items of construction plant with a sound pressure level of 80 dB L_{Aeq} at 10m operating simultaneously along the closest works boundary.

Given, the type and number of construction equipment will vary over the course of the construction phase, noise levels have been calculated at the closest noise sensitive locations assuming the construction noise levels and distances noted above. For the purpose of the assessment, a standard site hoarding of 2.4m high has been included in the calculations for noise sensitive boundaries. The calculations also assume that the equipment will operate for 66% of the working time. Table 7-9 summarises the result of this assessment.

Table 7-9 - Indicative Construction Noise Levels at Various Distances

Construction Phase	Sound Power at construction works, Lw(A)	Calculated noise levels at varying distances, dB L_{Aeq}				
		20m	30m	50m	60m	100m
Site Clearance General Construction Landscaping Road Works	115	71	68	63	62	57

The predicted noise levels detailed in the Table 7-9 indicate that during the main construction phase including site clearance, building construction works etc. assuming up to 5 items of plant are operating simultaneously at the closest noise sensitive boundaries, there is potential for the significance threshold to be exceeded at distances of 20m. The calculated noise levels at 20m and 30m represent the closest residential properties to the site. Construction noise levels at these properties are likely to exceed a construction noise limit of 70 dB when works are occurring immediately along the adjacent boundaries to these properties assuming the level of construction activities, the predicted effect would be negative, temporary and moderate to signfiicant. However, it should be noted that this scenario is highly worst case and will occur for limited periods of time, additionally the exceedance predicted is of the order of 1 dB which can be considered an imperceptible exceedance. Construction works occurring within the remainder of the site will be at further distances from these properties and will result in reduced construction noise levels. The calculated results in Table 7-9 indicate that at distances of 30m and greater, construction noise levels are below the significance criteria, with a resultant description of negative, slight to moderate and short-term. A schedule of best practice noise mitigation measures is included in Section 7.8.1.

7.4.2 Construction of the Ratoath Outer Relief Road

As per TII guidance, noise levels associated with construction may be calculated in accordance with methodology set out in BS5228 2009 + A1 2014: Part 1. This standard sets out sound power levels for plant items normally encountered on construction sites, which in turn enables the prediction of noise levels at selected locations. It is often not possible, however, to conduct detailed prediction calculations for the construction phase of a project. This is due to the fact that the programme for construction works has not been established in detail. Under such circumstances, best practice involves the consideration of appropriate mitigation measures to ensure construction activities do not exceed the recommended noise criteria as set out in Section 7.2.1.2.

A variety of items of plant will be in use, such as excavators, loaders, dumper trucks, generators in addition to vehicular movements to and from the site that will make use of existing roads. Due to the nature of the activities undertaken on a road construction site, there is potential for generation of high levels of noise in close proximity to the works.

BS5228:2009 +A1 2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise sets out typical noise levels for items of construction plant. Table 7-10 lists the sound power levels of the plant used for calculation of the expected noise level at various distances from the roadway. Construction noise calculations have been conducted at distances of 10 to 80m from the main work phases. The calculations assume that plant items are operating for 66% of the time and

that all plant items associated with the individual phases are operating simultaneously and at the same distance for any one scenario. A screening correction of 5 dB has been included in the calculations, assuming a partial screening from site hoarding along the site works.

Table 7-10 – Typical Road Construction Plant Sound Power Noise Levels

Plant Item (BS5228 Ref.)	Sound Power Level, dB(A) re 10^{-12} W
Wheeled loader C2.26	107
Tracked excavator (loading dump truck) C1.10	113
Dozer C.2.10	108
Dump Truck Tipping fill (C2.30)	107
Articulated dump truck (dumping rubble) C1-11	108
Tracked excavator (C2.21)	99
vibration rollers (C5.20)	103
Asphalt Paver & Tipping Lorry (C.5.31)	105
Diesel Generator (C4.76)	89
Road Rollers (C5.19)	108

Table 7-11 to Table 7-13 set out the predicted noise levels during various phases of road construction at distances of 10m to 80m from the works.

Table 7-11 - Indicative Construction Noise Levels During Site Clearance and Preparation

Site Clearance & Preparation	Calculated $L_{Aeq,T}$ at distance from road (m)			
	10m	25m	50m	80m
Wheeled loader (C2.26)	72	64	58	54
Tracked excavator (loading dump truck) (C1.10)	78	70	64	60
Dozer (C.2.10)	73	65	59	55
Dump Truck (C2.30)	72	64	58	54
Combined L_{Aeq}	**81**	**73**	**67**	**63**

Table 7-12 - Indicative Construction Noise Levels During Excavation and Fill Works

Site Clearance & Preparation	Calculated $L_{Aeq,T}$ at distance from road (m)			
	10m	25m	50m	80m
Tracked excavator (loading dump truck) (C1.10)	78	70	64	60
Articulated dump truck (dumping rubble) (C1.11)	73	65	59	55
Wheeled loader (C2.26)	72	64	58	54
Dozer C.2.10	73	65	59	55
Dump Truck Tipping fill (C2.30)	72	64	58	54
Combined L_{Aeq}	**81**	**74**	**68**	**63**

Table 7-13 - Indicative Construction Noise Levels During Road Works

Site Clearance & Preparation	Calculated $L_{Aeq,T}$ at distance from road (m)			
	10m	25m	50m	80m
Tracked excavator (C2.21)	64	56	50	45
Dump Truck (C2.30)	72	64	58	49
vibration rollers (C5.20)	68	60	54	42
Asphalt Paver & Tipping Lorry (C.5.31)	70	62	56	36
Diesel Generator (C4.76)	54	46	40	55
Road Rollers (C5.19)	73	65	59	57

Combined L_{Aeq}	**76**	**68**	**62**	**70**

The results of the assessment have indicated that at distances of beyond 50m from the works, the construction day time noise limit of 70 dB L_{Aeq} can typically be complied with for the scenarios assessed. At distances of up to 25m from the works, there is potential for the noise criterion to be exceeded in the absence of noise mitigation over and above the use of site hoarding indicating a negative, moderate to significant and temporary effect. Properties at receptors A,C and D are within 25m of the proposed works, hence the use of localised screening and the range of best practice mitigation measures set out in Section 7.8.1 will be employed when working at close proximity to these locations to ensure the construction noise limits are not exceeded along the length of the scheme.

7.4.3 Construction Vibration

The main potential source of vibration during the construction programme is associated with piling and excavation activities depending on the methodologies used.

In order to assess potential vibration impacts at the closest sensitive buildings to the site works, a range of typical level of vibration during augured piling have been determined through reference to published empirical data within BS 5228 – Part 2. The following vibration magnitudes associated with rotary bored piling using a 600mm pile diameter for bored piling into soft ground over rock are summarised below:

- 0.54mm/s at a distance of 5m, for auguring;
- 0.22mm/s at a distance of 5m, for twisting in casing;
- 0.42mm/s at a distance of 5m, for spinning off, and;
- 0.43mm/s at a distance of 5m, for boring with rock auger.

The residential dwellings situated on the western perimeter of the site are located at the closest distances to the site (approx. 20m). Considering the low vibration levels at very close distances to augured piling rigs, vibration levels at the nearest receptors are not expected to pose any significance in terms of cosmetic or structural damage. At further distances from the works vibration magnitudes will dissipate further resulting in lower vibration levels to those noted above and hence are orders of magnitude below the limit values in Table 7-2, for both structurally sound and more vulnerable buildings. In addition, the range of vibration levels is typically below a level which would cause any disturbance to occupants of the closest buildings along western perimeter of the site.

During ground breaking in the excavation phase, there is also potential for vibration to propagate through the ground. Empirical data for this activity is not provided in the BS 5228- 2:2009+A1:2014 standard, however the likely levels of vibration from this activity is expected to be significantly below the vibration criteria for building damage 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.

The range of values recorded provides some context in relation typical ranges of vibration generated by construction breaking activity likely required on the proposed site. The range of vibration magnitudes indicate vibration levels at the closest neighbouring buildings noted in Figure 7-3 are likely to be below the limits set out in Table 7-2 to avoid any cosmetic damage to buildings.

In terms of disturbance to building occupants, works undertaken within close proximity to the residential receptors on the site perimeter have the potential to emit perceptible vibration levels, the effects are predicted to be negative, slight and temporary at the closest noise sensitive lcoations Mitigation and management of these works are discussed in Section 7.8.1.

7.5 Operation of Ratoath Outer Relief Road

7.5.1 Noise Model

A computer-based prediction model has been prepared in order to quantify the traffic noise level associated with the operational phase of the proposed road scheme. This section discusses the methodology behind the noise modelling process and presents the results of the modelling exercise.

7.5.2 SoftNoise 7810 Predictor

Proprietary noise calculation software was used for the purposes of this impact assessment. The selected software, SoftNoise Type 7810 Predictor, calculates traffic noise levels in accordance with Calculation of Noise from Road Traffic (CRTN) and TII guidance.

7.5.3 Prediction of Traffic Noise

Noise emissions during the operational phase of the project have been modelled using Predictor in accordance with CRTN and with the application of the relevant conversion factors as detailed in the TII Guidance. The CRTN method of predicting noise from a road scheme consists of the following five elements:

- divide the road scheme into segments so that the variation of noise within this segment is small;
- calculate the basic noise level at a reference distance of 10 metres from the nearside carriageway edge for each segment;
- assess for each segment the noise level at the reception point taking into account distance attenuation and screening of the source line;
- correct the noise level at the reception point to take account of site layout features including reflections from buildings and facades, and the size of source segment, and;
- combine the contributions from all segments to give the predicted noise level at the receiver location for the whole road scheme.

Note that all calculations are performed to one decimal place. For the purposes of comparison with the design goals of 60 dB L_{den}, the relevant noise level is to be rounded to the nearest whole number in accordance with guidance given in the TII document.

7.5.4 Input to the Noise Model

The noise model was prepared using road alignments drawings, topographical data, Ordnance Survey mapping and traffic flow data supplied by OCSC. A traffic flow volume of 6,621 at 50 km/h was extracted from the Do Something design year of 2039. This traffic data was modelled to determine the impact of the new road on surrounding receptors. The traffic volumes discussed above are the highest traffic flow provided for the development by the traffic engineers that are described as the ‘Do Maximum’ in the traffic model outputs. This scenario takes account of traffic along the completed link road and the proposed development. The AADT values have been broken into 24 hourly periods using the TII Diurnal profiles. The hourly noise predictions were conducted in accordance with Method A of the TII guidelines.

7.5.5 Output of the Noise Model

Predictor calculates noise levels for a set of receiver locations specified by the user. The results include an overall level in dB L_{den}.

7.5.6 Choice of Receiver Locations

Free-field traffic noise levels have been predicted at the closest existing and proposed properties in the vicinity of the scheme in question. For existing properties, noise levels have been calculated at those located at Receptor R1 to R4 in Figure 7-4. Noise levels have also been calculated at the proposed development buildings located adjacent to the proposed RORR.

A description of the modelled locations are summarised in Table 7-14.

Figure 7-4 - Prediction Locations for Existing Properties

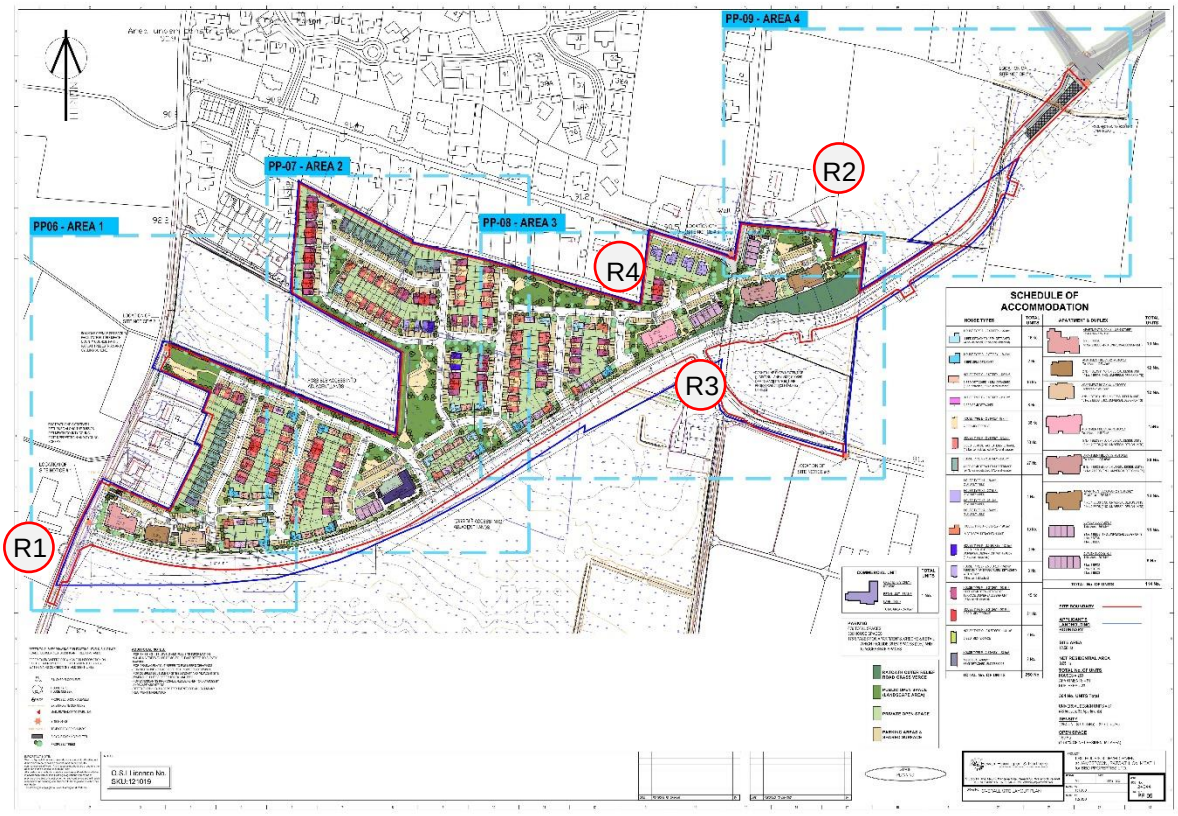


Table 7-14 – Receptor Reference and Descriptions

Receiver	Description
R1	Carrabeg House on Fairyhouse Road
R2	House Located on Glascarn Lane
R3	House Located on Glascarn Lane
R4	House Located on Glascarn Lane
R5	Proposed Properties Adjacent to RORR

7.5.7 Model Results

The results of the modelling are presented in Table 7-15.

Table 7-15 – Predicted Noise Levels as a Result of the RORR

	Description	Predicted Noise Level 2035	Mitigation Required?

Receiver Location Reference		L_{den} (dB)	
R1	Carrabeg House on Fairyhouse Road	53	No
R2	House Located on Glascarn Lane	53	No
R3	House Located on Glascarn Lane	52	No
R4	House Located on Glascarn Lane	46	No
R5	Proposed Properties Adjacent to RORR	66	Yes*

*Note that these are properties that are proposed as a part of this development and hence the mitigation may include upgraded glazing and ventilation to ensure that internal noise levels remain 'good'. This is covered in the ProPG assessment within this chapter.

The calculated traffic noise levels associated with the RORR will generate noise levels lower than the 60 dB L_{den} threshold at all existing properties.

At R1 Carrabeg House the predicted noise level due to the new RORR is 53 dB L_{den} and as this property is located adjacent to an existing road there is the potential that the new road could cause a cumulative effect that has the potential to increase noise levels sufficiently that mitigation measures are required as per the TII guidance. Hence, an assessment has been undertaken to calculate any potential increase in noise level at this property by comparing a Do Nothing scenario from 2044 with the Do Something scenario of 2044 to calculate the change in noise level. The model output for these scenarios predicts a noise level of 62.9 dB L_{den} for the Do Nothing 2044 scenario and a noise level of 63.1 dB L_{den} for the 2044 Do Something scenario, a change of +0.2 dB which, according to the guidance set out in Table 7-3, is Negligible and does not require mitigation.

For the proposed properties within the development that overlook the RORR the predicted noise level is 66 dB L_{den}, hence mitigation will be required for these properties. It is proposed that mitigation for the proposed residences will be in the form of upgraded glazing specifications to ensure that internal noise levels remain good. This is explored further in Section 7.8.2.

The effect of the RORR and additional traffic associated with the proposed development is considered to be **negative, not significant and long term** for all existing receptors.

7.5.8 Operation Phase – Additional Traffic on Existing Roads

In terms of the additional operational traffic on local roads that will be generated as a result of this development the following comment is presented. In order to increase traffic noise levels by 1 dB, traffic volumes would need to increase by the order of 25% along the local road network. As outlined in the relevant sections of chapter relating to traffic, additional traffic introduced onto the local road network due to the construction phase of the proposed development will not result in a significant noise impact.

The largest change in traffic levels is expected along Fairyhouse Road. The traffic data with and without the proposed development results in change in noise level of +0.2 dB which is considered imperceptible in accordance with the criteria detailed in Table 7-3.

In summary, the predicted increase in noise levels associated with vehicles at road junctions in the vicinity of the proposed development is of **long-term, imperceptible** effect.

7.5.9 Operation Phase – Inward Noise Impact – ProPg Stage 1

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.

Paragraph 2.9 of ProPG states that,

"The noise risk assessment may be based on measurements or prediction (or a combination of both) as appropriate and should aim to describe noise levels over a "typical worst case" 24 hour day either now or in the foreseeable future."

Figure 7-5 and Figure 7-6 present the basis of the initial noise risk assessment. In this instance a 3D computer noise model of the development site has been developed to predict the noise levels across the entire site in order to investigate the initial noise risk. The noise model has used AADT traffic volumes for worst case predicted future traffic flows.

The notice of opinion identified that the proposed development is located within the Dublin Airport noise contours. Note that whilst the site is located within the 45 - 49 dB L_{den} contour calculated as part of the Aircraft Noise competent Authority annual review (https://fingalcoco.maps.arcgis.com/apps/instant/basic/index.html?appid=4f351ec95a3849c9945effc7b8ca2f01), the contour indicates that noise levels are not of a sufficient magnitude to warrant noise insulation. Standard noise insulation on the façades and roof of the building will be sufficient to reduce noise from aircrafts. Additionally, the proposed development site is not situated within the Dublin Airport Noise Zones, hence, objectives MOV OBJ 68 and MOV OBJ 70 of the Meath Development Plan are not relevant to this project. In this respect aircraft noise from Dublin Airport is not considered to cause a significant inward impact on the proposed development. However, an inward noise impact assessment has been undertaken to assess the effect of road traffic from the surrounding local roads and the proposed Ratoath Outer Relief Road on the proposed residential properties within this development.

7.5.9.1 Model Results

To assess the initial noise risk assessment across the development site, the noise model has been used to prepare noise contour maps for both daytime and night-time periods at 4m height above ground, this is to give an indication of expected noise levels at various levels of the development. These maps are presented in Figure 7-5 and Figure 7-6. The model indicates that daytime noise levels will range from 60 to 69 dB L_{day} and 50 to 61 dB L_{night} for properties overlooking the RORR.

Figure 7-5 - L_{day} Noise Contours (dB)

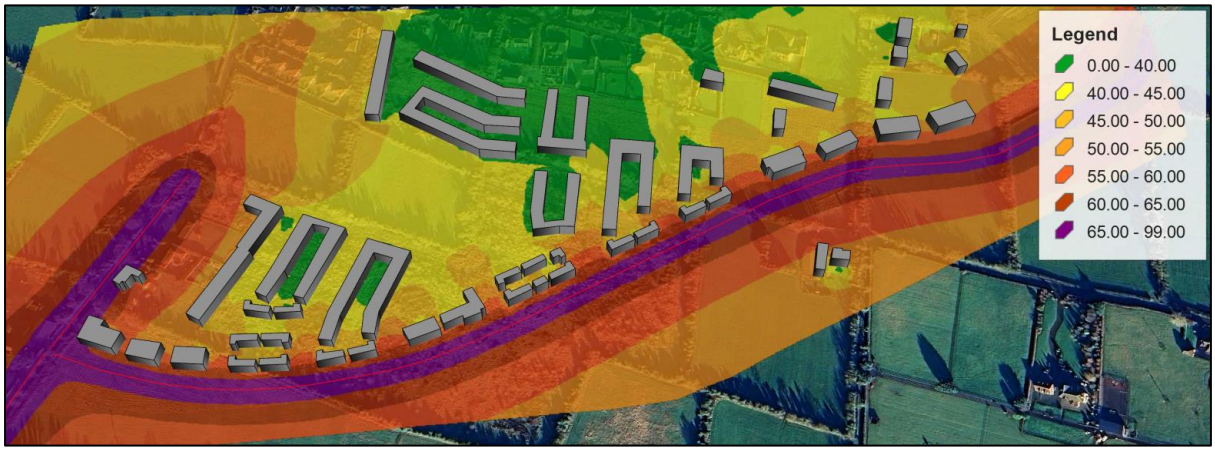
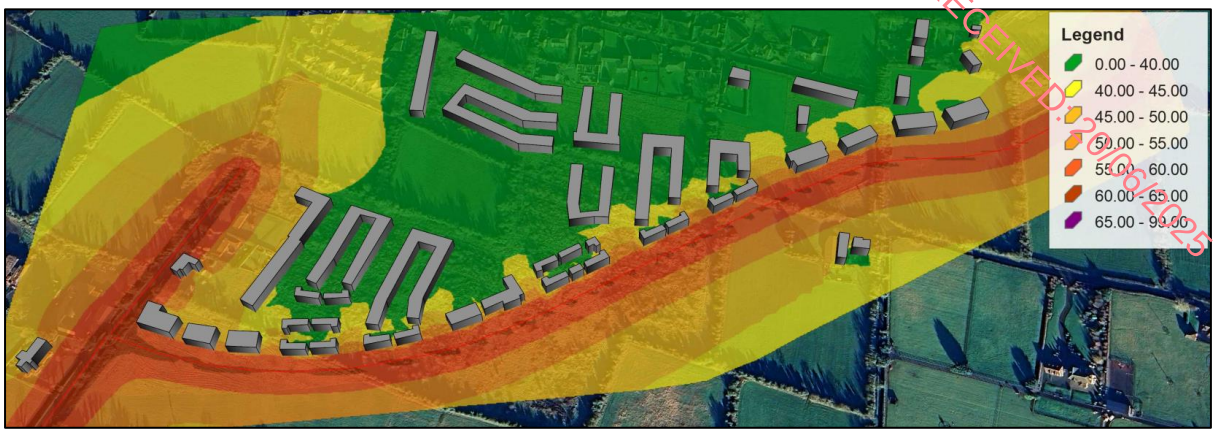


Figure 7-6 - L_{night} Noise Contours (dB)



7.5.9.2 ProPg Risk Assessment Conclusion

Giving consideration to the measured and predicted noise levels presented in the previous sections the initial site noise risk assessment has concluded that the level of risk across the site varies from low to medium noise risk.

ProPG states the following with respect to medium risks:

Medium Risk *As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development.*

Given the site above an Acoustic Design Strategy will be required to demonstrate that suitable care and attention has been applied in mitigating and minimising noise impact to such an extent that an adverse noise impact will be avoided in the final development.

7.5.9.3 Façade Noise Levels

Noise levels have been predicted across the site during day and night-time periods with the proposed buildings in place.

Where façade noise levels are less than 55 dB $L_{Aeq,16hr}$ during the day and 50 dB $L_{Aeq,8hr}$ at night it is possible to achieve reasonable internal noise levels while also ventilating the dwellings with open windows. Therefore, for those properties where the façade noise levels are less than 55 dB $L_{Aeq,16hr}$ during the day and 50 dB $L_{Aeq,8hr}$ at night no further mitigation is required.

Where façade levels are above these levels the sound insulation performance of the building façade becomes important and a minimum sound insulation performance specification is required for windows and vents to ensure that the internal noise criteria are achieved.

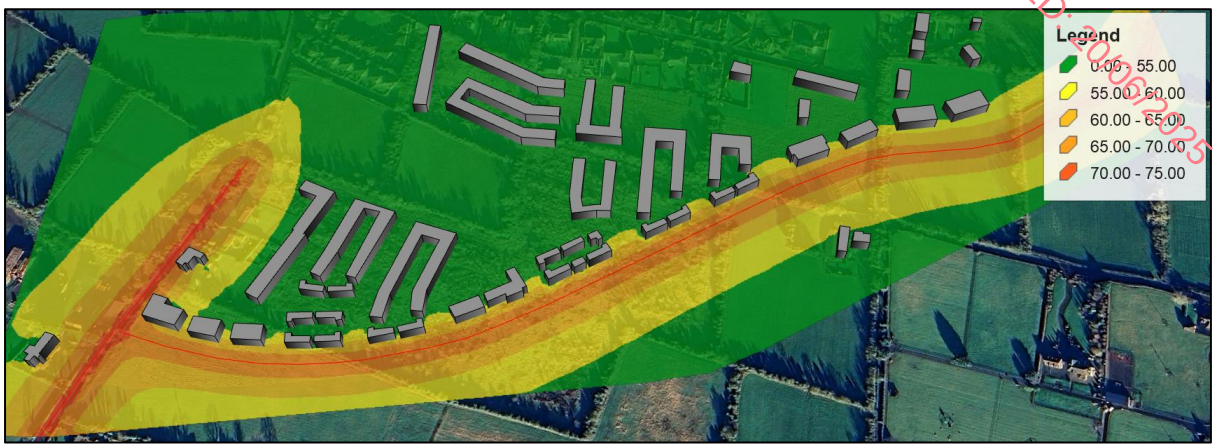
The model for the proposed development has predicted that noise levels incident on facades overlooking the RORR will be 62 dB L_{day} and 58 dB L_{night}, hence mitigation in the form of upgraded glazing is required for these facades. The specification of the glazing is discussed in Section 7.8.2.

7.5.9.4 External Noise Levels

As can be seen in Figure 7-7 the predicted noise levels in the external areas to the rear of the properties overlooking the new RORR are below the 55 dB L_{Aeq} guidance level for external amenity areas taken from ProPG. Additionally, the vast majority of communal open space is within the 55 dB L_{Aeq} guidance level. It is therefore considered that the objective of achieving suitable external noise

levels is achieved within the overall development. The resultant effect is neutral, not significant and long-term.

Figure 7-7 Model Presenting External Noise Contours



7.5.10 Building Services Plant

Once operational, there will be building services plant items required to serve the various buildings within the development. These will typically be limited to heating and cooling plant and extract units, depending on the building design and user requirements. Given the use of these buildings, the majority of plant items are likely to be required during daytime hours only, however, there may be requirement for night-time operational plant, depending on specific requirements.

The location or type of building services plant has not yet been established, therefore it is not possible to calculate noise levels to the surrounding environment. In this instance, is it best practice to set appropriate noise limits that will inform the detailed design during the selection and layout of building services for the development.

These items will be selected at a later stage, however, they will be designed and located so that there is no negative impact on sensitive receivers within the development itself. The cumulative operational noise level from building services plant at the nearest noise sensitive location within the development (e.g. apartments, creche rooms etc.) will be designed/attenuated to meet the relevant external noise criteria for day and night-time periods as set out in Section 7.2.5. Given the baseline noise levels measured in Section 7.3 appropriate criteria for plant noise levels at the nearest sensitive noise receptors is considered to be 45 dB $L_{Aeq,1hr}$ for the day period and 31 dB $L_{Aeq,15min}$ for the night period.

7.6 Potential Cumulative Impact

7.6.1 Construction Stage

It's noted that construction works are currently underway on the Jamestown residential development located at the eastern boundary of this proposed development. It is unlikely that construction phases will overlap as the neighbouring development appears to be mid-way to completion. However, should the developments be under construction simultaneously then there is the potential for the construction noise levels and the construction period to increase at the properties located on Glascarn Lane. Whilst noise levels would only be expected to increase by 3 dB due to the equidistant adjacency of both sites (which can be considered only just perceptible), it's more likely that an increase in the length of the construction period would be noticeable. However, it is expected that this would remain a short-term impact.

7.6.2 Operational Stage

Cumulative impacts have been incorporated into the traffic data supplied for the operational stage noise modelling assessment where such information was available. The results of the modelling assessment

(Section 7.5.7 and 7.5.8) show that there is a negative, imperceptible to not significant and long-term effect during the operational stage.

7.7 Do Nothing Scenario

In the absence of the proposed development being constructed, the noise environment at the nearest noise sensitive locations and across the development site itself will remain largely unchanged. The noise levels measured/noted during the baseline studies are considered representative of the Do-Nothing scenario. The Do-Nothing scenario is therefore considered neutral impact.

7.8 Mitigation Measures

7.8.1 Construction Phase

The contract documents will clearly specify the construction noise criteria included in this chapter which the construction works must operate within. The Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Noise and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001. These measures will ensure that:

- No plant used on site will be permitted to cause an ongoing public nuisance due to noise
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use
- Any plant, such as generators or pumps that is required to operate before 07:00hrs or after 19:00hrs will be surrounded by an acoustic enclosure or portable screen

During the course of the construction programme, the contractor will be required to manage the works to comply with the limits detailed in Table 1 using methods outlined in BS 5228-1:2009+A1 2014. Part 1 – Noise BS 5228 -1: 2009+A1 2014 Part 2 which include guidance on several aspects of construction site practices, which include, but are not limited to the measures discussed below.

Selection of Quiet Plant

The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item of plant will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether or not said item can be replaced with a quieter alternative.

For static plant such as compressors and generators used at work areas such as construction compounds etc., the units will be supplied with manufacturers' proprietary acoustic enclosures where possible.

The contractor will evaluate the choice of excavation, breaking or other working method taking into account various ground conditions and site constraints. Where possible, where alternative lower noise generating equipment that would economically achieve, in the given ground conditions, equivalent structural/ excavation/ breaking results, these will be selected to minimise potential disturbance.

General Comments on Noise Control at Source

The following outline guidance relates to practical noise control at source techniques which relate to specific site considerations:

- For mobile plant items such as cranes, dump trucks, excavators and loaders, the installation of an acoustic exhaust and/or maintaining enclosure panels closed during operation can reduce noise levels by up to 10dB. Mobile plant will be switched off when not in use and not left idling;
- For percussive tools such as pneumatic concrete breakers or tools a number of noise control measures include fitting muffler or sound reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed. Erection of localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries are other suitable forms of noise reduction;
- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum;
- For all materials handling, the contractor will ensure that best practice site noise control measures are implemented including ensuring that materials are not dropped from excessive heights;
- Where compressors, generators and pumps are located in areas in close proximity to noise sensitive properties/ areas and have potential to exceed noise criterion, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation;
- Resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can be controlled by fixing resilient materials in between the surfaces in contact;
- Demountable enclosures can also be used to screen operatives using hand tools and may be moved around site as necessary, and;
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

Screening

Typically screening is an effective method of reducing the noise level 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.

The length of the screen should in practice be at least five times the height, however, if shorter sections are necessary then the ends of the screen will be wrapped around the source.

BS 5228 -1:2009+A1 2014 states that on level sites the screen should be placed as close as possible to either the source or the receiver. The construction of the barrier will be such that there are no gaps or openings at joints in the screen material. In most practical situations the effectiveness of the screen is limited by the sound transmission over the top of the barrier rather than the transmission through the barrier itself. In practice screens constructed of materials with a mass per unit of surface area greater than 10 kg/m2 will give adequate sound insulation performance. As an example, the use of a standard 2.4m high construction site hoarding will provide a sufficient level of noise screening once it is installed at a suitable position between the source and receiver.

Working Hours

Normal working times will be 07:00 to 19:00hrs Monday to Saturday. Works other than the pumping out of excavations, security and emergency works will not be undertaken outside these working hours without the written permission of the Contracting Authority. This permission, if granted, can be withdrawn at any time should the working regulations be breached.

7.8.2 Operational Phase

As is the case in most buildings, the glazed elements of the building envelope are typically the weakest element from a sound insulation perspective. In general, all wall constructions (i.e. blockwork or concrete and spandrel elements) offer a high degree of sound insulation, much greater than that offered by the glazing systems. Therefore, noise intrusion via the wall construction will be minimal. It is also noted that the ventilation strategy will be for Mechanical Ventilation Heat Recovery units which are expected to provide strong sound insulation to external noise, hence ingress of noise through the ventilation systems is considered to be negligible for this assessment.

The performance values set out in Table 7-16 below are to provide the range of the overall Rw values required for the glazing system.

Figure 7-8 Identified Façades that Require Upgraded Sound Insulation

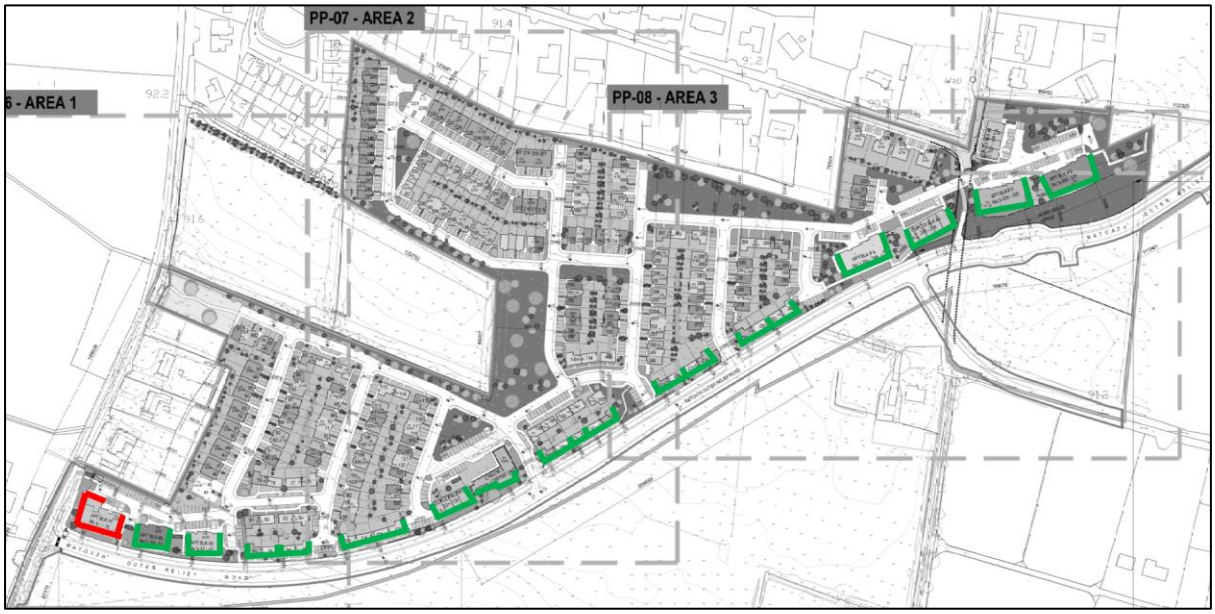


Table 7-16 – Sound insulation performance requirements for glazing for each category.

Reference	Octave Band						Specification (dB R_w)
	125	250	500	1k	2k	4k	
RED	26	27	34	40	38	46	38
GREEN	23	23	32	38	42	44	35

The acoustic specification for Glazing Type Red and Green can be achieved using a double glazed configuration with slightly thicker glass panes than standard double glazing. For all other unmarked windows standard double glazing will be sufficient to meet the criteria.

With the inclusion of the glazing specifications noted above, the recommended internal noise criteria can be achieved. The calculated glazing specifications are preliminary and are intended to form the basis for noise mitigation at the detailed design stage, consequently, these may be subject to change as the project progresses. It is noted that there are other glazing systems on the market that may also provide sufficient sound insulation to meet the criteria, the overriding factor is that suitable glazing

systems are selected at design stage so that the internal noise levels presented in Table 7-4 are achieved.

It is important to note that the acoustic performance specifications detailed herein are minimum requirements which apply to the overall glazing system. In the context of the acoustic performance specification the 'glazing system' is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e. glass, frames, seals, openable elements etc.

7.9 Residual Impacts

7.9.1 Construction Noise

General Site Construction Works

It is predicted that when construction works take place at less than 20m distance to the receptors a **moderate to significant, temporary effect** will occur. At distances greater than 20m from the site works (at which the vast majority of construction works will occur) the effect is considered to be **slight to moderate and short-term.**

Construction of the Ratoath Outer Relief Road

It is predicted that when construction works take place at less than 50m distance to the receptors a **moderate to significant, temporary effect** will occur. At distances greater than 50m from the site works the effect is considered to be **slight to moderate and temporary.**

7.9.2 Construction Vibration

It is predicted that the effects due to construction vibration will be **negative, slight and short-term**.

7.9.3 Outward Noise Impact – Road Traffic Noise

The effects of the RORR and any potential increase in traffic on existing roads is predicted to be **negative, not significant and long-term.**

7.9.4 Outward Noise Impact – Plant and Mechanical Noise

Following any necessary mitigation measures implemented at design stage the effects of mechanical plant noise are predicted to be **negative, not significant and long-term**.

7.9.5 Inward Noise Impact

Noise mitigation measures in the form of upgraded glazing specifications have been detailed within this chapter. Following the implementation of these measures the effect is considered to be **negative, not significant and long-term**.

7.10 Monitoring

7.10.1 Construction Phase

The contractor will be required to undertake regular noise monitoring at locations representative of the closest sensitive locations and, where they are required, monitor the implementation of mitigation measures.

Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.

7.10.2 Operational Phase

Noise or vibration monitoring is not required once the development is operational.

