ARMSTRONG FENTON ASSOCIATES

PROJECT:

Ashbourne Strategic Housing Development

Environmental Impact Assessment Report (EIAR) - Volume II

CLIENT:

Arnub Ltd. & Aspect Homes (ADC) Ltd.

DATE:

SEPTEMBER 2022

Planning & Development Consultants

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Part A - Introduction and Background

1.0. Introduction

1.1. Introduction

1.1.1. This Environment Impact Assessment Report (EIAR) has been prepared by Armstrong Fenton Associates, Planning & Development Consultants, on behalf of Arnub Ltd. & Aspect Homes (ADC) Ltd. (the Applicants) who intend to apply to An Bord Pleanála for a Strategic Housing Development (SHD) on a site located in the townlands of Baltrasna and Milltown, in Ashbourne, County Meath. The application is being made under the Planning and Development Act 2000, as it is amended by various pieces of legislation including the Planning and Development (Housing) and Residential Tenancies Act 2016. This chapter of the EIAR was prepared by Tracy Armstrong MRUP MIPI MRTPI of Armstrong Fenton Associates Planning + Development Consultants.

A full list of the competent experts who were involved in the preparation of this EIAR, along with their experience and qualifications, is included for in Section 1.12.16 of this chapter of the EIAR.

1.1.2. The subject site is a greenfield site located within the settlement boundary of Ashbourne, in the townlands of Baltrasna and Milltown, to the south-east of Ashbourne town centre (c. 1.5km distance). The site, i.e., the red line boundaries of the submitted site layout plan / site location map, measures c. 20.04 Ha.

The site is located to the west of the Dublin Road (R135) into Ashbourne, west of The Briars residential estate, south-west of Cherry Lane and north-west of Hickey's Lane. To the south are agricultural lands in the Rural Area (i.e., outside of Ashbourne's development boundaries), while to the west are greenfield lands that are zoned 'Open Space'. To the north are the existing residential dwellings at Alderbrook Rise, Alderbrook Downs & Alderbrook Heath, while the existing residential dwellings at Tara Close and Tara Court abut the site to the north-west. It should be noted that the site encompasses third-party lands in the northern part of the site, which are identified the site layout plan(s) submitted with the planning application.

As noted in the documentation submitted with the application, the subject site is comprised of lands owned by two different landowners being: Arnub Ltd. and Aspect Homes (ADC) Ltd. The two landowners have joined together to put forward a coherent, unified, development of the residentially zoned lands available (Refer to Figure 1.3).

1.1.3. The proposed development is located at the south-east of Ashbourne's built up urban environs, with the subject site forming the vast majority of an identified Master Plan area in Ashbourne i.e., Master Plan 18 of the Written Statement for Ashbourne contained in the existing Meath County Development 2021-2027 (CDP) or 'MP 18' on the Ashbourne Land Use Zoning Map of the existing CDP. The 'MP 18' lands form the majority of residentially zoned lands in Ashbourne for the 2021-2027 period, with the Written Statement for Ashbourne contained in the CDP stating that on the MP 18 lands:

"It is intended that these lands shall provide a primary school site, lands for recreational uses, including playing fields, and lands for residential development. The development of the lands shall be on a phased basis to be agreed as part of the preparation of the Master Plan."

The Master Plan submitted as part of the subject application has been discussed and agreed with Meath County Council (MCC) and a phasing plan is proposed as part of the subject application. The proposed development provides for residential development and recreational uses, while also providing for an area reserved for a future primary school site, including a playing pitch.

The existing CDP was subject to its own environmental assessments including for a Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) Screening / Natura Impact Report (NIR) which considered alternative scenarios, determined the land use zoning objectives for the county and has now been statutorily adopted. The subject application includes for an AA Screening and SEA of the Master Plan lands.

In the above context, this EIAR is undertaken against a background of a significant amount of environmental information and assessment which informed the preparation of the existing CDP and its approval by MCC.

1.1.4. The Environmental Impact Assessment (hereafter 'EIA') process, including the preparation of this EIAR and the examination of the information presented by MCC will inform the decision-making process. The purpose of this EIAR is to assist and inform An Bord Pleanála (ABP), as the competent authority, in undertaking an environmental assessment of the proposed development.

Therefore, the objectives of this EIAR are summarised as follows:-

- To identify the significant environmental impacts of the proposed development during the construction and operational phases having regard to the characteristics of the receiving environment.
- To evaluate the magnitude and significance of these impacts and propose appropriate measures to mitigate potential adverse impacts.
- To identify, where appropriate, monitoring measures to be implemented during the construction and operational phases.

The nature and extent of the development being assessed is outlined in Chapter 2 of this EIAR and summarised in Section 1.2 below. This EIAR is prepared with reference to the plans and particulars submitted with the planning application and should be read in conjunction with same.

1.2. Proposed Development Synopsis

1.2.1. Arnub Ltd. & Aspect Homes (ADC) Ltd. seek permission for a strategic housing development, located in the townlands of Baltrasna and Milltown, Ashbourne, County Meath.

1.2.2. The subject site is located to the west of the Dublin Road (R135) into Ashbourne, west of The Briars residential estate, south-west of Cherry Lane and north-west of Hickey's Lane. To the south are agricultural lands in the Rural Area (i.e., outside of Ashbourne's development boundaries), while to the west are greenfield lands that are zoned 'Open Space'. To the north are the existing residential dwellings at Alderbrook Rise, Alderbrook Downs & Alderbrook Heath, while the existing residential dwellings at Tara Close and Tara Court abut the site to the north-west. It should be noted that the site encompasses third-party lands in the northern part of the site, which are identified the site layout plan(s) submitted with the planning application.

The site is a greenfield site located at the settlement boundary of Ashbourne, in the townlands of Baltrasna and Milltown, to the south-east of Ashbourne town centre (c. 1.5km distance). The site, i.e., the red line boundary of the submitted site layout plan(s) / site location map, measures c. 20.04 Ha.

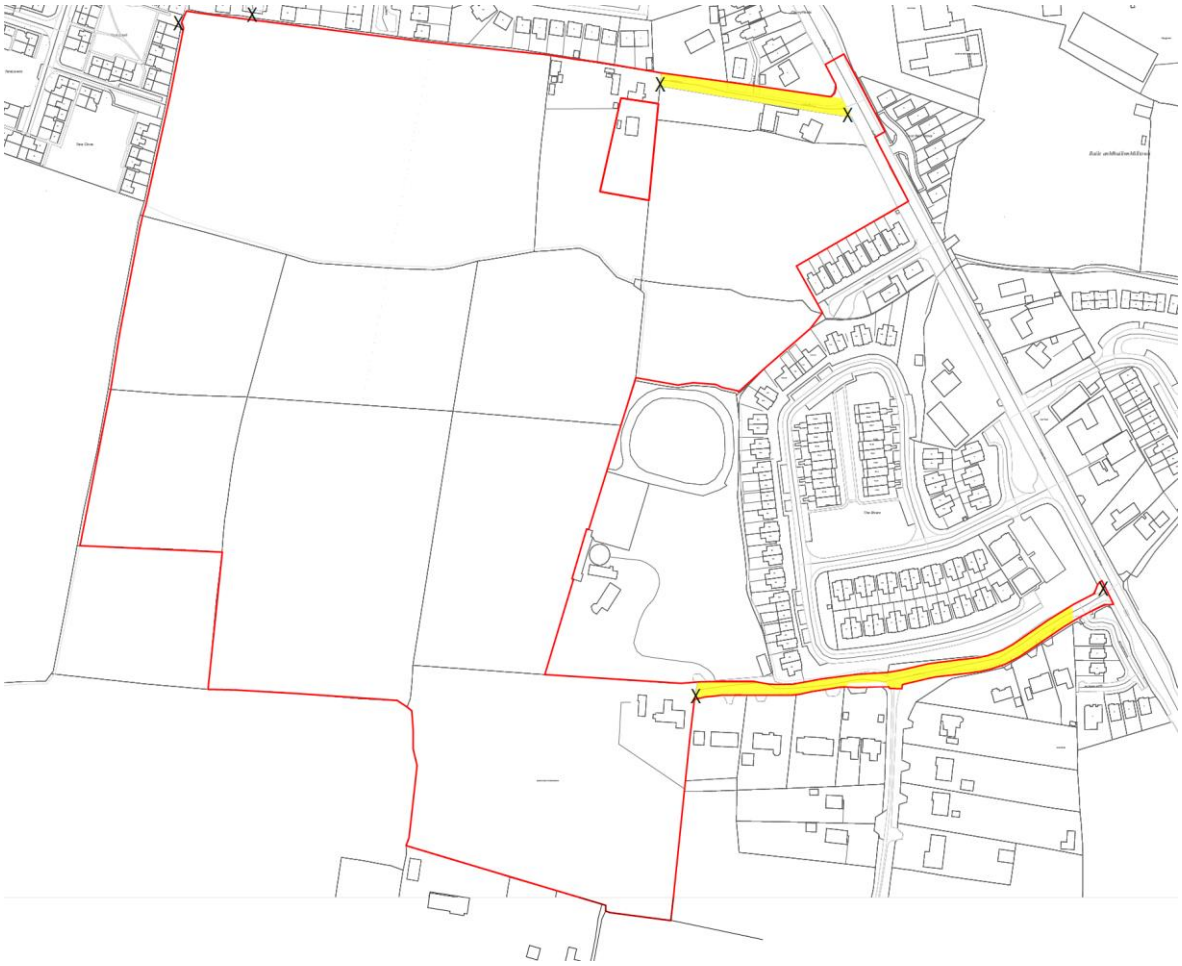


Figure 1.1. Site Location Map.

1.2.3. There are several existing buildings on the site, i.e., 3 no. detached dwellings (c. 354 sq.m in total) along with their associated outbuildings (c. 305 sq.m). These buildings are to be demolished as part of the proposed development.

1.2.4. The subject application is for a residentially led development comprising the construction of 702 no. dwellings, comprised of 420 no. 2 & 3 storey, 2, 3, 4 & 5 bed houses, 38 no. 2 & 3 bed duplex units in 19 no. blocks, and 244 no. 1, 2 & 3 bed apartments in 20 no. buildings, which range in height from 3-6 storeys. Table 1.1. below, provides for a summary of the proposed residential unit types / mix.

Dwelling Type	No. of 1 bed units	No. of 2 bed units	No. of 3 bed units	No. of 4 bed units	No. of 3-4 bed units	No. of 4-5 bed units	No. of 3-5 bed units	Total no. of units	Total Percentage (%)
Houses	-	48	185	50	31	80	26	**420**	**60%**
Apartments	56	162	26	-	-	-	-	**244**	**35%**
Duplexes	-	19	19	-	-	-	-	**38**	**5%**
Total	**56**	**229**	**230**	**50**	**31**	**80**	**26**	**702**	**100%**
Percentage (%)	**8%**	**33%**	**33%**	**7%**	**4%**	**11%**	**4%**	**100%**	-

Table 1.1. Summary of proposed unit types / mix.

Figure 1.2. Subject Site (indicative boundary outlined in red).

1.2.5. The proposed development includes for the following non-residential uses: (i) 2 no. creches (c. 289 sq.m & 384 sq.m accommodated in Blocks A and A1 respectively) (ii) 4 no. retail units (c. 106 sq.m & c. 174 sq.m in Block A, c. 191 sq.m in Block A1 & c. 469 sq.m in Block B1) & (iii) 1 no. GP practice / medical use unit (c. 186 sq.m) in Block A1.

1.2.6. The proposed development includes for a basement level car park located beneath Blocks A1. The proposed basement measures c. 4,095 sq.m. Stair core / lift access to the basement level is provided from Block A1 (4 no. cores). The basement provides for 126 no. car parking spaces including for accessible parking spaces for persons with impairments and EV parking spaces. The basement also includes for bin storage and plant areas. Vehicular access to the basement level from the west of Block A1, off the internal road network.

The proposed development includes for 2 no. undercroft parking areas located at ground floor level of Block A and Block B1.The proposed undercroft parking area in Block A measures c. 466 sq.m. provides for 16 no. car parking spaces. This undercroft area provides for 66 no. bicycle parking spaces. Vehicular access to this undercroft area from the south west of Block A.The proposed undercroft parking area in Block B1 measures c. 1,466 sq.m. provides for 53 no. car parking spaces including for accessible parking spaces for persons with impairments. This undercroft area provides for 152 no. bicycle parking spaces. Vehicular access to this undercroft area from the south west of Block B1.

Figure 1.3. Site Location (indicative boundary outlined in red).
White line denotes indicative split in ownership between the two applicants.

1.2.7. Car parking for the proposed development is provided in the form of basement level, undercroft and on-street car parking. In total, the proposed development caters for 1,262 no. car parking spaces. For houses, car parking is proposed as a mix of on-street and on-curtilage parking. Where applicable on-street surface car parking for houses is assigned to individual houses. For apartments and duplex units, as well as the proposed non-residential units detailed in Section 1.2.5 above, car parking is proposed as a mix of on-street, basement and undercroft parking. Please refer to Chapter 10 of this EIAR 'Material Assets: Transportation' and the submitted Traffic & Transport Assessment (TTA) prepared by DBFL Consulting Engineering for further details.

For houses, bicycle parking will be accommodated within the curtilage of the property. For apartments and duplex units, as well as the proposed non-residential units detailed in Section 1.2.5 above, dedicated bicycle parking spaces are proposed as a mix of surface level and undercroft parking. In total, the proposed development caters for 869 no. dedicated bicycle parking spaces. Please refer to Chapter 10 of this EIAR 'Material Assets: Transportation' and the submitted Traffic & Transport Assessment (TTA) prepared by DBFL Consulting Engineering for further details.

1.2.8. Vehicular access to the proposed development will be via 2 no. access points as follows: (i) off the existing Cherry Lane to the north-east, off the R135 Dublin Road, and (ii) via Hickey's Lane to the south-east, off the R135 Dublin Road, The project includes for road development / improvement works to the existing Hickey's Lane, and Cherry Lane and their junction with Dublin Road (R135). The proposed development includes for 1 no. pedestrian / bicycle only access point located off the Dublin Road (R135), and also includes for pedestrian and cycle routes and connections throughout the site.

1.2.9. The proposed development provides for a quantum of public open space in compliance with the requirements of the existing Meath County Development Plan 2021-2027. In total the proposed development provides for c. 28,885 sq.m of public open space. The proposed development also caters for communal and private amenity space in compliance with the requirements of the guidelines for '*Sustainable Urban Housing: Design Standards for New Apartments'* (2020) and, where applicable, the existing Meath County Development Plan 2021-2027. In total the proposed development caters for 3,180 sq.m of communal open space. Please refer to the submitted Planning Statement prepared by Armstrong Fenton Associates which accompanies the planning application for more details.

1.2.10. The proposed development also provides for (i) all ancillary / associated site development works above and below ground, (ii) public open spaces (c.28,885m^2 total), including hard & soft landscaping, play equipment & boundary treatments, (iii) communal open spaces (c.3,180m^2 total) (iv) undercroft, basement, and surface car parking, including for EV, mobility impaired, and car share parking spaces (total 1,262 no. car parking spaces) (v) 869 no. dedicated bicycle parking spaces at undercroft and surface level, including for external bicycle stores & visitor spaces (vi) bin storage, (vii) public lighting, (viii) signage (ix) plant (M&E) & utility services, including for 7 no. ESB sub-stations (x) green roofs, all on an overall application site area of 20.04 hectares.

1.2.11. It should also be noted that, while the proposed development does not seek permission for a school, the subject site / proposed layout accommodates an area of c. 1 Ha reserved for a future school site and playing pitch in the western part of the site. Please refer to the submitted Planning Statement prepared by Armstrong Fenton Associates which accompanies the planning application for more details.

Figure 1.4. Proposed Site Layout Plan.

1.1. Definition of EIA and EIAR

1.1.1. Directive 2011/92/EU of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU (hereafter the "EIA Directive"), defines '*environmental impact assessment'* as a process which includes the responsibility of the developer to prepare an Environmental Impact Assessment Report (EIAR) and the responsibility of the competent authority to provide reasoned conclusions following the examination of the EIAR and other relevant information.

1.1.2. Article 1(2)(g) 4 of the EIA Directive states that *'environmental impact assessment'* (EIA) means a process consisting of:

"(i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);

(ii) the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;

(iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;

(iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and

(v) the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a".

The content of an EIAR is included in Article 5(1) and expanded upon in Annex IV (See Figure 1.5. below):

"Article 5

1. Where an environmental impact assessment is required, the developer shall prepare and submit an environmental impact assessment report. The information to be provided by the developer shall include at least:
(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."

BOX 1.1 ANNEX IV: DIRECTIVE 2011/92/EU AS AMENDED BY DIRECTIVE 2014/52/EU

INFORMATION REFERRED TO IN ARTICLE 5(1)
(INFORMATION FOR THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT)

1. A Description of the project, including in particular:
(a) a description of the location of the project;
(b) a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;
(c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;
(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.

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

3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.

4. A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.

Figure 1.5. Annex IV: Directive 2011/92/EU as amended by 2014/52/EU.

5. A description of the likely significant effects of the project on the environment resulting from, inter alia:
(a) the construction and existence of the project, including, where relevant, demolition works;
(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;
(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;
(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);
(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;
(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;
(g) the technologies and the substances used.
The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium- term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.

6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.

7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.

8. A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.

9. A non-technical summary of the information provided under points 1 to 8.

10. A reference list detailing the sources used for the descriptions and assessments included in the report.

Figure 1.5. (Continued) Annex IV: Directive 2011/92/EU as amended by 2014/52/EU.

1.1.3. A definition of EIAR has not been included in the revised directive, however, the EPA's *'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022)* provide the following definition:

"An EIAR is defined in the Planning and Development Act as:

'a report of the effects, if any, which proposed development, if carried out, would have on the environment and shall include the information specified in Annex IV of the Environmental Impact Assessment Directive'

The EIAR is prepared by the developer and is submitted to a CA [Competent Authority] 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 understand the significant effects of the project and its effects and to inform their submissions to the CA.

The EIAR presents the results of a systematic analysis and assessment of the significant effects of a proposed project on the receiving environment. The amended EIA Directive prescribes a range of environmental factors which are used to organise descriptions of the environment and these factors must be addressed in the EIAR. These are listed below. The EIAR should be prepared at a stage in the design process when changes can still be

made to avoid significant adverse effects. This often results in the modification of the project to avoid or reduce effects through redesign."

1.1.4. In summary, EIA is a process for anticipating the effects on the environment caused by development. An EIAR is the document produced as a result of that process and provides information which the competent authority uses in deciding whether or not to grant consent. Where potential environmental effects are identified that are likely, significant and adverse; the EIA process aims to quantify and minimise the impact specified development projects have on the environment through appropriate mitigation measures. The preparation of an EIAR document requires site-specific considerations and the preparation of baseline assessment against which the likely impacts of a proposed development can be assessed by way of a concise, standardised and systematic methodology.

1.4. EIA Legislation

1.4.4. The EIA Directive is transposed into Irish law through a number of statutory instruments. Of these, the most relevant for this project are Part X of the Planning and Development Act 2000, as amended and the Planning and Development Regulations 2001, as amended.

1.4.5. The following guidance has informed the preparation of this EIAR:

- EPA *'Guidelines on the Information to be contained in Environmental Impact Assessment Reports'* (2022)
- European Commission's Guidance on the preparation of the EIAR (2017); and
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018).

1.5. EIA Guidelines

1.5.1. EIA practice has evolved substantially since the introduction of the EIA Directive in 1985. Practice continues to evolve and takes into account the growing body of experience in carrying out EIAs in the development sector. The relevant key EIA Guidance which has been consulted in the preparation of this EIAR document is detailed below. In addition, the individual chapters of this EIAR should be referred to for further information on the documents consulted by each individual consultant.

The following is a list of the EIA Guidelines consulted as part of the preparation of this EIAR:

Irish Guidance

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, 2018.
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports, EPA, 2022.
- 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 (2017).
- Development Management Guidelines (DoEHLG, 2007).
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2003).
- Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003).

European Union / European Commission Guidance (in addition to Directives referenced above)

- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (2017).
- Environmental Impact Assessment of Projects – Guidance on Screening (2017).
- Environmental Impact Assessment of Projects – Guidance on Scoping (2017).

- Study on the Assessment of Indirect & Cumulative Impacts as well as Impact Interaction (DG Environment 2002).
- EU Guidance on EIA Screening (DG Environment 2001).
- Guidance on EIA Scoping (DG Environment 2001).
- EIA Review Checklist (DG Environment 2001).

1.5.2. The 2022 EPA guidelines were prepared to assist practitioners in interpreting the amended EIA Directive and in advance of new regulations transposing Directive 2014/52/EU becoming available. They provide practical guidance to planning authorities, An Bord Pleanála, and other relevant stakeholders, on procedural issues and the EIA process, and outline the key changes introduced by Directive 2014/52/EU. Updated guidelines from the EPA will now be published following the transposition of the 2014 Directive via the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

1.6. The EIA Process

1.6.1. The main purpose of the EIA process is to identify the likely significant impacts on the human environment, the natural environment and on cultural heritage associated with the proposed development, and to determine how to eliminate or minimise these impacts. The EIAR summarises the environmental information collected during the impact assessment of the proposed development.

Several interacting steps typify the early stages of the EIA process and include:

- Screening
- Scoping
- Assessing Alternatives, and
- Assessing and Evaluating

Screening: Screening is the term used to describe the process for determining whether a proposed development requires an EIA.

Scoping: This stage firstly identifies the extent of the proposed development and associated site, which will be assessed as part of the EIA process, and secondly, it identifies the environmental issues likely to be important during the course of completing the EIA process through consultation with statutory and non-statutory stakeholders.

Assessing Alternatives: This stage outlines the possible alternative approaches to the proposed development. Consideration of alternative sites and layouts within the final chosen site are set out in Chapter 2 of this EIAR.

Assessing and Evaluating: The central steps of the EIA process include baseline assessment (desk study and field surveys) to determine the status of the existing environment, impact prediction and evaluation, and determining appropriate mitigation measures where necessary.

1.7. Screening

1.7.1. Screening is the term used to describe the process for determining whether a proposed development requires an EIA by reference to mandatory legislative threshold requirements or by reference to the type and scale of the proposed development and the significance or the environmental sensitivity of the receiving baseline environment.

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 2001-2022 set mandatory thresholds for each project class. Sub-section 10(b) (iii) 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.

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

This proposed development comprises of; *inter alia,* the provision of 702 no. residential units, 2 no. creches, 4 no. retail units, 1 no. GP practice / medical use unit, open space, and all associated infrastructure on an overall site area of 20.04 hectares.

An EIA is therefore mandatory as the proposed development at Baltrasna & Milltown in Ashbourne , County Meath, includes provision of 702 no. dwellings, exceeding the threshold of 500 dwelling units.

1.8. Scoping

1.8.1. The 2022 EPA Guidelines state that *'Scoping'* is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information and states that:

"Scoping is best carried out by personnel having appropriate expertise and relevant prior experience. Knowledge of the characteristics of the project type and of the sensitivities likely to be present in the receiving environment are particularly useful for scoping."

1.8.2. The Applicants for the proposed development are committed to ensuring that all of their proposed development is conducted in a responsible and sustainable manner. An informal scoping process to identify the issues that are likely to be most important during the EIA process was carried out by the Applicants, design team and all of EIAR consultants and informed the format of this EIAR.

1.9. Environmental Factors

1.9.1. The EIAR prepared for the subject application has endeavoured to be as thorough as possible and, therefore, the provisions included in the revised EIA Directive and all of the issues listed in Schedule 6, Sections 1, 2 and 3 of the Planning and Development Regulations 2001-2022 (as amended) and in recent guidance documents have been addressed in the EIAR.

In this context the following topics/issues have been reviewed and addressed in this EIAR in relation the proposed development:

- Introduction
- Description of the Project and Alternatives
- Population and Human Health
- Biodiversity
- Land, Soils & Geology
- Water & Hydrology
- Air Quality & Climate
- Noise & Vibration
- Material Assets: Built Services

- Material Assets: Transportation
- Material Assets: Resource and Waste Management
- Cultural Heritage (Archaeological and Architectural)
- The Landscape
- Identification of Significant Impacts / Interactions
- Summary of EIA Mitigation and Monitoring Measures

The above topics / issues form the chapters of this Volume of the EIAR (Volume II). A Non-Technical Summary is also provided as a separate volume of the EIAR (Volume I). Where applicable, appendices for the chapters of this Volume of the EIAR are also provided as a separate volume of the EIAR (Volume III).

1.9.2. In addition to this EIAR, a series of standalone reports have been prepared to accompany the planning application, these include for, *inter alia*; a Traffic and Transport Assessment (TTA), a Site Specific Flood Risk Assessment (SSFRA), and Construction Environmental Management Plan (CEMP) prepared by DBFL Consulting Engineers, an Appropriate Assessment Screening Report prepared by Scott Cawley Ltd, a Daylight and Sunlight Assessment Report and CGI/Verified Views prepared by 3D Design Bureau, an Arboricultural Assessment prepared by Arborist Associates, a Hydrological and Hydrogeological Qualitative Risk Assessment prepared by AWN Consulting along with an Operational Waste Management Plan (OWP) & Resource & Waste Management Plan (RWMP), both of which form appendices to this EIAR, and a Planning Statement prepared by Armstrong Fenton Associates. All of these reports have helped inform the chapters of the EIAR where relevant and are submitted as separate documents with the planning application also.

1.9.3. It is necessary to examine each section of this EIAR with respect to the impacts that the proposed development may have on the environment. The purpose of this scoping exercise is to shape and mould the EIAR so as not to dismiss any potential impacts that may in fact be significant, and to focus on issues which need to be resolved.

1.9.4. The scope of this EIAR has, in particular, been informed by the following:

- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, August 2018.
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022).
- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (EC, 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 (2017).
- The requirements of Part X of the Planning and Development Act, 2000, as amended, and Part 10 of the Planning & Development Regulations, 2001-2022.
- The requirements of the Meath County Development Plan 2021-2027

- National and Regional Planning Policy Documents.
- The likely concerns of third parties.
- The nature, location and scale of the proposal.
- The existing environment together with any vulnerable or sensitive local features and current uses.
- The planning history and environmental assessments associated with the subject site and adjoining lands.
- The likely and significant impacts of the proposed development on the environment.
- Available methods of reducing or eliminating undesirable impacts.

1.9.5. Prior to the submission of the subject planning application to An Bord Pleanála (ABP), numerous meetings took place between the Applicants, their design team, and the technical staff of Meath County Council (MCC). One pre-application consultation also took place between the Applicants, the Planning Authority (MCC) and ABP under

the Strategic Housing Development (SHD) process which assisted in the preparation of this EIAR and planning application.

1.9.6. The content of this EIAR has been prepared in accordance with the provisions of Article 5(1) and the EIA Directive 2014/52/EU. Article 5(1) states:

"The information to be provided by the developer shall include at least:

(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."

Annex IV states:-

"1. A Description of the project, including in particular:

(a) a description of the location of the project;
(b) a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;
(c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;
(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.

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

3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.

4. A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.

5. A description of the likely significant effects of the project on the environment resulting from, inter alia:

(a) the construction and existence of the project, including, where relevant, demolition works;

(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;
(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;
(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);
(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;
(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;
(g) the technologies and the substances used.

The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.

6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.

7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.

8. A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.

9. A non-technical summary of the information provided under points 1 to 8.

10. A reference list detailing the sources used for the descriptions and assessments included in the report."

1.10. Purpose of the EIAR

1.10.1. The objective of the EIAR is to:

- identify and predict the likely environmental impacts of the proposed development
- to describe the means and extent by which they can be reduced or ameliorated
- to interpret and communicate information about the likely impacts, and
- to provide an input into the decision making and planning process.

As provided for in the EPA 2022 guidelines, the EIAR focuses on:

- Impacts that are both likely and significant
- Impact descriptions that are accurate and credible

1.10.2. The objective of the EIAR will also be to identify and predict the likely environmental impacts of the proposed development; to describe the means and extent by which they can be reduced or ameliorated; to interpret and communicate information about the likely impacts; and to provide an input into the decision making and planning process.

The definition of Environmental Impact Assessment is clarified within the 2014 EIA Directive and is as follows:

"(g) 'environmental impact assessment' means a process consisting of:

(i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);

(ii) the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;

(iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;

(iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and

(v) the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a".

1.10.3. Under Article 5(3) of the 2014 Directive, it is specifically required that the developer must ensure that the environmental impact assessment report is prepared by competent experts. Each chapter of this EIAR has been prepared by experts with the requisite qualifications and competences which are detailed in each relevant chapter.

1.10.4. The intention of this EIAR document is to provide transparent, objective and replicable documentary evidence of the EIA evaluation and decision-making processes which led to the selection of the final project configuration. The EIAR documents the consideration of environmental effects that influenced the evaluation of alternatives. It also documents how the selected project design incorporates mitigation measures; including impact avoidance, reduction or amelioration; to explain how significant adverse effects will be avoided.

1.11. Objectives of this EIAR

1.11.1. The EPA guidelines list the following fundamental principles to be followed when preparing an EIAR:

- Anticipating, avoiding and reducing significant effects
- Assessing and mitigating effects
- Maintaining objectivity
- Ensuring clarity and quality
- Providing relevant information to decision makers
- Facilitating better consultation

1.11.2. This EIAR document describes the outcomes of the iterative EIA process which was progressed in parallel with the project design process. This forms the first part of the EIA process which will be completed by the competent authority, which in turn will be required to examine, analyse and evaluate the direct and indirect effects of the development on the various factors listed under Section 171A of the Planning and Development Act 2000, (as amended).

1.11.3. The amended EIA Directive prescribes a range of environmental factors which are used to organise descriptions of the environment and the environmental impact assessment should identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the prescribed environmental factors which are:

(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 documents the assessment process of the prescribed environmental factors in relation to the proposed residential development on lands at Baltrasna & Milltown in Ashbourne, County Meath.

1.11.4. The EIA process was based on the following four key objectives:

i. Pursuing Preventative Action
ii. Maintaining Environmental Focus and Scope
iii. Informing the Decision
iv. Public & Stakeholder Participation

i. Pursuing Preventative Action

Pursuing preventative action is the most effective means by which potential negative environmental impacts can be avoided. An assessment of anticipated likely and significant impacts was undertaken during the screening, informal scoping and the considerations of alternatives stages of the EIA process. This involved forming a preliminary opinion, in the absence of complete data, with respect to the approximate magnitude and character of the likely environmental impacts. This assessment was based on the knowledge, experience and expertise of the EIA and project design team with reference to the amended EIA Directive, EIA guidance material and local precedents.

Avoidance of impacts has been principally achieved through the consideration of alternatives and through the review of the project design in light of identified key environmental constraints. This is outlined in greater detail in Chapter 2.

ii. Maintain Environmental Scope and Focus

It is important that the EIAR document remains tightly focussed. This minimises expenses, delays and the potential for a confusing mass of data to obscure relevant facts. The EIA process has been project-managed and steered, so as to ensure that the EIAR documentation and analysis are confined to those topics and issues which are explicitly described in the legislation, and where environmental impacts may arise. Evaluation and analysis has been limited to topics where the indirect, secondary or cumulative impacts are either wholly or dominantly due to the project or development under consideration and remain focused on issues that:

- Are environmentally based

- Are likely to occur
- Have significant and adverse effects

iii. Informing the Decision

The EIAR document enables the competent/consenting authorities to reach a decision on the acceptability of the proposed development in the full knowledge of the project's likely significant impacts on the environment, if any.

iv. Public & Stakeholder Participation

Decisions are taken by competent/consent authorities through the statutory planning process which allows for public participation and consultation while receiving advice from other key stakeholders and statutory authorities with specific environmental responsibilities.

Public participation and consultation is an integral part of the planning process as outlined in the Planning and Development Act (as amended), and the Planning and Development Regulations 2001 (as amended).

The structure, presentation and the non-technical summary of the EIAR document, as well as the arrangements for public access, all facilitate the dissemination of the information contained in the EIAR. The core objective is to ensure that the public and local community are aware of the likely environmental impacts of projects prior to the granting of consent.

Informal scoping of potential environmental impacts was undertaken with the Planning Authority through pre application meetings. Direct and formal public participation in the EIA process will be through the statutory planning application process under the new Strategic Housing Development procedures.

1.11.5. To summarise, it is the intention of this EIAR document is to provide transparent, objective, and replicable documentary evidence of the EIA evaluation and decision-making processes which led to the selection of the final project configuration. The EIAR documents the consideration of environmental effects that influenced the evaluation of alternatives. It also documents how the selected project design incorporates mitigation measures; including impact avoidance, reduction or amelioration; to explain how significant adverse effects will be avoided.

It is intended that this EIAR will assist ABP, statutory consultees, and the public, in assessing all aspects of the proposed development.

1.12. Structure Methodology

1.12.1. Structure of the EIAR

The overall structure and scope of this EIAR has regard to the information required by the EU/EC Directives, Statutory Regulations and relevant environmental guidelines prepared by the Environmental Protection Agency (EPA). The EIAR has been written and illustrated with figures in a manner which, insofar as possible, is intended to be understandable to the public generally. A Non-Technical Summary has been prepared in accordance with the statutory regulations and is submitted as a separate document to this EIAR, i.e. Volume I – Non-Technical Summary. The appendices to this EIAR contain background and technical details relating to the project and are referred to in the relevant chapters, with all appendices incorporated into a separate volume of the EIAR (Volume III of the EIAR).

The structure used in this EIAR is a Group Format structure. This structure examines each environmental topic in a separate section of the EIAR. The chapter headings reflect the broadened scope of the environmental factors introduced by the 2014 Directive.

1.12.2. Contributors

This EIAR has been prepared on behalf of the developers / Applicants by a design team of qualified experts, as required by Article 5(3) of Directive 2014/52/EU. The contributors involved in the preparation of this EIAR are identified at the beginning of each chapter and in Table 1.3 of Section 1.12.16 of this EIAR and their qualifications and competence is described.

1.12.3. Methodology

A systematic approach is employed using standard descriptive methods, replicable prediction techniques and standardised impact descriptions to provide an appropriate evaluation of each environmental topic under consideration. An outline of the general methodology structure used to ensure consistency in each chapter of this EIAR and to examine each environmental topic is detailed in Table 1.2. below.

Section	Description
Introduction	Provides an overview of the specialist area and specifies the specialist who prepared the assessment.
Assessment Methodology	Outlines the method by which the relevant assessment of the development impacts has been conducted within that chapter.
Receiving Environment	Describes and assesses the receiving environment, the context, character, significance and sensitivity of the baseline receiving environment into which the proposed development will fit.
Construction Impacts and Mitigation	Describes the specific, direct and indirect impacts that may arise during the construction phases of the development. A description of the appropriate mitigation measures either practicable or reasonable is also provided in this section
Operational Impacts and Mitigation	Focuses on the operational phase of the proposed development and describes the specific, direct and indirect impacts that may arise together with appropriate mitigation measures.
Do Nothing Impact	Describes a scenario in which the development does not proceed and the environment would not change as a result.
Monitoring	Describes the monitoring of the development in a post-development phase, if required. This section addresses the effects that require monitoring, along with the methods and the agencies that are responsible for such monitoring. The level of monitoring, along with the methods and the agencies that are responsible for such monitoring. The level of monitoring proposed is proportionate to the nature, location and size of the project and the significance of its effects. This involves a description of monitoring in a post-development phase, if required. This section addresses the effects that require monitoring, along with the methods and the agencies that are responsible for such monitoring. The level of monitoring, along with the methods and the agencies that are responsible for such monitoring. The level of monitoring proposed is proportionate to the nature, location and size of the project and the significance of its effects.
	While not applicable to every aspect of the environment considered within the EIAR, certain measures need to be proposed to ensure that in the event of the proposal

Reinstatement	being discontinued, there will be minimal impact on the environment.
Interactions	Where applicable, the assessment refers to impact interactions, including potential indirect, secondary and cumulative impacts.
Difficulties encountered	Where applicable, any difficulties encountered by the environmental specialist in compiling the required information are noted.

Table 1.2. - EIAR Methodology Outline.

1.12.4. Forecasting Methods

The individual forecasting methods used to assess the various effects of the proposed development on the environment are outlined in the relevant chapters of this EIAR under the subheading *'Assessment Methodology'*.

1.12.5. Difficulties Encountered

Some details of the project and the construction methodology/programme are matters which may be subject to change depending on the contractor(s) appointed and other considerations which are not finalised at this stage, and which cannot be finalised until a grant of planning permission for the proposed development has been issued. However, these matters will not alter the nature or extent of the proposed development and the Contractor will be obliged to implement all mitigation measures proposed for the construction phase of the project.

No other significant difficulties were encountered in the preparation of the EIAR. Any limitations or technical difficulties associated with assessment of an environmental factor are detailed in the relevant chapter.

1.12.6. Terminology

In accordance with the EPAs' 'Guidelines on the Information to be contained in Environmental Impact Statements' (2002) and Advice Notes on Current Practice in the preparation of Environmental Impact Statements (2003), the following definitions are used where applicable in this EIAR. These definitions take account of the 2022 Guidelines on the 'Information to be contained in Environmental Impact Assessment Reports' prepared by the EPA:

The quality of the effects is defined as:

Positive effects: A change which improves the quality of the environment (e.g. by increasing species diversity; or the improving reproductive capacity of an ecosystem, or removing nuisances or improving amenities).

Negative effects: A change which reduces the quality of the environment (e.g. lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).

Neutral effects: A change which does not affect the quality of the environment.

The significance of the effects is described as:

Imperceptible: An effect capable of measurement but without noticeable consequences.

Not significant: An effect which causes noticeable changes in the character of the environment but without noticeable 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 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 the majority of a sensitive aspect of the environment.

Profound effects: An effect which obliterates sensitive characteristics.

The magnitude of the effect is, where appropriate, indicated as:

Extent: Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.

Duration: Describe the period of time over which the effect will occur. (See further detail below)

Frequency: Describe how often the effect will occur. (Once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)

Context: Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)

The probability of the effect is, where appropriate, indicated as:

Likely Effects: The effects that can reasonably be expected to occur as a result of the planned project if all mitigation measures are properly implemented.

Indeterminable Effects: When the full consequences of a change in the environment cannot be described.

`Worst case' Effects: The effects arising from a project in the case where mitigation measures substantially fail.

The duration of the effect is, where appropriate, indicated as:

Momentary Effects: Effects lasting from seconds to minutes

Brief Effects: Effects lasting less than a day

Temporary Effects: Effects lasting for one year or less.

Short-term Effects: Effects lasting one to seven years.

Medium-term Effects: Effects lasting seven to fifteen years.

Long-term Effects: Effects lasting fifteen to sixty years.

Permanent Effects: Effects lasting over sixty years.

The type of effect is described, where appropriate, as:

Cumulative Effects: The addition of many small effects to create one larger, more significant, impact.

Do-nothing Effects: The environment as it would be in the future should no development of any kind be carried out.

Indeterminable Effects: When the full consequences of a change in the environment cannot be described.

Irreversible Effects: When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.

Residual Effects: The degree of environmental change that will occur after the proposed mitigation measures have taken effect

Worst-case: The impacts arising from a development in the case where mitigation measures substantially fail.

Synergistic Effects: Where the resultant effects is of greater significance than the sum of its constituents.

Indirect Effects: Effects that arise off-site or are caused by other parties that are not under the control of the developer (such as a quarry)

Secondary Effects: Effects that arise as a consequence of a project (a new waste water treatment plant will reduce the yield of mussels in a nearby estuary)

1.12.7. Non-Technical Summary

A Non-Technical Summary of the EIAR has also been prepared. The EIA Directive states that one of the objectives of the EIA process is to ensure that the public are fully aware of the environmental implications of any decisions. The EPA Guidelines note that the Non-Technical Summary of the EIAR should facilitate the dissemination of the information contained in the EIAR and that the core objective is to ensure that the public is made as fully aware as possible of the likely environmental impacts of projects prior to a decision being made by the Local Authority. A Non-Technical Summary of the EIAR has therefore been prepared which summarises the key environmental impacts and is provided as a separately bound document i.e., Volume I of the EIAR.

1.12.8. Links between EIAR and Appropriate Assessment

An Appropriate Assessment Screening Statement (AA) was carried out for the proposed development to determine if there is a risk of effects to any Natura 2000 site and accompanies this EIAR as a separate document that is submitted as part of the planning application.

While AA is required by the proposer of any plan or project likely to have an adverse effect on a Natura 2000 site, EIA is required for projects listed in Annex I of the EIA Directive. The requirement for EIA relative to projects listed in Annex II of the EIA Directive is determined on a case by case. These two different types of assessment are independent and are required by separate legislation.

1.12.9. Availability of EIAR Documents

A copy of this EIAR document and Non-Technical Summary is available for purchase at the offices of An Bord Pleanála and Meath County Council at a fee not exceeding the reasonable cost of reproducing the document. The application can also be viewed on the SHD website www.ashbourneshd.ie set up by the applicants.

1.12.10. Impartiality

This EIAR document has been prepared with reference to a standardised methodology which is universally accepted and acknowledged. Recognised and experienced environmental specialists have been used throughout the EIA process to ensure the EIAR document produced is robust, impartial and objective.

It should be noted that, as highlighted above, an important part of the EIA process is preventative action which causes the project design team to devise measures to avoid, reduce or remedy significant adverse impacts in advance of applying for consent. As a result, where no likely significant impacts have been identified where they might reasonably be anticipated to occur, the design and layout of the proposed development has generally been amended to minimise the potential of any likely significant adverse impacts.

1.12.11. Statement of Difficulties Encountered

No particular difficulties, such as technical deficiencies or lack of knowledge, were encountered in compiling any of the specified information contained in this statement, such that that the prediction of impacts has not been possible. Where any specific difficulties were encountered, these are outlined in the relevant chapter of the EIAR.

1.12.12. EIA Quality Control and Review

Armstrong Fenton Associates is committed to consistently monitoring the quality of EIAR documents prepared both in draft form and before they are finalised, published and submitted to the appropriate competent authority taking into account latest best-practice procedure, legislation and policy. The EPA published Guidelines on Information to be contained in Environmental Impact Assessment Report[1] and the Department of Housing, Planning, Community and Local Government have published a consultation paper[2], which have been consulted in the preparation of this EIAR.

1.12.13. Errors

While every effort has been made to ensure that the content of this EIAR document is error free and consistent there may be instances in this document where typographical errors and/or minor inconsistencies do occur. These typographical errors and/or minor inconsistencies are unlikely to have any material impact on the overall findings and assessment contained in this EIAR.

1.12.14. Reference List

At the end of each chapter in Part B of this Volume, each contributor has included a reference list of sources relied on in that chapter. Below is a detailed list of references which have generally informed the descriptions and assessments included in this EIAR.

EU Directives / Legislation

- The EU Directives on Environmental Impact Assessment (85/337/EEC as amended by 97/11/EC, 2003/35/EC, 2009/31/EC (codified in 2011/92/EU) and 2014/52/EU).
- The Planning and Development Act, 2000 (as amended).
- The Planning and Development Regulations, 2001 (as amended).

[1] *Guidelines on the Information to be contained in an Environmental Impact Assessment Report, Environmental Protection Agency, 2022*

[2] *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.*

EIA and related Guidance

- Guidelines on the Information to be contained in Environmental Impact Statements, EPA (2002)
- Advice Notes on Current Practice in the preparation of Environmental Impact Statements, EPA (2003)
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft), EPA (2017)
- Advice Notes for preparing Environmental Impact Statements (Draft), EPA (2015)
- Appropriate Assessment of Plans and Projects in Ireland, Guidelines for Planning Authorities DEHLG (2009)
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, DECLG (2013)
- Circular PL1/2017 – Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive): Advice on Administrative Provisions in Advance of Transposition, DHPCLG (2017)
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports, EPA (2022)

Planning Policy (National, Regional, Local)

- The National Planning Framework (Project Ireland 2040)
- Eastern & Midland Regional Assembly Regional & Spatial Economic Strategy 2019-2031
- Smarter Travel – A Sustainable Transport Future 2009-2020
- Spatial Planning and National Roads, Guidelines for Planning Authorities 2012
- Sustainable Residential Development in Urban Areas, Guidelines for Planning Authorities 2009 and Urban Design Manual, A Best Practice Guide.
- Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities 2020.
- Design Manual for Urban Roads and Streets, 2013
- The Planning System and Flood Risk Management – Guidelines for Planning Authorities 2009
- National Cycle Manual
- Meath County Development Plan 2021– 2027

1.12.15. List of Abbreviations

The following is a non-exhaustive list of abbreviations used in this EIAR. Where an abbreviation is not listed below it is clarified in the relevant chapter of this EIAR.

AA: Appropriate Assessment
AADT: Annual Average Daily Traffic
BOD: Biochemical Oxygen Demand
CAP: Climate Action Plan
CDP: City/County Development Plan
CEMP: Construction and Environment Management Plan
CFRAMS: Catchment Flood Risk Assessment and Management Study
CMP: Construction Management Plan
CNT: Construction Noise Threshold
CoF: Confirmation of Feasibility
DoCHG: Department of Culture, Heritage and the Gaeltacht
DECLG: Department of the Environment, Community and Local Government
DED: District Electoral Division
DEFRA: Department of Environment Food and Rural Affairs
DEHLG: Department of the Environment, Heritage and Local Government
DELG: Department of the Environment and Local Government
DHPCLG: Department of the Housing, Planning, Community and Local Government
DMURS: Design Manual for Urban Roads and Streets

EEC: European Economic Community
EIA: Environmental Impact Assessment
EIAR: Environmental Impact Assessment Report
EIS: Environmental Impact Statement
EPA: Environmental Protection Agency
ESB: Electrical Supply Board
EC: European Commission
EV: Electric Vehicle
EU: European Union
GDSDS: Greater Dublin Strategic Drainage Strategy
GSI: Geological Survey of Ireland
HDV: Heavy Duty Vehicle
INDC: Intended Nationally Determined Contributions
IOA: Institute of Acoustics
IW: Irish Water
KER: Key Ecological Receptors
MCC: Meath County Council
MCDP: Meath County Development Plan
NBDC: Natural Biodiversity Data Centre
NHA: Natural Heritage Areas
NPF: National Planning Framework
NPWS: Natural Parks and Wildlife Service
NRA: National Roads Authority
NTA: National Transport Authority
OPW: Office of Public Works
pNHA: Proposed Natural Heritage Areas
RMP: Record of Monuments and Places
RPS: Record of Protected Structures
RPGs: Regional Planning Guidelines
RSES: Regional Spatial and Economic Strategy
SAC: Special Area of Conservation
SCI: Site of Community Importance
SEA: Strategic Environmental Assessment
SEO: Strategic Environmental Objective
SI No: Statutory Instrument Number
SPA: Special Protection Areas
SSFRA: Site Specific Flood Risk Assessment
TII: Transport Infrastructure Ireland
TMP: Traffic Management Plan
UNFCCC: United Nations Framework Convention on Climate Change
WFD: Water Framework Direction
ZOI: Zone of Influence

1.12.16. Project Team

This EIAR has been prepared on behalf of the applicants by a team of qualified experts, as required by Article 5(3) of Directive 2014/52/EU. The contributors involved in the preparation of this EIAR are identified in Table 1.3. above, and at the beginning of their relevant chapters in Part B of this EIAR.

Chapter	Author (s)
Non – Technical Summary	Armstrong Fenton Associates, Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI
1. Introduction	Armstrong Fenton Associates, Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI
2. Description of Project and Alternatives	Armstrong Fenton Associates, Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI
3. Population and Human Health	Armstrong Fenton Associates, Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI
4. Biodiversity	Scott Cawley Ltd. Síofra Quigley, Senior Consultant Ecologist,
5. Land, Soil & Geology	DBFL Consulting Engineers Brendan Manning BEng (Hons) CEng MIEI
6. Water	DBFL Consulting Engineers Brendan Manning BEng (Hons) CEng MIEI
7. Air Quality & Climate	AWN Consulting Ciara Nolan, BSc, MSc, Senior Environmental Consultant
8. Noise & Vibration	AWN Consulting Donogh Casey, Acoustic Technician
9. Material Assets: Built Services	DBFL Consulting Engineers Brendan Manning BEng (Hons) CEng MIEI
10. Material Assets: Transportation	DBFL Consulting Engineers Mark Kelly BAI, BA, MSc, PGradDip, CEng MIEI
11. Material Assets: Resource and Waste Management	AWN Consulting Chonaill Bradley, BSc in Environmental Science, & Niamh Kelly, MSc. in International Disaster Management / B.A. in Earth Sciences
12. Cultural Heritage and Archaeology	Archaeology Plan Jordan Hanson, BA, MA
13. The Landscape	Cunnane Stratton Reynolds Ronan Finnegan, BSc, PG Dip, CMLI, Review by Lucy Carey, MILI, Director of Cunnane Stratton Reynolds.
14. Identification of Significant Impacts / Interactions	Armstrong Fenton Associates, Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI
15. Summary of EIA Mitigation & Monitoring Measures	Armstrong Fenton Associates, Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI

Table 1.3. EIAR Project Team.

2.0. Description of the Project and Alternatives

2.1. Introduction

This chapter of the EIAR has been prepared by Armstrong Fenton Associates, Planning & Development Consultants (Tracy Armstrong BA MRUP MIPI MRTPI), and provides for a description of the proposed development site in the context of its receiving environment together with a description of the project. As required by the EIA Directive and regulations thereunder, this chapter of the EIAR also outlines the main alternatives considered.

In accordance with the EIAR preparation process, various mitigation measures are detailed in this EIAR which can either be incorporated during the planning process or as part of the conditions attached to a future grant of planning permission.

The project description in Section 2.3. of this chapter of the EIAR should be read in conjunction with all plans and particulars submitted with the planning application, including the statutory planning notices, and both the Planning Statement and Statement of Consistency submitted as part of the subject planning application.

2.2. Site Context

2.2.1. Site Location

The subject site is a greenfield site located at the settlement boundary of Ashbourne, to the south-east of Ashbourne town centre (c. 1.5km distance), in the townlands of Baltrasna and Milltown. The subject site, i.e., the red line boundary of the submitted site layout plan(s) / site location map, measures c. 20.04 Ha.

The site is located to the west of the Dublin Road (R135), west of The Briars residential estate, south-west of Cherry Lane and north-west / south/west of Hickey's Lane. To the south-west are are agricultural lands in the Rural Area (i.e., outside of Ashbourne's development boundaries), while to the south-east is existing residential development generally in the form of detached rural houses. To the west are greenfield lands zoned for 'Open Space'. To the north are the existing residential dwellings at Alderbrook Rise, Alderbrook Downs & Alderbrook Heath, while the existing residential dwellings at Tara Close and Tara Court abut the site to the north-west.

It should be noted that the site encompasses third-party lands, in the northern part of the site, which are identified as being outside the application site on the submitted site layout plan(s) and do not form part of the subject planning application.

The site is accessed via Cherry Lane to the north-east of the site and Hickey's Lane to the south-east of the site, both of which are directly connected to the Dublin Road (R135).

2.2.2. Site Description

The site has mature hedging around the entirety of its perimeter, save for where it meets the rear gardens of some existing properties to the east. The site comprises 12 no. large agricultural fields which are also defined / separated by existing hedgerows.

The site generally slopes from east to west except for an area at towards western boundary, near the proposed reserved school site included in the subject application, which slopes from west to east.

There are several existing buildings on the site, i.e., 3 no. detached dwellings (c. 354 sq.m in total) along with their associated outbuildings (c. 305 sq.m) which are proposed to be demolished as part of the subject application for permission.

The site is currently used for agricultural purposes.

2.2.3. Adjoining Development

The adjoining land uses comprise of existing residential development to the north-west, north, north-east, east, and south-east. To the south-west are agricultural lands. To the west are greenfield lands zoned for 'Open Space'.

It should be noted that the site encompasses third-party residential lands, in the northern part of the site, which are identified as being outside the application site on the submitted site layout plan(s) and do not form part of the planning application.

2.2.4. Ownership

As noted in the planning documentation submitted with the application, the subject site is comprised of lands owned by two different landowners being: Arnub Ltd. and Aspect Homes (ADC) Ltd. Notwithstanding the ownership of the land, the two landowners have joined together to put forward a coherent, unified, application to develop the residentially zoned lands available (Refer to back to Figure 1.3).

2.2.5. Zoning & Master Plan

The vast majority of the subject application site is zoned for residential development (i.e., Objective 'A2' – 'New Residential') in the existing Meath County Development 2021-2027(CDP), with the vision for 'A2' zoned lands stated in the CDP as being the objective to:

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

The existing CDP goes on to state that 'A2' zoned lands are:

"the primary zone to accommodate new residential development. Whilst residential zoned lands are primarily intended for residential accommodation, these lands may also include other uses that would support the establishment of residential communities. This could include community, recreational and local shopping facilities. These facilities must be at an appropriate scale and cannot interfere with the primary residential use of the land."

A portion of the site (c. 1 Ha), at the western boundary, is zoned for community infrastructure (i.e., Objective 'G1'-Community Infrastructure') in the existing CDP, with the vision for 'G1' zoned lands stated in the CDP as being the objective to:

"To provide for necessary community, social, and educational facilities."

Furthermore, the subject site forms the vast majority of an identified master plan area for Ashbourne i.e., Master Plan 18 of the Ashbourne Written Statement contained in the existing CDP or 'MP 18' on the Ashbourne Land Use Zoning Map of the existing CDP.

The Written Statement for Ashbourne contained in the existing CDP states that, on the MP 18 lands:

"It is intended that these lands shall provide a primary school site, lands for recreational uses, including playing fields, and lands for residential development. The development of the lands shall be on a phased basis to be agreed as part of the preparation of the Master Plan."

The master plan has been agreed with Meath County Council prior to the submission of the subject application and a phasing plan is proposed / submitted as part of the subject application.

The proposed development provides for residential development and recreational uses and caters for an area reserved for a future primary school site, including a playing field in compliance with the requirements of the master plan. The proposed layout has also been designed to comply with the individual zoning objectives attached to the site i.e., zoning objectives 'A2' & 'G1'. For further details please refer to the Planning Statement prepared by Armstrong Fenton Associates which is submitted with the planning application as a separate document.

2.3. Description of the Physical Characteristics of the Proposed Development

The proposed development includes for the demolition all existing structures on site, i.e., 3 no. detached dwellings (c. 354 sq.m total) along with their associated outbuildings (c. 305 sq.m total).

The proposed development is a residentially led development consisting of 702 no. dwellings, comprised of 420 no. 2 & 3 storey houses, 38 no. duplex units in 19 no. blocks and 244 no. apartments in 20 no. buildings ranging in height from 3-6 storeys.

The proposed development includes for the following non-residential uses: (i) 2 no. creches accommodated in Blocks A and A1 respectively, (ii) 4 no. retail units in Block A, A1 & Block B1 & (iii) 1 no. GP practice / medical use unit in Block A1.

The proposed development includes for 1 no. basement car park underneath Block A1 and 2 no. undercroft car park areas at ground floor level of Blocks A & B1 respectively.

The proposed development includes for an area of c. 1 Ha reserved for a school site and a playing pitch in the western part of the site.

The proposed development includes for road upgrades / improvement works to both the existing Cherry Lane and Hickey's Lane and their junctions with the Dublin Road (R135). The development includes for 1 no. pedestrian / bicycle only access point located off the Dublin Road (R135), and also includes for pedestrian and cycle paths throughout the site.

The proposed development also provides for (i) all ancillary / associated site development works above and below ground, (ii) public open spaces, including hard & soft landscaping, play equipment & boundary treatments, (iii) communal open spaces, (iv) undercroft, basement & surface car parking, including for EV & mobility impaired car parking spaces (v) undercroft, basement & surface bicycle parking, including for external bicycle stores & visitor spaces (vi) bin storage, (vii) public lighting, (viii) signage (xi) plant (M&E) & utility services, including for 7 no. ESB sub-stations (x) green roofs, etc. all on an overall application site area of 20.04 hectares.

The proposed development is described in full below, as per the statutory notices submitted for the subject planning application:

Arnub Ltd. & Aspect Homes (ADC) Ltd. intend to apply to An Bord Pleanála for permission for a strategic housing development, on an overall site of c. 20.04 hectares, located in the townlands of Baltrasna and Milltown, Ashbourne, County Meath. The application site is located to the west / south-west of Dublin Road (R135), south-west of Cherry Lane, west of the existing dwellings at The Briars and Cherry Court, south of the existing dwellings at Alderbrook Heath, Alderbrook Downs & Alderbrook Rise, east / south-east of the existing dwellings at Tara Close & Tara Place, and north-west and south-west of Hickey's Lane.

The development will consist of the following:

(1) Demolition of all existing structures on site, comprising 3 no. single storey dwellings and their associated outbuildings (total demolition area: c.659m²).

(2) Construction of 702 no. residential dwellings comprised of: 420 no. 2 & 3 storey 2, 3, 4, & 5 bed detached, semi-detached & terraced houses, 38 no. 2 & 3 bed duplex units in 19 no. 3 storey buildings, and 244 no. 1, 2, & 3 bed apartments in 20 no. buildings ranging in height from 3 to 6 storeys.

(3) The development also includes for the following non-residential uses: (i) 2 no. childcare facilities located in Blocks A and A1 (c. 289m² & c.384m² respectively), (ii) 4 no. retail units comprised of: 2 no. units in Block A (c.106m² & c.174m² respectively), 1 no. unit in Block A1 (c.191m²), & 1 no. unit in Block B1 (c.469m²), and (iii) 1 no. GP practice / medical use unit located in Block A1 (c.186m²).

(4) The development provides for a basement level car park located under Block A1 (c. 4,095m²) and, 2 no. undercroft car parks located at the ground floor level of Block A (c. 466m²) and Block B1 (c. 1,466m²).

(5) The development provides for an area of c.1 hectare reserved for a future school site and playing pitch at the western boundary of the site.

(6) Vehicular access to the development will be via 2 no. access points as follows: (i) from Cherry Lane, located off Dublin Road (R135), in the north-east of the site and, (ii) from Hickey's Lane, located off Dublin Road (R135), to the east of the site. The development includes for road upgrades / improvement works to both Cherry Lane and Hickey's Lane and their junctions with Dublin Road (R135). A new east-west access road through the development site extending from Cherry Lane to the western boundary of the site and all associated site development works is proposed. The development includes for 1 no. pedestrian / bicycle green link access point from Dublin Road (R135) and pedestrian and cycle paths throughout the development site.

(7) The development also provides for (i) all ancillary / associated site development works above and below ground, (ii) public open spaces (c.28,885m² total), including hard & soft landscaping, play equipment & boundary treatments, (iii) communal open spaces (c.3,180m² total) (iv) undercroft, basement, and surface car parking, including for EV, mobility impaired, and car share parking spaces (total 1,262 no. car parking spaces) (v) 869 no. dedicated bicycle parking spaces at undercroft and surface level, including for external bicycle stores & visitor spaces (vi) bin storage, (vii) public lighting, (viii) signage (ix) plant (M&E) & utility services, including for 7 no. ESB sub-stations (x) green roofs, all on an overall application site area of 20.04 hectares.

2.3.1. Site and Development Works

The proposed development includes the following works:

- Demolition of existing buildings on site (c. 659 sq.m in total)
- Residential development (702 no. dwellings)
- 2 no. creche facilities (c. 289 sq.m & c. 384 sq.m)
- 4 no. retail units (c. 106 sq.m, c. 174 sq.m, c. 191 sq.m & c. 469 sq.m)
- 1 no. GP practice / medical use unit (c. 186 sq.m)
- 1 no. basement car park (c. 4,095 sq.m)
- 2 no. undercroft car park areas (c. 466 sq.m & c. 1,466 sq.m)
- Surface car parking
- Surface, basement and undercroft bicycle parking
- Road development / improvement works to the existing Hickey's Lane and Cherry Lane and their junctions with the Dublin Road (R135)
- Public, communal, and private open spaces, and pedestrian and cycle routes/connections
- 7 no. ESB substations

- All ancillary / associated site development works above and below ground, including for bin storage, public lighting, plant (M&E), utility services etc.

Further details are provided in all the plans and reports submitted with the planning application however we refer the reader to the Planning Statement prepared by Armstrong Fenton Associates submitted with the planning application in particular.

2.3.2. Project Lifecycle

Beyond the construction and operational phases, there are no further phases of development envisaged for this project. It is envisaged that development, if granted permission, will take a maximum of 5 years to construct.

2.3.3. Demolition

The proposed development includes for the demolition of existing buildings on site i.e., 3 no. detached dwellings (c. 354 sq.m in total) along with their associated outbuildings (c. 305 sq.m). Proposed demolition details can be found on the relevant demolition drawings (Drawing No's. D2101-DL01 to D2101-DL03) prepared by the project architects, Davey + Smith, submitted with the application – please refer to same for details. An Construction & Environmental Management Plan (CEMP) prepared by DBFL Consulting Engineers and a Resource Waste Management Plan (RWMP) prepared by AWN Consulting are also submitted with the planning application.

2.3.4. Residential Development

Regarding residential development, in summary, the proposed development proposes to construct of 702 no. dwellings, comprised of 420 no. 2 & 3 storey, 2, 3, 4 & 5 bed houses, 38 no. 2 & 3 bed duplex units in 19 no. blocks, and 244 no. 1, 2 & 3 bed apartments in 20 no. buildings, which range in height from 3-6 storeys. Table 2.1. below, provides for a summary of the proposed residential unit types / mix.

Dwelling Type	No. of 1 bed units	No. of 2 bed units	No. of 3 bed units	No. of 4 bed units	No. of 3-4 bed units	No. of 4-5 bed units	No. of 3-5 bed units	Total no. of units	Total Percentage (%)
Houses	-	48	185	50	31	80	26	**420**	**60%**
Apartments	56	161	26	-	-	-	-	**243**	**35%**
Duplexes	-	20	19	-	-	-	-	**39**	**5%**
Total	**56**	**229**	**230**	**50**	**31**	**80**	**26**	**702**	**100%**
Percentage (%)	**8%**	**33%**	**33%**	**7%**	**4%**	**11%**	**4%**	**100%**	-

Table 2.1. Summary of proposed unit types / mix.

A wide variety of dwelling typologies and building heights are included for in the project, all dispersed throughout the proposed layout to provide for visual interest, variety and distinctiveness. Further details of same are set out in Section 6.8 of the submitted Planning Statement prepared by Armstrong Fenton Associates and on submitted Drawing No. D2101.S.06 - *'Overall Site Layout 1:1000 (Colour Coded)'* – prepared by Dave + Smith Architects, please refer to same.

The proposed layout is based upon are 5 no. character areas dispersed throughout the scheme, each with its own distinct design material palette. This is illustrated in more detail in the submitted Architectural Design Statement prepared by Davey + Smith Architects – please refer to same for details .

2.3.5. Non-Residential Development

The proposed development includes for the following non-residential uses:

- 2 no. creche facilities (c. 289 sq.m & c. 384 sq.m)
- 4 no. retail units (c. 106 sq.m, c. 174 sq.m, c. 191 sq.m & c. 469 sq.m)
- 1 no. GP practice / medical use unit (c. 186 sq.m)

Proposed Creche Facilities

The project includes for 2 no. creches which are strategically located in the eastern and western halves of the development to ensure that all future residents have ease of access to childcare facilities.

The first of the 2 no. proposed creches is located in Block A at the north-east corner of the layout, adjacent to Cherry Lane. This facility is a one storey facility located on the ground floor of the block, at the western side of the block. The proposed childcare facility measures c. 289 sq.m and caters for dedicated classrooms in addition to reception, lobby, canteen, storage and bathroom areas etc.

The second of the 2 no. proposed creches is located in Block A1 in the western part of the layout, adjacent to the reserved area for a future school site. This facility is a one storey facility located on the ground floor of the block, at the south-east corner of the block. The proposed childcare facility measures c. 384 sq.m and caters for dedicated classrooms in addition to reception, lobby, canteen, storage and bathroom areas etc.

The proposed creche facilities are capable of accommodating c. 65 no. childcare places (Block A) & c. 110 no childcare places (Block A1) based on the guidance of the Childcare Facilities – Guidelines for Planning Authorities (2001) and the Sustainable Urban Housing: Design Standards for New Apartments (2020).

The proposed creche facilities are strategically located in the eastern and western halves of the development to ensure that all future residents have ease of access to childcare facilities. Each facility is located adjacent to proposed public open space which enhances safe drop off and allows for better ease of access and use.

The internal road network, including for proposed materials, has been designed to further ensure pedestrian priority in the areas surrounding the creches. Each of the proposed creche facilities is provided with an area of outdoor play space which will be treated with an appropriate boundary treatment to ensure safety and enhancement of use – please refer to the landscaping plans prepared by CSR Landplaning and Design submitted with the planning application for further details of same

Proposed Retail Units

The proposed development includes for 4 no. one storey retail units. The location and sizes of the retail units are as follows:

- Located on the ground floor of Block A fronting onto Cherry Lane - c. 174 sq.m
- Located on the ground floor of Block A fronting onto Cherry Lane / Dublin Road (R135) - c. 106 sq.m
- Located on the ground floor of Block A1 fronting onto proposed public open space to the south of the block - c. 191 sq.m
- Located on the ground floor of Block B1 fronting onto proposed public open space to the north of the block) - c. 469 sq.m

The proposed retail units have been strategically located to cater for active frontage along the main access road into the development, at Cherry Lane, and provide for vibrant focal point, or local centre, in the western part of the development centred on a hard landscaped urban plaza area.

The proposed retail units are put forward in recognition of the scale of the proposed development and its future population, who will require conveniently located shopping facilities to serve their needs. As indicated in the existing MCC CDP's vision for 'A2' zoned lands, the proposed retail units will support the establishment of the new residential community by providing for local shopping facilities. The proposed facilities are at an appropriate scale and are ancillary to the primary residential use of the land.

Proposed GP Practice / Medical Use Unit

The proposed development includes for 1 no. one storey GP practice / medical use unit on the ground floor of Block A1 (c. 186 sq.m) fronting onto the internal access road adjacent to the reserved school site.

The proposed GP practice / medical use unit is put forward in recognition of the scale of the proposed development and its future population, who will require services such as medical facilities / doctors to serve their everyday needs. As indicated in MCC CDP's vision for 'A2' zoned lands, the proposed GP practice / medical use unit is considered to support the establishment of the new residential community by providing for required facilities. Furthermore, it's location, adjacent to the reserved future school site, will allow for ease of access for future students of the school should it be developed.

Proposed Basement

The project includes for a basement level car park located beneath Blocks A1. The proposed basement measures c. 4,095 sq.m. Stair core / lift access to the basement level is provided from Block A1 (4 no. cores). The basement provides for 126 no. car parking spaces including for accessible parking spaces for persons with impairments and EV parking spaces. The basement also includes for bin storage and plant areas. Vehicular access to the basement level from the west of Block A1, off the internal road network.

Proposed Undercroft Parking Areas

The project includes for 2 no. undercroft parking areas located at ground floor level of Block A and Block B1.

The proposed undercroft parking area in Block A measures c. 466 sq.m. provides for 16 no. car parking spaces including for accessible parking spaces for persons with impairments. This undercroft area provides for 66 no. bicycle parking spaces. Vehicular access to this undercroft area from the south west of Block A (2 no. access points).

The proposed undercroft parking area in Block B1 measures c. 1,466 sq.m. provides for 53 no. car parking spaces including for accessible parking spaces for persons with impairments. This undercroft area provides for 152 no. bicycle parking spaces. Vehicular access to this undercroft area from the south west of Block B1 (2 no. access points).

2.3.6. Car Parking and Bicycle Parking Provision

Car parking for the proposed development is provided in the form of basement level, undercroft and on-street car parking. In total, the proposed development caters for 1,262 no. car parking spaces

For houses, car parking is proposed as a mix of on-street and on-curtilage parking. Where applicable on-street surface car parking for houses is assigned to individual houses. For apartments and duplex units, as well as the proposed non-residential units detailed in Section 1.2.5 of this EIAR, car parking is proposed as a mix of on-street, basement and undercroft parking

For houses, bicycle parking will be accommodated within the curtilage of the property. For apartments and duplex units, as well as the proposed non-residential units detailed in Section 1.2.5 of this EIAR, dedicated bicycle parking spaces are proposed as a mix of on-street, basement and undercroft parking. In total, the proposed development

caters for 869 no. dedicated bicycle parking spaces.

Both Chapter 10 of this EIAR 'Material Assets: Transportation' and the submitted Traffic & Transport Assessment (TTA) prepared by DBFL Consulting Engineering provide for further details.

2.3.7. Access

Vehicular access to the proposed development will be via 2 no. access points as follows: (i) off the existing Cherry Lane to the north-east, off the R135 Dublin Road, and (ii) via Hickey's Lane to the south-east, off the R135 Dublin Road, The project includes for road development / improvement works to the existing Hickey's Lane, and Cherry Lane and their junction with Dublin Road (R135).

A letter of consent from Meath County Council for works on lands under their control is enclosed with the planning application - please refer same for details.

The proposed development includes for 1 no. pedestrian / bicycle only access point located off the Dublin Road (R135), and also includes for pedestrian and cycle routes and connections throughout the site.

The proposed layout accommodates for the potential future connection of the proposed road network, including for pedestrians and cycle links, into the adjoining lands to the west and east should it be required in future.

2.3.8. Open Space

The proposed development provides for public open space, including hard & soft landscaping, play equipment & boundary treatments, children's play areas, and a multi-use games area, in compliance with the requirements of the MCC's existing CDP i.e., minimum 15% of the site area provided is as public open space. In total, the proposed development provides for c. 28,885 sq.m. of public open space – please refer to the submitted Planning Statement prepared by Armstrong Fenton Associates for further details of same.

The public open space provision has been strategically designed and located to provide for visual interest and variety, while also catering for links throughout the development. Please refer to the submitted landscaping plans prepared by CSR Land Planning & Design, which accompany the planning application for further details of design and rationale of the public open space provisions. Please also refer to the submitted Planning Statement prepared by Armstrong Fenton Associates which accompanies the planning application for details of the public open space provisions. Please also see submitted Drawing No. D201.S.13. *'Site Layout – Open Space'* prepared by Davey + Smith for details.

The proposed development also caters for communal open space and private open space in compliance with the requirements of the guidelines for '*Sustainable Urban Housing: Design Standards for New Apartments'* (2020) and, where applicable, MCC's existing CDP. Please refer to the submitted Planning Statement prepared by Armstrong Fenton Associates which accompanies the planning application for full details. In total the proposed development caters for 3,180 sq.m of communal open space. For details of individual private amenity space please refer to the submitted Housing Quality Assessment prepared by Davey + Smith Architects.

2.3.9. Ancillary / Associated Development

The proposed also provides for (i) all ancillary / associated site development works above and below ground, (ii) public open spaces (c.28,885m^2 total), including hard & soft landscaping, play equipment & boundary treatments, (iii) communal open spaces (c.3,180m^2 total) (iv) undercroft, basement, and surface car parking, including for EV, mobility impaired, and car share parking spaces (total 1,262 no. car parking spaces) (v) 869 no. dedicated bicycle parking spaces at undercroft and surface level, including for external bicycle stores & visitor spaces (vi) bin storage, (vii) public lighting, (viii) signage (ix) plant (M&E) & utility services, including for 7 no. ESB sub-stations (x) green roofs, all on an overall application site area of 20.04 hectares.

2.4. Construction Details

2.4.1. Construction Management

A Construction and Environmental management Plan (CEMP) has been prepared for the proposed development and considers environmental factors associated will the construction of the proposed development. Prior to the commencement of works, a detailed finalised (CEMP) will be prepared. The contractor will be required to comply with, and implement, the requirements and mitigation measures as set out in this EIAR, and any conditions imposed as part of planning permission.

A Resource & Waste Management Plan (RWMP) has also been prepared for the proposed development and is submitted with the planning application (see Chapter 11 – Appendices). Prior to the commencement of works, a detailed finalised RWMP will be prepared and incorporate all mitigation measures and construction methodologies outlined in this EIAR and provide the baseline requirements off which the contractor will work. The RWMP will remain a live document which will be updated by the contractor as construction progresses to take account of live requirements imposed by both the planning permission and the site conditions.

An Outline Construction Management Plan (CMP) is submitted with the planning application and on receipt of a grant of planning, and prior to the commencement of works, a detailed finalised Construction Management Plan (CMP) will be prepared. The contractor will be required to comply with, and implement, the requirements and mitigation measures as set out in this EIAR, and any conditions imposed as part of planning permission.

A Construction Traffic Management Plan (CTMP) will be prepared prior to commencement of development works. The CTMP will address traffic management, dust control, road cleaning, and staff parking associated with the construction works.

Certain assumptions are made in the aforementioned documents based on the information available at this time of making the planning application and, for the avoidance of doubt, it is not proposed or intended that the Applicants / contractor(s) are bound by these proposals which may change depending on the timing and circumstances pertaining at the time of construction. Upon receipt of a grant of planning, and prior to the commencement of works, more detailed and finalised documents, taking into account any required amendments, will be prepared and agreed with the Local Authority. The contractor will be required to comply with and implement all mitigation measures and construction methodologies as set out in this EIAR.

All of the aforementioned plans include / will include further information on the construction programme and construction related activities. The plans also address / will address issues relating to site access, compounds, site security, waste management contractors' responsibilities etc.

2.4.2. Construction Programme / Phasing

It is estimated that construction of the project will take approximately five years to complete. A phasing plan accompanies the planning application – please refer to the submitted Drawing No. D2102.S.10 "Overall Site Layout – Phasing Map" prepared by Davey + Smith Architects which illustrates the proposed phasing of the development.

The proposed phasing plan also illustrated in Figure 2.1 of this chapter. The intended sequence of development may change post grant of planning permission as a detailed construction programme is dependent on contractor appointment, market and other considerations. Any amendments required to the phasing programme will be discussed and with Local Authority as required. The phasing proposal submitted with the planning application can be summarised as follows:

Phase 1: will commence at the northern end of the site and will include for:

(i) The demolition of the existing buildings in the northern part of the site (2 no. dwellings & associated buildings).
(ii) The provision of vehicular access from Cherry Lane & associated upgrades to the junction with Dublin Road (R135) and the main east-west link road traversing the northern part of the site.
(iii) The delivery of c. 7,637 sq.m of public open space
(iv) 167 no. dwellings, comprised of:
- 34 no. apartments (12 blocks)
- 6 no. duplex units (3 blocks)
- 127. no. houses

Phase 2: will consist of the central section of the site and will include for:

(i) The delivery of c. 12,466 sq.m of public open space (included for a Multi-Use-Games Area (MUGA)
(ii) The provision of the pedestrian and bicycle access from the Dublin Road (R135) into the development,
(iii) The delivery of the creche facility in Block A1 and the creche facility in Block A
(iv) The delivery of the 4 no. retail units in Blocks A, A1 & B1
(v) The delivery of the GP practice / medical use unit in Block A1.
(vi) 350 no. dwellings, comprised of:
- 210 no. apartments (8 blocks)
- 12 no. duplex units (6 blocks)
- 128 no. houses

Phase 3: will be the final phase, consisting of the southern-eastern part of the site and will include for:

(i) The demolition of the existing buildings in the southern part of the site (1 no. dwelling & associated buildings).
(ii) The delivery of c. 8,782 sq.m of public open space
(iii) The provision of vehicular access from Hickey's Lane & associated upgrades to the junction with Dublin Road (R135)
(iv) 185 no. dwellings, comprised of:
- 20 no. duplex units (10 blocks)
- 165 no. houses

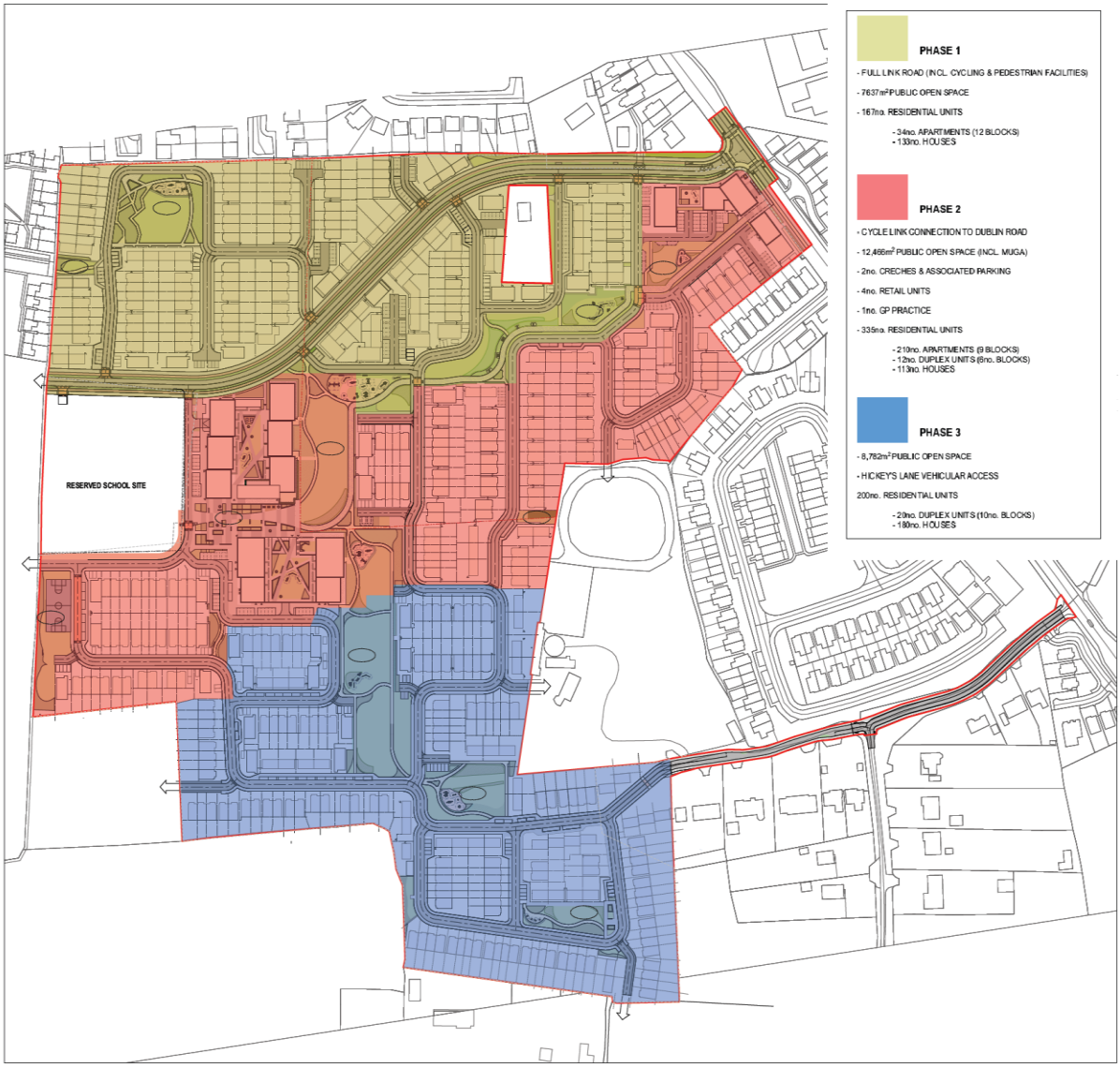


Fig. 2.1. Proposed Phasing Plan.

2.4.3. Site Preparation

The proposed development includes for the demolition of existing buildings on site i.e., 3 no. detached dwellings (c. 354 sq.m in total) along with their associated outbuildings (c. 305 sq.m). These buildings will be demolished in line with the proposed phasing programme detailed in Section 2.4.2. of this chapter.

Excavation works for the proposed basement beneath Block A1 will be required. Excavated material on site will predominantly be re-used on site / on lands within the applicant's control.

The contractor(s) will require connections to the following services / utilities for the duration of the works:

- Water supply
- Foul sewer
- Surface water sewer
- Electricity
- Telecommunications

Existing services / utilities within and adjoining the site will be protected during construction.

2.4.4. Construction Activities

The construction works associated with the proposed development will be contained within the application site boundary. These works will include excavation, earthworks, etc.

Some construction activity may take place off-site, on lands within the control of the Applicants / developer. These activities may include access and haul routes, site compound(s), storage of materials and soil/excavated material, screening and processing of existing materials for re-use within the development works, construction parking, staff welfare facilities etc. These areas will be identified in the finalised CMP.

Subject to the agreement of the Local Authority, the following site operation hours are proposed:

- 07.00 to 19.00 Monday to Friday
- 08.00 to 13.00 on Saturdays
- No works on Sundays or public holidays

During the construction period, due to exceptional circumstances, construction work may be necessary outside the above standard hours. If necessary, this will be agreed in advance with the Local Authority (MCC).

The contractor will be guided by the finalised CMP & RWMP, which will be subject to any changes imposed by condition on any grant of permission or as a result of this EIAR, with regard to re-use, recovery, recycle and disposal of waste produced during construction. Chapter 11 of this EIAR "Material Assets: Resource and Waste Management" also considers the re-use recovery, recycle and disposal of waste arising from the development.

2.4.5. Construction Material

The proposed development will have a requirement for imported materials, primarily concrete, steel, stone and asphalt. The estimated quantities for the overall development are provided in the RWMP. The majority of new materials brought to site will be used immediately, the remainder will be stored within the site boundary.

Material excavated on the site will be used in construction. The re-use of this material reduces the quantity of materials being imported to the site. Prior to use, this material will be subject to appropriate testing to ensure material is suitable for construction. Locations to stockpile this material will be identified by the contractor(s) in the finalised CMP prior to commencement of development.

2.4.6. Construction Traffic

A Construction Traffic Management Plan (CTMP) will prepared and agreed with MCC by the appointed contractor prior to commencement of development works. The finalised CTMP will outline proposals for construction deliveries and staff accessing the compounds and construction sites.

During all phases of construction access to all existing properties adjoining the development lands will be maintained. Local traffic management procedures will be put in place where required.

Site access / egress routes and construction traffic generation are discussed in the TTA prepared by DBFL Consulting Engineers.

2.5. Energy Statement

2.5.1. Technologies and Standards

Conservation and Renewable Technologies that will be employed in part or in combination with each other for this development. These techniques will be employed to achieve compliance with the building regulations Part L and NZEB standards.Principle standards and references include:

- Building regulations Technical Guidance Document for Part L, Department of Environment, 2021 (TBG Part L)
- Building regulations Technical Guidance Document for Part F, Department of Environment, 2021 (TBG Part F)
- SEAI Building Energy Rating documentation and software (BER)
- S.I. No. 243/2012 - European Union (Energy Performance of Buildings) Regulations 2012

The final combination of products, systems and other elements employed to meet Part L and Part F will be determined by means of a Building Energy Rating for each dwelling or unit.

2.6. Environment / Global Issues

Increasing levels of greenhouse gases have been linked with changes in climate and predicted global warming. By far the biggest human contribution to the greenhouse gases is in emissions of carbon dioxide. The proposed development is likely to increase carbon dioxide levels in the atmosphere by the embodied emissions in the building materials used, and in the operational energy consumed during the life of each building.

To minimise the embodied emissions impact, materials will be sourced locally where possible (reducing carbon dioxide emissions associated with transportation), and preference will be given to reusing materials, and using materials in their natural state (reducing the emissions associated with processing).

2.7. Emissions and Waste

2.7.1. Effluents

Effluent arising from foul drainage from the development will be discharged through piped systems to Local Authority sewers. Operation of the development will involve the discharge of uncontaminated surface water from the impermeable areas to a proposed network all linking into the established public system in the environs. Details of the impacts and remedial and reductive measures for surface water and foul drainage are recorded at Chapter 6 “Water & Hydrology” of this EIAR.

2.7.2. Municipal Waste/Waste Management

An Operational Waste Management Plan (OWMP) and a Resource & Waste Management Plan (RWMP) have been prepared and are included for in the appendices of Chapter 11 of this EIAR (Material Assets: Resource & Waste Management). Finalised versions of these documents will be prepared and be submitted to the Local Authority for agreement prior to commencement of development on site. These documents will demonstrate how the Construction Phase will comply with the following relevant legislation and relevant Best Practice Guidelines:

- Waste Management Acts 1996
- Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)
- Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)
- Department of the Environment, Heritage and Local Government – Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects – July 2006.

The OWMP & RWMP will present the potential environmental impacts, proposed monitoring methodologies, limit values where applicable, based on the concept of Best Practice and the proposed mitigation measures to be implemented at the development site. Reference to National and International Standards shall also be included where relevant.

Waste materials generated by construction activities will be managed according to the Department of the Environment, Heritage and Local Government's 2006 Publication - *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects.*

Waste minimisation and prevention shall be the primary responsibilities of the Construction Project Manager who shall ensure the following:

(1) Materials will be ordered on an *"as needed"* basis to prevent over supply
(2) Materials shall be correctly stored and handled to minimise the generation of damaged materials
(3) Materials shall be ordered in appropriate sequence to minimise materials stored on site
(4) Sub-contractors will be responsible for similarly managing their wastes

2.7.3. Construction Waste Disposal Management

It is proposed that from the outset of construction activities, a dedicated and secure compound containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the active construction phase of the development site.

2.7.4. Contaminated Soil

In the unlikely event that contaminated soils are discovered, these areas of ground will be isolated, tested for contamination in accordance with *2002 Landfill Directive (2003/33/EC),* and pending the results of laboratory testing, will be excavated and exported off-site by an appropriately Permitted Waste Contractor holding an appropriate Waste Collection permit and that this hazardous material will be sent for appropriate treatment / disposal to an appropriately Permitted / Licenced Waste Facility.

2.7.5. Domestic Waste Management

The development shall be constructed and developed to minimise the generation of construction waste. During the construction phase, construction waste shall be stored and segregated in dedicated waste storage areas which shall optimise the potential for off-site reuse and recycling. All construction waste materials shall be exported off-site by an appropriately permitted waste contractor.

It shall be the responsibility of the Facilities Management Company to ensure that all domestic waste generated by apartment / duplex residents is managed to ensure correct storage prior to collection by an appropriately waste permitted waste collection company on a weekly basis. Sufficient domestic waste storage areas are provided throughout the proposed residential development. It shall be the responsibility of the Facilities Management Company to ensure that appropriate signage is provided in each area notifying apartment / duplex resident of the importance to recycle domestic waste items in accordance with the requirements of the contracted Waste Collection contractor. For houses, waste shall be collected on a weekly basis by an appropriately permitted commercial waste contractor.

The development has been designed to provide adequate domestic waste storage areas for common residential areas (apartments / duplexes) and individual houses. This will promote the appropriate segregation at source of domestic generated waste from all residential units at the development. Waste bin storage areas shall be designed in a manner to ensure that appropriate signage for the correct waste disposal and recycling is available for residents.

The proposed crèches, retail/commercial units, café, GP / medical use unit shall have designated commercial waste bins for both general and recyclable waste which shall be stored within the boundaries of that building area or adjacent to the building in a secure area. Waste shall be collected on a weekly basis by an appropriately permitted commercial waste contractor.

2.7.6. Emissions

The principal forms of air emissions relate to discharges from motor vehicles and heating appliances. Regarding heating appliances, the emission of nitrogen oxides and carbon monoxide will be minimised by the use of modern, efficient heating appliances and as a result, the potential impact is estimated to be negligible. Exhaust gases from motor vehicles will arise from car parking areas and will be discharged directly to the atmosphere. Car parking for motor vehicles is provided at basement, undercroft and surface levels. In general, it is noted that approximately 80% of all cars in Ireland run on unleaded fuel which can be expected to have a reductive effect on air emissions.

As per the submitted plan(s) and transportation documents, for the apartments and duplex units, a quantum of car parking spaces will have EV charging facilities / be future proofed for EV Charging capability. For private houses, future home owners will be offered the opportunity to install a charging facility within the curtilage of the property, however, the applicants will provide the necessary piped services for same as part of the proposed site development works. It is expected therefore that the potential impact will be negligible.

Noise may be considered in two separate stages, during construction, and when the development is operational. Construction related noise impacts are an inevitable short term, limited inconvenience feature which, in general, is accepted by members of the public, subject to the standard controls typical of planning conditions attached to urban based development projects. These impacts can be reduced in a number of ways, e.g., it is standard practice to limit construction to normal working hours during the day. In addition, there are a number of regulations relating to noise during construction which the contractor will be expected to adhere to throughout the construction phase.

2.8. Direct and Indirect Effects Resulting from Use of Natural Resources

Details of significant direct and indirect effects arising from the project are outlined in Chapters 4-14 of this EIAR which deal with *'Aspects of the Environment Considered'*. No significant adverse impact is predicted to arise from the use of natural resources.

2.9. Direct and Indirect Effects Resulting from Emission of Pollutants, Creation of Nuisances and Elimination of Waste

Details of emissions arising from the project together with any direct and indirect effects resulting from same have been comprehensively assessed and are outlined, where relevant, in the relevant in Chapters 4-14 of this EIAR which deal with '*Aspects of the Environment Considered'*. There will be no significant direct or indirect effects arising from these sources.

2.10. Forecasting Methods Used for Environmental Effects

The methods employed to forecast, and the evidence used to identify, the significant effects on the various aspects of the environment are standard techniques used by each of the particular individual disciplines. The general format followed was to identify the receiving environment, to add to that a projection of the *"loading"* placed on the various aspects of the environment by the proposed development, and to put forward amelioration measures to lessen or remove an impact and thereby arrive at net predicted impact. Where specific methodologies are employed for various sections, they are referred to in the individual chapter of the EIAR. Some of the more detailed/specialised information sources and methodologies for a number of the environmental assessments are outlined in the individual chapter of the EIAR.

2.11. Transboundary Impacts

Large-scale transboundary projects[3] are defined as projects which are implemented in at least two Member States or having at least two Parties of Origin, and which are likely to cause significant effects on the environment or significant adverse transboundary impact. Having regard to the nature and extent of the proposed development, which comprises a residentially led development located in the townlands Baltrasna and Milltown in Ashbourne, within the administrative area of Meath County, transboundary impacts on the environment are not considered relevant, in this regard.

2.12. Alternatives Examined

The consideration of alternatives is an important part of the EIA process. By examining alternatives considered and indicating the main reasons for choosing the proposed development, it is possible to reduce or minimise environmental impacts and ensure that better solutions are not overlooked.

The EIA Directive (2014/52/EU) requires that EIAR include: *"A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."*

Article 94 and Schedule 6, paragraph 1(d) of the Planning and Development Regulations 2001 (as amended) provides for, an outline of the main alternatives studied by the developer and an indication of the main reasons for his or her choice, taking into account the effects on the environment, i.e.:

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

This section of the EIAR provides an explanation of the reasonable alternatives examined throughout the design and consultation process. This serves to indicate the main reasons for choosing the proposed development, taking into account and providing a comparison of the environmental effects.

The alternatives may be described at four levels as follows:

(1) Alternative locations
(2) Alternative uses
(3) Alternative layouts
(4) Alternative processes

Pursuant to Section 3.4.1 of the Environmental Protection Agency (EPA) Guidelines on the *Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2022), the consideration of alternatives also needs to be cognisant of the fact that "*in some instances some of the alternatives described below will not be applicable - e.g. there may be no relevant 'alternative location'…"*

In accordance with the EPA Guidelines (EPA, 2022), different types of alternatives may be considered at several key phases during the process. As environmental issues emerge during the preparation of the EIAR, alternative designs may need to be considered early on in the process or alternative mitigation options may need to be considered towards the end of the process.

The 2022 EPA Guidelines also state:

[3] The definition is based on Articles 2(1) and 4 of the EIA Directive and Article 2(3) and (5) of the Espoo Convention, respectively. http://ec.europa.eu/environment/eia/pdf/Transboundry%20EIA%20Guide.pdf

"Analysis of high-level or sectoral strategic alternatives cannot reasonably be expected within a project level EIAR… It should be borne in mind that the amended Directive refers to 'reasonable alternatives… which are relevant to the proposed project and its specific characteristics'".

The DHPLG 2018 EIA Guidelines state:

"Reasonable alternatives may relate to matters such as project design, technology, location, size and scale. The type of alternatives will depend on the nature of the project proposed and the characteristics of the receiving environment. For example, some projects may be site specific so the consideration of alternative sites may not be relevant. It is generally sufficient for the developer to provide a broad description of each main alternative studied and the key environmental issues associated with each. A 'mini- EIA' is not required for each alternative studied."

Thus, the consideration and presentation of the reasonable alternatives studied by the project design team is an important requirement of the EIA process, and the main alternatives considered are identified below.

2.12.1. Alternative Locations

The location and type of development proposed has been determined by the land use zoning objectives contained in the existing Meath County Development 2021-2027 (CDP), which has been environmentally assessed and statutorily adopted. The subject site is currently zoned for residential development (i.e., Objective 'A2' – 'New Residential') in the existing CDP, with the vision for 'A2' zoned lands being the objective to:

"To provide for new residential communities with ancillary community facilities, neighbourhood facilities as considered appropriate." The existing Meath County Development 2021-2027 goes on to state that 'A2' zoned lands are: *"the primary zone to accommodate new residential development. Whilst residential zoned lands are primarily intended for residential accommodation, these lands may also include other uses that would support the establishment of residential communities. This could include community, recreational and local shopping facilities. These facilities must be at an appropriate scale and cannot interfere with the primary residential use of the land."*

A portion of the site (c. 1 Ha), at the western boundary, is zoned for community infrastructure (i.e., Objective 'G1'- Community Infrastructure') in the existing CDP, with the vision for 'G1' zoned lands stated in the CDP as being the objective to:

"To provide for necessary community, social, and educational facilities."

The proposed site layout has been designed to comply with the above individual zoning objectives attached to the site i.e., zoning objective A2 & G1

Furthermore, the subject site forms the vast majority of an identified master plan area in Ashbourne i.e., Master Plan 18 of the Written Statement for Ashbourne contained in the existing CDP / 'MP 18' on the Ashbourne Land Use Zoning Map contained in the existing CDP.

The Written Statement for Ashbourne contained in the existing CDP states that on the MP 18 lands:

"It is intended that these lands shall provide a primary school site, lands for recreational uses, including playing fields, and lands for residential development. The development of the lands shall be on a phased basis to be agreed as part of the preparation of the Master Plan."

The master plan has been agreed with Meath County Council prior to the submission of the subject application and a phasing plan is proposed as part of the subject application.

The proposed development provides for residential development and recreational uses and caters for an area reserved for a future primary school site, including a playing pitch, as per the vision of the master plan, and the

planning application includes for an AA Screening and SEA of the Master Plan lands.

The existing MCC CDP was subject to its own environmental assessment including consideration of alternative scenarios In the preparation of the MCC CDP, a Strategic Environmental Assessment (SEA) and and Appropriate Assessment (AA) were carried out.

The SEA Non-Technical Summary (NTS) states that:

"The assessment of the Plan has concluded that its objectives are acceptable and represent a balanced and fair approach to the sustainable development of the county. Monitoring of the Plan throughout its lifetime will ensure that any potential adverse environmental impacts, unforeseen at this stage will be identified early, so as to prevent any deterioration of the environment. The Plan balances growth with environmental protection and can deliver a sustainable future for the inhabitants of the area. Taking into account the mitigation measures which has been integrated into the Plan, it has been determined that significant residual adverse environmental effects will not occur as a result of the implementation of the Plan."

The AA screening Conclusion Statement of the CDP states that a Natura Impact Report (NIR) was required due to the potential to result in likely significant effects on European sites. Subsequently, an NIR was prepared to further examine these likely significant effects and to ascertain if the CDP could adversely affect the integrity of any European sites. The resulting assessment identified that the majority of policies and land use zonings contained in the CDP did not give rise to likely significant effects on European sites, and that where likely significant effects were identified these could be mitigated. The NIR concluded that, assuming the successful implementation of the policies/objectives in the Written Statement of the CDP, compliance with the individual Settlement Written Statements and Maps, and application of the mitigation measures provided there would be no adverse effects on integrity of European Sites in isolation or in combination with other Plans and Projects acting in the same area.

As previously stated, the proposed development has also been designed to comply with the individual zoning objectives attached to the site i.e., zoning objective A2 & G1.

Given the objectives for the subject site detailed in the existing MCC CDP, apart from localised interpretation of the existing CDP and its development management standards, no alternative sites were considered in this EIAR as the development of this site for the uses proposed has been identified as a strategic objective of the existing MCC CDP.

This approach is compliant with the EPA Guidelines (2022) which recognises that it is not realistic to consider alternative options for projects which have been previously determined by a higher plan: *"Clearly, in some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant 'alternative location' …..Higher level alternatives may already have been addressed during the strategic environmental assessment of relevant strategies or plans."* (EPA Guidelines, 2022, Section 3 pg 33)

Taking all of the aforementioned into consideration, it is put forward that the most logical and practical location solution to addressing the current housing shortage is through facilitating the development of zoned lands available for residential use. The subject site comes within this category and therefore it seems appropriate that the proposed development is sited here.

2.12.2. Alternative Uses

As the existing MCC CDP, approved and adopted by MCC, already provides a strategic framework indicating the manner in which the site may be developed, the range of alternative use was therefore lessened.

The subject site is currently in greenfield condition, in the majority in agricultural use, and have no relevant extant grant of permission for similar residential development attached to them.

The subject site is currently zoned for residential development (i.e., Objective 'A2' – 'New Residential') in the existing CDP, with the vision for 'A2' zoned lands being the objective to:

"To provide for new residential communities with ancillary community facilities, neighbourhood facilities as considered appropriate." The existing CDP goes on to state that 'A2' zoned lands are: *"the primary zone to accommodate new residential development. Whilst residential zoned lands are primarily intended for residential accommodation, these lands may also include other uses that would support the establishment of residential communities. This could include community, recreational and local shopping facilities. These facilities must be at an appropriate scale and cannot interfere with the primary residential use of the land."*

A portion of the site (c. 1 Ha), at the western boundary, is zoned for community infrastructure (i.e., Objective 'G1'- Community Infrastructure') in the existing CDP, with the vision for 'G1' zoned lands stated in the CDP as being the objective to:

"To provide for necessary community, social, and educational facilities."

The proposed site layout has also been designed to comply with the above individual zoning objectives attached to the site i.e., zoning objective A2 & G1

Furthermore, the subject site forms the vast majority of an identified masterplan area in Ashbourne i.e., Master Plan 18 of the Written Statement for Ashbourne contained in the existing CDP / 'MP18' on the Ashbourne Land Use Zoning Map contained in the existing CDP.

The Written Statement for Ashbourne contained in the existing CDP states that on the MP 18 lands: *"It is intended that these lands shall provide a primary school site, lands for recreational uses, including playing fields, and lands for residential development. The development of the lands shall be on a phased basis to be agreed as part of the preparation of the Master Plan."*

The master plan has been agreed with Meath County Council prior to the submission of the subject application and a phasing plan is proposed as part of the subject application.

Based on all the above, it is evident that the Local Authority supports the provision of residential development on the subject lands. As such, the development proposal in this case considered alternatives which are in keeping with the local, regional and national guidelines.

The main alternative use for the subject lands would be to maintain its current agricultural use. In any event, it is envisaged that in the long term, these lands will be developed for residential purposes to accommodate much needed new housing.

The design parameters for the project were set down in the first instance in the existing MCC CDP which determined the land use objective for the site. The Written Statement for Ashbourne contained in the CDP sets out the parameters for development of the MP 18 lands. The project is also put forward having been guided by detailed discussions with the relevant departments of the Local Authority, including for Planning, Roads & Traffic, Parks and Water and Drainage etc. prior to the proposed development being prepared. These detailed discussions highlighted the environmental issues to be addressed, which informed the design process.

The overall development for the site in this case should comprise of:

- Primarily residential use
- Local shopping facilities
- Crèches and supporting community services
- New open space

- New pedestrian and cycle routes

The overall form and content of the any proposed development is fixed by the requirement of the master plan for the lands, as agreed with Local Authority. In this regard, the consideration of alternatives during the design stage was confined to details such as:

- Residential layout and mix
- Residential density
- Design and layout of open space
- Form and layout of the vehicular access routes
- Form and layout of pedestrian and cycle routes

Given the objectives for the subject site detailed in the existing MCC CDP, no alternative uses were considered in this EIAR as the development of this site for the uses proposed has been identified as a strategic objective of the existing MCC CDP.

This approach is compliant with the EPA Guidelines (2022) which recognises that it is not realistic to consider alternative options for projects which have been previously determined by a higher plan: *"Clearly, in some instances some of the alternatives described below will not be applicable…..Higher level alternatives may already have been addressed during the strategic environmental assessment of relevant strategies or plans."* (EPA Guidelines, 2022, Section 3 pg 33).

2.12.3. Alternative Layouts

The subject planning application has been prepared under the strategic housing development (SHD) system which required the applicants to consult with both the Local Authority (Meath County Council) and An Bord Pleanála prior to the submission for the final application for permission and, as such, the design process has seen the Applicants and the Local Authority 'work together' to ensure that a number of design alternatives and layouts have been considered.

The design parameters for the development proposal are set down in the first instance in the existing CDP which has determined the land use zoning and appropriate uses for the site. The development proposal has been guided by detailed discussions with the relevant Local Authority departments, including for Planning, Roads & Traffic, Parks, and Water and Drainage etc. prior to the proposed development being prepared. These detailed discussions highlighted the issues to be addressed, such as residential mix, the building height, density, access, and other physical characteristics.

Alternative site layouts and siting progressed throughout the design process in order to minimise the impact on the receiving environment at the earliest opportunity. The initial stage involved a constraints analysis of the land within the proposed development site to identify all high-level constraints and aggregate them against the site to allow a suitable layout to be developed.

The original concept for the subject lands related to residential development on the 'A2' zoned only and did not include for the north-eastern part of the finalised site. This concept (Figure 3.2.) caters for a more enclosed layout and linear format somewhat based on field alignments. This progressed to focus on a layout centred on a local centre in the western part of the site, adjacent to a proposed school site, in order to provide for a sense of place with ancillary facilities within the layout (Figure 3.3.)

Following early discussions with MCC it was considered that any development of the subject site should include for the future potential connection of the site to the adjoining lands to the west of the site and the provision of a strong edge to the north-east of the site access road, Figure 3.5., over, illustrates the layout submitted with S.247 pre-planning consultations with the Local Authority.

Figure 2.2. Sketch Concept.

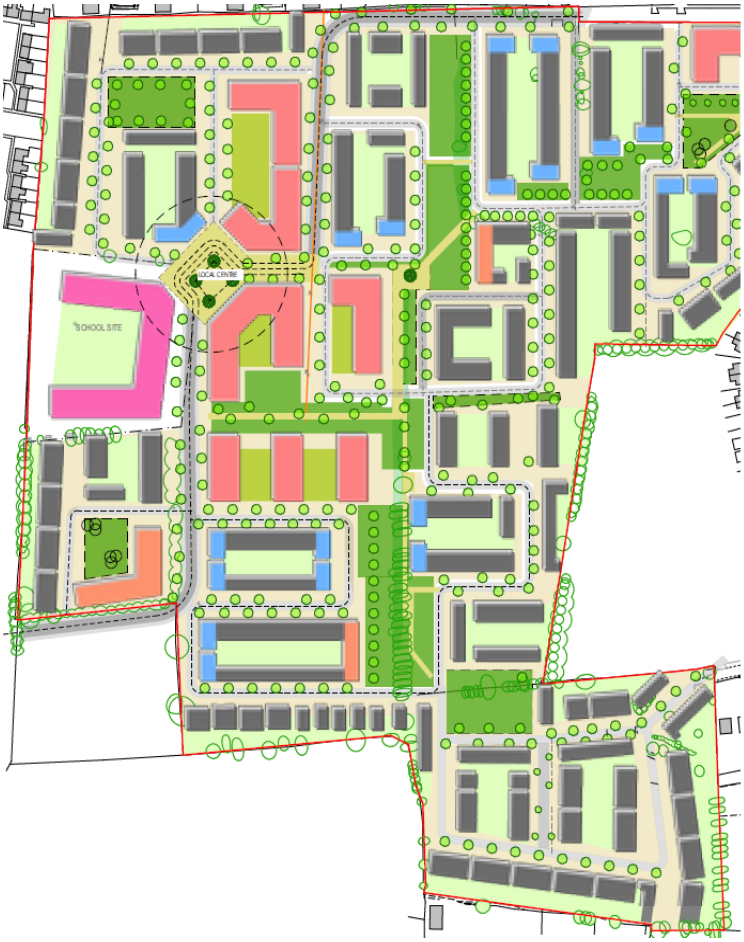


Figure 2.3. Sketch Concept.

Figure 2.4. Draft layout.

Figure 2.5. S.247 layout.

The final layout now put forward for assessment (Refer back to Figure 1.4. of this EIAR) pays cognisance to An Bord Pleanála's Opinion (Pre-application Consultation Ref. 312246-21) in relation to density, transport routes, and the design and layout of public open spaces. The proposed development has also had regard to the following Section 28 Ministerial Guidelines: (i) Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009) which refer to minimum net densities of 35 dwellings on greenfield sites and encourage development at a sufficiently high density to provide for an efficiency in serviceable land usage and (ii) the Guidelines for Planning Authorities on Building Heights and Urban Development, 2018 and their SPPRs.

The proposed layout represents the best utilization of these zoned lands with the development. In terms of design, the proposed layout constitutes the best option for housing, which accords with both of the zoning objectives attached to the site, while also protecting and replenishing the environment as necessary.