7.11 Interactions

This chapter has used information from the Traffic and Transportation chapter and the architectural drawings to inform the assessment of noise and vibration impacts. With increased traffic movements, the noise levels in the surrounding area have the potential to increase. The impacts of the proposed development on the noise environment are assessed by reviewing the change in traffic flows on roads close to the site.

7.12 Difficulties Encountered During the Study

Difficulties encountered in the preparation of the EIAR are outlined in each chapter as they relate to the various environmental topics.

7.13 References

- EPA (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- European Union (2018) The European Union (Planning and Development) (Environmental Impact Assessment) Regulations
- European Union (1999) European Communities (Environmental Impact Assessment) (Amendment) Regulations (S.I. No. 93 of 1999)
- Irish Statute (2000) The Planning and Development Act (No. 30 of 2000), as amended
- Irish Statute (2001) Planning and Development Regulations (S.I. No. 600 of 2001) as amended European Commission, (2001) Guidance on EIA – Scoping
- EPA (2017) Draft Guidelines on preparation of Environmental Impact Assessment Reports
- Department of the Environment, Community and Local Government (DoECLG), (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment
- EPA (2002) Guidelines on the Information to be contained in Environmental Impact Statements
- EPA (2003) Advice Notes on Current Practice in the Preparation of Environmental Impact Statements
- EPA (2015) Draft Revised Guidelines on the Information to be contained in Environmental Impact Statements
- EPA (2015) Draft Revised Advice Notes on Current Practice in the Preparation of Environmental Impact Statements
- EPA (2015) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports;

Department of Housing Planning and Local Government (2018) EIA Portal. Available from: https://www.housing.gov.ie/planning/environmental-assessment/environmental-impactassessment-eia/eia-portal.

8 Biodiversity

8.1 Introduction

This Biodiversity assessment has been undertaken by Altemar Limited. It assesses the biodiversity value of the proposed development area and the potential impacts of the development on the ecology of the surrounding area and within the potential zone of influence (ZOI) in the absence of mitigation.

The proposed development comprises a Large-scale Residential Development (LRD) on a site of 12.58ha within the townlands of Jamestown and Commons in Ratoath Co. Meath. The proposed development will principally consist of the construction of 364 no. residential units including 250 no. houses and 114 no. apartment / duplex units along with a creche, retail unit and café unit all with associated car and cycle parking and bin stores. Proposed building heights range from 2 no. to 4 no. storeys. Public open space is proposed across the site consisting of a central public park area and pocket parks featuring formal and informal play and amenity areas.

The proposed development also includes the construction of a section of the Ratoath Outer Relief Road (RORR) which will be continued from its current termination point in the northeast of the subject site to the existing Fairyhouse Road (R155) in the southwest. Access to the development is proposed via 2 no. vehicle access points from the new RORR. A series of pedestrian and cycle connections are proposed to site from the Fairyhouse Road (R155), Glascarn Lane and the new RORR.

Please refer to the planning application form and statutory notices (newspaper and site notices) for a full and formal description of the proposed development.

The programme of work in relation to biodiversity assessment was designed to identify and describe the existing ecology of the area and detail designated sites, habitats or species of conservation interest that could potentially be impacted by the proposed development. It also assesses the significance of the likely impacts of the scheme on the biodiversity elements, and designs mitigation measures to alleviate identified impacts.

A separate AA Screening, in accordance with the requirements of Article 6(3) of the EU Habitats Directive, has been produced to identify potential impacts of the development on European (Natura 2000) sites, Annex species or Annex habitats. It concludes that ‘On the basis of the content of this report, the competent authority is enabled to conduct a Stage 1 Screening for Appropriate Assessment and consider whether, in view of best scientific knowledge and in view of the conservation objectives of the relevant European sites, the Proposed Development, individually or in combination with other plans or projects is likely to have a significant effect on any European site. There is no possibility of significant impacts on European sites, features of interest or site-specific conservation objectives. A Natura Impact Statement is not required.“

8.1.1 Background to Altemar

Since its inception in 2001, Altemar has been delivering ecological and environmental services to a broad range of clients. Operational areas include residential, infrastructural, renewable, oil & gas, private industry, local authorities, EC projects and State/semi-State Departments. Bryan Deegan is the managing director of Altemar. Bryan is an environmental scientist and marine biologist with 31 years’ experience working in Irish terrestrial and aquatic environments, providing services to the State, Semi-State and industry. Bryan Deegan (MCIEEM) holds a MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and a NCEA National Certificate in Science (Aquaculture).

8.2 Assessment Methodology

A pre-survey biodiversity data search and preliminary ecological appraisal was carried out. This included examining records and data from the National Parks and Wildlife Service (NPWS), National Biological Data Centre (NBDC) and the Environmental Protection Agency (EPA), in addition to aerial, 6 inch maps and satellite imagery. A habitat survey of the site was undertaken within the appropriate seasonal timeframe for terrestrial fieldwork. Field surveys were carried out as outlined in Table 8.1. All surveys were carried out in the appropriate seasons. The presence of mammals is indicated principally by their signs, such as resting areas, feeding signs or droppings - though direct observations are also occasionally made. Habitat mapping was carried out according to Fossitt (2000) using AcrGIS 10.5 and displayed on Bing satellite imagery or street mapping. Any rare or protected species or habitats were noted. As part of the fieldwork an invasive species assessment was carried out. Birds noted on site were classed based on the Birds of Conservation Concern In Ireland classification, of red, amber and green, which is based on an assessment of the conservation status of all regularly occurring birds on the island of Ireland.

Table 8.1: Surveys undertaken

Area	Surveyors	Survey Dates	**Appendix**
Terrestrial Ecology/ Avian/ Aquatic Ecology	Bryan Deegan Emma Peters, Jeff Boyle	19th February 2020, 24th May 2020 & 30th August 2021 6th September 2024, 21st May 2025	Within biodiversity chapter
Bat Survey	Bryan deegan Emma Peters Jeff Boyle and Gayle O'Farrell	24th May 2020 and 30th August 2021 14th September 2023, 15th September 2024, 1st May & 21st May 2025	Appendix 8.1
Non-volant Terrestrial Fauna Assessment	Frank Spellman	April 2nd 2024, April 2nd 2025	Appendix 8.2

8.2.1 Proximity to Designated Conservation Sites and Habitats/Species of Conservation Interest

The designated conservation sites within 15km of the site and with potential pathways were examined for potential effect. This assessment included sites of international importance; Natura 2000 sites (European sites) (Special Areas of Conservation (SAC), Special Protection Areas (SPA)) in addition to Ramsar sites and sites of National importance (Natural Heritage Areas (NHA), proposed Natural Heritage Areas (pNHA). Up to date GIS data (2025 NPWS data shapefiles) were acquired and plotted against the proposed development site. A data search of rare and threatened species within 10km of the proposed site (GIS shapefile) was provided by NPWS. Additional information on rare and threatened species was researched through the National Biodiversity Data Centre maps. Terrestrial and Avian Ecology.

8.2.2 Bat Fauna

Onsite trees were inspected for bats and/or their signs using a powerful torch (141 Lumens) – Petzl MYO RXP. The site survey was supplemented by a review of Bat Conservation Ireland's (BCIreland) National Bat Records Database. Bat detector and emergent surveys were carried out on the 24th May 2020 and 30th August 2021, 14th September 2023, 15th September 2024, 1st May & 21st May 2025.

8.2.3 Zone of Influence

The potential ZOI of the project was deemed to be the area of the site with potential for localised downstream impacts via the surface water discharge network from the development. The Ratoath

Stream and the Fairyhouse Stream are approximately 300 m and 415 m respectively from the proposed development site. Surface water from the south-west portion of the site will drain to the drainage ditch, which travels under the Fairyhouse Road where it then travels in a westerly direction towards the Bradystown Stream, which ultimately connects to the Ratoath Stream and the Broadmeadow Stream. The Broadmeadow Stream outfalls to Malahide Estuary. The remainder of the site will discharge attenuated flows to the existing surface water network on the Ratoath Outer Relief Road to the north-east.

8.2.4 Rating of Effects

The rating of effects was carried as per EPA EIAR guidelines (2022):

Table 8.2: Impact Description Terminology

Magnitude of impact (change)		Typical description
High	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Medium	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Low	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring
Negligible	Adverse	Very minor loss or alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.

Criteria for Establishing Receptor Sensitivity/Importance

Importance	Ecological Valuation
International	Sites, habitats or species protected under international legislation e.g. Habitats and Species Directive. These include, amongst others: SACs, SPAs, Ramsar sites, Biosphere Reserves, including sites proposed for designation, plus undesignated sites that support populations of internationally important species.
National	Sites, habitats or species protected under national legislation e.g. Wildlife Act 1976 and amendments. Sites include designated and proposed NHAs, Statutory Nature Reserves, National Parks, plus areas supporting resident or regularly occurring populations of species of national importance (e.g. 1% national population) protected under the Wildlife Acts, and rare (Red Data List) species.
Regional	Sites, habitats or species which may have regional importance, but which are not protected under legislation (although Local Plans may specifically identify them) e.g. viable areas or populations of Regional Biodiversity Action Plan habitats or species.
Local/County	Areas supporting resident or regularly occurring populations of protected and red data listed-species of county importance (e.g. 1% of county population), Areas containing Annex I habitats not of international/national importance, County

Importance	Ecological Valuation
	important populations of species or habitats identified in county plans, Areas of special amenity or subject to tree protection constraints.
Local	Areas supporting resident or regularly occurring populations of protected and red data listed-species of local importance (e.g. 1% of local population), Undesignated sites or features which enhance or enrich the local area, sites containing viable area or populations of local Biodiversity Plan habitats or species, local Red Data List species etc.
Site	Very low importance and rarity. Ecological feature of no significant value beyond the site boundary.

Quality of Potential Impacts on Biodiversity

	Impact Description
Negative /Adverse Impact	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).
Neutral Impact	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Positive Impact	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).

Significance of Impacts

Significance of Impact	Description of Potential Impact
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable2 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	An impact which obliterates sensitive characteristics.

Duration of Impact

Duration of Impact	Description
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

Duration of Impact	Description
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Extent of Effects	Description
Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.

8.2.5 Difficulties Encountered

No difficulties were encountered in relation to the preparation of the biodiversity report. All surveys were carried out as per standard practice CIEEM guidance and no difficulties were encountered. The bat surveys were undertaken within the active bat period (April to September) and detector surveys were possible in optimal conditions.

8.3 Baseline Environment

The site has a stated area of 12.58ha and is irregular in shape. The site is currently in use as agricultural grassland. There are some mature hedgerow boundaries defining each field. A row of single detached dwelling bound the site along Glascarn Lane to the north and northwestern boundary. The R155 is located to the west and there are 3 single storey dwellings located along this route and will be bound on 3 sides by the proposed development. The eastern boundary is adjoining to neighbouring agricultural lands. The new and proposed phase 2 of the RORR will connect to the existing completed RORR and will connect the R125 to the R155, running south along the proposed development.

8.3.1 Designated Sites

The site is not within a designated site. The nearest European (Natura 2000) site to the proposed development is 12.8 km away (Rye Water Valley Carton SAC). There is no direct or indirect hydrological pathway or biodiversity corridor from the proposed development site to this SAC. There is an indirect pathway via the surface water network to Malahide Estuary (Malahide Estuary SAC and Malahide Estuary SPA) as there is Surface water from the south-west portion of the site will drain naturally to the drainage ditch, which travels under the Fairyhouse Road where it then travels in a westerly direction towards the Bradystown Stream, which ultimately connects to the Ratoath Stream and the Broadmeadow Stream. The Broadmeadow Stream outfalls to Malahide Estuary. The remainder of the site will discharge attenuated flows to the existing surface water network on the Ratoath Outer Relief Road to the north-east.

8.3.2 Species Data

Table 8.3: European sites within 15 km of the proposed development

European Site	Distance	Direct Hydrological/ Biodiversity Connection
Special Areas of Conservation		
Rye Water Valley Carton SAC	12.8 km	**No**
Malahide Estuary SAC	16.6 km	**No (Yes, indirect)**
Special Protected Areas		
Malahide Estuary SPA	16.9 km	**No (Yes, indirect)**

Table 8.4: Nationally designated sites within 15 km of the proposed development

Designation	Site Name	Distance	Direct Hydrological/ Biodiversity Connection
pNHA	Royal Canal	12.1 km	No
pNHA	Rye Water Valley/ Carton	12.8 km	No
pNHA	Liffey Valley	13.4 km	No
pNHA	Balraith Woods	14.8 km	No

Table 8.5 National Biodiversity Data Centre Records within the 10km2 grid.

The following Protected Species were noted under the National Biodiversity Data Centre records as having been sighted within the 10km^2 grid (grid reference O05):
Common Frog (*Rana temporaria*), Smooth Newt (*Lissotriton vulgaris*), Barn Owl (*Tyto alba*), Barn Swallow (*Hirundo rustica*), Black-headed Gull (*Larus ridibundus*), Common Coot (*Fulica atra*), Common Grasshopper Warbler (*Locustella naevia*), Common Greenshank (*Tringa nebularia*), Common Kestrel (*Falco tinnunculus*), Common Kingfisher (*Alcedo atthis*), Common Linnet (*Carduelis cannabina*), Common Pheasant (*Phasianus colchicus*), Common Redshank (*Tringa totanus*), Common Snipe (*Gallinago gallinago*), Common Starling (*Sturnus vulgaris*), Common Swift (*Apus apus*), Common Wood Pigeon (*Columba palumbus*), Corn Crake (*Crex crex*), Eurasian Curlew (*Numenius arquata*), Eurasian Teal (*Anas crecca*), Eurasian Tree Sparrow (*Passer montanus*), Eurasian Woodcock (*Scolopax rusticola*), European Golden Plover (*Pluvialis apricaria*), European Nightjar (*Caprimulgus europaeus*), Grey Partridge (*Perdix perdix*), Herring Gull (*Larus argentatus*), House Martin (*Delichon urbicum*), House Sparrow (*Passer domesticus*), Jack Snipe (Lymnocryptes *minimus*), Lesser Black-backed Gull (*Larus fuscus*), Little Egret (*Egretta garzetta*), Mallard (*Anas platyrhynchos*), Mew Gull (*Larus canus*), Northern Lapwing (*Vanellus vanellus*), Northern Wheatear (*Oenanthe oenanthe*), Rock Pigeon (*Columba livia*), Sand Martin (*Riparia riparia*), Sky Lark (*Alauda arvensis*), Spotted Flycatcher (*Muscicapa striata*), Stock Pigeon (*Columba oenas*), Yellowhammer (*Emberiza citrinella*), Smooth Hornwort (*Phaeoceros laevis*), Gipsy Cuckoo Bee (*Bombus (Psithyrus) bohemicus*), Large Red Tailed Bumble Bee (*Bombus (Melanobombus) lapidarius*), Moss Carder-bee (*Bombus (Thoracombus) muscorum*), Ephemerella notata, Bifid Crestwort (*Lophocolea bidentata*), Common Crystalwort (*Riccia sorocarpa*), Common Frillwort (*Fossombronia pusilla*), Dilated Scalewort (*Frullania dilatata*), Even Scalewort *(Radula complanata*), Glaucous Crystalwort (*Riccia glauca*), Anomalous Bristle-moss (*Orthotrichum anomalum*), Bird's-claw Beard-moss (*Barbula unguiculata*), Bryum dichotomum, Common Cord-moss (*Funaria hygrometrica*), Common Feather-moss (*Eurhynchium praelongum*), Common Pottia (*Tortula truncata*), Crimson-tuber Thread-moss (*Bryum rubens*), Cylindric Ditrichum (*Ditrichum cylindricum*), Ephemerum serratum var. minutissimum, Field Forklet-moss (*Dicranella staphylina*), Flat Neckera (*Neckera complanata*), Intermediate Screw-moss (*Syntrichia intermedia*), Lesser Bird's-claw Beard-moss (*Barbula convoluta*), Marble Screw-moss (*Syntrichia papillosa*), Neat Feather-moss (*Scleropodium purum*), Pill Bryum (*Bryum violaceum*), Pink-fruited Thread-moss (*Pohlia melanodon*), Revolute Beard-moss (*Pseudocrossidium revolutum*), Rough-stalked Feather-moss (*Brachythecium rutabulum*), Schreber's Forklet-moss (*Dicranella schreberiana*), Silky Wall Feather-moss (*Homalothecium sericeum*), Silver-moss (*Bryum argenteum*), Small Hairy Screw-moss (*Syntrichia laevipila*), Streaky Feather-moss (*Brachythecium glareosum*), Swartz's Feather-moss (*Oxyrrhynchium hians*), Wall Screw-moss (*Tortula muralis*), Brown Long-eared Bat (*Plecotus auritus*), Brown Rat (*Rattus norvegicus*), Daubenton's Bat (*Myotis daubentonii*), Eurasian Badger (*Meles meles*), European Otter (*Lutra lutra*), Lesser Noctule (*Nyctalus leisleri*), Nathusius's Pipistrelle (*Pipistrellus nathusii*), Pine Marten (*Martes martes*), Pipistrelle (*Pipistrellus pipistrellus* sensu lato), Soprano Pipistrelle (*Pipistrellus pygmaeus*), West European Hedgehog (*Erinaceus europaeus*) Yellowhammer (*Emberiza citrinella*),

Invasive Species

Indian Balsam (*Impatiens glandulifera*), Japanese Rose (*Rosa rugosa*), Sycamore (*Acer pseudoplatanus*), Traveller's-joy (*Clematis vitalba*), Wall Cotoneaster (*Cotoneaster horizontalis*), Harlequin Ladybird (*Harmonia axyridis*), Jenkins' Spire Snail (*Potamopyrgus antipodarum*), Eastern Grey Squirrel (*Sciurus carolinensis*), European Rabbit (*Oryctolagus cuniculus*)

An assessment of files received from the NPWS (Code No. 2020_185), which contain records of rare and protected species and grid references for sightings of these species, was carried out. There are no recorded sightings within the Site itself, however Common Frog (*Rana temporaria*) was the nearest noted species, approximately 5 km to the southwest of the site boundary. No other species of conservation importance were noted at high resolution within 1 km^2 based on NPWS records.

Table 8.6: Species found by NPWS within 10km.

Common Frog (*Rana temporaria*), Badger (*Meles meles*), Irish Hare (*Lepus timidus subsp. Hibernicus*), Stoat (*Mustela erminea)*

8.3.3 Site Survey

Numerous site assessments were carried out as outlines in Table 8.1. The Fossitt habitat map is based on the most recent habitat assessment carried out on 21st May 2025.

Figure 8.1: Site outline

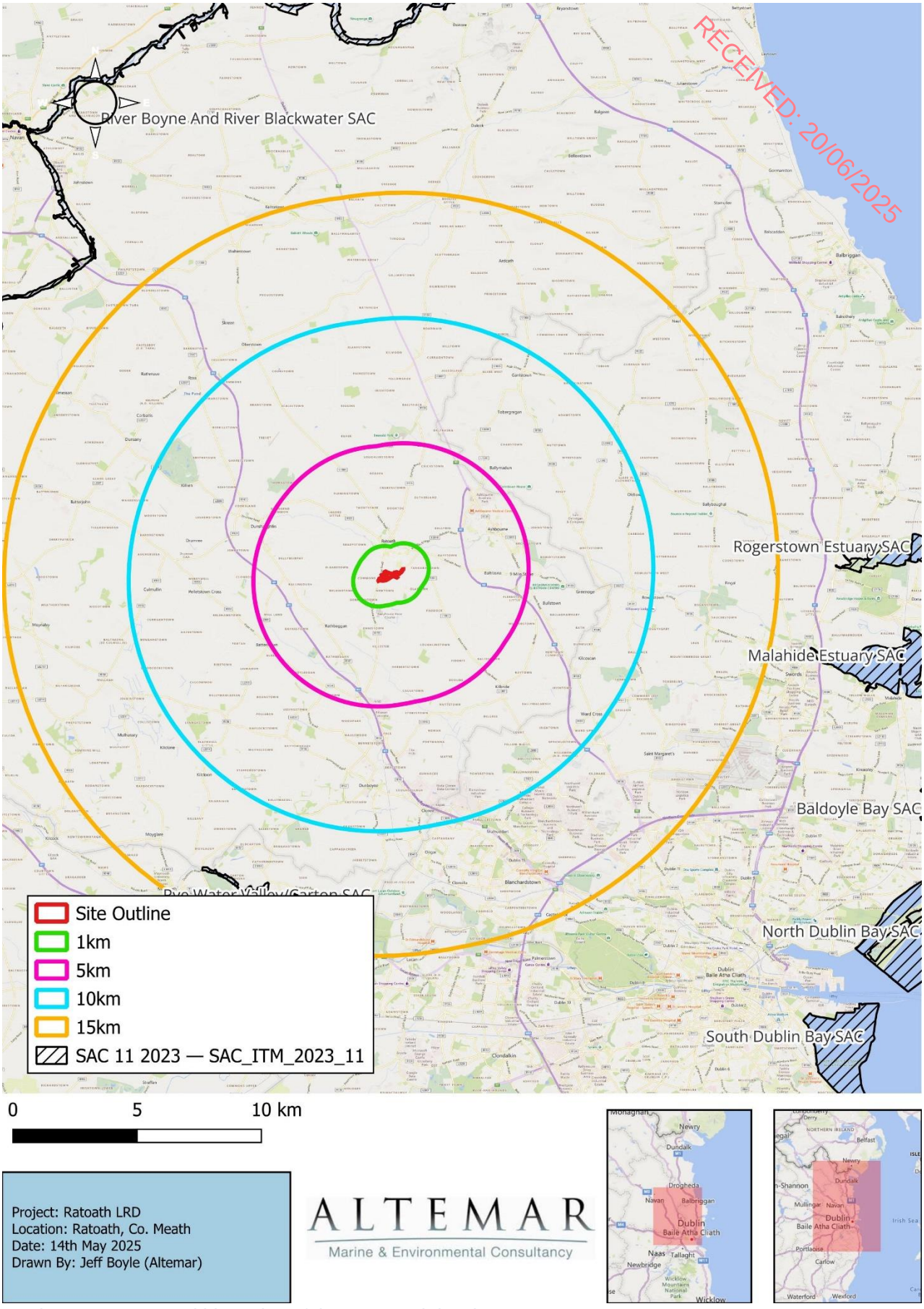


Figure 8.2: SACs within 15 km of the proposed development

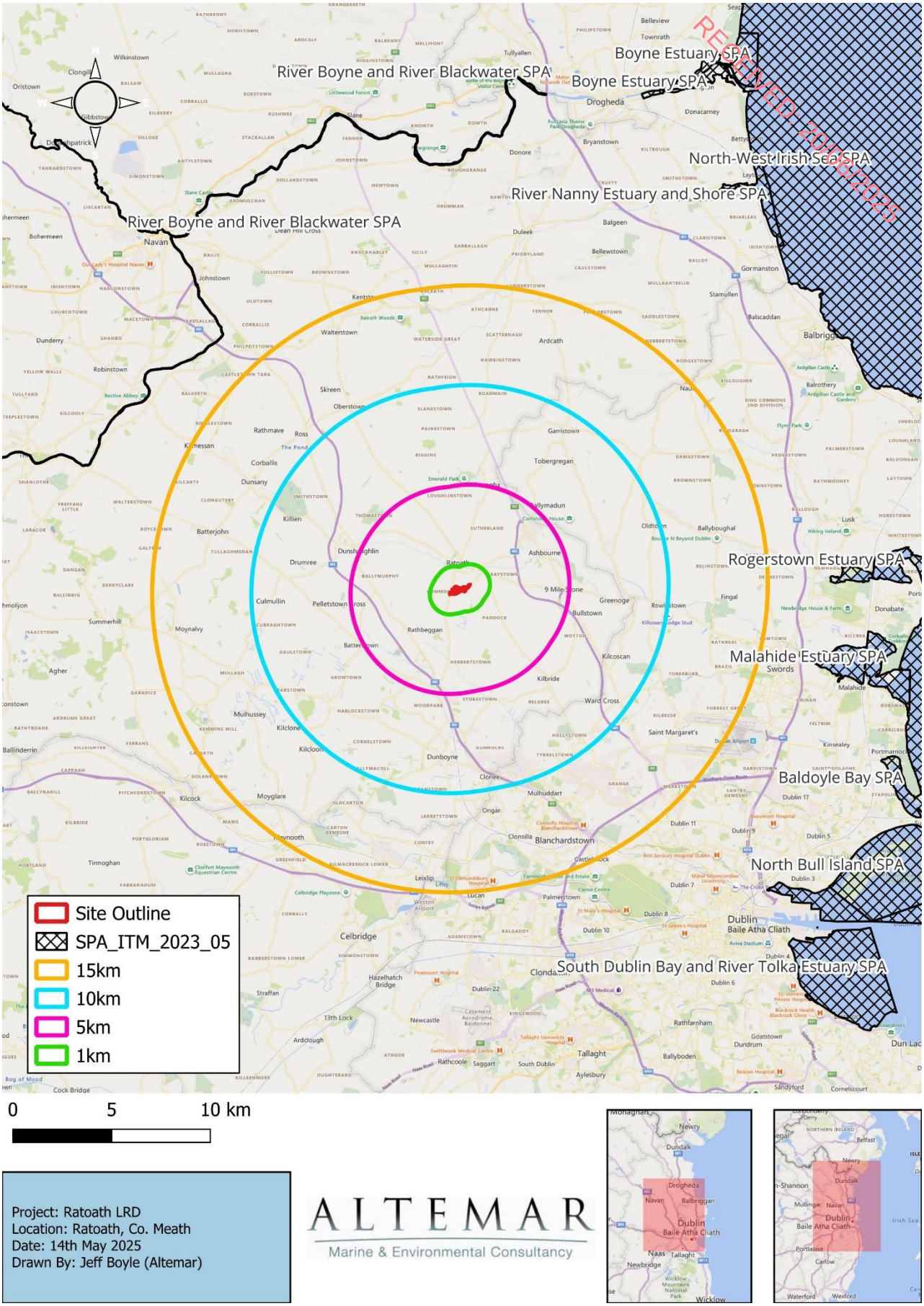
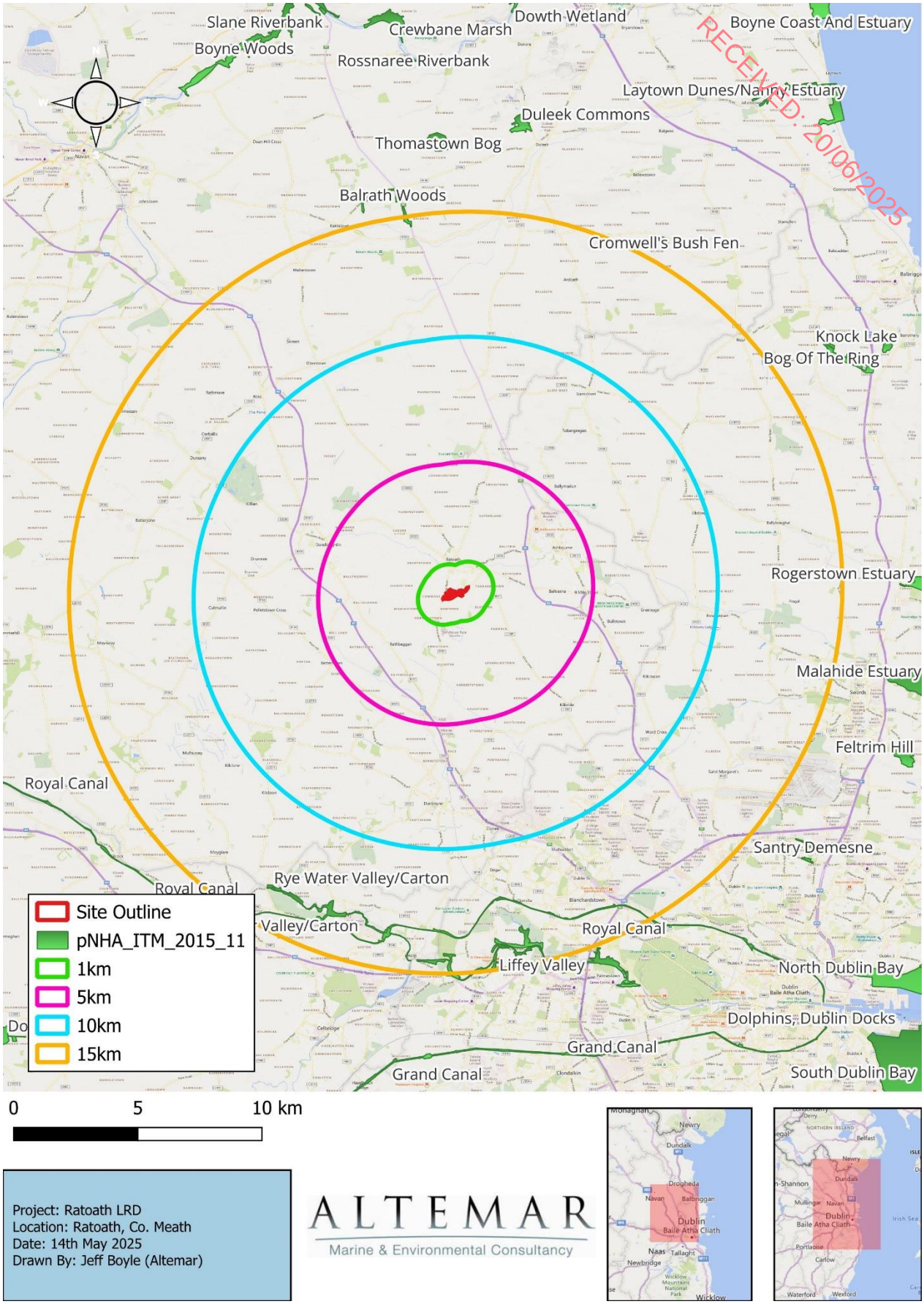


Figure 8.3: SPAs within 15 km of the proposed development



Project: Ratoath LRD
Location: Ratoath, Co. Meath
Date: 14th May 2025
Drawn By: Jeff Boyle (Altemar)

ALTEMAR
Marine & Environmental Consultancy

Figure 8.4: pNHAs within 15 km of the proposed development

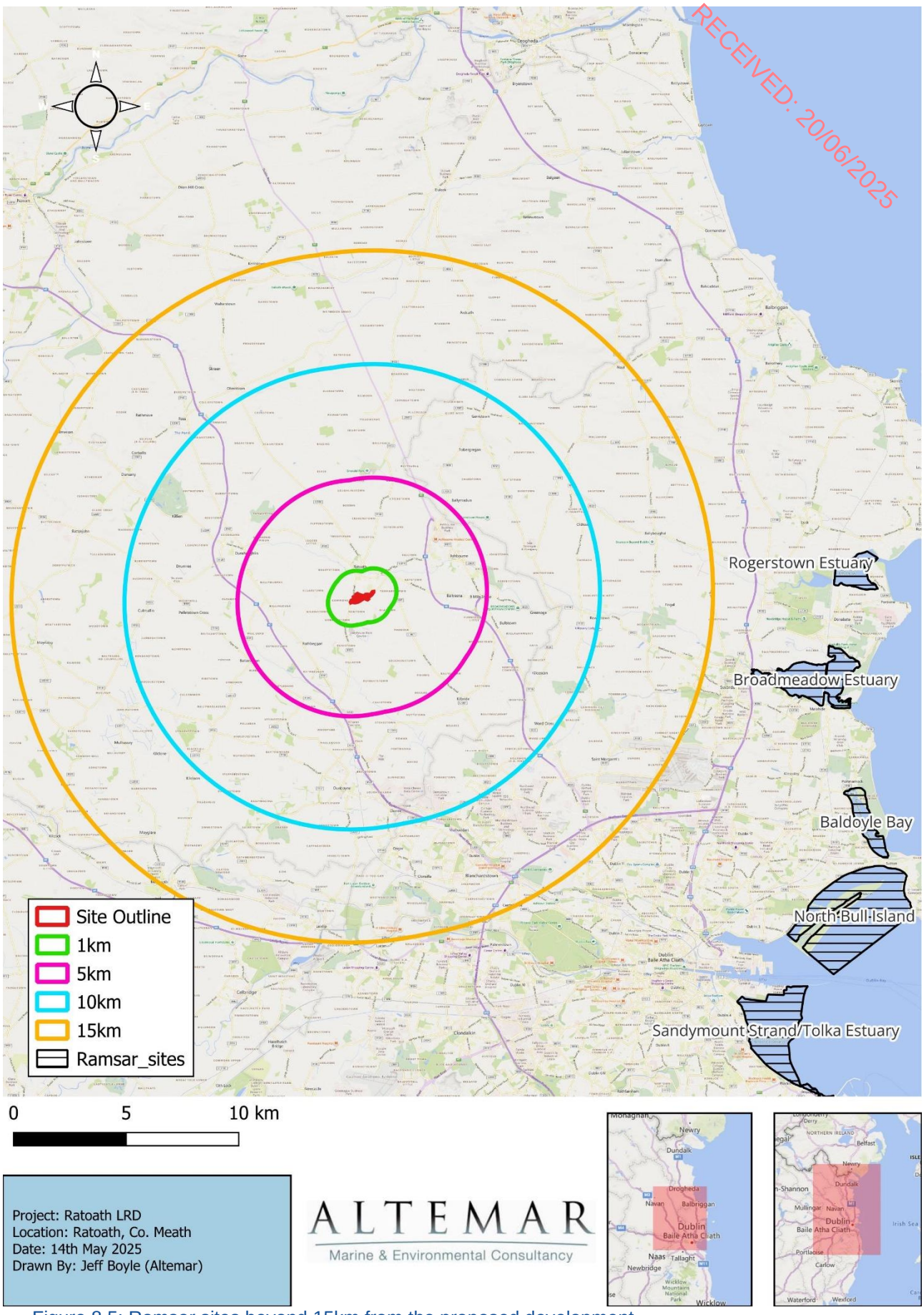


Figure 8.5: Ramsar sites beyond 15km from the proposed development

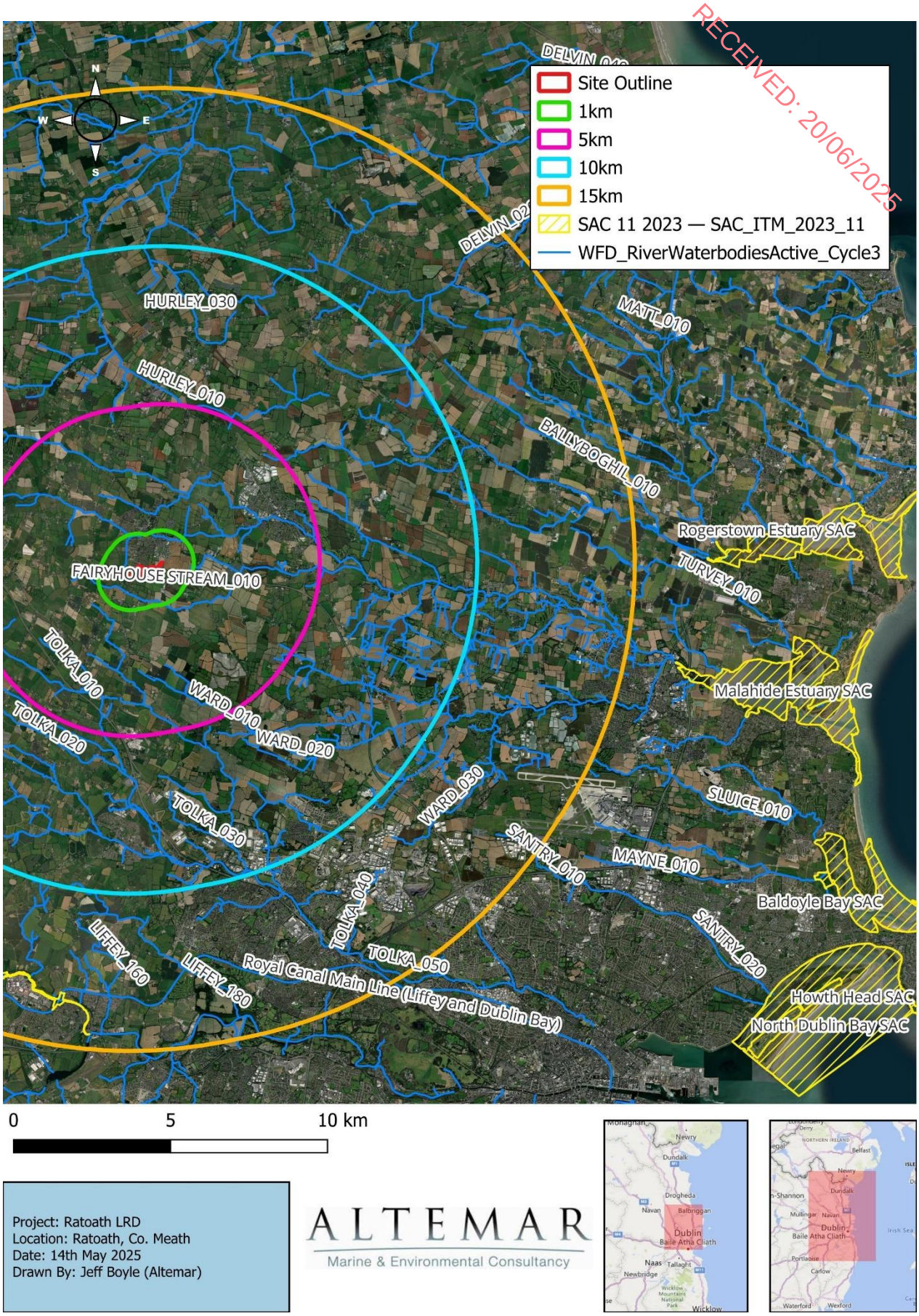


Figure 8.6: Potential hydrological pathways between SACs and the proposed development site

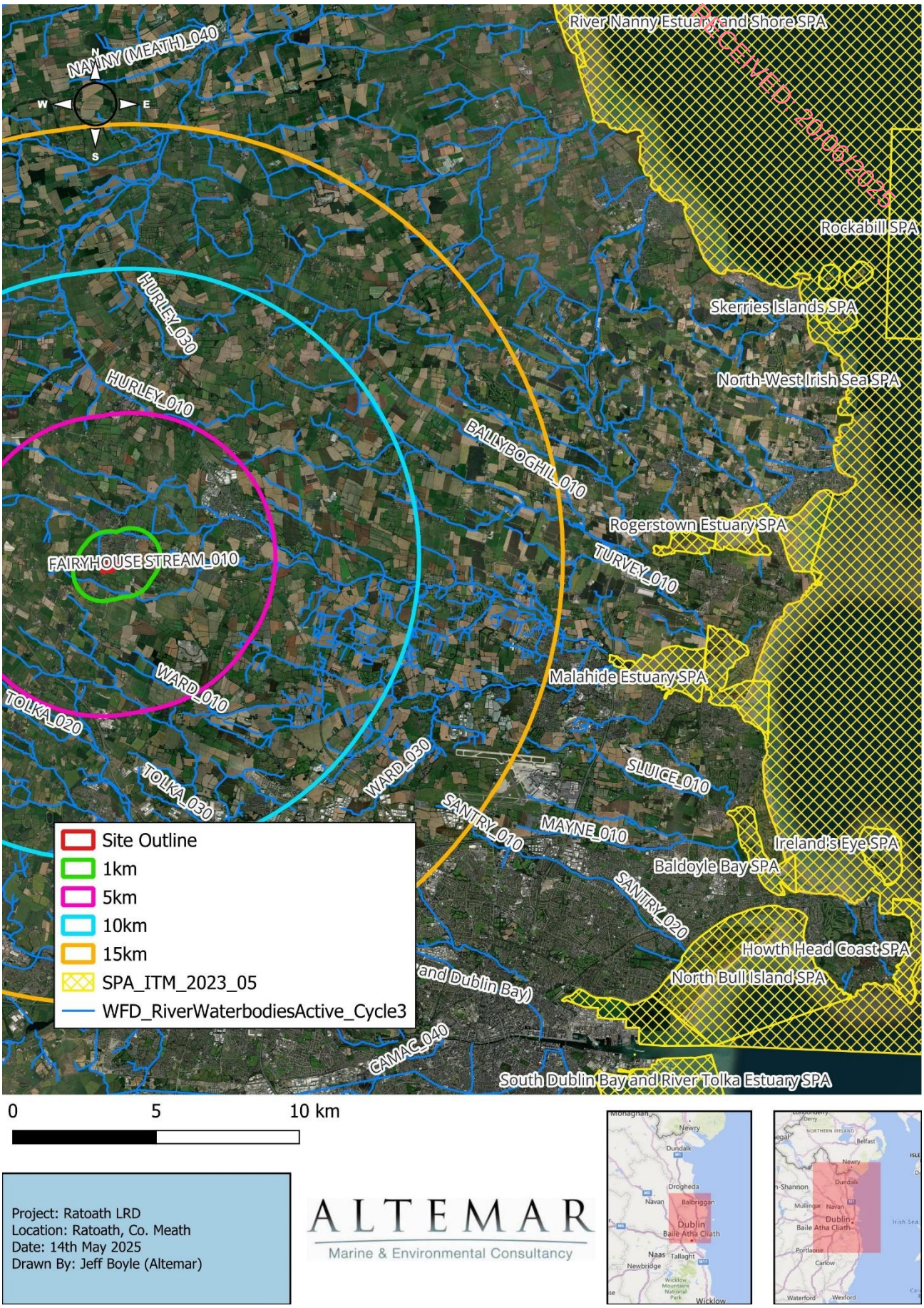


Figure 8.7: Potential hydrological pathways between SPAs and the proposed development site

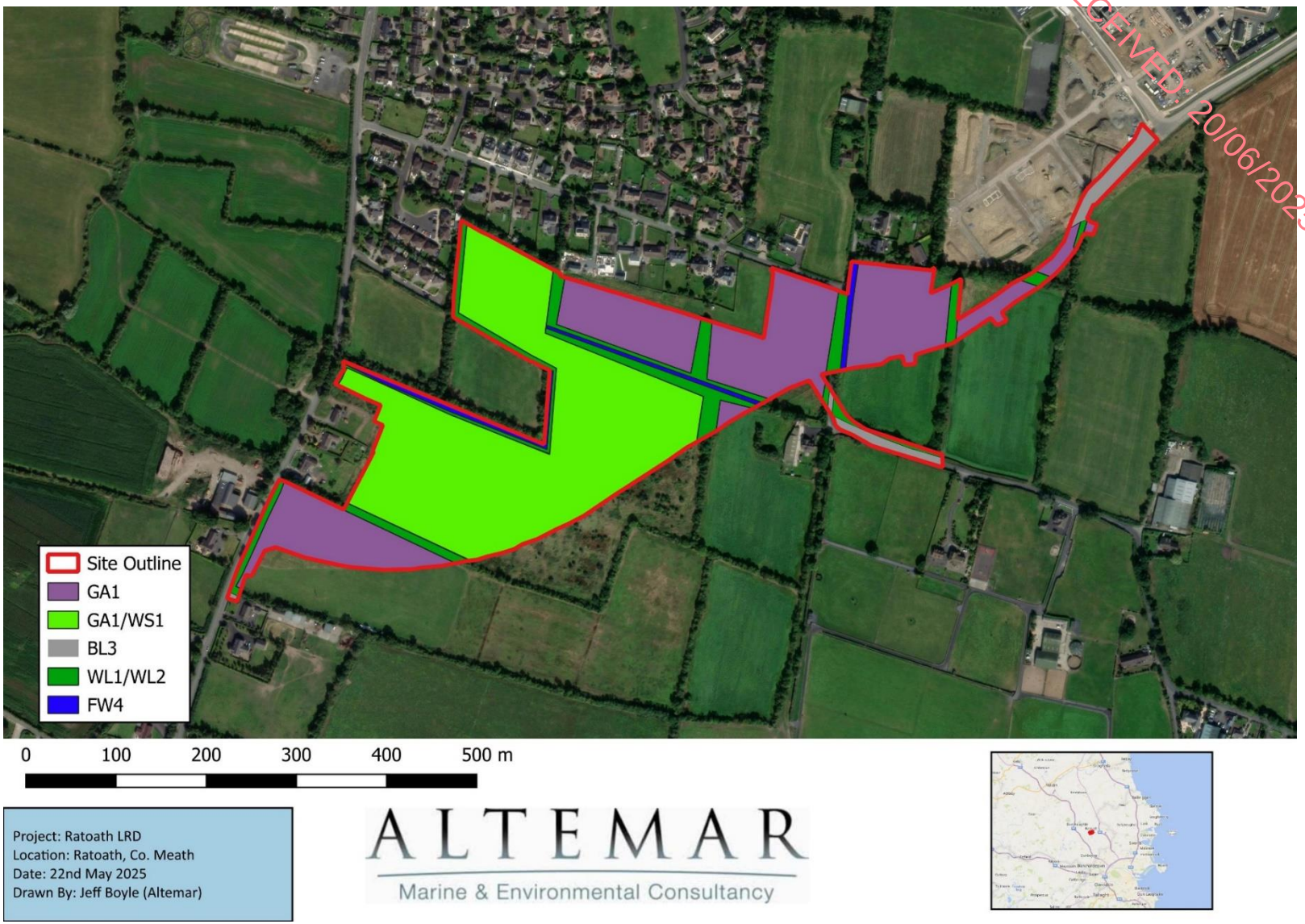


Figure 8.8: Fossitt (2000) habitat map of the proposed development site

Habitats and Species

WL1/WL2- Hedgerow/Treeline

The hedgerows within the subject site were used to separate fields and had been planted purposefully. The species noted comprising the hedgerows included willow (*Salix spp.*), brambles (*Rubus fruticosus agg*), hawthorn (*Crataegus monogyna*), rosehip (*Rosa canina* agg.), gorse (*Ulex europaeus*), blackthorn (*Prunus spinosa*), hazel (*Corylus avellana*), elder (*Sambucus nigra*) and rowan (*Sorbus aucuparia*). Many rabbit and fox tunnels were noted here. The treeline habitat was more so to the north of the site and had many mature trees of ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), oak (*Quercus sp.*), alder (*Alnus glutinosa*), hawthorn (*Crataegus monogyna*) and willow (*Salix spp*) stood within the hedgerows on site. Many of the trees were heavily clade in ivy (*Hedera helix*).

Plate 1: Treeline with hedgerow understory.

WS1 - Scrub

The hedgerows had been left unmanaged and as a result a band of bramble (*Rubus fruticosus agg*) scrub had formed along them. Throughout the fields were tufts of scrub mainly willow (*Salix spp.*), gorse (*Ulex europaus*), rosehip (*Rosa canina*) and brambles (*Rubus fruticosus agg*). The ground cover flora included nettles (*Urtica dioica*), hogweed (*Heracleum sphondylium*), common ragwort (*Jacobaea vulgaris*), meadow vetchling (*Lathyrus pratensis*), water doc (*Rumex hydrolapathum*), and bush vetch (*Vicia sepium*).

Plate 2: Bramble scrub encroaching out from the hedgerow.

GA1 - Agricultural grassland

This habitat was dominated with creeping buttercup (*Ranunculus repens*), meadow buttercup (*Ranunculus acris*) and nettles (*Urtica dioica*). Species within this habitat also included white clover (*Trifolium repens*), red clover (*Trifolium pratense*), ribwort plantain (*Plantago lanceolata*), greater plantain (*Plantago major*), broad-leafed doc (*Rumex obtusifolius*), water doc (*Rumex hydrolapathum*), marsh woundwort (*Stachys palustris*), common ragwort (*Jacobaea vulgaris*), great willowherb (*Epilobium hirsutum*), compact rush (*Juncus conglomeratus*), dandilions (*Taraxacum officinale* agg.), rose-bay willowherb (*Chamaenerion angustifolium*), great horsetail (*Equisetum telmateia*), thistles (*Cirsium spp.*), bush vetch (*Vicia sepium*),wild Angelica (*Angelica sylvestris*), cleavers (*Galium aparine*), fool's parsley (*Aethusa cynapium*), ramping fumitory (*Fumaria muralis*), rapeseed (*Brassica napus*), smooth sow-thistle (*Sonchus oleraceus*), red dead-nettle (*Lamium purpureum*), red bartsia (*Odontites vernus*), hairy tare (*Ervilia hirsuta (Vicia hirsuta)*), silverweed (*Potentilla anserina*), lesser stitchwort (*Stellaria graminea*) and bittersweet (*Solanum dulcamara*). The central field of the subject site was quite wet and left to for bramble (*Rubus fruticosus agg*) and willow (*Salix spp*) to encroach. Clumps of *Juncis* and *Carex*, including *Carex nigra* were mosaiced around this habitat.

Plate 3: Area of agricultural grassland in the north of the site.

FW4 - Drainage ditch

These habitats were found predominantly in the northern portion of the site. Duckweed (*Lemna spp.*) and water mint (*Mentha aquatica*) were noted here.

Plate 4: Drainage ditch habitat, (2023 site visit).

Discussion of habitats:

The subject site in located in a rural area comprising of fields used for agriculture purposes (GA1). The fields are bordered by hedgerow (WL1) and treelines (WL2). Bramble and willow scrub (WS1) can be found mosaiced throughout the site. To the north and west of the site there are wet drainage ditches (FW4).

Flora

The plant species encountered at the various locations on site are detailed above. No rare, high impact invasive or plant species of conservation value were noted during the field assessment. No invasive species listed under the third schedule of Articles 49/50 of the Habitats Directive (2011) were noted on site. Records of rare and threatened species from NBDC and NPWS were examined. No rare or threatened plant species were recorded within the proposed development site.

Bats

As outlined in Appendix 8.1, bat detector surveys were carried out on the 24th May 2020 and 30th August 2021. Follow up surveys were undertaken on the 1st and 21st of May 2025. Bat activity on site was not particularly high. A single soprano pipistrelle was observed emerging from a large ash tree that is covered in ivy in the central/western portion of the site (yellow circle Figure 19) during the 2020/2021 surveys. This tree and the corresponding hedgerow are to be retained. Foraging activity of Leisler's bat (Lesser Noctule) (*Nyctalus leisleri*), soprano Pipistrelle (*Pipistrellus pygmaeus*) and common pipistrelle (*Pipistrellus pipistrellus*) were noted on site primarily along the hedgerows on site.

During the 2025 surveys, a single Common Pipistrelle (*Pipistrellus Pipistrellus)* was observed foraging along central treelines. The Common Pipistrelle (*Pipistrellus Pipistrellus)* was noted emerging from an Ash tree (*Fraxinus excelsior)* which is scheduled for retention as part of the development.

Non volant Fauna

One mammal species was confirmed within the survey area by visual confirmation and behavioural evidence: badger (*Meles meles*). One amphibian species was confirmed through spawn: common frog (*Rana temporaria*). Mammal activity was observed throughout the survey area, with trails circumnavigating and crossing all fields. An area of high mammal activity was observed along the field boundaries in the northeast of the survey area. A large multi-entrance badger sett (6 entrances) was recorded to the east of the site. This is likely a breeding sett. An abandoned subsidiary badger sett was observed on the bank of a ditch within a field boundary to the south of the subject site. No evidence of other terrestrial mammals were observed within the survey area. Evidence of amphibians (spawn) was observed in ditches within the survey area. No evidence of fox, otter, pine marten, hedgehog, or deer were observed within the site outline/survey area. The area is used by locals, especially for dog walking, which is likely responsible for many of the trails on site. A review of existing records revealed that two additional species, red fox (*Vulpes vulpes*) and west European hedgehog (*Erinaceus europaeus*) have been recorded in the vicinity of the survey area. No evidence of these species was observed within the survey area.

Overall, the subject site is of importance to badger foraging and movement and to common frogs. Areas immediately adjacent, but a sufficient distance from proposed works, to the east of the site, is of breeding value to badgers. Although a lack of evidence was observed for other species, there is habitat suitability for a variety of mammals, including fox, hedgehog, and newt, and therefore it is possible that one or more other faunal species (apart from badger) or amphibian utilise an area or establish a territory within the site outline currently or in the future.

Birds

Birds observed on site are seen in table 7. No amber or red listed species of conservation importance were noted on site.

Table 8.7: Birds observed on site

Common Name	Scientific name	Conservation status
Wren	*Troglodytes troglodytes*	Green
Robin	*Erithacus rubecula*	Green
Woodpigeon	*Columba palumbus*	Green
Jackdaw	*Corvus monedula*	Green
Rook	*Corvus frugilegus*	Green
Blackbird	*Turdus merula*	Green
Chiffchaff	*Phylloscopus collybita*	Green
Pheasant	*Phasianus colchicus*	Green
Goldfinch	*Carduelis carduelis*	Green
Great tit	*Parus major*	Green

8.3.4 Overall Evaluation of the Context, Character, Significance and Sensitivity of the Proposed Development Site

The proposed development site is primarily a series of agricultural grassland surrounded by hedgerows in addition to some areas that have undergone recent construction activity and reprofiling. The drainage ditches (acting as a biodiversity corridor) and hedgerows would be seen as the most important habitats on site, not because of the species noted but, by the linear nature of the elements providing biodiversity corridors and bat foraging routes to the surrounding areas in addition to providing potential frog spawning areas due to the water retention in some ditches. No other habitats of conservation significance were noted within the site outline.

8.4 Predicted Impacts

8.4.1 Construction Phase

Designated European Sites within 15 km

The proposed development is not within a designated European site. Rye Water Valley Carton SAC is 12.8 km from the proposed development site. There is no direct or indirect hydrological pathway or biodiversity corridor from the proposed development site to this SAC. The potential impacts from the proposed development on European sites is assessed in the accompanying AA Screening. The AA screening concluded that "*On the basis of the content of this report, the competent authority is enabled to conduct a Stage 1 Screening for Appropriate Assessment and consider whether, in view of best scientific knowledge and in view of the conservation objectives of the relevant European sites, the Proposed Development, individually or in combination with other plans or projects is likely to have a significant effect on any European site. There is no possibility of significant impacts on European sites, features of interest or site-specific conservation objectives. A Natura Impact Statement is not required.*"

Impacts: ***Neutral, short-term, unlikely, localised.***

Ecology

The construction of the proposed development would potentially impact on the existing ecology of the site and the surrounding area. These potential construction impacts would include impacts that may arise during site clearance, re-profiling of the site, and the building phases of the proposed project.

Impacts: ***Minor adverse, long-term, likely, site, not significant***.

Terrestrial Ecology

During the site visits, no protected flora or terrestrial fauna species of conservation importance were recorded on-Site or in NPWS or NBDC records. Loss of habitat and habitat fragmentation may affect some common mammalian species. No protected mammals were noted on-site, with the exception of a badger footprint. Frogs and reptiles were not observed on-site. The common lizard may occur on-site but was not observed. However, the development will result in the removal of the majority of internal hedgerows in addition to some perimeter hedgerows which would form nesting and foraging habitats and drainage ditches for local biodiversity. Landscaping of the development will result in tree planting across the site, but connectivity of biodiversity corridors will be reduced. No invasive species are noted on site. An invasive species management plan is not required.

Impacts: ***Minor adverse, long-term, site, not significant***. Mitigation is required in the form of pre-construction inspections.

Bats

A bat fauna assessment (Appendix 8.1), including a bat detector survey, was carried out and bats were noted foraging on site. The removal of hedgerows will result in a reduction of foraging areas on site and lighting during construction could also reduce foraging on site.

Impacts: ***Minor adverse, negative, long term, site, not significant***. Mitigation is required in the form of a pre-construction inspection of trees to be felled, the provision of bat boxes and a post construction light spill assessment.

Avian Fauna

Clearance, reprofiling and construction of the site will result in the loss of nesting habitat in addition to foraging habitat for birds

Impacts: ***Moderate adverse, negative, medium term, site, not significant***. Mitigation is required in the form of site clearance outside bird nesting season and the provision of a biodiversity pack for each house on site to include one bird box and two native trees to provide nesting and foraging potential for birds.

8.4.2 Operation Phase

Once constructed, all on site drainage will be connected to separate foul and surface water systems. Surface water run-off will comply with SUDS. The biodiversity value of the site would be expected to improve as the landscape measures mature. It would be expected that the localised ecological impacts in the long-term would be minor adverse once the landscape has established.

Designated European Sites within 15 km

The proposed development is not within a designated European site. Rye Water Valley Carton SAC is 12.8 km from the proposed development site. There is no direct or indirect hydrological pathway or biodiversity corridor from the proposed development site to this SAC. The potential impacts from the proposed development on the European sites at Malahide Estuary (Malahide Estuary SAC and Malahide Estuary SPA) were considered as there is an indirect pathway via the surface water network. However, given the distance from the proposed development site to these European sites, any pollutants, silt laden run off or dust that enters the surface water network will be diluted or dispersed to negligible levels prior to reaching these sites. During the operational phase, foul water from the site will be treated at Ringsend WwTP and surface water discharge will ultimately discharge to the Broadmeadow Stream.

Impacts: ***Neutral long-term, unlikely, localised, not significant***.

Terrestrial Ecology

As the landscape measures improve with maturity, it would be expected that the biodiversity value of the site to birds and flora would also increase.

Impacts: ***Minor adverse, negative, long term, site, not significant***.

Bats

The proposed project will result in increased lighting and fragmentation. As landscaping matures these impacts would reduce. The buildings are solid structures with strong reflective properties and would be expected to be clearly visible to bats. Bat collisions with the buildings would not be expected.

Impacts: ***Minor adverse, negative, long term, site, not significant***. Mitigation is required in the form of the provision of bat roosting opportunities and a post construction light spill assessment.

Avian Fauna

Increased activity and lighting will result in the disturbance of avian fauna but this would be expected not to extend significantly beyond the site. As landscaping matures the biodiversity value of the site would improve.

Impacts: ***Minor adverse, negative, long term, site, not significant***. Mitigation is required in the form of the provision of a biodiversity pack for each house on site to include one bird box and two native trees to provide nesting and foraging potential for birds.

8.5 Mitigation Measures

8.5.1 Construction Phase

A Construction & Environmental Management Plan has been prepared by OCSC for the proposed development. It outlines the following measures which will be implemented to protect biodiversity in the area:

"Inland Fisheries Ireland (IFI)

Inland Fisheries Ireland (IFI) made a submission during a prior iteration of this development, on 27 June 2022. Based on this submission, the following is relevant to this development:

- *It is noted that the development is in the catchment of the Ratoath stream/Broadmeadow River, which is an important salmonid system with Brown Trout throughout. Conservation of this system will be enforced throughout the construction and operational phases of the development.*
- *Adequate pollution prevention measures will be employed during construction to ensure fauna and flora within the freshwater system is not impacted. These measures are described in the following section.*
- *Various mitigation measures are noted in this document to ensure good construction practices.*
- *As requested by IFI, comprehensive surface water treatment measures will be implemented during the construction and operational stages. Drainage from the topsoil storage area will be considered. Wheel was facilities will be provided and will be receive regular inspection and maintenance.*
- *Bio-retention areas or swales will be used for attenuation as requested by IFI.*
- *The capacity of the receiving foul and storm water infrastructure has been carefully calculated to accept predicted volumes.*
- *All discharges will be in compliance with the European Communities (Surface Water) Regulations 2009 and the European Communities (Groundwater) Regulations 2010.*

Pollution prevention

Pollution prevention measures will be undertaken in accordance with best practice guidelines from Inland Fisheries Ireland (2016). There are no sensitive fisheries habitats on the site however extensive earthworks are planned. A programme for the control of sediment will therefore be required. This will be put in place by the appointed contractor.

All works will be carried out in compliance of the Water Pollution Act 1977 and the Wildlife Act 1976 and all relevant amendments.

Only sediment-free run-off is to leave the site. A suitably sized detention basin or settlement area will be installed at the lowest point before discharge where excess run-off must leave the site. Silt curtains or earth berms will be used to channel run-off to locations where it can be controlled. These may take the form of an open detention area or, where the need arises, a portable skip/s, or similar, where inflow passes through straw bales, gravel etc. The Site Manager will be responsible for the pollution prevention programme and will ensure that at least daily checks are carried out to ensure compliance. A record of these checks will be maintained.
Preliminary locations of temporary surface water lagoons used at construction stage can be seen in the figure following. The location of the four lagoons correspond to the envisaged four phases of construction. The exact locations of these including the detailed design will be undertaken prior to construction stage by the appointed contractor."

In addition to mitigation measures outlined elsewhere in the EIAR, the following measures will be implemented to protect biodiversity:

- A pre-construction survey for bats and terrestrial mammals will be carried out. This will include an inspection for resting and breeding places for both terrestrial mammals and bats. Should resting or breeding places be found a derogation licence will be acquired from NPWS and conditions followed prior to works commencing in the vicinity of the resting or breeding place.
- An Ecological Clerk of Works (ECoW) will be appointed to oversee the construction phase and to oversee the implementation of all mitigation including compliance with Wildlife Acts and Water Pollution Acts and ensure that biodiversity in neighbouring areas including birds will not be impacted.
- Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August). If removal is required during this season the removal of woody material will be carried out under the supervision of an ecologist. If nesting birds are present NPWS will be contacted, and removal will be subject to conditions outlined by NPWS.
- It would be expected that the beneficial effects of these trees would not be seen until the medium to long term.
- Removal of deciduous trees. Should any mature broadleaved tree be scheduled for removal as part of the development plans, it will first be surveyed for roosting potential and bat presence if required. If bats are found, an application for a derogation licence should be made to the National Parks and Wildlife Service to allow its legal removal. Such trees will be felled in the period late August to late October, or early November, in order to avoid disturbance of any roosting bats as per National Roads Authority guidelines (NRA 2006a and 2006b) and also to avoid the bird breeding seasons. Any tree felling will be completed by mid-November at the latest as bats roosting in trees are very vulnerable to disturbance during their hibernation period (November – April). Trees may be removed at other times but the likelihood of encountering bats during works will be higher. Trees with ivy-cover, once felled, will be left intact onsite for 24 hours prior to disposal to allow any bats beneath foliage to escape overnight.
- 20 bird boxes and 3 bat boxes will be placed on site as an enhancement measure. Of these ten bird boxes and 12will be placed on the board walk. The position of these boxes will be carried out in consultation with an ecologist.
- An Ecological Clerk of Works (ECoW) will be appointed to oversee the construction phase and to oversee the implementation of all mitigation including compliance with Wildlife Acts and Water Pollution Acts and ensure that biodiversity in neighbouring areas including birds will not be impacted.

- Preconstruction surveys for mammals will be carried out given the high habitat suitability adjacent to the proposed works for a variety of mammal species and the time between the original surveys and possible commencement of works.
- Pre-Construction inspection for bats in trees of bat roosting potential.
- During construction, lighting at all stages will be done sensitively with no direct lighting of hedgerows and treelines.
- Lighting during construction should only be used during working hours with no floodlighting of the site.
- All lighting during construction and operation will be carried out to the satisfaction of the project ecologist.

8.5.2 Operational Phase

The biodiversity value of the site would be expected to improve as the landscaping matures. The proposed development has a sustainable drainage strategy and detailed landscape strategy and mitigation during operation will be carried out as outlined elsewhere in the EIAR. The following operation mitigation measures will be carried out:

1. Post construction an inspection of drainage connections and lighting will be carried out by the project ecologist.

8.6 Cumulative Impacts

Construction

A number of the identified impacts can also act cumulatively with other impacts from similar developments in the area.

Considering the nature of the proposed development and the adjacent residential developments, it is considered that the potential cumulative impacts are:

1. A deterioration in water quality, resulting in an impact upon aquatic biodiversity. During construction it is possible that the proposed development could act in combination with other projects underway at the same time, thereby exacerbating pollution to downstream watercourses via drainage ditches. Standard measures will be in place to ensure compliance with Water Pollution Acts. These measures are designed to avoid pollution to the greatest possible extent and with their full implementation the cumulative impact to water quality will be negative, imperceptible and unlikely.

2. Alien invasive species

There are no alien invasive plant species growing on, or adjacent to, the development site.

This impact is neutral, imperceptible and unlikely.

3. Habitat loss. This development will result in the loss of habitat which is likely to contribute to cumulative losses of similar habitat (principally hedgerow and treelines). This impact was assessed as negative, not significant, likely and long-term in the absence of mitigation. However, with the mitigation which has been proposed the cumulative effects will be neutral and not significant in the long-term.

Operation

A number of the identified impacts can also act cumulatively with other impacts from similar developments in the area. These primarily arise through the urbanisation of the landscape as provided

for by land use zoning and include: loss of habitats, particularly hedgerows and treelines; spread of alien invasive species, pollution from surface water run-off and pollution from wastewater generation.

Other developments in this vicinity include proposed or underway housing developments as listed in table above.Considering the nature of the proposed development and the adjacent residential developments, it is considered that the potential cumulative impacts are:

1. A deterioration in water quality, resulting in an impact upon aquatic biodiversity. However, given that the proposed development is not, proximate to a watercourse and anticipated to result in a significant impact upon water quality during the operational phase, and considering the nature of the development and adjacent residential developments, it is considered that there would be no cumulative water quality impacts which would pose a significant risk to aquatic biodiversity during operation. This impact is neutral, imperceptible and unlikely. Standard measures will be in place to ensure compliance with Water Pollution Acts. These measures are designed to avoid pollution to the greatest possible extent and with their full implementation the cumulative impact to water quality will be negative, imperceptible and unlikely.

2. Alien invasive species

There are no alien invasive plant species growing on, or adjacent to, the development site.

This impact is neutral, imperceptible and unlikely.

3. Habitat loss. This development will result in the loss of habitat which is likely to contribute to cumulative losses of similar habitat (principally hedgerow and treelines). This impact was assessed as negative, not significant, likely and long-term in the absence of mitigation. However, with the mitigation which has been proposed the cumulative effects will be neutral and not significant in the long-term.

Table 8.8: Summary of nearby proposals

Ref. No.	Address	Proposal
RA160969	27 Fairyhouse Lodge, Ratoath, Co. Meath	for modifications to existing openings/fenestration of all facades, a new opening to the side, modification to rooflights to the front and rear roof and all associated site works.
RA140582	19 Fairyhouse Lodge, Ratoath, Co. Meath	construction of a new single storey extension to the side of existing dwelling, amendments to three elevations inc. front, side and rear, internal alterations. New external walls and glass covered terrace pergola and all associated site works
RA181201	Glascarn Lane , Glascarn, Ratoath, Co. Meath	revised floor plans, elevations and roof design from that previously granted under RA170966 and complete all ancillary site works.
DA130908	Ground Floor Unit, Riverwalk Court, Fairyhouse Road, Ratoath, Co. Meath	change of use from retail to restaurant use with provision for the sale and consumption of hot food off the premises, to include an èxternal eating area of not more than 30 sqm to the front of the premises for seasonal use. New awning to the front of the premises and internal alterations including provision of part M compliant toilets, staff area and kitchen
RA160109	Park House, Skryne Road, Ratoath, Co. Meath	the development consists of the removal of outbuildings and existing rear extension, construction of new rear extension, alterations to existing porch, internal alterations, new driveway and all associated siteworks (on a Protected Structure)
221118	Fairyhouse Road , Ratoath , Co. Meath	(a) Single Storey Front & Rear Extension to Existing Bungalow Dwelling, (b) Revised Windows/Openings to all Elevations (c) Demolition of Existing Shed & Stables & (d) New Domestic Garage Using Existing Effluent Treatment System & Percolation Area & Using Existing Vehicular Entrance and all associated site works

Ref. No.	Address	Proposal
2560278	Cunney's Field House , Glascarn Lane Commons , Ratoath Co. Meath	Single story rear extension to existing detached garage and associated site works.
305196	Jamestown, Ratoath, Co. Meath.	228 no. residential units (114 no. houses, 114 no. apartments), childcare facilities and associated site works.
2461100	Jamestown , Ratoath , Co. Meath	Permission for a Large-Scale Residential Development: planning permission for a Large-scale Residential Development consisting of modifications to the previously granted Strategic Housing Development permitted under (ABP-305196-19) (Planning Ref. No. SH305196).The proposed modifications are to the granted 52 no. Apartment units (in 2 no. 4 & 5 storey Block 1 & Block 2 apartment buildings with under-croft basement parking)consisted of 4 no. 1-Bed, 20 no. 2- Bed & 2 no. 3 bed Apartment units.Proposed modifications to the 2 no. apartment blocks will now consist of 48 no.apartment units (in 2 no. 3 storey duplex & 5 storey apartment block with surface car parking and elimination of the under-croft basement parking) consisting of 22 no. 1-Bed, 20 no. 2- Bed & 6 no. 3-Bed Apartment units.Modifications to Communal Open space, provision of roof terrace, Bin & Bike storage,and all other associated landscaping, boundary treatments, site development, and service infrastructure works at Jamestown, Ratoath, Co. Meath. All drawings and related documents can be viewed online at www.wellfieldlrd2.ie

8.7 Residual Impact

The successful implementation of the mitigation measures outlined in this chapter of the EIAR are important elements to the successful mitigation of the loss of biodiversity on-site in addition to ensuring that works do not impact on the downstream aquatic ecology. The application of the mitigation measures outlined in this EIAR will help reduce the impact on biodiversity ecology such that significant impacts do not arise. It is considered that, where possible, biodiversity enhancement measures have been incorporated into the design for the benefit of the overall biodiversity value of the site and offset the loss of biodiversity on site. The overall residual impact of the proposed Project on biodiversity will be a minor adverse, long-term, site, not significant impact. This is primarily as a result of the loss of terrestrial habitats on-site, supported by the creation of additional terrestrial biodiversity features, mitigation measures and landscaping strategy.

8.8 Do Nothing Scenario

If the proposed development were not undertaken, it is expected that there would be no change on the subject site and, therefore, no impact on biodiversity arising from the subject site. However, in the long term it would be expected that biodiversity would improve on site as the a natural succession to dense scrub or woodland would occur

8.9 Worst Case Scenario

8.9.1 Construction Phase

A large pollution incident during the construction phase could cause short term negative impact on the watercourses downstream of the site. Mitigation measures will be in place.

8.9.2 Operational Phase

Failure of petrochemical interceptors could lead to downstream impacts.

8.10 Difficulties Encountered

No difficulties were encountered in the preparation of the Biodiversity Chapter of this EIAR.

8.11 Interactions

This chapter was prepared in coordination with the details outlined in Chapter 13 – Water; Chapter 12 – Land and Soils; and Chapter 16 - Material Assets: Waste Management.

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9 Archaeological, Architectural and Cultural Heritage

9.1 Introduction

This chapter presents the findings of an archaeological and cultural heritage impact assessment on the site of the proposed development on lands at Ratoath, Co. Meath (ITM 701928, 750512; Figure 9.1). The main purpose of this section is to assess the impact of the proposed development on the existing archaeological and cultural heritage environment.

The site was subject to a number of archaeological assessments carried out in relation to the site, both invasive and non-invasive. These include Geophysical Survey (20R0026; Russell, Breen, 2020), test trenching (21E0511; Cosgrove, 2021) and Archaeological Assessment (Collins, Lyne, 2025).

This chapter encompasses the results of all archaeological investigations undertaken in order to assess the site and allow appropriate mitigation measures to be employed.

The proposed development comprises a Large-scale Residential Development (LRD) on a site of 12.58ha within the townlands of Jamestown and Commons in Ratoath Co. Meath. The proposed development will principally consist of the construction of 364 no. residential units including 250 no. houses and 114 no. apartment / duplex units along with a creche, retail unit and café unit all with associated car and cycle parking and bin stores. Proposed building heights range from 2 no. to 4 no. storeys. Public open space is proposed across the site consisting of a central public park area and pocket parks featuring formal and informal play and amenity areas.

The proposed development also includes the construction of a section of the Ratoath Outer Relief Road (RORR) which will be continued from its current termination point in the northeast of the subject site to the existing Fairyhouse Road (R155) in the southwest. Access to the development is proposed via 2 no. vehicle access points from the new RORR. A series of pedestrian and cycle connections are proposed to site from the Fairyhouse Road (R155), Glascarn Lane and the new RORR.

Please refer to the planning application form and statutory notices (newspaper and site notices) for a full and formal description of the proposed development.

This chapter has been carried out by Donald Murphy and Magda Lyne of Archaeological Consultancy Services Unit Ltd. Donald holds a Master's Degree in Archaeology from University College Dublin (NFQ Level 9). He is a Member of the Institute of Archaeologists of Ireland. Donald is the founder and Managing Director of Archaeological Consultancy Services Unit Ltd. He has over 30 years post-graduation experience carrying out Environmental Impact Assessments, archaeological assessments and excavations. He has also completed excavations on behalf of the National Monuments Service at Knowth, the Hill of Tara, Clonmacnoise, Mellifont Abbey and Newgrange. As Project Manager/Senior Archaeologist, Donald has managed the archaeological aspect of some of the largest infrastructural schemes undertaken in Ireland, including road projects such as the N52 Nenagh Bypass Link Road (2000); M1 Northern Motorway Project (2001–2002); N22 Ballincollig Bypass (2001); M4 Kinnegad–Enfield–Kilcock Motorway (2001–2004); N25 Waterford Bypass (2003–2007); M3 Clonee to North of Kells Motorway (2005–2010); M7/M8 Motorway (2005–2008) and the N5 Westport to Turlough Road Scheme (2015–2020).

Magda holds a Master's Degree in Archaeology from the University of Adam Mickiewicz in Poznan, Poland (NFQ Level 9). She is a member of the Institute of Archaeologists of Ireland and is excavation licence eligible since 2019. She has over 12 years of post-graduation experience working in Poland, Ireland, Denmark and Norway. She excavated sites on a variety of large scale infrastructure projects (e.g. M3, N9/10, N18 and N22 road projects in Ireland, Copenhagen Metro Project, Kriegers Flak Project in Denmark). She has worked with ACSU since 2019 and specialises in archaeological desktop assessments and Environmental Impact Assessment Reports.