In summary, the proposed development will *inter alia* :

- Provide an appropriate and in demand mix of housing typologies which respect the existing pattern of development in the area

- Comply with MCC's detailed quantitative standards for residential development as set out in the existing MCC CDP and, where applicable, the Section 28 Ministerial Guidelines "Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities" (2020)

- Preserve the natural amenity characteristics of the site, in particular to ensure that the visual impact of the development is minimised. This has been achieved by allocating areas of open space for recreation, all of which will be developed in accordance with the overall Landscape Masterplan for this proposed development. The design and layout of the proposed development also takes into consideration appropriate development densities along with the need for a variety of dwelling types and sizes so as to encourage social mix and choice whilst also ensuring that the design makes use of material, architectural form and colour to create a high level of visual amenity.

The final design now put forward for permission presents the most effective utilization of this significant site whilst also fulfilling the objectives of MCC's CDP by providing for long term, sustainable housing for which there is a considerable demand at present.

It is put forward that the final layout for the proposed residential development optimizes development space within the overall site, facilitates ready access to all parts of the scheme, avoids significant visual and landscape impact, and provides for an appropriate level of ancillary facilities.

The proposed layout is also put forward with regard to feedback received from MCC at the S.247 pre-application meeting, considers the existing CDP's objectives for the subject site, and has regard to feedback from ABP at the pre-application tri-partite meeting. As such, while alternative layouts were considered the final layout now put forward for permission protects the existing amenity in the immediate environs, takes on board the comments of the Local Authority / ABP and will ensure the subject site is development in an efficient and appropriate manner.

2.12.4. Alternative Processes & Mitigation

This is a residential led / urban development and therefore there are no alternative processes to be considered.

2.12.5. Do Nothing Scenario

The "Do Nothing" Scenario describes the impacts of the proposed development if it would not transpire. The positive benefits to the national, regional, and local community arising from implementing the proposed development of this site would not materialize in the "Do Nothing" scenario. This alternative is therefore not

attractive.

In addition, the "Do Nothing" scenario would result in non-compliance with the National Planning Framework (NPF) (and other recent national planning policy documents / Section 28 Ministerial Guidelines) which contains the following relevant objectives amongst others:

- **National Policy Objective 3a** - Deliver at least 40% of all new homes nationally, within the built-up footprint of existing settlements;

- **National Policy Objective 32** - To target the delivery of 550,000 additional households to 2040.

2.12.6. The Do Minimum Scenario

The "Do Minimum" Scenario in the present instance could involve the construction of the subject site at a low density however, the current proposal is supported by national and regional planning policy to provide housing and intensify land use through increased densities in areas within walking distance of key transport routes.

Alternatively, the "Do Minimum" scenario could involve the construction of the site over a number of phases / planning permissions. While this alternative may reduce the level of construction activity in the short term, it is considered that it would have the effect of spreading construction over a longer period of time.

The "Do-Minimum" scenario would also result in reduced efficiencies in construction and delays in implementation of these residentially zoned lands.

2.12.7. The Do Maximum Scenario

The "Do Maximum" Scenario in the present instance could involve the construction of the entire site in one phase of development, i.e., 702 no. residential units and ancillary uses. This would involve a greater degree of disruption to the receiving environment in the short term. This alternative was discounted on the basis of practical considerations relating to phasing of development, funding and feasibility.

2.12.8. Conclusion On Assessment Of Alternatives

Based on the foregoing in Section 2.12 of this chapter of the EIAR, it is considered that all reasonable alternatives to the proposed development were considered, and no alternatives have been overlooked which would significantly reduce or further minimise environmental impacts.

2.13. The Existence of the Project

Pursuant to the EIA Directive, an EIAR document is required to set out a description of the project processes, activities, materials and natural resources utilised; and the activities, materials and natural resources and the effects, residues and emissions anticipated by the operation of the project.

The project is a residentially led development which includes for 2 no. creches, 4 no. retail units, 1 no. GP /Medical Practice, areas of open space, parking etc. and associated site development works etc..

The primary, direct, significant environmental effects will arise during the construction stage. As a result, post-construction, the operation of the project is therefore relatively benign and not likely to give rise to any significant additional impacts in terms of activities, materials or natural resources used or effects, residues or emissions which are likely to have a significant impact on population and human health, biodiversity, soils, water, air, climate, or landscape.

The primary likely and significant environmental impacts of the operation of the proposed development are fully addressed in this EIAR document.

The proposed development also has the potential for cumulative, secondary and indirect impacts particularly with respect to such topics as traffic – which in many instances – are often difficult to quantify due to complex inter-relationships. However, all cumulative secondary and indirect impacts are unlikely to be significant; and where appropriate, have been addressed in the content of this EIAR document.

2.14. Description of Changes to the Project

Guidelines on the information to be contained in Environmental Impact Assessment Reports were published by the EPA in 2022. The Guidelines state in relation to change:

"Very few projects remain unaltered throughout their existence. success may bring growth; technology or market forces may cause processes or activities to alter. all projects change and – like living entities – will someday cease to function. The life cycles of some types of projects, such as quarries, are finite and predictable. such projects often consider their closure and decommissioning in detail from the outset, while for most projects a general indication of the nature of possible future changes may suffice. While the examination of the potential consequences of change (such as extension) does not imply permission for such extension, its identification and consideration can be an important factor in the determination of the application. descriptions of likely changes may cover:

- *Extension*
- *Decommissioning*
- *Other changes"*

As per the EPA Guidelines and in the interests of proper planning and sustainable development, it is important to consider the potential future growth and longer-term expansion of a proposed development in order to ensure that the geographical area in the vicinity of the proposed development has the assimilative carrying capacity to accommodate future development.

Given the proposed site layout extent, the limitations of physical boundaries and adjoining land uses, the potential for growth of the proposed development is considered limited and confined which will have a negligible impact.

The parameters for the future development of the area in the vicinity of the subject site are governed by the Meath County Development Plan 2021-2027. The future (re)development of adjacent lands will be the subject of separate land use zoning and planning applications in the future, where they are identified as being suitable for development, and where the provision of the requisite physical and other infrastructure is available.

2.15. Description of Secondary and Off-Site Developments

No significant secondary enabling development is deemed necessary to facilitate the proposed development. the planning application includes details of the necessary road works, which are required to facilitate this development. these works are assessed within this environmental impact assessment report.

2.16. Risks of Major Accidents and/or Disasters

The surrounding context consists of a mix of residential, agricultural, and open space public amenity lands. It does not include any man-made industrial processes (including SEVESO II Directive sites (96/82/EC & 2003/105/EC) which would be likely to result in a risk to human health and safety.

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 is considered, and the implications for likely significant effects on the environment

if it did occur.

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

'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'.

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

5. "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)."*

(Source: Page 31, Section 4.29)

During the construction phase the risk of accidents and/ or disasters arise from the potential for construction accidents are addressed under Health and Safety Regulations and other codes. Insofar as they are relevant to the planning and EIA process, mitigation measures that will prevent and/ or mitigate the significant effects are identified.

During the operational phase the risk of fire related accidents is similarly addressed through the Building Regulations (Fire Safety) and is therefore addressed through primary mitigation in the design process. Residual risks of fire and road traffic accidents will be managed by emergency services as per their standard procedures.

The risk of flooding and vulnerability of the project is addressed in the Site Specific Flood Risk Assessment (SSFRA) submitted with the planning application documentation. Adherence to best practice and "proper planning and sustainable development" principles means these risks are reduced to an acceptable level, whereby the risk is unlikely and unexpected as a result, and further assessments within the EIA process are not necessary.

Otherwise, in terms of the project, no other major accidents or disasters are considered to give rise to effects that are 'likely' and 'significant'.

2.17. Construction Phase

The construction phase would be expected to commence in Q3 2022, and accordingly, the projected completion of the development by Q3 2027.

The Outline CMP, CEMP & RWMP which are included with this planning application, should be referred to for more detail on the Construction Phasing and Environmental Measures associated with same. The appointed Contractor will prepare a detailed final CMP, including detailed construction phasing and a Traffic Management Plan (TMP).

2.18. Description of the Operational Phase

The proposed development consists of 702 no. dwellings comprised of residential houses, apartments and duplex units ranging in height from 3 to 6 storeys. The proposed development also includes for 2 no. creches, 4 no. retail units & 1 no. GP practice / medical use unit.

The primary direct significant environmental effects will arise during the construction phase. As a result, the operational phase of the development is therefore relatively benign and not likely to give rise to any significant additional impacts in terms of activities, materials or natural resources used or effects, residues or emissions which are likely to have a significant impact on human beings, flora and fauna, soils, water, air and climate.

2.19. Related Development and Cumulative Impacts

The proposed development also has the potential for cumulative, secondary and indirect impacts particularly with respect to such topics as traffic which in many instances are often difficult to quantify due to complex inter-relationships. However, all cumulative, secondary and indirect impacts are unlikely to be significant and, where appropriate, have been fully addressed in the relevant specialist chapters of this EIAR.

Each chapter of the EIAR includes a cumulative impact assessment of the proposed development with other 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 proposes.

As such, with the necessary mitigation for each environmental aspect, it is anticipated that the potential cumulative impact of the proposed development in conjunction with the other planned developments will be minimal.

Part B – Effects on the Environment

3.0. Population and Human Health

3.1. Introduction

This chapter of the EIAR has been prepared by Armstrong Fenton Associates Planning Consultants (Tracy Armstrong, BA, MRUP, MIPI, MRTPI) and provides an assessment of the potential impacts of the proposed development on human beings, population, and human health in the vicinity of the development site and an assessment of these issues.

Issues associated with population and human health are varied and cover a broad spectrum of topics associated with the existence, activities, and wellbeing of people as groups. Whilst most developments will affect people in some form or way, this chapter of the EIAR focuses on those topics which are manifested in the environment, such as demographic change, impacts on community facilities, on the economy, and on indicators of human health. Actual and perceived impact of the proposed development on population and human health may also arise from a number of elements of the proposal. These impacts are dealt with throughout this EIAR, and in particular, the following chapters:

- Chapter. 5: Land, Soil & Geology
- Chapter. 6: Water & Hydrology
- Chapter 7: Air Quality & Climate
- Chapter 8: Noise & Vibration
- Chapter 9: Material Assets: Built Services
- Chapter 10: Material Assets: Transportation
- Chapter 11: Material Assets: Resource & Waste Management
- Chapter 13: The Landscape.

The EIA Directive updated the list of topics to be addressed in an EIAR and has replaced 'Human Beings' with 'Population and Human Health'. The term 'human health' is not defined in the 2014 EIA Directive; however, the European Commission (EC) Guidance on the Preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (2017) states that:

"Human health is a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population" (p. 37).

The EPA *'Guidelines on the information to be contained in Environmental Impact Assessment Reports'* (2022) state that:

"In an EIAR, the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in this EIAR e.g. under the environmental factors of air, water, soil etc." (p. 28)

This chapter of the EIAR also meets the requirement for assessment of 'Human Beings' as per Schedule 6 of the Planning and Development Regulations, 2001 (as amended).

3.2. Assessment Methodology

The assessment involved a desktop study of census information, divided into State, County and District Electoral Division (DED) level. While State and County data has been used to provide a holistic comparison, the primary focus of this EIAR is the lands located within the immediate vicinity of the proposed development . As such, census statistics at a DED level have been used to assess the effects on the existing population as the DED level data generally provides the most accurate picture of the existing population living in the vicinity of a proposed development site. Based on this study, it was possible to consider the presence, importance and sensitivity of the population and the potential likely significant impacts on both the local and wider community. The proposed development is situated within the Donaghmore DED and Ratoath DED (See Figure 3.1.).

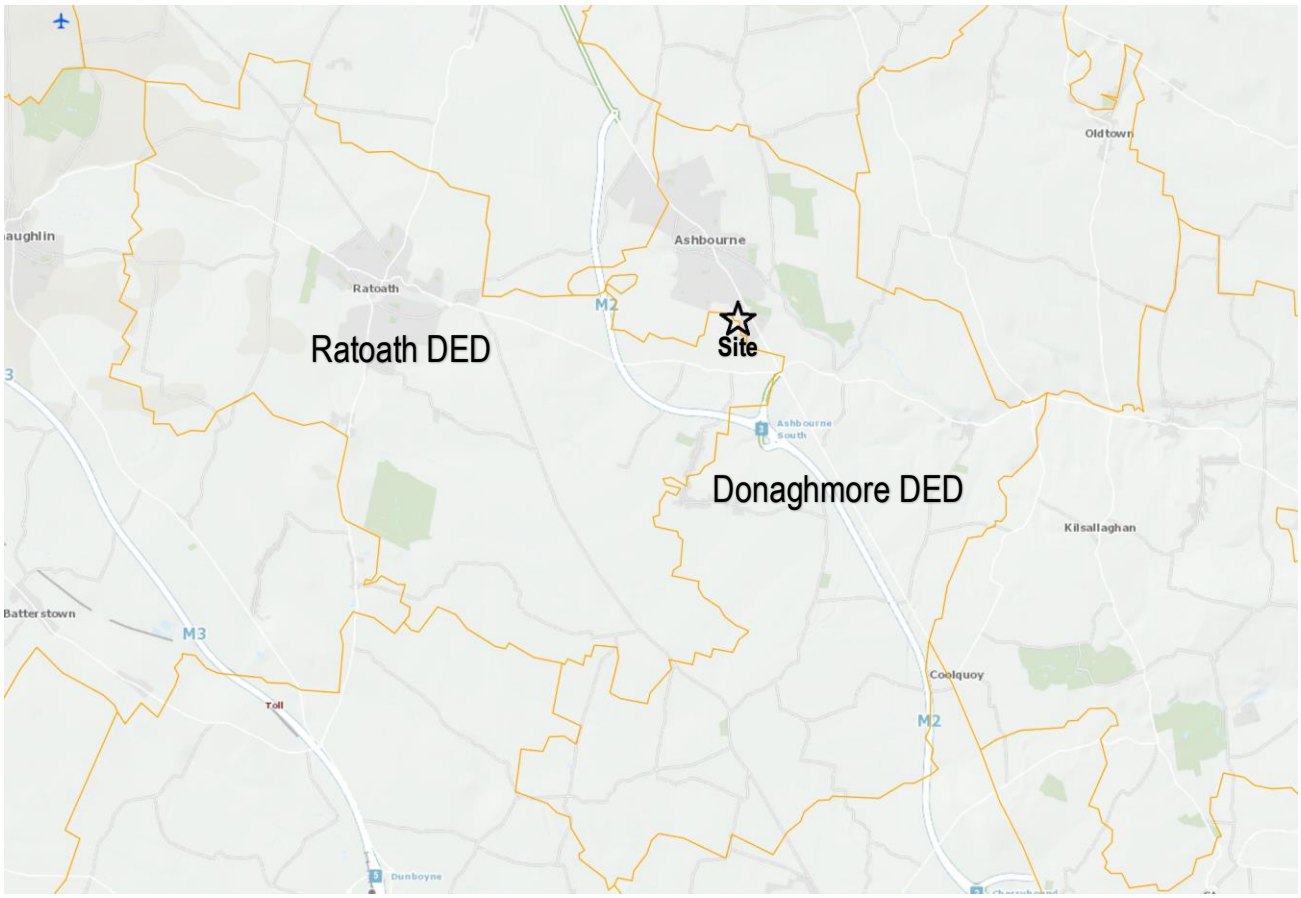


Figure 3.1. Location of the site in relation to DED boundaries.

The profile of the residential communities adjacent to the proposed development site is presented under the following headings:

- Land Use Planning / Settlement Patterns
- Population Change
- Socio-Economic Profile
- Community and Outdoor Facilities
- Movement and Transport
- Human Health
- Landscape and Visual

Chapter 2 of this EIAR noted that likely environmental effects were assessed at a strategic level as part of the the process which adopted the existing Meath County Development Plan 2021-2027 (CDP). The public was consulted

in the making of the existing CDP and their views taken into account by Meath County Council (MCC) in finalising and adopting the CDP for the 2021-2027 period.

This assessment has been carried out in accordance with the following guidance, and tailored accordingly based on professional judgement:

- EPA (2022). *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*
- EPA (2015). *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*
- IEMA (2017). *Health in Environmental Impact Assessment: A Primer for a Proportionate Approach.*

Perceptions of the proposed development are subjective; however, it is considered that the impacts presented in this chapter of the EIAR are representative of the impacts on the majority of those residing / working within the study area.

3.2.1. Significance of Impacts

In line with the EPA's *"Guidelines on the Information to be Contained in Environmental Impact Assessment Reports"*(EPA, 2022); seven generalised degrees of impact significance are used to describe impacts as detailed in Table 3.1. over.

Significance of Effect	Definition
Imperceptible	An effect capable of measurement but without significant consequences
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Very Significant	An effect which, by its character, magnitude, duration or intensity alters most of a sensitive aspect of the environment
Profound Effects	An effect which obliterates sensitive characteristics

Table 3.1. Definition of Significance of Effects.

In addition, the following terms detailed in Table 3.2. & 3.3. below are defined when quantifying the quality of effects and the duration and frequency of effects.

Quality	Definition
Positive Effects	A change which improves the quality of the environment
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecast error
Negative / Adverse Effects	A change which reduces the quality of the environment

Table 3.2. Definition of Quality of Effects.

Quality	Definition
Momentary Effects	Effects lasting from seconds to minutes
Brief Effects	Effects lasting less than a day
Temporary Effects	Effects lasting less than a year
Short-Term Effects	Effects lasting one to seven years
Medium-Term Effects	Effects lasting seven to fifteen years
Long-Term Effects	Effects lasting fifteen to sixty years
Permanent Effects	Effects lasting over sixty years
Reversible Effects	Effects that can be undone, for example through remediation or restoration
Frequency of Effects	Describe how often the effect will occur

Table 3.3. Definition of Duration of Effects.

3.3. Characteristics of Proposed Development

The proposed development includes for the demolition all existing structures on site, i.e., 3 no. detached dwellings (c. 354 sq.m total) along with their associated outbuildings (c. 305 sq.m total).

The proposed development is a residential led development consisting of 702 no. dwellings, comprised of 420 no. 2 & 3 storey houses, 38 no. duplex units in 19 no. blocks and 244 no. apartments in 20 no. buildings ranging in height from 3-6 storeys.

The proposed development includes for the following non-residential uses: (i) 2 no. childcare facilities located in Blocks A and A1 (c.289m² & c. 384m² respectively), (ii) 4 no. retail units, comprised of: 2 no. units in Block A (c.106m² & c. 174m² respectively), 1 no. unit in Block A1 (c.191m²) & 1 no. unit in Block B1 (c.469m²), & 1 no. GP practice / medical use unit located in Block A1 (c.186m²).

The proposed development includes for 1 no. basement car park underneath Block A1 and 2 no. undercroft car park areas at ground floor level of Blocks A & B1 respectively.

The proposed development includes for an area of c. 1 Ha reserved for a school site and playing pitch in the western part of the site.

Vehicular access to the proposed development will be via 2 no. access points as follows: (i) from Cherry Lane, located off the Dublin Road (R135), in the north-east of the site and, (ii) from Hickey's Lane, located off the Dublin Road (R135), to the east of the site. The development includes for road upgrades / improvement works to both the existing Cherry Lane and Hickey's Lane and their junctions with the Dublin Road (R135). The development includes for 1 no. pedestrian / bicycle only access point located off the Dublin Road (R135), and also includes for pedestrian and cycle paths throughout the site.

The development also provides for (i) all ancillary / associated site development works above and below ground, (ii) public open spaces (c.28,885m^2 total), including hard & soft landscaping, play equipment & boundary treatments, (iii) communal open spaces (c.3,180m^2 total) (iv) undercroft, basement, and surface car parking, including for EV, mobility impaired, and car share parking spaces (total 1,262 no. car parking spaces) (v) 869 no. dedicated bicycle parking spaces at undercroft and surface level, including for external bicycle stores & visitor spaces (vi) bin storage, (vii) public lighting, (viii) signage (ix) plant (M&E) & utility services, including for 7 no. ESB sub-stations (x) green roofs, all on an overall application site area of 20.04 hectares.

The proposed development is described in detail in Chapter 2 of this EIAR – please refer back to same for further details. The submitted Planning Statement prepared by Armstrong Fenton Associates also provides for further detail of the proposed development.

3.4. The Existing Receiving Environment

3.4.1. Introduction

A description of the relevant aspects of the current state of the environment (baseline scenario) in relation to population and human health is provided below.

The existing environment is considered in this section under the following headings:

- Land Use Planning / Settlement Patterns
- Population Change
- Socio-Economic Profile
- Community and Outdoor Facilities
- Movement and Transport
- Human Health
- Landscape and Visual

3.4.2. Study Area

The subject site is a greenfield site located within the settlement boundary of Ashbourne, to the south-east of Ashbourne town centre (c. 1.5km distance), in the townlands of Baltrasna and Milltown. The site, i.e., the red line boundary of the submitted site layout plan(s) / site location map, measures c. 20.04 Ha.

The site is located to the west of the Dublin Road (R135), west of The Briars residential estate, south-west of Cherry Lane and north-west / south-west of Hickey's Lane. To the south-west are are agricultural lands in the Rural Area (i.e., outside of Ashbourne's development boundaries), while to the south-east is existing residential development generally in the form of detached rural houses. To the west are greenfield lands zoned for 'Open Space'. To the north are the existing residential dwellings at Alderbrook Rise, Alderbrook Downs & Alderbrook Heath, while the existing residential dwellings at Tara Close and Tara Court abut the site to the north-west. It should be noted that the site encompasses third-party lands, in the northern part of the site, which are identified as being outside the application site on the submitted site layout plan(s) and do not form part of the subject proposal.

For the purposes of this assessment, a study area was identified. The vast majority of the subject site is located in the Ratoath DED, with the most northern part and the north-east part of the site being in the Donaghmore DED. The DED level is considered to provide the most accurate census statistical data, providing a detailed analysis of population fluctuations and demographic trends. As such, for purposes of this chapter of the EIAR, the study area is the Ratoath and Donaghmore DEDs – refer back to Figure 3.1 for an illustration of same.

Sensitive receptors include neighbouring landowners, local communities and other parties which are likely to be directly affected by the proposed development. In particular homes, hospitals, hotels, schools, community facilities and commercial premises are noted. Regard is also given to transient populations including drivers, tourists and walkers. The sensitive receptors impacted upon by Air, Noise, Visual, Transportation effects are identified in the relevant chapters of this EIAR (i.e., Chapters 7, 8, 13 & 10) – refer to same for further details.

The existing receptors specifically relevant to this chapter of the EIAR include:

- The residents of the existing residential estates to the immediate north-west, north, north-east, west & south-west
- The adjoining lands currently in agricultural use to the south and west.
- Ashbourne School and Community Centre to the north-east

Future receptors will be the residents of the proposed development, and the staff and users of the proposed non-residential uses (i.e., the proposed 2 no. creche facilities, 4 no. retail facilities, 1 no. GP /medical use unit).

3.4.3. Land Use Planning/Settlement Patterns

The proposed development site is a greenfield site, the vast majority of which is zoned for residential use in the existing Meath CDP.

Within the study area, the existing settlement pattern largely provides for residential and agricultural uses, with other mix uses such as commercial / retail uses, services, education, and open space / recreational use being provided, largely in the settlements of Ashbourne and Ratoath.

Agricultural uses occupy the largest proportion of the study area, with residential population focused on the settlements of Ashbourne and Ratoath. In the south-west of the study area is Fairy House racecourse.

3.4.4. Population Change

For the purposes of population evolution and growth forecasting, this EIAR has examined census results from both the 2011 and 2016 Census in terms of the State, County and Local Level i.e., the Ratoath and Donaghmore DEDs. The Study Area for the purposes of this methodology therefore is the Ratoath and Donaghmore DEDs.

	2011	2016	Actual Change	% Change
State	4,588,252	4,761,865	173,613	4%
County Meath	184,135	195,044	10,909	6%
Ratoath DED	9,043	11,082	2,039	18%
Donaghmore DED	9,752	11,758	2,006	17%

Table 3.4. Population Change at State, County and Local Level 2011-2016.

The two DEDs which make up the Study Area (i.e., the Ratoath and Donaghmore DEDs) have grown to a combined population of 22,840 persons as per the published census data for 2016 and as demonstrated in Table 3.4. above.

This is a growth of 18% (4,045) overall for the two DEDs in the Study Area for the five-year period since the 2011 census. Prior to this, the population had grown at a rate of 23% between 2006 and 2011.

Please refer to Table 3.5 below for 'Population change for DEDs in the study area'

District Electoral Division (DED)	2006	2011	2016	% Change 2011-2016
Ratoath DED	7,249	9,043	11,082	18%
Donaghmore DED	7,165	9,752	11,758	17%
Total	144,414	18,795	22,840	18%

Table 3.5. Population Change at State, County and Local Level 2011-2016.

In addition to the resident population, there is also a significant working population within the Study Area.

3.4.5. Socioeconomic Profile

The socio economic profile of the Study Area is presented using 2016 Census data under the headings of household formation, age profile, dependant age cohorts (0-14 and 65+ years), the working age group (15-64 years) and the 25-44 age cohort.

Household Formation

The total number of households in the Study Area was 22,914 according to the 2016 Census data. The total number of households in the Donaghmore Area was 11,786 in 2016 and 11,128 in Ratoath.

The average household size for the State was 2.75 persons in 2016, with County Meath having an average household size of c. 3 persons.

Based on the above data, the Study Area has an average household size of 3.0 persons which is higher in comparison to the State as a whole and similar to that of County Meath.

The average household size has increased in both of the DEDs within the Study Area,

District Electoral Division (DED)	2011	2016	% Change 2011-2016
Ratoath DED	3.25	3.36	3.4%
Donaghmore DED	2.98	3.07	3%

Table 3.6. Household size in Study Area.

Age Profile

This section provides a comparative demographic breakdown of the Study Area (i.e., the Ratoath and Donaghmore DEDs), County Meath and the State.

(i) the dependant population (i.e., those persons within the 0-14 and 65+ age cohorts)
(ii) the working/independent population (i.e., those persons residing in the 15-64 year age cohorts) and
(iii) those persons within the family formation age cohorts, aged 25-44.

Figure 3.2. provides a comparison of the population cohorts in the Study Area with County Meath and the State as a whole.

The number of persons under 44 in the Study Area was c. 70% in comparison to c. 66% in County Meath and c. 63% in the State. This demonstrates that the Study Area has a young population when compared to the population of the State and County Meath.

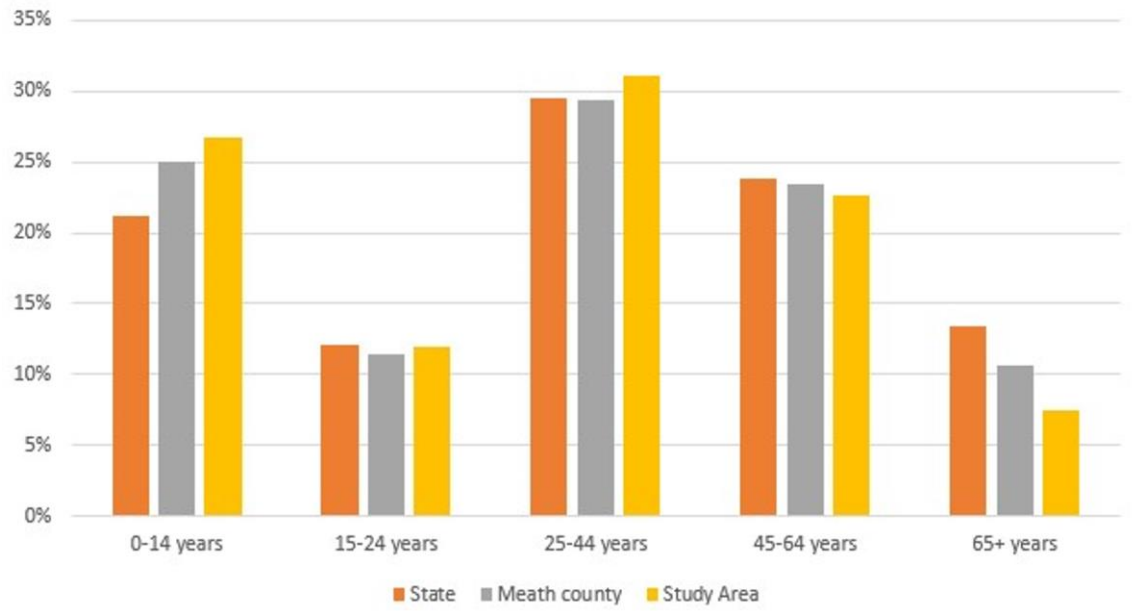


Figure 3.2. Age Profile – Comparison of Study Area with County Meath and the State.

The following tables, Tables 3.7. & 3.8. detail the demographic breakdown of the Study Area (i..e., the Ratoath and Donaghmore DEDs), County Meath and the State from both the 2011 and 2016 Census.

	0-14	15-24	25-44	45-64	65+	Total
State	979,157	580,359	1,450,259	1,042,983	535,494	4,588,252
County Meath	46,466	20,972	60,923	39,452	16,322	184,135
Ratoath DED	3,289	1,089	3775	1,873	535	10,561
Donaghmore DED	2,465	1,442	4,102	2,387	598	10,994

Table 3.7. Age Profile at State, County Meath, and Study Area Level 2011.

	0-14	15-24	25-44	45-64	65+	Total
State	1,006,552	576,452	1,406,291	1,135,003	637,567	4,761,865
County Meath	48,931	22,366	57,254	45,705	20,788	195,044
Ratoath DED	3,259	1,438	3,128	2,519	738	11,082
Donaghmore DED	2,837	1,297	3,984	2,669	971	11,758

Table 3.8. Age Profile at State, County Meath, and Study Area Level 2016.

The following tables, Tables 3.9. & 3.10., below, detail the percentile of each age cohort in the Study Area (i.e., the Ratoath and Donaghmore DEDs), County Meath and the State from both the 2011 and 2016 Census.

	0-14	15-24	25-44	45-64	65+
State	21%	13%	32%	23%	11%
County Meath	25%	11%	33%	22%	9%
Ratoath DED	31%	10%	36%	18%	5%
Donaghmore DED	22%	13%	37%	22%	6%

Table 3.9. Age Profile at State, County Meath and Study Area Level 2011.

	0-14	15-24	25-44	45-64	65+
State	21%	12%	30%	24%	13%
County Meath	25%	11%	30%	23%	11%
Ratoath DED	29%	13%	28%	23%	7%
Donaghmore DED	24%	11%	34%	22%	9%

Table 3.10. Age Profile at State, County Meath and Study Area Level 2016.

Dependant Age Cohorts (0-14 and 65+ years)

The proportion of dependants (aged 0-14 and 65+ years) within the two DEDs of Study Area was recorded at an average of 34.2% of the population in the 2016 Census. This is an increase from the 2011 Census results which recorded the age dependant cohort within the Study Area at an average of 32.0%.

The proportion of dependants (aged 0-14 and 65+ years) for the State as a whole was recorded at 34.53% of the population in the 2016 Census. This is an increase from the 2011 Census results which recorded the age dependant cohort for the State at 32.60%.

Based on the above, the Study Area can be seen to be following the national trend for an increase in the age dependant cohort. At the study level, the older age group (65+ years) represents the minority of the age dependant cohort, however, over the five-year intercensal period there was an increase in the proportion of the 65+ age group in line with the national trend.

These figures indicate that the Study Area has a younger population likely made of up young families, while the 65+ age cohort may create a likely demand for retirement care facilities, however, it should be noted that the split of the dependant age cohorts is an 82/18 split in terms of the 0-14 and the 65+ age groups respectively for the Ratoath DED and a 75/25 split for the Donaghmore DED and, as such, over the next decade the younger proportion of this age cohort will move into the working age groups and will likely increase pressure on future housing demands.

The Working Age Group (15-64 years)

The working age group is defined as those persons residing within the 15–64-year age cohort. The majority of the population, in all areas examined, resides within this age cohort, which again reflects the youthful population structure of the Study Area and the State as a whole.

The working age group demographic within the Study Area represented 66% of the population in the 2016. This remains relatively the same from the 2011 Census results which recorded the working age group demographic within the Study Area at 68%.

The working age group demographic for the State represented 65.47% of the population in the 2016. This is a slight decrease from the 2011 Census results which recorded the working age group demographic for the State at 67.4%.

Based on the above, the Study Area can be seen to be not following the national trend for a slight decrease in the working age cohort. Notwithstanding same, the high percentile of the working age group residing in the Study Area (66% of the population) has implications on demand for housing, services, etc. in order to service this population age, which the proposed development may contribute to satisfying this demand.

The 25-44 Age Cohort

The 25-44 age cohort is most likely to look to purchase a home, start a family and settle into a long-term community. It is therefore important to analyse this age cohort in particular as they will have the greatest impact on the social and economic conditions for the short and medium term, with regard to housing, employment and childcare facilities.

The 25-44 age cohort within the Study Area represented 31.1% of the population in the 2016. This is a slight decrease from the 2011 Census results which recorded the 25-44 age cohort within the study area at 36.5%. The 25-44 age cohort for the State as whole represented 29.53% of the population in the 2016. This is a slight decrease from the 2011 Census results which recorded the 25-44 age cohort for the State at 31.2%.

For both the Study Area and the State the 25-44 age cohort represents the largest age demographic of the population. It is considered that the current demand for housing reflects the large percentage of this age cohort in the existing population. It is largely this age cohort that begins to have families and set up independent households, all of which has medium and long term social and economic implications and impacts on the demand for housing. The provision of housing for these group will also have an impact on workforce retention and therefore future economic growth of the area.

The smaller group of 15-24 will also have social and economic implication in the medium terms as persons from this group enter the workforce and seek to set up independent households. The movement of persons from this age cohort move into the childbearing age cohorts of the 25-44 years, has medium and long term social and economic implications.

In conclusion, the youthful population structure of both County Meath and the Study Area suggests that there is a significant proportion of young families in the area. In the medium to long term, it can be expected that this trend in population growth is set to continue as young people from the 0-14 cohort move into working and childbearing age cohorts.

3.4.6. Community and Outdoor Facilities

The Study Area is considered to be well served with a range of existing community facilities. Education facilities in the Study Area include for 3 no. post-primary schools; Colaiste De Lacy, Ashbourne Community School and Ratoath College, and 8 no. primary schools; St. Marys National School, St. Declan National School, Gaelscoil na Cille, Gaelscoil na Mi, St. Pauls National Catholic School, Ratoath Junior National School, St. Andrews National School and Scoil Naomh Cianain.

Ashbourne town centre, to the north-west of the site, provides a variety of retail stores as well as the Ashbourne Retail Park. In the southwest the south-west, Fairyhouse Racecourse which provides sports entertainment. The Study Area provides for a selection of sports and recreational facilities, including but not limited to; Donaghmore Ashbourne GAA Club, Ashbourne Rugby Club, Ashbourne United AFC and Ashbourne Golf Club.

3.4.7. Movement and Transport

3.4.7.1. Road Network

The subject development site is located west of the Dublin Road (R135). The Dublin Road (R135) is a two-way single carriageway regional road. It connects Ashbourne to Dublin City Centre in addition to providing links to N2/M2 motorway northbound and southbound respectively. The speed limit is 60kph from Nine Mile Roundabout, and it reduces to 50kph on approach to Hickey's Lane.

The primary access to the subject site will be via Cherry Lane, which is currently a local road that caters for less than 10 houses (cul-de-sac). This road will be upgraded and act as the primary access to the proposed development, with pedestrian and cycle facilities on either side of the carriageway.

The proposed secondary access to the development will be via Hickey's Lane. This is rural local road which provides access to residential properties and farms, there are currently no pedestrian or cycle facilities along Hickey's Lane (60kph). Hickey's Lane provides access to the Dublin Road R135 to the east and Ratoath Road R125 to the south.

Further details of same can be found in Chapter 10 of this EIAR 'Material Assets: Transportation'.

3.4.7.2. Public Transport

The subject site is well served in terms of public transport provision. Several bus routes connect the area with Dublin City Centre, Dublin Airport, Blanchardstown, Ratoath, Swords or Balbriggan. These routes are outlined below.

- 103 (Dublin – Ashbourne – Ratoath – Tayto Park). Operated by Bus Eireann, it is the service offering the highest frequency, with over 50 services per direction on a weekday and 40 on weekend days. It links Dublin with Ashbourne in 40 minutes, with a frequency of 20 minutes at peak hour.
- 103x (Dublin – Ashbourne – Navan). Operated by Bus Eireann, this route is similar to the 103, with a more direct itinerary non-stop from Ashbourne to Dublin City Centre. There are only 3 services per direction at peak hour.
- 105 (Drogheda – Ashbourne – Ratoath – Blanchardstown). Operated by Bus Eireann, it offers a link with Blanchardstown Shopping Centre, as well as other services to Dublin City Centre and Dunboyne Train Station. In the other direction, users can access to Drogheda and its Train Station. The route offers 30 service from Monday to Saturday in each direction.
- 109a (Kells – Navan – Dunshaughlin – Ratoath – Ashbourne – Dublin City Centre). Operated by Bus Eireann, it offers a link to Dublin Airport in 30 min, with some services to City Centre and DCU. There are 26-27 services running every day in each direction.
- 193/194 (Ashbourne/Ratoath – Dublin). Operated by Ashbourne Connect, it is a express Ashbourne-Dublin service running only at peak times. There are 5 services on weekdays only, at AM peak towards Dublin, and at PM Peak towards Ashbourne/Ratoath.
- 197 (Swords – Ashbourne). Operated by Go Ahead Ireland, it links Ashbourne with Swords, Pavilions Shopping Centre, Airside, and services to other areas in Fingal.
- Local Link 195 (Ashbourne – Balbriggan). This is a TFI Local Link service running from Monday to Saturday linking Ashbourne with Balbriggan Train Station and small towns in between.

Further details of same can be found in Chapter 10 of this EIAR 'Material Assets: Transportation'.

3.4.7.3. Pedestrian & Cycle Network

Dublin Road (R135) offers pedestrian footpaths on both sides of the carriageway from Nine Mile Stone Roundabout to Ashbourne Town Centre, although there is a limited number of pedestrian crossing facilities, particularly controlled pedestrian crossings.

Cherry Lane is a local road providing access to less than 10 houses (cul-de-sac), a pedestrian footpath is provided on the northern side of the carriageway for a section of the road. While Hickey's Lane is rural local road which provides access to residential properties and farms, there are no pedestrian facilities along Hickey's Lane (60kph).

In terms of cycle infrastructure, the subject site is located within the GDA Cycle Network sector designated as the "Dunshaughlin, Ratoath & Ashbourne". Figure 10.8 below illustrates the existing cycle network in the vicinity of the subject site, with the existing facilities from the GDA Cycle Network Plan (2013) updated with more recent built infrastructures.

There are existing cycle lanes along the following roads within proximity of the subject site:

- Dublin Rd – Frederick St (R135). Cycle lanes immediately adjacent to each traffic lane in a North-South direction, starting at Dublin Rd/Alderbrook Rd/Deerpark junction up to Dunnes Stores, through Ashbourne Town.
- Broadmeadow Greenway – Castle St – Killegland. Cycle lanes in a East-West direction from Broadmeadow

Greenway up to Ashbourne Education Campus in Killegland.
- Churchfields – Castle St – Killegland St. Cycle lanes linking the Churchfields to Ashbourne Town Centre.

Further details of same can be found in Chapter 10 of this EIAR 'Material Assets: Transportation'.

3.4.8. Human Health

Health, as defined by the World Health Organization (WHO), is "*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*." The Healthy Ireland Framework 2013-2025 defines health as "*everyone achieving his or her potential to enjoy complete physical, mental and social wellbeing. Healthy people contribute to the health and quality of the society in which they live, work and play'*." This Framework also states that health is much more than an absence of disease or disability, and that individual health, and the health of a country, affects the quality of everyone's living experience.

The Department of Health's 2019 report, Health in Ireland – Key Trends 2019, provides summary statistics on health and health care in Ireland over the past ten years. The report highlights the following key trends:

- The numbers and proportion of the population in the older age groups continues to grow, with the number of people over the age of 65 continuing to increase by over 20,000 a year.

- Life expectancy continues to improve in Ireland, while the gap between the life expectancy of men and women also continues to narrow.

- Mortality rates have declined 10.5% since 2009. Age-standardised death rates for major causes of death such as cancers and circulatory system diseases have declined by 10% and 25%, respectively, over the past ten years.

- Lifestyle factors such as smoking, drinking, levels of physical activity and obesity continue to be issues which have the potential to jeopardise many of the health gains achieved in recent years.

At the national level, population health presents a picture of decreasing mortality rates and high self perceived health over the past ten years. Ireland has the highest self-perceived health status in the EU, with 82.9% of people rating their health as either 'good' or 'very good'. The number of people reporting a chronic illness or health problem is also better than the EU average, at around 27.7% of the population. However, health status reflects income inequality, with fewer low income earners reporting good health both in Ireland and across the EU. Infant mortality, measured as deaths per 1,000 live births, has also decreased by 5.2% since 2009 and remains below the EU average.

Ireland is currently below the EU average for suicide rates for both men and women. After a rise in the mal suicide rate from 2008 to 2012, the three-year moving average has decreased, and in 2015 the rate fell below the EU average for the first time since 2010. However, it should be noted that improvements in mortality rates and high levels of self-rated health can mask variations between regions, age groups and other population subgroups.

Rates of cigarette smoking have decreased since 2000, and alcohol consumption has also decreased over the same period, although not as dramatically.

Human health has the potential to be affected by exposure to toxic substances or pathogens in environmental media, such as air, water and soil. Human health impacts can also arise due to anthropogenic or naturally occurring accidents or disasters; such as landslides, flooding or structural failures. Nuisance and negative psychosocial impacts can also arise as a direct result of environmental factors; e.g. as a result of noise, dust, unsafe environments and / or crime; or indirectly, e.g. as a result of economic hardship. Occupational health and safety risks to construction site personnel are also inherent where demolition and construction works are proposed.

Health is an essential resource for everyday life, a public good, and an asset for health and human development. A healthy population is a major asset for society and improving the health and wellbeing of the nation is a priority for the Government. The Healthy Ireland Framework 2013-2025 is a collective response to the risks that threaten Ireland's future health and wellbeing.

	Verry Good	Good	Fair	Bad	Very Bad	Not Stated
Ratoath DED	7,864	2,430	494	100	9	185
Donaghmore DED	7,314	3,199	707	123	21	394
Total (No.)	15,178	5,629	1,201	223	30	579
Total (%)	c. 66%	c. 25%	c. 5%	c. 1%	%	c. 3%

Table 3.11. Health Status of the Study Area.

Table 3.9 above shows that most people (a combined 91%) in the study area have identified themselves as being in 'very good' or 'good' health.

The baseline environments in terms of air, water and groundwater / soil are detailed in Chapter 5 (Land, Soils & Geology), Chapter 6 (Water) and Chapter 7 (Air Quality & Climate) respectively.

The risks of accidents and disasters are addressed, where relevant, in the various specialist chapters herein. Flood risk, for instance, is addressed in Chapter 6 (Water & Hydrology); while geohazards are addressed in Chapter 5 (Land, Soils & Geology). As discussed in Chapter 1 of this EIAR, 'Major Accidents & Disasters' has been scoped out of this EIAR. It should also be noted that the subject application is also accompanied by separate standalone assessments i.e., a Site Specific Flood Risk Assessment (SSFRA) prepared by DBFL Consulting Engineers and a Hydrological & Hydrogeological Qualitative Risk Assessment prepared by AWN Consulting.

In relation to the potential human health risks associated with the proposed works, a Construction Management Plan (CMP) and Resource & Waste Management Plan (RWMP) are submitted under separate covers as part of this application. These documents outline how the proposed works will be delivered safely and in a manner which minimises risk to human health, including that of site personnel.

Healthcare within the Study Area is provided by a range of different organisations including public, voluntary and private agencies. The Health Services Executive is the primary agency responsible for delivering health and personal social services in Ireland. In recent years, primary care has been identified as the most effective and cost-efficient way to treat patients. This offsets dependence on the hospital system allowing most patient care to take place at local, community locations which feature multi-disciplinary teams of healthcare professionals working together. A Social Infrastructure Assessment which considers healthcare facilities has been prepared by Armstrong Fenton Associates and is submitted with the planning application under a separate cover.

The proposed project is located within the MCC administrative area which has access to national public hospitals, private hospitals, high-tech hospitals, accident and emergency services, psychiatric hospitals, rehabilitation centres, orthopaedic hospital and hospices. The submitted Social Infrastructure Assessment prepared by Armstrong Fenton Associates provides details of health care services in the subject area – please refer to same.

3.4.9. Landscape and Visual

As part of the subject application, a number of views have been taken from sensitive points where the site maybe visible from third party lands. Verified views and 3D CGI's have been prepared by 3D Design Bureau and are submitted as separate document(s) as part of this planning application. In addition, Chapter 13 "The Landscape" of this EIAR takes into account the visual receptor sensitivity from the selected view locations.

3.5. Potential Impact of the Proposed Development

3.5.1. Construction Phase

The duration of the construction phase is anticipated to be somewhere in the region of 60 months (or five years). As such, associated impacts are expected to be short-term in duration. During this time, there will be no severance of land, loss of rights of way or amenities as a result of the proposed development.

In the absence of mitigation, potential impacts on population and human health as a result of the construction phase of the proposed development may be summarised as follows:

- Nuisance due to dust generating activities
- Nuisance and disturbance due to noisy activities and vibration
- Negative impacts on journey characteristics, parking availability and noise due to construction
- traffic
- Negative visual impacts due to presence of construction site
- Positive direct and indirect economic impacts due to construction employment and increased
- demand for local businesses, suppliers and other supporting services; and
- Negative impacts on site personnel and local community due to improper construction site waste
- management.

Overall, subject to adherence to best practice and implementation of appropriate mitigation measures detailed below and elsewhere in this EIAR, the overall temporary impacts associated with the construction phase (excluding employment, which will be positive) are considered to be negative and slight/moderate.

The main areas of impact are as follows:

Population and Demographic

There will be no impact on the demographic profile during the construction phase.

Residential Amenity

Construction of the proposed development will last for approximately five years. During this time, the proposed development will cause a certain amount of loss of amenity, disruption and inconvenience to local residents, particularly the residents who are located closest to the boundaries of the site i.e., at The Briars and Cherry Court residential estates to the east, at the Alderbrook and Tara residential estates at the north and north-west, to the existing residences on Hickey's Lane to the south-east, and to the third party residence which the development site encircles.

These impacts will be related to construction traffic (particularly HGVs) and travel disruption and also to the generation of noise and dust which is generally associated with the construction of such infrastructural projects. These issues are considered elsewhere in this EIAR and mitigation measures identified. In particular, the access constraints arising in respect of receptors are considered in Chapter 10 Materials Assets: Transportation and impacts arising from the generation of noise and dust are considered in Chapter 8 – Noise and Chapter 7 – Air Quality & Climate. The visual impacts of the development are considered in Chapter 13 – The Landscape.

The overall impacts associated with the construction phase are temporary/short term and moderate.

Land Take, Use and Planning Policy

The construction works associated with the proposed development will generally be contained within the application site boundary and the lands under the control of the applicants.

The development proposal is for a residential development, along with other non-residential ancillary uses, on lands which are zoned to accommodate / permit such uses.

The proposed development also includes the undertaking of upgrade works to Cherry Lane and Hickey's Lane and their junctions with Dublin Road, as identified within the red line boundary of the application and for which a letter of consent from the Planning Authority is included with this application for permission.

Employment

During the construction phase, the proposed development will have a short-term positive effect in terms generating economic activity. It is anticipated that up to c. 250 no. construction personnel will be employed either directly or indirectly during the construction phase which is anticipated to extend over a period of approximately 60 months. Apart from the direct employment associated with the project, additional employment will be generated through the multiplier effect. In this case, the multiplier effect refers to the indirect impact that new spending has when it is circulated through the local economy. In the context of the overall economy of the area, the impact of the project in terms of employment (direct and indirect) will be slight and positive.

Travel and Commuting

During the construction phase there will be some traffic impacts on the receiving environment by virtue of the works related traffic. Measures to address these impacts are detailed in the CMP, CEMP & RWMP, and in Chapter 10 "Material Assets: Transportation" of the EIAR, and they will be slight and short-term.

Health and Safety

The construction of any project of this nature has potential to give rise to an impact on health and safety of human beings if such activities are not managed properly. These concerns are addressed in the CMP, CEMP & RWMP submitted as part of this planning application.

Human Health

The proposed development is likely to give rise to a short-term direct negative impact on the surrounding settlements during the construction phase, The Briars and Cherry Court residential estates to the east, at the Alderbrook and Tara residential estates at the north and north-west, to the existing residences on Hickey's Lane to the south-east, and to the third party residence which the development site encircles. This will be a short-term significant effect on a localised scale and this is further discussed in Chapter 7 (Air Quality & Climate) Chapter 98 (Noise) and Chapter 13 (The Landscape) of this EIAR.

The construction phase will result in an element of noise, mobility of heavy vehicles, dust and the arrival and departure of construction workers into the area. This impact will be negative, short-term, significant and localised.

Landscape and Visual

Impacts on the visual amenity of the surrounding area are fully addressed in Chapter 13 (The Landscape) of this EIAR. During the construction phase, general construction, disturbance and site development has the potential to result in significant temporary and short-term negative landscape and visual impact on the surrounding areas.

Conclusion

In the absence of mitigation, predicted likely, significant, negative effects on population and human health as a result of the construction phase of the proposed development are as follows:

- A negative, significant, short-term and reversible impact within 50m of the site due to noise-generating activities, affecting residential receptors within 40m of the subject site. Note that predicted noise levels are typical of developments of this scale and will be limited to site working hours (i.e. the day-time). The impacts will be limited to nuisance, irritation, minor disturbance while working, etc., and are highly subjective – lasting health impacts (e.g. hearing damage) are not expected to occur as a result of the proposed works.

- A negative, moderate to significant and short-term visual impact due to the presence of a substantial construction site.

- A negative, localised, significant, short-term impact due to the potential improper management of waste generated on the construction site.

Mitigation

Mitigation measures for the construction phase are outlined in each of the relevant chapters (No's 4-13) and are also provided in Chapter 15 "Summary of EIA Mitigation and Monitoring Measures". During the construction phase a number of mitigating measures should be considered, including inter alia:

- Restrict working hours from 07.00 to 19.00 Mondays to Fridays inclusive, between 09.00 to 13.00 on Saturdays. No general works are envisaged to be carried out on Sundays. Should there be a need to work Sundays/Bank Holidays, a written request will be made to MCC for permission to do so. Any conditions from MCC relating to out of hours working will be followed including any required notifications to relevant parties

- Maintain a Traffic Management Plan (TMP) in effect for duration of works

- Adherence to the CMP & CDWMP

- A CEMP will be agreed with the Planning Authority upon receipt of planning permission. The construction of the proposed development shall adhere to the relevant provisions of this Plan; and;

- As part of the CEMP, maintain a Dust and Noise abatement plan in operation.

Monitoring

Measures to monitor potential negative effects on people in respect of noise, air, traffic etc. are included in the following relevant Chapters of this EIAR.

In respect of the impacts assessed above, the contractor will monitor development during the construction phase to ensure compliance with the parameters of the CMP. Remedial action will be taken, if required, to ensure construction activities conform to its requirements.

Reinstatement

It is not considered that reinstatement works are required during the construction phase.

3.5.2. Operational Phase

The duration of the operational phase of the proposed development is assumed to be long-term in duration, as per the definitions in the EPA 2022 EIAR Guidelines.

The existing Meath CDP sets out the overall land use patterns for the county including the lands on which the project is proposed. The nature of the development is permanent and will act as a catalyst for the future development in the area, as provided for in the settlement plans.

The proposed development will comply with the statutory land use zoning policies and objectives of the Meath CDP and the Government's National Planning Framework (NPF). Development of the site will align with the NPF's high-level objective to achieve compact, sustainable growth and, in doing so, will realise the efficient use of currently vacant greenfield lands with medium density housing.

In the absence of mitigation, potential impacts on population and human health as a result of the operation of the proposed development may be summarised as follows:

- Nuisance and disturbance of residents due to noisy building services plant and vehicular deliveries / collections within the site
- Negative impacts on journey characteristics due to additional operational phase traffic generated by the proposed development
- Positive impacts on pedestrians and cyclists due to enhanced permeability and provision of public realm which prioritises these users
- Nuisance and disturbance due to increased traffic volumes arising from operation of proposed development
- Visual impacts due to completion of proposed development, establishing significant new residential development
- Direct and indirect positive socioeconomic impacts due to employment opportunities and increased demand for goods and services from local businesses
- Positive impacts on existing and new residents due to provision of new facilities i.e., creche as well as direct links to local services, facilities and amenities
- Positive socioeconomic impacts due to provision of significant additional housing; and
- Negative impacts on residents and local community due to improper waste management.

Population and Demographic

During the operational phase of the development, the demographic profile will change with additional people moving into the locality. The changing demographic profile during the operational phase of the proposed development is likely to ensure a balanced age profile within the local area.

Projected residential population from the proposed development will be approximately 2,106 persons. This is based on an average number of persons per household of c. 3 persons, which is the average household size in the study area in 2016.

The impact on population is considered to be permanent but slight, and appropriate to the land-use zoning designation for the site, and the Core Strategy of the existing Meath CDP.

Residential Amenity

All of existing local amenities will remain in place during the operational phase of the development. The potential viability of these amenities going forward will be strengthened from the increased population of the area. The population increase will result in a greater demand for community and outdoor facilities in the Study Area. The Applicants are providing for two purpose built childcare facilities on the subject site. Furthermore, the proposed

development provides for new public and communal open spaces available to future residents, as well as a new play areas for children.

Therefore, the effects on community amenities is deemed to be slightly positive or neutral in the long term.

Land Take, Use & Planning Policy

The existing Meath CDP set out the overall land use patterns for the lands on which this residential project is proposed. The nature of the development is permanent and will in time change the character of the area from a greenfield site to predominately residential use. The proposed land use (i.e., residential, open space, amenity and employment) and will not impact on human health. Overall, the impact on land use and settlement is considered to be moderate, permanent and positive.

Employment

During the operational phase, the development will have a slight, positive long-term impact. The development will result in the creation of jobs associated with the proposed childcare facilities, retail units, GP /medical use unit, and permanent apartment building management jobs. Other associated jobs such as gardening and window cleaning, with spin-off economic activity created for local retail and service providers.

Travel and Commuting

During the operational phase of the development, there are likely to be some impacts on the receiving environment in relation to travel and commuting. The development will provide additional people to sustain the public transport network. The impact due to the increase in number of persons potentially travelling and commuting will be significant and permanent, with a neutral long-term effect. Detailed information on the traffic impacts of the proposed development are set out in Chapter 10 of this EIAR 'Material Assets: Transportation'.

Health and Safety

The operational phase of the development is unlikely to give rise to any additional risks of health and safety on human beings. Maintenance and building management plans will form part of the programme of development upon receipt of a grant of permission.

Human Health

The changes in the area will have a positive impact in terms of changing the age profile and increasing the longevity of local schools and facilities.

The development will create a modern living environment adjacent to a wide range of amenities, with good accessibility to Ashbourne town centre, providing locally positive health benefits to its residents.

Landscape and Visual

The development is designed to seamlessly integrate into the surrounding context. A Daylight & Sunlight Analysis, prepared by 3D Bureau, demonstrates that the proposed development's design and building forms will not negatively impact the amenity areas of the development. Therefore, during the operational phase, the landscape or visual impacts arising from the development will be not significant from these areas. Chapter 13 of this EIAR 'The Landscape' examines the landscape visual impact of the proposed development in detail.

Conclusion

Overall, the proposed development is expected to result in a net positive impact on population and human health once operational, principally in that it will deliver a high volume of high-quality housing in the context of an ongoing housing crisis, in a manner that is consistent with national and regional level policy. Notwithstanding the proposal's positive impacts, in the absence of mitigation, the following likely, significant, negative effects on population and human health have also been predicted to occur as a result of the operational phase of the proposed development:

- A negative, localised, long-term and significant impact on on-site residents due to potential improper storage, management and disposal of solid waste.

Mitigation

Where relevant, mitigation measures to address the potential impacts of noise, air traffic etc. on people are included in the appropriate chapters of this EIAR. No likely significant impacts have been identified for population, or land use, accordingly no mitigation measures are required for the operational phase. The proposed development has been designed to avoid significant impacts in relation to local amenities and recreational facilities by:

- Incorporating the provision of a new childcare facilities within the design proposal.
- Incorporating the provision of a new local services by including for 4 no. retail units and 1 no. GP /medical use unit within the design proposal.
- Reserving a site to accommodate a potential new primary school, dependent on confirmation from the Department of Education and Skills for the need for same.
- The provision of c. 28,912 sq.m of public open space representing c. 15.5% of the 'A2' zoned residential lands
- Providing new pedestrian and cyclist links to local amenities and facilities.

Accordingly, no further mitigation measures are required.

Monitoring

No additional monitoring is proposed for the operational phase other than that proposed in other chapters of this EIAR.

Reinstatement

It is not considered that reinstatement works are required during the operational phase.

3.6. Predicted Impacts

The predicted impacts on human health below are compiled from the relevant chapters of this EIAR.

3.6.1. Air Quality & Climate

An adverse impact due to air quality in either the construction or operational phase has the potential to cause human health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact complies with all ambient air quality legislative limits and, therefore, that

the predicted residual impact is short-term, direct, negative and imperceptible during the construction phase, and long-term, direct, negative and imperceptible during the operational phase.

3.6.2. Transportation

Construction and operational stage traffic and traffic management measures have the potential to affect journey amenity or economic activity as a result of increased congestion or access restrictions. The increased infrastructure for sustainable travel modes can contribute towards modal shift in travel patterns and increased physical activity. Employment and economic activity will be generated during the construction stage of the project.

3.6.3. Resource and Waste Management

3.6.4. The potential impacts on human beings in relation to the generation of waste during the construction and operational phases are that the incorrect management of waste could result in littering which could cause a nuisance to the public and attract vermin. A carefully planned approach to waste management and adherence to the project specific RWMP and OWMP will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be long-term, imperceptible and neutral.

3.7. Residual Impacts

3.7.1. Construction Phase

Assuming the proper and full implementation of the mitigation measures in this EIAR (summarised above in relation to population and human health), the following significant, negative, residual impacts on population and human health are predicted:

The application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures (as set out in Chapter 8 “Noise & Vibration”), will ensure that noise and vibration impacts are minimised as far as practicable. However, given the nature of the proposed works and the proximity to residential receptors; the possibility remains for short-term, negative, slight to significant noise impacts to arise within a 40m radius of the subject site. It should be noted that these impacts will entail nuisance and daytime disturbance only, and that the nature of noise levels generated will be typical of urban construction works of this nature. As such, it is considered that this potentially significant, negative, residual impact on the local population is commensurate with the proposed development and acceptable considering the net merit of the proposal.

Significant and unavoidable, negative residual visual impacts on surrounding areas as a result of the proposed works, as follows:

The visual impact from the construction phase on properties along the site boundaries, and to agricultural lands and individual dwellings, would be significant, negative and short-term.

No other significant, negative residual impacts are predicted in relation to population and human health.

3.7.2. Operational Phase

Assuming the proper and full implementation of the mitigation measures in this EIAR (summarised above in relation to population and human health), no significant, negative, residual impacts are predicted to occur during the operational phase in the long-term. However, as discussed below, there is the potential for significant, negative, short-term visual impacts to occur.

As stated above, the net operational phase impact on population and human health is predicted to be positive, principally because the proposed development will deliver a high volume of high-quality housing in the context of

an ongoing housing crisis, in a manner that is consistent with national and regional-level policy

3.7.3. Conclusion

The residual effects of the construction and operational phase of the project on the socio-economic character of the area and the local community (i.e. population and human health), subject to the implementation of the various mitigation measures outlined in this EIAR are identified as follows:

- The development will facilitate the implementation of the Meath CDP and the Master Plan for the subject lands;
- The development will provide new pedestrian and cycling links, and road links, through the subject site
- The development will provide for new childcare, retail and medical facilities as weels as a large provision of new public open space.

3.8. Interactions

As noted in this chapter of the EIAR, there are numerous inter-related environmental topics described in detail throughout this EIAR which are of relevance to human health. During the construction phase noise, air, traffic and consumption of materials will be the key environmental factors that will have an impact on population and human health.

This chapter of the EIAR has been instructed by updated guidance documents reflecting the changes within the 2014 EIA Directive. These documents are the Guidelines on the information to be Contained in Environmental Impact Assessment Reports, published by the EPA in June 2022 and the Key Issues Consultation Paper on the Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems, published by the Department of Environment, Community and Local Government in May 2017. In line with the guidance documents referred, this chapter of the EIAR focuses primarily on the potential likely and significant impact on Population and Human Health in relation to health effects/issues and environmental hazards from the other environmental factors and interactions that potentially may occur.

Where there are identified associated and inter-related potential likely and significant impacts which are more comprehensively addressed elsewhere in this EIAR document, these are referred to.

During the operational phase, it is anticipated that water and traffic will be the key environmental factors impacting upon population and human health during the operational phase as a new residential landscape will be created. The increase in population will result in increased traffic and increased demands on water supply and increased requirements for wastewater treatment. These are addressed in the appropriate sections of this EIAR.

3.9. Reinstatement

There are no reinstatement works proposed specifically with respect to population and human health.

3.10. Cumulative Impacts

An increase in local housing, and increase in employment opportunities and service provision (childcare facilities and other non-residential uses) have the potential to generate direct, indirect impacts. The visual appearance of the landscape will be altered with the introduction of the proposed built elements including infrastructure, in cumulation with other development in the area. Implementation of the remedial and reductive measures in respect of noise/traffic management etc. in the EIAR would ensure a minimal impact on the existing communities of this area during the construction phase.

The development of the proposed scheme will open up the lands to improved connectivity from the subject site from the north, east and west and beyond to local services and facilities e.g., Ashbourne town centre etc. and will require works that will likely entail some localised impacts to residents. A mitigation for the construction stage detailed throughout this EIAR will minimise the short term disruption to existing local residents.

There will be some short term impacts during the construction phase as the infrastructural / site development works are undertaken, particularly in respect of traffic management with regards to sensitive receptors. This may cause local short term inconvenience and disturbance to residents in the vicinity of the works. However, the works would normally be undertaken in sections on a phased/rolling programme so that the number of persons experiencing local inconveniences at any one time is kept to a minimum.

3.11. Difficulties Encountered in Compiling

No difficulties were encountered when compiling this chapter of the EIAR.

3.12. Do Nothing Scenario

A do-nothing scenario would result in the site remaining in greenfield / agricultural use. If the proposed development were not to proceed there would be no immediate impact on the existing population, or economic activity for residents living in the area.

If the lands were to remain undeveloped, this would be an under-utilisation of zoned lands from a sustainable planning and development perspective, particularly considering the location of the lands and the objectives of both the Meath CDP . The positive benefits to the national, regional and local community arising from implementing the residential development proposals of the CDP for the subject lands would therefore not materialize.

3.13. Conclusion

This Chapter of the EIAR has assessed the potential of the proposed development to result in significant impacts on population and human health during the construction and operational phases. It has found that, while the net impact of the proposed development is expected to be positive (in that its completion will create a high volume of high quality housing in the context of an ongoing housing crisis), it likely that negative impacts will also arise as a result of the proposal. These negative predicted impacts are commensurate with the nature and scale of the proposed development and are predominantly short-term impacts associated with the proposed construction and demolition works (such as noise, dust, and traffic). A suite of corresponding mitigation measures have been prescribed throughout the EIAR, which in most cases will ensure that significant negative impacts are avoided. The following potentially significant negative residual impacts cannot be avoided, however:

- Given the nature of the proposed works and the proximity to residential receptors; the possibility remains for short-term, negative, slight to significant noise impacts to arise within a 40m radius. These impacts will entail nuisance during daytime hours only, and the nature of noise levels generated will be typical of urban construction works of this nature.

- Significant and unavoidable, negative, short-term visual impacts on surrounding areas as a result of the proposed works.

- There is the potential for short-term significant, negative visual impacts to viewpoints in the surrounding area upon the completion of the proposed development, but that these are expected to ameliorate to an overall neutral to positive visual impact in the long-term, once the proposed development has become established in its surroundings.

3.14. References

- Central Statistics Office www.cso.ie.
- CSO (2012). Census 2011 Small Area Population Statistics (SAPS).
- CSO (2017). Census 2016 Small Area Populations Statistics (SAPS).
- Meath County Development Plan 2021–2027.
- Healthy Ireland Framework 2013-2025

4.0. Biodiversity

4.1. Introduction

This chapter of the EIAR was authored by Síofra Quigley of Scott Cawley Ltd. It has been reviewed for quality assurance purposes by Niamh Burke of Coiscéim Consulting Ltd., and by Colm Clarke of Scott Cawley Ltd.

Síofra Quigley is a Senior Consultant Ecologist with Scott Cawley. She obtained an honours degree in Zoology, from National University of Ireland Galway, and a Masters in Wildlife Biology and Conservation from Edinburgh Napier University. She has four years' professional experience working in the UK and Ireland on large to small scale infrastructure projects, with governmental and private clients. Síofra is experienced in carrying out field surveys in several protected species including bat, otter, badger, red squirrel, reptile, pine marten and mountain hare. She has also been involved in radio tracking mountain hares and bats, bat call analysis, badger bait marking, acting as an Ecological Clerk of Works, Phase 1 habitat surveys and reports (Joint Nature Conservation Committee, 2010), Fossitt (2000) habitat assessments, and desk top studies. Since joining Scott Cawley, Síofra's work involves the preparation of reports, including Ecological Impact Assessment and Appropriate Assessment reports for residential, commercial, and infrastructural projects across Ireland.

Niamh Burke is Principal Ecologist with Coiscéim Ecology. She holds a BSc in Natural Sciences with Environmental Science, a PhD in salmonid ecology from Southampton University and a Higher Diploma in Environmental Law and Planning (Kings Inns).She is a Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env) and a Full Member of the CIEEM. Niamh is a senior scientist with over 15 years academic research and consulting experience in terrestrial ecology, aquatic ecology and fluvial geomorphology. She is an experienced project manager with a full working knowledge of EIA, the planning process and relevant environmental legislation, both national and European. With a specialism in aquatic habitats, she also has experience of terrestrial species' surveys and mitigation approaches. In her extensive consultancy roles she has acted as reviewer for all ecological reporting and ensured consistency of standards and approach.

Colm Clarke is a Principal Ecologist with Scott Cawley and has over seven years' experience in ecological consultancy. He obtained an honours degree in Natural Sciences, with a specialisation in Botany, from Trinity College Dublin, and a Masters in Biodiversity and Conservation from the same institution. Colm is a full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM), a member of the Irish Environmental Law Association (IELA), and chairperson of the Dublin Bat Group (an affiliate group of Bat Conservation Ireland (BCI). Colm's principal areas of interest are botany, and bats, although he also has experience in a range of other fauna surveys, including freshwater white-clawed crayfish, freshwater pearl mussel, badger and otter. As Principal Ecologist, Colm regularly acts as primary author and project ecologist on complex projects. He also routinely completes technical peer review work, both internally as part of Scott Cawley's quality assurance procedures, and externally for clients. Colm has contributed to survey and assessment of the N6 Galway City Ring Road, and is the project ecologist for the N24 Cahir to Limerick Junction Project, and N24 Waterford to Cahir Project. Colm completed peer review of this report as part of Scott Cawley Ltd.'s quality assurance procedures.

The chapter provides an assessment of the potential ecological effects of the proposed development at Ashbourne (refer to Figure 4.1 for location). The proposed development is for a Strategic Housing Development (SHD) consisting of 702 no. number residential units, 4 no. retail units, 1 no. GP practice and associated ancillary roads, drainage pumping, and services infrastructure delivered across three phases, located in Milltown Ashbourne, County Meath. The residential units will consist of detached, semi-detached and terraced houses, duplex apartments and 20 no. apartment blocks. A detailed description of the proposed development is included for in Chapter 2 of the EIAR.

The proposed development site is located in the 10km Grid Square O05 at O 06542 51363 on the outskirts of Ashbourne town. The lands comprise of 11 agricultural fields separated by hedgerows, drainage ditches and treelines. Cattle graze regularly on the southern, eastern, and north western fields. Three residential houses (one currently occupied), and three sheds/barns are also present within the proposed development site. Agricultural fields border the lands to the west and south, with residential areas and the town of Ashbourne to the north and east of the proposed development site. The north eastern border is bounded by the Dublin Road (R135) to the

east. There are no surface water features within the proposed development site, with the nearest surface water feature being the Fairyhouse Stream, located c. 300m south of the proposed development (Figure 4.1).

Figure 4.1. The proposed development in relation to wider surroundings.

4.1.2. Aims

The purpose of this report is to:

- Establish and evaluate the baseline ecological environment, as relevant to the proposed development
- Identify, describe and assess all potentially significant ecological effects associated with the proposed development
- Set out the mitigation measures required to address any potentially significant ecological effects and ensure compliance with relevant nature conservation legislation
- Provide an assessment of the significance of any residual ecological effects;
- Identify any appropriate compensation, enhancement or post-construction monitoring requirements.

An Appropriate Assessment (AA) Screening was prepared to be submitted with the planning application. It contains information required for the competent authority (in this instance An Bord Pleanála) to undertake a screening for AA. It provides information on and assesses the potential for the proposed development to impact on the European sites.

4.2. Planning Policy and Legislation

The collation of ecological baseline data and the preparation of this assessment has had regard to the following legislation and policy documents. This is not an exhaustive list but the most relevant legislative and policy basis for the purposes of preparing this Biodiversity Chapter.

The following international legislation is relevant to the proposed development:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora; hereafter, referred to as the 'Habitats Directive'. The Habitats Directive is the legislation under which the Natura 2000 network[4] was established and special areas of conservation (SACs) are designated for the protection of natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of that directive.
- Directive 2009/147/EEC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds; hereafter, referred to as the 'Birds Directive'. The Birds Directive is the legislation under which special protection areas are designated for the protection of endangered species of wild birds listed in Annex I of that directive.
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy hereafter, referred to as the 'Water Framework Directive'. The Water Framework Directive' is the legislation requiring the protection and improvement of water quality in all waters (rivers, lakes, groundwater, and transitional coastal waters) with the aim of achieving good ecological status by 2015 or, at the latest, by 2027.
- The requirement for EIA for certain types and scales of development is set out in the EIA Directives (2011/92/EU and 2014/52/EU), European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (the bulk of which came into operation in September 2018), the European Communities (Environmental Impact Assessment) Regulations 1989-2006, Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001, as amended. It should be noted that this EIA Report is prepared in accordance with the 2011 EIA Directive (2011/92/EU), as amended by the 2014 EIA Directive.

The following national legislation is relevant to the proposed development:

- *Wildlife Acts 1976 to 2022*, hereafter collectively referred to as the 'Wildlife Acts'. The Wildlife Acts are the principal pieces of legislation at national level for the protection of wildlife and for the control of activities that may harm wildlife. All bird species, 22 other animal species or groups of species, and 86 species of flora are protected under this legislation.
- *Planning and Development Acts 2000 to 2021*; hereafter collectively referred to as the 'Planning and Development Acts'. This piece of legislation is the basis for Irish planning. Under the legislation, development plans (usually implemented at local authority level) must include mandatory objectives for the conservation of natural heritage and for the conservation of European Sites. It also sets out the requirements in relation to environmental assessment with respect to planning matters, including transposition of the Habitats and Birds Directive into Irish law.
- *European Communities (EC) (Birds and Natural Habitats) Regulations 2011 to 2012*, hereafter the 'Birds and Habitats Regulations'. This legislation transposes the Habitats and Birds Directives into Irish law. It also contains regulations (49 and 50) that deal with invasive species (those included within the Third Schedule of the regulations).
- *European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003)*. This legislation transposes the Water Framework Directive into Irish Law.

[4] The Natura 2000 network is a European network of important ecological sites, as defined under Article 3 of the Habitats Directive 92/43/EEC, which comprises both special areas of conservation and special protection areas. Special conservation areas are sites hosting the natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of the Habitats Directive, and are established under the Habitats Directive itself. Special protection areas are established under Article 4 of the Birds Directive 2009/147/EC for the protection of endangered species of wild birds. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats.

In Ireland these sites are designed as *European sites* - defined under the Planning Acts and/or the Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

- *Flora (Protection) Order, 2022*. This lists species of plant protected under Section 21 of the Wildlife Acts.

The following plans and policies are relevant to the proposed development:

- *National Biodiversity Action Plan 2017-2021 (Department of Culture Heritage and the Gaeltacht, 2017)*
- *Meath County Development Plan 2021 – 2027 (Meath County Council, 2021)*
- *County Meath Biodiversity Action Plan 2015 – 2020 (Meath County Council, 2015)*
- *Ashbourne Local Area Plan 2009 – 2015 (As Amended) (Meath County Council, 2015)*
- *Fingal Development Plan 2017-2023 (Fingal County Council 2017)*
- *Dublin City Development Plan 2016 – 2022 (Dublin City Council, 2016)*

4.3. Methodology

4.3.1. Scope of the Assessment

The study area is defined by the zone of influence of the proposed development with respect to the ecological receptors that could potentially be affected.

The Zone of Influence (ZoI), or distance over which potentially significant effects may occur, will differ across the Key Ecological Receptors (KERs), depending on the potential impact pathway(s). The results of both the desk study and the suite of ecological field surveys undertaken has established the habitats and species present within, and in the vicinity of, the proposed development site. The ZoI and study area (*i.e.,* the area within the red line boundary as shown on Figure 4.1) was then informed and defined by the sensitivities of each of the KERs present, in conjunction with the nature and potential impacts associated with the proposed development.

The ZoI of habitat loss impacts will be confined to within the proposed development boundary.

The ZoI of potential impacts on surface water quality in the receiving freshwater environment could extend downstream as far as the estuary.

The ZoI of general construction activities (i.e. risk of spreading/introducing non-native invasive species, dust deposition and disturbance due to increased noise, vibration, human presence and lighting) is not likely to extend more than several hundred metres from the proposed development.

4.3.1. Desk Study

A desk study was undertaken in August 2022 to collate available information on the local ecological environment. The following resources were used to inform the assessment presented in this report:

- Data on European sites, Natural Heritage Areas (NHAs) or proposed Natural Heritage Areas (pNHAs) as held by the National Parks and Wildlife Service (NPWS) from https://www.npws.ie/protected-sites and https://www.npws.ie/maps-and-data – refer to Appendix 5.I and Figure 5.3 for descriptions and locations of protected sites in the vicinity of the proposed development.
- Records of rare and protected species for the 10km grid square(s), as held by the National Biodiversity Data Centre (NBDC) www.biodiversityireland.ie or the NPWS – refer to Appendix 5.2 for all desk study flora and fauna records.
- Spatial information relevant to the planning process including land zoning and planning applications from Department of Housing Planning, Community and Local Government web map portal. Available from https://myplan.ie/.
- Ordnance Survey Ireland mapping and aerial photography from http://map.geohive.ie/.
- Data on waterbodies, available for download from the Environmental Protection Agency (EPA) web map service. Available from https://gis.epa.ie/EPAMaps/.

- Information on soils, geology and hydrogeology in the area available from the Geological Survey Ireland (GSI) online Spatial Resources service. Available from https://www.gsi.ie/en-ie/data-and-maps/Pages/Groundwater.aspx.
- Information on the conservation status of birds in Ireland from Birds of Conservation Concern in Ireland (Gilbert et al., 2021).
- Information on the location, nature and design of the proposed development supplied by the applicant's design team.
- Appropriate Assessment Screening: for Strategic Housing Development, Milltown, Ashbourne (Scott Cawley Ltd. 2022).
- Hydrological & Hydrogeological Qualitative Risk Assessment for Proposed Masterplan and SHD in Lands at Milltown, Ashbourne, Co. Meath (AWN Consulting, 2022).
- Infrastructure Design Report, Lands at Cherry Lane, Ashbourne, Co. Meath (DBFL Consulting Engineers, August 2022).
- Report on Site-Specific Flood Risk Assessment, Lands at Cherry Lane, Ashbourne, Co. Meath (DBFL Consulting Engineers, August 2022).

4.3.2. Consultations

A consultation letter was submitted by email to the Development Applications Unit of NPWS, Department of Housing, Local Government and Heritage on 6th December 2021. The letter included an outline description of the proposed development, and a request for comments on the proposal. No response was received by Scott Cawley Ltd. prior to submission of the planning application for the proposed development.

4.3.3. Field Survey

Ecological field surveys were carried out following the best practice professional guidelines with respect to seasonality, timing and frequency for each survey type listed below, in 2020, 2021 and 2022.

Survey	Survey Date(s)	Surveyor(s)
Habitat surveys	31st August 2020 18th June 2021 20th April 2022	Scott Cawley Ltd.
Mammal surveys (excluding bats)	31st August 2020 18th June 2021 20th April 2022	Scott Cawley Ltd.
Breeding bird surveys	23rd April 2021 31st May 2021 11th June 2021 20th April 2022	Scott Cawley Ltd.
Wintering bird surveys	16th February 2021 3rd March 2021 25th March 2022	Scott Cawley Ltd.
Bat surveys: Building/tree inspections Activity transect surveys Building roost presence/absence surveys	31st August 2020 16th February 2021 20th April 2022 1st September 2020 14th September 2020 14th August 2021 7th September 2021 1st September 2020 14th August 2021 7th September 2021 3rd May 2022	Scott Cawley Ltd.

Table 4.1. Ecological surveys and survey dates.

4.3.4.1. Habitats and Flora Survey

A habitat survey was undertaken of the proposed development site on the 31st August 2020 by Alexis Fitzgerald B.Sc. M.Sc. of Scott Cawley Ltd., and on the 18th June 2021 and 20th April 2022 by Síofra Quigley B.Sc. (Hons) M.Sc. also of Scott Cawley Ltd. following the methodology described in *Best Practice Guidance for Habitat Survey and Mapping*[5]. All habitat types were classified using the *Guide to Habitats in Ireland*[6], recording the indicator

[5] Smith, G.F., O'Donoghue, P., O'Hora, K. & Delaney, E. (2011) *Best Practice Guidance for Habitat Survey and Mapping*. The Heritage Council Church Lane, Kilkenny, Ireland.

6 Fossitt, J.A. (2000) *A Guide to Habitats in Ireland*. Heritage Council, Kilkenny.

species and abundance using the DAFOR scale[7] and recording any species of conservation interest. Vascular and bryophyte plant nomenclature generally follow that of *The National Vegetation Database*[8], having regard to more recent taxonomic changes to species names after the *New Flora of the British Isles*[9] and the British Bryological Society's *Mosses and Liverworts of Britain and Ireland: A Field Guide*[10].

4.3.4.2. Fauna Survey

Terrestrial Mammals (excl. Bats)

A terrestrial fauna survey (excluding bats) for the presence/absence of terrestrial fauna species were surveyed through the detection of field signs such as tracks, markings, feeding signs, and droppings, as well as by direct observation, was undertaken on the 31st August 2020 by Alexis Fitzgerald, and on the 18th June 2021 and 20th April 2022 by Síofra Quigley. The habitats on site were assessed for signs of usage by protected/red-listed fauna species, and their potential to support these species. Surveys to check for the presence of badger setts within the study area, and to record any evidence of use.

Breeding Birds

Breeding bird surveys were undertaken on the 23rd April 2021 by Síofra Quigley and Cathal O'Brien, on the 31st May 2021 by Wayne Daly B.Sc. (Hons), on the 11th June 2021 and on the 20th April 2022 by Síofra Quigley, using a methodology adapted from the *Bird Monitoring Methods - A Manual of Techniques for Key UK Species* 11. The study area covered the lands within the proposed development site, of which were slowly walked in a manner allowing the surveyor to come within 50m of all habitat features. Birds were identified by sight and song, and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes. Any buildings/structures within the lands were assessed for nesting bird species, including barn swallows, house martins and barn owls. Survey details are provided in Table 4.2.

[7] The DAFOR scale is an ordinal or semi-quantitative scale for recording the relative abundance of plant species. The name DAFOR is an acronym for the abundance levels recorded: Dominant, Abundant, Frequent, Occasional and Rare.

[8] Weekes, L.C. & FitzPatrick, Ú. (2010) The National Vegetation Database: Guidelines and Standards for the Collection and Storage of Vegetation Data in Ireland. Version 1.0. Irish Wildlife Manuals, No. 49. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

[9] Stace, C. (2019) *New Flora of the British Isles. 4th Edition*. C&M Floristics.

[10] Atherton, I., Bosanquet, S. & Lawley, M. (2010) *Mosses and Liverworts of Britain and Ireland: A Field Guide*. Latimer Trend & Co., Plymouth.

11 Gilbert, G., Gibbons, D.W. & Evans, J. (1998) *Bird Monitoring Methods - A Manual of Techniques for Key UK Species*. RSPB: Sandy

Date (Sunrise)	Survey Time	Weather Conditions
23/04/2021 (06:07)	06:15 – 10:30	Clear, dry, light winds, 13°C.
31/05/2021 (05:04)	05:15 – 09:15	Clear, no rain, no wind, 19°C
11/06/2021 (04:57)	05:05 – 09:00	Overcast, no rain, light breeze, 17°C
20/04/2022 (06:15)	07:30 – 09:00	Partially overcast, no rain, slight breeze, 14°C

Table 4.2. Breeding bird survey details.

Wintering Birds

Wintering bird surveys were undertaken 16th February 2021 by Laura Higgins B.Sc. (Hons), on the 3rd March 2021 by Lorna Gill B.Sc. (Hons), on the 25th March 2022 by Wayne Daly B. Sc. (Hons), using a methodology based on the Bird Monitoring Methods – A Manual of Techniques for Key UK Species. The study area covered the lands within the proposed development site. Lands were initially surveyed visually using binoculars/scope from a vantage point(s) at the edge of the study area followed by a walkover of the area to identify birds which may not be visible from a distance (e.g. waders) and evidence of usage by wildfowl such as swans or geese (e.g. droppings). Birds were identified by sight and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes.

Bats

A ground-level assessment of trees and structures/buildings within the subject lands, to examine their suitability to support roosting bats and potential to act as important landscape features for commuting/foraging bats, was based on guidelines (see Table 5.3) in Bat Surveys for Professional Ecologists: Good Practice Guidance (Collins ed., 2016) and included inspections of trees and structures/buildings for potential roost features (PRFs), and for signs of bats (staining at roost entrances, droppings, carcasses, insect remains). This included internal access of barns/shed and buildings (where possible) to assess for the actual presence of bats, and for evidence as described above. Residential buildings were not accessed due to Covid 19 restrictions in 2020 and 2021, however all buildings were assessed externally, and barns/farm buildings were assessed internally and externally. The residential houses in the north of the site were inspected internally in 2022. Due to access issues, the residential house in the south of the house was not inspected internally. This was undertaken on the 31st August 2020, 16th February 2021, and the 20th April 2022.

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (*i.e.* unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, treelined watercourses and grazed parkland. Site is close to and connected to known roosts.

Table 4.3. Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, applied according to professional judgement. (Taken from Collins (2016)).

Five separate bat activity surveys were undertaken within the lands by surveyors who are experienced in bat transect surveys and bat roost presence/absence surveys. The surveys were designed with reference to methodologies in *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn.) (Collins, 2016), and survey details are provided in Table 4.4. The aim of the surveys was to both document the usage of the proposed development site by bats, and to determine whether any buildings within the proposed development site were bat roosts. Four surveys involved completion of a walked transect within the proposed development site, and four surveys were preceded/followed by bat roost emergence/re-entry surveys at the buildings/structures within the proposed development site. Observations of bat activity were recorded, and where necessary, data collected in the field was analysed using specialist software (Elekon BatExplorer) to aid in the identification of bat species by their calls. Data generated from the transect surveys was analysed using Elekon BatExplorer software, whereby calls were identified to species level (where this was possible), through professional judgement and with reference *British Bat Calls: A Guide to Species Identification* (Russ, 2012).

Date (Sunset/Sunrise)	Survey Time	Survey Type	Weather Conditions
01/09/2020 (06:35)	04:30 – 06:40	Dawn transect activity survey, Roost presence/absence survey	13 - 16°C, partially overcast, no wind or rain
14/09/2020 (19:55)	19:35 – 21:50	Dusk transect activity survey	18°C, clear, no wind or rain
14/08/2021 (06:04)	04:30 – 06:30	Dawn transect activity survey, Roost presence/absence survey	13°C, overcast, intermittent fog, no rain, light winds
07/09/2021 (20:01)	19:40 – 21:43	Dusk transect activity survey, roost presence/absence survey	13°C, strong winds, clear skies, no rain
03/05/2022 (20:57)	20:37 – 22:20	Dusk roost presence/absence survey	14°C, light winds, no rain, overcast

Table 4.4 Details of bat surveys undertaken within the proposed development site.

Amphibians and Reptiles

A survey for suitable habitat for amphibians and reptiles was undertaken on the 18th June 2021, and 24th April 2022. Suitable habitat for amphibians, such as ponds and wet ditches, and reptiles, such as habitats with stone walls, rocks or logs suitable for basking, were noted and mapped. Any direct observations of individuals were noted.

4.3.4.3. Survey Limitations

Wintering bird surveys were carried out during February and March 2021 and 2022. Whilst this deviates from the guidelines of one survey a month between September and March[12], it remains a valid time of year for the completion of wintering bird surveys.

The number and timing of wintering bird surveys was informed by the location of the proposed development site in the context of known important wintering wetland bird sites, the suitability of the proposed development site for wintering wetland birds, and the context of habitats in the area between the proposed development site and known wintering wetland bird sites:

- The closest known wintering wetland bird site, Malahide Estuary SPA is located *c.* 12.7km from the proposed development site, and is separated from the proposed development site by large expanses of agricultural land including lands similar to the proposed development site.
- The habitats within the proposed development site overwhelmingly comprise agricultural grassland, managed for pasture which are of relatively low suitability for wintering wetland birds. Although there are patches of wet grassland, and drainage ditches, these are small in area.

[12] Gilbert, G., Gibbons, D.W. & Evans, J. (1998) Bird Monitoring Methods – A Manual of Techniques for Key UK Species

Although geese and other wetland birds may utilise agricultural grassland for supplementary forage, the distance between the proposed development site and any important wintering wetland bird sites means that wintering birds do not regularly utilise the proposed development site as the energy cost of travelling between known wintering wetland bird sites and the proposed development site is likely to be greater than the energy costs of foraging on agricultural grassland in close proximity to known wintering bird sites.

Therefore the wintering bird survey scope for this proposal has been sufficient to inform a full assessment of impacts with respect to wintering birds, and the timing and number of surveys completed doe not impose any limitation on the outcome of the assessment.

4.3.5. Ecological Evaluation and Impact Assessment

4.3.5.1. Ecological Evaluation

Ecological receptors (including identified sites of ecological importance) are valued with regard to the ecological valuation examples set out in *Guidelines for Assessment of Ecological Impacts of National Roads Schemes: Revision 2*[13] and the guidance provided in *Guidelines for Ecological Impact Assessment in the UK and Ireland*[14] – refer to Appendix 4.3 for examples of how ecological importance is assigned. In accordance with these guidelines, important ecological features within what is referred to as the Zone of Influence (ZoI) of the proposed development which are "both of sufficient value to be material in decision making and likely to be affected significantly" are deemed to be 'Key Ecological Receptors' (KERs). These are the ecological receptors which may be subject to significant effects from the proposed development, either directly or indirectly. KERs are those biodiversity receptors with an ecological value of local importance (higher value) or greater.

4.3.5.2. Impact Assessment

Ecological impact assessment is conducted following a standard source-pathway-receptor model, where, in order for an impact to be established all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism is sufficient to conclude that a potentially significant effect would not occur.

- Source(s) – e.g. pollutant run-off from proposed works
- Pathway(s) – e.g. groundwater connecting to nearby qualifying wetland habitats
- Receptor(s) – e.g. wetland habitats and the fauna and flora species they support

4.3.5.3. Charactering and Describing the Impacts

The parameters considered in characterising and describing the potential impacts of the proposed development are per the EPA's *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*[15] and CIEEM's *Guidelines for Ecological Impact Assessment in the UK and Ireland*: whether the effect is positive, neutral or negative; the significance of the effects; the extent and context of the effect; the probability, duration and frequency of effects; and, cumulative effects.

[13] NRA (2009) Guidelines for Assessment of Ecological Impacts of National Roads Schemes: Revision 2. National Roads Authority.

[14] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland. Chartered Institute of Ecology and Environmental Management, Winchester, UK.

[15] Environmental Protection Agency. (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports. May 2022. (refer to Table 3.3)

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. The following development types are included in considering cumulative effects:

- Existing projects (under construction or operational)
- Projects which have been granted consent but not yet started
- Projects for which consent has been applied for which are awaiting a decision, including those under appeal
- Projects proposed at a plan level, if relevant (e.g. future strategic infrastructure such as roads or greenways)

The likelihood of an impact occurring, and the predicted effects, can also be an important consideration in characterising impacts. In some cases it may not be possible to definitively conclude that an impact will not occur. In these cases the evaluation of significant effects is based on the best available scientific evidence but where reasonable doubt still remains then the precautionary principle is applied and it may need to be assumed that significant effects may occur. Professional judgement is used in considering the contribution of all relevant criteria in determining the overall magnitude of an impact.

4.3.5.4. Charactering and Describing the Impacts

In determining whether potential impacts will result in significant effects, the CIEEM guidelines were followed. The approach considers that significant effects will occur when there are impacts on either:

- the structure and function (or integrity) of defined sites, habitats or ecosystems; or
- the conservation status of habitats and species (including extent, abundance and distribution).

4.3.5.5. Integrity

The term “integrity” may be regarded as the coherence of ecological structure and function, across the entirety of a site that enables it to sustain all of the biodiversity or ecological resources for which it has been valued (NRA, 2009).

The term ‘integrity’ is most often used when determining impact significance in relation to designated areas for nature conservation (e.g. SACs, SPAs or pNHA/NHAs) but can also be the most appropriate method to use for non-designated areas of biodiversity value where the component habitats and/or species exist with a defined ecosystem at a given geographic scale.

An impact on the integrity of an ecological site or ecosystem is considered to be significant if it moves the condition of the ecosystem away from a favourable condition: removing or changing the processes that support the sites’ habitats and/or species; affect the nature, extent, structure and functioning of component habitats; and/or, affect the population size and viability of component species.

4.3.5.6. Conservation Status

Similar definitions for conservation status given in the EU Habitats Directive 92/43/EEC, in relation to habitats and species, are also used in the CIEEM (2018) and NRA (2009) guidance which are summarised as follows:

- For natural habitats, conservation status means the sum of the influences acting on the natural habitat and its typical species, that may affect its extent, structure and functions as well as its distribution, or the long-term survival of its typical species, at the appropriate geographical scale
- For species, conservation status means the sum of influences acting on the species concerned that may affect the abundance of its populations, as well as its distribution, at the appropriate geographical scale

An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status, having regard to the definitions of favourable conservation status provided in the EU Habitats Directive 92/43/EEC – i.e. into the future, the range, area and quality of habitats are likely to be maintained/increased and species populations are likely to be maintained/increased.

According to the CIEEM methodology, if it is determined that the integrity and/or conservation status of an ecological receptor will be impacted on, then the level of significance of that impact is related to the geographical scale at which the impact will occur (i.e. local, county, national, international). In some cases an impact may not be significant at the geographic scale at which the ecological feature has been valued but may be significant at a lower geographical level. For example, a particular impact may not be considered likely to have a negative effect on the overall conservation status of a species which is considered to be internationally important. However, an impact may occur at a local level on this internationally important species. In this case, the impact on an internationally important species is considered to be significant at only a local, rather than an international level.

4.4. Baseline Ecological Environment

4.4.1. Designated Sites

European Sites

Special Areas of Conservation (SAC) are designated under the EC Habitats Directive (92/43/EEC) for the protection of habitats listed on Annex I and/or species listed on Annex II of the Directive. Special Protection Areas (SPAs) are designated under the Birds Directive (2009/147/EC) for the protection of bird species listed on Annex I of the Directive, regularly occurring populations of migratory species (such as ducks, geese or waders), and areas of international importance for migratory birds.

SACs and SPAs are offered additional protection under county development plans, as is the case for the *Meath County Development Plan 2021-2027* through Policy 32 on European sites which requires that planning authorities give due regard to their protection in planning policies and decisions (Meath County Council, 2021).The proposed development does not overlap with any European sites. The nearest European sites are Malahide Estuary SAC and Malahide Estuary SPA, located c. 12.6km and c. 12.7km east of the proposed development, respectively. The nearest surface water feature to the site, the Fairyhouse Stream is located c. 300m south of the proposed development. This stream flows c. 3.2km downstream in a south easterly direction, where it joins with the Broadmeadow River. The Broadmeadow River flows c. 11.3km downstream where it ultimately discharges into the Malahide Estuary, and subsequently, the European sites therein i.e., Malahide Estuary SAC and Malahide Estuary SPA.

Rogerstown Estuary SAC and Rogerstown Estuary SPA are the only other European sites within c. 15km of the proposed development site, located c. 13.1km and c. 14km east of the proposed development site.

Foul waters from the proposed development will join the public sewer and will be treated at the Ringsend WWTP prior to subsequent discharge to Dublin Bay. Therefore, there is an indirect hydrological link between the proposed development site and Dublin Bay, and the European sites within, i.e., South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA, and North Bull Island SPA. These European sites are considered to be within the potential zone of influence of the proposed development, as all of these sites are located downstream of the proposed development site within Dublin Bay.

There are no other European sites in the vicinity of the proposed development, or hydrological pathways to any other European sites, with all other European sites over 15km away.

The SAC and SPA sites in the vicinity of the proposed development, their distance from the proposed development and their qualifying interests/special conservation interests are presented in Appendix 4.2.

The locations of those SAC and SPA sites relative to the proposed development are illustrated on Figure 4.2 below:

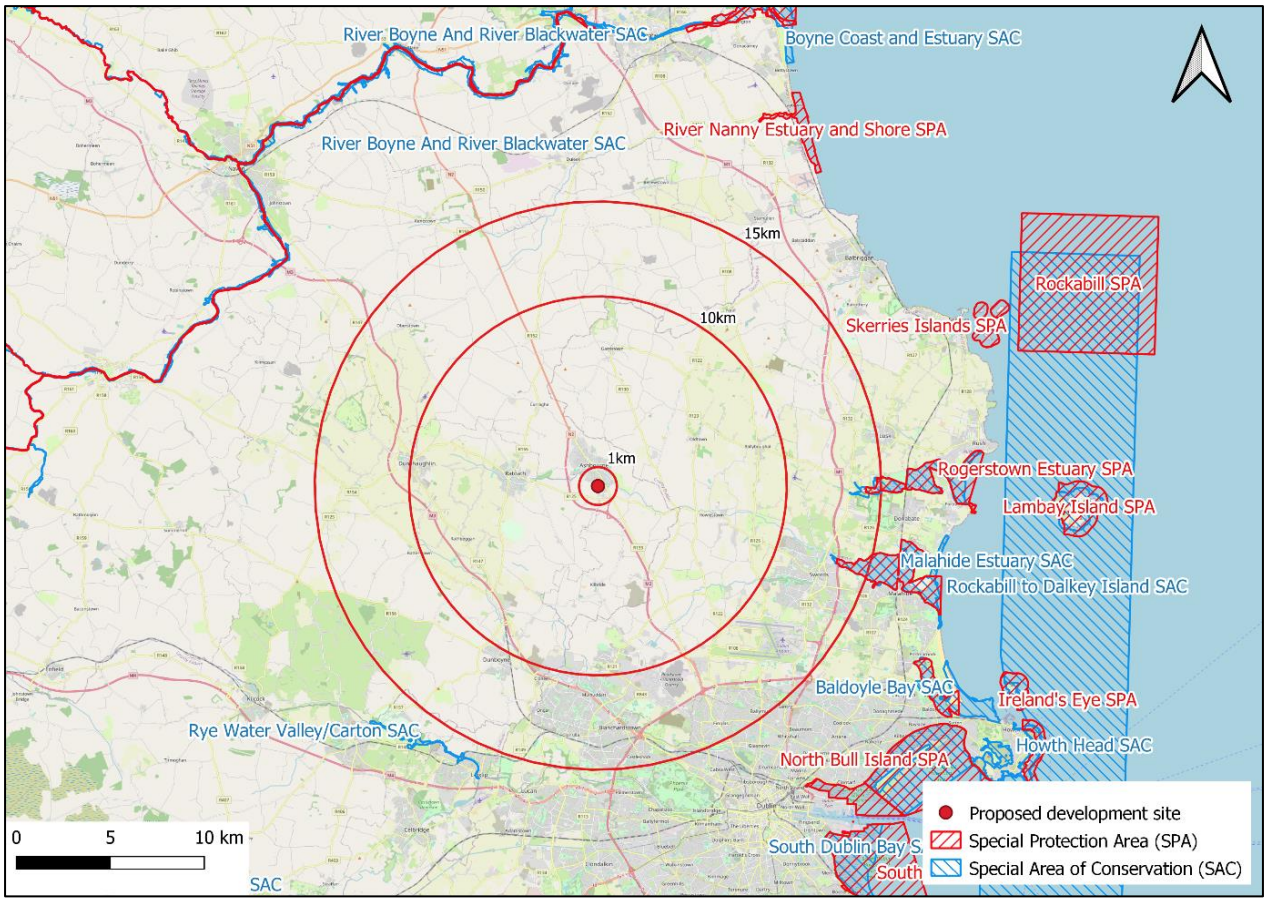


Figure 4.2. European sites in the vicinity of the proposed development.

Nationally Designated Sites

Natural Heritage Areas (NHAs) are designated under the Wildlife Acts to protect habitats, species or geology of national importance. In addition to NHAs there are proposed NHAs (referred to as pNHAs), which are also sites of significance for wildlife and habitats and were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated. Proposed NHAs are offered protection in the interim period under county or city development plans which requires that planning authorities give due regard to their protection in planning policies and decisions. Such is the case in the *Meath County Development Plan 2021-2027* through Policy 32 on Natural Heritage Areas which requires that planning authorities give due regard to their protection in planning policies and decisions (Meath County Council, 2021).

The proposed development does not overlap with any national sites. There are eight national sites within the vicinity of the proposed development, all of which are pNHAs. The nearest national site is Malahide Estuary pNHA, located *c.* 12.6km east of the proposed development. The nearest surface water feature to the site, the Fairyhouse Stream is located c. 300m south of the proposed development. This stream flows *c.* 3.2km downstream in a south easterly direction, where it joins with the Broadmeadow River. The Broadmeadow River flows c. 11.3km downstream where it ultimately discharges into the Malahide Estuary, and subsequently, the national sites therein *i.e.,* Malahide Estuary pNHA.

Foul waters from the proposed development will join the public sewer and will be treated at the Ringsend WWTP prior to subsequent discharge to Dublin Bay. Therefore, there is an indirect hydrological link between the proposed development site and Dublin Bay, and the National sites within, i.e., South Dublin Bay pNHA, and North Dublin Bay pNHA. These National sites are considered to be within the potential zone of influence of the proposed development, as all of these sites are located downstream of the proposed development site within Dublin Bay.

The pNHA sites in the vicinity of the proposed development, their distance from the proposed development and their qualifying interests/special conservation interests are presented in Appendix 4.1.

The locations of those pNHA sites relative to the proposed development are illustrated on Figure 4.3 below.

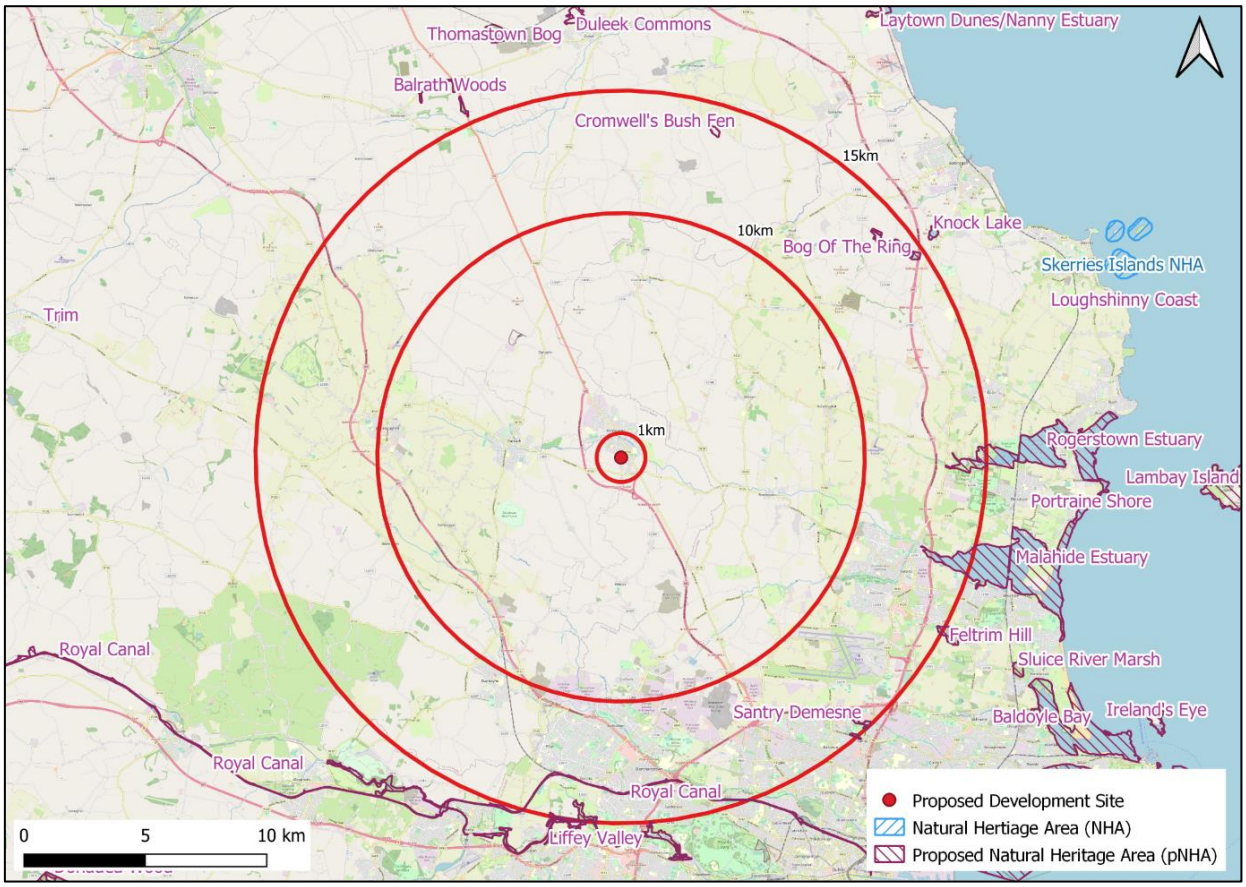


Figure 4.3. National sites in the vicinity of the proposed development.

4.4.2. Habitats Flora

No protected plant species contained within the Flora (Protection) Order, 2022, rare plant species contained within Ireland Red List No. 10 Vascular Plants (Wyse Jackson et al., 2016), or species listed on Irelands Red List No. 8: Bryophytes (Lockhart et al., 2012) were identified within the proposed development site during habitat surveys. There was one record of a species on the Red List No. 10 Vascular Plants, *Lamiastrum galeobdolon*, within *c.* 2km of the proposed development from a NBDC data search. This species is of Least Concern and was not identified within the proposed development site.

No non-native, invasive plant species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were recorded within the proposed development site, or were identified on an NBDC database search of records within c. 2km of the proposed development.

The following habitat types (and mosaics of these), assigned using the Heritage Council classification system[6], and their corresponding level of ecological importance was determined in accordance with CIEEM (2018) and NRA (2009) guidelines, were identified within the proposed development site and are mapped in Figure 4.4:

- Buildings and artificial surfaces (BL3)
- Improved agricultural grassland (GA1)
- Amenity grassland (improved) (GA2)
- Wet grassland (GS4)

- Hedgerows (WL1)
- Treelines (WL2)
- Scrub (WS1)

Figure 4.4. Habitats identified within the proposed development site.

Buildings and Artificial Surfaces (BL3)

Within the north eastern and south eastern parts of the proposed development site there are a total of eight buildings[16], and associated artificial surfaces, present. They are either sheds of agricultural nature and/or private living dwellings. Given the nature of this artificial habitat and the age of these structures, it is valued as being of a local importance (lower value).

[16] Six buildings are included in the planning application, however there are eight on site. This is as one of the outbuildings is exempt from planning (BB3) , and one of the houses (BB 6) is not included in the proposed development, and will not be demolished.

Plates 1 & 2 – Barn shed in the north east of the site (left) and residential (unoccupied) building in the north east of the site (right)

Improved Agricultural Grassland (GA1)

This habitat type is the dominant habitat type within the proposed development site, identified throughout the site. The fields are grazed by cattle resulting in poor quality habitat from frequent trampling. *Lolium perenne* and *Holcus lanatus* are the abundant grass species common throughout each field with *Ranunculus acris, Trifolium* repens and *Poa trivialis* being frequent. The other species either only occurring in the fields or are rare within this habitat type. These include *Jacobaea vulgaris, Plantago lanceolata, Trifolium pratense, Cerastium fontanum, Taraxacum agg., Rumex crispus, Rumex obtusifolius, Cirsium arvense, Potentilla anserina, Plantago major, Polyonum aviculare, Achilla millefolium, Dactylis glomerata, Rumex actosa, Cirsium vulgare, Arrhenatherum elatius, Rumex x pratensis*. Given the common and widespread species found within this habitat type, and managed nature, whether by grazing or cutting, this habitat is considered to be of local importance (lower value).