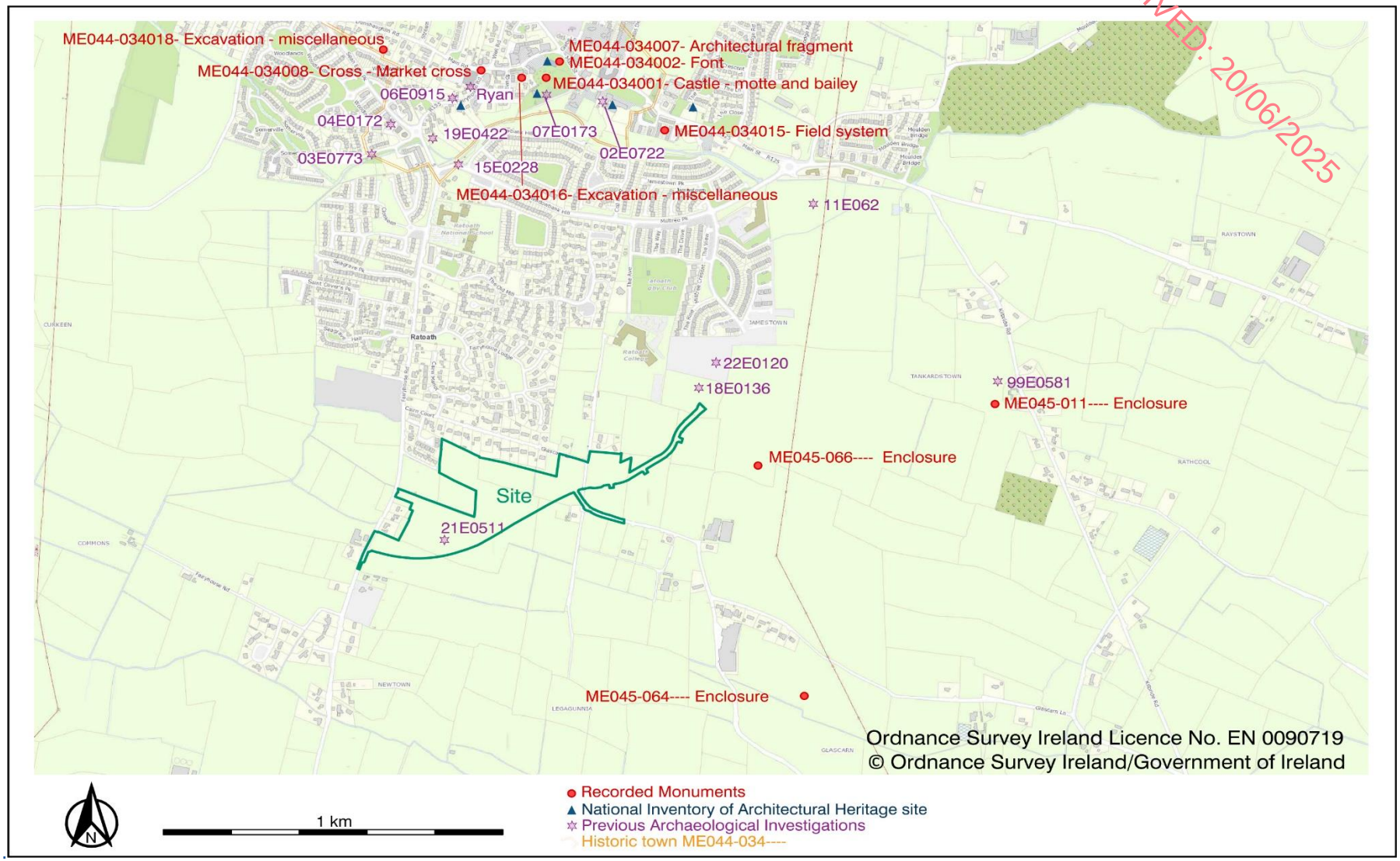

Figure 9.1: Location of site and nearby Recorded Monuments, Excavations, Protected Structures, National Inventory of Architectural Heritage sites

Figure 9.2: Extract from Down Survey map of County Meath, Barony of Ratoath (1654–56), showing approximate location of site.

9.2 Assessment Methodology

This section commences with an outline of the criteria used to assess the nature of impacts on the known and potential elements of the cultural heritage resource within the study area. The baseline information on this resource was established by a combination of desk-based research, a site inspection, a geophysical survey and test trenching, which were undertaken to identify features of cultural heritage significance likely to be affected by the proposed development.

This chapter's methodology is guided by a legislative framework that governs how aspects of archaeological, cultural and architectural heritage are protected. It has been prepared in compliance with all relevant EIAR legislation and guidance, including the recently published guidelines by the Environmental Protection Agency (EPA, 2022).

9.2.1 Documentary Sources

For the purposes of this report, archaeology, architectural and cultural heritage is considered to include the following elements:

- Sites listed in the Sites and Monuments Record (SMR)
- Record of Monuments and Places (RMP)
- National Monuments in State Care
- Topographical files of the National Museum of Ireland
- Archaeological sites listed on the National Monuments Service website
- Cartographic sources and Aerial Imagery
- Sites reported in the Excavations Database
- Tangible Cultural Heritage Sites and Features
- A list of protected monuments
- List of architectural heritage structures – the National Inventory of Architectural Heritage (NIAH)
- List of protected structures (Meath County Development Plan 2021-2027)
- Reports on archaeological assessment of the site carried out to date
- Irish placename database
- Traditions or historical figures associated with the site.

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

A primary cartographic source for baseline data for the assessment was the consultation of the Sites and Monuments Record (SMR) and Record of Monuments and Places (RMP) for County Meath (Figure 9.1) All known recorded archaeological monuments are indicated on 6-inch Ordnance Survey (OS) maps and are listed in this record. The SMR/RMP is not a complete record of all monuments as newly discovered sites may not appear in the list or accompanying maps. In conjunction with the consultation of the SMR and RMP the electronic database of recorded monuments which may be accessed on the National Monuments Service website (www.archaeology.ie), was also consulted.

National monuments in State Care Database

List of National Monuments in state care, including in the ownership/guardianship of the Minister for Housing, Local Government and Heritage.

National Monuments in the ownership/guardianship of the Minister for Housing, Local Government and Heritage are listed on the Department's website by county (www.archaeology.ie/national-monuments/search-by-county). The list for County Meath was reviewed.

The term 'National Monument' is defined by the National Monuments Act (1930) as being

'a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic, or archaeological interest attaching thereto'.

The aforementioned Act states that the consent of the Minister is required for archaeological works at or near a national monument in the ownership or guardianship of the Minister or a local authority or to which a preservation order applies. The Minister is required to consult with the Director of the National Museum of Ireland in relation to such an application for consent.

Excavation Database

The excavations database (www.excavations.ie) is an annual account of all excavations carried out under license. The database includes excavations from 1970 to the present. This database was consulted as part of the desktop research for this assessment to establish if any archaeological excavations had been carried out on or near to the proposed development area.

Topographical Files of the National Museum of Ireland

The topographical files of the National Museum of Ireland contain information pertaining to archaeological finds (mainly artefactual) and excavations in numerous townlands throughout the country which were reported to the museum from the 1920s. While many of these find spots are not recorded monuments, they can provide an indication of archaeological activity in a townland and consequently add to the archaeological potential of an area.

Cartographic sources and aerial imagery

A number of cartographic sources were also consulted as part of the assessment, namely the Down Survey map of County Meath, Barony and Parish of Ratoath (1654–56), Taylor and Skinner's Maps of 1777, the first (1835) and second edition (1909) OS maps.

Potential archaeological or cultural heritage features are marked on such maps and provide a useful resource in identifying sites particularly if they no longer have any above-ground remains.

Aerial photographs dating between 1995 and 2013 from the Ordnance Survey of Ireland and in addition, Google Earth imagery dating between 2009 and 2022 were examined.

Unrecorded archaeological sites can often be identified in aerial photographs as cropmarks or differential growth in a field.

Tangible Cultural Heritage Sites and Features

Cultural heritage is a broad term encompassing aspects of archaeology as well as architecture. Both elements can be expressed in landscape and can relate to designated landscapes, historic places, monuments, and settlements, including buildings and structures.

Townland boundaries are considered tangible cultural heritage features. The townland system is of Gaelic origin, pre-dating the Norman invasion, and many townlands have names of Irish Gaelic origin. Some townland names and boundaries, however, come from Norman manors, plantation divisions, or later creations of the Ordnance Survey when many Irish names were translated into English. The confiscations of the mid-17th century saw the townland boundaries first recorded and described in the surveys. The townland boundaries were first depicted on the Down Survey Map of 1656-58, and the work of the Ordnance Survey saw them depicted on the mapping in more detail. Townland boundaries recorded for the first edition Ordnance Survey mapping of the nineteenth century were then utilised as

formal administrative units for the census and as the basic framework for Griffith's Valuation. These are often laid along wet ditches, rivers, streams, roads, walls or topographical features. The boundaries can take a variety of forms and may consist of hedgerows and/or trees, earthen and stone banks, and/or ditches, stone walls.

Protected Structures

The Meath County Development Plan 2021-2027 was consulted as it contains the list of Architectural Conservation Areas and the Record of Protected Structures. These contain a list of Architectural Conservation Areas and a Record of Protected Structures for the County. The Record of Protected Structures lists cultural heritage sites, buildings of historic, architectural, -cultural, scientific and/or artistic interest.

These are protected by the Planning and Development Act 2000 (Part IV Architectural Heritage).

Architectural Heritage Sites

The National Inventory of Architectural Heritage (NIAH) (www.buildingsofireland.ie) database for Meath was consulted.

The National Inventory of Architectural Heritage for County Meath was consulted to determine if any architectural heritage sites were present within the proposed development site. It contains a record and evaluation of the post-1700 architectural heritage of Ireland as an aid in the protection and conservation of the built heritage. It provides the basis for recommendations of the Minister for Housing, Local Government and Heritage to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS).

Archaeological Assessment Reports

The following reports were also consulted in order to inform the assessment of all aspects of the archaeological resource within the proposed development site and to ensure that the assessment is cognisant of all relevant policies and objectives:

- Report on Geophysical Survey of lands at Jamestown, Commons, Newtown, Legagunnia, Ratoath, Co. Meath (Licence Number 20R0026) by ACSU (Russell, Breen, 2020);

Geophysical Survey, in the form of magnetic gradiometry, is a non-intrusive method that is used in Irish Archaeology. It is a method for rapidly mapping archaeological objects, structures, deposits and other features, including geological anomalies, that survive beneath the ground surface. The results are presented as a grey-scale map of anomalies detected that are interpreted by an experienced archaeologist. A licence to carry out work is required and is granted by the Department of Housing Local Government and Heritage following submission of the licence application for the site in question (in this case Licence Number 20R0026 was granted on the 29th of January 2020 to Ian Russell). Upon completion of the work, a report detailing the results of the work carried out is submitted to the Department and the National Museum of Ireland (in this case, the report was submitted in April 2020).

- Archaeological Assessment (Test Trenching) at Commons, Ratoath, Co. Meath (21E0511) (Licence Number 21E0511) by ACSU (Cosgrove, 2021);

Archaeological test trenching is carried out in advance of construction, and is undertaken across the footprint of a proposed development. Test trenches are excavated to facilitate the early identification of archaeological deposits and features. If test trenching is carried out following a geophysical survey, the trenches are placed to target anomalies detected in order to assess their significance, extent and depth. The results allow for an informed decision on how best to deal with any discovered archaeological finds or features prior to works on site commencing. A licence to carry out the work is required and is granted by the Department of Housing Local Government and Heritage following submission of the licence application for the site in question (in this case Licence Number 21E0511 was granted on the 29th of

July 2021 to Caroline Cosgrove). Upon completion of the work, a report detailing the results of the work carried out is submitted to the Department and the National Museum of Ireland (in this case, the report was submitted in October 2021).

- Archaeological Impact Assessment Report Large Residential Development at Jamestown, Commons, Ratoath, Co. Meath by ACSU (Collins, Lyne, 2025);

The Archaeological Assessment Report includes the results of non-intrusive desktop research and site inspection, in this case results of previously carried out assessments (geophysical survey and test trenching) with the results designed to identify at an early stage any potential constraints to the development and the impact that the proposal will have on the cultural heritage. It includes the results of all other assessments carried out to date (in this case the results of geophysical survey and test trenching carried out), and offers recommendations for the mitigation of any potential impacts.

Irish Placename Database

Irish Placename Database (https://www.logainm.ie/en/) was consulted for the meaning of the placenames within and surrounding the proposed development site. The database was created by Gaois, Fiontar & Scoil na Gaeilge in collaboration with The Placenames Branch of the Department of Housing, Local Government and Heritage. It contains archival records and placenames research conducted by the State. The vast majority of Ireland's geographical names are of Irish origin, while others derive from English, with a small number from Old Norse. The anglicisation process included name standardisation, which was carried out largely in the 19th century and recorded in the Ordnance Survey's work.

Field Survey

In addition, and as a part of previously carried out assessments of the site, a field survey was carried out; its results are included in the Archaeological Assessment (Collins, Lyne, 2025). The purpose of the field survey is to assess whether or not the site contains any evidence for the presence of any previously unrecorded areas or features of historical or archaeological significance.

9.2.2 Guidance and Legislation

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) (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), ratified by Ireland in 1997; and the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, 2003, ratified by Ireland in 2015.

The national legal statutes and guidelines relevant to this assessment include:

- National Monuments Act (1930) (and amendments in 1954, 1987, 1994, 2004 and 2014);
- Historic and Archaeological Heritage Bill 2023
- Heritage Act (1995);
- National Cultural Institutions Act (1997);
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act (1999);
- Planning and Development Act (2000, as amended);
- Architectural Heritage Protection: Guidelines for Planning Authorities (Department of Arts, Heritage, and the Gaeltacht, 2011); and

- Framework and Principles for the Protection of the Archaeological Heritage (Department of Heritage, Gaeltacht and the Islands, 1999)
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (Environmental Protection Agency, 2022)

9.2.3 Archaeological Heritage

The following section presents a summary of the legal and policy frameworks designed to protect the Irish archaeological resource, and further information is available in the Framework and Principles for the Protection of the Archaeological Heritage published by the Department of Arts, Heritage, Gaeltacht and the Islands (1999). 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 Arts, Heritage and the Gaeltacht. The National Monuments Act of 1930 and its Amendments are the primary means of ensuring the satisfactory protection of the archaeological resource. They include a number of provisions that are applied to secure the protection of archaeological monuments. These include the designations of nationally significant sites such as National Monuments, the Register of Historic Monuments, the Record of Monuments and Places, the Sites and Monuments Record, and the placing of preservation orders and temporary preservation orders on endangered sites.

The archaeological heritage is protected under the National Monuments Act 1930-2014 and its amendments:

- National Monuments (Amendment) Act 2004
- National Monuments (Amendment) Act 1994
- National Monuments (Amendment) Act 1987
- National Monuments (Amendment) Act 1954
- National Monuments Act 1930

9.2.4 Architectural Heritage

This section presents a summary of the legal and policy frameworks designed to protect Irish Architectural Heritage; further information is available in the 'Architectural Heritage Protection – Summary of the Guidelines for Planning Authorities'.

The legal framework in Ireland rests upon UNESCO's 'Convention Concerning the Protection of the World Cultural and Natural Heritage (1972)' ratified in Ireland in 1991, and the 'Grenada Convention (1987)', ratified in Ireland in 1997; the latter forms the basis for the protection of architectural heritage in Ireland. The architectural heritage is protected through legislative provisions that were introduced in the Local Government: Planning and Development Act 1999 and have since been replaced by Part IV of the Planning and Development Act 2000. Responsibility for this legislation lies with the Department of Housing, Local Government and Heritage.

County Development Plans contain a list of protected structures. The planning authority's responsibility is to preserve the character of places and townscapes by assigning Architectural Conservation Areas (ACA), objectives for the protection of structures, and the preservation of the character of areas, which are included in the development plan for each county. When a structure is protected, it involves the structure, its interior and the land within its curtilage and all fixtures or features, both interior and exterior. Should any work take place in relation to protected structures or the exterior of a structure located within an ACA, the Department of Housing, Local Government and Heritage must be informed at least 2 months prior to any scheduled works.

Conservation of Architectural Heritage is promoted through the National Inventory of Architectural Heritage, which was established in 1990 as a result of the Grenada Convention. This state initiative was established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act of 1999. Its role is to identify, record and evaluate the post-1700 architectural heritage of Ireland. It acts as an aid in the protection and conservation of the built heritage, and it provides the basis for the recommendation of the Minister for Housing, Local Government and Heritage to the planning authorities for the inclusion of structures in the Record of Protected Structures (RPS).

9.2.5 EIA Legislative Framework

The EIA Directives (from 1985 to 2014) set out the requirements for an EIA in European law. This assessment has been prepared in accordance with the 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 Part 10 of the Planning and Development Regulations, 2001 (as amended).

Ireland has transposed EU Directive 2014/52/EU through 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 through extensive amendments to existing planning law.

9.2.6 Statutory Consultations

The quality and type of an impact can be classed as one of the following (as per the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022):

- Negative Impact: A change which reduces the quality of the environment, for example, a change that will detract from or permanently remove an archaeological or cultural heritage site from the landscape;
- Neutral Impact: A change which does not affect the quality of the environment; or
- Positive Impact: A change that improves the quality of the environment, such as improving or enhancing the setting of an archaeological or cultural heritage site.

The below terms are used in relation to the archaeological and cultural heritage and relate to a site will be physically impacted upon or not:

- Direct Impact: Where an archaeological/cultural heritage feature or site is physically located within the footprint of the proposed development and entails the removal of part, or all, of the monument or feature; and
- Indirect Impact: Where a feature or site of archaeological or cultural heritage merit or its setting is located in close proximity to the footprint of a development.

9.2.7 Significance of Effects

Impact definitions (description of effects) are as per the most recent EPA guidelines (2022):

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 noticeable consequences.

Slight

An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

Moderate

An effect that alters the character of the environment in a manner that is consistent with existing or 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 that obliterates sensitive characteristics.

9.3 Baseline Environment

The existing receiving environment is considered a baseline situation. Archaeology is considered here to include all recorded monuments listed in the Record of Monuments and Places (RMP), National Monuments (i.e. those in the ownership/guardianship of the state), previously unrecorded sites, sites reported in the Excavations Database if not included in the RMP and find spots or sites listed in the Topographical Files.

9.3.1 Archaeological and Architectural Background

The proposed development extends across c. 12.58 hectares, incorporating land within the townlands of Jamestown and Commons in the Barony and Civil Parish of Ratoath. The site lies to the south of the town of Ratoath in County Meath.

Prehistoric period

The wider environs of the site are well represented in the archaeological record, containing evidence for some prehistoric, early medieval and medieval remains. For example, two ring-ditches were excavated c. 1km to the north (Licence no. 03E1781), ring-ditch (SMR No. ME044-043) identified as a cropmark on a 2018 aerial image lies c. 2.1km to the southeast of the site. Further examples are located to the southeast (ME045-013) and southwest (ME044-041) (see Figure 2). These monuments represent places of burial, ceremony and ritual practices that can date from the Neolithic to the Iron Age but also continue in use into the early medieval period. Towards the end of the Neolithic and the beginning of the Bronze Age, features known as ‘barrows’ emerged, and these can be defined as earthen or earth/stone construction mounds with a surrounding ditch or ditches, sometimes with a low external bank, typically less than 30 metres in diameter and most commonly associated with cremation burials (O’Sullivan and Downey 2012). In 2002, in advance of the gas pipeline works from North Dublin to Limerick, ring-ditches/barrows were excavated at Flemingtown, Co. Meath, Dalystown 1, Co. Westmeath, Knockuregare, Co. Limerick and Rath, Co. Dublin (Grogan et al. 2007). All of these sites had substantial ditches, the largest having an external diameter of 38.75m. The excavations provide evidence for this type of funerary site occurring throughout the Bronze Age (2450–800 BC) and highlight the significance of liminal space for death and burial in the form of ceremonial enclosures. McGarry (2009) states that of all the barrows excavated in Ireland, about half of them have produced the remains

of a single person, most commonly found under the mound and central to the barrow. Almost all sites, however, produce cremated human remains spread throughout the fill of the barrow ditches. This can be seen at sites such as Ballybeen, Co. Antrim (Mallory 1984) and Ballydribbeen, Co. Kerry (Dunne 2003). Another interesting feature of barrows is the presence or absence of an 'entrance' or break in the ditch. This feature provided a causeway into the monument. Entrances are present in a number of ring-ditches and ring-barrows, and although the entrance may be orientated in any direction, there is a clear preference for them facing either east or southeast. However, it must be noted that there are also many instances where entrances are not present, such as Donacarney, Co. Meath (Stirland 2017). In 2003, two ring-ditches excavated to the north of the site in advance of a large-scale residential development were set c. 5.5m apart, with one measuring 15m in internal diameter and the other 6m (Licence no. 03E1781; Wallace 2003a). The fragmentary remains of one cremation burial were identified in the fill of one ditch, but the other did not contain any burial evidence.

Some burnt pits and spreads/fulachtaí fia located to the north of the site were also discovered as a result of archaeological assessments (Licence nos 03E1300, 03E1632, 03E1781). Fulachtaí fia comprise the most commonly discovered evidence for prehistoric settlement across Ireland and represent the use of pyrolithic technology to boil water, with those noted in close proximity to a trough generally interpreted as cooking/industrial sites (Hawkes 2018). These sites generally consist of a low mound of charcoal-enriched soil mixed with an abundance of heat-shattered stones, commonly forming a horseshoe shape in proximity to a trough. They are found in low-lying marshy areas or close to streams. Often these sites have been ploughed out and survive as a spread of heat-shattered stones in charcoal-rich soil with no surface expression. Field systems are also recorded in the environs of the site, such as that in Warrenstown to the southwest (ME044-024), and these features can also date from Neolithic times onwards. However, they are more likely to be early medieval or medieval in date. Artefacts recorded by the National Museum of Ireland also demonstrate prehistoric occupation of the area, such as a fragment of a stone axehead (E551:1294) found in Grange townland, which probably represents Neolithic activity, and an unusual funerary vessel (NMI X192), described as a double 'sepulchral vessel', found in 1864 in a cist during the excavation of a ditch in Ratoath and most likely dating to the Bronze Age (Waddell 1974; 1990, 129).

Early medieval period

The landscape of the area under study also contains a high distribution of early medieval settlement (c. AD 400–1100), as indicated by the presence of enclosures, ringforts and agricultural features, including field systems and cultivation ridges. This was a time when settlement occurred as dispersed defended homesteads on lakes and across the wider landscape (O'Sullivan et al. 2012). Souterrains dating from the same period are often found in association with settlements such as ringforts. The term 'souterrain' derives from the French sous terrain, meaning 'underground'. In archaeological terms, souterrains are artificial underground structures cut into bedrock or, more commonly, built into dug-out trenches with drystone walling and large stone lintels. The primary function of souterrains seems to have been food storage as they maintain constant temperatures (c.10°c). The less well-defined 'enclosures' are generally accepted as being from the same period and may be the remnants of destroyed ringforts or similar associated sites. However, the possibility of prehistoric origins cannot be ruled out. Four enclosures are present in the environs of the development area, SMR No. ME045-066 is located c. 180m to the east of the site, SMR No. ME045-064 is located c. 0.9km to the southeast, RMP No. ME045-011 c. 0.9km to the east, RMP No. ME044-025 c. 2.4km to the south.

ME045-066 represents a circular enclosure defined by a fosse with a diameter of c.30m with a small, c.7m diameter enclosure attached to its northwest extent. The monument is not marked on any of the Ordnance Survey maps. Both ME045-066 and ME045-064 were identified in the form of cropmarks via aerial imagery, from 2017 and 2018, respectively, while ME044-025 was marked as a 'Fort' on the first edition Ordnance Survey (OS) 6-inch map. Furthermore, previous disturbances of enclosure ME044-025 produced human remains, suggesting the area is highly archaeologically sensitive and has significant potential for further human remains.

To the east of Ratoath town, in advance of the M2 Finglas-Ashbourne Road scheme, a number of important archaeological discoveries were made. Most significant was a large and multi-phased early medieval archaeological complex that was excavated at Raystown (Licence 03E1229). It comprised enclosures, souterrains, a cemetery, kilns, mills and a mill race complex (Seaver 2005; 2016). A number of excavations have also taken place in recent years in relation to residential developments in the environs, mostly concentrated within the northern and north-western part of the Ratoath town.

Medieval period

The archaeological remains at Ratoath would suggest that the area was settled sometime during the medieval period. The arrival of the Anglo-Normans in Meath in c. 1170 changed the social and political structures in this area. The area of Ratoath was incorporated into Ratoath manor, which was part of the de Lacy Lordship, and it was retained as a signorial manor of the Earl after the subinfeudation of Meath in the late 12th century (Graham 1975). The most predominant feature at the centre of the town is the motte and bailey (ME044-034001), which is of Anglo-Norman construction. A timber and earthen castle/motte was constructed at Ratoath in the late 12th/early 13th century. The motte consists of a flat-topped earthen mound with a diameter of 20m. The base is much wider and measures 62m in diameter, with the mound itself measuring 11m in height. Remains of a fosse are evident, and a rectangular bailey is visible to the southeast. Ratoath was incorporated as a borough most likely in the early 13th century. This was mentioned in the inquisition of 1333. Ratoath was the site of a manor court and a hundred court (Orpen 1921). Within the town, there is the site of an early church, on which now stands the remains of a 19th-century church. Reference to the early church is made in Bishop Dopping's Visitation Book of 1682–85 (Ellison 1971, 37–8). A late 13th or early 14th-century effigy (Hunt 1974, 213) and a 17th-century cross are to be found in the present graveyard attached to the Church of Ireland, built in 1818. The original medieval church was among the possessions of St Thomas' Augustinian abbey in Dublin, but no traces of it remain within the graveyard, apart from some dressed pieces of windows suggesting a 16th-century date. A graveslab of a knight with Lombardic letters dates that slab to the 13th or early 14th century (Hunt 1974). Ratoath was classed among the borough towns of County Meath during the reign of Henry VI (15th century).

Post-Medieval Period

In 1795, a turnpike road was built between Curragha and Ratoath (Andrews 1964). A suitable infrastructure was needed, and the introduction of toll roads was the result of economic prosperity under the Protestant Anglo-Irish. These toll roads are easily recognised as they run in straight lines. Lewis (1837) mentions an abbey dedicated to St Mary Magdalene in Ratoath. He also notes the manufacture of sacking and the weaving of linen carried out on a small extent and remarks that the land is profitable for cultivation and stone of good quality is quarried. Corballis Esq had his principal seat at the Manor House in town, which is an example of a Protected Structure (RPS ID. 91453), as listed in the Meath County Development Plan 2021-2027.

Fairyhouse Racecourse, located to the south of the site, is noted for the first time on the third edition OS 25-inch map, where a Grand Stand, Pavilion and Flagstaff are all depicted. The first race at Fairyhouse Racecourse was held in 1848, with the Irish Grand National steeplechase held since 1870.

A structure was identified within the site on the 1835 map (Figure 9.11). CHA1 was identified during this assessment as a result of the examination of cartographical imagery and appears to consist of a structure/building with a plot, probably a house and garden. The structure's gable faces the road, now Fairyhouse Road. The structure and the plot were no longer depicted by the time of the 1909 map, suggesting both were removed.

The structure might represent a vernacular structure. The term 'vernacular structures' is used to describe a structure built between 1650 and 1850; however, some structures of the early 20th century can be included. The structures represent mostly houses, usually built by occupants with the help of family and neighbours. They were known as ernhaus (hearth house) and had a main cooking hearth,

were rectangular in shape, usually single-story, one room, with a loft; if more rooms were present, these would be entered from adjoining rooms. Door(s) and windows were placed along long walls with a fireplace set in the middle of the cross walls (O'Reilly 2011). Campbell (1937) identified two house types in Ireland, one with a central hearth and one with a gable hearth. The vernacular structures varied regionally and locally.

9.3.2 National Monuments in State Care

No National Monuments are located on or within the immediate environs of the proposed development site. A National Monument (Guardianship) is located c. 5.1 kilometres (km) to the northwest, in Dunshaughlin town centre and consists of a monument registered as a Church with a carved door lintel (Nat. Mon. No. 400, SMR ME044-033002).

9.3.3 Recorded Monuments

No recorded archaeological monuments are located within the proposed development site boundary, as listed in the Record of Monuments and Places (RMP) and shown on the associated maps.

There are three monuments located within a 1km radius of the edge of the site. These include three enclosures ME045-066, ME045-064----, ME045-011----, a field system ME044-034015- and the south edge of the zone of archaeological potential associated with Ratoath Historic town ME044-034. The nearest of these is enclosure ME045-066, located c. 180m to the east of the site. This monument is scheduled for inclusion in the next revision of the Record of Monuments and Places. This enclosure has no above-ground presence recorded but is clearly visible on aerial photographs as a cropmark.

The surrounding landscape is also rich in recorded monuments, ranging in date from the prehistoric period to post-medieval times. The following is a list of the recorded monuments located within the environs of the site. These descriptions are derived from the published Archaeological Inventory of County Meath (Moore 1987). In certain instances, the entries have been revised and updated in the light of recent research and are available in the National Monuments Service Archaeological Survey Database (http://maps.archaeology.ie/historicenvironment/).

Table 9-1: Recorded Monuments

RMP No./ SMR No.	Class/Site Type	Townland	Description
ME045-066----	Enclosure	Jamestown	Circular area measuring c. 30m in diameter, no surface expression. Described in SMR file as: *Located on a slight N-facing slope. The faint cropmark of a circular enclosure (diam. c. 30m E-W) defined by a slight fosse W-N-E is visible on Google Earth (07/05/2017). A small enclosure (diam. c. 7m) defined by a fosse is attached to the NW.*
ME045-064----	Enclosure	Glascarn	Sub rectangular area measuring 55m in diameter, no surface expression. Described in SMR file as: *Located on a fairly level landscape. The cropmark of a subrectangular enclosure (dims c. 55m NE–SW: c. 50–55m NW–SE) defined by fosse or drain features is visible on Google Earth (07/05/2017; 24/06/2018). It is bisected by the cropmark of a N–S drain, and was first reported by Jean-Charles Caillére.*
ME044-043----	Ring-ditch	Mullinam	Circular area measuring c. 8m in diameter, no surface expression. Described in SMR file as: *Situated on a slight NW-facing slope in a fairly level landscape. The cropmark of a small circular feature (diam. c. 8m) defined by a single continuous ditch*

RMP No./ SMR No.	Class/Site Type	Townland	Description
			feature is visible on Google Earth (24/06/2019). It is also visible on Digital Globe (2017). It was first reported by Jean-Charles Caillére.
ME044-025----	Enclosure	Ennistown (Ratoath By.)	Oval area measuring c. 73m by 30m, some surface remains. Described in SMR file as: *Located on a low NW-SE ridge. This monument is depicted as a D-shaped embanked enclosure backing onto the townland boundary with Mullinam at E and S, and with an internal oval quarry pit on the 1836 edition of the OS 6-inch map where it is described as a 'Fort'. It is represented as a D-shaped hachured feature backing onto the townland boundary on the 1908 edition. The N and W boundaries were removed in the 1960s when bones were said to have been found. It was described in 1969 (SMR file) as a subrectangular area (dims c. 73m NW-SE; c. 30m NE-SW) that was stony at its N edge. A house had been built on it by 1995 (OSIAP).*
ME044-041----	Ring-ditch	Warrenstown (Ratoath By.)	Circular area measuring c. 9m in diameter, no surface expression. Described in SMR file as: *Situated on a fairly level landscape. The cropmark of a small circular enclosure (int. diam. c. 7m) defined by a single continuous fosse feature is visible on Google Earth (24/06/2018). It was first reported by Anthony Murphy.*
ME045-013----	Ring-ditch	Glascarn	Circular area measuring c.20m in diameter, no surface expression. Described in SMR file as: *Cropmark ring (diam. c. 20m) (Cambridge University Collection of Aerial Photographs Ref.: AVF 41). It is also visible on Ordnance Survey Ireland Aerial Photographs (2005).*
ME044-024----	Field system	Warrenstown (Ratoath By.)	Rectangular fields, defined by scarps (dims. up to 30m by 20m) covering c. 8 acres. Described in SMR file as: *Located on a S-facing slope at the E extremity of what might have been the medieval extent of Ratoath. It might also be on the grounds of the Manor House, an eighteenth century mansion just to the NW. The Manor House is probably on the site of the medieval manor house, which was described in an inquisition of 1333 as half an acre surrounded by a square ditch (Orpen 1921) and was probably a moated site. Archaeological testing (01E0359) by J. Ó Neill in a green area of about 4 acres (c. 1.5 ha) identified cultivation ridges (Wth c. 1m) which produced medieval pottery, while medieval pottery was also recovered from the topsoil (excavations.ie 2001: 1041). The furrows survived best at the bottom of the slope close to W-E Broad Meadow River but not on the flat ground immediately adjacent to it. In the same area there were also deeper ditches (Wth c. 0.6-3m) placed c. 12m apart cut into the subsoil and dividing the area into plots. No house structures or evidence of settlement was recorded in the area. (O'Neill 2001)* *Further monitoring (02E1454) by M. Fitzpatrick recovered more medieval and post-medieval*

RMP No./ SMR No.	Class/Site Type	Townland	Description
			pottery from the topsoil and identified further N-S or NW-SE linear cut features (Wth 1.4m ; D 0.5m) (excavations.ie 2002:1515). These were placed c. 10-15m apart with some slighter E-W cuts (Wth 0.5m; D 0.01m) off-set from them. The latter are probably furrows but the former are probably boundaries delineating burgher plots from the medieval settlement. No house sites were identified. The area was subsequently developed for modern housing. (Fitzpatrick 2001)
ME045-011----	Enclosure	Tankardstown (Ratoath By.)	Circular area defined by fosse (diam. c. 60m). Described in SMR file as: *Situated on a rise in a fairly level landscape. This is depicted as a circular embanked enclosure (ext. diam. c. 50m) and described as a 'Fort' in gothic lettering on the 1836 edition of the OS 6-inch map. It is depicted as a D-shaped enclosure (ext. dims c. 60m NNE-SSW; c. 60m WNW-ESE) defined by a ditch or drain on the 1908 edition. The monument was planted with wheat in 1970 but the yellow clay of what had probably been an inner bank was then visible (SMR file), and it was probably a rath. A subrectangular enclosure (dims c. 50m NNW-SSE; c. 50m WNW-ESE) defined by a wide and curving fosse (Wth c. 4-5m) is visible on Google Earth (21/07/2021). (Feeley 2001, 62, No. 66)*
ME044-034----	Historic town	Ratoath	Only the very south extent of the zone is within the 1km of the site. The zone of archaeological potential incorporates 18 recorded monuments, including a motte and bailey (ME044-034001-); a font (ME044-034002-); a church (ME044-034003-); architectural fragments (ME044-034004- & 007-), an effigial tomb (ME044-034005-); a churchyard cross (ME044-034006-); a market cross (ME044-034008-), a cistern (ME044-034011-); cultivation ridges (ME044-034015-); a graveyard (ME044-034017-); and miscellaneous sites uncovered as a result of excavations (ME044-034009-, 010-, 012-, 013-, 014-, 016 & 018-).

ME044-034---- Described in SMR file as:

Ratoath is situated on a locally prominent hill with a W-E section of the Broad Meadow River just to the S. The name, signifying the 'fort of Thó' or what is more likely 'O thuaidh (North)', is the only indication of a pre-Anglo-Norman presence and a rath may be incorporated into the base of the motte. This area was retained by Hugh de Lacy in the Anglo-Norman settlement of Meath after 1171. He granted the churches of Dunshaughlin and Ratoath to St Thomas' Augustinian abbey (DU018-020051-) before 1183, and the rectory of Ratoath was still amongst the possessions of St Thomas' at its suppression in 1540 (White 1943, 35). On Hugh's death in 1186 Meath was inherited by his son Walter who granted the baronies of Morgallion and Ratoath to his brother Hugh before 1198. The younger Hugh probably built the motte and bailey, and he may have granted a charter to Ratoath c. 1200. This Hugh became the first Earl of Ulster in 1205 after he had taken over the de Courcy lordship (Orpen 1921, 69).

The castle (i.e. motte) of Ratour or Ratouth is referred to frequently in the thirteenth century. The manor was forfeited by Hugh in 1210 but it was returned to Walter de Lacy in 1215. The lands and castles in Walter's charge including Ratoath were seized by the King again in 1224 but they were returned to

Hugh de Lacy in 1227, when the right to hold a fair lasting thirteen days at Ratoath was also granted. David FitzWilliam, the baron of Naas, had an interest in Ratoath in 1244 through his wife, Matilda, a daughter of Hugh de Lacy. In 1283 Sir Roger de Clifford, a Welsh baron, sold the manor of Ratoath to Queen Eleanor, the wife of King Edward I. Ratoath had probably been granted to Roger by King Edward to help Roger raise some ransom money as he was held captive in Wales, and Eleanor almost immediately granted the manor to Richard de Burgh, Earl of Ulster, known as the Red Earl. The manor had passed to the Duke of York with the liberty of Trim before 1449 when it was granted the right to hold weekly markets on Monday, and two fairs, each of two days duration, during the year. (Bradley and King 1985, 123)

An inquisition in 1333 found William de Burgh, a grandson of the Red Earl, possessed of the manor of Ratoath at his death, and he had held it in capite from the King. The manor had no buildings but its site is described as half an acre surrounded by a square ditch, and this suggests that not only the motte and bailey but even this moated site were abandoned as the manorial centre, although two carucates (townlands) and 100 acres were in the demesne. The burghers of Ratoath paid over £6 in yearly rent (Orpen1921, 76), indicating that the settlement may have had over a hundred heads of households. It also had a manorial court and there was a mill. About 160 acres are described as Betaghsland, meaning the native Irish settlement, which could be Baytown in Kilbride parish. About thirty five free tenants are named, amongst whom the names Cruys, Tuyt, Cusack, de Bathe, and FitzLeon recur, but the most common name is Bereford. Many of the townlands in the barony can be identified by name. (Orpen 1921)

According to the Civil Survey (1654) in 1641 Ratoath townland had 21 proprietors, but only four of these lived there. However, 82 lettings described as tenements or messuages are dependent on them, and the town had a portreeve or mayor and a sergeant (Simington 1940, 106-07). There was a corn mill in repair on the river called the Gore Water, according to the terrier or commentary on the Down Survey (1656-8) parish map. This was probably on the S side of the river where a mill is depicted on the 1835 edition of the OS 6-inch map. The terrier says that the market for provisions and linen was on Mondays. It describe the motte as at the S edge of the town, and the map shows the 62 acres of the town on the N side of the river. Ratoath had a population of 166 c. 1659 (Pender 1939, 487). However, it maintained its status as an incorporated town into the eighteenth century as it continued to send two members to the Irish Parliament up to its dissolution in 1800. The electors appear to have been the adult males of the manor or parish. By this time the Corballis family were the largest landowners and lived in the Manor House, a seven bay, two storey house which was built c. 1780 and is now a nursing home. It is located c. 170m ESE of the motte, and is possibly on the site of the old moated site that was the centre of the medieval manor.