Plate 3. Example of GA1 habitat found throughout the site

Amenity Grassland (Improved) (GA2)

This habitat type is found within the garden of the house located south-east of the site, and only in a small portion of the proposed development. The garden is dominated by grass species as *Festuca rubra agg., Lolium perenne* and *Poa annua,* and contains forb species such as *Trifolium repens, Taraxacum agg., Bellis perennis, Ranunculus acris, Hypochaeris radicata* and *Rumex obtusifolius*. The space is filled by the dominant lawn moss *Rhytidiadelphus squarrosus*. Given the managed cutting nature and nurture by the homeowner, this habitat is considered to be of local importance (lower value).

Plate 4. Amenity grassland in the south east of the site

Hedgerows (WL1)/Treelines (WL2)

Mature hedgerows and a mosaic of hedgerow/treelines habitat intersect the proposed development site and segregate the GA1 fields from a mixture of north-south & east-west directions. This habitat is present as a well-established, mature hedgerows and treelines, with native and non-native both occurring. Species found include; C*rataegus monogyna, Rubus fructicosus, Fraxinus excelsior, Prunus avium, Picea sitchensis, Prunus spinosa* and *Salix cinerea subsp. oleifolia*. This habitat also has undergrowth species such as *Hedera helix, Urtica dioica, Rubus fruticosus agg., Ulex europaeus, Geranium robertianum, Veronica chamaedrys, Geum urbanum, Polystichum setiferum, Anthriscus sylvestris, Torilis japonica and Galium aparine*, providing extensive cover and shelter for local wildlife, as well as linear commuting corridors.

Due to the mature and good condition of the treelines present within the lands, and the corridors this habitat provides to the surrounding areas, this habitat is valued as being of a local importance (higher value).

Plate 5. Hedgerow/Treeline habitat bordering the fields within the site

Wet Grassland (GS4)

This habitat type is present in the south east of the proposed development, in a very small section adjacent to the boundary of the lands, where the grassland habitat has become inundated, waterlogged and poorly drained. This habitat is in poor quality due to frequent cattle poaching degrading the habitat. Species identified here include *Juncus effusus, Juncus articulates, Ranunculus repens, Potentilla anserina), Cardamine hirsute,* and *Persicaria maculosa.*

Due to the poor quality of this habitat, and common species found here, this habitat is valued as local importance (lower value).

Plate 6. Wet grassland habitat in the south east of the proposed development

Scrub (WS1)

Scrub habitat was present in the north east of the site, adjacent to the unoccupied dwelling (BB7) and disused stables (BB 8). Common species could be found here including; *Rubus fruticosus, Crataegus monogyna, Prunus spinosa, Sambucus nigra, Rosa canina, Urtica dioica*, and *Hedera helix*.

Due to the common nature of this habitat and the species found within, and is poorly developed in most areas, this habitat is valued as being of local importance (lower value).

4.4.3. Fauna

4.4.3.1. Terrestrial Fauna (Excluding bats)

Badger

Badger *Meles meles,* and their breeding and resting places, are protected under the Wildlife Acts. The NBDC data search returned two records of badger within c. 2km of the proposed development site, both from 2012, and identified on the R125, c. 500m south west of the site (Appendix 4.2).

No evidence of badger, such as setts, snuffle holes, latrines or hair, was identified within the proposed development site during field surveys carried out between 2020 and 2022. The treelines, hedgerows and drainage ditches provide ample opportunities for commuting, foraging and sett building, whilst the grassland provides good foraging and commuting habitat for badger. The lands are well connected to the surrounding landscape,

Due to their stable Irish populations, badger are considered to be of "Least concern" in terms of conservation (Nelson *et al.*, 2019). The local badger populations are valued to be of local importance (higher value), as there

is suitable habitat within the proposed development site and its vicinity, and from the NBDC desk study search records within *c.* 2km of the proposed development site.

Otter

Otter *Lutra lutra*, and their breeding and resting places, are protected under the Wildlife Acts. Otter are also listed on Annex II and Annex IV of the EU Habitats Directive and are afforded strict protection under the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011. The NBDC data search returned four records for otter within *c.* 2km of the proposed development, with the latest from 2016, c. 800m north west of the site, along the Broadmeadow River (Appendix 4.2.)

There are no surface water features within the proposed development site. A number of the fields are bordered by drainage ditches, which collect runoff and rainwater during periods of rainfall, and so water levels would fluctuate throughout the year. These ditches are not connected to any nearby surface water features, but likely drain underground and ultimately flow into the Fairyhouse Stream, located *c.* 300m south of the proposed development site. These drainage ditches are unsuitable for otter usage as they are periodically dry and hold no prey species for otter (*e.g.* fish, crayfish, eel). No evidence of otter was identified within the proposed development site, and as there is no suitable habitat for this species.

The nearest European site designated for otter is the River Boyne and River Blackwater SAC, located *c.* 21km north of the proposed development site. This European site is not hydrologically connected to the proposed development and therefore there will be no impact from the proposed development on the River Boyne and River Blackwater SAC otter population.

The proposed development does not have any suitable habitat for otter. Otters in nearby watercourses (i.e. Fairyhouse Stream, and Broadmeadow River), are of County Importance.

Other mammals

Red deer *Cervus elaphus* and hedgehog *Erinaceus europaeus* are protected under the Wildlife Acts. The NBDC database search identified one record of red deer within *c.* 2km of the proposed development, from 2008 located in the 10km grid square O04. 19 records of hedgehog were identified from an NBDC database search, with the closest record located in Alderbrook Heath, *c.* 30m north of the proposed development (Appendix 4.2).

No evidence or sightings of the aforementioned species, or any other species protected under the Wildlife Acts, was identified within the proposed development site. A fox scat was identified within the proposed development site during surveys in 2021.

Hedgehogs are found in a range of habitat types; however are predominantly present in habitats with a rich ground cover, and as such, the scrub and grassland habitats within the site are considered suitable for this species. Although not identified on site or in the NBDC database search, pygmy shrew, Irish stoat, and Irish hare have similar habitat preferences to hedgehogs. In addition, the dense hedgerows and drainage ditches present would also provide cover and commuting corridors for these species. Red deer are typically found in the uplands where they feed on heather and dwarf shrubs, they can also be found in lowland grassland and woodland habitats during harsh weather conditions[17].

All of the mammal species returned in the NBDC search or identified within the proposed development site are of "Least" conservation concern (Nelson *et al.,* 2019). They are widely distributed throughout Ireland. The habitats on site and in the surrounding environs are suitable for Irish hare, pygmy shrew, hedgehog, and Irish stoat, and as such the mammal species are therefore valued as being of local importance (higher value).

Non-native Invasive Mammals

The NBDC database search return records of two fauna species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 within c. 2km of the proposed development site, grey squirrel *Sciurus carolinensis* and sika deer *Cervus nippon.* Neither species were identified within the proposed development site during surveys.

[17] Red Deer, The Irish Deer Society. Accessed here: https://www.irishdeersociety.ie/red-deer/

Birds

All wild birds, and their nests and eggs, are protected under the Wildlife Acts. Some bird species are also listed on Annex I of the EU Birds Directive.

Table 4.5 on the pages over provides a summary of the findings of the breeding bird surveys with respect breeding status of each of the species identified.

Yellowhammer are red-listed (*i.e.* of high conservation concern) due to declines in breeding populations. This species was identified during two of the breeding bird surveys in May and June 2021 and was heard twice during the survey in May. Twenty-five records of yellowhammer within c. 2km of the proposed development were returned from an NBDC database search, with the most recent records from 2021 from the 'Birds of Ireland' database[18]. No nests were identified, however a singing male was herd on three occasions, and due to the abundance of suitable habitat in the site and the wider environs, this species is considered to be a potential breeder within the proposed development. Yellowhammers are typically found in cultivated agricultural fields where they can feed on cereal grain, and nest in ditch vegetation or at the base of thick hedgerows, close to the ground[19]. Field boundaries consisting of well-defined hedgerows and ditches are also important for this species. Whilst the habitats within the proposed development site are not used for crop cultivation, the lands directly west of the site are, and therefore the proposed development and surrounding environs provide ample opportunities for yellowhammer to utilise the habitats within for breeding and foraging.

There are a number of habitats within the proposed development site that are suitable for breeding birds to nest in, including trees, barns, hedgerows and scrub. The proposed development site is likely to encompass and/or form part of the breeding territories of a number of bird species recorded during the surveys. Breeding behaviour of the majority of species was observed within the proposed development site, predominately along or close to hedgerows and treelines. Starlings were observed nesting in the dilapidated barn in the north of the proposed development site. A pair of buzzards were observed soaring and calling above the western field in proposed development site. Whilst a nest was not identified, it is likely they are nesting nearby in the local area.

Although there were a number of buildings and barns within the site, there were no buildings suitable for barn owls, due to lack of potential nest places within the barns present i.e. a concave or level surface or cavity, that is elevated and well hidden. No evidence of barn owls was identified within the proposed development site, with the most recent NBDC database record within *c.* 2km of the proposed development returned from 2011.

Due to the widespread distribution of the birds encountered on site, and the presence of a number of amber-listed species, and one red-listed species, the abundance of suitable breeding habitat in the site and confirmed nesting species, the breeding birds within the proposed development site are considered to be of local importance (higher value).

Common name/Latin name	BoCCI	Breeding status
Blackbird /Turdus merula	Green-listed	Recorded in multiple places along all hedgerows and treelines within the site, particularly in the south eastern fields. Confirmed to breed within hedgerow and treeline habitats.
Blackcap / Sylvia atricapilla	Green-listed	Observed multiple times in a number of hedgerows/treelines in the central section of the site, confirmed to breed within the hedgerows and treeline habitats.
Blue tit / Cyanistes caeruleus	Green-listed	Observed in multiple locations in the central sections of the site, along the treelines and hedgerows. Nest observed in north of the site, and breeding

[18] Collated by the National Biodiversity Data Centre from different sources, Birds of Ireland, National Biodiversity Data Centre, Ireland, accessed 10 August 2022, <https://maps.biodiversityireland.ie/Dataset/155>

[19] Yellowhammer, Royal Society for the Protection of Birds. Accessed in August 2022 here: https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/helping-species/yellowhammer/

Common name/Latin name	BoCCI	Breeding status
		behaviours observed (breeding calls, alarm calls). Therefore, confirmed to breed within the hedgerows and treeline habitats.
Bullfinch / Pyrrhula pyrrhula	Green-listed	Male and females observed feeding together in the north of the site in hedgerow habitat. Likely to be breeding within or near the site.
Buzzard / Buteo buteo	Green-listed	A pair recorded along the southern boundaries of the site across all three surveys, with courtship behaviour observed. Likely breeding along southern treeline, or very close to site (no nest observed).
Coal tit / Periparus ater	Green-listed	Observed on the north eastern hedgerow/treelines of the site, possible breeder within this habitat type.
Collared dove / Streptopelia decaocto	Green-listed	Pair observed in the north western boundary of the site. Possible breeder within treeline/hedgerow habitat, or in lands adjacent.
Chaffinch / Fringilla coelebs	Green-listed	Observed in multiple locations throughout the site, with a pair seen entering a potential nest site. Possible breeder within treeline/hedgerow habitat.
Chiffchaff / Phylloscopus collybita	Green-listed	Observed in multiple locations along treelines/hedgerows within the site. Breeding/alarm calls heard, possible breeder within this habitat type in the site.
Dunnock / Prunella modularis	Green-listed	Observed in central section of the site, alarm/breeding calls heard. Possible breeder within the site in treeline/hedgerow habitat.
Goldcrest / Regulus regulus	Amber-listed	Observed in multiple locations along treelines/hedgerows within the site. Breeding/alarm calls heard, possible breeder within this habitat type in the site.
Goldfinch / Carduelis carduelis	Green-listed	Observed in central sections of the site flying over. Not confirmed breeding within the site.
Great tit / Parus major	Green-listed	Observed in low numbers in treelines/hedgerows within the site. Adult seen carrying food, confirmed breeder within the site.
Greenfinch / Chloris chloris	Amber-listed	One observation in the central area of the site. Singing male, possibly breeding within or near the site.
Grey heron / Ardea cinerea	Green-listed	One observation of a heron was recorded in the north of the site, flying over the site. Unlikely to be breeding or using the site.
Hooded crow / Corvus cornix	Green-listed	Observed in multiple areas of the site, flying over and also pairs recorded carrying food. Confirmed breeder within this treeline/hedgerow habitat in the proposed development site.
House sparrow / Passer domesticus	Amber-listed	Recorded in the north of the site, and observed entering nest site residential house in the north west. Possibly breeding within the proposed development, and confirmed breeding adjacent.
Jackdaw / Corvus monedula	Green-listed	Observed flying over the site on multiple occasions, did not land within the proposed development site. Not considered to be breeding within the site.
Lesser redpoll / Acanthis cabaret	Green-listed	Considered a possible breeder within the site. Observed during one survey in the north of the site within hedgerows.
Linnet / Carduelis cannabina	Amber-listed	Observed once flying over the northern most field, did not land within the site, and therefore not considered to be breeding within the site.
Long-tailed tit / Aegithalus caudatus	Green-listed	Observed in suitable nesting habitat (hedgerows/treelines), with male breeding calls heard. Possibly breeding within the site.

Table 4.5. Bird species identified during surveys of the proposed development.

Magpie / Pica pica	Green-listed	Considered to be breeding within the site, pair observed in suitable nesting habitat, and an adult was observed carrying food.
Mistle thrush / Turdus viscivorus	Green-listed	Considered to be possibly breeding within the site. Observed in the central area of the site in suitable nesting habitat (hedgerows/treelines).
Pheasant / Phasianus colchicus	Green-listed	Male bird observed during two surveys in the east of the site, considered a possible breeder within proposed development or in lands adjacent.
Robin / Erithacus rubecula	Green-listed	Observed in multiple areas of the site, flying over and also pairs recorded carrying food. Confirmed breeder within this treeline/hedgerow habitat in the proposed development site.
Rook / Corvus frugilegus	Green-listed	Observed flying over the site on multiple occasions, did not land within the proposed development site. Not considered to be breeding within the site.
Siskin / Carduelis spinus	Green-listed	Observed once in the south of the site in a treeline. Considered to be possibly breeding within the site.
Song thrush / Turdus philomelos	Green-listed	Observed in multiple areas of the site, in treeline/hedgerow habitat. Breeding behaviour also observed, including nest building, food carrying, and male breeding calls. Confirmed breeder within the site.
Sparrowhawk / Accipiter nisus	Green-listed	Observed flying over the site on two occasions. Not confirmed breeding within the site.
Starling / Sturnus vulgaris	Amber-listed	Observed in large numbers flying over and foraging within the site. Observed entering nest in the north of the site in the outbuilding, and in the south east of the site in the occupied residential building. Considered to be breeding within the site.
Swallow / Hirundo rustica	Amber-listed	Observed foraging over number of fields on multiple occasions. Seen carrying food and observed entering barn in the north of the site. Considered to be breeding within the site.
Treecreeper / Certhia familiaris	Green-listed	Observed twice in the central hedgerow/treeline. Singing male heard, considered to be possibly breeding within the site.
Willow warbler / Phylloscopus trochilus	Amber-listed	Heard singing from southern most hedgerow, possibly breeding within proposed development site.
wood pigeon / Columba palumbus	Green-listed	Observed within all hedgerows/treelines bordering fields, including central hedgerow, on multiple occasions. Confirmed breeding within proposed development site.
Wren / Troglodytes troglodytes	Green-listed	Observed singing and calling in multiple locations within hedgerows bordering site. Confirmed to be breeding within proposed development.
Yellowhammer / Emberiza citrinella	Red-listed	Male heard singing on three occasions in the central section and southern most hedgerow/treeline. Considered to be a potential breeder in the site.

Table 4.5. Bird species identified during surveys of the proposed development (Continued).

Wintering birds

The desk study records from the NBDC database search include 20 species of wintering waterfowl, gull and wader species within *c.* 2km of the proposed development site. These records are present in Appendix 4.2.

Table 4.6 over provides a summary of the findings of the winter bird surveys with respect to those species which are of highest conservation concern, and were recorded within winter bird survey sites:

- Special Conservation Interests (SCIs), for a wintering population, of nearby SPAs
- Species listed under Annex I of the Birds Directive (2008/144/EC)
- Red, Amber and Green BoCCI species listed for their wintering populations

Common name/Latin name/BoCCI Code	Distribution in the study area	Peak count/Site/Date	Conservation Importance		
			BoCCI (Breeding)	Annex I	SCI
Herring gull *Larus argentatus* (HG)	Observed flying over multiple areas of the site during three visits. Identified foraging in northern field in 2022	4 birds observed in March 2022 in north eastern field	Amber (B/W)	-	✓
Snipe *Gallinago gallinago* (SN)	Observed in the southern most field in wet grassland habitat during survey in 2022	1 birds during March 2022 visit.	Red (B/W)	-	-
Mallard *Anas platyrhynchos* (MA)	Observed in the wet grassland habitat in the south of the site during one survey, and observed flying over the central fields of the site in an easterly direction in 2021. Not observed in 2022	3 birds, in the central fields during one visit in 2021	Amber (B/W)	-	-
Redwing (RE)	Observed flying in the central fields during one survey in 2021. Not observed again	10 birds in February visit 2021	Green (W)	-	-

Table 4.6. Details of wintering bird species found within the proposed development site.

During wintering bird surveys carried out in February and March 2021 and March 2022, one SCI species from nearby European sites were identified within the lands, herring gull, an SCI species of Ireland's Eye SPA located c. 23km south east of the proposed development. This species was identified flying over the site on numerous occasions, and observed foraging in one of the fields in 2022. Due to the distance between the proposed development site and this European site (i.e. over 20km), it is unlikely that the herring gull SCI population use the proposed development as foraging grounds, particularly given the low numbers observed and on only one occasion.

There is no suitable habitat for light-bellied Brent goose *Branta bernicla hrota*, greylag goose and/or other SCI wintering bird species such as waders onsite. Light-bellied Brent geese and wintering waders regularly use Dublin's amenity parks and sports grounds for foraging. The nearest known light-bellied Brent goose site is c. 14km south east the proposed development site at Broadmeadow/Seatown East Fields (Scott Cawley Ltd., 2017). Given that there is no suitable foraging habitat onsite, i.e., short sword grassland typically used as sports pitches, the proposed development site is unsuitable for light-bellied Brent goose, and/or other SCI wintering bird species that use similar habitat for foraging within County Dublin and surrounds. The proposed development is not on any known migrating routes of wintering bird species or located on any flight path for ex-situ SCI species.

The wet grassland habitat provides some suitable habitat for wading species such as snipe, which was identified in this habitat during surveys in 2022. There is limited habitat for waterfowl species however due to the lack of open waterbodies in the site.

The treelines and scrub offer suitable foraging habitat and shelter for smaller overwintering species such as passerines for example redwings *Turdus iliacus* and fieldfare *Turdus pilaris*, redwing was identified flying through the site during surveys in 2021.

Due to the presence of a small number of wintering bird species, and limited suitable habitat on site, the local wintering bird population are valued to be of local importance (higher value).

4.4.3.2. Amphibians and Reptiles

The Wildlife Acts provide protection to Ireland's only native reptile species, common lizard, Zootoca vivipara and two native amphibian species, common frog Rana temporaria and smooth newt Lissotriton vulgaris.

The NBDC data search returned records (within c. 2km) of the one amphibian species, with 10 records of common frog, the latest being from 2020.

The drainage ditches that separates the fields, may pool water during periods of heavy rain. The wet grassland habitat in the south of the site will also have fluctuating water levels, however it does remain wet for most of the year. These habitats would be suitable for breeding amphibians due to the presence of invertebrates and vegetation observed within the stagnant pools. The surrounding lands likely have similar features as the proposed development. Whilst these areas were not surveyed, it is likely that these areas are suitable for amphibians, and individuals could travel between the habitats within and beyond the proposed development site.

There were no records of common lizard in the NBDC database within c. 2km of the site. No individuals were observed at the time of the survey, and it is considered unlikely that reptiles are present within the site, as common lizard is typically associated with heath and coastal scrub habitat in Ireland. This species is therefore not considered further.

Local amphibian populations are of local importance (higher value), due to the presence of suitable habitat within the proposed development and in close proximity in the wider environs, and the local records of these species.

4.4.3.3. Bats

Bats, and their breeding and resting places, are protected under the Wildlife Acts. All bat species are also listed on Annex IV of the EU Habitats Directive (with the Lesser horseshoe bat also listed on Annex II) and are afforded strict protection under the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011. The NBDC database search returned records for the following bat species: brown long-eared bat *Plecotus auritus,* Leisler's bat *Nyctalus leisleri*, and Daubenton's bat *Myotis daubentonii.*

The review of records held by Bat Conservation Ireland returned 14 roosts within c. 10km of the proposed development site (Appendix 5.2). The closest roost to the site was a brown long-eared bat roost located c. 1.6km east of the proposed development, in Robertstown House. The next nearest roost record was located in Fingal, c. 4.6km east, with records of Leisler's, common pipistrelle, and soprano pipistrelle roosts in the building. The remaining records were all over 5km from the proposed development site. The roosts identified within 3km of the proposed development site are within the Core Sustenance Zone (CSZ) of Irish bat species , and therefore could use the proposed development site as foraging and commuting habitat.

There are eight buildings within the proposed development that were assessed for bat roosting features[20] (Figure 4.6). The buildings in the lands appear to generally be of mid-twentieth century origin. The buildings in the lands appear to generally be of mid-twentieth century origin. Their structure and condition of most are good, particularly the residential houses (i.e. BB 2, BB 6, BB 4, and BB7), whilst the barn buildings/outhouses are in slight disrepair, with BB 3 in very poor condition with the roof partially caved in. Buildings BB 2 in the south of the site has a hipped roof, whilst BB 4, BB 6, and BB 7 all have gabled roofs. Generally, buildings with pitched roofs (e.g. hipped or gabled) are more likely to provide roosting opportunities for roosting bats. All of the buildings have various small gaps and crevices between soffit boards, under tiles, and between the walls and joinery, creating crevices that small numbers of bats could use as potential roosting features. The barn sheds/outbuildings (i.e. BB 1, BB 3, BB 5 and BB 8), whilst in various forms of disrepair, do contain some potential roosting features, including; gaps between/in walls, dense ivy, between roofing felt and wooden joists. Most of the barns/sheds had open doors or windows, allowing easy access for bats to fly in and out of, for warm up flights and for roosting within. All of the buildings within the proposed development site are largely unlit, with the buildings in the north experiencing some light spill on their northern aspects from neighbouring properties and streetlights. The lack of illumination on the

[20] The planning documents list six buildings within the proposed development, as BB 3 is exempt from planning, and BB 6 is not included in the development and will not be demolished. However this building is within the ZoI of the development, and therefore was included in the ecology surveys and results.

buildings, and in the site in general, increases the likelihood of use by bats, as bats are light sensitive species and tend to avoid roosting or foraging in areas subject to artificial lights[21]. Details of the buildings surveyed internally and externally, and any bat evidence identified are provided in Table 4.7 below.

Building ID no.	Bat evidence identified	Roost	Suitability	Details of building, surrounding habitat and any bat evidence recorded
BB 1	No	No	Low	Shed with concrete block walls and corrugated metal gabled roof. Dense ivy on southern aspect. Surrounding landscape - pasture fields to the north, west, residential areas to the east and south, and well connected to surrounding landscape with treelines/hedgerows adjacent.
BB 2	No	No	Moderate	Adjacent to 1. Residential occupied bungalow, concrete tiled hipped roof. Surrounding landscape similar to 1.
BB 3	No	No	Low	Dilapidated, partially collapsed barn shed. Corrugated metal walls and roof. Very exposed, permanently open. Surrounding landscape – pasture fields to the west, south, and east, residential to the north. Well connected to the surrounding habitat via hedgerows/treelines.
BB 4	No	No	Moderate	Unoccupied residential house, bungalow, concrete tiled gabled roof with concrete walls. Surrounding landscape as in BB 3.
BB 5	No	No	Low	Farm shed with stone/stippling walls with corrugated roof. Exposed with open windows/doors. Surrounding landscape same as BB 3 and BB 4.
BB 6	No	No	Moderate	Unoccupied residential house, bungalow, concrete tiled gabled roof with concrete walls. Surrounding landscape same as in BB 3.
BB 7	No	Yes	Moderate	Unoccupied residential bungalow with gabled concrete tiled roof. South and west pasture fields, north and east are residential areas. Adjacent to main road into Ashbourne (R135).
BB 8	Yes, droppings within shed	No	Moderate	Disused stable barn, partly concrete walls and corrugated metal, corrugated metal roof. Partially exposed but stables have roof felting within. Surrounding landscape same as in BB 7.

Table 4.7. Description of buildings within the proposed development site.

[21] Roche, N., Aughney, T., Marnell, F. & Lundy, M. (2014). Irish Bats in the 21st Century. Bat Conservation Ireland, Cavan, Ireland.

Figure 4.5. Buildings assessed for bat roosting potential and trees with bat roosting potential within the proposed development

The habitat within the lands provides good commuting and foraging routes for bats using the wider environs and its level of suitability is valued moderate as per the Bat Conservation Trust (BCT) guidelines (Collins ed., 2016). The treelines and hedgerows along the field boundaries follow linear routes which are connected to mature treelines/hedgerows in the surrounding area, and the subject lands are largely unlit, with the northern and eastern boundary partially illuminated from streetlights and the nearby housing.

There was one bat roost identified in the proposed development; A single soprano pipistrelle bat was identified re-entering BB 7 in the northeast of the site during surveys carried out in August 2021. This bat was seen re-entering the roost at the apex of the gable end of the house, after swarming around the roost entry point for approximately 10 minutes. On subsequent visits in 2021 and 2022, no bats were identified entering/exiting the roost. There are nine trees with bat roost potential within the proposed development (Figure 4.5). All of these trees are Ash, of mature age and are well established. Eight trees are considered to have low potential for roosting bats, due to only a small number of PRFs recorded. One mature Ash is considered to have moderate potential due to larger cavities and a number of PRFs within. All trees were located on the proposed development boundaries. No evidence of bats was identified within any trees.

The bat activity surveys carried out within the lands in 2020, 2021 and 2022 recorded five bat species: common pipistrelle, soprano pipistrelle, brown long-eared bat, Leisler's bat, and Myotis species[22], foraging and/or commuting within the proposed development site (Figure 4.6). The most commonly recorded species was the common pipistrelle, followed by Leisler's bat. Leisler's bat were recorded mostly flying above 40 – 50m over the proposed development site, whilst all other species (soprano and common pipistrelle, brown long-eared bat, and

[22] Calls identified as belonging to species of the genus *Myotis* were recorded on automated detectors. Species of the genus *Myotis* which have been recorded in Ireland comprise Daubenton's bat *Myotis daubentonii*, whiskered bat *Myotis mystacinus*, Brandt's bat *Myotis brandtii* (vagrant), and Natterer's bat *Myotis nattereri*. These species tend to exhibit similar call sonograms, which are often very difficult to differentiate with any accuracy. For this reason, these species have been assigned to genus level only.

Myotis sp.) were using the linear features i.e., treelines and hedgerows, within the site to commute and forage along. The north western-most field had very little bat activity.

Due to the suitable commuting and/or foraging habitat within and surrounding the proposed development, the moderate levels of activity from common and widespread species (i.e. species of least concern), the presence of a bat roost within the site, the local bat populations are valued as being of local importance (higher value).

Figure 4.6. Bat species and locations of calls identified during bat activity surveys, and trees with potential roost features within the proposed development site.

4.4.4. Summary of Ecological Evaluation

Table 4.8 over summarises the ecological evaluation of all receptors taking into consideration legal protection, conservation status and local abundance, and identifies the Key Ecological Receptors (KERs). Species, habitats and features not qualifying as KERs are not subjected to impact assessment in line with current best practice of assessing the impacts on what are determined to be important ecological or biodiversity features: CIEEM and TII guidelines (CIEEM, 2018 and National Roads Authority, 2009).

Ecological Receptor	Ecological Valuation	KER?
Designated Sites		
Malahide Estuary SAC	International Importance	**Yes**
Rogerstown Estuary SAC	International Importance	**Yes**
Malahide Estuary SPA	International Importance	**Yes**
Rogerstown Estuary SPA	International Importance	**Yes**
All other SAC or SPA sites	International	No
Malahide Estuary pNHA	National Importance	**Yes**
Rogerstown Estuary pNHA	National Importance	**Yes**
All other NHA or pNHA sites	National Importance	No
Habitats		
Buildings and artificial surfaces (BL3)	Local importance (lower value)	No
Improved agricultural grassland (GA1)	Local importance (lower value)	No
Wet grassland (GS4)	Local importance (lower value)	No
Hedgerows (WL1)	Local importance (higher value)	**Yes**
Treelines (WL2)	Local importance (higher value)	**Yes**
Amenity grassland (GA2)	Local importance (lower value)	No
Scrub (WS1)	Local importance (lower value)	No
Fauna Species		
Badger	Local importance (higher value)	**Yes**
Otter	County importance	**Yes**
Other mammals	Local importance (higher value)	**Yes**
Birds	Local importance (higher value)	**Yes**
Wintering birds	Local importance (higher value)	**Yes**
Amphibians	Local importance (higher value)	**Yes**
Bats	Local importance (higher value)	**Yes**

Table 4.8. Summary of the ecological evaluation.

4.5. Characteristics of the Proposed Development

Arnub Ltd. & Aspect Homes (ADC) Ltd. intend to apply to An Bord Pleanála for permission for a strategic housing development, on a site of c. 20.04 hectares, located in townlands of Baltrasna and Milltown, in Ashbourne, County Meath. The application site is located to the west / south-west of the Dublin Road (R135), south-west of Cherry Lane, west of the existing dwellings at The Briars and Cherry Court, south of the existing dwellings at Alderbrook Heath, Alderbrook Downs & Alderbrook Rise, east / south-east of the existing dwellings at Tara Close & Tara Place, and north-west and south-west of Hickey's Lane.

The development will consist of the following:

(1) Demolition of all existing structures on the site, comprising 3 no. single storey dwellings & their associated outbuildings (Total demolition: c. 659m²).

(2) Construction of 702 no. residential dwellings comprised of: 420 no. 2 & 3 storey 2, 3, 4 & 5 bed houses, 38 no. 2 & 3 bed duplex units in 19 no. 3 storey buildings, 244 no. 1, 2 & 3 bed apartments in 20 no. buildings ranging in height from 3 to 6 storeys.

(3) The development also includes for the following non-residential uses: (i) 2 no. childcare facilities located in Blocks A and A1 (c.289m² & c. 384m² respectively), (ii) 4 no. retail units, comprised of: 2 no. units in Block A (c.106m² & c. 174m² respectively), 1 no. unit in Block A1 (c.191m²) & 1 no. unit in Block B1 (c.469m²), & 1 no. GP practice / medical use unit located in Block A1 (c.186m²).

(4) The development provides for a basement level car park located under Block A1, and 2 no. undercroft car parks located at the ground floor level of Blocks A & B1.

(5) The development provides for an area of c. 1 hectare reserved for a future school site and playing pitch at the western boundary of the site.

(6) Vehicular access to the development will be via 2 no. access points as follows: (i) from Cherry Lane, located off the Dublin Road (R135), in the north-east of the site and, (ii) from Hickey's Lane, located off the Dublin Road (R135), to the east of the site. The development includes for road upgrades / improvement works to both the existing Cherry Lane and Hickey's Lane and their junctions with the Dublin Road (R135). The development includes for 1 no. pedestrian / bicycle only access point located off the Dublin Road (R135), and also includes for pedestrian and cycle paths throughout the site.

(7) The development also provides for (i) all ancillary / associated site development works above and below ground, (ii) public open spaces, including hard & soft landscaping, play equipment & boundary treatments, (iii) communal open spaces, (iv) undercroft, basement & surface car parking, including for EV & mobility impaired car parking spaces (v) undercroft, basement & surface bicycle parking, including for external bicycle stores & visitor spaces (vi) bin storage, (vii) public lighting, (viii) signage (xi) plant (M&E) & utility services, including for 7 no. ESB sub-stations (x) green roofs, etc. all on an overall application site area of 20.04 hectares.

There is an existing 375mm surface water line located opposite Cherry Lane on the Dublin Road. The existing Fairyhouse Stream is located to the south of the subject site; it is proposed to discharge the outflow of the surface water drainage to this stream.

Surface water runoff from the site will be limited to greenfield runoff rates (Qbar) in accordance with the Greater Dublin Strategic Drainage Study (GDSDS). Storms up to the 30-year critical storm with an additional 20% allowance for climate change will be stored underground in attenuation systems such as Stormtech or similar approved. Storms up to the 100 year critical storm with an additional 20% allowance for climate change will be stored above ground in detention/infiltration basins.

Surface water discharge rates from the proposed surface water drainage network will be controlled by a vortex flow control device (Hydrobrake or equivalent) and associated underground geo-cellular attenuation systems (Stormtech or approved equivalent). Surface water discharge will also pass via a Class 1 separator (sized in accordance with permitted discharge from the site).

The proposed surface water drainage network will collect surface water runoff from the site via a piped network prior to discharging off site via the attenuation tank, flow control device and separator arrangement as noted above. Surface water runoff from the site's road network and roofs will be directed to the proposed pipe network via conventional road gullies while surface water runoff from driveways will be captured by permeable paving.

The design will include Sustainable Urban Drainage Systems (SuDS) which will be incorporated to reduce run-off volumes and improve run-off water quality. These features will be provided to cater for up to a 1-in-100 year rainfall

event and 20% climate change. It should be noted that these SuDS measures have not been taken into account in the subsequent analysis and are not in place for the protection of European sites.

A Flood Risk Assessment, prepared by DBFL sets out that the proposed development area is fully within Flood Zone C. This indicates a low risk of fluvial, pluvial, groundwater and coastal flooding (less than 0.1% AEP or 1 in 1000 chance of flooding in a given year). Therefore, any flood events will not cause flooding of the Proposed Masterplan, and the development will not affect the flood storage volume or increase flood risk elsewhere.

Foul water

The proposed development site has no existing foul loading as it is currently a greenfield site. According to the Infrastructure Design Report, there is an existing 225/300mm foul sewer which is located immediately to the west of the subject site in the Dublin Road.

The site has been divided in two areas for the purposes of foul drainage management. The northern half of the site will discharge via gravity to an existing foul manhole in the Dublin Road via Cherry Lane. The units in the southern portion of the site will discharge to an existing foul sewer located in Hickeys Lane. All connections are to be agreed with Irish Water prior to commencement.

The Infrastructure Design Report for the proposed SHD estimated a foul peak flow of 21.72 l/s (for 702 no. residential units). Therefore, the total 760 no. residential units would generate a peak flow of 23.57 l/s. The foul water from the proposed development eventually discharges to the Ringsend WasteWater Treatment Plant (WWTP) which in turn discharges into Dublin Bay.

4.6. Potential Impact of the Proposed Development

4.6.1. Construction Stage

4.6.1.1. Potential Impacts on Designated Sites during Construction

<u>European Sites</u>

This section describes and assesses the potential for the proposed development to result in likely significant effects on European sites that lie within the ZoI of the proposed development. In the context of European sites this is focussed on the habitats and species for which the sites are selected (QIs for SACs and SCIs for SPAs) and the conservation objectives supporting their conservation status in each site. This assessment is directly related to the assessment methodology for European sites required under the Habitats Directive, which is presented in the Appropriate Assessment Screening Report for the proposed development that accompanies this application.

The assessment presented in the Appropriate Assessment Screening Report concluded that the potential impacts associated with the proposed development do not have the potential to affect the receiving environment and, consequently, do not have the potential to affect the conservation objectives supporting the qualifying interests or special conservation interests of any European sites; either alone or in combination with any other plans or projects.

As the proposed development does not traverse any European sites there is no potential for habitat fragmentation to occur.

The proposed development site does not support populations of any fauna species linked with the QI/SCI populations of any European site(s).

The nearest European sites are Malahide Estuary SAC and Malahide Estuary SPA, located c. 12.6km and c. 12.7km east of the proposed development, respectively. Malahide Estuary SAC is designated for its intertidal and estuarine habitats, whilst the SPA is designated for its wintering bird populations.

A potential indirect source-pathway-receptor link through hydrological means has identified connectivity via the surface water and foul water networks from the proposed development site and the Malahide Estuary and Dublin Bay European sites. There are no other European sites hydrologically connected to the proposed development.

However, effects on European sites in the Malahide Estuary and Dublin Bay have been excluded for the following reasons, which are discussed in more detail in the AA Screening report (Scott Cawley, 2022):

- Results of the CSM carried out by AWN[23] and which inform the AA screening report, indicate that surface run-off from the proposed development, during both construction and operational phases respectively, will not result in any perceptible impact on water quality in downstream receiving waters in Malahide Estuary (and thus in the European sites therein).
- The AWN report also concludes that the cumulative or in-combination effects of effluent arising from the proposed development with that of other developments discharging to Ringsend WWTP will not be significant having regard to the size of the calculated discharge from the proposal.
- Considering the above, particularly the current unpolluted status of Dublin Bay, and that foul water discharges from the proposed development would equate to a very small percentage of the overall discharge volumes sent to Ringsend WWTP[24] for treatment, it is concluded that the proposed development will not impact on the overall water quality status of Dublin Bay.

Considering these, the following conclusions can be made:

- The effects of an accidental pollution event occurring the construction phase of the proposed development is considered not to be significant;
- Any accidental pollution event is likely to be short in duration (i.e. confined to storm events) and would only occur during the construction phase which is estimated to continue for five years, limiting the magnitude and extent of effects; and,
- The distance between the proposed development outfall of surface water runoff and the nearest European site in Malahide Estuary (c. 15km), means that sediments or pollutants from the proposed development will not result in any discernible effects on European sites in Malahide Estuary.

Due to the reasons above and discussed by AWN in the Hydrological and Hydrogeological Qualitative Risk Assessment, there are no hydrological or hydrogeological risks associated with the construction stage of the proposed development, and therefore there are no European sites at risk of habitat degradation.

There are no species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 on the proposed development site. The proposed development site is hydrologically connected to European sites in Malahide Estuary and Dublin Bay, however, due to the absence of Third Schedule non-native invasive species within the proposed development site, there is no risk of non-native invasive species spreading from the proposed development site to any European site.

Construction-related disturbance and displacement of fauna species could potentially occur within the vicinity of the proposed development. For mammal species such as otter, disturbance effects would not be expected to extend beyond 150m. For birds, disturbance effects would not be expected to extend beyond a distance of c. 300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance. There are no European sites within the disturbance ZoI; the next nearest European site to the proposed development is c. 12.6km away.

There are no habitat areas within the disturbance ZoI of the proposed development that support populations of qualifying/special conservation interest species of any European site. The nearest SAC designated for otter is the River Boyne and River Blackwater SAC, c. 20km north west of the proposed development. There are no hydrological connections between this European site and the proposed development. Therefore, as the proposed

[23] *Hydrological & Hydrogeological Qualitative Risk Assessment for Proposed Masterplan and SHD in lands at Milltown, Ashbourne, Co. Meath.* Awn Consulting, August 2022.

[24] The plant has received planning (2019) and will be upgraded with increased treatment capacity over the next five years. The peak foul discharge calculated for the proposed amendment is well within the capacity of the WWTP. Even without treatment at the Ringsend WWTP, the peak effluent discharge, calculated for the proposed amendment as 19.27 litres/sec (which would equate to 0.174% of the licensed discharge at Ringsend WWTP [peak hydraulic capacity]), would not impact on the overall water quality within Dublin Bay and therefore would not have an impact on the current Water Body Status (as defined within the Water Framework Directive).

development will not result in the disturbance/displacement of the qualifying/special conservation interest species of any European site, there is no potential for any in combination effects to occur in that regard.

National Sites

In the case of NHAs and pNHAs the assessment considers whether the integrity of any such site would be affected by the proposed development with reference to the ecological features for which the site is designated or is proposed.

The proposed development does not overlap with any nationally designated sites and it is not located in their immediate vicinity. The nearest national site is Malahide Estuary pNHA, located c. 12.6km south east of the proposed development. This national site is designated for its marine habitats and wintering bird species.

As the proposed development does not traverse any nationally designated sites there is no potential for habitat fragmentation or loss to occur.

A potential source-pathway-receptor link through hydrological means has identified connectivity via the surface water and foul water networks from the proposed development site and Malahide Estuary and Dublin Bay national sites. There are no other national sites hydrologically connected to the proposed development. However, effects on national sites in Malahide Estuary and Dublin Bay, have been excluded for the following reasons, which are discussed in more detail in the AA Screening report in relation to European sites in Malahide Estuary and Dublin Bay which overlap with national sites (Scott Cawley, 2022):

- Results of the CSM carried out by AWN[23] and which inform the AA screening report, indicate that surface run-off from the proposed development, during both construction and operational phases respectively, will not result in any perceptible impact on water quality in downstream receiving waters in Malahide Estuary (and thus in the national sites therein).
- The AWN report also concludes that the cumulative or in-combination effects of effluent arising from the proposed development with that of other developments discharging to Ringsend WWTP will not be significant having regard to the size of the calculated discharge from the proposal.
- Considering the above, particularly the current unpolluted status of Dublin Bay, and that foul water discharges from the proposed development would equate to a very small percentage of the overall discharge volumes sent to Ringsend WWTP for treatment, it is concluded that the proposed development will not impact on the overall water quality status of Dublin Bay.

Considering these, the following conclusions can be made:

- The likelihood of an accidental pollution event occurring during the construction phase of the proposed development is considered to be very low;
- Any accidental pollution event is likely to be short in duration (i.e. confined to storm events) and would only occur during the construction phase which is estimated to continue for five years, limiting the magnitude and extent of effects; and,
- The distance between the proposed development outfall of surface water runoff and the nearest national site in Malahide Estuary (c. 15km), means that sediments or pollutants from the proposed development will not result in any discernible effects on national sites in Malahide Estuary pNHA.

Due to the above reasons, there are no hydrological or hydrogeological construction risks associated with the proposed development, and therefore there are no nationally designated sites at risk of habitat degradation.

There are no species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 on the proposed development site. The proposed development site is hydrologically connected to nationally designated sites in Malahide Estuary and Dublin Bay, however, due to the absence of Third Schedule non-native invasive species within the proposed development site, there is no risk of non-native invasive species spreading from the proposed development site to any nationally designated site.

Construction-related disturbance and displacement of fauna species could potentially occur within the vicinity of the proposed development. For mammal species such as otter, disturbance effects would not be expected to extend beyond 150m. For birds, disturbance effects would not be expected to extend beyond a distance of c. 300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance. There are no nationally designated sites within the disturbance ZoI; the nearest national site to the proposed development designated for wildfowl species is the Malahide Estuary pNHA, located c. 12.6km east of the proposed development, and therefore beyond the ZoI for disturbance related impacted from the proposed development on bird species associated with this national site.

4.6.1.2. Potential Impacts on Habitats and Flora during the Construction Stage

Habitat Loss

Construction of the proposed development will result in the loss of habitat area; totalling approximately 19ha. None of the habitats directly affected by the proposed development are considered to be any greater than of local biodiversity importance (higher value). The majority of the habitats within the proposed development boundary are of local biodiversity importance (lower value) and predominantly comprised of improved agricultural grassland, amenity grassland, wet grassland, and scrub (c. 16.8ha), but also include buildings and artificial surfaces (c. 0.4ha). As these habitats are of local biodiversity importance (lower value), their loss or modification will not result in a likely significant effect on biodiversity.

The habitat types within the proposed development boundary, and the area of each, that are considered to be of a higher local biodiversity value and will be lost are the hedgerows (WL1) and treelines (WL2) - The linear length of hedgerow being lost is 1859m, and 69 trees.

There will be a loss of treelines and hedgerows within the proposed development, as these habitats will be directly impacted by construction activities. The areas that will be lost are relatively small in the context of the site and the wider environs, however these habitats do provide good connectivity to the wider environment for a multitude of fauna. There are 12 'Category U' trees (Those trees in such a condition that any existing value would be lost within 10 years), 23 'Category C' trees (trees of low quality and value), 33 'Category B' trees (trees of moderate quality and value), and one 'Category A' tree (trees of high quality/value) being removed[25]. 1859m of hedgerow habitat will be removed, this encompasses c. 49.7% of the total hedgerow habitat within the site. The hedgerows on the peripheries of the site are largely being retained, whilst along the central hedgerows there will be some removal, particularly in the north of the site. The existing mature trees located along the site boundaries will be largely retained and enhanced with additional native hedgerow/tree planting. The main habitat being lost within the site is improved agricultural grassland. This has limited ecological value, and is a common habitat found in the wider environment. The drainage ditches within the site, will be piped and filled in with stone, and finished with soil to incorporate them into the landscaped development.

The proposed development will result in the loss of treelines, and hedgerows habitat, both of which are valued at higher local biodiversity value. Considering the length of hedgerow being removed, the number of trees requiring felling, and the benefits these habitats provide to local fauna, this is likely to result in a significant negative effect, at the local geographic scale.

Introducing or spreading non-native invasive plant species

Planting, dispersing, or allowing/causing the dispersal, spread or growth of certain non-native plant species is controlled under Article 49 of the European Communities (Birds and Natural Habitats) Regulations, 2011; and refers to plant or animal species listed on the Third Schedule of those regulations. There were no non-invasive species as listed on the Third Schedule identified within the site, or any sensitive habitats within or adjacent to the

[25] *An Arboricultural Assessment of the Tree Vegetation on Lands at Baltrasna and Milltown, Ashbourne, Co. Meath.* Arborists Associates Ltd. August 2022

site. As such, the introduction or spread of invasive species to the site and the local environs, including within watercourses, is not likely to result in a significant negative effect, at any geographical scale.

Habitat degradation from dust generated during construction

The proposed development has the potential to generate dust during construction works which could affect vegetation in habitat areas within and adjacent to the proposed development boundary. This has the potential to affect highly sensitive and ecologically important habitat areas (e.g. designated area for nature conservation or areas of Annex I habitat), however no such designations or Annex I habitats have been identified within close proximity of the proposed development that could potentially be impacted by dust arising from the construction works. As such dust impacts could result in a likely significant negative effect, at a local geographic scale only.

An Accidental Pollution Event Affecting Surface Water Quality in the Receiving Environment

During construction, contaminated surface water runoff and/or an accidental spillage or pollution event into any surface water feature has the potential to have a significant negative impact on water quality and consequently affect aquatic and wetland habitats in the local receiving environment.

It is considered unlikely that a pollution event of such a magnitude would occur during construction or be any more than temporary in nature, and as concluded in the AWN report, such event would not be significant should it occur. Nevertheless, a precautionary approach is being taken in assuming a level of risk of water quality impacts. Consequently, detailed mitigation measures are required to further minimise the risk of the proposed development having any perceptible effect on water quality.

Habitat degradation as a consequence of effects on surface water quality has the potential to affect the conservation status of aquatic, wetland or estuarine/marine habitats and therefore, has the potential to result in a significant negative effect at a local geographic scale.

4.6.1.3. Potential Impacts on Fauna During Construction Stage

Potential Impacts from Habitat loss

Badger

Badgers, and their breeding and resting places, are protected under the Wildlife Acts. Due to their stable Irish populations, they are considered to be of "Least concern" in terms of conservation (Nelson *et al.*, 2019). The proposed development site has the potential to be used by badger due to suitable habitat for foraging and sett building, however no evidence of this species was identified during field surveys carried out within the lands. During the construction stage of the development, badgers could be impacted by the removal of foraging areas and feeding resource available. However, the overall loss of habitat is small and not significant at any scale, considering the typical badger territory size of more than 60ha in Ireland (Hayden and Harrington, 2000), and the abundance of available suitable habitat surrounding the proposed development site. Although the actual effect of foraging habitat loss cannot be quantified in terms of any threshold value that could be predicted, any affected badger groups would be expected to adapt to the changed landscape. It is therefore predicted that, despite any temporary effects, the loss of foraging habitat associated with the proposed development is unlikely to affect the conservation status of the local badger population and will not result in a likely significant negative effect, at any geographic scale.

Other mammals

The proposed development site has the potential to be used by hedgehogs, pygmy shrews, Irish hare, and Irish stoat due to suitable habitat for foraging and breeding and the presence of these species from the local area from the findings of the desktop review. The construction stage of the development will reduce the amount of semi-

natural habitat available for foraging in this area for small mammals, however, the overall loss of habitat is small and not significant at any scale, considering that the peripheries of the site will largely be retained and still provide commuting and/or foraging habitat for these species, and the abundance of available suitable habitat surrounding the proposed development site for all of the aforementioned species. The proposed development will result in fragmentation of habitat during construction, which is important for mammal species to move between to find foraging and/or breeding opportunities.

Given the relatively low numbers of individuals of each species that are likely to be affected, and that they are highly mobile species, vegetation clearance is unlikely to result in a level of mortality that would affect the species' conservation status, and result in a significant negative effect, even at a local geographic scale.

Birds

In the absence of mitigation to protect birds and their nests, there is potential for direct impacts on breeding birds due to loss of suitable breeding bird habitat and/or the risk of direct mortality and injury to birds, which may arise from the clearance of vegetation within the proposed development site. This potential impact would be most likely to arise if clearance works are undertaken during the time of year when birds are likely to be nesting (*i.e.* 1st March to 31st August, inclusive).

With the exception of treelines, hedgerows and scrub, the habitats in the lands are of low suitability for nesting bird species. Species that commonly nest in grassland vegetation were not encountered during surveys of the lands in 2020, 2021, or 2022. The bird species recorded at the proposed development site during surveys include those that are commonly found in suburban and urban habitats (*e.g.* blackbird, hooded crow, robin and wren). These habitats include hedgerows, treelines and scrub, which can be found in the wider surrounding area. There will also be removal of the farm sheds within the proposed development site, starlings were observed nesting in BB3, and all of the barns have the potential to support breeding bird populations such as barn swallows and house martins.

The primary consequence of habitat loss will be increased competition for resources (*e.g.* nesting habitat and/or prey/food source) both between and amongst breeding bird species. The magnitude of this effect will be largely defined by many unquantifiable factors such future land use changes and whether the local habitat resource has currently reached its carrying capacity or not in terms of breeding bird species. For species with larger home ranges during the breeding season (*i.e.* buzzard) habitat loss at the scale of the proposed development is not likely to have any perceptible effects on breeding success or population dynamics.

The habitat areas that will be lost as a result of the proposed development form a relatively small part of larger expanses of similar habitat types and mosaics in the wider locality. The proposed development is connected to agricultural lands of the same land uses within the proposed site. The hedgerows and treelines that demarcate these boundaries would be important breeding sites for local bird species, including red-listed yellowhammer. None of the habitat areas to be lost are unique to the locality and, either individually or collectively, are not likely to support a significant proportion, or the only population, of any given breeding bird species locally. Although a temporary decline in overall breeding bird abundance could potentially occur at a local level (*i.e.* the footprint of the proposed development), this is unlikely to affect the local range of the breeding bird species present nor is it likely to affect the ability of these breeding bird populations to maintain their local populations in the long-term.

Under the Wildlife Acts, it is an offence to disturb birds while on their nests, or to wilfully take, remove, destroy, injure or mutilate their eggs or nests. Mitigation measures have been provided to ensure adherence to the Wildlife Acts.

Bats

All bat species and their roost sites are strictly protected under both European and Irish legislation including: -

- Wildlife Act 1976 and Wildlife (Amendment) Act, 2000 (S.I. No. 38 of 2000)
- Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna 1992 (Council Directive 92/43/EEC)
- European Communities (Birds and Natural Habitats) Regulations, 2011

It is an offence under Section 23 of the Wildlife Acts 1976-2017 and under Section 51 of the European Communities (Birds and Natural Habitats) Regulations, 2011 to kill a bat or to damage or destroy the breeding or resting place of any bat species. Under the European Communities (Birds and Natural Habitats) Regulations it is not necessary that the action should be deliberate for on offence to occur. This places an onus of due diligence on anyone proposing to carry out works that might result in such damage or destruction. Under Section 54 of S.I. 477 of 2011, a derogation may be granted by the Minister where there is no satisfactory alternative, and the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range.

The proposed development will affect a small soprano pipistrelle bat roost in BB 7. This roost was only identified once during surveys in 2021, highlighting the transient and mobile bat species are. This roost is small, and significant at a local scale only; therefore, the loss of this roost would result in a likely significant effect at a local scale only.

This roost comes under the footprint of the proposed development, and as mentioned previously, bats are protected by law in Ireland, and it is considered to be appropriate to undertake all reasonable measures to avoid mortality of bats during proposed works. In the absence of any mitigation, the potential effects of roost loss on soprano pipistrelle bat would be significant, although in light of the small number of bats roosting in the building, the scale of impact would be at the local level only. Potential impacts of loss of this roost would not have an impact on the conservation status for this species as they are widespread in the area, and across Ireland, and are a species listed as 'Least Concern'.