Apart from the motte and bailey, the site of the medieval church is known as well as the location of the market where the Market cross once stood. The burgage plots as depicted on the 1835 edition of the OS 6-inch map are on either side of the Dunshaughlin Road. There are also plots extending S from Main Street and the sinuous Fairyhouse Road to the W-E Broad Meadow River that is c. 70m S of the motte and bailey.

The town had no defensive wall but this does not preclude an earthwork boundary consisting of an earthen bank and external ditch. Such a ditch (ME044-034012-) was found in archaeological testing of a sewage pipe on the Kentstown road as well as a medieval roadway, a cistern and cut drains that are probably property boundaries. Archaeological monitoring (02E1563) by B. Shanahan of a services trench (D 0.6-0.9m) outside the perimeter of the grounds of the Roman Catholic church NW-NE and west as far as the site of the market cross identified but did not excavate three pits and three ditches of likely medieval date beneath more modern features (excavations.ie 2002: 1516), and other boundaries between plots have been discovered in other excavations within the town.

9.3.4 Summary of Previous Archaeological Fieldwork

An area to the northeast of the site was subject to archaeological testing and monitoring carried out under licence 18E0136 (Roycroft 2018) in advance of the Ratoath Outer Relief Road, exposing nothing of archaeological significance. More recently, an archaeological assessment including geophysical survey under licence 23R0119 and subsequently test trenching (Piera, Lee 2022a; Piera,

Whitaker 2023) and excavation under licence 22E0120 (Piers, Murtagh 2022b) were carried out. Features associated with prehistoric burnt mound activity were identified and excavated. These included pits, postholes, troughs and spreads of heat-affected material on a natural depression in which peat had accumulated over time.

As a part of the archaeological assessment of the site, both non-invasive and invasive archaeological investigation was undertaken in 2020 and 2021 in relation to the Proposed Strategic Housing Development on lands to the Immediate South of Ratoath, Co. Meath. These included geophysical survey (non-invasive) and test trenching (invasive). The geophysical survey was carried out under licence 20R0026, while test trenching of an area measuring 10.3ha was carried out under licence 21E0511 (both were issued by the Department of Housing, Local Government and Heritage in consultation with the National Museum of Ireland). Furthermore, the very northeastern portion of the current site (including road footprint) was subject to monitoring carried out under licence 22E0120 and is in the preparation stage (Pierre, pres. Comm.)

Below is a brief description of the findings:

Geophysical Survey (Licence Number 20R0026)

The geophysical survey (20R0026) of a larger area that the site is a part of was carried out by Ian Russell of Archaeological Consultancy Services Unit Ltd (ACSU). This was carried out between February and March 2020. Fields 1 - 6 and 21 were subject to geophysical survey, while Fields 7 - 9 were not (Figure 9.3). The geophysical survey included a full, detailed gradiometer survey and was undertaken throughout the application area using a Bartington GRAD 601-2 dual sensor fluxgate gradiometer system. A detailed survey was conducted with a sample interval of 0.25m and a traverse interval of 1m for all the survey areas within the site of the proposed development, with variations in the magnetic field (between -100nT to +107.834nT).

No definitive signs of an archaeological site were identified; however, some of the field boundaries visible on the Ordnance Survey mapping have been detected (Figure 9.4). Also, an anomaly that may represent an old trackway or 'boreen' (Anomaly E), or possibly the remnants of ridge and furrow ploughing, is visible extending east-west across the northern half of the large field in the north-east part. Additional possible anomalies (Anomalies F, G & H) were interpreted as possibly representing areas of archaeological activity, perhaps in the form of burning or pits. There were no anomalies within the northwest corner of Field 6.

The report prepared (Russell, 2020) recommended targeted archaeological assessment in the form of test trenching to be carried out in order to assess the nature and extent of the identified anomalies, in particular the nature of the strongest linear anomalies as well as a number of the stronger magnetic anomalies identified elsewhere in order to ascertain their archaeological significance. More general testing of the subject area was also recommended in advance of any proposed development of the site to confirm the geophysical survey results.

Below is an extract from the geophysical survey report prepared by Russell & Breen (2020), detailing the results of the survey for relevant fields (Figure 9.3 and 9.4).

***Field 1** is located in the northwest corner of the development area; formerly cultivated or grazed it now lies abandoned. Long grasses as well as a mixture of new trees and shrubs have taken over. The field is flanked by housing estates along its northern and western edges. High magnetic disturbance is present along the northern perimeter of the field as well as the southwest corner (A). This is likely the result of modern ferrous structures such as fencing and or gateways.*

A number of dipolar anomalies (B) identified along the western portion of the field are also likely to be the result of modern ferrous objects that may be scattered throughout the subsoil. Two small irregular shaped positive anomalies (C) and (D), may represent cut features and may be archaeological in nature. However, given the lack of a definitive archaeological site with which they may be associated.

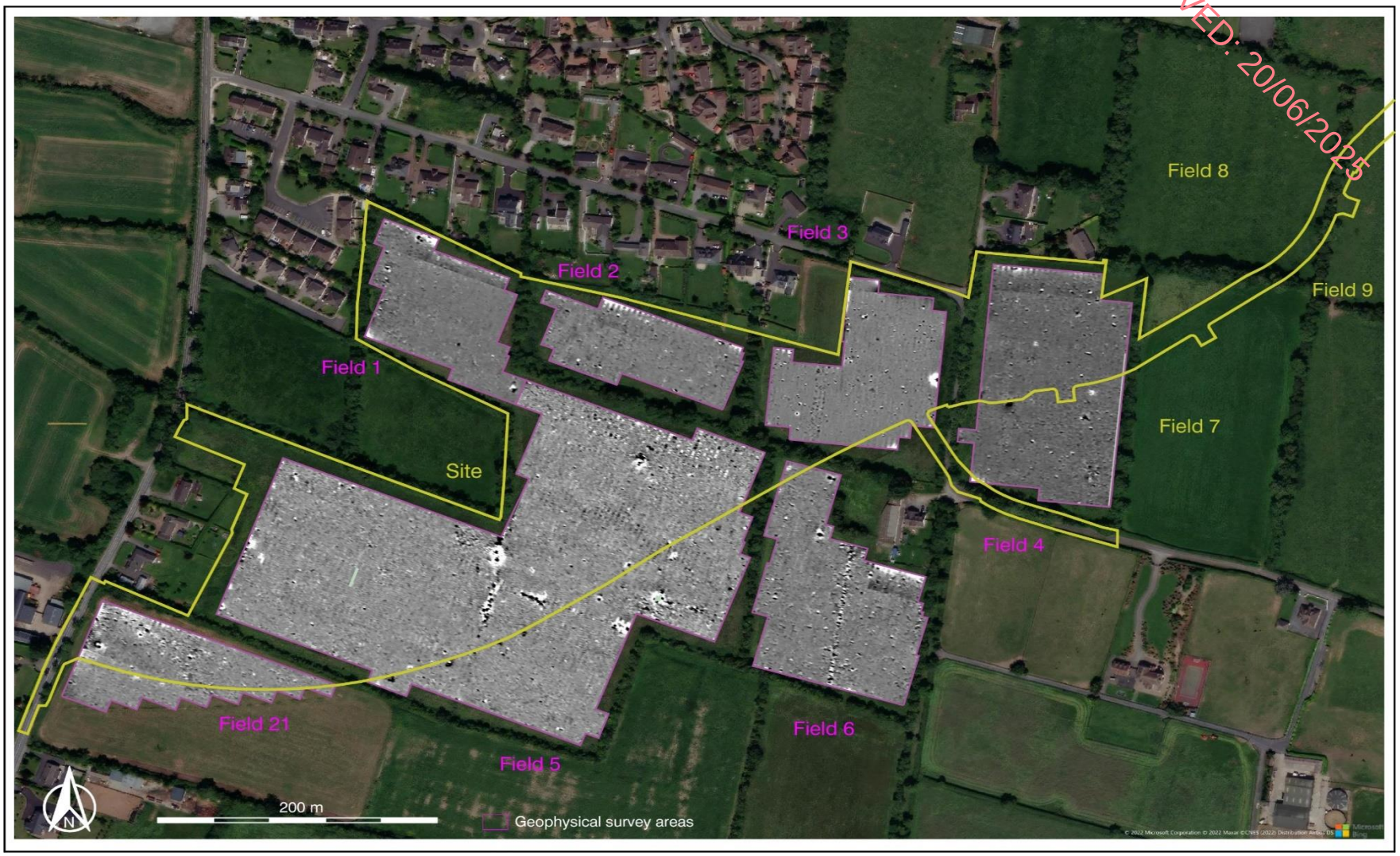

Figure 9.3: Geophysical survey results (grey scale images), showing fields 1 to 6 and field 21 and extent of site.

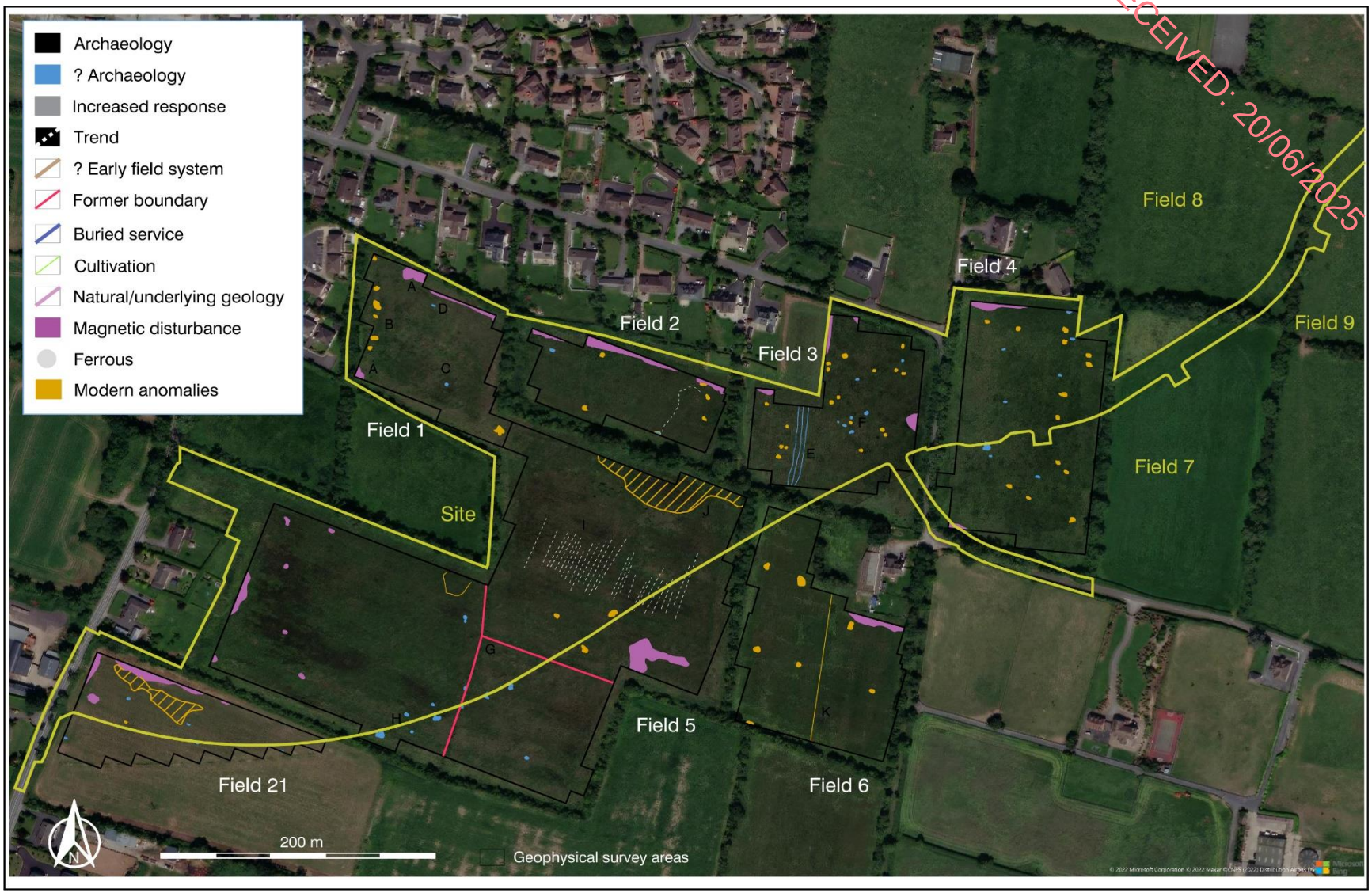

Figure 9.4: Geophysical survey interpretation, showing fields 1 to 6 and field 21 and extent of site

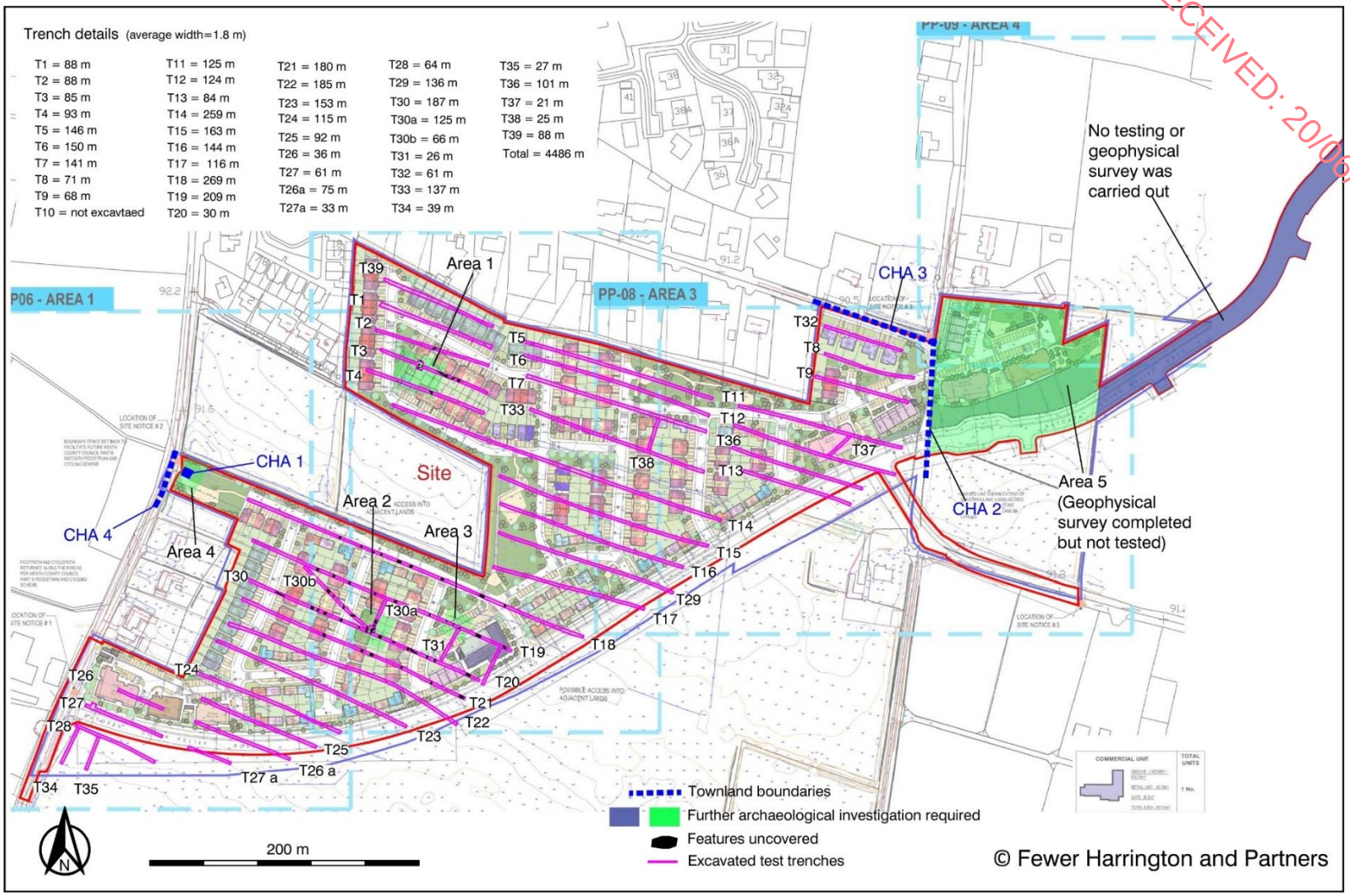

Figure 9.5: Details of site development, showing location of excavated test trenches (21E0511), townland boundaries, CHA and further investigation areas.

they may also prove to be non-archaeological tree bowls or depressions in the ground. Another dipolar anomaly (E) was identified in the southeast portion of the field. This is likely to be another modern ferrous anomaly within the subsoil.

***Field 2** is enclosed by deep field boundaries and was accessed from field 3 to the east. A number of properties run along the northern edge of this field.*

High magnetic disturbance was identified along the northern boundary as a result of the enclosing fence. One positive anomaly was identified in the western portion of the field and may represent a cut feature of archaeological significance. A number of bipolar anomalies were also identified scattered across the field and may represent modern ferrous anomalies in the topsoil or subsoil. A faint curvilinear identified running north-south through the field may be the result of weak magnetic variations in the subsoil and is likely to be natural in origin such as a dried-up stream.

***Field 3** is located in the northeast of the development area along a corner of the Glascarn Lane, which runs along its northern and eastern edges. Currently, the field serves as pasture land.*

A number of tightly compact positive and negative linear anomalies (E) were identified to the southwest of the field. These may be of archaeological origin or may be the result of ploughing activity, such as ridge and furrow, which would have resulted in a series of cut depressions, each flanked by a bank made up of the removed material. The anomaly was not identified in field 6 immediately south on the far side of the field boundary. The anomaly may also be the result of a drain or disturbed ground terminating in the field boundary to the south.

A number of positive anomalies (F) were identified towards the middle of field 3 and may represent cut features such as refuse or storage pits, or may be natural in origin. A number of negative and or bipolar anomalies identified are likely to be the result of modern ferrous debris scattered in the subsoil, e.g. plough remains, horseshoes, fencing materials etc.

***Field 4** is located in the northeast corner of the survey area and currently serves as pasture land. No definitive signs of archaeology were identified. A number of positive anomalies that may represent cut features, such as pits or troughs, should be investigated during any future testing of the site. A number of bipolar anomalies scattered throughout the survey area are likely the result of modern ferrous debris within the subsoil or topsoil and so are unlikely to be of archaeological significance.*

***Field 5** continues from the southwest corner of Field 1. Much of the survey area is overgrown with a mixture of long grasses and new young trees and heavy shrubs. Two historic field boundaries were identified (G). One field boundary aligned north-south divides the lower portion of the field, while the second field boundary runs perpendicular to the other and continues eastwards into the current field boundary. Both of these field boundaries are visible in the cartographic evidence on OSI 6" and 25" editions. Both of these field boundaries should be archaeologically tested in order to assess their nature, depths and true age. A series of positive anomalies running southwest to northeast from the southern boundary of field 5 were identified (H). These are likely the result of cut features and may represent a linear series of pits.*

A series of weak linear anomalies aligned north-south (I) in the northeast portion of field 5 may represent further evidence of ridge and furrow activity.

The northeast corner of the field produced an area of high magnetic disturbance, which may be the result of churned ground, rubble or modern ferrous anomalies such as scattered fencing (J).

***Field 21** is located south of Field 5, directly east of the Fairyhouse Rd R155, from which the field is accessed. Areas of high magnetic disturbance were identified along the northern perimeter as a result of a metallic fence along the hedgerow. A large irregular band of magnetic disturbance was also produced across the northern end of the area. This may indicate disturbed ground or the heavy use of farming machinery in the area near the field entrance.*

This band of magnetic disturbance, along with the small number of positive anomalies identified, should be targeted during any testing phase of the project in order to ascertain their archaeological potential.

Test Trenching (Licence Number 21E0511)

The test trenching (21E0511) of the site measuring 10.3ha was carried out by Caroline Cosgrove of Archaeological Consultancy Services Unit Ltd (ACSU). This was carried out in August 2021. Test trenches were arranged in order to target anomalies identified during the geophysical survey (20R00226) and the site overall (Figure 9.5). The area suitable for test trenching consisted of 9.3ha; this was due to the presence of hedges/field boundaries.

A total of 42 test trenches were excavated, totalling 4,486m of linear trench. Each trench measured 1.8m in width. In total, 8.795 sqm were excavated. In general, the topsoil was a dark brown silty clay that measured between c. 0.3m–0.58m in depth. The natural, varied from an orange-brown boulder clay exposed in the southernmost part of the site. to a mottled orange and grey clay in the remaining part of the site.

Archaeological test trenching identified three areas of archaeological activity: one in Field 1 and two in Field 5. The features exposed comprise ploughed out pits, post-holes and spreads, likely associated with a prehistoric activity. These features were exposed in Trenches 3, 4 (Figure 9.6, Figure 9.9 and Figure 9.10).

Trenches 30, 30a and the eastern part of Trench 19 (Figure 9.7 and Figure 9.8). Furthermore, a number of linears were exposed; these were found to represent field ditches and drains. Field boundaries exposed in Field 5 account for Anomaly G identified during geophysical survey, also visible above the ground, and are marked on all Ordnance Survey maps (1835, 1909 and 1958). The anomalies identified during the geophysical survey were found to relate to modern agricultural activity.

The report prepared (Cosgrove, 2021) recommended that the features identified be preserved by record (excavated). The three areas should be stripped of topsoil, and any archaeological features exposed should be preserved by record (excavated). All excavation should be carried out by a licence eligible archaeologist at the pre-construction phase in order to mitigate the impact of the proposed development on archaeological features and deposits.

Below is an extract from the test trenching report prepared by Cosgrove (2021) listing the exposed archaeological features (Figure 9.5).

Field 1. In Trench 4, three pits (C71, C73 and C99) were identified. To the north, in Trench 3, four pits (C79, C81, C83 and C95), a possible gully (C77), and five post-holes (C85, C87, C89, C91 and C93) were uncovered (Figure 9.6, Figure 9.9, Figure 9.10)

Field 5. In Trenches 30 and 30a a number of burnt pits (C21, C23, C28 and C26), four pits (C29, C33, C67 and C69) and three possible features (C35, C37 and C41) were uncovered. To the northeast in Trench 19, a burnt pit (C59) and a possible pit (C57) to the east were identified (Figure 9.7 and Figure 9.8).

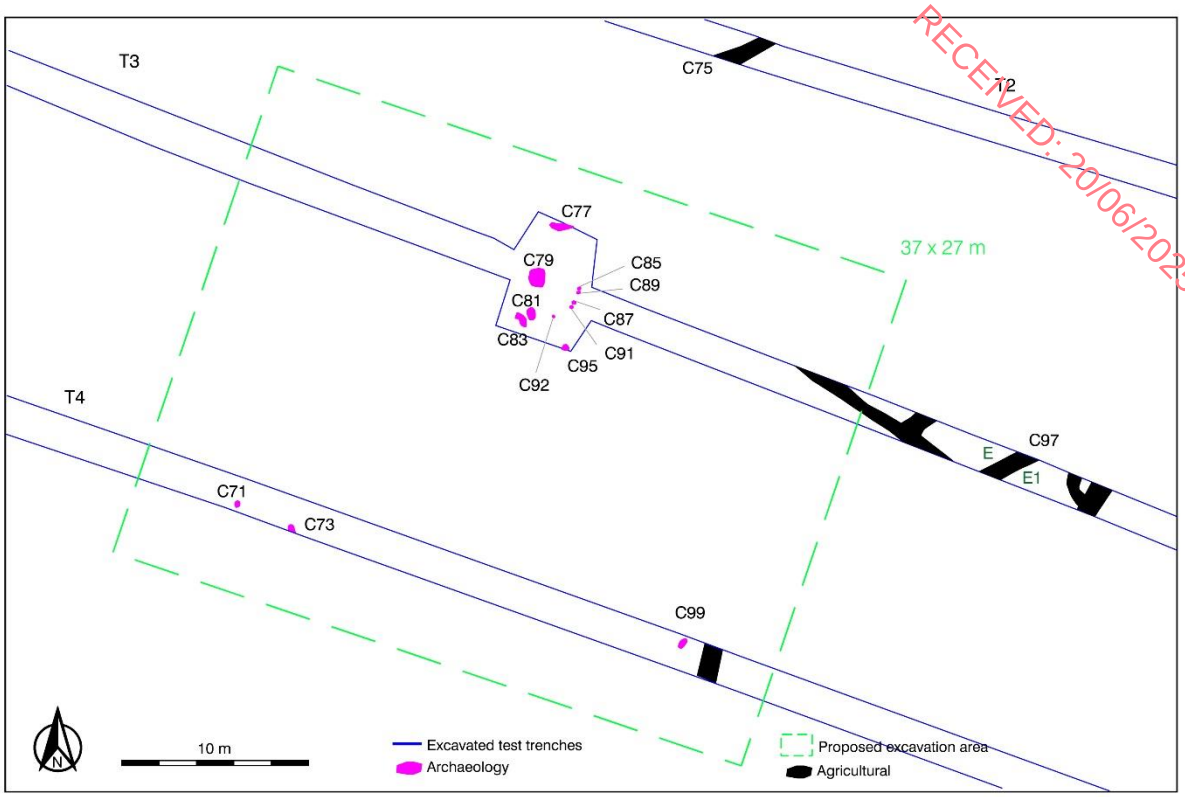

Figure 9.6: Details of archaeological features uncovered in Trenches 2, 3 and 4 (Area 1)

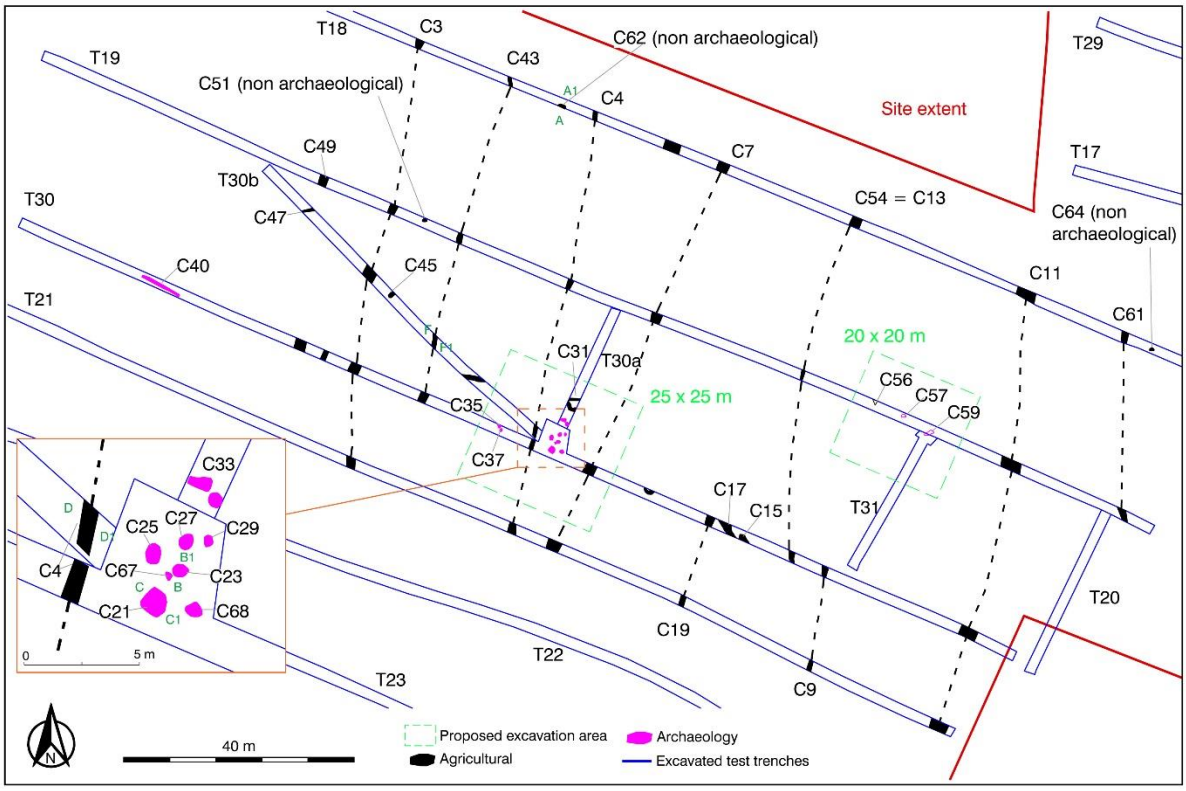

Figure 9.7: Details of archaeological features uncovered in Trenches 18-21 (Area 2) and Trenches 30-31 (Area 3).

Figure 9.8: Field 5, Trenches 30, 30a (Area 2): pits C21, C23, C25, C27, C29, C33, C66, C68 facing north.

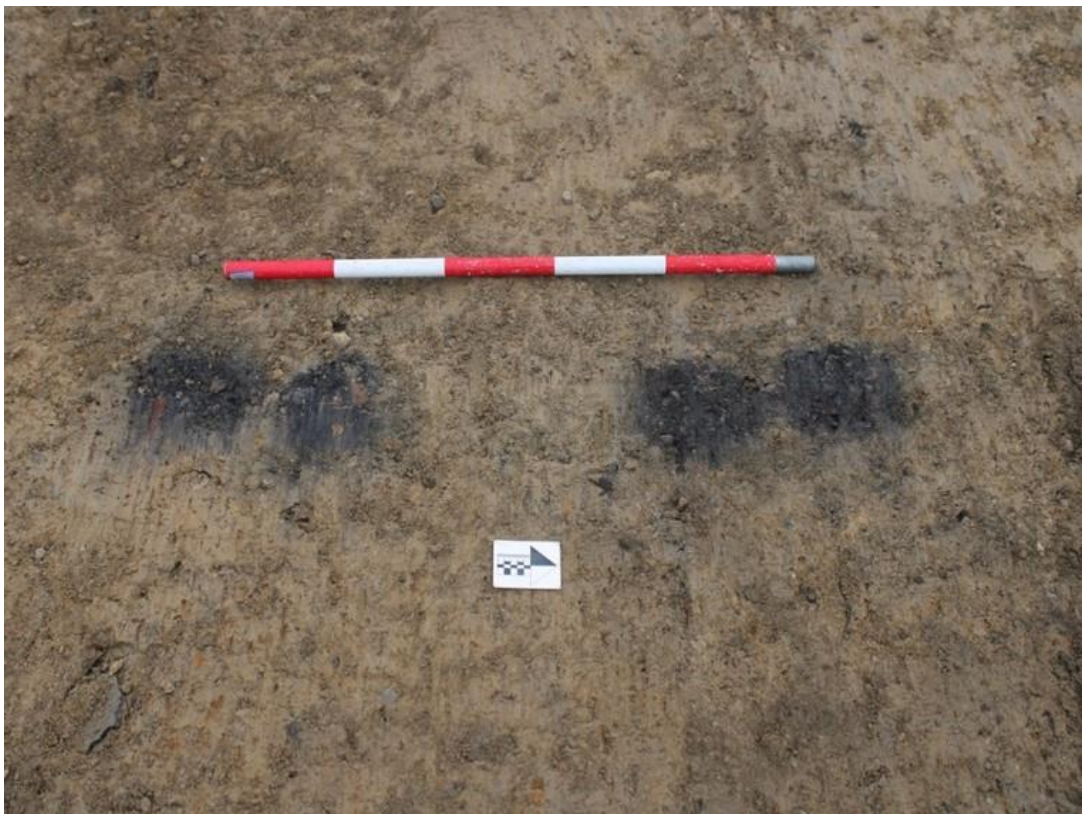

Figure 9.9: Field 1, Trench 3 (Area 1): postholes C85, C89, C87, C91, facing west.

Figure 9.10: Field 1, Trench 3 (Area 1): pits 81 and C83, facing north.

9.3.5 Topographical Files

The Topographical Files of the National Museum of Ireland were consulted. These list no finds for the townlands of Commons or Jamestown that the site is located within.

9.3.6 Placename Evidence

The database of Irish placenames (www.logainm.ie) was consulted for the meaning of the placenames within and surrounding the proposed development site. It can reveal important information about the natural and cultural heritage of an area. For example, Commons townland (An Coimín) was first mentioned and depicted the 'Comons of Ratooth' on the Down Survey Map of County Meath, Barony of Ratoath (1654-56), and can be translated as commonage, common land; little hollow, glen. Jamestown was first mentioned in 1836 as Jamestown and was noted by John O'Donovan in 1836 (Ordnance Survey Parish Namebooks).

Ratoath gives its name to a town, a townland, a parish and to a barony. The derivation or meaning of the word is, however, uncertain. Gaelicised forms of the name are Rat-tógh and Rath-tachatacta. These placenames occur in Irish manuscripts, and scholars say that the writers were referring to Ratoath. Evidently, they were trying to give a phonetic rendering of a name that was unfamiliar to them. Mruigtuaithe occurs in the Book of Armagh as the name of one of these places in Meath where St Patrick founded a church, and Eoin MacNeill identifies it as Ratoath. If this is correct, it would seem that the second portion of the word comes from the Gaelic word 'tuath', which means a territory belonging to a family or sept. 'Mruig' means a grazing plain. The first part of the word 'Ratoath' may be derived from the Gaelic word 'Rath', which means a fort or fortification, but this is unlikely, as the place name probably existed before the Normans erected the 'moat', unless they built it on top of a rath already in existence (Orpen 1921).

9.3.1 Cartographic Sources and Aerial Photography

As a part of the assessment, relevant cartographic sources and available aerial photography imagery were reviewed. Potential archaeological or cultural heritage features are marked on such maps and provide a useful resource in identifying sites, particularly if they no longer have any above-ground remains. Monuments with no surface expression can be seen as cropmarks on aerial imagery.

Cartographic Review

A review of available historic mapping for the area was carried out and included the Down Survey map of Ireland 1654-56, Taylor and Skinner's Maps of 1777, as well as first (1835), third (1909) and Cassini (1958) editions of the Ordnance Survey (OS) maps.

On the Down Survey of Ireland 1654-56, the barony is depicted as 'Barony of Rattoth'. The map depicts the site within '*The Commons to Rattooth town'*; while Jamestown appears to be located within an area labelled as the property of '*Widow Angeirs, ppriety prot'* meaning property of protestant (Figure 9.2), however it does not offer any more detail in relation to the site. Taylor and Skinner's Maps of the Roads of Ireland (1777) offers little insight into the site, although Ratoath town is depicted, as is Fairyhouse Road with a row of mature trees on its eastern side.

Ordnance Survey (OS) maps of the area were also examined to identify any possible archaeological features and trace the site's development during the 19th and early 20th centuries (Figure 9.11 and Figure 9.12). These are far more detailed than the earlier maps.

One building is depicted within the site on the first edition OS map (surveyed 1835, published 1837). This is located along Fairyhouse Rd (R155) within the northwestern part of the site. It was gone by the time of the 25-inch map in 1909. A road currently known as Glascarn Lane (L5020) is also depicted, it is also forming a townland boundary between Commons with Jamestown and Ratoath townlands. It should be noted that the boundaries between '*The Commons to Rattooth town*' now Commons and lands of '*Widow Angeirs ppriety prot*' that is now a part of (Jamestown and Ratoath townlands) are depicted since the Down Survey Map (Figure 9.2) and correspond roughly with the townland boundaries of Commons and Jamestown depicted on the 1835 map suggesting Glascarn Lane might have been used since at least the 17th century. Furthermore, a small portion of the sites western boundary, adjacent to the road, is also a townland boundary between Commons and Ratoath (Figure 9.11). Overall, it appears as if the nature of the lands has not changed significantly since the 19th century, with the site still comprising large fields primarily used for tillage and pasture.

By the time of the third edition OS 25-inch map (surveyed 1909, published 1911), one of the fields within the site appears to have been divided into two smaller fields with a north-south running boundary. Also, within the northern part of the site, a wet ditch running in a north-south direction was added within a large rectangular field. An examination of the Cassini edition of the 6-inch map (1958) shows little difference within the site from the 25-inch map.

Aerial Photography Review

In addition to examining the various editions of the OS maps, aerial photographs from the Geological Survey of Ireland, dating from between 1995 and 2013, and the Google aerial imagery, dating between 1995 and 2019, were consulted.

A cropmark was noted on a Google aerial photograph outside of the site (c. 180m to the east of the sites very east extremity). The National Monuments Service has been notified of the discovery of this site. Since the monument was registered as SMR No. ME045-066----and is scheduled for inclusion in the next revision of the Record of Monuments and Places. Such cropmarks likely indicate the presence of an archaeological site where the above-ground remains may be largely or completely destroyed. The site is visible on an aerial photograph dated 7 May 2017, which shows two conjoined circular enclosures. The larger, eastern enclosure measures c. 30m in diameter, while adjacent to the north-western side is the smaller feature, measuring c. 7m in diameter, perhaps suggesting the presence of a ring-ditch. This monument is the nearest to the site, and it will not be impacted by the current

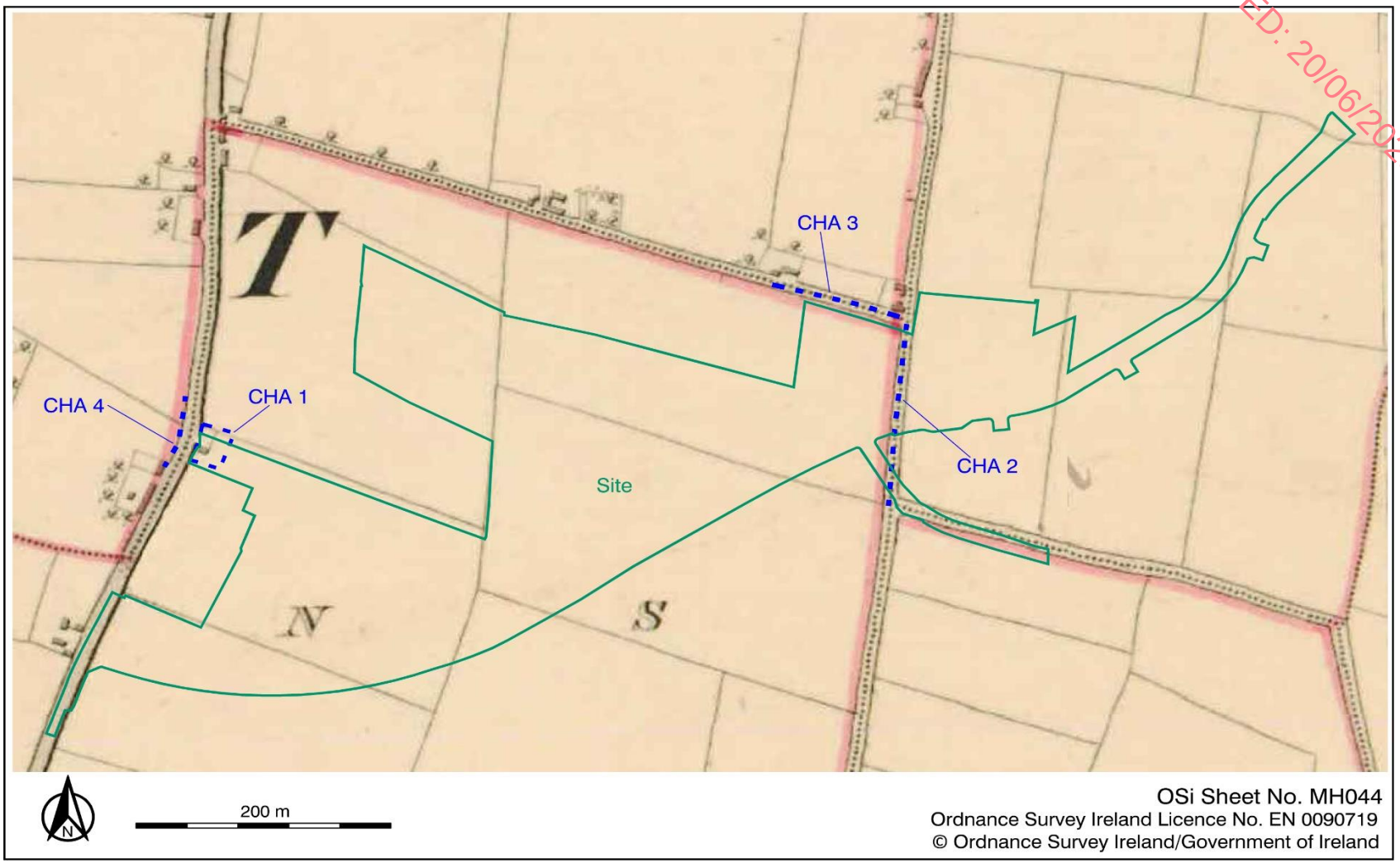

Figure 9.11 Extract from 1st edition Ordnance Survey (OS) 6-inch map (surveyed 1835 - published 1837), showing location of site and CHA.

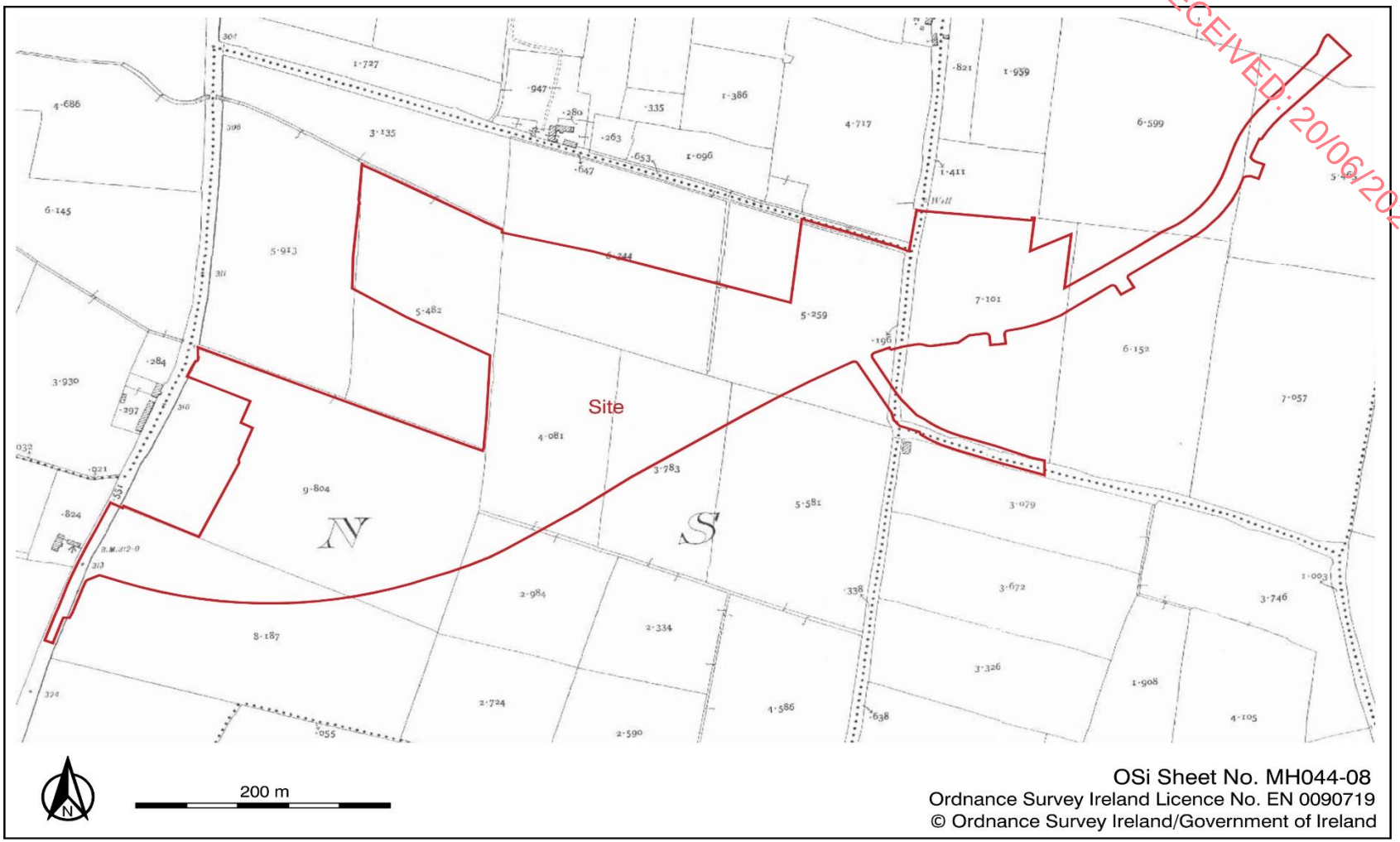

Figure 9.12 Extract from 3rd edition Ordnance Survey (OS) 25-inch map (surveyed 1909 – published 1911), showing location of site

development. In addition, linear cropmarks corresponding with former field boundaries are depicted on both Ordnance Survey maps (1835, 1909) are visible. No additional cropmarks were noted within the area to be developed.

9.3.2 Tangible Cultural Heritage Sites/Features

The Down Survey Map (1654-56) of County Meath; barony, parish maps, and Ordnance Survey Maps of the area, were examined in order to identify boundaries/field divisions of significance and any Cultural Heritage Areas (CHA).

One building (CHA1) is depicted on the examined mapping; it consists of a small rectangular structure, with a gable fronting onto Fairyhouse Road. The structure is shown within a small plot, in the western extent of the site; Field 5 (Figures 9.2, 9.5, 9.11). The house or the plot are no longer depicted by the time of the 1909 map.

There is one townland boundary depicted on the Ordnance Survey mapping (Figure 9.11), which is located within the current site's extent (CHA2). This boundary runs north to south, and is formed by a road known currently as Glascarn Lane. As shown on the 1835 map, the boundary is illustrated as running within the lane's footprint. In addition, a minor portion of the Commons and Ratoath townland boundary (CHA3), running east to west, forms part of the site's north boundary. It is shown along the east-to-west aligned portion of Glascarn Lane on the 1835 map within the lane's footprint. As noted, prior the boundaries between 'The Commons to Rattooth town'' (now Commons) and lands of 'Widow Angeirs ppriety prot' (now part of Jamestown, Ratoath townlands) are depicted since the Down Survey Map (Figure 9.2) and correspond roughly with the townland boundaries of Commons with Jamestown and Ratoath depicted on the 1835 map suggesting Glascarn Lane might have been used since at least the 17th century.

It should also be mentioned that a minor portion of the site's west boundary, running roughly north to south and formed by the Fairyhouse Road, is the townland boundary between Commons and Ratoath (CHA4). The road is also depicted since the Down Survey Map 1654-56, and the boundary is illustrated within the road's footprint on both Ordnance Survey maps.

9.3.3 Record of Protected Structures

The Meath County Development Plan 2021-2027 was consulted as it contains the Record of Protected Structures for County Meath. A protected structure, Ratoath Manor (RPS ID 91453), is located c. 1km to the north of the site. There is a concentration of protected structures within Ratoath town, and these are all on the north side of the Broadmeadow River that runs through Ratoath. None will be impacted either directly or indirectly by the proposed development.

9.3.4 National Inventory of Architectural Heritage sites

The National Inventory of Architectural Heritage (NIAH) for County Meath database was consulted as it contains additional sites of architectural heritage. There are no such sites within the site, and the above-mentioned Ratoath Manor is also recorded as NIAH Reg. No. 14336002.

9.3.5 Site Inspection

A site inspection was carried out as part of the Archaeological Impact Assessment (Lyne 2021). The site consists of parts of 10 fields (Fields 1-9, 21), with only the very northwest corner of Field 9 within the site. It is bounded by Fairyhouse Road from the west, residential houses to the north and agricultural fields to the south. The field boundaries consist of mature trees and hedges. The site is in use mainly as greenfield, with some areas tilled, others overgrown and rough pasture. The site contains no visible surface evidence of any archaeological features.

Figure 9.13: Overview of the study area, with Ratoath town adjacent to the north (drone imagery courtesy of Future Analytics, January 2020)

9.3.6 Characteristics of the Proposed Development

The proposed development area is located in Commons and Jamestown townlands, within a large agricultural landscape bounded to the west by the R155 (Fairyhouse Road).

The development of the site measuring 12.58 ha will include the construction of residential housing adjacent to and north of the proposed Ratoath Outer Relief Road (RORR) and south of the Ratoath urban area.

Please refer to the development description summary in Section 1 and to within the statutory notices for a complete description of the proposed development.

9.4 Predicted Effects

9.4.1 Direct Effects on Recorded Archaeological Monuments

There will be no direct effects on recorded archaeological monuments as no recorded monuments are located within the proposed development site. There is a monument located in the immediate environs of the site, enclosure ME045-066, located c. 180m to the east of the site, and it will not be impacted in any way.

9.4.2 Direct Effects on Protected Structures and National Inventory of Architectural Heritage Sites

There will be no direct effects on architectural heritage as no Protected Structures or sites listed within the National Inventory of Architectural Heritage (NIAH) are located within the proposed development site.

Protected Structure, Ratoath Manor (RPS ID 91453), which is also a National Inventory of Architectural Heritage Site (NIAH Reg. 14336002), is located c. 1km to the north of the site and will not be impacted in any way.

9.4.3 Direct Effects on Known and Potential Archaeological Features

The proposed development will have a direct effect on three areas of archaeological activity (one in Field 2 and 2 in Field 5) identified as a result of archaeological assessment of the site in the form of test trenching (21E0511). The features exposed consist of ploughed out pits, post-holes and spreads, likely associated with prehistoric activity, while a number of linears exposed, indicated by the geophysical survey results (20R0026) were found to represent field ditches and drains relating to modern agricultural activity.

Furthermore, the northeast portion of the site, Area 5/Field 4 and Field 7 (Figure 9.5), was not subject to test trenching carried out previously. A potential impact on the archaeological resource lies in the uncovering of sub-surface archaeological features during topsoil removal and other groundworks associated with the construction of the proposed buildings and associated infrastructure within this area. Ground disturbance associated with the proposed development within this area has the potential to uncover some minor monuments and associated artefacts. Further investigations, including test trenching and/or monitoring, will be required.

The construction of the development and any groundworks associated would involve the total removal of the features identified and any additional features, if present, with negative/adverse profound effects.

9.4.4 Direct Effects on Tangible Cultural Heritage.

The proposed development will have a direct effect on the townland boundary between Commons and Jamestown (CHA2), and the structure/building depicted on the 1835 map (CHA1) should it have any subsurface remains (Figure 9.5). The townland boundary between Commons and Jamestown and Ratoath townlands was depicted along the west and south of Glascarn Lane on the 1835 map, respectively, and within the lane's footprint on the 1909 map. A north-to-south portion of Glascarn Lane will be realigned to the west. The structure depicted on the 1835 map represents a pre-19th-century building, which would give any remains, if present, a vernacular status.

The development will have a negative/adverse profound effect on the portions of the townland boundaries and CHA1 and will result in the removal of sections of the boundaries to be impacted and the removal of any remains of CHA1 if present, with negative/adverse profound effects.

9.4.5 Indirect Effect

Indirect effects here are those which may have a negative (or positive) effect on the archaeological landscape after the construction phase of the development (i.e. operational). Indirect effect may include the visual impact on the surrounding archaeological landscape. The nearest monuments to the site comprise enclosure ME045-066, located c. 180m to the east of the site. The monument has no surface expression. While the development will see the continued preservation of two townland boundaries between Commons and Ratoath (CHA3 and CHA4), a photographic and measured survey (including written description and photographic record) prior to development commencing will be carried out.

The introduction of the proposed development to the area will not result in a major change to the general setting of any of the monuments listed. This is due to the fact that the enclosure is located within a greenfield and outside of the site, and with no surface expression, its immediate setting will remain unchanged.

9.5 Potential Cumulative Effects

In terms of cumulative effects, the large developments in the immediate environs of the site of similar settings were considered (SHD 305196, DA120765, RA150993 amongst others); there are no surface remains of any monuments within these areas and therefore there are no cumulative effects on the cultural heritage or archaeological resource.

9.6 Do Nothing Scenario

A ‘Do Nothing Scenario’ will see the continued preservation of the townland boundary between Commons and Jamestown townland/Glascarn Lane (CHA2), the preservation in situ of the three areas of archaeological

activity identified during previous test trenching (21E0511); and of any potential remains of the house/structure depicted on the 1835 map (CHA1) if present.

9.7 Mitigation Measures

The site was subject to a number of archaeological assessments carried out in relation to the site, both invasive and non-invasive. These include Geophysical Survey (20R0026; Russell and Breen, 2020), test trenching (21E0511; Cosgrove, 2021) and Archaeological Impact Assessment (Collins, Lyne, 2025).

The following mitigation measures will be carried out subject to the approval of the National Monuments Service (NMS) of the Department of Housing, Local Government and Heritage (DHLGH), and further mitigation may be sought by the NMS.

- Three areas of archaeological activity (Areas 1-3) identified during test trenching (21E0511) will be preserved by record (excavated). At the locations of the features identified, in Field 1 an area measuring 37m by 27m and in Field 5 two areas measuring 25m by 25m and 20m by 20m will be stripped of topsoil (Figure 9.5-9.7), features identified including any features associated that might be exposed, will be preserved by record. This will be carried out under licence from the National Monuments Service of the DHLGH by a suitably qualified archaeologist. The appointed archaeologist shall consult with the Licensing Section of the NMS regarding the methodology to be employed in the resolution of all sites. This will be carried out prior to construction works commencing.
- Prior to the development of the site, an area measuring 20m by 25m around the location of Cultural Heritage Area CHA1 shall be stripped of topsoil to establish if any remains of the structure are present (Figure 9.5). Further archaeological investigation may be required depending on the results, including a full archaeological excavation of any features and deposits identified by a licensed archaeologist in accordance with a methodology to be agreed with the National Monuments Service.
- Archaeological test trenching of Area 5/Field 4 and Field 7 (Figure 9.5) within the northeast portion of the site will be carried out prior to construction. Should archaeological features be identified, further mitigation, including preservation in situ (if feasible) or by record (excavation), will be required. This will be carried out under licence from the National Monuments Service of the DHLGH by a suitably qualified archaeologist. The appointed archaeologist shall consult with the Licensing Section of the NMS regarding the methodology to be employed in the resolution of all sites. This will be carried out prior to construction works commencing.
- Prior to the development of the site, a photographic and measured survey (including written description, photographic record) will be carried out of Cultural Heritage Area CHA2 – townland boundary between Commons and Jamestown, as well as CHA3 and CHA4 townland boundaries between Commons and Ratoath (Figure 9.5).
- Adequate time and resources will be provided by the developer for the resolution of any archaeology identified within the development site, which will be directly impacted by groundworks. Time and resources will also be allowed for any post-excavation work and specialist analysis necessary following any archaeological excavation that takes place.
- A full report including all post-excavation analysis will be submitted to the relevant authorities within 12 months of the completion of the archaeological excavations.

9.8 Residual Effects

The residual effects are likely to be low or negligible if the recommended mitigation measures are implemented. Table 9.2 below summarises the residual effects of the proposed development on the archaeological landscape. Residual impacts are defined as the overall effects of the development on archaeology on the basis of implementing the mitigation measures recommended in this report.

Table 9.2: Summary of Residual Impacts

Potential impacts	Mitigation strategy	Residual impacts
Construction effects		
Permanent direct negative effect on three areas of archaeological activity (Areas 1-3) identified (21E0511)	Full archaeological excavation of features and deposits identified, including any features associated that might be exposed by a licensed archaeologist in accordance with a methodology to be agreed upon with the National Monuments Service.	None
Permanent direct negative/adverse profound effects on archaeological features and deposits should these be present within the northeast portion of the site (Area 5/Field 4 and Field 7) that was not subject to test trenching previously.	Archaeological investigation (test trenching) of the northeast portion of the site that was not previously subject to test trenching. This will be carried out prior to construction. Should archaeological features be identified, further mitigation, including preservation in situ (if feasible) or by record (excavation), will be required. This will be carried out by a licensed archaeologist in accordance with a methodology to be agreed upon with the National Monuments Service.	None
Permanent direct negative/adverse profound effect to the townland boundary between Commons and Jamestown (CHA2) formed by the north to south aligned Glascarn Lane.	Full photographic and measured survey (including written description, photographic record) of CHA2.	None
Permanent direct negative/adverse profound effect on structure depicted on the 1835 map (CHA1)	Monitoring of topsoil stripping at the pre-construction phase at the location of CHA1 to establish if any remains of the structure are present. Further archaeological investigations may be required depending on the results, including a full archaeological excavation of any features and deposits identified by a licensed archaeologist in accordance with a methodology to be agreed upon with the National Monuments Service.	None
Effect on townland boundaries between Commons and Ratoath CHA3 and CHA4 that are to be retained.	A photographic and measured survey (including written description, photographic record) will be carried out prior to works commencing.	None

9.9 Interactions

No interactions in relation to the Cultural Heritage Resource are anticipated with other environmental factors assessed within this EIAR.

9.10 Monitoring

No monitoring is necessary.

9.11 Difficulties Encountered

No difficulties were encountered during the compilation of this chapter.

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10 Landscape and Visual

10.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) presents an assessment of likely significant effects from the proposed development in relation to landscape and visual impacts during the construction and operational phases.

This Assessment was prepared by Seamus Donohoe of Purser. Seamus has degrees in Landscape Architecture (BAgrSc Landscape Architecture, University College Dublin, 2010) and Town Planning (MRUP – Masters of Regional and Urban Planning, University College Dublin, 2013). He is a Registered Landscape Architect / Member of the Irish Landscape Institute (ILI), a Corporate Member of the Irish Planning Institute (IPI) and a Chartered Member of the Royal Town Planning Institute (RTPI). He has over 15 years' experience in Landscape and Visual Impact Assessment (LVIA).

This chapter sets out the methodology followed, describes the baseline environment and summarises the main characteristics of the proposed development which are of relevance to Landscape and Visual Impact Assessment. The likely significant effects of the proposed development on Landscape character and Visual receptors (people) are described. Mitigation and monitoring measures that are embedded in the design of the proposed development are presented. The residual effects of the proposed development are described. The cumulative effects of the proposed development are described. The chapter then provides a reference section.

Although closely linked, landscape and visual impacts are assessed separately. Collectively, these impacts are referred to throughout as LVIA.

Landscape Impact Assessment (LIA) relates to changes and/or additions to the characteristics and defining elements of areas of landscape, including their visual attributes. This may also include effects on the specific landscape features or identified character areas.

Visual Impact Assessment (VIA) relates to assessing effects on views and visual amenity experienced by people who are resident at particular locations or engaged in particular activities, which influences their sensitivity to visual change. This includes daytime and nighttime visual amenity.

Cumulative landscape and visual impact assessment is concerned with additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other permitted and proposed developments. Such projects will include other permitted or proposed notable scale projects within the relevant study area.

10.2 Methodology

The methodology employed in this LVIA is informed by the following Guidelines and Guidance notes:

- Environmental Protection Agency (EPA) publication 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2022)

- Landscape Institute and the Institute of Environmental Management and Assessment, Guidelines of Landscape and Visual Impact Assessment: Third Edition (2013) (referenced hereafter as GLVIA3).

It should be noted that GLVIA3 is exclusively used by LVIA specialists in Ireland as the overarching best practice guidance for LVIA for all forms of development in lieu of any equivalent adopted guidelines in the Irish Context.

The Landscape and Visual Impact Assessment (LVIA) methodology consists of a desktop baseline study followed by fieldwork and then assessment aided by maps and verifiable photomontage images.

The desktop study comprised of the following:

- Review of a Zone of Theoretical Visibility (ZTV) map, which indicates areas from which the development is potentially visible in relation to terrain within the study area.
- Review of relevant County Development Plans, particularly with regard to sensitive landscape and scenic view/route designations.
- Review of map resources to identify settlements and transport routes within the study area that may be potential visual receptors.
- Online review of tourism, recreational and heritage features within the study area that may be potential visual receptors.
- Selection of potential Viewshed Reference Points (VRPs) from key visual receptors to be investigated during fieldwork for actual visibility and sensitivity.
- Production of wireframe images of the development at each potential viewpoint (illustrating the WTG in a bare-ground context) to aid fieldwork / viewpoint selection.

Fieldwork comprised of the following:

- Examination of the landscape character of the proposed development area and its immediate surrounds as well as the wider study area.
- Investigation of potential viewpoint locations identified at the desk study stage and selection / rejection of each.
- Selection of other relevant viewpoints that may not have been apparent from the desk study (local monuments, walkways etc.).
- Capture of high-quality base photography in clear viewing conditions from which to prepare photomontages of the proposed development during both daytime.
- Viewpoints were presented to the relevant local authorities and no objections to the viewpoints proposed were received.

Assessment comprised of the following:

- Assessment of landscape sensitivity.
- Assessment of the magnitude of landscape impacts.
- Assessment of the likely significance of landscape effects.
- Assessment of visual receptor sensitivity.
- Assessment of the magnitude of visual impact upon receptors at representative viewpoint locations (supported by verifiable photomontages).
- Assessment of the likely significance of visual effects.
- Assessment of cumulative landscape and visual effects.

The sensitivity of Landscape and Visual receptors is derived from combining susceptibility to change and professional judgement of the value of the receptor to determine overall sensitivity. Similarly, the magnitude of impacts is derived from combining professional judgements in respect of the size, scale and nature of the impact with considerations of duration and reversibility. Sensitivity and magnitude judgements are then considered together using the significance matrix to determine the overall significance of effect (see **Figure 10.1**). Although the terminology differs slightly to that used in the EPA EIAR guidance, it is consistent with LVIA best practice and GLVIA3, which requires that those effects deemed to be significant in EIA terms are clearly set out. In this case negative effects of Major or Greater are deemed significant in EIA terms. It should also be noted that the EPA guidance allows for topic specific guidance to be used where it exists.

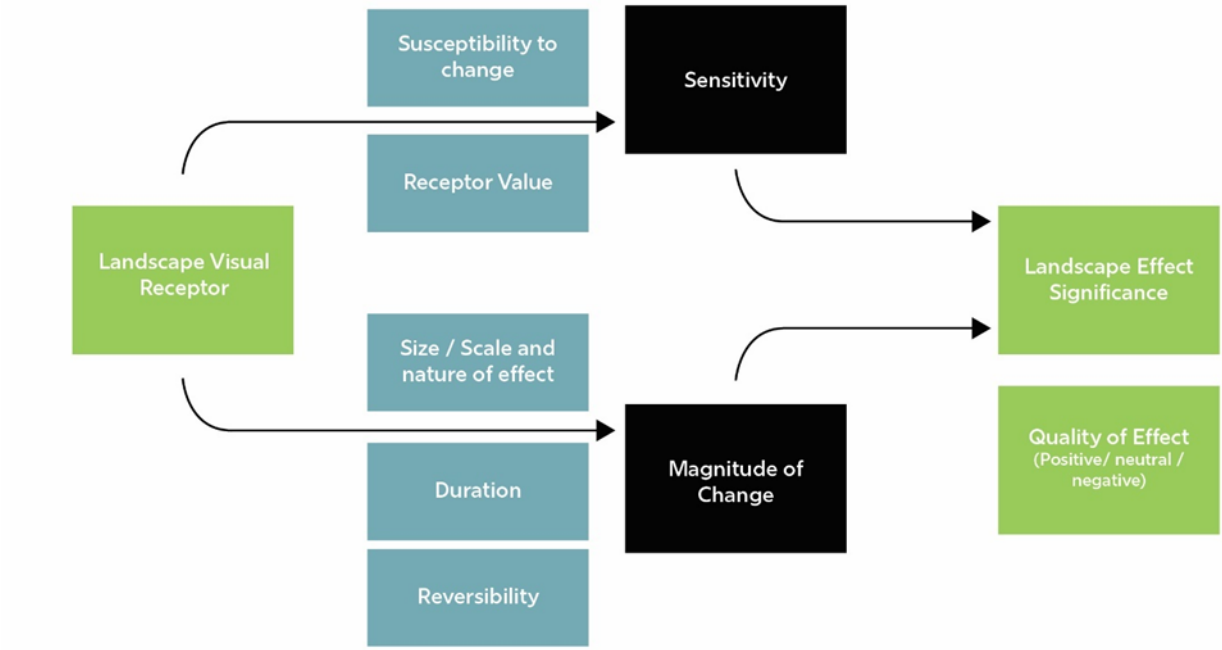

Figure 10.1: Overview of Landscape and Visual Assessment Process derived from GLVIA3.

10.2.1 Study Area

The extent of a proposed study area for an LVIA arises from the nature of the site and the wider landscape, along with the specifics of the proposed development. A 2 km radius study area has been determined based on site visits, mapping analysis and local environmental features. Initial assessments show that the presence of intervening vegetation, topography and surrounding structures significantly restricts visibility confining potential landscape and visual impacts primarily within 2 km of the site. Beyond this, the proposed development would be largely obscured, with any residual visibility and highly diminished.

This approach reflects findings from similar developments, which indicate limited discernibility and no significant landscape impact beyond approximately 2 km. Additionally, this limited scope aligns with the proportional impact assessment approach endorsed by the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3), emphasizing that study areas should reflect the scale and visibility of the development while remaining focused on areas of potential impact.

The choice of a 2 km study area balances thoroughness with relevance, ensuring that all significant receptors within this range are assessed, while unnecessary assessments of visually unaffected areas are avoided.

An emphasis has been placed on receptors around the boundary of the site as these are more likely/most likely to have the capacity to experience significant visual effects. It should not be inferred that the proposed development is unlikely to be visible from any location beyond the study area, but, more importantly, that the proposed development is unlikely to influence such receptors in a significant manner.

10.2.2 Methodology for Assessment of Effects

The assessment of landscape effects is separate to that of visual effects and thus, the criteria also differ. Nonetheless, both forms of assessment rely on the weighing of receptor sensitivity against impact magnitude. Although not identical to the sample criteria used in the EPA guidelines (2022), the criteria contained in **Tables 10.2, 10.3** and **10.4** is consistent with LVIA best practice in the UK and Ireland and corresponds closely with the EPA criteria. As identified in the Guidelines for Landscape and Visual Impact Assessment (2013), the critical factor is to clearly identify which judgements equate to significant effects in EIA terms.

10.2.2.1 Landscape Sensitivity

The sensitivity of the landscape to change relates to susceptibility and value, determining the degree to which a particular landscape receptor (Landscape Character Area (LCA) or feature) can accommodate changes or new features without unacceptable detrimental effects to its essential characteristics.

Landscape Susceptibility relates to the ability of the receptor to accommodate change and this relates to the scale and nature of the type of development in question rather than simply intrinsic susceptibility. Factors to be considered include the naturalistic qualities of the receptor and its quality / condition (pristine or degraded) as well as cultural and social associations to the landscape. Also considered are perceptual aspects such as remoteness / tranquilly, degree of enclosure / openness, movement, and aesthetic qualities.

Higher Susceptibility Criteria	Lower Susceptibility Criteria
Perceptual Qualities: The landscape has strong scenic qualities associated with naturalness and tranquilly.	The landscape has a high degree of contemporary development associated with settlement, industry, and primary production.
Condition: The landscape has a high degree of integrity and utility indicating care and management.	The landscape is degraded with unutilised or waste areas apparent and with little sign of care or management.
Scale / Simplicity: The landscape is intricate and complex where large scale development could generate scale conflict	The landscape is of a broad scale with simple legible elements that can accommodate large development without a sense of scale conflict.
Intensity and scale of existing development: The landscape has high levels of existing development of considerable scale and with associated movement.	The landscape has low levels of existing development and that which exists is of small scale and static in nature.
Openness / enclosure: The landscape is strongly enclosed with limited viewsheds that can be readily influenced by new and large-scale development.	The landscape is broad and open with expansive viewsheds that can readily accommodate new and large-scale development.

Table 10.1: Landscape Susceptibility

10.2.2.2 Landscape Value

Landscape Value relates to societal recognition of the receptor at a designated or non-designated level. It often relates to the rarity or representativeness of the receptor as well as its quality and condition. Recreational, conservation, tourism and scenic value are also key considerations. Higher order value is likely to be associated with landscapes that are designated for protection at a national or international level, whereas lower order value might be associated with rural or coastal productivity.

Higher Value Criteria	Lower Value Criteria
Designation: The landscape is protected by National / international level policy in relation to its natural and scenic beauty.	The landscape does not have a formal designation of protection or cautious management.

Rarity: The landscape is rare or unique at a national or regional level.	The landscape type is commonly found throughout the local, regional, and national context.
Cultural Associations: The landscape is strongly associated with cultural traditions, historic events or myth and legend.	The landscape is not recognised as being associated with cultural traditions, historic events or myth and legend.
Scenic / Perceptual: The landscape has a high degree of scenic value associated with naturalistic, conservation value and tranquillity.	The landscape has no recognised scenic value and is associated with settlement, cultivation development and production.
Tourism, recreation, and amenity: The landscape is strongly associated with tourism recreation and amenity and attracts high number of visitors.	The landscape is not associated with tourism recreation and amenity and is not recognised as a draw for visitors.

Table 10.2: Landscape Value

Taking consideration of susceptibility and value attributes, overall Landscape Sensitivity is classified using the following criteria (Table 10.3).

Sensitivity	Definition
Very High	Areas where the landscape exhibits very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The landscape character is such that its capacity to accommodate change is very low. These attributes are recognised in policy or designations as being of national or international value and the principal management objective for the area is protection of the existing character from change.
High	Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics. The landscape character is such that it has limited/low capacity to accommodate change. These attributes are recognised in policy or designations as being of national, regional or county value and the principal management objective for the area is the conservation of existing character.
Medium	Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong, or has evidence of alteration, degradation or erosion of elements and characteristics. The landscape character is such that there is some capacity for change. These areas may be recognised in policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change.
Low	Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character is such that it has capacity for change; where development would make no significant change or would make a positive change. Such landscapes are generally unrecognised in policy and the principal management objective may be to facilitate change through development, repair, restoration or enhancement.
Negligible	Areas where the landscape exhibits negative character, with no valued elements, features or characteristics. The character is such that its capacity to accommodate change is high; where development would make no significant change or would make a positive change. Such landscapes include derelict industrial lands, as well as sites or areas that are designated for a particular type of development. The principal management objective for the area is to facilitate change in the landscape through development, repair or restoration.

Table 10.3: Landscape Sensitivity

10.2.2.3 Landscape Impact Magnitude

The magnitude of a predicted landscape impact is a product of the size and scale of change as a result of the proposed development in the context of the receptor, as well as the geographical extent across which it is likely to be experienced and to a lesser extent the duration and reversibility of the effect.

The size and scale of the impact is the degree of change that will occur as a result of existing elements being lost and/or new ones introduced and is a measure of the degree to which these changes alter the prevailing character of the landscape receptor. Higher order judgements are likely to result from dramatic change to a substantial proportion of the receptor in question. However, this could be in the context of large-scale change at a single landscape space that would be experienced as a smaller effect for the broader landscape character area it is contained within.

The Geographical Extent of the impact is not how large or distinctive the physical development is, but the extent across which its impacts are experienced. Using the same example above, distinct change to a small parklet might be experienced as very localised impacts with a confined geographical extent. The loss or introduction of other elements might have effects experienced across a number of landscape character areas i.e. with a large geographical extent.

Taking consideration of the size and scale of the impact and its geographical extent, overall magnitude of landscape impacts is determined on the basis of the criteria contained in **Table 10.4.**

Magnitude of Impact	Definition
Very high	Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the landscape, and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the landscape.
High	Change that is moderate to large in extent, resulting in major alteration to key elements, features or characteristics of the landscape, and/or introduction of large elements considered uncharacteristic in the context. Such development results in change to the character of the landscape.
Medium	Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the character of the landscape.
Low	Change that is moderate or limited in scale, resulting in minor alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the character of the landscape.
Negligible	Change that is limited in scale, resulting in no alteration to key elements features or characteristics of the landscape, and/or introduction of elements that are characteristic of the context. Such development results in no change to the landscape character.

Table 10.4: Magnitude of Landscape Impacts

10.2.2.4 Visual Receptor Sensitivity

Unlike landscape sensitivity, the sensitivity of visual receptors has an anthropocentric basis. It considers factors such as the perceived quality and values associated with the view, the landscape context of the viewer, the likely activity they are engaged in and whether this heightens their awareness of the surrounding landscape.

A list of the factors considered by the assessor in estimating the level of sensitivity for a particular visual receptor is outlined below and used in **Table 10.5** to establish visual receptor sensitivity at each representative viewpoint:

Susceptibility of Receptors

In accordance with the Institute of Environmental Management and Assessment ("IEMA") Guidelines for Landscape and Visual Assessment (3rd edition 2013) 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; and*
- *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; and*
- *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".*

Values Associated with Views

1. **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 Developments Plans, for example, a public consultation process is required.

2. **Views from within highly sensitive landscape areas**. Again, highly sensitive landscape designations are usually part of a county's Landscape Character Assessment, which is then incorporated within the County Development Plan and is therefore subject to the public consultation process. Viewers i.e. visual receptors, within such areas are likely to be highly attuned to the landscape around them.

3. **Primary views from nearby dwellings.** This category is reserved for those instances in which the design of dwellings or housing estates, has been influenced by the desire to take in a particular view. This might involve the use of a slope or the specific orientation of houses in the locality.

4. **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 county or regional scale

5. **Provision of 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.