There are trees and buildings on site with potential roost features, which could be occupied at the time of site clearance, and therefore could result in the potential for bats to be injured or killed. All the bats recorded using the site are common species in Ireland that are classified as being of "least concern" in the Ireland Red List No. 3: Terrestrial Mammals (Marnell et al., 2019). The trees and buildings within the proposed development site that have low potential for roosting bats, are not considered to be significant in size and are unlikely to hold enough space for them to be maternity or hibernation roosts. The effects of loss of these low potential roost sites on bats are not considered to be significant at any geographic scale for these reasons. The tree and buildings that have moderate potential for roosting bats, do have the potential to hold larger groups of bats, including for breeding or hibernation. The effects of loss of these moderate potential roost rites on bats is considered to be significant at the local level only. The buildings are also deemed for removal, and so mitigation measures are provided below for buildings with confirmed roosts, and for buildings with the potential for roosts, should the roosting features become occupied by bats prior to the commencement of works.

The proposed development will include the removal of bat foraging habitat, *i.e.* the treelines, and hedgerows in the central section of the site. With regards to the loss of foraging habitat, majority of the treelines along the boundaries are to be retained within the design of the scheme and will therefore continue to provide foraging opportunities for bats. The effects of loss of foraging habitats on bats are considered to be temporary until planted vegetation can be developed, and significant at a local geographic scale, due to the level of activity identified on site, and the commuting and/foraging corridors the habitats within the site provide to local bats.

Potential Impacts Arising from Disturbance, Displacement and/or Mortality

Badger

While the proposed development will result in increased human presence on site, the potential effects on badgers in terms of disturbance are not significant in this instance. This is because, the proposed construction works are limited in terms of scale, and as works will largely be confined to daylight hours, when badgers are least likely to forage within the proposed development site, and there was no evidence identified within the proposed development of this species. Even in the event that the construction phase of the proposal coincides with construction of other projects in the immediate vicinity, there will be no significant disturbance or displacement effects on badgers. Badgers are widespread in Ireland and found in close proximity to human settlements, including in Dublin City, and therefore are likely to adapt to changes in human activity levels in the proposed development site and surrounding area.

Other mammals

In conjunction with any displacement effects associated with habitat loss, increased human presence and/or noise and vibration associated with construction works, has the potential to displace small mammal species from both breeding/resting places and from foraging habitat. However, given the limited potential for the majority site to support small mammal species, and disturbance will be short-term, it is extremely unlikely to result in any long-term effects on the local small mammal population or their conservation status. Particularly considering the retention of a treelines and drainage ditches and the local abundance of alternative scrub and grassland habitat of a similar nature, immediately adjacent to the proposed development in the surrounding environment. Therefore, disturbance/displacement during construction is unlikely to result in a significant negative effect, at any geographic scale.

Birds

The noise, vibration, increased human presence and the visual deterrent of construction traffic, associated with site clearance and construction will temporarily disturb breeding bird species and is likely to displace breeding birds from habitat areas adjacent to the footprint of the proposed development. Construction activities will largely involve excavations of the land, construction of buildings, construction of pathways and new road layouts, landscaping, and demolition of buildings. The magnitude of the impact will be dependent on the type of construction works and their duration; The construction phase of the proposed development will be completed on a phased basis, over a period of 5 years.

Although it is not possible to definitively quantify the magnitude of this potential impact (or the potential effect zone) in a worst-case scenario it could potentially extend for several hundred metres from the proposed development. As such, the construction works have the potential to affect the conservation status of affected breeding bird species and will result in a likely short-term significant negative effect, at a local geographic scale.

Amphibians

Site clearance works have the potential to result in disturbance to, and the direct mortality of amphibians. Given the size of the suitable habitats within the site (drainage ditches and wet grassland), and the retention of same, the number of individuals that would potentially be at risk is considered to be very low and impacts on such individuals would be unlikely to affect the local populations in the long-term. However, common frog is protected under the Wildlife Acts and it is an offence to hunt, take or kill them, or wilfully to interfere with or destroy their breeding places. Mitigation measures have been provided to ensure adherence to the Wildlife Acts.

Bats

One soprano pipistrelle roost was identified in BB 7. No other bat roosts were found within any trees or buildings within the proposed development site; however, the buildings, farm sheds and nine trees within the site were deemed to have potential roost features. Due to the presence of a bat roost, potential bat roost features in all buildings, trees, and sheds, the removal of trees and buildings onsite to facilitate the construction of the proposed development has the potential to result in disturbance of bats or their roosts, or in a worst-case scenario, the mortality of bats that could be roosting in these features within the trees or structures. The disturbance or mortality of bat species in the absence of mitigation is considered to result in a likely significant effect, at a local scale only.

Disturbance/displacement effects may also arise from the introduction of artificial lighting during construction. However, some of the species recorded the most within the proposed development site (i.e. Leisler's bat, soprano pipistrelle and common pipistrelle) are some of the least sensitive species to artificial light spill. In addition, bats recorded using the proposed development site are widespread and common across Ireland and frequently utilise urban and sub-urban environments where they are regularly exposed to levels of noise from urban activities.

Myotis sp. and brown long-eared bats are sensitive to light and will generally avoid well-lit areas. However; the construction works will typically be undertaken during normal daylight working hours, and therefore the requirement for lighting to accommodate construction works during night time, in areas where existing light levels are low, will be limited and restricted to winter when sunrise/sunset is later/earlier. It is possible that temporary lighting may be required outside of normal working hours during the construction stage of the proposed development that may illuminate previously unlit feeding and/or commuting areas, e.g. areas away from treeline retention areas, making them unsuitable for bats. Any effects associated with artificial lighting during construction of the proposed development, are likely to be short-term (over the 5 year phased construction period) and confined to specific areas within the site. Nonetheless, temporary lighting effects associated with the construction of the proposed development on local bat species, is considered to be significant at the local geographic scale only.

Potential Impacts from Habitat degradation

Otter

During construction, contaminated surface water runoff and/or an accidental spillage or pollution event into any surface water feature has the potential to have a significant negative impact on water quality into the local surface water drainage network, and consequently an impact on otter; either directly (e.g. acute or sub-lethal toxicity from pollutants) or indirectly (e.g. affecting their food supply or supporting habitats).

An accidental pollution event affecting surface water quality during construction or operation has the potential to result in a likely significant negative effect on otters, at a county geographic scale.

However, it is considered unlikely that a pollution event of such a magnitude would occur during construction or operation or be any more than temporary in nature, and as concluded in the AWN report, would not be significant. Nevertheless, a precautionary approach is being taken in assuming a level of risk of water quality impacts and detailed mitigation measures are required to further minimise the risk of the proposed development having any perceptible effect on water quality in the local area.

Amphibians

During construction, contaminated surface water runoff and/or an accidental spillage or pollution event into any surface water feature has the potential to have a significant negative impact on water quality and consequently an impact on amphibian species; either directly (e.g. species coming into direct contact with pollutants) or indirectly (e.g. acute or sub-lethal toxicity from pollutants affecting their food supply or supporting habitats). The effects of frequent and/or prolonged pollution events in a waterbody have the potential to be extensive and far-reaching and could potentially have significant long-term effects.

However, it is considered unlikely that a pollution event of such a magnitude would occur during construction or be any more than temporary in nature. Nevertheless, a precautionary approach is being taken in assuming a level of risk of water quality impacts and detailed mitigation measures required to minimise the risk of the proposed development having any perceptible effect on water quality during construction.

Habitat degradation as a result of effects on surface water quality during construction has the potential to affect the species' conservation status and result in a likely significant negative effect, at a local geographic scale. Mitigation measures have been designed to protect water quality during construction (see measures below and Chapter 6 of the EIAR 'Water & Hydrology').

4.6.2. Operational Stage

4.6.2.1. Potential Impacts on Designated Sites during Operational Stage

European Sites

The assessment presented in the Appropriate Assessment Screening Report concluded that the potential impacts associated with the proposed development do not have the potential to affect the receiving environment and, consequently, do not have the potential to affect the conservation objectives supporting the qualifying interests or special conservation interests of any European sites; either alone or in combination with any other plans or projects.

Chapter 6 of the EIAR submitted with this application deals with the hydrology of the proposed development site, alongside a Hydrological and Hydrogeological Risk Assessment (AWN, 2022) for the site. The chapter and risk assessment assess the hydrological and hydrogeological risks associated with the proposed development. The assessments noted that based on the potential sources of pollution from the proposed development during construction and operation phases, there is no potential for impacts to occur on European sites in Malahide Estuary and Dublin Bay. This conclusion is based on a good understanding of the hydrological and hydrogeological environment, plausible sources of impact and knowledge of receptor requirements. This allows possible source-pathway-receptor linkages to be identified. Potential sources of impacts during construction and operation were considered in the assessments and all potential sources of contamination were considered in relation to European sites without taking account of any measures intended to avoid or reduce harmful effects of the proposed development (mitigation measures) i.e. a worst-case scenario.

The results of the assessments carried out by AWN indicate that surface and foul run-off from the proposed development, during both construction and operational phases respectively, will not result in any impact on water quality in downstream receiving waters in Malahide Estuary and Dublin Bay (and thus in the European sites therein) due to the very low contaminant loading and distance to the Natura sites. It is concluded that there are no pollutant linkages as a result of the construction or operation of the Proposed Development which could result in a water quality impact which could alter the habitat requirements of the Natura sites within Malahide Estuary and Dublin Bay (AWN, 2022).

Therefore, there is no possibility of the proposed development during operational stage undermining the conservation objectives of any of the qualifying interests or special conservation interests of the European sites in, or associated with, Malahide Estuary and Dublin Bay as a result of surface water run-off or discharges.

National Sites

Nationally designated sites would be subjected to the same potential impacts from operational stage described above with respect to potential impacts on European sites. In absence of mitigation, such potential impacts may result in a likely significant effect at the national geographic scale.

There is a hydrological connection between the proposed development site and the nearest nationally designated site, Malahide Estuary pNHA, and a foul water hydrological connection to National Sites in Dublin Bay, however, the Hydrological and Hydrogeological Risk Assessment (AWN, 2022) has concluded that there is no possibility for potential impacts to occur via this hydrological connection.

4.6.2.2. Potential Impacts on Habitats and Flora during Operational Stage

The habitats within the proposed development will be removed, retained or replaced during the construction stage, prior to operation of the proposed development. The primary remaining sensitive habitats located within the proposed development site are the hedgerows and treelines that are largely to be retained along the boundaries of the site. No further impacts on these habitats and flora are expected during the operational stage of the proposed development, with the exception of a likely increase in footfall and human traffic within these habitats.

Despite this, the proposed development in operation will not result in a significant negative effect on habitats within the proposed development site at any geographical scale.

4.6.2.3. Potential Impacts Fauna during Operational Stage

Badger

The proposed development site has the potential to be used by badger due to suitable habitat for foraging and sett building, however no evidence of this species was identified during field surveys carried out within the lands. The conversion of the lands to buildings and artificial surfaces, with associated planting and other landscaping elements, will reduce the amount of semi-natural habitat available for foraging in this area for badgers; however, the overall loss of habitat is small and not significant at any scale, considering the typical badger territory size of more than 60ha in Ireland (Hayden and Harrington, 2000), and the abundance of available suitable habitat surrounding the proposed development site. Periphery commuting corridors will also be maintained and will be available to badger as wildlife corridors in the long-term. The landscaping plans also include a 'green spine', comprising of existing retained hedgerows and treelines, and additional planting with native understory shrubs and grassland planting, which will link the lands north – south and east-west, and to the wider environment.

Other mammals

The proposed development site has the potential to be used by hedgehogs, pygmy shrews, Irish hare, and Irish stoat due to suitable habitat for foraging and breeding and the presence of these species from the local area from the findings of the desktop review. The conversion of the lands to buildings and artificial surfaces, with associated planting and other landscaping elements, will reduce the amount of semi-natural habitat available for foraging in this area for small mammals; however, the overall loss of habitat is small and not significant at any scale, considering that the peripheries of the site will be retained and still provide commuting and/or foraging habitat for these species, and the abundance of available suitable habitat surrounding the proposed development site for all of the aforementioned species. The landscaping plans also include a 'green spine', comprising of existing retained hedgerows and treelines, and additional planting with native understory shrubs and grassland planting, which will link the lands north – south and east-west, and to the wider environment.

Given the relatively low numbers of individuals of each species that are likely to be affected, that they are highly mobile species and the suitability of the habitat in the surrounding lands in the south and west, the change in habitat is unlikely to result in a level that would affect the species' conservation status, and result in a significant negative effect, even at a local geographic scale.

Birds

With the exception of treelines, hedgerows and scrub, the habitats in the lands are of low suitability for nesting bird species. Species that commonly nest in grassland vegetation were not encountered during surveys of the lands in 2020 or 2021.

Increases in noise levels, associated with the increased frequency of traffic, as well as increased human presence, owing to the provision of the proposed cycle tracks and pathways, and may also have a negative effect on bird abundance and occurrence in the locality.

The displacement of breeding birds from the proposed development boundary is likely to result in an increase in competition for resources (e.g. nesting habitat or prey/food sources) both between and amongst breeding bird species, which in turn would have negative impacts on local breeding bird populations in the long-term.

Although the proposed development is predicted to have a long-term effect on local breeding bird populations, even at a local level this is not predicted to affect the ability of local breeding bird species to persist within their current ranges or to maintain their populations long-term. Therefore, the proposed development is not likely to affect the conservation status of breeding bird species and will not result in a likely significant negative effect, at any geographic scale.

Bats

Bats are considered to be light-sensitive species, and increased illumination of a site can affect how bats may utilise a site (ILP, 2018). For roosting bats, increased light levels can affect predation, as avian predators tend to rely on vision to catch their prey, and increased light levels at night-time may increase bats vulnerability to predation. Illumination of foraging and commuting habitat can result of abandonment of habitat. The response to lighting in Ireland by foraging bats varies by species, with Leisler's bat, a high-flying species, as well as common pipistrelle bat and soprano pipistrelle bat appearing to be least affected by lighting (Roche et al., 2014).

The habitat within the subject lands were mostly unlit during the surveys in 2020, 2021, and 2022, however the eastern and northern boundaries were partially illuminated with streetlights. During its operation, and in the absence of any mitigation, it is anticipated that the proposed development will result in an increase in lighting of the site. Light spill will originate both from installation of public lighting in the residential areas, as well as from the residential properties themselves (e.g. incidental light pollution from house windows). The increase in light spill will be in the central areas of the site, however a green spine is proposed to transverse the site from east - west and north - south, with a number of treelines/hedgerows being retained, which will allow bats to commute and forage along. However; in the absence of mitigation disturbance impacts on bats from the increase in lighting during operation is likely to result in a likely significant effect, at a local scale.

4.7. Do Nothing Scenario

The continuation of the existing management practices at the proposed development site in a "do-nothing" scenario, would maintain the current habitats present. The proposed development site would continue to provide suitable foraging and breeding habitat for badgers, as well as bird and small mammal species, suitable foraging and roosting habitat for common bat species. The fields would continue to be used for cattle grazing, and the drainage ditches would likely become degraded further due to this. The unoccupied buildings would likely degrade further.

As set out in the Meath County Development Plan 2021 - 2027, the lands are zoned as 'A2 – New Residential', with c. 1ha zoned as G1 – Community Infrastructure'. Therefore, the lands would eventually be developed for residential purposes in the future and would remain in its current state until this time.

4.8. Mitigation Measures

4.8.1. Construction Stage

4.8.1.1. Mitigation Measures for Habitats during the Construction Stage

Retention and Protection of Vegetation during Construction

Any vegetation (including trees, hedgerows or scrub adjacent to, or within, the proposed development boundary) which is to be retained shall be afforded adequate protection during the construction phase in accordance with the Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (National Roads Authority, 2006b), as follows:

- All trees within the proposed development boundary that are to be retained, both within and adjacent to the proposed development boundary (where the root protection area of the tree extends into the proposed development boundary), will be fenced off at the outset of works and for the duration of construction to avoid structural damage to the trunk, branches or root systems of the trees. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree. The RPA will be defined based upon the recommendation of a qualified arborist;
- Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it;

- The area within the RPA will not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) or concrete washout areas will not be undertaken within 10 m of any retained trees, hedgerows and treelines;
- A qualified arborist shall assess the condition of, and advise on any repair works necessary to, any trees which are to be retained or that lie outside of the proposed development boundary but whose RPA is impacted by the works. Any remedial works required will be carried out by a qualified arborist;
- A buffer zone of at least 5m will be maintained between construction works and retained hedgerows to ensure that the root protection areas are not damaged.

Protection of Vegetation from Dust during Construction

To control dust emissions during construction works standard mitigation measures shall include: spraying of exposed earthwork activities and site haul roads during dry and/or windy conditions; provision of wheel washes at exit points; control of vehicle speeds with adequate signage, and speed restrictions (20 km/h on any un-surfaced site road); covering of haulage vehicles; and, sweeping of hard surface roads. These procedures will be strictly monitored and assessed on a daily basis.

Dust screens will be implemented at locations where there is the potential for air quality impacts on sensitive ecological receptors (i.e. within 100m of the works) during the construction phase.

Protection of water quality

Mitigation measures to protect surface water in the receiving environment during construction will include the following:

- Entry to the drainage ditches when wet by vehicles and/or personnel will not be permitted under normal circumstances.
- There will be no direct discharges to surface waters
- Prior to any machinery working on site for any purpose, the working area will be marked out with wooden stakes and where deemed necessary, hazard tape will be erected to identify the working limits
- Working limits to be checked at the end of every day by the Site Manager
- Provision of measures to prevent the release of sediment during the construction work will be installed prior to any site clearance. In respect to works adjacent to the drainage ditches with flowing water, these measures will include the use of silt fences, sedimentation mats etc.
- Provision of exclusion zones and barriers (sediment fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the receiving water environment
- Temporary construction surface drainage and sediment control measures will be in place before earthworks commence
- If pouring of cementitious materials is required for the works adjacent to surface water drainage features, or drainage features connected to same, this will be carried out in the dry
- Discharge water generated during placement of concrete will be removed off site for treatment and disposal
- Where stockpiling is required, temporary stockpiles will be located >50 metres from any water features. Three sides will be surrounded with silt fences with access from the fourth (uphill) side. Sides will be smoothened and collection of run-off discharged to a settlement pond or similar.
- The contractor will avoid work involving moving of soil during heavy rainfall to minimise potential for entrainment of silt. Where forecasts indicate heavy rainfall events, works should be rescheduled accordingly and stockpiles of fine-grained material will be carried out

- Pumped concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to surface water. Concrete washout areas will be located remote from any surface water drainage features to avoid accidental discharge to watercourses
- No storage of hydrocarbons or any polluting chemicals will occur within 50m of the surface water network. Fuel storage tanks will be bunded to a capacity at least 110% of the volume of the storage tank (plus an allowance of 30mm for rainwater ingress). Re-fuelling of plant will not occur within 50m of the surface water network and only in bunded refuelling areas
- Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures
- Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste
- Contaminated groundwater, if encountered on site, could result in contaminated waters being discharged from the construction site. Any such contaminated waters will be treated using best practice (as described in Chapter 6 of the EIAR, Land, Soils & Geology), appropriate measures/controls dependent on the nature of the contamination prior to discharge to the surface water network
- There will be no direct pumping of contaminated water from the works to the surface water drainage/stream network at any time
- Foul drainage from site offices and compounds, where not directed to the existing wastewater network, will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations, to prevent the pollution of watercourses
- An Emergency Response Plan detailing the procedures to be undertaken in the event of flooding, a spill of chemical, fuel or other hazardous wastes, a fire, or non-compliance incident will be prepared
- Ensure site staff are trained in the implementation of the Emergency Response Plan and the use of any spill control equipment as necessary
- The contractor will employ an environmental specialist who will monitor water quality upstream and downstream of the area of works. Data on pH, conductivity, and suspended solids will be collected as follows:
    - Twice weekly visits during general site works
    - Daily site visits during key construction activities (to be agreed between the environmental specialist and Meath County Council), e.g. during installation of the proposed outfall, during and immediately after clearance of on-site vegetation.
    - Event inspection e.g. following heavy rainfall events or during concreting works
- Monitoring will be undertaken for a period of at least two months prior to works commencing and one-month post construction. Trigger concentrations should be agreed at commencement and based on the baseline established in the two months prior to works commencing.
- All monitoring data should be collated to show trends for indicator parameters pH, conductivity, suspended solids and hydrocarbons, and will be shared at regular intervals with Meath County Council.

These mitigation measures are for the protection of the water quality within the local receiving drainage network only, and not for the protection of European Sites downstream as there are no significant effects likely to arise on European sites as a result of water quality impacts associated with the proposed development, as discussed above in Section 4.6.

4.8.2.1. Mitigation Measures for Fauna during Construction Stage

Badgers

The mitigation measures described below follow the recommendations set out in the Guidelines for the Treatment of badgers during the Construction of National Road Schemes (National Roads Authority, 2006). These guidelines set out the best practice approach in considering and mitigating impacts on badgers during construction works.

Whilst no badger setts were identified within the proposed development, badger could potentially establish new setts in the future within the ZoI of the proposed development. Therefore, a pre-construction check of all suitable habitat within the proposed development boundary will be required within 12 months of any constructions works commencing. Any new badger setts present will be afforded protection in line with the requirements set out in the TII/NRA guidance document as follows:

- Badger setts will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage
- No heavy machinery shall be used within 30m of badger setts; lighter machinery (generally wheeled vehicles) shall not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance shall not take place within 10m of sett entrances
- During the breeding season (December to June inclusive), none of the above works shall be undertaken within 50m of active setts, nor blasting or pile driving within 150m of active setts
- Works can be undertaken within these zones following consultation with, the approval of and, if required, under the supervision of a badger ecologist
- During construction, the use of egress ramps in any pits or holes that have been dug on site is required. This will allow for any mammal species that have fallen in, to allow to escape and be unharmed by construction activities.

As the proposed development will not result in the permanent loss of any badger setts, there is no requirement to construct any artificial setts as part of the mitigation strategy.

Other Mammals

The construction phase of the proposed development is not deemed to affect the local mammal population and will not result in a likely significant negative effect, at any geographic scale. However, mitigation is provided should small mammals (*e.g.* pygmy shrew and hedgehog) become trapped in excavations or pits required for construction activities. During construction, the use of egress ramps in any pits or holes that have been dug on site is required. This will allow for any mammal species that have fallen in, to allow to escape and be unharmed by construction activities.

Otter

The mitigation measures as described above to protect water quality within the local receiving environment, will also mitigate for habitat degradation impacts on otter species.

Birds

Vegetation (e.g. hedgerows, trees, scrub) will not be removed, between the 1st March and the 31st August, to avoid direct impacts on nesting birds.

Amphibians

Disturbance and Mortality Risk

If works to clear any of the habitat features suitable to support amphibian species (i.e. wet drainage ditches or wet grassland) are to begin during the season where frogspawn or tadpoles may be present (February – mid-summer), or where breeding adult newts, their eggs or larvae may be present (mid-March – September), a pre-construction survey will be undertaken to determine whether breeding amphibians are present.

In the case of common frog, any frog spawn, tadpoles, juvenile or adult frogs present will be captured and removed from affected habitat with a hand net and translocated to the nearest area of available suitable habitat beyond the ZoI of the proposed development.

In the case of common frog, any frog spawn, tadpoles, juvenile or adult frogs present will be captured and removed from affected habitat with a hand net and translocated to the nearest area of available suitable habitat beyond the ZoI of the proposed development.

If the size or depth of the habitat feature is such that it cannot be determined whether all amphibians have been captured, it will be drained under the supervision of a suitably experienced ecologist to confirm that no amphibian species remain before it is destroyed or infilled. Any mechanical pumps used to drain the habitat feature will have a screen fitted, and be sited, such that no amphibian species can be sucked into the pump mechanism.

Any capture and translocation works shall be undertaken immediately in advance of site clearance/construction works commencing.

Protection of Water Quality

The mitigation measures as described above to protect water quality within the local receiving environment, will also mitigate for habitat degradation impacts on amphibians.

Bats

Measures to Protect Bats during the Removal of Potential Roost Features

All bat species and their roost sites are strictly protected under both European and Irish legislation including:

- Wildlife Act 1976 and Wildlife (Amendment) Act, 2000 (S.I. No. 38 of 2000)
- Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna 1992 (Council Directive 92/43/EEC)
- European Communities (Birds and Natural Habitats) Regulations, 2011

It is an offence under Section 23 of the Wildlife Acts 1976-2017 and under Section 51 of the European Communities (Birds and Natural Habitats) Regulations, 2011 to kill a bat or to damage or destroy the breeding or resting place of any bat species. Under the European Communities (Birds and Natural Habitats) Regulations it is not necessary that the action should be deliberate for on offence to occur. This places an onus of due diligence on anyone proposing to carry out works that might result in such damage or destruction. Under Section 54 of S.I. 477 of 2011, a derogation may be granted by the Minister where there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range. Given that the proposed development will result in the loss of a confirmed bat roost, a derogation licence under Section 54 of S.I. 477 of 2011 will be required[26].

The following mitigation measures are proposed in relation to structures with confirmed bat roosts, or are considered to have the potential to support roosting bats:

[26] If a bat roost is identified during pre-construction stage in a structure or tree, a derogation licence will be sought from NPWS.

- Demolition of structures with confirmed bat roosts (i.e. BB 7), and of buildings considered to have potential to support roosting bats, will be undertaken between March and September, in daylight hours, during dry mild weather when daytime temperatures are above 10°C. Spring and autumn coincide with periods when bats are active, but are at least risk from disturbance as they are not undergoing hibernation or raising young.
- All structures with confirmed bat roosts, will be re-examined immediately prior to the demolition to assess whether bats are present at the time of demolition. This will be an all-night examination to determine if bats enter the building during the night or early morning. This will provide adequate information to proceed with demolition, unless weather conditions were unsuitable for feeding bats, and prevented a pre-demolition survey from taking place. If bats are present, then they will require exclusion from the property over several nights or if possible physical removal by hand by a licenced bat specialist to be placed in a bat box or similar for release in the evening after capture. If any roosts are identified within the buildings due for removal, a derogation licence will be required from the NPWS and appropriate alternative roosting sites will be provided in the form of bat boxes.
- For structures which have not been confirmed as bat roosts that are due to be demolished but are regarded to have potential for bats, a bat detector survey of the property to be demolished will be carried out. If demolitions are proposed during the period of May to August and a bat roost is confirmed to be present, the proposed demolition will not be permitted. This will be an all-night survey undertaken during suitable weather conditions to determine if bats enter the building during the night or early morning. If bats are present, then they will require exclusion from the property over several nights or if possible, bats present will be physically removed by hand by a licensed bat specialist and placed in a bat box and then released in the evening after capture.
- Once structures containing roosts are deemed to be clear of bats, the bat specialist will be on site to supervise the demolition procedure until the structure is no longer deemed able to support a bat roost. Bats may re-enter a partially demolished structure overnight so the bat specialist will be required to be present during demolition works until they are completed.
- Buildings confirmed as bat roosts proposed for demolition will be marked on the ground with agreed paint marking to permit identification by Contractors.

Measures to Protect Bats during Vegetation Clearance

The following mitigation measures are proposed in relation to those trees identified as having potential to support roosting bats (Figure 5.6). Bats could occupy suitable roosting features at any time prior to the commencement of works. Therefore there is an inherent risk that bats could be affected by the proposed felling works. The following mitigation procedures will be followed:

- Felling of confirmed and potential tree roosts will be only undertaken during the periods April –September as during this period bats are capable of flight and may avoid the risks from tree felling if proper measures are undertaken, but also are not in hibernation. There are no trees with high bat roosting potential, and only one tree with potential is being removed under the development footprint
- Use of detectors alone may not be sufficient to record bat emergence and re-entry in darkness. Therefore, prior to felling of confirmed and potential tree roosts, an emergence survey using infra-red illumination and video camera(s) and bat detectors will be carried out on the night immediately preceding the felling operation to determine if bats are present
- Where it is safe and appropriate to do so for both bats and humans, such trees may be felled using heavy plant to push over the tree. In order to ensure the optimum warning for any roosting bats that may still be present, the tree will be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. The tree should then be pushed to the ground slowly and should remain in place until it is inspected by a bat specialist
- Trees should only be felled “in section” where the sections can be rigged to avoid sudden movements or jarring of the sections

- Where remedial works (e.g. pruning of limbs) is to be undertaken to trees deemed to be suitable for bats, the affected sections of the tree will be checked by a bat specialist (using endoscope under a separate derogation licence held by that individual) for potential roost features before removal. For limbs containing potential roost features high in the tree canopy, this will necessitate the rigging and lowering of the limb to the ground (with the potential roost feature intact) for inspection by the bat specialist before it is cut up or mulched. If bats are found to be present, they will be removed by a bat specialist licenced to handle bats and released in the area in the evening following capture
- If any bat tree roosts are confirmed, and will be removed by the proposed felling works, then a derogation licence will be required from the NPWS and appropriate alternative roosting sites will be provided in the form of bat boxes. The specifications, type, location and number of bat boxes (at least one box per roost lost) will be advised by the site ecologist, which will be determined by the species of bat that is identified roosting within the tree deemed for removal.

Measures to Control and Reduce Light Spill During Construction

Lighting of the site during construction is designed in accordance with the following guidance:

- Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2020)
- Bats & Lighting - Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, December 2010)
- Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008).

During construction, any external lighting to be installed, including facilitating night-time working or security lighting, on the site shall be sensitive to the presence of bats in the area, downlighting, and time limited. Lighting of sensitive wildlife areas and primary ecological corridors (e.g. along the hedgerows/treelines, boundaries of the site) and light pollution in general will be avoided. Light levels during construction in these areas will be maintained at baseline levels where possible, at a Lux level of 0.1 or below.

Monitoring of light levels along the treelines and hedgerows will be undertaken pre-construction, during-construction and post-construction to identify any areas where light spill is affecting background levels during construction. Where monitoring detects light spill is affecting these habitat areas, remedial measures, such as censored lighting or low column height lights, and will be implemented to ensure that background light levels are maintained.

Measures to prevent habitat loss impacts

The proposed development will result in a total loss of c. 1.8km of hedgerows and 69 trees, therefore replacement planting is required to ensure that there will be no impact on commuting and foraging local bat species as a result of the proposed development. Whilst the majority of hedgerows and treelines along the boundaries of the site, and some hedgerows within the central sections are to be retained, local bat species will be impacted by the loss of suitable foraging and commuting habitat. The planting regime proposed of native hedgerows will link to hedgerows along the boundaries that are being retained and augmented. New wetland planting and native woodland areas are also proposed that will merge with existing hedgerows, to ensure corridor routes for local faunal species will be maintained. A green-spine' is proposed which links the site from east to west, and north to south. Semi-mature native trees will be planted, including species such as; *Fagus sylvatica, Quercus petraea, Alnus glutinosa, Betula pendula, Populus tremula, Prunus avium,* and *Pinus sylvestris.* Hedgerow and large shrub species being proposed to be planted include; *Fugus sylvatica, Sambucus nigra, Salix cinerea, Ilex aquifolium, Corylus avellana, Salix caprea, Crataegus monogyna,* and *Ligustrum vulgare*[27].

Planting of diverse native meadow mixes, and woodland/understory shrub planting is also proposed in a number of areas throughout the proposed development. This will benefit the overall biodiversity of the site, and increase the number of invertebrates, thereby benefitting foraging bats, birds and mammals within the local area. This

[27] Residential Development at Hickey's Lane, Ashbourne. Landscape Design Report Planning Stage, Cunnane Stratton Reynolds, Land Planning & Design, August 2022.

planting as part of the landscaping will complement the development and its incorporation into the surrounding area. It will also help to provide good quality and sustainable long-term tree cover and as it establishes and grows in size, it will be continuously mitigating any negative impacts created with the loss of the existing hedgerow and tree vegetation to facilitate the proposed development. This planting will also help strengthen the existing field network of hedgerows and ensure good connectivity through the finished landscaped development.

4.8.2. Operational Stage

4.8.2.1. Mitigation Measures for Habitats during Operational Stage

Mitigation measures to protect surface water in the receiving local environment in the during operation are detailed in Chapter 6: Water & Hydrology, and include:

Continued management, monitoring and maintenance of the waste water treatment systems in accordance with the EPA licence requirements;

- Filter drains to the rear of housing;
- Permeable paving to all private parking areas;
- Rainwater butts (200l) to the rear downpipes of the houses;
- Filter swales adjacent to roadways where feasible;
- Runoff from the site will be attenuated within the on-site attenuation tanks, swales, and a hydrobrake will also be employed to control the rate of discharge. In combination, these SuDS measures significantly reduce the volume and rate of surface water discharging from the site.
- Pedestrian/green links to drain to surrounding landscape for reduction and treatment of run-off; permeable paving, swales, infiltration basins, tree pits, rain gardens and petrol interceptors;
- Grassed/landscaped detention basin;
- Silt-trap/catchpit manholes; and
- Hydrobrake limiting flow to Qbar Greenfield rates.

4.8.2.2. Mitigation Measures for Fauna during Operational Stage

Bats

There will be an increase in lighting levels across the site during operation, as the site is largely currently unlit.

Measures can be undertaken to reduce this impact on foraging and commuting local bats. This will include careful consideration of light placement on buildings, column heights and luminaire design. Luminaires will selected which do not emit UV light (e.g. metal halide and fluorescent light sources should be avoided), and luminaries are designed using full cut off to ensure there is no direct upward light. The threshold increment is included in the lighting calculations to that luminaries are not a glare source, with the lighting designed to dim by 25% from 00:00 to 06:00.

However, even with mitigation in place, there is likely to be a residual impact on bats as a result of disturbance from lighting within the site.

Birds

Re-planting of treeline, hedgerow and scrub habitats within/alongside the proposed development as detailed in the landscape drawings will over time provide suitable compensatory habitat for the breeding bird species to expand, and disturbance/displacement impacts occurring during the construction phase should reduce.

To further minimise the effects of breeding habitat loss, a total of 15 nest boxes will be erected by a qualified ecologist. The siting and type of nest boxes will be decided on by an ecologist at locations adjacent to where new trees will be planted or at suitable retained vegetation along the proposed development boundary.

4.9. Enhancement

The majority of native hedgerows and trees along the boundaries of the proposed development have been retained where possible to ensure wildlife corridors and green infrastructure is maintained. These hedgerows will also be infilled and enhanced with additional native species, which will add to the biodiversity of the site. The majority of habitats within the site are of poor quality (i.e., agricultural grassland). The site will be enhanced and provide new habitat for local wildlife due to the proposed planting of native meadow and woodland understory planting. This includes native species such as*; Lotus corniculatus, Medicago lupulina, Succisa pratensis, Glebionis segetum, Agrostemma githago, Trifolium repens, Achillea millefolium, Prunella vulgaris* and *Anthyllis vulneraria* to name a few. This planting as part of the landscaping will complement the development and its incorporation into the surrounding area. It will also help to provide good quality and sustainable long-term tree cover and as it establishes and grows in size, it will be continuously mitigating any negative impacts created with the loss of the existing hedgerow and tree vegetation to facilitate the proposed development. This planting will also help strengthen the existing field network of hedgerows and ensure good connectivity through the finished landscaped development.

4.10. Cumulative Impacts

This section of the report presents the assessment carried out to examine whether any other proposed developments have the potential to act cumulatively with the proposed development to give rise to likely significant effects on biodiversity.

As set out in the Meath Dublin County Development Plan 2021-2027, the lands to the east, north and south of the site are zoned as 'A2 - New Residential' under Objective – to protect and-or improve residential amenity in the Meath Dublin County Development Plan 2021-2027 (Meath County Council, 2021). Further south and to west, the lands are unzoned and largely used for agricultural purposes.

Potential cumulative impacts may arise during construction and operation, as a consequence of the proposed development acting in-combination with other plans and projects, on water quality in the downstream surface water environment, disturbance to birds, bats, small mammals and badger, as well as habitat loss to bats, birds, small mammals, otters and badger.

A review of planning applications submitted within the last 5 years from August 2022 within c. 2km of the proposed development has been undertaken. The vast majority of the planning applications are for minor works, e.g., extensions on residential properties, installation of dormer windows on existing properties. A solar farm in Bullstown, Ashbourne, c. 1.7km south east of the proposed development was given planning permission in 2017. This development has not yet begun construction but was subject to and must adhere to the environmental objectives and policies in the Meath County Development Plan 2021 – 2027. There are no other plans or projects within c. 2km of the proposed development site, with granted permission, are awaiting a decision, or projects proposed at plan level.

The most likely cumulative effect of other future development with the proposed development on the receiving environment is the potential for other pollution sources within the Nanny-Delvin catchment, to cumulatively affect water quality in the receiving surface water, estuarine and marine environments. There will be no significant cumulative impacts on water quality in the downstream surface water environment in the downstream Fairyhouse Stream, Broadmeadow River, and Malahide Estuary as a consequence of the proposed development acting in-combination with other plans and projects, as the development itself will not have any adverse effects on the downstream surface water environment, post mitigation. The potential for in combination effects to arise in downstream environments from any existing or proposed land use plans or developments is regulated and controlled by the environmental protective policies and objectives of the *Meath County Development Plan 2021-2027* and any other county level land use plans which can influence conditions in Malahide Estuary*: the Fingal*

Development Plan 2017-2023 (Fingal County Council, 2017), or any other county level land use plans which can influence conditions in Malahide Estuary via rivers and other surface water features. Any existing/proposed plan or project that could potentially affect downstream environments, must adhere to these overarching environmental protective policies and objectives. These policies and objectives will ensure the protection of the downstream environments within the zone of influence of the proposed development and include the requirement for any proposed development to undergo Screening for Appropriate Assessment and/or Appropriate Assessment to examine and assess their effects on European sites, alone and in combination with other plans and projects. Therefore, it is considered that any other projects acting in combination with the proposed development would be unlikely to undermine the conservation objectives of any of the qualifying interests or special conservation interests of Natural Heritage Areas or European sites in, or associated with, Malahide Estuary as a result of water quality effects.

There are general overarching policies in the Meath County Development Plan 2021-2027 to ensure that proposals for development integrate the protection and enhancement of biodiversity (Policy HER 35) and to ensure developments do not have a significant adverse impact on rare and threatened species. There are also specific objectives to protect European sites (Policy HER 34), prevent development that would adversely affect the integrity of any European site(s) or National site(s), to ensure that development does not have significant impact on protected habitats and species (Objective 1 HCL 12), to encourage the retention of hedgerows and prevent the loss and fragmentation (Policy HCL 15 Objective 3). The South Meath County Development Plan 2022-2027 also has specific policies and objectives relating to the protection of surface water and groundwater resources (e.g. Policy IE 1, 2, Policy G 5).

Considering the predicted impacts associated with the proposed development, the mitigation measures proposed to protect the local biodiversity resource and the receiving environment and the protective policies and objectives on the land-use plans that will direct future development locally, significant cumulative negative effects on biodiversity are not predicted.

4.11. Residual Impact of the Proposed Development

There will be a residual impact on foraging and/or commuting bats from the proposed development, as a result of disturbance from lighting within the site during operation.

Following the implementation of the mitigation measures outlined in Section 5.9 above, the proposed development will not result in any significant residual effect on any other Key Ecological Receptors identified (see Table 4.7) on its own, or cumulatively together with other proposed developments.

The proposed development does not pose a risk of adversely affecting (either directly or indirectly) the integrity of any European site, either alone or in combination with any other plans or projects.

The proposed development does not have the potential to result in significant negative effects on nationally designated areas for nature conservation, either alone or cumulatively, with any other plans or projects.

The proposed development has the potential to affect the surface water quality or the ecology of the adjacent waterbodies during construction. The surface water systems are designed in accordance with the principles of SUDS as recommended in the Greater Dublin Strategic Drainage Study. The implementation of mitigation measures to avoid or minimise the effect of the proposed development with regard to water quality impacts, will ensure there is no significant effects on the local water quality. There will be no works (e.g. piling/blasting) which may affect groundwater and groundwater-dependent terrestrial habitats.

The proposed development will result in some temporary habitat loss within the proposed development boundary, but this will not result in any significant negative effects following the implementation of mitigation and enhancement measures such as planting and strengthening existing treelines and hedgerows, as detailed in this report. The landscape design will ensure that the biodiversity value of the habitats to be retained and created as part of the proposed development, are maximised.

The proposed development does have the potential to result in significant negative effects on habitats, birds, amphibians, bats at local geographic levels and on otter at a county geographic scale prior to mitigation. The proposed development will have a residual impact on bats due to disturbance impacts from lighting within the site during operation. Following the implementation of mitigation measures, no other residual impacts on key ecological receptors (with the exception of bats) is predicted.

A comprehensive suite of mitigation measures are proposed, some which have been incorporated into the design of the proposed development. All of the mitigation measures will be implemented in full and are best practice, tried and tested, and effective control measures to protect biodiversity and the receiving environment. All mitigation measures included within this report must be committed to and delivered through the planning conditions.

Considering the elements included within the design of the proposed development (as described in Section 5.5), and the implementation of the mitigation measures proposed in Section 6 to avoid or minimise the effects of the proposed development on the receiving ecological environment, no significant residual ecological effects are predicted, either alone or cumulatively with any other projects. The proposed development complies with relevant biodiversity policies of the Meath County Development Plan 2021-2027 (Meath County Council, 2021) considered in this report.

4.12. Interactions

The most significant interactions for the Biodiversity Chapter are with the Water & Hydrology Chapter (Chapter 6), the Land, Soils, & Geology Chapter (Chapter 5), The Landscape Chapter (Chapter 13) and the Noise and Vibration Chapter (Chapter 8). The Water & Hydrology Chapter was reviewed in terms of effects on water quality in the local and downstream receiving environment, and the ensure that there is no change in the overall water regime at water dependent habitats on site. The Land, Soils, & Geology Chapter was reviewed in terms of the groundwater depended habitats on site, and to ensure there is no change in the overall groundwater regime within and outwith the proposed development site. The Landscape Chapter details the removal and addition of the planting regime proposed within the proposed development, this has been reviewed to ensure there will be no impact on the habitats and species within the proposed development site. The Noise and Vibration Chapter was assessed to determine and quantify the likely effects on sensitive species within the proposed development site and propose suitable mitigation measures to reduce this potential impact.

NOTE: Refer to Volume III of the EIAR for appendices associated with this chapter – i.e. Appendix 4

5.0. Land, Soils & Geology

5.1. Introduction

This chapter of the EIAR comprises of an assessment of the likely impact of the proposed development on soils and the geological environment, as well as identifying mitigation measures to minimise any impacts.

Refer to Chapter 2 of the EIAR (Description of the Project & Alternatives) for a detailed site and development description. This chapter should be read in conjunction with Chapter 6 (Water & Hydrology), Chapter 9 (Material Assets – Built Services) and Chapter 10 (Material Assets –Transportation).

5.1.1. Statement of Competence

In accordance with Article 5(3)(a) of the EU Directive, by appointing DBFL Consulting Engineers, the Applicants have ensured that this chapter of the EIAR has been prepared by a "competent expert".

This chapter has been prepared Brendan Manning BEng (Hons) CEng MIEI, who has over 10 years' experience in civil engineering and the construction industry.

5.2. Proposed Development

Refer to Chapter 2 of the EIAR (Description of the Project & Alternatives) for a detailed site and development description.

Site development works will include stripping of the 0.2m to 0.4m thick topsoil layer. It is expected that all stripped topsoil will be reused on site, incorporated into landscaping of back gardens and public open spaces. Excavation of subsoil layers will be required in order to allow road construction, foundation excavation, drainage and utility installation and provision of underground attenuation of surface water. Where feasible, excavated material will be reused as part of the site development works (e.g. use as fill material). Where bedrock is encountered in excavations, the rock will be crushed, screened and tested for use within the designed works as fill material for road construction and backfill to service trenches.

5.3. Assessment Methodology

An analysis of the predicted impacts of the proposed development on the land and soils/geology during and after the construction phase, as per Annex IV of Directive 2014/52/EU, EPA Guidance notes (2017) and Appendix C of the IGI EIS Preparation Guidelines (IGI 2013), is presented in the following section.

- The impact assessment was undertaken using the following considerations: **Quality of an Impact:** Described as being Positive, Neutral or Negative.

- **Significance of an Impact:** The significance of each impact was considered as having either an Imperceptible/Not Significant, Slight, Moderate, Significant/Very Significant or Profound impact.

- **Duration of Impacts:** The duration of each impact was considered to be either brief, temporary, short-term, medium-term, long-term or a permanent impact. Brief construction impacts are considered to last a day or so, Temporary impacts last less than one year. Short-term impacts are seen as impacts lasting one to seven years. Medium-term impacts are impacts lasting seven to 15 years. Long-term impacts are impacts lasting 15 to 60 years and Permanent impacts are impacts lasting over 60 years

This assessment meets the requirements for an EIAR, as outlined in the relevant National and EU 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports legislation, and has been prepared

in accordance with the Environmental Protection Agency (EPA) guidance documents, 2017'.

The appraisal methodology considered a description of the impact i.e. the "quality" of the effects (i.e. whether it is adverse or beneficial), the "significance" of the effects (i.e. the magnitude of the effect in terms of the environment), the "probability" of the event occurring, and the "duration" of the effects (i.e. whether it is short or long term) and also considers the significance/sensitivity of the existing environment. Terminology for describing the quality, significance, extent, probability and duration of effects is set out in Section 3.7.3 of the EPA EIAR guidance.

Description of the baseline environment and the assessment of the likely impact of the proposed development on soils and the geological environment included the following activities:

- Preliminary Ground Investigations.
- Review of information available on the Geological Survey of Ireland (GSI) online mapping service.
- Preliminary Ground Investigations for the proposed development were carried out by IGSL in July 2022 and included the following scope of work within the subject site:
- 7 No. Trial Pits.
- 7 No. Infiltration Tests.

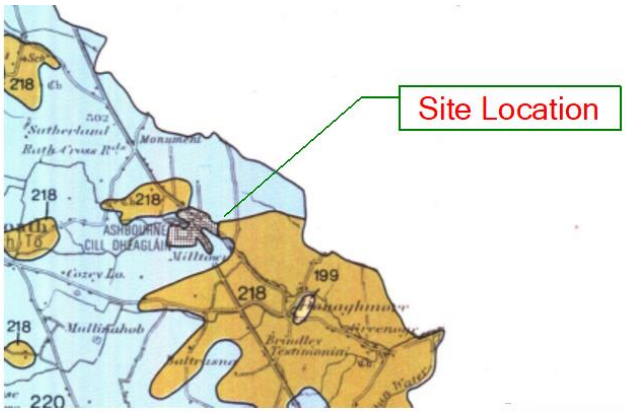
Refer to Appendix 5.1 of Volume III of the EIAR for Preliminary Ground Investigation Results (IGSL, Issue Date 25 July 2022).

5.4. Existing Environment (Baseline)

5.4.1. Soils

The Soil Map of Ireland (1980) indicates the predominant soil type in the Ashbourne area as "Limestone and shale drift and Irish sea drift", Review of information available on the Geological Survey Ireland (GSI) online mapping service (Teagasc Soils and Subsoils Map) shows that the majority of the site's topsoil layer consists of a "mineral poorly drained (mainly basic)", while the southern end of the site consists of a topsoil layer described as "shallow poorly drained mineral (mainly basic)". The vast majority of the site is underlain by a subsoil layer described as "till derived from limestones". Refer to Figure 5.1, Figure 5.2 and Figure 5.3 below.

Figure 5.2 shows that the majority of the site falls under Limestone till (Carboniferous). The texture is variable and the class is Tills (diamictons). The northeast of the site (shown in blue) is man made as it is an urban area.



Great Soil Group	Regosol	Lithosol	Brown Earth					Rendzina		
Soil Series	146 Seafield	204 Knockeyon	42 Baggotstown	43 Ballincurra	44sy Derk Shaley Phase	217 Kells	199 Ladestown	140 Burren	218 Dunboyne	218gv Dunboyne Gravelly Phase
Parent Material	Stabilised Sand	Chert Bedrock	Fluvioglacial Limestone	Limestone Till over Limestone Bedrock	Glacial drift, dominantly volcanic, with some Limestone, Shale and Sandstone	Drift from Lower Palaeozoic Shale	Fluvioglacial Shale, Chert and Limestone	Limestone Bedrock	Limestone and shale drift and Irish sea drift	Limestone and shale drift and Irish sea drift
% Total Land Area	·046	·129	·073	·007	·099	11·814	·492	·085	10·285	·111
Hectares	107	300	169	17	231	27,544	1,147	198	23,959	259

Urban=·317%

Great Soil Group	Gley									
Soil Series	220 Ashbourne	220sy Ashbourne Shaley Phase	201 Ballyshear	63 Camoge	67 Drombanny	221 Dunsany	82 Feale	70 Howardstown	129 Mylerstown	202 Street
Parent Material	Limestone and shale drift and Irish sea drift	Limestone and shale drift and Irish sea drift	Gravelly Limestone Till	River Alluvium	Peaty Lake Alluvium	Alluvium of Namurian shale and limestone origin	River Alluvium	Limestone Till	Gravelly Limestone Till	Shale and Limestone Till
% Total Land Area	17·340	·122	·039	1·152	·140	·098	·641	·232	·179	8·720
Hectares	40,402	285	93	2,686	327	229	1,494	543	418	20,312

Figure 5.1. Extract from Teagasc Soil Map.

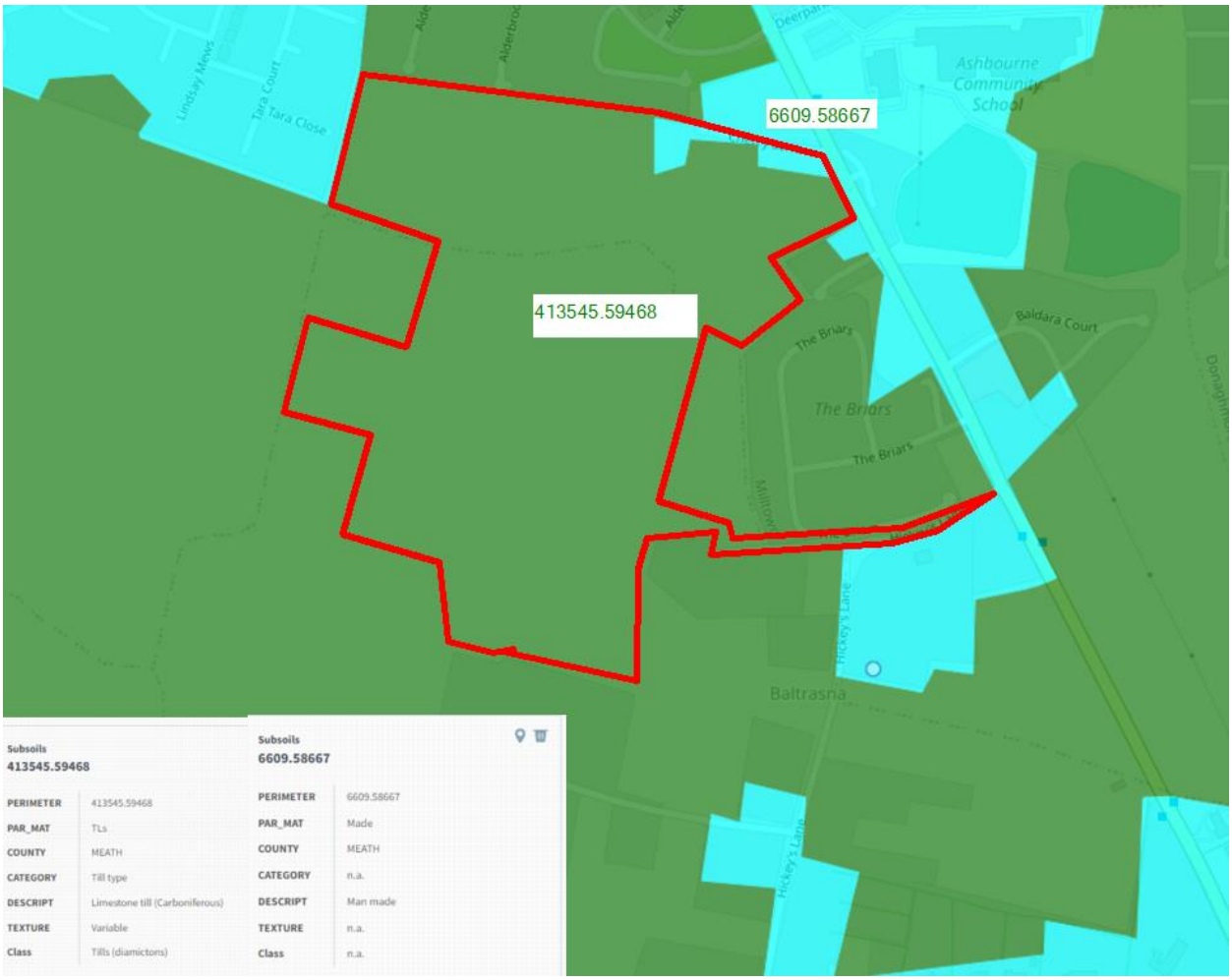


Figure 5.2. Extract from the GIS EPA website.

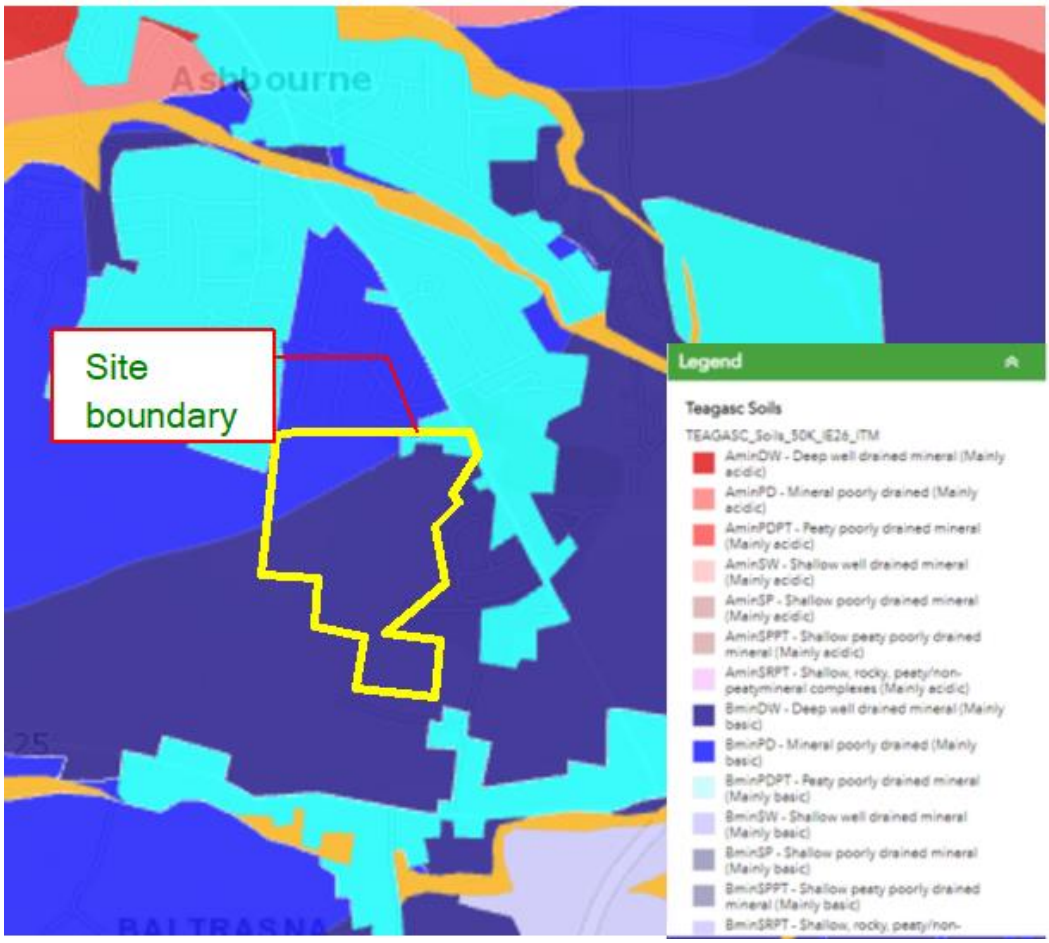


Figure 5.3. Extract from the ArcGIS website.

A Preliminary Site investigation carried out by IGSL indicate that the subsoil material generally comprises stiff brown/dark gravely clay. Stiff and silty sandy gravelly clay is also present. The Preliminary Ground Investigation (Appendix 5.1 of Volume III of the EIAR) is summarized as follows:

- Topsoil depths on the site range from 0.2m to 0.4m.
- The subsoil typically consists of sandy gravelly CLAY.
- Trial pit 4 contained bouldary gravel with all other trial pits consisting of sandy gravelly CLAY.
- Trial pits typically range from 2.5 to 3.0 m through the site.

7 no. Infiltration tests were carried out and the results of same are outlined below:

- SA01: 0.00031 m/min
- SA02: 8.9E-05 m/min
- SA03: 0.00076 m/min
- SA04: 0.00057 m/min
- SA05: 0.00029 m/min
- SA06: 0 m/min
- SA07: 0.00017 m/min

Broad Physiographic Divisions	Number	Principal Soil	Associated Soils	Correlation with Soil Map of Europe	Parent Material
Flat to undulating lowland	220	Gleys *	Grey Brown Podzolics	Gleyic Luvisols	Limestone and shale drift and Irish sea drift
* Dominantly influenced by surface water impedance.					

Table 5.1. Extract from Soil Map of Ireland Tables (Relevant to Ashbourne).

Table 5.1. above shows the soil number classified by Teagasc associated with the subject site in Ashbourne. The principal soil comprises of Gleys which is common in the Meath/Dublin area. Gley Soils generally have a dark-coloured topsoil and can be considered poorly drained mineral soil.

5.4.2. Geology

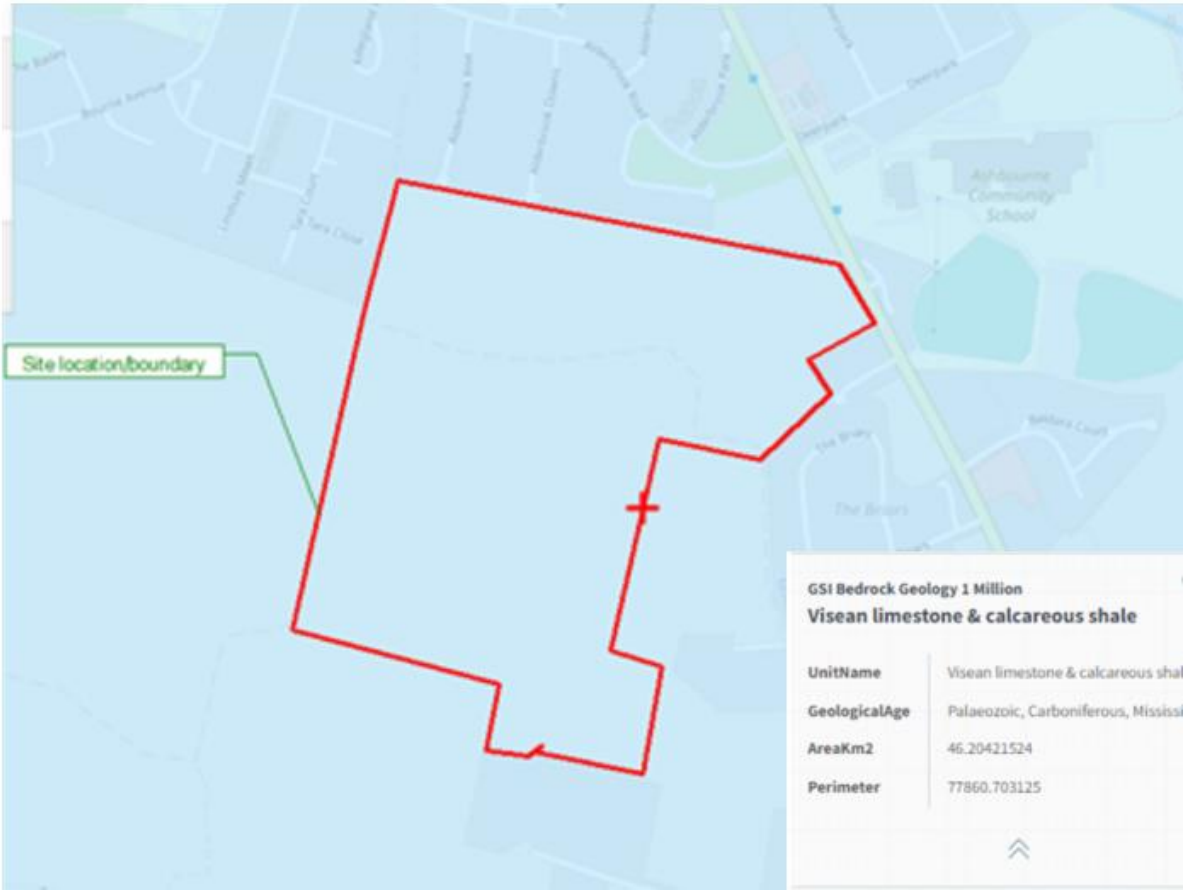


Figure 5.4. Bedrock Geology Map for Ashbourne.

The proposed development site is underlain by Visean limestone & calcareous shale.

The GSI bedrock aquifer map indicates an 'LI Aquifer', Locally Important Aquifer, bedrock which is Moderately Productive only in Local Zones, as shown on Figure 5.5. below.

Figure 5.5. Aquifer Classification Map for Ashbourne.

The groundwater vulnerability map for County Meath indicates a general vulnerability rating for the road development lands as high. See Figure 5.6 below.

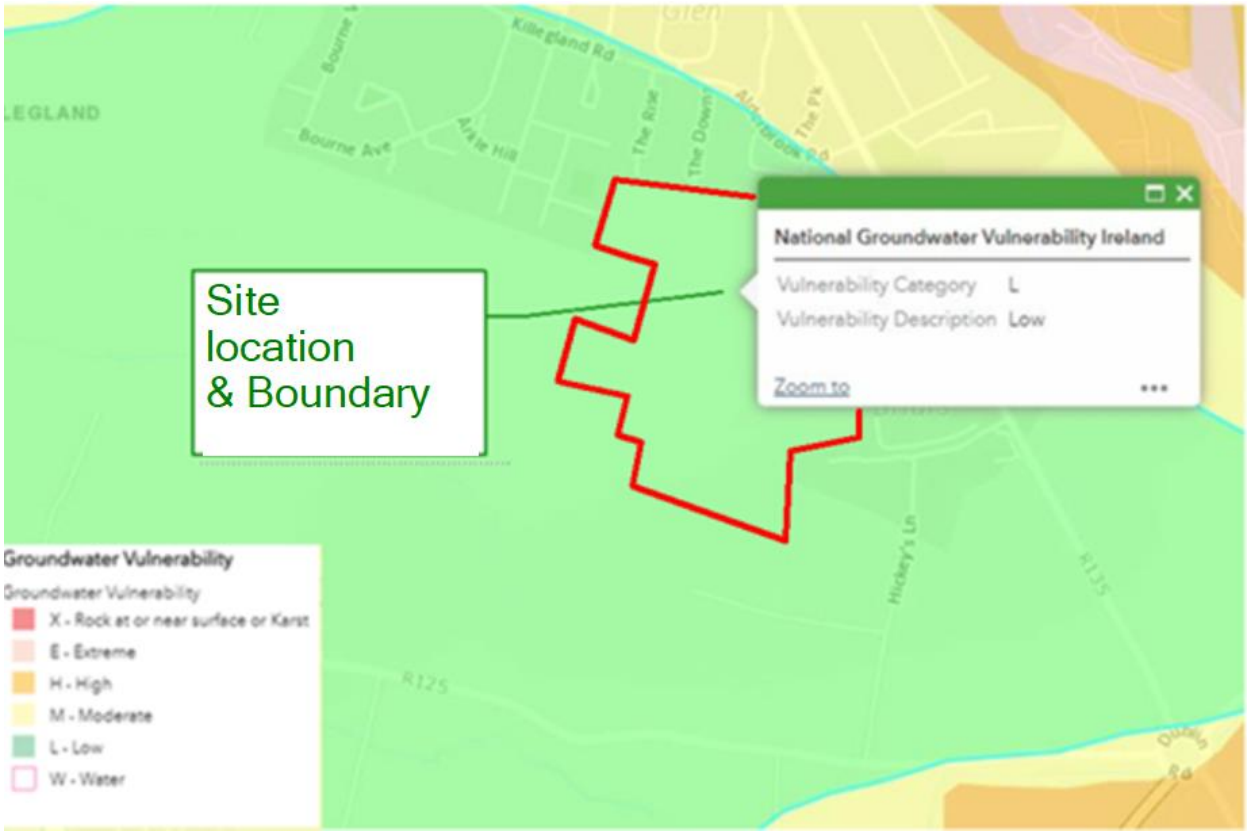


Figure 5.6. Extract from GSI Mapping Service (Groundwater Vulnerability).

Upon analyzing the GSI map, it can be stated that the groundwater vulnerability throughout the site is classified as "low", as that is what the green represents.

5.4.3. Radon Risk

A review of the EPA's online mapping service ("Radon Map") shows that less than 1% of the homes within the site area is estimated to be above the reference level of 200 bequerel per cubic metre (Bq/m3). Refer to Figure 5.7. below.

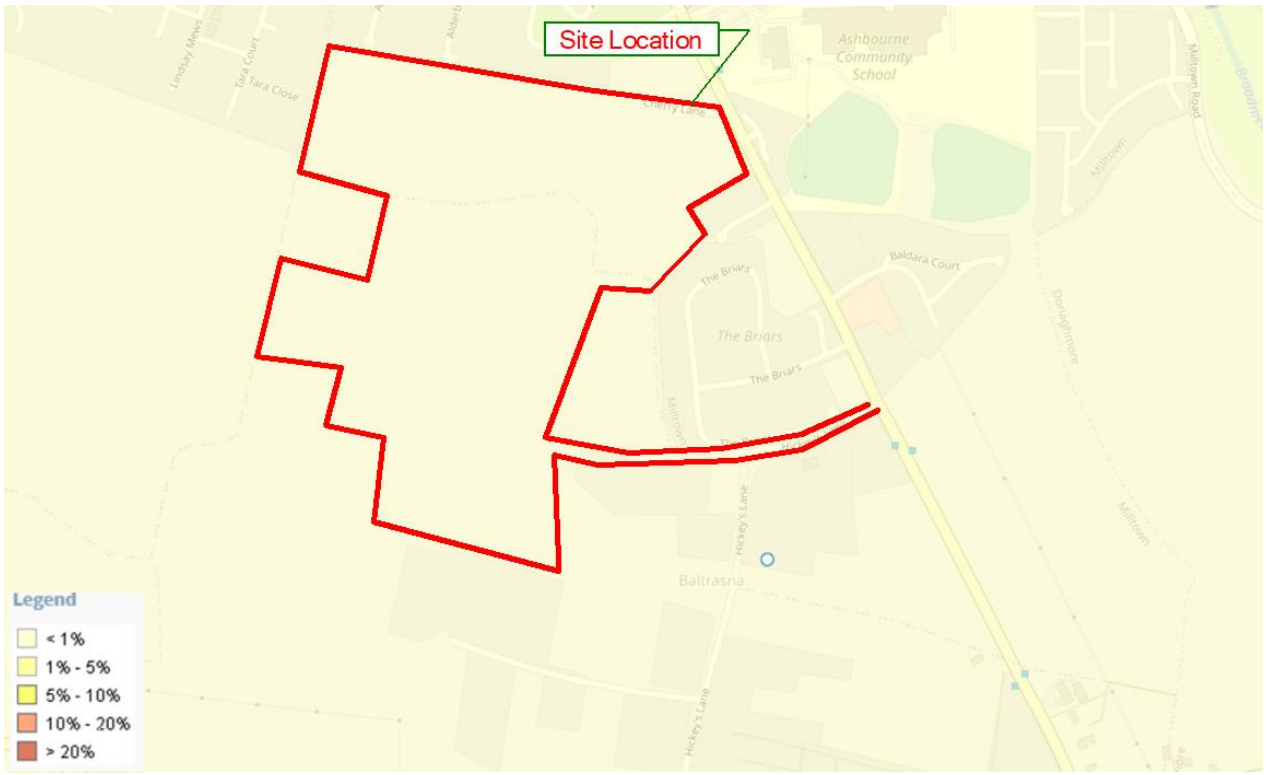


Figure 5.7. Extract from EPA Mapping Service (Radon Mapping).

5.5. Difficulties Encountered

There were no difficulties encountered in compiling and assessing the data for this section of the EIAR.

5.6. Impact Assessment

5.6.1. Do Nothing Scenario

There will be no impact on soils and the geological environment if the development does not proceed.

5.6.2. Construction Phase Impact

This section identifies a list of likely and significant impacts to the soil and geology of the subject site caused by the construction of the proposed development in Ashbourne.

5.6.2.1. Stripping of Topsoil

Removal of the existing topsoil layer will be required across the site. As noted previously, it is expected that all stripped topsoil will be reused on site (incorporated into landscaping of back gardens and public open spaces). Table 5.2 gives the approximately topsoil material volumes to be handled.

Stripping of topsoil will result in exposure of the underlying subsoil layers to the effects of weather and construction traffic and may result in subsoil erosion and generation of sediment laden runoff. The impact of these works will have a slight impact and negative effect over the short term. Mitigation measures outlined in section 5.7 will be employed to reduce the residual effect on stripping of topsoil.

	Volume (m^3)
Topsoil Strip (300mm thick layer)	59,400
Topsoil Reuse (landscaping of open spaces etc.)	50,000

Table 5.2. Preliminary Estimated Topsoil Volumes (approximate).

5.6.2.2. Excavation of Subsoil Layers

Excavation of existing subsoil layers will be required in order to allow road construction, foundation excavation, drainage and utility installation and provision of surface water attenuation facilities. Table 5.3. gives the approximately cut and fill material volumes to be handled.

Where feasible, excavated material will be reused as part of the site development works (e.g., use as fill material beneath houses and roads) however, unsuitable excavated subsoil is expected and will have to be removed to an approved landfill. The impact of these works will have a slight impact and negative effect over the short term. Mitigation measures outlined in Section 5.7 will be employed to reduce the residual effect on excavation of topsoil layers.

	Volume (m^3)
Cut	70,000
Fill	60,000
Removal of Unsuitable Material	10,000

Table 5.3. Estimated Cut/Fill Volumes (approximate).

To negate the need for soil and sub-soil to be removed or imported for the proposed works finished building levels etc for the subject lands have been optimized, to maximize the reuse of excavated material and to minimize where possible the volume of material requiring disposal from and importation to the site.

5.6.2.3. Construction Traffic

Earthworks plant (e.g. dump trucks) and vehicles delivering construction materials to site (e.g. road aggregates, concrete deliveries etc.) have potential to cause rutting and deterioration of the topsoil layer and any exposed subsoil layers, resulting in erosion and generation of sediment laden runoff. This issue can be particularly noticeable at site access points (resulting in deposition of mud and soil on the surrounding road network). Dust generation can also occur during extended dry weather periods as a result of construction traffic.

The impact of these works will have a slight impact and neutral effect over the short term. Mitigation measures outlined in section 5.7 will be employed to reduce the residual effect on stripping of topsoil.

5.6.2.4. Accidental Spills and Leaks

During the construction phase there is a risk of accidental pollution from the sources noted below. Accidental spills and leaks may result in contamination of the soils underlying the site.

- Storage of oils and fuels on site
- Oils and fuels leaking from construction machinery
- Spillage during refueling and maintenance of construction machinery
- Use of cement and concrete during construction works

It is considered that impact of any accidental spills or leaks could have a significant negative effect over the short term. However, with the implementation of mitigation measures outlined in section 5.7 the residual effect is minimised and it is considered unlikely that any accidental spills or leaks would occur.

5.6.2.5. Geological Environment

Rock was not encountered in most of the trial pits excavated as part of the preliminary ground investigation. Boulders were encountered in the first, third and fourth trial pit (TP01, TP03 and TP04). Additionally, rock was not encountered on boreholes (BH01 and BH02) taken from the link road previously to depths of up to 5.3m. Therefore, it is not expected that the installation of drainage will require excavation of bedrock. Notwithstanding this, excavations associated with development of the site have been designed as shallow as possible in the unlikely event that rock is encountered. Where bedrock is encountered it will be crushed, screened and tested for use within the designed works.

A more detailed Ground Investigation will be undertaken prior to construction to verify the Preliminary Ground Investigation.

Based on the above and the fact that rock was not encountered it is considered unlikely that there will be any effect on the bedrock geology during construction.

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a Neutral, Short Term, Moderate cumulative impact.

5.6.3. Operational Phase Impacts

On completion of the construction phase, there will be no further impact on soils and the geological environment.

5.6.4. Cumulative Impacts

Given the scale of the proposed development and the capacity of the surrounding environment to accommodate developments of this nature, it is considered that the overall cumulative development in this area will have a moderate, long term impact on the land, soils and geology of the area via the proposed structures, roads, infrastructure etc. for residential development on the subject site. However, with the detailed mitigation measures in place, as required under this EIAR and in the following section, the overall impact on land and soils will be permanent, not significant and have a neutral effect.

5.7. Mitigation

5.7.1. Construction Phase

5.7.1.1. Stripping of Topsoil

Stripping of topsoil will be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development.

At any given time, the extent of topsoil strip (and consequent exposure of subsoil) will be limited to the immediate vicinity of active work areas.

Topsoil stockpiles will be protected for the duration of the works and not located in areas where sediment laden runoff may enter existing surface water drains. These stockpiles will be monitored throughout the construction phase.

Topsoil stockpiles will also be located so as not to necessitate double handling.

5.7.1.2. Excavation of Subsoil Layers

The design of road levels and finished floor levels has been carried out in such a way as to minimise cut/fill type earthworks operations.

The duration that subsoil layers are exposed to the effects of weather will be minimised. Disturbed subsoil layers will be stabilized as soon as practicable (e.g. backfill of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping).

Similar to stripped topsoil, stockpiles of excavated subsoil material will be protected for the duration of the works. Stockpiles of subsoil material will be located separately from topsoil stockpiles. These stockpiles will be monitored throughout the construction phase. Monitoring of ground conditions and stability of excavations will be monitored on an on-going basis.

Measures will be implemented to capture and treat sediment laden surface water runoff (e.g. sediment retention ponds, surface water inlet protection and earth bunding adjacent to open drainage ditches).

5.7.1.3. Weather Conditions

Typical seasonal weather variations will also be taken account of when planning stripping of topsoil and excavations with an objective of minimising soil erosion and silt generation. The approach of extreme weather events will be monitored to inform near-term operational activities.

5.7.1.4. Surface Water Runoff

Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate. Monitoring of these sediment control measures will be undertaken throughout the construction phase.

Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds.

On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion.

Concrete batching will take place off site, wash down and wash out of concrete trucks will take place off site and any excess concrete is not to be disposed on site.

Surface water discharge points during the construction phase are to be agreed with Meath County Council's Environment Section prior to commencing works on site.

5.7.1.5. Water Pumped from Excavations

Rainwater pumped from excavations is to be directed to on-site settlement ponds.

Groundwater pumped from excavations is to be directed to on-site settlement ponds.

On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion. Monitoring of same will be undertaken.

Surface water discharge points during the construction phase will be agreed with Meath County Council prior to commencing works on site.

5.7.1.6. Construction Traffic

Earthworks plant and vehicles delivering construction materials to site will be confined to predetermined haul routes around the site.

Vehicle wheel wash facilities will be installed in the vicinity of any site entrances and road sweeping implemented as necessary in order to maintain the road network in the immediate vicinity of the site. The cleanliness of the adjacent road network will be monitored throughout the construction phase.

Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods.

A construction traffic management plan will be prepared by the contractor prior to any works commencing on site.

5.7.1.7. Accidental Spills and Leaks

In order to mitigate against spillages contaminating underlying soils, all oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area.

Refueling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any surface water inlets and outlets (when not possible to carry out such activities off site).

A response procedure shall be put in place to deal with any accidental pollution events and spillage kits shall be available and construction staff will be familiar with the emergency procedures and use of the equipment.

Monitoring of all fuel / oil storage areas will be undertaken and spill kits will be available on site.

5.7.1.8. Geological Environment

A more detailed Ground Investigation will be undertaken prior to construction to verify the Preliminary Ground Investigation and where possible the works will be designed to minimize the bedrock excavation required. At any given time, the extent of exposed bedrock will be limited to the immediate vicinity of active work areas. Where bedrock is encountered, it will be crushed, screened and tested for use within the designed works to reduce the volume of material required to leave site. This will also reduce the volume of material to be imported to the site.

With the consideration of mitigation measures the construction phase of the proposed development will likely have an overall Neutral, Short Term, imperceptible residual impact.

5.7.2. Operational Phase

For the operational phase no specific mitigation measures are proposed as there will be no further impact on soils and the geological environment.

5.8. Residual Impact

5.8.1. Construction Phase

Implementation of the mitigation measures outlined in section 5.7 will ensure that the potential impacts of the proposed development on soils and the geological environment will be minimised. The residual impact is considered to be not significant for the construction phase and any residual impacts will be short term, and neutral.

The primary residual impact is the removal of material unsuitable for reuse as fill material. This impact is unavoidable given the nature of the proposed development. With the implementation of all mitigation measures these effects will be slight short-term effects that should have a neutral impact on the surrounding environment.

5.8.2. Operational Phase

There are no predicted impacts arising from the operational phase.

5.8.3. Do Nothing Scenario

There are no predicted impacts should the proposed development not proceed.

5.8.4. Worse Case Scenario

The 'Worst Case Scenario' in terms of land and soil would be accidental fuel loss from machinery or spillage of fuel during the re-fuelling of construction machinery. This would impact on soil quality which could contaminate sub-soil and potentially contaminate groundwater. Considering the nature of the proposed development and the absence of a requirement to store large volumes of fuel on site this scenario is considered unlikely.

Another potential 'worst case scenario' would be the collapse of soil from excavations or stockpiles which would pose a risk to human health. This scenario is deemed very unlikely once steep excavations are correctly supported and stockpile heights are managed as per the Construction and Environmental Management Plan (CEMP).

5.9. Monitoring

Proposed monitoring by the main contractor during the construction phase in relation to the soil and geological environment are as follows:

- Adherence to the Construction and Environmental Management Plan (CEMP).
- Construction monitoring of the works (e.g. inspection of existing ground conditions on completion of cut to road sub-formation level in advance of placing capping material, stability of excavations etc.).
- Inspection of fuel / oil storage areas and having spill kits available to hand.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities.
- Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill, protection of soils for removal from site from contamination).
- Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.).

No ongoing monitoring is proposed on completion of the construction phase

5.10. Interactions

Land, soils, and geology can interact with several other environmental aspects during both the construction and operational phases of the development. These interactions are discussed below.

5.10.1. Transportation

Interactions with Traffic and Transport arise during the construction phase when soil and subsoils and demolition waste are being transported to and from the site and raw materials for construction are being imported to the site. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic.

5.10.2. Water

Interactions with Water and Hydrology arise during the construction phase and the operational phase. The surface water drainage infrastructure for the development will collect the rainfall on the site and convey the storm water run-off via tree pits, bio-retention area, rain gardens, infiltration basins, gullies, underground pipes, manholes, catchpit manholes and direct the flows via void arched attenuation systems towards vortex flow restricting devices (Hydrobrake or similar) and petrol interceptors before outfalling to the existing on site open watercourses to the south/existing drainage network to the east. During the construction phase a site-specific CEMP will manage site water and will mitigate the risk of surface contaminants infiltrating into the underlying geology and hydrogeology. Surface water drainage from the operational site has been designed in accordance with Greater Dublin Strategic Drainage Study (GDSDS) and SuDs methods will be used to manage drainage.

5.10.3. Resource & Waste Management

Interactions with Waste Management arise during the construction phase when soil, subsoils and demolition waste are being transported from the site. These waste materials will require appropriate transport and disposal. A Waste Classification Report for soils and subsoils shall be prepared in order to define appropriate waste disposal outlets.

5.10.4. Noise & Vibration

Development of the site will result in a level of noise and vibration related effects on the surrounding environment during the construction phase. The interaction between Soils, Land and Geology and Noise and Vibration is considered to be moderate and temporary in nature. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic.

5.10.5. Air Quality

There is a potential for soil excavation activity to impact on air quality in terms of dust generated. Dust generation can also occur during extended dry weather periods as a result of construction traffic. However, the implementation of suitable mitigation measures as outlined in a CEMP for the site will ensure a neutral impact.

5.10.6. Biodiversity / Species & Habitat

Removal of the existing topsoil layer will be required across the site as well as removal of some trees, hedgerows etc. Further details including any potential issues and mitigation measures are outlined in Chapter 4 of the EIAR (Biodiversity).

5.11. References

- Directive 2014/52/EU of the European parliament and of the council of 16 April 2014
- Guidelines on the information to be contained in environmental impact assessment reports (2022)
- Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (2013)
- Geological Survey Ireland Map Viewer (https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx)
- Environmental Protection Agency (EPA) Map Viewer (https://gis.epa.ie/EPAMaps/)
- Teagsc Map Viewer (http://gis.teagasc.ie/soils/map.php)

6.0. Water & Hydrology

6.1. Introduction

This chapter of the EIAR comprises of an assessment of the likely impact of the proposed development on the surrounding surface water and hydrogeological environments, as well as identifying proposed mitigation measure to minimise any impacts.

The assessment must consider the potential for non-conformance with the EU Water Framework Directive (WFD) (Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for the Community action in the field of water policy) objectives and ensure that:

- The need for the avoidance and reduction of impacts on the water environment is taken fully into account in the environmental evaluation; and
- The selection of appropriate means of preventing any significant predicted impact is made through modification of the drainage design, choice of discharge location(s) and/or adoption of runoff treatment methods, with the objective of designing-out potential adverse environmental impacts.

It describes water, hydrology and flooding issues associated with the proposed development in accordance with the requirements of the relevant EIA Regulations and guidance on preparation and content of an EIAR, as outlined in Section 6.4.

6.1.1. Statement of Competence

In accordance with Article 5(3)(a) of the EU Directive, by appointing DBFL Consulting Engineers, the Applicants have ensured that this chapter of the EIAR has been prepared by a "competent expert".

This chapter of the EIAR has been prepared Brendan Manning BEng (Hons) CEng MIEI, who has over 10 years' experience in civil engineering and the construction industry.

6.2. Proposed Development

The proposed development consists of 420 no. houses, 244 no. apartments, 38 no. duplexes 1 no. GP practice / medical centre, 4 no. retail units, and 2 no. creches and associated site services and works on a greenfield site.

Refer to Chapter 2 of the EIAR (Description of the Project and Alternatives) for a fully detailed site and development description. This chapter of the EIAR, Chapter 6 *'Water & Hydrology'*, should be read in conjunction with Chapter 5 (Land, Soils & Geology), Chapter 9 (Material Assets – Built Services) and Chapter 10 (Material Assets –Transportation).

The proposed surface water drainage network accords with SUDS principles, divides the site into two drainage sub-catchments for the Northern and Southern sites (see Figure 6.1). It is proposed to outfall the attenuated surface water collected from the main residential development to the existing Fairyhouse stream and Broad Meadows River at a controlled greenfield runoff rate of 41.73 l/sec.

The proposed development's foul drainage network discharges to an existing 225mm foul sewer located on the Dublin Road and an existing 225mm foul sewer located in the Briars residential development. Irish Water in their Confirmation of Feasibility Letter dated 29th of November 2021 have confirmed capacity is available to serve the proposed development subject to the applicant entering into a connection agreement. The water and wastewater connections are subject to upgrades.

There is an existing 315mm HDPE watermain located in the Dublin Road along the subject sites eastern boundary and will serve as a connection for the proposed site. The internal watermain layout will consist of 160mm PE watermains with a number of 110mm PE loops supplied along Local Streets. The watermain serving the proposed link street along the development will consist of a 225mm PE 100.

Figure 6.1. Proposed Foul and Surface Water Drainage Networks.

6.3. Methodology

This assessment meets the requirements for an EIAR, as outlined in the relevant National and EU legislation, and has been prepared in accordance with the Environmental Protection Agency (EPA) guidance documents 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2022'.

The appraisal methodology considered a description of the impact i.e., the "quality" of the effects (i.e., whether it is adverse or beneficial), the "significance" of the effects (i.e., the magnitude of the effect in terms of the environment), the "probability" of the event occurring, and the "duration" of the effects (i.e. whether it is short-term, long-term, etc.) and also considers the significance/sensitivity of the existing environment as required by the EPA EIAR guidance.

Assessment of the likely impacts of the proposed development on the surrounding surface water and hydrogeological environments included the following:

- Site inspection / walkover undertaken on 4th of February 2022. No flooding or poor ground conditions observed.
- Review of existing topographic survey information.
- Preliminary ground investigation carried out by Ground Investigations Ireland Limited in April 2019 of 7 No. trial pits and 7 No. infiltration tests.
- Review of utility records obtained from Meath County Council (MCC).
- Review of Planning Applications in the area with the use of the MCC Online Planning Applications Service.
- Review of information available on the Environmental Protection Agency (EPA) online mapping service. Use of the 'Water Features' layer to determine the water bodies in the vicinity of the site.
- Review of information available on the Geological Survey of Ireland (GSI) online mapping service. Use of the 'Groundwater Aquifer' and 'Groundwater Vulnerability' layers to determine the groundwater features
- Review of Office of Public Works (OPW) National Flood Hazard Mapping and Catchment Flood Risk Assessment and Management Studies (CFRAM Studies).
- Review of Ashbourne Local Area Plan 2009-2015.
- Review of Meath County Development Plan 2021-2027.

Surface water runoff calculations were carried out in accordance with the following guidelines:

- Greater Dublin Strategic Drainage Study (GDSDS) - http://www.greaterdublindrainage.com/wp-content/uploads/2011/11/GDSDS-Final-Strategy-Report-April-051.pdf

6.3.1. Impact Assessment Methodology

An analysis of the predicted impacts of the proposed development on the water and hydrology during and after the construction phase, as per Annex IV of Directive 2014/52/EU, EPA Guidance notes (2017) and Appendix C of the IGI EIS Preparation Guidelines (IGI 2013), is presented in the following section.

The impact assessment was undertaken using the following considerations:

- **Quality of an Impact:** Described as being Positive, Neutral or Negative.

- **Significance of an Impact:** The significance of each impact was considered as having either an Imperceptible/Not Significant, Slight, Moderate, Significant/Very Significant or Profound impact.

- **Duration of Impacts:** The duration of each impact was considered to be either brief, temporary, short-term, medium-term, long-term or a permanent impact. Brief construction impacts are considered to last a day or so, Temporary impacts last less than one year. Short-term impacts are seen as impacts lasting one to seven years. Medium-term impacts are impacts lasting seven to 15 years. Long-term impacts are impacts lasting 15 to 60 years and Permanent impacts are impacts lasting over 60 years.

6.4. Baseline Scenario

6.4.1. Hydrology

The subject site is within the Broad Meadow River Catchment. The Broad Meadow River is located east of the subject site. Below the subject site is the Fairyhouse stream which is a tributary to the Broad Meadows River. It is proposed to outfall the attenuated surface water from the southern site to the ditch located south of the site which flows into the Fairyhouse stream. The surface water network from the northern half site will outfall to the ditch located beside the Dublin Road which in turn will flow into the Fairyhouse stream and then into the Broad Meadow River.

The nearest Environmental Protection Agency (EPA) designated watercourse is the Broad Meadows River which is located immediately to the east of the subject site and flows in a south easterly direction. The site is within the Broad meadows Water River Water Framework Directive (WFD) Sub-catchment. The coast is approximately 19km to the east.

A topographical survey of the site indicates that the southern portion of the site generally slopes to the southeast towards the existing ditch with some of the northern portion of the site sloping east towards the Dublin Road. Refer to Figure 6.2 for existing overland flow routes. The site is part of a single surface water catchment as shown in Figure 6.3 below and is currently drains to the Broad Meadow River.

The proposed surface water drainage infrastructure has been designed in accordance with the GDSDS. Please refer to Chapter 9 (Material Assets -Built Services) and a separate Infrastructure Design Report submitted as part of the overall planning submission for further information on drainage.

Figure 6.2. Existing Overland Flow Routes.

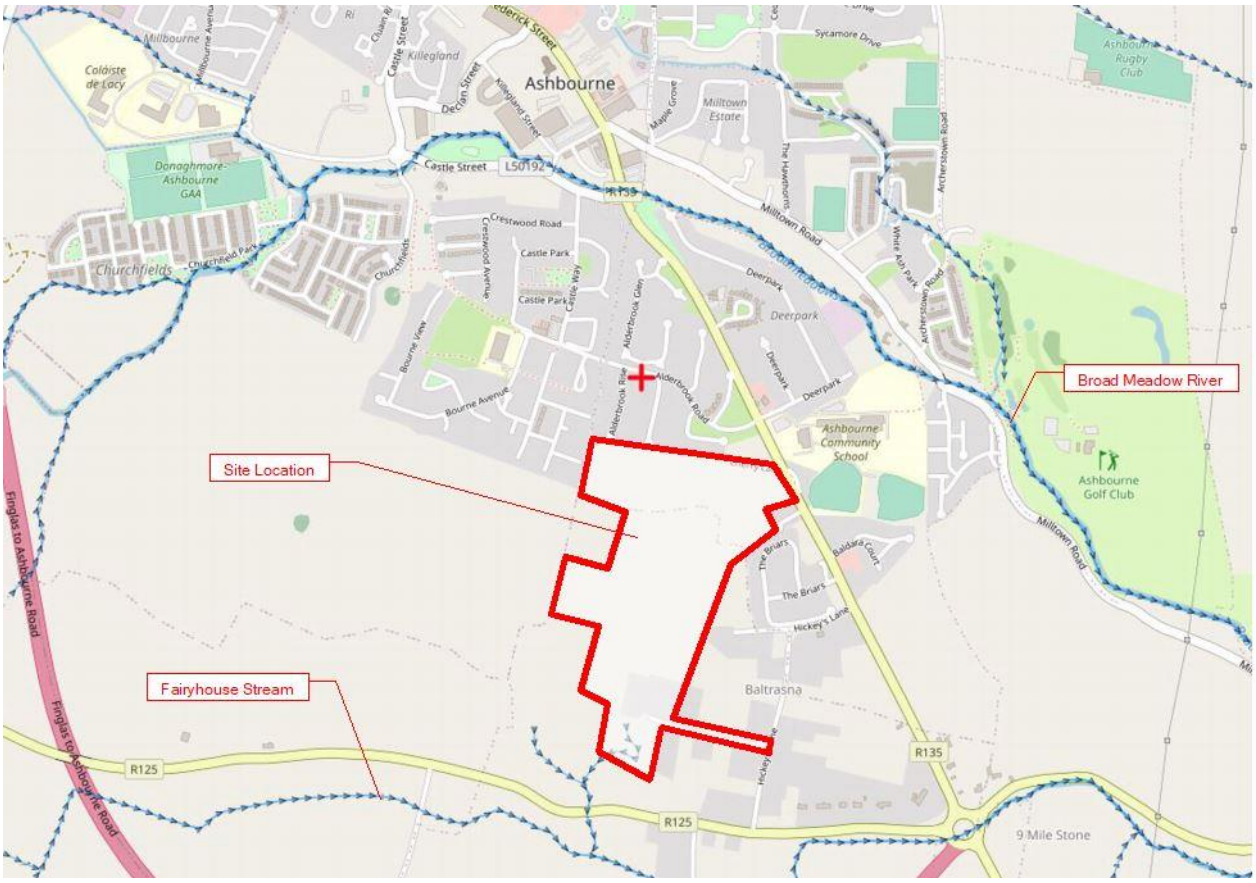


Figure 6.3. Extract from EPA Online Mapping Service.

The development works include the attenuation of surface water flows to greenfield runoff rates. The proposed development will be attenuated using vortex flow control devices (Hydrobrake or equivalent) at the outfall, limiting the discharge rate to greenfield runoff rates in accordance with the Greater Dublin Strategic Drainage Strategy (GDSDS). SUDs measures, such as permeable paving, swales and detention basins, have been incorporated into the design.

In order to adhere to this requirement, the calculated allowable surface water runoff for the northern site has been calculated as 41.73 l/s for the whole development. It has been determined that a total attenuation volume of 3904m^3 for the whole development will therefore be required to accommodate for the 100-year storm event (a 20% provision for climate change included), as required by the GDSDS.

The surface water drainage network, attenuation storage and site levels are designed to accommodate a 1000-year storm event (a 20% provision for climate change included). Floor levels of houses are set above the 100-year flood levels by a minimum of 0.5m. For storms in excess of 100 years, the development has been designed to provide overland flood routes along the various development roads towards the surface water drainage outfalls at the Broad Meadow River. These overland flood routes also reduce the development's vulnerability to climate change.

6.4.2. Hydrogeology

The Geological Survey Ireland (GSI) Online Data Services classifies the aquifer at the subject site as "Locally Important Aquifer – Bedrock which is moderately productive only in local zones".

GSI classifies the site's groundwater vulnerability as low as illustrated in Figure 6.4. Groundwater Vulnerability is a term used to represent the natural ground characteristics that determine the ease with which groundwater may be contaminated by human activities. Low vulnerability is located in all of the subject site.

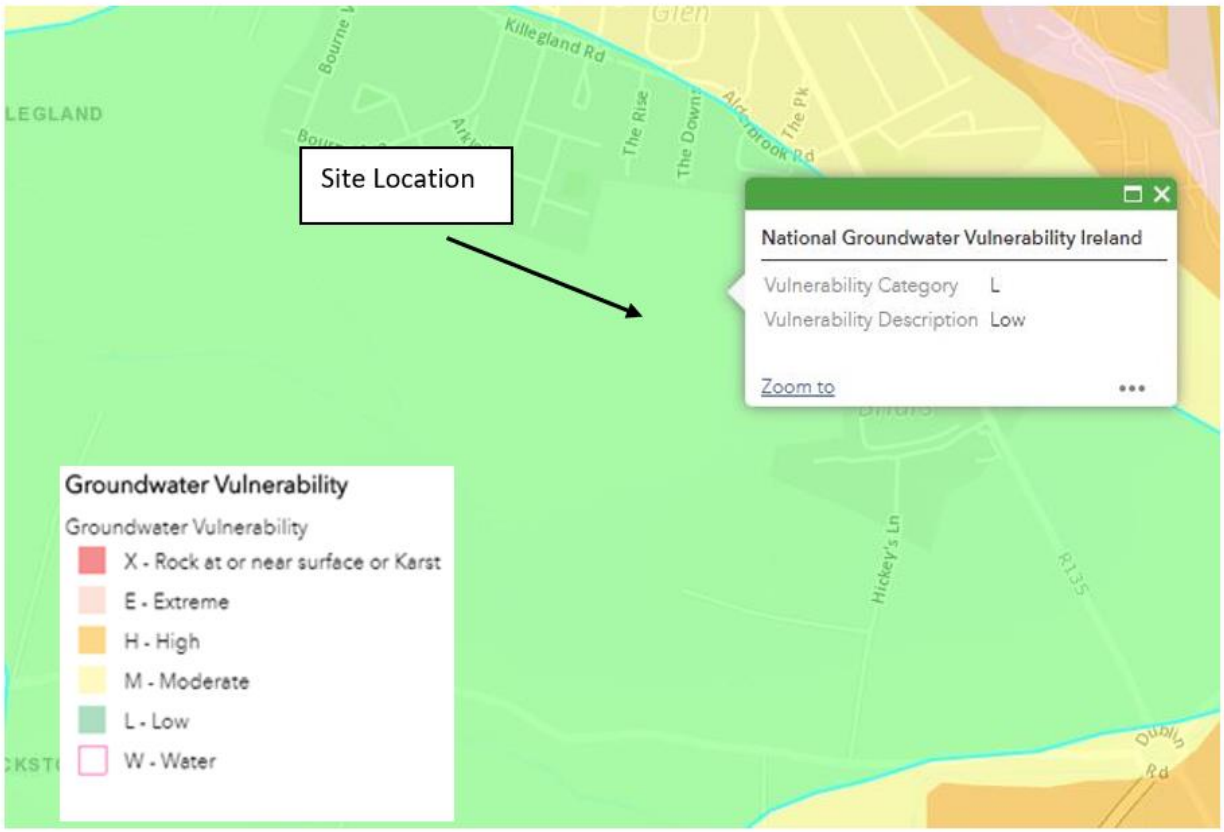


Figure 6.4. Extract from GSI Mapping Service (Groundwater Vulnerability).

An aquifer is described as an underground layer of permeable rock, sediment or soil that yields water. Upon review of the GSI mapping service it can be seen that the aquifer in the proposed site is a Bedrock Aquifer which is moderately productive only in local zones.

Figure 6.5. Extract from GSI Mapping Service (Groundwater Aquifers).

From the site investigation was completed in 2022, excavations at 7 soakaway test locations and 7 trial pits locations were carried out to depths ranging from 2.5m to 3.1m below existing ground level. Groundwater was encountered in SA06 and TP06 at depths of 1.8m, 2.4m below ground level respectively. Each of the soakpits had adequate infiltration except for SA06 which had 0, all attenuation has been adopted in all attenuation calculations systems proposed was used for this assessment.

During construction, it is anticipated that the deepest excavations will be for the installation of surface water drainage lines and attenuation tanks (up to approximately 4.0m deep).

6.4.3. Flood Risk

DBFL Consulting Engineers have undertaken a separate Site-Specific Flood Risk Assessment (SSFRA) which is included with the planning application documentation. The SSFRA included a review of information from the Office of Public Works (OPW) National Flood Hazard Mapping (www.floods.ie), the Eastern Catchment Flood Risk Assessment and Management (CFRAM) mapping, Meath County Development Plan (CDP) 2013 to 2019 and Meath County Development Plan (CDP) 2021 to 2027.

Based on historical Eastern CFRAMs flood mapping, the entire whole of the site is in Flood Zone C (i.e., not at risk of flooding). Refer to Figure 6.6. below for historical Eastern CFRAMs flood.

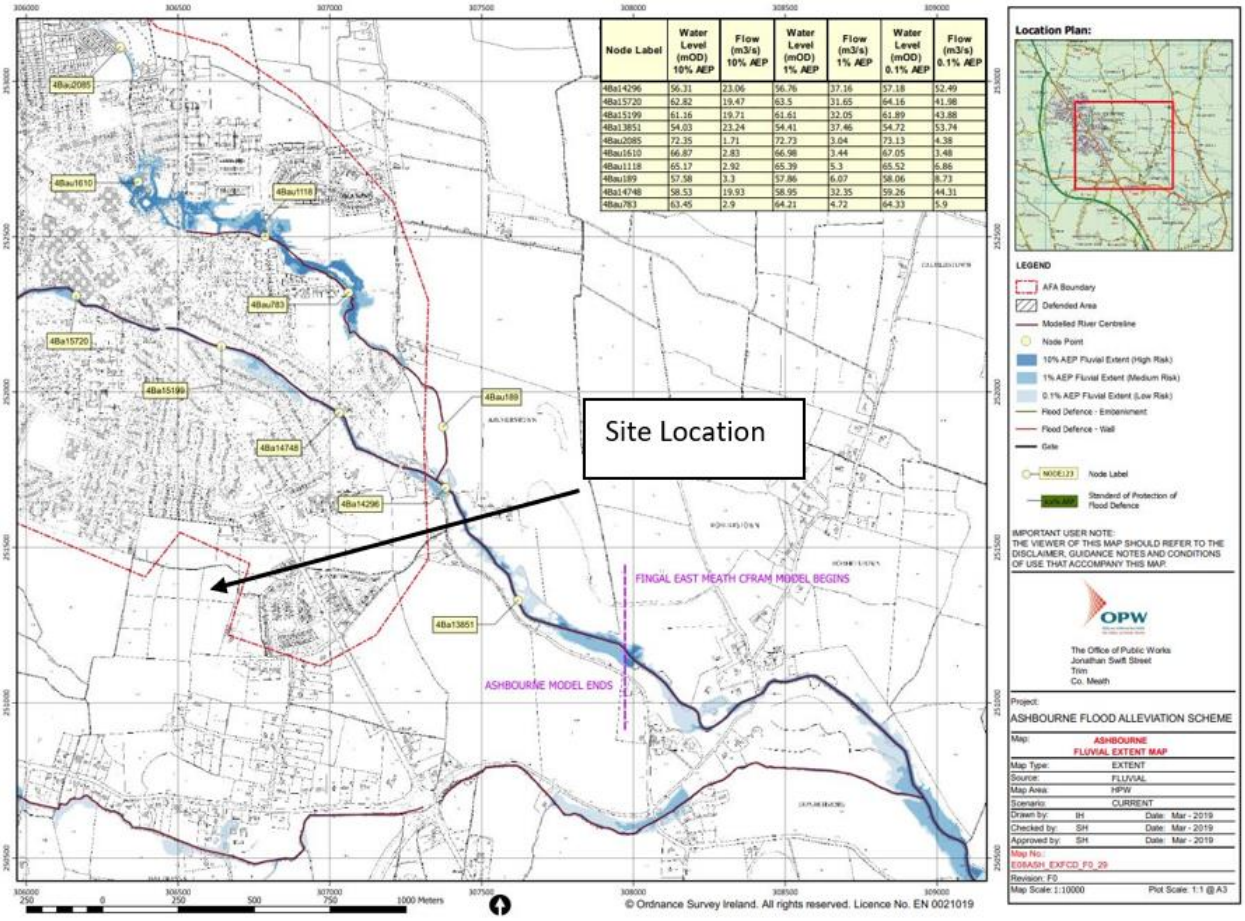


Figure 6.6. Eastern CFRAMs Flood Mapping Prior to Flood Mitigation Works.

Sustainable Drainage Systems (SuDS) will be employed to serve the proposed development, ensuring that only clean attenuated surface water from the development will discharge to the Broad Meadow River and the Fairyhouse stream. Discharge will be restricted to greenfield runoff levels via flow control devices. The proposed development layout design is in accordance with the required standards and will attenuate run-off by providing approximately 3,482m^3 of storm-water storage. Therefore, the design will not cause impacts or increase the risk of flooding elsewhere or in adjacent areas.

The development is designed such that new buildings will have freeboard substantially above predicted pluvial flood levels and above potential overland flow paths along roads etc. The development's drainage design provides a significant volume of above ground attenuation storage for the 1 in 100 year return event and, together with various design mitigation measures, meets the drainage design requirements of the Greater Dublin Strategic Drainage Study. Should extreme pluvial flooding occur that is in excess of the development's drainage capacity then overland flood routes to the drainage outfall will protect the development and houses with lower floor levels. Refer to Figure 6.7. and 6.8. below of Proposed Overland Flow Routes.

Figure 6.7. Proposed Overland Flow Route (Northern Section).

Figure 6.8. Proposed Overland Flow Route (Southern section).

The development's layout and drainage design have been considered within the context of flood risk and mitigation measures have been recommended for the operation and maintenance of the surface water system. Proposed mitigation measures for flood risk include regular maintenance of the of the proposed drainage system to prevent blockages and overland flow routes are to be provided in the event of any storms exceeding the 1 in 100 Year return period event. These together with provision of attenuated outlets, attenuation storage volume, SUDS drainage features, building and road levels above expected drainage flood levels have been considered in the development's layout and drainage design. The development will not increase flood risk elsewhere and therefore it is concluded that the requirements of the Sequential Test as contained in The Planning System and Flood Risk Management, Guidelines for Planning Authorities are passed for the proposed development layout in the subject Site.

Based on the above all proposed dwellings in the north and south sites are considered to have a very low probability of flooding. We also note that all proposed dwellings are located in zoned lands and all proposed dwellings are located in Flood Zone C (i.e. not at risk of flooding).

6.5. Difficulties Encountered

There were no material difficulties encountered in compiling and assessing the data for this EIAR chapter.

6.6. Impact Assessment

6.6.1. Do Nothing Scenario

There are no predicted impacts should the proposed development not proceed.

6.6.2. Potential Construction Phase Impacts

The potential impacts for the construction phase of the proposed development are noted below:

- Surface water runoff may contain increased silt levels (e.g. runoff across areas stripped of topsoil) or become polluted by construction activities (Run off from vehicles, cement, oil spills etc).
- Discharge of rainwater pumped from excavations containing increase levels of silt, oil, cement, etc.
- Accidental spills and leaks associated with storage of oils and fuels, leaks from construction machinery and spillage during refuelling and maintenance contaminating the surrounding surface water and hydrogeological environments.
- Concrete runoff, particularly discharge of wash water from concrete trucks.
- Discharge of vehicle wheel wash water containing high silt levels, oil and fuels, cement (potential impact on existing hydrology e.g. discharge to existing surface water drainage infrastructure).
- Discharge of foul water drainage from contractor's compound (impact on existing hydrology e.g. cross-contamination of existing surface water drainage).
- Infiltration of groundwater into excavations.
- Cross-contamination of temporary potable water supply to construction compound.

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a Neutral, Short Term, Moderate impact.

6.6.3. Potential Operational Phase Impacts

Potential operational phase impacts are noted below:

- Increased impermeable surface area will reduce local groundwater recharge rate.
- Increased impermeable surface area will potentially increase surface water runoff rate (if not attenuated to greenfield run-off rate).
- Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g., along roads and in driveway areas).

As noted, surface water outflow from the site ultimately discharges to the Broad Meadow River which flows into the Irish sea at Malahide. If surface water is not adequately treated and managed in accordance with the GDSDS it has the potential to impact aquatic life and human health.