6. **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 aware of / affected by changes in the view than those taking in the view of a busy street scene, for example.

7. **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.

8. **Presence of striking or noteworthy features.** A view might be strongly valued because it contains a distinctive and memorable landscape feature such as a promontory headland, lough or castle.

9. **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.

10. **Rarity or uniqueness of the view.** This might include the noteworthy representativeness of a certain landscape type and considers whether the receptor could take in similar views anywhere in the broader region or the country.

11. **Integrity of the landscape character**. This looks at the condition and intactness of the landscape in view and whether the landscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components.

12. **Sense of place.** This considers whether there is special sense of wholeness and harmony at the viewing location; and

13. **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. No relative importance is inferred by the order of listing. Overall sensitivity may be a result of a number of these factors or, alternatively, a strong association with one or two in particular. Visual receptor sensitivity is assessed on the bases of the criteria set out in **Table 10.5.**

Visual Receptor Sensitivity	Viewer Susceptibility	View Value
Very High	Viewers who have sought out a particular view due to its remarkable scenic qualities and who are likely engaged in active or passive recreation. Minimal tolerance for change.	Unique views of remarkable scenic quality involving distinct, naturalistic or historic features that are designated for protection and/or obtained from landscapes protected by policy at a national or international level. Minimal tolerance for change.
High	Viewers travelling on designated scenic routes or engaged on active or passive recreation where views of the surrounding landscape are important to the experience and residents of areas where views contribute to the landscape setting. Low tolerance for change	Views of considerable scenic quality involving distinct, naturalistic or historic features that are designated for protection and/or obtained from landscapes protected by policy at a Regional / County level. Low tolerance for change.
Medium	Viewers travelling on routes that have some scenic quality or sense of tranquillity. Recreationalists engaged in activities where scenic amenity is appreciated, but not key to the experience and residents of areas where views do not contribute strongly to the landscape setting. Medium tolerance for change.	Views with some scenic quality that might involve notable, naturalistic or historic features that are not designated for protection and are not obtained from landscapes identified for protection. Medium tolerance for change.
Low	Viewers engaged in recreation that does not involve an appreciation of scenic amenity, those travelling on busy roads with little scenic quality within the surrounding landscape setting. People at their place of work where visual setting in not key to the working experience. High tolerance for change.	Views without recognised scenic quality that are typical in nature and without naturalistic and historic features present, but likely with utilitarian features present. High tolerance for change.
Negligible	Viewers engaged in activities or present at locations where visual amenity is not a consideration or where the visual setting is a detraction. High tolerance for change	Views without any amenity value where the visual setting may be degraded. High tolerance for change

Table 10.5: Visual Receptor Sensitivity

10.2.2.5 Visual Impact Magnitude

The criteria used to assess visual impact magnitude are included in **Table 10.6** below.

Magnitude of Impact	Definition
Very high	The proposal obstructs or intrudes into a large proportion or critical part of the available vista and is without question the most noticeable element. An extensive degree of visual change will occur within the scene completely altering its character, composition and associated visual amenity
High	The proposal obstructs or intrudes into a significant proportion or important part of the available vista and is one of the most noticeable elements. A considerable degree of visual change will occur within the scene substantially altering its character, composition and associated visual amenity
Medium	The proposal represents a moderate intrusion into the available vista and is a readily noticeable element. A noticeable degree of visual change will occur within the scene perceptibly altering its character, composition and associated visual amenity
Low	The proposal intrudes to a minor extent into the available vista and may not be noticed by a casual observer and/or the proposal would not have a marked effect on the visual amenity of the scene
Negligible	The proposal would be barely discernible within the available vista and/or it would not influence the visual amenity of the scene

Table 10.6: Magnitude of Visual Impact

10.2.2.6 Landscape and Visual Significance of Effect

The significance of landscape and visual effect is based on a balance between the sensitivity of the landscape and visual receptor and the magnitude of the impact. The significance of landscape and visual effects is informed by the following matrix (**Table 10.7**), but ultimately determined by professional judgement:

Magnitude of Landscape / Visual Change	Sensitivity of Landscape / View				
	Very High	**High**	**Medium**	**Low**	**Negligible**
Very high	Profound	Profound - Very Significant	Very Significant - Significant	Moderate	Slight
High	Profound - very significant	Very Significant	Significant	Moderate - Slight	Slight - Not significant
Medium	Very Significant - Significant	Significant	Moderate	Slight	Not significant
Low	Moderate	Moderate - Slight	Slight	Not significant	Imperceptible
Negligible	Slight	Slight - Not Significant	Not significant	Imperceptible	Imperceptible

Table 10.7: Landscape and Visual Impact Significance Matrix2

[2] The matrix (Table 10.7) is only a guide to the classification of impact significance. The assessor also uses professional judgement informed by their expertise, experience and common sense to arrive at a classification that is reasonable and justifiable. In the EPA guidelines the chart above is accompanied by a footnote that states: "The depiction of significance classifications is indicative and should not be relied on as being definitive. It is provided for general guidance purposes" (EPA guidelines Section 3, page 53). For

Note: that the shaded cells in Table 10.7 ('Major' and above) are considered to equate with 'significant' effects in EIA terms where that impact is also deemed to be of a 'Negative' quality. Unshaded cells (Major-moderate and below) are not deemed to be significant effects in EIA terms.

Significance of Effect	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.
Major	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.

Table 10.8: Indicative significance of effect criteria descriptions

10.2.2.7 Representative Viewpoint Selection

The selection of viewpoints for this visual assessment was informed by thorough desktop analysis and field studies, ensuring a comprehensive representation of the visual impact across the receiving environment.

A total of 10 No. viewpoints have been selected for detailed assessment, with each viewpoint backed by verified photomontages. These viewpoints are specifically chosen to represent key landscape features, character areas, and groups of visual receptors within the vicinity of the proposed development.

All viewpoints are situated in publicly accessible areas, representing views from main roads, pedestrian zones, and notable viewing locations near the site. This strategic selection highlights views that are likely to be relevant for visual receptors in various contexts, including local residents, road users, and recreational visitors.

The visual impact assessment should be read alongside the baseline photographs and verified photomontages (available in **Volume 3: Appendix 10.1**).

Viewpoint Selection and Agreement with Planning Authority

In accordance with best practice and GLVIA3 guidance, a preliminary set of nine (9 no.) viewpoints was identified by the consultant team to represent a range of publicly accessible locations and receptor types.

example, according to the EPA chart a change of high magnitude affecting a receptor of medium sensitivity could be classified as either 'significant' or 'moderate'. That judgement must be made by the assessor.

These viewpoints were initially proposed following a coordinated review process conducted by the project LVIA consultant, Purser, in collaboration with the wider Large Residential Development (LRD) consultant team.

Subsequently, a formal LRD meeting was held with Meath County Council as part of the pre-application consultation process. The proposed viewpoint locations were reviewed during this meeting and were deemed generally acceptable. However, the Planning Authority in its Notice of LRD Opinion requested two additional locations:

- One additional viewpoint between the originally proposed Viewpoints 1 and 9, to the south of the site; and
- A further viewpoint at or near Viewpoint 9, with a view oriented to the north-east.

Following this, an updated LVIA Viewpoint Location Diagram was issued to Meath County Council for consideration. In response, Viewpoint No. 10 (providing a view to the north-east) was accepted and formally added to the assessment. This viewpoint is fully included within the LVIA and its assessment is provided in the relevant sections of this chapter.

Regarding the request for a viewpoint between Viewpoints 1 and 9, it was clarified that this location falls within a privately owned field, which, while within the applicant's red line boundary, is not currently publicly accessible. As per GLVIA3 guidance, verified viewpoints should be taken from publicly accessible areas such as roads, public footpaths or other locations with open access. Accordingly, while the location did not qualify for inclusion as a formal LVIA viewpoint, a Computer-Generated Image (CGI) from this location was prepared for illustrative purposes and included within the wider planning application pack. This approach was accepted by Meath County Council following further correspondence.

Confirmation of acceptance of the proposed viewpoint adjustments was received by email from the Planning Authority on 24 March 2025, following clarification from the project team. The Planning Authority acknowledged that the revised approach was appropriate and compliant with LVIA best practice.

This collaborative and consultative approach ensured that the viewpoint selection for the LVIA is robust, policy-compliant, and responsive to the concerns of the Planning Authority.

10.2.2.8 Quality and Timescale of Effects

In addition to assessing the significance of landscape effects and visual effects, EPA Guidance for EIARs requires that the quality of the effects is also determined. This could be negative/adverse, neutral, or positive/beneficial.

Landscape and Visual effects are also categorised according to their duration:

- Temporary – Lasting for one year or less.
- Short Term – Lasting one to seven years.
- Medium Term – Lasting seven to fifteen years.
- Long Term – Lasting fifteen years to sixty years; and
- Permanent – Lasting over sixty years.

The duration of effect is not used to increase or reduce the significance of effect judgement, but as a supplementary factor to be considered i.e. a significant effect might be considered more acceptable if its duration is temporary rather than permanent.

10.2.2.9 Assessment of Cumulative Effects

The planned, existing and/or approved projects selected through the screening exercise as potentially relevant to the assessment of impacts to landscape and visual are presented in **Table 10.9**.

The cumulative construction assessment focuses on projects scheduled to build concurrently with the proposed development in 2025/2026, excluding projects completed before this period. For cumulative operational impacts, the assessment considers the total effects of projects operating simultaneously with the proposed development.

The CEA methodology consists of three stages:

Long List of Projects: Initially, a broad list of "*other existing and/or approved projects*" was compiled, focusing on projects that could impact environmentally sensitive areas or require significant natural resources.

Screening: This list was then screened by EIA Specialists to identify projects with the potential for significant cumulative effects, based on factors like location, scale, and available data. Projects unlikely to contribute to cumulative impacts were screened out.

Cumulative Assessment: Projects Within and Beyond 2.5 km

Projects Within a 2.5 km Radius

Projects located within a 2.5 km radius of the proposed development were assessed for potential cumulative landscape and visual impacts. These include primarily residential developments, along with selected commercial and renewable energy projects, considered due to their scale and proximity. Most of these were screened in for assessment based on their potential visibility and relevance to the local context. However, some projects were screened out where sufficient physical and visual separation exists, and where no meaningful cumulative impact was considered likely.

Projects Beyond a 2.5 km Radius

Projects located beyond the 2.5 km radius were reviewed but screened out from the cumulative landscape and visual assessment. Due to their greater distance, lack of intervisibility, and limited spatial or perceptual connection with the proposed development, these projects are not expected to contribute to cumulative landscape or visual effects. Accordingly, no significant cumulative impacts are anticipated from projects located beyond this threshold.

Assessment of Selected Projects: Projects deemed relevant were carried forward for detailed assessment, with findings included in the main body of the EIAR chapter.

This structured approach allows for a focused analysis of cumulative impacts.

(Please note the table below provides only a summary of the relevant developments. Please refer to EIAR Chapter 2, Section 2.6 for an overview of cumulative effects.)

Table 10.9: Projects 'Screened in for Cumulative Effects Assessment.

No.	Project Name	Planning Ref.	Project Description	Status	Timeframe	Justification for screening into the cumulative effects assessment
1	**Tullydale Ltd. Former BMX Facility, Fairyhouse Road**	Meath Co. Co. Reg. Ref. 2460924	The proposed development will consist of, inter alia, the removal of the existing BMX track	Further Information	Further information was requested from	Screened in – two to three storey development within 500m of

No.	Project Name	Planning Ref.	Project Description	Status	Timeframe	Justification for screening into the cumulative effects assessment
			and the construction of a 2–3 storey nursing home comprising 118 bedrooms and 8 single-storey Independent Living Units (ILUs), along with a new access road and junction upgrade works to Fairyhouse Road. The development will also include car and bicycle parking, signage, communal and private open space, and all associated landscaping, boundary treatments, and site development works.		the developer on 07 January 2025. As of writing the Further Information has not been submitted by the Developer	development site. Potential for cumulative construction and operational effects.
2	**Flinders Developments Limited Fairyhouse Road**	Meath Co. Co. Reg. Ref. 2460558	The site is located opposite the Glascarn Lane junction, southwest of Seagrave Hall. The development will provide, inter alia, a new BMX facility comprising a main track and practice track, storage containers, and all associated site development works including lighting, landscaping, SuDS features, boundary treatments, and service provision.	Permitted	Application granted permission by Meath County Council on 27 March 2025.	Screened in – development Potential for cumulative construction and operational effects.
3	**Jamestown LRD (1)**	ABP Reg. Ref. 305196-19	Strategic Housing Development for 228 No. residential units (114 No. houses, 114 No. apartments), childcare facilities and associated site works.	Permitted	Application approved by An Bord Pleanála on 06 December 2019. Scheme is currently under construction.	Screened in – large scale residential development to north west of subject site. Potential for cumulative construction and operational effects.

No.	Project Name	Planning Ref.	Project Description	Status	Timeframe	Justification for screening into the cumulative effects assessment
4	**Jamestown LRD (2)**	Meath Co. Co. Reg. Ref. 23882 ABP Reg. Ref. ABP-318557-23	The proposed development will consist of, inter alia, modifications to SHD application ABP 305196-19 relating to 62 residential units in six duplex blocks, along with all associated landscaping, boundary treatments, site development, and service infrastructure works.	Permitted	Application approved by An Bord Pleanála on 27 March 2024. Scheme is currently under construction.	Screened in – large scale residential development to north west of subject site. Potential for cumulative construction and operational effects.
5	**Jamestown LRD (3)**	Meath Co. Co. Reg. Ref. 2461100	The proposed development will consist of, inter alia, modifications to the previously permitted Strategic Housing Development (ABP-305196-19), comprising 48 apartment units in two blocks with surface car parking (in place of undercroft parking), and associated changes to communal open space, provision of a roof terrace, bin and bicycle storage, as well as all associated landscaping, boundary treatments, site development, and service infrastructure works.	Permitted	Application approved on 17 February 2025	Screened in – large scale residential development to north west of subject site. Potential for cumulative construction and operational effects.
6	**Jamestown LRD (4)**	Meath Co. Co. Reg. Ref. 24382	Extension of duration of planning permission SH/305196.	Permitted	Application was granted an extension of time for 5 years until 31 December 2029. The scheme is currently under construction.	Screened in – large scale residential development to north west of subject site. Potential for cumulative construction and operational effects.
7	**Lands at Jamestown**	Meath Co. Co. Reg.	Proposed housing development on a site of c. 3.766 hectares,	Further Information	Further information was requested from	Screened in – large scale residential

No.	Project Name	Planning Ref.	Project Description	Status	Timeframe	Justification for screening into the cumulative effects assessment
		Ref. 2460676	consisting of: 90 residential units and all other associated landscaping, boundary treatments, site development & services infrastructure works		the developer on 21 October 2024. Further information received by Council on 02 April 2025.	development to north west of subject site. Potential for cumulative construction and operational effects.
8	**Sergejs & Olga Podoba Glascarn Lane**	Meath Co. Co. Reg. Ref. 21104	Single storey porch to the front of the dwelling, the addition of 2 No. new windows to the front elevation, stone cladding to be added to parts of the front elevation of the dwelling, a single storey extension to the rear, a new domestic garage to the rear and all associated site works.	Permitted	Planning permission expires 25 April 2026. Construction has not started.	Screened in – small scale residential development adjacent to northern site boundary. Potential for cumulative construction and operational effects.
9	**Glenlly Glascarn Lane**	Meath Co. Co. Reg. Ref. 22702	The proposed development will consist of, inter alia, alterations to the existing dwelling including remodelling of the front elevation at ground and first floor levels, alteration of the roof profile, re-finishing of roof slopes with fibre cement slate, and all ancillary site works.	Permitted	Planning permission expires 31 August 2027.	Screened in – small scale residential development adjacent to northern site boundary. Potential for cumulative construction and operational effects.
10	**Mr. Adrian Groza, Glencarn Lane**	Meath Co. Co. reg. Ref. 221653	The proposed development will consist of, inter alia, amendments to previously approved planning permissions (RA/170966, RA/181201 & 21/2210), including replacement of the roof, relocation and enlargement of the domestic garage, and all associated site works,	Permitted	Planning permission expires 22 January 2028.	Screened in – small scale residential development adjacent to northern site boundary. Potential for cumulative construction and operational effects.

No.	Project Name	Planning Ref.	Project Description	Status	Timeframe	Justification for screening into the cumulative effects assessment
			landscaping, and site drainage.			
11	**Site 3 @ The Bungalow & Buttevant**	Meath Co. Co. Reg. Ref. 22199	Modifications & amendments to previous approved permission (Ref: RA170973) to include modified floor plans to ground & first floor, modified elevations to suit, re-orientation of dwelling, extended garage area with associated site works.	Permitted	Planning permission expires 21 May 2027. Construction has started on site.	Screened in – small scale residential development located north of the site along Glascarn Lane. Potential for cumulative construction and operational effects.
12	**Cairn Lodge, Glencarn Lane**	Meath Co. Co. Reg. Ref. 2460035	Retention Permission is sought for of existing on-site wastewater treatment system, (b) planning permission is sought for alteration of the existing dwelling elevations, and (c) additional rear two-storey extension to dwelling	Permitted	Planning permission expires 15 April 2029. Construction is yet to begin on site.	Screened in – small scale residential development adjacent to northern site boundary. Potential for cumulative construction and operational effects.
13	**Mr. Albano Jupi, Fairyhouse Road**	Meath Co. Co. Reg. Ref. 221118	Single Storey Front & Rear Extension to Existing Bungalow Dwelling and all associated site works.	Permitted	Planning permission expires 22 March 2028. Construction is yet to begin on site.	Screened in - small scale residential development adjacent to northern site boundary. Potential for cumulative construction and operational effects.
14	**Dave and Veronica McCormack Fairyhouse Road**	Meath Co. Co. Reg. Ref. 2460574	Extension to an existing dwelling house, erection of a new domestic garage together with associated site works.	Permitted	Planning permission expires 30 October 2029. Construction is yet to begin on site	Screened in - small scale residential development adjacent to northern site boundary. Potential for cumulative

No.	Project Name	Planning Ref.	Project Description	Status	Timeframe	Justification for screening into the cumulative effects assessment
						construction and operational effects.

A key consideration in the Guidance is the nature of cumulative visibility as described below.

'**Combined visibility** occurs where the observer is able to see two or more developments from one viewpoint. Combined visibility may either be in combination (where several wind farms are within the observer's arc of vision at the same time) or in succession (where the observer has to turn to see the various wind farms).

Sequential effects occur when the observer has to move to another viewpoint to see different developments. The occurrence of sequential effects may range from frequently sequential (the features appear regularly and with short time lapses between, depending on speed of travel and distance between the viewpoints) to occasionally sequential (long time lapses between appearances, because the observer is moving very slowly and / or there are large distances between the viewpoints.)'

The GLVIA (2013) defines cumulative landscape and visual effects as those that 'result from additional changes to the landscape and visual amenity caused by the proposal in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.'

In this instance cumulative effects are assessed in relation to other permitted or planned developments on the basis that, where relevant, any existing developments will present in the baseline of the main assessment.

The principal focus of the cumulative assessment of projects will be the relationship between the proposed development and other planned or permitted development in close proximity to the subject site, focused on the north, northwest and northeast.

10.2.2.10 Data Collection and Collation

Data used in the LVIA consists of written character assessment and guidance documents, online resources and technical data including:

- Relevant County Development Plans and associated County Landscape Character Assessments:
  - Meath County Development Plan 2021-2027 (including Appendix 5 – Landscape Character Assessment).
  - Ratoath Written Statement – Volume 2 Written Statements and Maps for Settlements
- Online review of tourism, heritage and amenity features
- OSI mapping and aerial imagery including 'Google Earth' and 'Google Street View'.
- High resolution photography at selected viewpoints
- Geo-referenced 3D models of the various development elements used in the preparation of photomontages.

Relevant Guidance and Policy

Relevant Guidance and Policy considered in this section starts with overarching framework documents and thereafter, the finer grain of regional and county level guidance and policy documents that are relevant to this LVIA.

Meath County Development Plan 2021-2027

The original Meath County Development Plan 2021-2027 (adopted on 22 September 2021) has been superseded by the Consolidated version of the Meath County Development Plan 2021-2027 (incl. Variations 1 & 2) adopted on the 13th May 2024. This document has been considered in the preparation of this EIAR Chapter. Key policies and objectives are highlighted below. (Note: this policy review is non-exhaustive and intended only for the purposes of this LVIA. Please refer to **Chapter 3 - Planning Policy Context – of this EIAR** for a detailed policy review.)

Relevant Policies and Objectives:

Land Use Zoning

The subject site is zone '**A2 – New Residential'** within the following objective: 'to provide for new residential communities with ancillary community facilities, neighbourhood facilities as considered appropriate'.

In 2024 Meath County Council prepared a variation to the Meath County Development Plan 2021-2027. The variation amended the zoning for the Ratoath Outer Relief Road from RA Rural Area and WL White Lands to A2 New Residential. This variation replaced and updated the delineation of the Ratoath Outer Relief Road (RORR) from its indicative status to its permitted, partly constructed and final design. The amendment provided certainty for the development of the final part of the road on appropriately zoned lands.

Within the Ratoath Written Statement for Settlements site is also within a designated masterplan boundary (MP37). The Ratoath Written Statement advises that

> "*any planning application made for development on these lands [lands to the south west of Ratoath zoned for the completion of the Outer Relief Road] shall be accompanied by a Master Plan (MP37)*" [our addition].

The Master Plan, MP37 includes details such as overall site and building layout for the lands, building height and design principles, mix of uses, open space and recreational provision, traffic impact assessment and management proposals and service.

Chapter 5 – Movement

Below are the relevant policies and objectives from Chapter 5 (Movement) which guide development for transport infrastructure within the region. The policies and objectives have been included in the planning policy review due to the inclusion of the final section of the Ratoath Outer Relief Road (RORR) as part of the development.

- **MOV POL 26:** Provides for and carry out improvements to sections of national, regional and county roads that are deficient in terms of alignment, structural condition or capacity, where resources permit, and to seek to maintain that standard thereafter. To ensure that, where possible, any maintenance and improvement strategies have regard to future climates.

- **MOV OBJ 55:** Promotes the delivery of the following key strategic roads including but not limited to: Ratoath Outer Relief Road, Bryanstown Link Road (Drogheda), Navan Road – Dublin Road Link, Trim, M3 junction6/R125 to R147 distributor road. Each of these projects will subject to the outcome of the Appropriate Assessment process.

Chapter 8 – Cultural and Natural Heritage Policies

Below are the relevant policies and objectives from Chapter 8 of the Development Plan that guide historic landscape management and development within such areas.

- **HER OBJ 29**: Requires that proposals for development in designated landscapes and demesnes include an appraisal of the landscape, designated views and vistas, in order to inform site appropriate design proposals.

- **HER POL 37**: Encourages the retention of hedgerows and other distinctive boundary treatments in rural areas and prevent loss and fragmentation where practically possible. If a removal of a hedgerow is unavoidable mitigation by provision of the same type of boundary will be required.

- **HER POL 38**: Promotes and encourages planting of native hedgerow species in new developments and as part of the Council's own landscaping works.

- **HER POL 52**: Protects and enhances the quality, character and distinctiveness of the landscapes within the County in order to ensure that new development meets high standards of siting and design in accordance with national policy and guidelines and the recommendations of the Meath Landscape Character Assessment (2007).

- **HER POL 53**: Discourages proposals which require the removal of an extensive amount of trees, hedgerows and historic walls or other distinctive boundary treatments.

- **HER OBJ 49**: Ensures that the management of development will have regard to the value of the landscape including its character, importance, sensitivity and capacity to absorb as outlined in Appendix 5 Meath Landscape Character Assessment and its recommendations

- **HER OBJ 50**: Requires and landscape and visual impact assessments prepared by suitably qualified professionals to be submitted with applications which may have a significant impact on landscape character areas of medium or high sensitivity.

Section 8.18 Views and Prospects

County Meath has numerous vantage points which offer attractive views, many of which are associated with heritage and tourism sites. The Development Plan states that

> "*it is not envisaged that the designation of a protected view would prohibit all development within the view, rather than any development proposed within the view should be designed and located so as not to obstruct the view or be unduly intrusive in the landscape as seen from these vantage points*."

- **HER OBJ 56**: Preserve and protect the views and prospects listed in Appendix 10, in Volume 2 and on Map 8.6.

Volume 2 – Written Statement for Settlement: Ratoath

As part of the Meath County Development Plan (2021-2027) Written Statements were prepared for all settlements within the county including Ratoath. The written statement provides a brief description and development strategy for Ratoath. A detailed Local Area Plan for the town will be prepared during the life of the Development Plan. The Local Area Plan has not yet been drafted.

Relevant Policies

Below are the relevant policies and objectives from Section 8.0 (Town Development Policies) of the Written Statement for Settlement: Ratoath that guide development within the town of Ratoath.

- **RA OBJ 6:** To facilitate the development of the Ratoath Outer Relief route in tandem with development;

- **RA OBJ 10:** To promote a high standard of architectural design, and quality of materials utilised throughout the Development Framework area, which is appropriate in scale, and form to its location.

- **RA OBJ 11:** To require that development proposals are prepared in accordance with a Masterplan which includes an urban design and landscape design statement.

Meath County Development Plan: Appendix 5 – Landscape Character Assessment

The Landscape Character Assessment forms Appendix 5 to the Development Plan providing guidance for a detailed understanding of the landscapes of the County. The LCA sets out guidance and recommendations to assist in providing policies, strategies and management for development within the County.

Landscape Character Type (LCT) – Lowlands

The proposed development is located within the 'Lowlands' Landscape Character Type (LCT), as identified in the Meath County Development Plan 2021–2027. This is the most extensive LCT in the county and is predominantly agricultural in use. The south-eastern area, where the site is located, has undergone significant change due to its proximity to Dublin, resulting in a more developed and transitional landscape.

The Landscape Character Assessment highlights the need for sensitive integration of new development, particularly in areas experiencing urban expansion. It advises that future development should respond to the existing structure and scale of towns and villages, and use local materials where possible to reflect the area's character.

Key recommendations include reinforcing the urban-rural transition through appropriate landscape buffers, maintaining historic boundaries, and preserving rural landscape features such as hedgerows and views to key upland areas.

Landscape Character Area (LCA) 10: Ward Lowlands

The Meath Landscape Character Assessment further expands upon the Landscape Character Types into 20 Landscape Character Areas. The subject site is located within the 'Ward Lowlands' which is located in the southeast of the county and encompasses the urban settlements of Ratoath, Ashbourne and Kilbride.

An overview of the Ward Lowlands is set out below:

- **Landscape Value**: The Ward Lowlands are described as having low value within the Landscape Character Assessment.

- **Landscape Importance**: The importance of the Ward Lowlands is of regional value.
- **Sensitivity and Capacity**: The Ward Lowlands is identified as having a high landscape sensitivity[3].

The Landscape Character Assessment sets out a number of recommendations for the Ward Lowlands. Recommendation No. 4 is of relevance and set out below:

"4. Consolidate urban fringes particularly Ratoath and Ashbourne, including appropriate landscape treatment to soften urban edges and provide opportunities for public access and recreation in proximity to population centres."

(In our professional opinion, the proposed development is consistent with Recommendation No. 4 of the Landscape Character Assessment by contributing to the consolidation of the urban fringe of Ratoath. The layout and design of the development provide a defined and coherent settlement edge, aligned with the site's zoning and policy objectives. The proposed landscape treatment—comprising structured planting, green buffers, and pedestrian connections—softens the transition between urban and rural areas, supports biodiversity, and offers future opportunities for public access and amenity in line with the guidance for this Landscape Character Area.

Protected Structures

There are no Protected Structures located within the subject site. The closest Protected Structures are located within Ratoath town centre. The subject site is physically and visually separated from the Protected Structures by distance and intervening residential development. Therefore, no landscape or visual impact is anticipated to the protected structures as demonstrated by Table 10.10 below.

Table 10.10: Protected Structures within Ratoath. Source Meath County Development Plan 2021-2027.

RPS No.	Protected Structure	Distance from Subject Site
91444	Park House – detached three bay, two storey house built c. 1870.	c. 1.8km
91445	The Barracks – detached three-bay two storey Tudor style house built c. 1890	c.1.7km
91446	Holy Trinity Parochial House – detached three-bay two storey house built c. 1869.	c.1.42km
91447	Holy Trinity Parochial House outbuildings – detached six bay two storey outbuilding built c. 1870.	c.1.42km
91448	Holy Trinity Roman Catholic Church – Detached church commenced 1820, remodelled	c.1.5km

[3] While the Meath Landscape Character Assessment (LCA) assigns a high sensitivity rating to the Ward Lowlands, this blanket designation appears somewhat contradictory given its simultaneous classification as a low-value landscape. In our professional opinion, the high sensitivity may relate to the pressure exerted by expanding urban settlements on the surrounding rural landscape, rather than to development within the settlements themselves. The subject site is zoned for development and, in our view, does not exhibit the characteristics of a highly sensitive landscape in this context. A more detailed assessment of site-specific landscape sensitivity is provided below.

	1868 and 1874. Site contains a motte and bailey	
91449	Grotto – freestanding Marian grotto built c. 1955	c.1.5km
91450	Ratoath Church of Ireland – detached square profile, three stage castellated and pinnacle tower built c. 1817. Ruins of church walls to the east.	c.1.6km
91451	Water pump	c.1.49km
91452	Ratoath Glebe House – Detached five-bay two storey over basement former rectory built c. 1813.	c.1.75km
91453	Ratoath Manor – seven bay two storey former house built c. 1780	c.1.42km
NIAH Ref: 14336001	Fox Lodge	c.1.53km
NIAH Ref: 14336014	House – Detached five-bay single-storey house, built c.1800	c.1.4km

Architectural Conservation Area (ACA)

The subject site is not located within an ACA.

Preserved Views

There are no protected or preserved views located on or adjacent to the subject site. The nearest designated views are:

- View No. 73 – County road between Robinson's Cross Roads on the R108 and Windmill Hill, located approximately 7km north of the site.
- View No. 77 – View of Killeen Castle and the Skane Valley from the south-east direction near Warrenstown College, located approximately 8.8km to the west.

Both views are oriented away from the subject site, facing in a northeasterly direction. As such, the proposed development will not be visible from these locations, and no impacts on protected views are anticipated.

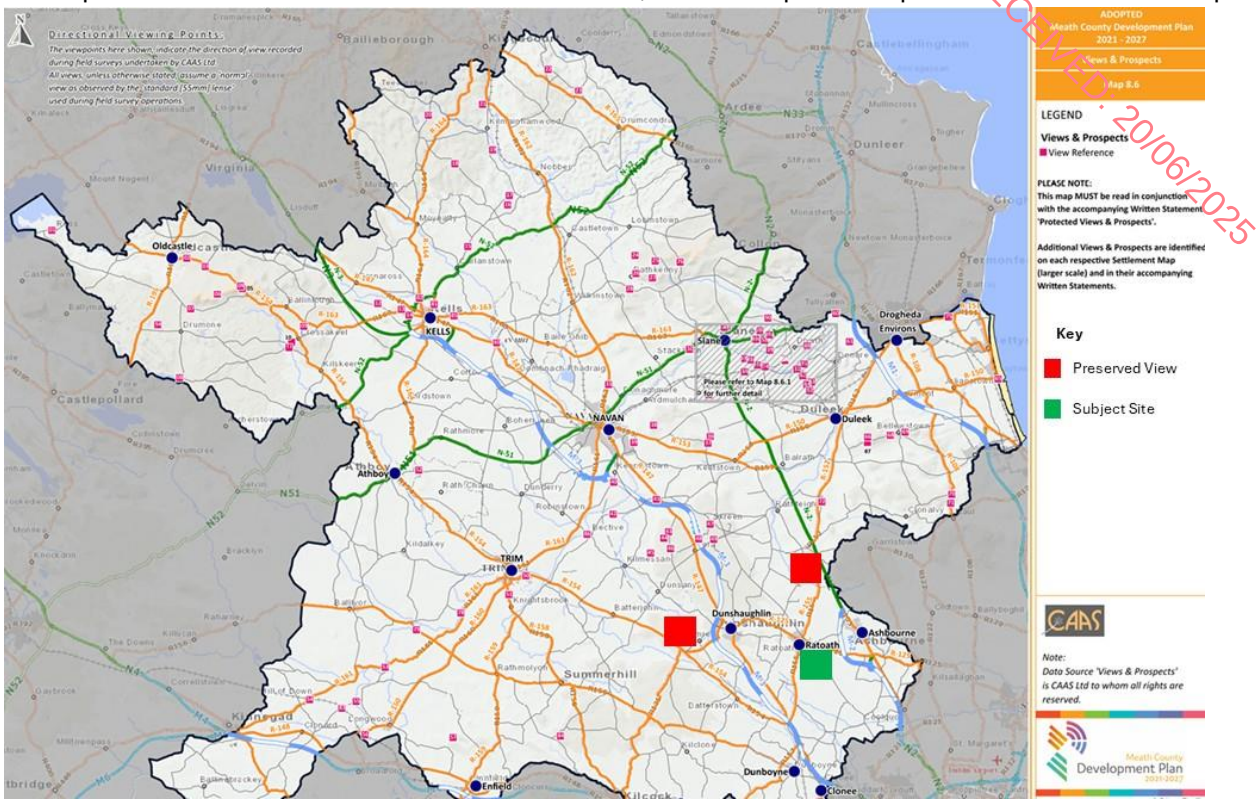

Figure 10.2: Map 8.6 – Views and Prospects. Source: Meath County Development Plan 2012-2027. Annotated by Purser.

10.3 Baseline Environment

10.3.1 Site Context and Landscape Setting

The subject site is located on the southern edge of Ratoath, County Meath, and forms part of the town's designated development lands. It comprises approximately 12.58 hectares of generally flat, agricultural grassland defined by mature field and roadside hedgerows. The site forms part of a transitional landscape between the established urban fabric of Ratoath to the north and a predominantly rural landscape to the south.

The surrounding area presents a mixed character. To the north, the site adjoins existing residential areas, including Carraig na Gabhna, Cairn Court, and residential properties along Glascarn Lane, as well as Ratoath College. To the south, east, and west, the context becomes increasingly rural, comprising agricultural lands interspersed with scattered one-off dwellings, and local commercial enterprises along Glascarn Lane. The site also lies adjacent to the permitted Jamestown Large Residential Development (LRD), which is currently under phased construction. The proposed Ratoath Outer Relief Road (RORR) defines the southern site boundary and forms part of a wider strategic infrastructure corridor envisaged in the Meath County Development Plan 2021–2027.

10.3.2 Land Use and Vegetation

The site consists of multiple agricultural fields bounded by established hedgerows and tree lines. Vegetation on site primarily comprises Hawthorn hedgerows with understorey Bramble and Dogrose. Tree species include Ash (many showing signs of dieback), Sycamore, Crab Apple, and occasional Poplar. An arboricultural assessment has classified the majority of trees and hedgerows as Category 'C' (low quality/value), with only

one tree rated Category 'B' (moderate quality/value). The hedgerow network contributes to local visual screening and biodiversity value, despite its declining condition.

10.3.3 Visual Characteristics

The visual envelope is relatively constrained due to the site's flat topography and the enclosing pattern of mature hedgerows. Views into the site are generally limited to short-range glimpses from adjoining residential properties and local roads (e.g., R155 Fairyhouse Road and Glascarn Lane). The most sensitive visual receptors include adjacent residential dwellings, particularly those that directly adjoin the site. In general, the broader landscape offers limited intervisibility with the site.

10.3.4 Visual Receptors

The visual envelope associated with the site is relatively limited due to flat topography, the presence of mature hedgerows, and the site's location at the urban fringe. The key visual receptors include:

- **Adjoining Residential Properties:** Dwellings immediately north and west of the site (including properties along Glascarn Lane, Carraig na Gabhna, Cairn Court, and the R155 Fairyhouse Road) may experience partial views of the development. However, these views are generally filtered by existing boundary vegetation, garden walls, and fencing. Many of these properties already overlook a transitional landscape where suburban development interfaces with agricultural land.

- **Road Users:** Views from local roads (Glascarn Lane and R155 Fairyhouse Road) are intermittent and screened by mature roadside hedgerows. There are no clear, long-range views of the site from regional or national routes.

- **Community and Educational Facilities:** Facilities such as Ratoath College and the BMX track are physically separated from the site by existing or permitted development and vegetation. No direct or significant views are currently available from these locations.

Overall, the number of sensitive visual receptors with uninterrupted views of the site is limited. The existing vegetation and the site's edge-of-town location help to visually contain the site within the local landscape.

10.4 Characteristics of the Proposed Development

The proposed development comprises a Large-scale Residential Development (LRD) on a site of 12.58ha within the townlands of Jamestown and Commons in Ratoath Co. Meath. The proposed development will principally consist of the construction of 364 no. residential units including 250 no. houses and 114 no. apartment / duplex units along with a creche, retail unit and café unit all with associated car and cycle parking and bin stores. Proposed building heights range from 2 no. to 4 no. storeys. Public open space is proposed across the site consisting of a central public park area and pocket parks featuring formal and informal play and amenity areas.

The proposed development also includes the construction of a section of the Ratoath Outer Relief Road (RORR) which will be continued from its current termination point in the northeast of the subject site to the existing Fairyhouse Road (R155) in the southwest. Access to the development is proposed via 2 no. vehicle access points from the new RORR. A series of pedestrian and cycle connections are proposed to the site from the Fairyhouse Road (R155), Glascarn Lane and the new RORR.

Please refer to the planning application form and statutory notices (newspaper and site notices) for a full and formal description of the proposed development.

10.4.1 Site Layout

The proposed layout has been carefully designed in response to the site's context, planning policy, and feedback received during pre-planning engagement with Meath County Council. The site layout reflects an integrated approach that balances residential density with permeability, high-quality open space, and strong place-making principles.

The design creates a legible network of streets and spaces, structured around a hierarchy of movement routes and defined by clear connections to adjoining lands, including the Jamestown LRD and the Ratoath Outer Relief Road (RORR). A green spine runs through the site, connecting a series of public and communal open spaces that act as focal points for recreation and community interaction.

The development delivers strong frontage along the RORR, while also incorporating shared surface streets and pedestrian-priority zones within the scheme to promote walkability and enhance neighbourhood character. The overall layout supports visual and physical permeability, passive surveillance, and social interaction among residents.

(Refer to the Architectural Design Statement by Fewer Harrington & Partners for full details.)

10.4.2 Building Form, Massing and Materiality

The architectural design responds to the site’s edge-of-town location and transitional context between the built-up area of Ratoath and the surrounding rural hinterland. Building heights range from 2 to 4 storeys, with massing carefully modulated to respect adjoining properties and maximise daylight and privacy. Lower buildings are placed at site boundaries, particularly adjacent to existing dwellings, with taller elements focused around the central areas of the site and along the RORR frontage.

A contemporary yet contextual architectural language has been adopted throughout, with material choices that reflect the local vernacular while providing a distinctive and unified identity. The palette includes red and buff brickwork, light render, metal cladding, and aluminium-framed glazing. Pitched roofs and articulated facades add rhythm and variety to the streetscape, while balconies and large windows promote natural surveillance and daylight penetration.

The proposed crèche and retail/coffee unit at the site entrance adopts a bolder expression to act as a gateway feature and local landmark. Its varied materials and strong corner emphasis help activate the public realm and support community activity.

(Refer to the Architectural Design Statement and architectural drawings for further details.)

10.4.3 Landscape Proposals

High-quality landscape design is a central component of the proposed development and plays a critical role in creating a distinct identity, supporting biodiversity, and ensuring integration with the surrounding environment. The design, prepared by Studio Glasú Landscape Architects, draws inspiration from the site's field patterns, hedgerows, and the broader landscape structure of Ratoath, creating a legible and connected green infrastructure network.

The landscape strategy establishes a clear hierarchy of open spaces, anchored by a central green spine and complemented by a series of pocket parks and local nodes. These spaces are designed for informal play, rest,

social interaction, and ecological enhancement. The central open space acts as a primary organising feature and is flanked by homes offering passive surveillance and easy access, reinforcing safety and usability.

A key objective of the design is to promote community cohesion and social vitality, with seating, planting, and spatial configurations that invite informal gathering and interaction. Native and pollinator-friendly planting is used extensively to support biodiversity and create year-round visual interest. A particular emphasis is placed on ecological continuity, with retained and reinforced boundary hedgerows enhancing the site's relationship with adjoining green spaces and wildlife corridors.

In total, the development includes over 1.59 hectares of public open space, supplemented by 0.118 hectares of communal open space for apartments and duplexes. The planting strategy involves a significant quantum of new planting, including new trees, extensive native hedgerows, ornamental shrub beds, pollinator-friendly species, and SuDS features such as swales and rain gardens. This new green infrastructure is designed not only to enhance visual quality but also to increase biodiversity, strengthen ecological corridors, and provide robust long-term screening and amenity.

The site's permeability is supported by a well-considered network of pedestrian and cycle connections that align with natural desire lines and tie into wider infrastructure including the Ratoath Outer Relief Road (RORR) and the adjacent Jamestown LRD site. Planting and materials have been chosen to deliver robustness, ease of maintenance, and a unified visual language throughout the public realm.

SuDS principles have been embedded through the use of swales and natural drainage features, ensuring a sustainable approach to surface water management and contributing to the ecological function of the site.

(Please refer to the Landscape Design Statement and drawings by Studio Glasú Landscape Architects, submitted with this application, for full details.)

10.5 Potential Effects

Landscape Sensitivity

The sensitivity of the receiving environment is assessed as **Medium**, in line with GLVIA3 and informed by site context, planning policy, landscape character, and capacity for change.

(Definition: "Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong, or has evidence of alteration, degradation or erosion of elements and characteristics. The landscape character is such that there is some capacity for change. These areas may be recognised in policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change.")

This classification reflects the following key factors:

1. Site Context and Condition: The site comprises underutilised agricultural grassland located at the southern edge of Ratoath, enclosed by mature hedgerows and bounded by the R155 (Fairyhouse Road) and Glascarn Lane. It lies within the defined development boundary of Ratoath and is zoned for residential use. The site lacks distinctive landscape features or topographical variety that might elevate its landscape value. In visual terms, its flat profile and mature boundaries limit its prominence in the wider landscape.

2. Planning Designations and Constraints: The site is not subject to any designated scenic routes, protected views, or landscape conservation objectives under the Meath County Development Plan 2021–2027. It is primarily zoned A2 – New Residential, which supports residential development in principle. A minor section of land along the proposed Ratoath Outer Relief Road (RORR) corridor is zoned RA – Rural, but this is marginal and does not pose a development constraint.

3. Policy Context and Capacity for Change: The site lies within Landscape Character Area (LCA) 10: Ward Lowlands, which is described in the Development Plan as having low landscape value but high sensitivity. In professional judgement, this apparent contradiction reflects pressure from dispersed rural development, rather than a limitation on development within zoned settlement lands. The Development Plan encourages consolidation of towns like Ratoath through infill development and expansion at their edges, especially where such development is supported by infrastructure and strong design.

4. Emerging Landscape Character and Urban Transformation: The character of the area is undergoing transition. To the immediate east, the permitted Jamestown Large Residential Development is under construction. The proposed development—alongside delivery of the final section of the RORR—will contribute to this transformation by reinforcing a coherent and legible southern urban edge for Ratoath. The planned layout, public realm strategy, and landscape design are aligned with Meath County Council's vision for compact, sustainable growth. The adjoining White Lands to the south are also expected to accommodate future development in accordance with the MP37 Masterplan Framework.

Although the site is currently in agricultural use, it does not function as part of a high-value or protected landscape. Its role is transitional, bridging existing suburban development and emerging growth areas. The Medium sensitivity classification reflects this evolution—acknowledging the site's current rural use, while recognising its limited visual prominence, development zoning, and strategic importance in the planned consolidation of Ratoath.

10.5.1 Construction Phase Landscape Effects

The construction phase of the proposed development will involve a temporary and sequential transformation of the site's landscape, as it transitions from agricultural grassland to an urban neighbourhood. These changes will occur over an anticipated 24–48 month period and are detailed in the Construction & Environmental Management Plan (CEMP) prepared by O'Connor Sutton Cronin & Associates (dated 28 March 2025).

From a landscape perspective, the construction phase will result in a short-term, medium magnitude change to the site and its immediate setting. The following landscape effects are anticipated:

- Loss of existing agricultural character, including removal of internal hedgerows (in accordance with plans and particulars) and associated vegetation to accommodate development platforms, roads, and services.
- Introduction of construction-related features, such as site hoarding, site compounds, temporary fencing, stockpiles, plant and machinery, haul roads, and traffic management infrastructure.
- Disruption of landscape continuity, as green field parcels are temporarily replaced by hard infrastructure and construction activity.
- Disturbance to landscape features, including regrading, soil stripping, and localised clearance works to facilitate construction and road realignment (notably the completion of the Ratoath Outer Relief Road).

Although these effects will be perceptible during construction, the landscape context is already transitional and influenced by recent and ongoing development, including the adjacent Jamestown LRD. The site is enclosed by existing boundary hedgerows and development, limiting landscape exposure beyond the immediate vicinity.

Importantly, the landscape change is temporary and forms part of a planned urban expansion on serviced lands zoned for development. The landscape strategy includes a significant quantum of new planting, including a green spine, street trees, native hedgerows, and pollinator-friendly species, which will establish a robust and high-quality landscape framework during and after construction. These measures are designed not only to mitigate loss of vegetation but to improve long-term landscape structure and ecological connectivity.

In conclusion, the construction phase will result in temporary and moderate adverse effects on local landscape character due to the transformation of the site and loss of internal field structures. However, these effects are

short-term and will be mitigated through the implementation of a comprehensive landscape scheme, aligned with the long-term planning objectives for the area and delivered in tandem with phased construction.

(Refer to the Construction & Environmental Management Plan for further detail on site set-up, phasing, and environmental mitigation during construction.)

10.5.2 Construction Phase Visual Effects

The visual effects during the construction phase of the proposed development are assessed as short-term and of moderate magnitude, primarily affecting receptors in the immediate vicinity of the site. These effects will vary throughout the build period depending on phasing, location of works, and construction activities underway.

The construction process will include the removal of internal hedgerows and boundary vegetation, clearance of grassland, regrading of ground levels, earthworks, and the progressive introduction of construction-related infrastructure, including perimeter hoarding, scaffolding, cranes, temporary stockpiles, and on-site plant. Temporary lighting may also be in place during early mornings or winter working hours, although usage will be managed to minimise light spill.

Construction will be carried out over four sequential phases, beginning with Phase 1 at the western end of the site, which includes the delivery of the Ratoath Outer Relief Road (RORR) and the first cluster of residential units. Subsequent phases will progress eastwards. The construction compound and staff facilities will be located at the northern boundary off Glascarn Lane, while primary construction access will be from the R155 (Fairyhouse Road). This layout ensures that construction logistics are concentrated along site edges and separated, where possible, from completed residential areas as construction progresses.

During the construction period, temporary hoarding and fencing will enclose active areas of the site. The use of cranes, diggers, and scaffolding will result in elevated visual elements, particularly during the early stages of each phase. These will be visible from adjoining roads and residential properties, especially during Phases 1, 3, and 4, which are adjacent to existing homes along Glascarn Lane, Cairn Court, and Fairyhouse Road. In these areas, visual effects will be more pronounced due to proximity and partial visibility over or through existing boundaries.

However, it is important to note that the site is visually contained by mature roadside hedgerows and existing development along its northern and western edges. The flat topography and absence of elevated views from public vantage points mean that visual effects will be primarily localised and limited to short- to medium-range views.

As construction advances, visual effects will reduce. By the final stages, the majority of structural elements will be complete, and the tallest temporary infrastructure such as cranes will have been removed. Remaining construction-related elements (e.g. fencing, machinery, stockpiles) will be of low visual prominence and gradually withdrawn as each phase is delivered and landscaping is established.

In summary, construction phase visual effects will be moderate and localised, primarily experienced by adjacent residential receptors. These effects will be temporary and reversible, and will diminish as the permanent built and landscaped form of the development is delivered and visual containment improves through the implementation of boundary treatments and new planting.

(Refer to the Construction & Environmental Management Plan by O'Connor Sutton Cronin & Associates for further detail on phasing, access, and construction logistics.)

10.5.3 Operational Phase Landscape Effects

The operational phase of the proposed development will result in a **permanent, medium magnitude** change to the receiving landscape. This reflects the introduction of new built form and public realm interventions on a previously undeveloped agricultural site at the southern fringe of Ratoath.

(Definition: "Change that is moderate in extent, resulting in a partial alteration of key elements or characteristics of the landscape, and/or introducing elements that may be noticeable yet not substantially out of character with the existing landscape. Such change leads to a shift in landscape character."

The proposed development will result in a clear and deliberate transformation of landscape character—from semi-rural grassland to a well-structured urban extension incorporating housing, public open space, and the final section of the Ratoath Outer Relief Road (RORR). This transformation is not unexpected or out of context: it is fully supported by the zoning designation (A2 – New Residential) and strategic planning policies aimed at compact growth, consolidation of urban edges, and coordinated infrastructure delivery.

While the change in land use is significant, the proposed development has been carefully designed to respond sensitively to the local landscape context. Built form has been arranged to provide graduated massing, with taller elements centrally located and lower building heights placed along sensitive site edges adjoining existing residential properties. The resulting arrangement ensures that the transition between the established suburban edge and the new development is cohesive and legible.

The landscape strategy, prepared by Studio Glasú, plays a pivotal role in the integration of the development into its setting. The design incorporates a green spine running east–west through the site, linking a central park, pocket parks, and seating areas with generous tree and hedgerow planting. Over 1.59 hectares of public open space and significant new green infrastructure help to establish a strong landscape framework that complements the built form, supports biodiversity, and maintains ecological connectivity with surrounding lands. The landscape design draws inspiration from local field boundaries and rural settlement structure, interpreted through contemporary landscape architecture principles.

The materiality and built expression of the development also reinforce landscape integration. A mix of red and buff brick, render, metal cladding, and slate-effect roofing tones reflect both traditional and modern local architectural influences. The simple and neutral colour palette helps anchor the development visually within its suburban fringe context.

In landscape character terms, the site lies within the Ward Lowlands Landscape Character Area (LCA 10), which has been identified as having low value but high sensitivity. However, the professional judgement of the authors is that this sensitivity relates primarily to unmanaged rural expansion, rather than the delivery of coordinated development on zoned lands within settlement boundaries. The development aligns with LCA Recommendation No. 4, which seeks to consolidate the urban fringe of Ratoath through appropriately scaled and landscaped development.

In summary, the proposed development will lead to a moderate and policy-aligned shift in landscape character, consistent with the planned evolution of Ratoath. The effects will be permanent and positive, establishing a new urban edge supported by high-quality landscape design, public realm infrastructure, and a robust green network that significantly enhances the site's contribution to the town's wider landscape setting.

10.5.4 Operational Phase Visual Effects

10 No. viewpoints were selected for detailed visual effects assessment informed by verified photomontages. The viewpoints were selected to represent the main elements, character areas and groups of visual receptors in the receiving environment.

All viewpoints have been located within the public domain and are representative of views available from main thoroughfares/ pedestrian areas/ key viewpoints within the vicinity of the proposed development.

The assessments should be read in conjunction with the baseline photographs and verified photomontages provided in A3 format under separate cover prepared by 3D Design Bureau (see Volume 3, Appendix 10.1of this EIAR). For each viewpoint the following views are provided:

- Baseline View: Photograph of the existing scenario.
- Proposed View: Photomontage of the proposed development.

We assess visual impact below.

Table 10.11: Visual impact assessment

View No. 1 (VVM1)	**Glascarn Lane looking west**
Distance & Direction from Site	c. 250m south-east of the site boundary
Baseline View:	This viewpoint is located on Glascarn Lane, looking west towards the subject site. The foreground is characterised by the single-carriageway road corridor and the front boundary and entrance of Carn Lodge (A85 EF44), a detached residential property. The middle ground is defined by tall, well-established roadside hedgerows on both sides of the road, which enclose and frame the view. Above the hedgerows, mature deciduous trees are visible, providing additional vertical enclosure and screening. Overhead electrical poles and wires are present on the left-hand side, contributing to visual clutter within the view. Due to the combined screening effect of the hedgerows and vegetation, the subject site is not visible from this location. The landscape appears enclosed and vegetated, with no discernible views towards the development site or wider landscape features beyond.
Viewpoint sensitivity:	Low
Proposed View:	The proposed development will not be visible from this viewpoint due to intervening landscape and vegetation.
Magnitude of change:	None.
Significance and Quality of Visual Effects:	No change.
Timeframe	Not applicable – no change.
Cumulative Impact	There will be no cumulative visual effects from this viewpoint, as the other developments identified in the cumulative assessment are also not visible from this location, either individually or in combination with the proposed development.

View No. 2 (VVM2)	**Fairyhouse Road (R155) looking northeast**
Distance & Direction from Site	c. 100m south of the site boundary
Baseline View:	This viewpoint is located on the R155 Fairyhouse Road, looking northeast towards the subject site. The foreground consists of the road corridor south of Carra Beg (Eircode: A85 T446), including painted road markings, a grass verge, and roadside hedgerows along the eastern boundary of the carriageway. In the middle ground, mature deciduous trees are visible to the left of the view, providing a degree of vertical enclosure and visual interest.

	The subject site is partially discernible from this location, with intermittent views through gaps in the boundary vegetation. While vegetation provides some screening, the open nature of the road and site interface allows for partial visibility of the development area.
Viewpoint sensitivity:	Low
Proposed View:	The proposed development will be visible in the centre of the middleground, emerging above the existing roadside hedgerows. The upper levels of the four-storey residential blocks are discernible from this location and will form a new, recognisable built element in the view. The development presents as a well-articulated, contemporary piece of architecture, strategically positioned along the newly constructed Ratoath Outer Relief Road (RORR). Its appearance will mark the transition between the rural hinterland and the expanding urban fabric of Ratoath, contributing to the definition of a new, planned urban edge. Although the introduction of multi-storey built form represents a notable change in character, it is visually balanced by the integration of high-quality landscaping, including tree planting and structured green infrastructure. These measures help to anchor the development within the view, softening its visual impact and allowing it to assimilate into the evolving suburban context.
Magnitude of change:	Medium.
Significance and Quality of Visual Effects:	Slight and positive.
Timeframe	Permanent.
Cumulative Impact	There will be no cumulative visual effects from this viewpoint, as the other developments identified in the cumulative assessment are also not visible from this location, either individually or in combination with the proposed development.

View No. 3 (VVM3)	**Fairyhouse Road (R155) looking west**
Distance & Direction from Site	c. 40m west of the site boundary
Baseline View:	This viewpoint is located on the R155 Fairyhouse Road, looking east towards the subject site. The foreground features the road corridor, including painted markings, a grass verge, and the western approach to the property known as Ardbury (Eircode: A85 HY26). The middleground is occupied by this single-storey dwelling, its driveway, and a maintained front garden. Mature shrubs and overhead utility infrastructure—including electrical poles and wires—are also present, contributing to the visual composition on the right-hand side of the view. The subject site is visible beyond the residential property, forming part of the background. While partially screened by boundary vegetation and domestic structures, the open character of the setting allows for clear views towards the western portion of the development lands.
Viewpoint sensitivity:	Low
Proposed View:	From this viewpoint, the proposed development will be partially visible behind the existing single-storey dwelling (Ardbury) in the centre of the middleground. The view primarily includes two-storey, pitched-roof houses, which are appropriately scaled in relation to the adjacent property and surrounding residential context along Fairyhouse Road.

	The proposed buildings adopt a simple and contemporary architectural language, drawing on the form, scale, and materiality of existing dwellings in the area. This allows the development to integrate sympathetically into the view, with no abrupt contrast or visual intrusion. Overall, the development appears as a modest and well-considered residential extension, reinforcing the pattern of existing settlement and sitting comfortably within the evolving suburban landscape.
Magnitude of change:	Low.
Significance and Quality of Visual Effects:	Not significant and neutral.
Timeframe	Permanent.
Cumulative Impact	There will be no cumulative visual effects from this viewpoint, as the other developments identified in the cumulative assessment are also not visible from this location, either individually or in combination with the proposed development.

View No. 4 (VVM4)	**Junction of Fairyhouse Road (R155) and Carraig na Gabhna looking east**
Distance & Direction from Site	c. 5 m north of the site boundary
Baseline View:	This viewpoint is located at the junction of Fairyhouse Road (R155) and Carraig na Gabhna, a small residential cul-de-sac comprising six two-storey dwellings. The foreground is defined by the estate roadway, which is unlined, with a narrow grass verge and a mature hedgerow visible to the left of the view. In the middleground, a footpath and a series of low boundary brick walls and piers associated with the individual properties form a visual rhythm. The upper storeys of some dwellings are partially visible above mature garden planting, contributing to a well-vegetated suburban character. A large hedge dominates the left-hand portion of the view. Due to the combination of intervening built form and vegetation, the subject site is not visible from this location.
Viewpoint sensitivity:	Low
Proposed View:	The proposed development is largely screened from view due to intervening built form and mature vegetation associated with the Carraig na Gabhna residential development. A limited portion of the upper floors of the proposed dwellings may be visible in the background, appearing above and beyond the existing rooftops and garden planting. However, the visibility is minimal and filtered, with no direct views into the development. The pitched roof design and domestic scale of the proposed dwellings ensure that any glimpses of the built form that do arise are visually consistent with the existing residential character. As such, the development will not introduce any elements that appear out of place or visually disruptive within this view.
Magnitude of change:	Negligible.
Significance and Quality of Visual Effects:	Imperceptible and neutral.
Timeframe	Permanent.

Cumulative Impact	There will be no cumulative visual effects from this viewpoint, as the other developments identified in the cumulative assessment are also not visible from this location, either individually or in combination with the proposed development.

View No. 5 (VVM5)	**Cairn Court looking southeast**
Distance & Direction from Site	c. 100m north of the site boundary
Baseline View:	This viewpoint is located within Cairn Court, looking southeast towards the subject site. The foreground is defined by the unlined estate roadway, with a footpath running along its eastern side. The road is domestic in character, typical of a small suburban cul-de-sac. In the middleground, the left-hand portion of the view contains an open green space with several semi-mature trees, contributing to the suburban landscape quality. The middle and right portions of the view are occupied by two-storey semi-detached houses, with multiple parked cars visible in driveways and along the kerb. Mature trees are also visible in the background, behind the row of residential properties. Due to the presence of these intervening dwellings and established vegetation, the subject site is not visible from this location.
Viewpoint sensitivity:	Low
Proposed View:	The proposed development will be largely screened from view due to the presence of existing residential dwellings and mature vegetation within Cairn Court. A small portion of the upper floors of the proposed development may be visible in the background, above and beyond the existing rooflines. However, visibility is minimal and distant, with only limited roof elements perceptible through gaps in the intervening built form. The use of pitched roofs and dark roof tiles ensures that any visible elements are visually recessive and blend into the overall roofscape. As a result, the proposed development will be barely discernible within the view and will not introduce any features that appear visually prominent or incongruous.
Magnitude of change:	Negligible.
Significance and Quality of Visual Effects:	Imperceptible and neutral.
Timeframe	Permanent.
Cumulative Impact	There will be no cumulative visual effects from this viewpoint, as the other developments identified in the cumulative assessment are also not visible from this location, either individually or in combination with the proposed development.

View No. 6 (VVM6)	**Junction of Glascarn Lane and Cairn Manor looking southeast**
Distance & Direction from Site	c. 160m north of the site boundary
Baseline View:	This viewpoint is located on Glascarn Lane, at the junction with Cairn Manor, looking southeast towards the subject site.

	The foreground includes the unlined roadway with two tarmacadam driveways to either side and a narrow grass verge to the right. In the middleground, the right side features a residential entrance with brick walls, piers, and a metal gate. A two-storey red brick house with a jerkinhead roof occupies the centre of the view. An electricity pole and overhead wires are also visible, introducing some visual clutter. Further residential properties, boundary walls, and mature hedging are visible beyond. Due to intervening built form and vegetation, the subject site is not visible from this location.
Viewpoint sensitivity:	Low
Proposed View:	This viewpoint is located on Glascarn Lane, at the junction with Cairn Manor, looking southeast towards the subject site.The foreground includes the unlined roadway with two tarmacadam driveways to either side and a narrow grass verge to the right. In the middleground, the right side features a residential entrance with brick walls, piers, and a metal gate. A two-storey red brick house with a jerkinhead roof occupies the centre of the view. An electricity pole and overhead wires are also visible, introducing some visual clutter. Further residential properties, boundary walls, and mature hedging are visible beyond. Due to intervening built form and vegetation, the subject site is not visible from this location.
Magnitude of change:	None.
Significance and Quality of Visual Effects:	No change.
Timeframe	Not applicable – no change.
Cumulative Impact	There will be no cumulative visual effects from this viewpoint, as the other developments identified in the cumulative assessment are also not visible from this location, either individually or in combination with the proposed development.

View No. 7 (VVM7)	**Glascarn Lane looking southeast**
Distance & Direction from Site	c. 75m north of the site boundary
Baseline View:	This viewpoint is located on Glascarn Lane, approximately 250 metres east of Viewpoint No. 6, looking southeast towards the subject site. The foreground consists of the unlined roadway, flanked by tarmacadam driveways on both sides. A grass verge and stone boundary wall are visible along the right-hand edge. In the middleground, the right side of the view is occupied by a two-storey house with a hipped roof and two dormer windows. Several electrical poles and overhead wires are visible throughout the scene. The centre of the view includes the upper storeys of two additional dwellings, a white rendered boundary wall, and mature hedging behind a timber fence. On the left, a mature roadside hedge defines the front boundary of an adjacent property. Due to the extent of intervening built form and vegetation, the subject site is not visible from this location.

Viewpoint sensitivity:	Low
Proposed View:	The proposed development will be largely screened from view due to intervening residential buildings and mature vegetation. A single two-storey dwelling will be partially visible in the background, identifiable by its pitched roof form. The dwelling is of a domestic scale, and its design references the surrounding context through the use of materials and finishes that reflect local character. The building reads as a modest, contemporary addition, appropriately scaled and finished to a high standard. It sits unobtrusively within the view, with no significant disruption to the established suburban landscape.
Magnitude of change:	Negligible.
Significance and Quality of Visual Effects:	Imperceptible and neutral.
Timeframe	Permanent.
Cumulative Impact	There will be no cumulative visual effects from this viewpoint, as the other developments identified in the cumulative assessment are also not visible from this location, either individually or in combination with the proposed development.

View No. 8 (VVM8)	**Fairyhouse Lodge looking south**
Distance & Direction from Site	c. 200m north of the site boundary
Baseline View:	This viewpoint is located on Fairyhouse Lodge, looking south towards the subject site. The foreground is occupied by an unmarked estate roadway, with grass verges on either side. A dropped kerb providing access to a residential property is visible in the lower left of the view. In the centre of the view, three semi-mature trees and a steel streetlight are visible. The middleground is framed by two two-storey red brick dwellings, one on either side of the view. Behind these, the upper levels of additional residential properties can be seen, partially obscured by boundary walls and mature vegetation. Due to the extent of intervening built form and planting, the subject site is not visible from this location.
Viewpoint sensitivity:	Low
Proposed View:	A small portion of the proposed development will be partially visible in the centre of the middleground, glimpsed beyond the existing boundary wall and to the right of a residential property, through gaps in the mature trees. The majority of the development will remain screened from view due to the presence of intervening built form within Fairyhouse Lodge and established vegetation along the southern edge of the estate and further south along Glascarn Lane. As a result, the proposed development will have a minimal visual presence in this view and will not alter the overall character of the streetscape.
Magnitude of change:	Negligible.
Significance and Quality of Visual Effects:	Imperceptible and neutral.

Timeframe	Permanent.
Cumulative Impact	There will be no cumulative visual effects from this viewpoint, as the other developments identified in the cumulative assessment are also not visible from this location, either individually or in combination with the proposed development.

View No. 9 (VVM9)	**Glascarn Lane looking south**
Distance & Direction from Site	c. 50m north of the site boundary
Baseline View:	This viewpoint is located on Glascarn Lane, looking south towards the subject site. The foreground is defined by a wide grass verge on the eastern side of the road and a narrower verge with mature hedgerow on the western side. The centre of the view is occupied by tall, mature trees and dense hedgerows lining both sides of the roadway. A residential entrance with a wooden gate and mature planting is visible to the centre-left. Overhead utility wires are present in the background. Due to the extent of intervening vegetation, the subject site is not visible from this location.
Viewpoint sensitivity:	Low
Proposed View:	From this location, only a limited number of the proposed dwelling houses will be partially visible above the existing mature hedgerow along Glascarn Lane. These houses are primarily two-storey in height with pitched roofs, and their appearance is consistent with the prevailing residential character of the surrounding area. No taller elements, such as the proposed four-storey apartment buildings, are visible from this viewpoint. The visible dwellings are well-scaled, and their design—including roof form and materiality—ensures they appear as a modest and coherent extension of the existing built form. Overall, the proposed development introduces a subtle and contextually appropriate change to the view, with the scale, height, and finishes of the visible buildings enabling them to be comfortably accommodated within the evolving suburban landscape.
Magnitude of change:	Medium.
Significance and Quality of Visual Effects:	Slight and neutral.
Timeframe	Permanent.
Cumulative Impact	There will be no cumulative visual effects from this viewpoint, as the other developments identified in the cumulative assessment are also not visible from this location, either individually or in combination with the proposed development.

View No. 10 (VVM10)	**Glascarn Lane looking north**
Distance & Direction from Site	c. 250m south-east of the site boundary
Baseline View:	This viewpoint is located on Glascarn Lane, looking north towards the subject site and the adjacent Large Residential Development (LRD) at Jamestown.

	The foreground is occupied by the road corridor, including the carriageway and narrow grass verges. In the middleground, a tall, mature roadside hedgerow and associated vegetation create a strong visual barrier. The canopies of mature trees are visible above the hedgerow, indicating the presence of vegetation beyond. Due to the density of the intervening vegetation, the subject site is not visible from this location.
Viewpoint sensitivity:	Low
Proposed View:	The proposed development will not be visible from this viewpoint due to the presence of mature hedgerows and trees along Glascarn Lane, which provide a consistent and effective visual screen. As a result, the development will not result in any perceptible change to the existing view.
Magnitude of change:	None.
Significance and Quality of Visual Effects:	No change.
Timeframe	Not applicable – no change.
Cumulative Impact	There will be no cumulative visual effects from this viewpoint, as the other developments identified in the cumulative assessment are also not visible from this location, either individually or in combination with the proposed development.

10.6 Mitigation and Monitoring Measures

10.6.1 Construction Phase

While no landscape and visual mitigation measures are specifically required beyond standard good practice during the construction phase, a number of measures have been integrated into the Construction and Environmental Management Plan (CEMP) prepared by O'Connor Sutton Cronin & Associates (). These measures will help reduce temporary landscape and visual disruption:

- The site compound and contractor parking will be located in the northeastern portion of the site, away from existing residential boundaries and outside the root protection areas of trees to be retained. The compound will be removed at the earliest practicable stage following completion of main construction activities.
- The location of any on-site batching plants or temporary disposal areas will be determined by the contractor, but will be positioned away from sensitive receptors, including existing dwellings.
- Trees, hedgerows, and mature vegetation will be retained wherever possible. A detailed Tree Protection Plan will be implemented to safeguard vegetation identified for retention, in accordance with best arboricultural practice.
- Site hoarding and temporary fencing will be installed to provide both security and visual screening of construction activities. These will be maintained to a high standard throughout the construction period and relocated as necessary to suit phasing and progress.
- Construction traffic will primarily access the site from the south via Fairyhouse Road (R155) and the M3 motorway, reducing potential disruption to residents along Glascarn Lane and the existing built-up area of Ratoath.

These measures are intended to manage and reduce the short-term impacts of construction on landscape character and nearby visual receptors, especially those in close proximity to active works areas.

10.6.2 Operation Phase

No additional LVIA-specific mitigation is required during the operational phase of the development.

However, it is important to note that the proposed development has been inherently designed to minimise visual impact and integrate successfully into its setting. The design approach adopted by the project team incorporates the following embedded mitigation principles:

- The use of locally appropriate building materials, colours, and forms that reflect the existing suburban character of Ratoath and promote visual cohesion with adjacent residential areas.
- The implementation of a comprehensive landscape strategy, prepared by Studio Glasu Landscape Architects, which includes a green spine, public open spaces, street tree planting, and native hedgerows. These elements contribute to the creation of a visually attractive and contextually appropriate landscape structure, helping to soften the built form and reinforce the emerging character of this part of the town.

Together, these embedded design and landscape measures ensure that the development sits comfortably within its landscape context, while contributing positively to the visual amenity of the area over the long term.

10.7 Residual Effects

10.7.1 Construction Phase Residual Effects

During the construction phase, the most visually prominent elements will include soil stripping, removal of internal hedgerows and selected trees, the presence of tall construction equipment such as cranes, and the installation of site hoarding. These features will temporarily alter the landscape character and introduce visually discordant elements into the local environment.

Mitigation measures, such as perimeter hoarding, sensitive compound placement, tree protection measures, and the implementation of the CEMP, will help reduce the severity of visual effects. However, due to the site's proximity to residential receptors—particularly along Glascarn Lane, Cairn Court, and Fairyhouse Road—some localised visual impacts will remain unavoidable.

The residual visual effect during the construction phase is therefore considered to be short-term, medium in magnitude, and negative in nature.

10.7.2 Operational Phase Residual Effects

The proposed development will result in permanent changes to landscape character and will introduce new built elements that are visible from adjoining residential properties. However, these changes are not out of character with the evolving suburban fringe context of Ratoath. The site lies adjacent to the permitted and partially constructed Jamestown Large Residential Development and will facilitate the completion of the Ratoath Outer Relief Road, both of which establish a clear precedent for urban expansion in this area.

While some localised visual effects will occur—particularly for receptors closest to the development—the layout, massing, and materiality of the proposed buildings, as well as the comprehensive landscape strategy (including a green spine, street planting, and native boundary treatments), will help integrate the development into its surroundings over time.

The proposal contributes to the planned consolidation of the town, reinforcing a coherent and defined southern urban edge. As such, the residual operational effect is assessed as long-term, medium in magnitude, and positive, reflecting the scheme's contribution to the emerging urban character and improved legibility of this transitional area.

10.8 Interactions

As with any development that alters the visual environment, the landscape and visual impacts of the proposed scheme interact with several other environmental and social factors. The key interactions are outlined below:

- **Population and Human Health:**
  Changes to the visual environment may influence the perception, amenity, and well-being of nearby residents. The proposed development has been designed to sit comfortably within its context, presenting as a well-scaled and contemporary residential scheme, supported by high-quality landscaping. These embedded design and mitigation measures will minimise adverse visual effects, particularly during the operational phase, and ensure that any potential impacts on residential amenity are minor and localised.

- **Material Assets:**
  The visual presence of the development intersects with nearby material assets, including the Ratoath Outer Relief Road (RORR) and supporting urban infrastructure such as footpaths, lighting, and utilities. However, as the development is located within a serviced, zoned area with an emerging urban character, the interaction with material assets is considered minimal.

- **Cultural Heritage:**
  The site is not located within, or adjacent to, any designated archaeological or architectural heritage features. Due to the absence of sensitive heritage receptors and the limited extent of long-range visibility, any interaction between the development's visual effects and cultural heritage is assessed as negligible.

10.9 Cumulative Effects

A long list of other projects in the surrounding area was compiled for the purposes of cumulative landscape and visual impact assessment. This list included recent planning applications and permitted developments within a 2.5 km radius of the subject site.

A screening exercise was undertaken to determine whether any of these projects were likely to give rise to significant cumulative landscape or visual effects when considered in combination with the proposed development. The majority of projects were screened out on the basis of their location, scale, nature, or lack of visibility overlap with the subject site. Projects were screened in only where there was a reasonable likelihood of cumulative interaction with the proposed development in terms of shared visibility, proximity, or sequential experience in the landscape.

As a result of this process, only a small number of nearby projects were carried forward for further assessment. These are located within approximately 500 metres of the subject site. This refined study area reflects the enclosing effect of local topography, existing built form, and intervening vegetation, which significantly limits the potential for cumulative visibility beyond the immediate context.

Most of the screened-in developments consist of small-scale residential extensions or infill developments, which are not anticipated to result in significant cumulative effects due to their limited scale and localised visibility.

The notable exception is the Jamestown Large Residential Development (LRD), located to the northeast of the subject site, and currently under construction. This permitted scheme includes the first phase of the Ratoath Outer Relief Road, which forms a key piece of infrastructure connecting the two sites.

The location of the Jamestown LRD in conjunction with the proposed development will contribute to the emerging urban edge of Ratoath, forming a consolidated, planned extension of the town on lands zoned A2 –

New Residential under the Meath County Development Plan. The character of the area is already transitioning from rural to urban fringe, and the combined effect of these two developments is considered consistent with the policy objective of compact growth.

Summary of Cumulative Effects

- **Construction Phase:**
  The cumulative construction of the proposed development alongside the adjacent Jamestown LRD may result in short-term, moderate negative cumulative landscape and visual effects, particularly due to overlapping construction activities, vegetation removal, temporary infrastructure, and machinery. These effects will be temporary in nature, limited to the construction period, and will be contained within the immediate visual envelope of the two sites.

- **Operational Phase:**
  In the long term, the combined presence of both developments will contribute to a coherent and legible urban form along the southern edge of Ratoath. The coordinated delivery of high-quality architectural and landscape design, along with strategic infrastructure (i.e. the Outer Relief Road), will result in a medium magnitude but positive cumulative effect on local landscape character and visual coherence. This reflects the area's planned transition to a residential neighbourhood within a defined urban boundary.

10.10 Monitoring

10.10.1 Construction Stage

Landscape and visual mitigation measures will be monitored during the construction stage. This will include siting of the construction compound; protection of trees / hedgerows to be retained; stripping and storage of topsoil; reinstatement of landscape / soil areas; and completion of landscape works.

All landscape areas disturbed by construction works will be reinstated prior to the completion of construction works. Any materials or plants which fail within a twelve month post-construction aftercare period will be replaced.

10.10.2 Operational Stage

No monitoring other than management of landscape areas will be required during the operational stage. Any landscape materials, plants or areas which fail during the on-going operational stage will be replaced.

10.11 Difficulties Encountered

No difficulties were encountered during the compilation of this chapter.

10.12 References

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