Surface water drainage for the development has been designed in accordance with the GDSDS therefore the risk to human health has been mitigated.

These impacts are likely and are expected to be slight, permanent and have a neutral effect on the environment.

6.6.4. Potential Risk to Human Health

There is a risk to human health from contamination of the potable water supply from surface water or ground water. The ground water and supply network would present possible pathways such as damaged or incorrectly installed pipes. The risks are considered below.

Groundwater Supply

Considering the low infiltration rates obtained as part of the preliminary site investigation undertaken, by Ground Investigations Ireland, the risk to the contamination of ground water from surface water run-off from the development is considered for each development phase. During the construction phase the impact is considered to be a moderate, neutral short-term effect. During the operational phase, the impact is considered to be a moderate, neutral permanent effect.

Potable Water Network Supply

The water supply network will not become operational until after construction of the road network. Therefore, there is no risk of contamination at this stage.

The potable water supply will be delivered in new pipework infrastructure in accordance with Irish Water's specification. Therefore, the risk to human health through the water supply network from the road in operation will be very low. The installation of new water supply network will also provide a positive effect to human health in the surrounding areas by way of a controlled network. The overall impact is considered to be a positive, long term, and moderate.

6.6.5. Cumulative Impacts

No potential cumulative impacts are anticipated in relation to foul drainage and water supply. Irish Water have confirmed that wastewater and water connections are feasible with any infrastructure upgrades required. See Figure 6.9. below for location of Ashbourne WWTP.

Figure 6.9. Existing Ashbourne WWTP.

6.7. Mitigation Measures

6.7.1. Construction Phase

- A Construction and Environmental Management Plan will be submitted with the application documentation and will be implemented by the contractor during the construction phase. Site inductions will include reference to the procedures and best practice as given in the CEMP.

- All water pumped from excavations will be directed to on-site settlement ponds for treatment to reduce pollution to acceptable levels before being discharged to the local environment at a controlled rate.

- Surface water runoff from areas stripped of topsoil, from the construction compound, and from access tracks will be directed to on-site settlement ponds for treatment to reduce pollution to acceptable levels before being discharged to the local environment at a controlled rate.

- Weather conditions and seasonal weather variations will be taken into account when planning stripping of topsoil and excavations, with an objective of minimizing soil erosion and silt run-off. Short term weather forecasts will also be taken into account.

- In order to mitigate against spillages contaminating the surrounding surface water and hydrogeological environments, all oils, fuels, paints and other chemicals shall be stored in a secure bunded hardstand area in the construction compound. Refuelling and servicing of construction machinery will take place in a designated hardstand area which will be remote from any surface water inlets and outlets (where it is not possible to carry out such activities off site). Hydrocarbon spill kits will be available and to hand for refuelling crews in the event of any spills.

- Concrete batching will take place off site and wash out of concrete chutes will take place at designated locations in the site and the washout of truck drums will take place after back at the batching plant to minimise pollution release within the subject site.

- Discharge from any vehicle wheel wash areas will be directed to on-site settlement ponds for treatment prior to discharge to the local environment.

- Groundwater pumped from excavations is to be directed to on-site settlement ponds for treatment prior to discharge to the local environment.

6.7.2. Operational Phase

The design of proposed site levels (roads, finished floor levels etc.) was completed to replicate existing surface contours, break lines etc., therefore replicating existing overland surface water flow paths, to minimise changes to the site characteristics and not concentrating water run-off in any particular location(s).

Surface water runoff from the site will be attenuated to the existing greenfield runoff rate as outlined in the Greater Dublin Strategic Drainage Study (GDSDS). Surface water discharge rates will be controlled by 7 no. Hydrobrake type vortex flow control devices, located at all attenuation areas, in conjunction with attenuation storage in both locations.

The design of the proposed development incorporates the following SuDS surface water treatment train solutions:

- Permeable paving in driveway areas.
- Surface water runoff from roofs will be routed to the proposed surface water pipe network via the porous aggregates beneath permeable paved driveways.
- Surface water runoff from roads, where allowable, will drain to swales for treatment and runoff reduction.
- Attenuation of the 100-year return event storms with a 20% allowance for climate change.
- Installation of 7 No. flow control devices (Hydrobrake or similar) limiting surface water discharge from the site to greenfield runoff rates at the outfalls to the Fairyhouse stream and Broad Meadow River.
- Surface water discharge to pass via 7 No. Class 1 fuel / oil separator (sized in accordance with permitted discharge from the site).
- Non-Return Valve fitted at outlet locations to prevent any water from the Fairyhouse stream or the drainage ditch from draining back into the systems.

6.8. Residual Impacts

Construction Phase

Implementation of mitigation measure outlined in Section 6.7 will ensure that the potential impacts of the

proposed development on water and the hydrogeological environment do not occur during the construction phase and that any residual impacts will be slight, short-term and have a neutral impact on the environment.

Operational Phase

As the surface water drainage design has been carried out in accordance with the GDSDS, and SuDS methodologies will be implemented as part of a treatment train approach, the predicted residual impacts on the water and hydrogeological environment arising from the operational phase are expected to be slight, long term and have a neutral effect on the development.

Overall, the impact on the hydrological environment as a result of the wider developments in the area are considered to be permanent and imperceptible. The overall impact is expected to be neutral.

6.9. Worst Case Scenario

The following unplanned events could potentially give rise to impact on the receiving water and hydrology:

- Flooding of the road network, preventing access by emergency services to all parts of the proposed development.
- Should the above event occur, it would be considered significant brief or short term and have a negative effect on the site. However, if the mitigation measures outlined in section 9.7 are adhered to then these issues will not likely occur.
- The attenuation areas for the site are designed to accommodate flood events up to 0.1% (1000 year) AEP (Annual Exceedance Probability) with an additional 20% allowance for climate change. In events above this risk level, the surface water network is designed to provide overland flood routes along the various development roads towards the surface water drainage outfall therefore mitigating the risk.

6.10. Monitoring

Proposed monitoring in relation to the water and hydrogeological environment are as follows:

- Inspection and maintenance of fuel / oil separators.
- Inspection and maintenance of the internal road network for wear and tear that could cause silt release.
- Inspection and maintenance of attenuation and hydrobrake infrastructure.
- During the operational phase, an inspection and maintenance contract is to be implemented in relation to the proposed Class 1 fuel / oil separators, hydrobrakes and attenuation facilities.

6.11. Interactions

Water can interact with several other environmental aspects during both the construction and operational phases of the development. These interactions are discussed below.

6.11.1. Transportation

Interactions with Traffic and Transport arise during the construction phase when excavations are undertaken on sire and potential groundwater is encountered. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic and also mitigation measures will be provided to control groundwater on site.

6.11.2. Land and Soils

Interactions with Land and Soils arise during the construction phase and the operational phase. The surface water

drainage infrastructure for the development will collect the rainfall on the site and convey the storm water run-off via tree pits, bio-retention area, rain gardens, infiltration basins, gullies, underground pipes, manholes, catchpit manholes and direct the flows via void arched attenuation systems towards vortex flow restricting devices (Hydrobrake or similar) and petrol interceptors before out falling to the existing on site open watercourses to the south/existing drainage network to the east. During the construction phase a site-specific CEMP will manage site water and will mitigate the risk of surface contaminants infiltrating into the underlying geology and hydrogeology. Surface water drainage from the operational site has been designed in accordance with Greater Dublin Strategic Drainage Study (GDSDS) and SuDs methods will be used to manage drainage.

6.11.3. Biodiversity / Species & Habitat

Removal of the existing topsoil layer will be required across the site as well as removal of some trees, hedgerows etc. Further details including any potential issues and mitigation measures are outlined in Chapter 4 (Biodiversity). Harmful materials on site like plastics and different types of material dust can get into a water source and cause pollution. Measures must be in place to prevent this from occurring.

6.11.4. Noise and Vibration

Development of the site will result in a level of noise and vibration related effects on the surrounding environment during the construction phase. The interaction between Water and Hydrology and Noise and Vibration is considered to be moderate and temporary in nature. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic.

6.11.5. Air Quality

There is a potential for excavation activity to impact on air quality in terms of dust generated.
Dust generation can also occur during extended dry weather periods as a result of construction traffic. However, the implementation of suitable mitigation measures as outlined in a CEMP for the site will ensure a neutral impact.

6.11.6. Resource & Waste Management

Interactions with Waste Management arise during the construction phase when soil, subsoils and demolition waste from excavations are being transported from the site. These waste materials will require appropriate transport and disposal. A Waste Classification Report for soils and subsoils shall be prepared in order to define appropriate waste disposal outlets.

6.12. References

- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (2000).
- Greater Dublin Strategic Drainage Study. Dublin Drainage (2005).
- Geological Survey Ireland Maps – Groundwater Aquifer and Groundwater Vulnerability Maps.
- Office of Public Works (OPW) National Flood Hazard Mapping – Fluvial Flood Maps.
- Environmental Protection Agency (EPA) Maps – Water Features Map.
- Ashbourne Local Area Plan (2009-2015) Meath County Council.
- OPW (November 2009) Guidelines for Planning Authorities – The Planning System and Flood Risk Management.
- Guidelines on the information to be contained in environmental impact assessment reports. Environmental Protection Agency (Draft 2017).
- Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements. Institute of Geologists of Ireland (2013).

- Directive 2014/52/EU (16 April 2014) European Parliament.
- 200059-DBFL-CS-SP-RP-C-002 Infrastructure Design Report submitted by DBFL.
- Meath County Development Plan (2013 to 2019) & Meath County Development Plan (2021-2027)

7.0. Air Quality and Climate

7.1. Introduction

This chapter of the EIAR assesses the air quality and climate impacts associated with the proposed development at townlands of Baltrasna and Milltown, Ashbourne, County Meath. A full description of the proposed development is available in Chapter 2 of this EIAR 'Description of the Project & Alternatives'.

This chapter of the EIAR was completed by Ciara Nolan, a Senior Environmental Consultant in the air quality section of AWN Consulting Ltd. She holds an MSc. (First Class) in Environmental Science from University College Dublin and has also completed a BSc. in Energy Systems Engineering. She is an Associate Member of both the Institute of Air Quality Management (AMIAQM) and the Institution of Environmental Science (AMIEnvSc). She has over 5 years of consultancy experience focussing on air quality. She has prepared air quality and climate impact assessments for numerous EIARs for a range of projects including commercial, residential, industrial, pharmaceutical and data centre developments.

7.2. Methodology

7.2.1. Criteria for Rating of impacts

7.2.1.1. 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 include the Air Quality Standards Regulations 2011 (S.I. no. 180 of 2011), which incorporate EU Directive 2008/50/EC, which has set limit values for a number of pollutants. The limit values for NO_2, PM_{10} and $PM_{2.5}$ are relevant to this assessment (see Table 7.1). Although the EU Air Quality Limit Values are the basis of legislation, other thresholds outlined by the EU Directives are used, which are triggers for particular actions.

Pollutant	Regulation [Note 1]	Limit Type	Value
Nitrogen Dioxide (NO_2)	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m^3
		Annual limit for protection of human health	40 µg/m^3
		Critical level for protection of vegetation	30 µg/m^3 NO + NO_2
Particulate Matter (as PM_{10})	2008/50/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m^3
		Annual limit for protection of human health	40 µg/m^3
Particulate Matter (as $PM_{2.5}$)	2008/50/EC	Annual limit for protection of human health	25 µg/m^3

Table 7.1. Ambient Air Quality Standards.

Note 1: EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC

7.2.1.2. Dust Deposition Guidelines

The concern from a health perspective is focussed on particles of dust which are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$) in diameter, and the EU ambient air quality standards outlined in Table 7.1 have set

ambient air quality limit values for PM_{10} and $PM_{2.5}$.
With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust in respect of this development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/(m^2*day), averaged over a one year period, at any receptors outside the site boundary. Recommendations from the Department of the Environment, Heritage & Local Government (DEHLG, 2004) apply the Bergerhoff limit of 350 mg/(m^2*day) to the site boundary of quarries. This limit value can also be implemented with regard to dust impacts from construction of the proposed development.

7.2.1.3. Climate Agreements

Ireland is party to both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. The Paris Agreement, which entered into force in 2016, is an important milestone in terms of international climate change agreements and includes an aim of limiting global temperature increases to no more than 2°C above pre-industrial levels, with efforts to limit this rise to 1.5°C. The aim is to limit global greenhouse gas (GHG) emissions to 40 gigatonnes as soon as possible whilst acknowledging that peaking of GHG emissions will take longer for developing countries. Contributions to GHG emissions will be based on Intended Nationally Determined Contributions (INDCs) which will form the foundation for climate action post-2020. Significant progress was also made in the Paris Agreement on elevating adaptation onto the same level as action to cut and curb emissions.

In order to meet the commitments under the Paris Agreement, the EU enacted Regulation (EU) 2018/842 on binding annual greenhouse gas 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 (the Regulation). 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. Ireland's obligation under the Regulation is a 30% reduction in non-ETS GHG emissions by 2030 relative to its 2005 levels.

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the Act). The purpose of the Act was to enable Ireland "*to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050*" (3 (1) of No. 46 of 2015). This is referred to in the Act as the "*national transition objective*". The Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the 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, 2019a). The Climate Action Plan 2019 outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The Government published the second Climate Action Plan in November 2021 (Government of Ireland, 2021a). The plan contains similar elements as the 2019 CAP and aims to set out how Ireland can reduce our greenhouse gas emissions by 51% by 2030 (compared to 2018 levels) which is in line with the EU ambitions, and a longer-term goal of to achieving net-zero emissions no later than 2050. The 2021 CAP outlines that emissions from the Built Environment sector must be reduced to 4 - 5 $MtCO_2e$ by 2030 in order to meet our climate targets. This will require further measures in addition to those committed to in the 2019 CAP. This will include phasing out the use of fossil fuels for the space and water heating of buildings, improving the fabric and energy of our buildings, and promoting the use of lower carbon alternatives in construction.

Following on from Ireland declaring a climate and biodiversity emergency in May 2019 and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme for the Climate Action (Amendment) Bill 2019 in December 2019 (Government of Ireland 2019b) followed by the publication of the Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021) (hereafter referred to as the 2021 Climate Act) in July 2021 (Government of Ireland, 2021b). The 2021 Climate Act was prepared for the purposes of 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 will also '*provide 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*'. The 2021 Climate Act removes any reference to a national mitigation plan and instead refers to both the Climate Action Plan, as published in 2019, and a series of National Long Term Climate Action Strategies. In addition, the Environment Minister shall request each local authority to make a '*local authority climate action plan'* lasting five years and to specify the mitigation measures and the adaptation measures to be adopted by the Local Authority.

7.2.2. Construction Phase

7.2.2.1. Air Quality

The assessment focuses on identifying the existing baseline levels of PM_{10} and $PM_{2.5}$ in the region of the proposed development by an assessment of EPA monitoring data. Thereafter, the impact of the construction phase of the development on air quality was determined by a qualitative assessment of the nature and scale of dust generating construction activities associated with the proposed development.

Construction phase traffic also has the potential to impact air quality and climate. The UK Highways Agency Design Manual for Roads and Bridges (DMRB) guidance (UK Highways Agency, 2019a), 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:

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- A change in speed band; and / or
- A change in carriageway alignment by 5 m or greater.

The use of the UK guidance is recommended by the TII (2011) in the absence of specific Irish guidance. This approach is considered best practice and can be applied to any development that causes a change in traffic. The construction phase traffic has been reviewed and none of the impacted road links meet the above criteria. Therefore, a detailed air quality assessment has been scoped out as there is no potential for significant impacts to air quality from construction traffic emissions.

7.2.2.2. Climate

The impact of the construction phase of the proposed development on climate was determined by a qualitative assessment of the nature and scale of GHG generating construction activities associated with the proposed development.

The UK Highways Agency has published an updated DMRB guidance document in relation to climate impact

assessments, *LA 114 Climate.* The following scoping criteria are used to determine whether a detailed climate assessment is required for a proposed development. If any of the road links impacted by the proposed development meet the below criteria then further assessment is required:

- A change of more than 10% in AADT;
- A change of more than 10% to the number of HDVs; and / or
- A change in daily average speed of more than 20 km/hr.

The construction phase traffic has been reviewed and none of the impacted road links meet the above criteria. Therefore, a detailed climate assessment has been scoped out as there is no potential for significant impacts to climate from construction traffic emissions.

7.2.3. Operational Phase

7.2.3.1. Air Quality

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the proposed development. The operational phase air quality assessment has been carried out following procedures described in the publications by the EPA (2015; 2022) and using the methodology outlined in the guidance documents published by the UK Highways Agency (2019a) and UK Department of Environment Food and Rural Affairs (DEFRA) (2016; 2018). Transport Infrastructure Ireland (TII) reference the use of the UK Highways Agency and DEFRA guidance and methodology in their document *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (2011). This approach is considered best practice in the absence of Irish guidance and can be applied to any development that causes a change in traffic.

In 2019 the UK Highways Agency DMRB air quality guidance was revised with *LA 105 Air Quality* replacing a number of key pieces of guidance (HA 207/07, IAN 170/12, IAN 174/13, IAN 175/13, part of IAN 185/15). This revised document outlines a number of changes for air quality assessments in relation to road schemes but can be applied to any development that causes a change in traffic. Previously the DMRB air quality spreadsheet was used for the majority of assessments in Ireland with detailed modelling only required if this screening tool indicated compliance issues with the EU air quality standards. Guidance from Transport Infrastructure Ireland (TII, 2011) recommends the use of the UK Highways Agency DMRB spreadsheet tool for assessing the air quality impacts from road schemes. However, the DMRB spreadsheet tool was last revised in 2007 and accounts for modelled years up to 2025. Vehicle emission standards up to Euro V are included but since 2017, Euro 6d standards are applicable for the new fleet. In addition, the model does not account for electric or hybrid vehicle use. Therefore, this a somewhat outdated assessment tool. The LA 105 guidance document states that the DMRB spreadsheet tool may still be used for simple air quality assessments where there is unlikely to be a breach of the air quality standards. Due to its use of a "dirtier" fleet, vehicle emissions would be considered to be higher than more modern models and therefore any results will be conservative in nature and will provide a worst-case assessment.

The 2019 UK Highways Agency DMRB air quality revised guidance *LA 105 Air Quality* states that modelling should be conducted for NO_2 for the base, opening and design years for both the do minimum (do nothing) and do something scenarios. Modelling of PM_{10} is only required for the base year to demonstrate that the air quality limit values in relation to PM_{10} are not breached. Where the air quality modelling indicates exceedances of the PM_{10} air quality limits in the base year then PM_{10} should be included in the air quality model in the do minimum and do something scenarios. Modelling of $PM_{2.5}$ is not required as there are currently no issues with compliance with regard to this pollutant. The modelling of PM_{10} can be used to show that the project does not impact on the $PM_{2.5}$ limit value as if compliance with the PM_{10} limit is achieved then compliance with the $PM_{2.5}$ limit will also be achieved. Historically modelling of carbon monoxide (CO) and benzene was required however, this is no longer needed as concentrations of these pollutants have been monitored to be significantly below their air quality limit values in recent years, even in urban centres (EPA, 2021a). The key pollutant reviewed in this assessment is NO_2. Concentrations of PM_{10} have been modelled for the base year to indicate that there are no potential

compliance issues. Modelling of operational NO_2 concentrations has been conducted for the do nothing and do something scenarios.

The TII guidance (2011) states that the assessment must progress to detailed modelling if:

- Concentrations exceed 90% of the air quality limit values when assessed by the screening method; or
- Sensitive receptors exist within 50m of a complex road layout (e.g. grade separated junctions, hills etc).

The UK DMRB scoping criteria outlined above in Section 7.2.2.1 has been used in the current assessment to determine the road links required for inclusion in the modelling assessment. Sensitive receptors within 200m of impacted road links are included within the modelling assessment. Pollutant concentrations are calculated at these sensitive receptor locations to determine the impact of the proposed development in terms of air quality. The guidance states a proportionate number of representative receptors which are located in areas which will experience the highest concentrations or greatest improvements as a result of the proposed development are to be included in the modelling (UK Highways Agency, 2019a). The TII guidance (2011) defines sensitive receptor locations as: residential housing, schools, hospitals, places of worship, sports centres and shopping areas, i.e. locations where members of the public are likely to be regularly present. A total of six high sensitivity residential receptors (R1 – R6) were included in the modelling assessment and are detailed in Figure 7.1. These receptors were chosen as they are within 200m of affected road links which meet the air quality assessment criteria outlined in Section 7.2.2.1. The UK DMRB guidance (2019a) states that road links at a distance of greater than 200m from a sensitive receptor will not influence pollutant concentrations at the receptor.

The following model inputs are required to complete the assessment using the DMRB spreadsheet tool: road layouts, receptor locations, annual average daily traffic movements (AADT), percentage heavy goods vehicles (%HGV), annual average traffic speeds and background concentrations. Using this input data the model predicts the road traffic contribution to ambient ground level concentrations at the worst-case sensitive receptors using generic meteorological data. The DMRB model uses conservative emission factors, the formulae for which are outlined in the DMRB Volume 11 Section 3 Part 1 – HA 207/07 Annexes B3 and B4. These worst-case road contributions are then added to the existing background concentrations to give the worst-case predicted ambient concentrations. The worst-case 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 document *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (2011) 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 both the absolute and relative impact of the proposed development. The TII significance criteria are outlined in Appendix 10 of the TII guidance and have been adopted for the proposed development. The significance criteria are based on NO_2 and PM_{10} as these pollutants are most likely to exceed the annual mean limit values (40 µg/m^3).

Conversion of NO_x to NO_2

NO_X (NO + NO_2) is emitted by vehicles exhausts. The majority of emissions are in the form of NO, however, with greater diesel vehicles and some regenerative particle traps on HGV's the proportion of NO_X emitted as NO_2, rather than NO is increasing. With the correct conditions (presence of sunlight and O_3) emissions in the form of NO, have the potential to be converted to NO_2.

Transport Infrastructure Ireland states the recommended method for the conversion of NOx to NO_2 in "*Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes*" (2011). The TII guidelines recommend the use of DEFRAs NOx to NO_2 calculator (2020) which was originally published in 2009 and is currently on version 8.1. This calculator (which can be downloaded in the form of an excel spreadsheet) accounts for the predicted availability of O_3 and proportion of NOx emitted as NO for each local authority across the UK. O_3 is a regional pollutant and therefore concentrations do not vary in the same way as concentrations of

NO_2 or PM_{10}.

The calculator includes Local Authorities in Northern Ireland and the TII guidance recommends the use of 'Armagh, Banbridge and Craigavon' as the choice for local authority when using the calculator. The choice of Craigavon provides the most suitable relationship between NO_2 and NO_x for Ireland. The "All Non-Urban UK Traffic" traffic mix option was used.

Update to NO_2 Projections using DMRB

In 2011 the UK DEFRA published research (Highways England, 2013) on the long term trends in NO_2 and NO_X for roadside monitoring sites in the UK. This study marked a decrease in NO_2 concentrations between 1996 and 2002, after which the concentrations stabilised with little reduction between 2004 and 2010. The result of this is that there now exists a gap between projected NO_2 concentrations which UK DEFRA previously published and monitored concentrations. The impact of this 'gap' is that the DMRB screening model can under-predict NO_2 concentrations for predicted future years. Subsequently, the UK Highways Agency published an Interim advice note (IAN 170/12) in order to correct the DMRB results for future years. This methodology has been used in the current assessment to predict future concentrations of NO_2 as a result of the proposed development.

Traffic Data Used in Modelling Assessment

Traffic flow information was obtained from DBFL Consulting Engineers for the purposes of this assessment. Data for the base year 2021 and data for the Do Nothing and Do Something scenarios for the opening year 2023 and design year 2038 were provided. The traffic data is detailed in Table 7.2 with the %HGV shown in parenthesis beside the AADT. Only road links that met the DMRB scoping criteria and that were within 200m of receptors were included in the modelling assessment. Background concentrations have been included as per Section 7.3.2 of this chapter based on available EPA background monitoring data (EPA, 2021a).

This traffic data has also been used in the operational stage climate impact assessment.

Road Name	Speed (kph)	Base Year 2021	Opening Year 2023		Design Year 2038	
			Do Nothing	Do Something	Do Nothing	Do Something
Dublin Road (S)	50	11,295 (0.1%)	12,836 (0.1%)	13,213 (0.1%)	15,146 (0%)	17,116 (0%)
Cherry Lane (Link St)	50	80 (0%)	91 (0%)	689 (0%)	429 (0%)	3,208 (0%)
Dublin Road (N)	50	11,284 (0.1%)	12,823 (0.1%)	13,044 (0.1%)	15,047 (0%)	16,294 (0%)
Dublin Road R135 (S)	60	10,775 (3.5%)	12,245 (3.6%)	12,622 (3.5%)	14,458 (3.4%)	16,563 (2.9%)
Hickey's Lane	60	469 (2.4%)	533 (2.5%)	533 (2.5%)	620 (2.4%)	1,141 (1.3%)
Dublin Road R135 (N)	50	11,026 (3.5%)	12,531 (3.6%)	12,907 (3.5%)	14,791 (3.4%)	16,760 (3%)
Dublin Road (S)	50	11,306 (3.3%)	12,849 (3.5%)	13,070 (3.4%)	15,077 (3.2%)	16,324 (3%)
Dublin Road (N)	50	11,289 (3.2%)	12,829 (3.4%)	13,009 (3.3%)	15,029 (3.1%)	16,045 (2.9%)
Hickey's Lane	60	269 (4.3%)	305 (4.4%)	305 (4.4%)	355 (4.1%)	529 (2.8%)
M2 access	80	12,570 (3%)	14,284 (3.1%)	14,495 (3.1%)	16,730 (2.9%)	17,960 (2.7%)
R135 (N)	60	10,712 (3.3%)	12,173 (3.4%)	12,544 (3.3%)	14,358 (3.2%)	16,463 (2.8%)

Table 7.2. Traffic Data used in Modelling Assessment.

Figure 7.1. Sensitive Receptors used in Operational Phase Air Modelling Assessment.

7.2.3.2. Climate

Ireland has annual GHG targets which are set at an EU level and need to be complied with in order to reduce the impact of climate change. Impacts to climate as a result of GHG emissions are assessed against the targets set out by the EU *under Regulation (EU) 2018/842 on binding annual greenhouse gas 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*, which has set a target of 30% reduction in non-ETS sector GHG emissions by 2030 relative to 2005 levels.

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 7.3.3). The impact of the proposed development on climate is determined in relation to this baseline. Road traffic associated with the proposed development will emit certain volumes of carbon dioxide (CO_2).

The UK Highways Agency DMRB scoping criteria detailed in Section 7.2.2.2 were used to determine if any road links are affected by the proposed development and, as such, require inclusion in a detailed air dispersion modelling assessment. There are a number of road links that will experience an increase of 10% or more in the AADT. These road links have been included in the detailed climate assessment (see Table 7.2). The impact of the proposed development at a national / international level has been determined using the procedures given by Transport Infrastructure Ireland (2011) and the methodology provided in Annex D in the UK Design Manual for Roads and Bridges (UK Highways Agency, 2007). The assessment focused on determining the resulting change

in emissions of carbon dioxide (CO_2). The Annex provides a method for the prediction of the regional impact of emissions of these pollutants from road schemes and can be applied to any project that causes a change in traffic. The inputs to the air dispersion model consist of information on road link lengths, AADT movements and annual average traffic speeds (see Table 7.2).

The EU guidance (2013) also states indirect GHG emissions as a result of a development must be considered, this includes emissions associated with energy usage. In addition to the EU guidance, the Institute of Environmental Management and Assessment (IEMA) guidance note on 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' (IEMA, 2022) states that "*the crux of significance regarding impact on climate 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*". Mitigation has taken a leading role within the guidance compared to the previous edition published in 2017. Early stakeholder engagement is key and therefore mitigation should be considered from the outset of the project and continue throughout the project's lifetime in order to maximise GHG emissions savings.

A number of measures have been incorporated into the overall design of the development to reduce the impact to climate where possible.

7.3. Receiving Environment

7.3.1. Meteorological Conditions

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, and 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 relatively low. 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 at Dublin Airport., which is located approximately 12 km south-east of the site. Dublin Airport meteorological data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 7.2). The predominant wind direction is westerly to south-westerly over the period 2017 - 2021, with a mean wind speed of 5.5 m/s over the period 1981 – 2010 (Met Éireann, 2022).

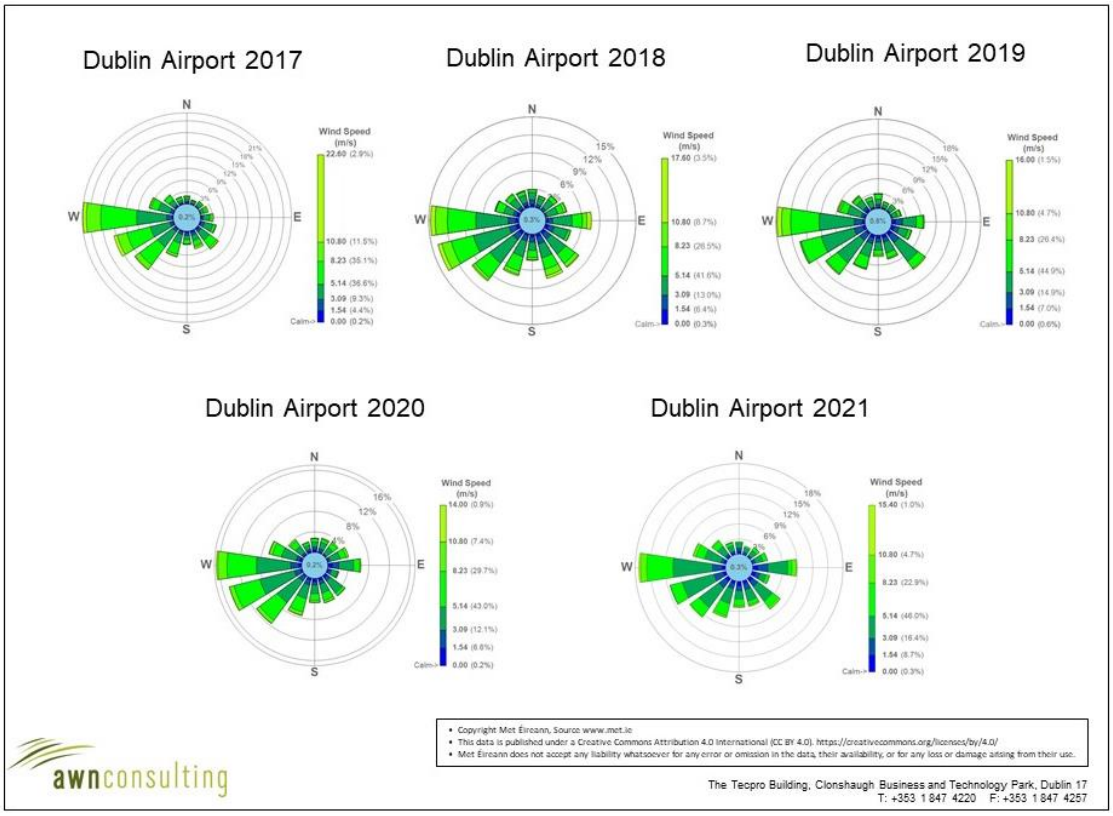


Figure 7.2. Dublin Airport Windrose 2017 – 2021.

7.3.2. 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 2020*" (EPA, 2021a). 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 (EPA, 2022a).

As part of the implementation of the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011), as amended, four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2022a). 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, 2022a). 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.).

In 2020 the EPA reported (EPA, 2021a) that Ireland was compliant with EU legal air quality limits at all locations, however this was largely due to the reduction in traffic due to Covid-19 restrictions. The EPA *Air Quality in Ireland 2020* report details the effect that the Covid-19 restrictions had on air monitoring stations, which included reductions of up to 50% at some monitoring stations which have traffic as a dominant source. The report also notes that CSO figures show that while traffic volumes are still slightly below 2019 levels, they have significantly increased since 2020 levels. 2020 concentrations are therefore predicted to be an exceptional year and not consistent with long-term trends. For this reason, they have not been included in the baseline section and previous long-term data has been used to determine baseline levels of pollutants in the vicinity of the proposed

development.

Long-term NO_2 monitoring was carried out at the Zone D locations of Castlebar, Enniscorthy, Emo and Kilkitt for the period 2015 - 2019 (EPA, 2021a). Long term average concentrations are significantly below the annual average limit of 40 µg/m³; average results range from 2 – 10 µg/m³ (Table 7.3) over the five year period. Based on the above information an estimate of the current background NO_2 concentration for the region of the proposed development is 8 µg/m³.

Station	Averaging Period Note 1	Year				
		2015	2016	2017	2018	2019
Castlebar	Annual Mean NO_2 (µg/m³)	8	9	7	8	8
	99.8th %ile 1-hr NO_2 (µg/m³)	-	66	60	60	59
Kilkitt	Annual Mean NO_2 (µg/m³)	2	3	2	3	5
	99.8th %ile 1-hr NO_2 (µg/m³)	-	26	17	22	42
Emo	Annual Mean NO_2 (µg/m³)	3	4	3	3	4
	99.8th %ile 1-hr NO_2 (µg/m³)	-	36	28	42	28
Enniscorthy	Annual Mean NO_2 (µg/m³)	9	10	-	-	-
	99.8th %ile 1-hr NO_2 (µg/m³)	-	73	-	-	-

Table 7.3. Trends in Zone D Air Quality – NO_2.

Note 1 Annual average limit value of 40 µg/m³ and hourly limit value of 200 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 180 of 2011).

Continuous PM_{10} monitoring was carried out at the Zone D locations of Castlebar, Claremorris, Enniscorthy and Kilkitt for 2015 - 2019. Levels range from 7 – 18 µg/m³ over the five-year period (Table 7.4). In addition the 24-hour limit value of 50 µg/m³ (as a 90.4th percentile) was complied with at all sites (EPA, 2021a). Based on the EPA data, an estimate of the current background PM_{10} concentration in the region of the proposed development is 13 µg/m³.

Station	Averaging Period Note 1	Year				
		2015	2016	2017	2018	2019
Castlebar	Annual Mean PM_{10} (µg/m³)	13	12	11	11	16
	90th %ile 24-hr PM_{10} (µg/m³)	22	20	19	20	24
Kilkitt	Annual Mean PM_{10} (µg/m³)	9	8	8	9	7
	90th %ile 24-hr PM_{10} (µg/m³)	18	15	14	15	13
Claremorris	Annual Mean PM_{10} (µg/m³)	10	10	11	12	11
	90th %ile 24-hr PM_{10} (µg/m³)	17	17	17	20	20
Enniscorthy	Annual Mean PM_{10} (µg/m³)	18	17	-	-	18
	90th %ile 24-hr PM_{10} (µg/m³)	34	32	-	-	-

Table 7.4. Trends in Zone D Air Quality – PM_{10}.

Note 1 Annual average limit value of 40 µg/m³ and 24-hour limit value of 50 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 180 of 2011).

Monitoring of both PM_{10} and $PM_{2.5}$ takes place at the station in Claremorris which allows for the $PM_{2.5}/PM_{10}$ ratio to be calculated. Average $PM_{2.5}$ levels in Claremorris over the period 2015 - 2019 ranged from 4 - 6 µg/m³, with a $PM_{2.5}/PM_{10}$ ratio ranging from 0.4 – 0.6 (EPA, 2021a). Based on this information, a conservative ratio of 0.7 was used to generate an existing $PM_{2.5}$ concentration in the region of the development of 9.1 µg/m³.

Background concentrations for the Opening Year 2023 and Design Year of 2038 have been calculated for the local air quality assessment. These have used current estimated background concentrations and the year on year reduction factors provided by Transport Infrastructure Ireland in the *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (2011) and the UK Department for Environment,

Food and Rural Affairs LAQM.TG(16) (2018).

7.3.3. Climate Baseline

Anthropogenic emissions of greenhouse gases (GHGs) in Ireland included in the European Union's Effort Sharing Regulation (ESR) (EU 2018/842) are outlined in the most recent review by the EPA which details provisional emissions up to 2021 (EPA, 2022b). The greenhouse gas emission inventory for 2021 is the first of ten years over which compliance with targets set in the ESR will be assessed. This Regulation sets 2030 targets for emissions outside of the Emissions Trading Scheme (known as ESR emissions) and annual binding national limits for the period 2021-2030. Ireland's target is to reduce ESR emissions by 30% by 2030 compared with 2005 levels, with a number of flexibilities available to assist in achieving this. Ireland's ESR emissions annual limit for 2021 is 43.48 Mt CO_2eq[28]. Ireland's provisional 2021 GHG ESR emissions are 46.19 Mt CO_2eq, this is 2.71 Mt CO_2eq more than the annual limit for 2021 (EPA, 2022b). Agriculture continues to be the largest contributor to overall emissions at 37.5% of the total. Transport, energy industries and the residential sector are the next largest contributors, at 17.7%, 16.7% and 11.4%, respectively. GHG emissions for 2021 are estimated to be 4.7% higher than emissions in 2020, this is due to a gradual lifting of covid restrictions and an increase in the use of coal and less renewables within electricity generation. Ireland's GHG emissions have increased by 11.4% from 1990 – 2021.

Provisional National total emissions (including LULUCF) for 2021 are 69.29 Mt CO_2eq, these have used 23.5% of the 295 Mt CO_2eq Carbon Budget for the five-year period 2021-2025. This leaves 76.5% of the budget available for the succeeding four years, requiring an 8.4% average annual emissions reduction from 2022-2025 to stay within budget.

The EPA 2022 GHG Emissions Projections Report for 2021 – 2040 (EPA, 2022c) provides an assessment of Ireland's total projected greenhouse gas (GHG) emissions from 2021 to 2040, using the latest Inventory data for 2020 and provides an assessment of Ireland's progress towards achieving its National ambitions under the Climate Action and Low Carbon Development (Amendment) Act 2021 (Government of Ireland, 2021) and EU emission reduction targets for 2030 as set out under the EU Effort Sharing Regulation (ESR) 2018/842. Two scenarios are assessed – a "*With Existing Measures*" (WEM) scenario, which is a projection of future emissions based on the measures currently implemented and actions committed to by Government, and a "*With Additional Measures*" (WAM) scenario, which is the projection of future emissions based on the measures outlined in the latest Government plans at the time Projections are compiled. This includes all policies and measures included in the WEM scenario, plus those included in government plans but not yet implemented.

The EPA report states under the "*With Existing Measures"* scenario, the projections indicate that Ireland will cumulatively exceed its ESR emissions allocation by 52.3 Mt CO_2eq over the 2021-2030 period even with full use of the flexibilities available. Under the "*With Additional Measures scenario"*, the projections indicate that Ireland can achieve compliance under the ESR over the 2021-2030 period using both flexibilities but only with full implementation of the 2021 Climate Action Plan. Both projected scenarios indicate that implementation of all climate plans and policies, plus further new measures, are needed for Ireland to meet the 51 per cent emissions reduction target and put the country on track for climate neutrality by 2050 (EPA, 2022c).

7.4. Characteristics of the Proposed Development

The proposed development is located in the townlands of Baltrasna and Milltown, Ashbourne, County Meath. The proposed development comprises a strategic housing development (SHD) which includes a mix of residential units, 2 no. creches, retail units, landscaping works and all other associated site ancillary works. A full description of the development is available in Chapter 2 of the EIAR. Impacts to air quality and climate can occur during both the construction and operational phases of the development.

During the construction phase construction dust emission have the potential to impact air quality. Dust emissions

[28] Mt CO_2eq – million tonnes carbon dioxide equivalent

will primarily occur as a result of site preparation works, earthworks and the movement of trucks on site and exiting the site. There is also the potential for engine emissions from site vehicles and machinery to impact air quality and climate during construction. Engine emissions from vehicles accessing the site have the potential to impact air quality and climate during the operational phase of the development through the release of NO_2, PM_{10}, $PM_{2.5}$ and CO_2. These potential impacts have been assessed in the following sections.

7.5. Potential Impacts of the Proposed Development

7.5.1. Construction Phase

7.5.1.1. Air Quality

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 350 m of a construction site, the majority of the deposition occurs within the first 50 m. 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 data (see Section 7.3.1) indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature. 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, 191 days per year have rainfall over 0.2 mm (Met Éireann, 2022) and, therefore, it can be determined that dust generation will be reduced over 50% of the time.

The proposed development can be considered major in scale due to the overall site area involved and therefore there is the potential for significant dust soiling 100 m from the source (TII, 2011) (Table 7.5). There are a number of high sensitivity residential receptors bordering the site in residential housing estates to the north and west (Alderbrook, Tara Close, Tara Place), as well as to the east (The Briars) and to the south along Hickey's Lane. In the absence of mitigation there is the potential for moderate, direct, negative, short-term impacts to nearby sensitive receptors as a result of dust emissions from the proposed development.

Source		**Potential Distance for Significant Effects (Distance from source)**		
Scale	**Description**	**Soiling**	**PM_{10}**	**Vegetation Effects**
Major	Large construction sites with high use of haul routes	100m	25m	25m
Moderate	Moderate sized construction sites with moderate use of haul routes	50m	15m	15m
Minor	Minor construction sites with limited use of haul routes	25m	10m	10m

Table 7.5. Assessment Criteria for the Impact of Dust Emissions from Construction Activities with Standard Mitigation in Place
Source: Appendix 8: Assessment of Construction Impacts taken from "*Guidelines for the treatment of Air Quality During the Planning & Construction of National Road Schemes*" (TII, 2011)

There is also the potential for traffic emissions to impact air quality in the short-term over the construction phase. Particularly due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed and a detailed air quality assessment has been scoped out as none of the road links impacted by the proposed development satisfy the DMRB assessment criteria in Section 7.2.2.1. It can therefore be determined that the construction stage traffic will have an imperceptible, direct, neutral and short-term impact on air quality.

7.5.1.2. Climate

A number of GHG emissions will occur during the demolition and construction phase of the proposed development. Construction vehicles, generators, etc., will give rise to CO_2 and N_2O emissions. The IAQM *Guidance on the Assessment of Dust from Demolition and Construction* (2014) states that site traffic and plant is unlikely to make a significant impact on climate. As per Section 7.3.3, Ireland had total GHG emissions of 43.48 Mt CO_2eq in 2021 emissions from the construction phase of the proposed development will be a small fraction of this. Therefore, the impact of the construction phase on climate is considered to be imperceptible, direct, neutral and short-term.

7.5.1.3. Human Health

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 per Table 7.5, PM_{10} emissions can occur within 25 m of the site for a development of this scale. There are a number of high sensitivity receptors bordering the site in residential housing estates to the north, west and east with a number of properties within 25 m of the site boundary. Therefore, in the absence of mitigation there is the potential for slight, direct, negative, short-term impacts to human health as a result of the proposed development.

7.5.2. Operational Phase

7.5.2.1. Air Quality

The potential impact of the proposed development has been assessed by modelling emissions from the traffic generated as a result of the development. The impact of NO_2 emissions for the opening and design years was predicted at the nearest sensitive receptors to the development. This assessment allows the significance of the development, with respect to both relative and absolute impacts, to be determined. Transport Infrastructure Ireland's document *Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes* (2011) detail a methodology for determining air quality impact significance criteria for road schemes and this 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, in order to determine the degree of impact.

The results of the assessment of the impact of the proposed development on NO_2 in the opening year 2023 are shown in Table 7.6 and for design year 2038 are shown in Table 7.7. The annual average concentration is in compliance with the limit value at all worst-case receptors in 2023 and 2038 with concentrations of NO_2 reaching at most 30% of the annual limit value in 2023 and 31% of the limit value in 2038. In addition, the hourly limit value for NO_2 is 200 µg/m^3 and is expressed as a 99.8th percentile (i.e. it must not be exceeded more than 18 times per year). The maximum 1-hour NO_2 concentration is not predicted to be exceeded in any modelled year (Table 7.8).

The impact of the proposed development on annual mean NO_2 concentrations can be assessed relative to "Do Nothing (DN)" levels. Relative to baseline levels, there is predicted to be some imperceptible to small increases in concentrations at the receptors R1 – R6 assessed (Table 7.6 and Table 7.7). Concentrations at worst-case receptor R2 will increase by at most 0.16 µg/m^3 in 2023 and 0.94 µg/m^3 in 2038. Using the assessment criteria outlined in Appendix 10 of the TII guidance (TII, 2011) the impact of the proposed development in terms of NO_2 is considered negligible. Therefore, the overall impact of NO_2 concentrations as a result of the proposed development is long-term, negative and imperceptible.

Concentrations of PM_{10} were modelled for the baseline year of 2021 The modelling showed that concentrations were in compliance with the annual limit value of 40 µg/m^3 at all receptors assessed, therefore, further modelling for the opening and design years was not required. Concentrations reached at most 0.68 µg/m^3. When a background concentration of 13 µg/m^3 is included, the overall impact is 34% of the annual limit value at the worst

case receptor.

The impact of the proposed development on ambient air quality in the operational stage is considered long-term, direct, localised, negative and imperceptible and therefore, no mitigation is required.

Receptor	Opening Year 2023				
	DN	DS	DS-DN	Magnitude	Description
R1	11.3	11.4	0.10	Imperceptible Increase	Negligible
R2	8.3	8.5	0.16	Imperceptible Increase	Negligible
R3	10.2	10.3	0.03	Imperceptible Increase	Negligible
R4	12.1	12.2	0.08	Imperceptible Increase	Negligible
R5	11.5	11.5	0.04	Imperceptible Increase	Negligible
R6	9.3	9.3	0.01	Imperceptible Increase	Negligible

Table 7.6. Predicted Annual Mean NO_2 Concentrations – Opening Year 2023 (µg/m³).

Receptor	Design Year 2038				
	DN	DS	DS-DN	Magnitude	Description
R1	11.5	11.7	0.21	Imperceptible Increase	Negligible
R2	8.0	8.9	0.94	Small Increase	Negligible
R3	10.1	10.2	0.09	Imperceptible Increase	Negligible
R4	12.3	12.5	0.22	Imperceptible Increase	Negligible
R5	11.6	11.6	0.04	Imperceptible Increase	Negligible
R6	9.0	9.0	0.01	Imperceptible Increase	Negligible

Table 7.7. Predicted Annual Mean NO_2 Concentrations – Design Year 2038 (µg/m³).

Receptor	Opening Year 2023		Design Year 2038	
	DN	DS	DN	DS
R1	40	40	40	41
R2	29	30	28	31
R3	36	36	36	36
R4	42	43	43	44
R5	40	40	41	41
R6	33	33	31	32

Table 7.8. Predicted 99.8th percentile of Daily Maximum 1-hour NO_2 Concentrations (µg/m³).

7.5.2.2. Climate

Climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. As a result of this, there is the potential for flooding related impacts on site in future years. However, adequate attenuation and drainage have been provided for to account for increased rainfall in future years, as part of the design of this proposed development. Therefore, the impact will be long-term, direct, localised, neutral and imperceptible.

There is also the potential for increased traffic volumes to impact climate. The predicted concentrations of CO_2 for the future years of 2023 and 2038 are detailed in Table 7.9. These are significantly less than the 2023 and 2030 targets set out under EU legislation (targets beyond 2030 are not available). It is predicted that in 2023 the proposed development will increase CO_2 emissions by 0.00005% of the EU 2023 target. Similarly low increases in CO_2 emissions are predicted to occur in 2038 with emissions increasing by 0.00036% of the EU 2030 target.

Therefore, the potential climate impact of the proposed development is considered negative, direct, long-term and imperceptible.

Year	Scenario	CO_2 (tonnes/annum)
2023	Do Nothing	816
	Do Something	838
2038	Do Nothing	955
	Do Something	1,075
Increment in 2023		21.6 Tonnes
Increment in 2038		119.9 Tonnes
Emission Ceiling (kilo Tonnes) 2023		**41,235**
Emission Ceiling (kilo Tonnes) 2030		**33,381**
Impact in 2023 (%)		0.00005 %
Impact in 2038 (%)		0.00036 %

Table 7.9. Climate Assessment.

Note 1 Target under *Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas 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*

The proposed development has been designed to reduce the impact to climate where possible during operation. Details of measures incorporated into the design of the development are included within the Building Lifecycle Report prepared by Armstrong Fenton Associates and submitted with this planning application. The development will be Nearly Zero Energy Building (NZEB) compliant in accordance with the Part L 2021 requirements as appropriate. Each building will have a Building Energy Rating (BER) that will comply with the Part L requirements. Building materials with a high durability and low future maintenance requirement will be chosen where possible to reduce the need for replacement and significant maintenance in the future which will in turn reduce the embodied carbon of the development during operation.

The following measures will be incorporated into the proposed development to achieve a more energy efficient (i.e. less carbon intensive) design, full details are provided within the Building Lifecycle Report:

- High performance U-values;
- Improved air tightness;
- Improved thermal transmittance and thermal bridging;
- Use of natural daylight where possible and energy efficient light fittings;
- Use of natural ventilation where possible or high efficiency mechanical ventilation;
- Air source heat pumps and PV solar panels are being considered as part of the renewable energy technologies which will be chosen at the detailed design stage.

It is also proposed to incorporate bicycle parking spaces within the proposed development to promote the use of sustainable transport. In addition, EV charging spaces will be incorporated into the development. Overall, the incorporated design measures will reduce the operational phase impact of the proposed development on climate.

7.5.2.3. Human Health

Traffic-related air emissions have the potential to impact human health if they do not comply with the ambient Air Quality Standards detailed in Table 7.1. The traffic generated by the proposed development has been assessed in Section 7.5.2.1 and it has been determined that pollutant concentrations will be in compliance with the Air Quality Standards. The impact to human health during the operational stage will be negative, direct, localised, long-term and imperceptible.

7.5.3. Do-Nothing Scenario

The Do-Nothing scenario includes retention of the current site without the proposed development in place. In this scenario, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc.). As per Section 7.3, the general air quality in the area is of a good level and is within the air quality guidelines for the protection of human health. With the implementation of the numerous climate measures set out under various government plans, including the Climate Action Plan 2021, emissions of pollutants from road traffic, including NO_2, PM_{10}, $PM_{2.5}$ and CO_2 will likely decrease in future years with the addition of further electric vehicles to the fleet and the phasing out of fossil fuelled vehicles.

The Do Nothing scenario for the operational phase is assessed within Section 7.5.2. Baseline traffic without the proposed development in place in future years was assessed in relation to NO_2 and CO_2 emissions. The modelling assessment determined there is an imperceptible impact to both air quality and climate.

7.6. Remedial & Mitigation Measures

7.6.1. Construction Phase

7.6.1.1. Air Quality

The pro-active control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the dust management plan. The key aspects of controlling dust are listed below. Full details of the dust management plan can be found in Appendix 7.1. In summary the measures which will be implemented will include:

- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.
- Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.
- Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph.
- Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

7.6.1.2. Climate

Impacts to climate during the construction stage are predicted to be imperceptible however, best practice measures can be incorporated to ensure potential impacts are lessened. These include:

- 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.

7.6.2. Operational Phase

No mitigation measures are required for the operational phase of the proposed development as it is predicted to have an imperceptible impact on ambient air quality and climate.

7.7. Residual Impacts of the Proposed Development

7.7.1. Construction Phase

7.7.1.1. Air Quality

In order to minimise dust emissions during construction, a series of mitigation measures have been prepared in the form of a Dust Management Plan (Appendix 7.1). Provided the dust minimisation measures outlined in the plan are adhered to, the predicted residual air quality impacts during the construction phase are **short-term, direct, negative, localised** and **imperceptible**.

7.7.1.2. Climate

According to the IAQM guidance (2014), Site traffic and plant are unlikely to make a significant impact on climate during the construction phase. Therefore, the predicted residual impact on climate of the construction phase is considered to be **neutral**, **direct, imperceptible** and **short-term**.

7.7.1.3. Human Health

Best practice mitigation measures are proposed for the construction phase of the proposed development, which will focus on the proactive control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact complies with all EU ambient air quality legislative limit values which are based on the protection of human health (see Table 7.1). Therefore, the predicted residual impact of construction of the proposed development is **negative, direct, short-term** and **imperceptible** with respect to human health.

7.7.2. Operational Phase

7.7.2.1. Air Quality

Air dispersion modelling of operational traffic emissions associated with the proposed development was carried out using the UK DMRB model. 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 imperceptible. Therefore, the operational phase impact to air quality is **long-term, direct, localised, negative** and **imperceptible**.

7.7.2.2. Climate

Modelling of operational phase CO_2 emissions as a result of the traffic associated with the proposed development was carried out to determine the impact to climate. It was found that emissions of CO_2 will increase by an imperceptible amount as a result of the proposed development and are significantly below the EU 2023 and 2030 GHG targets. The operational phase impact to climate is **long-term, direct, negative** and **imperceptible**. In addition, the proposed development has been designed to reduce the impact to climate where possible during operation.

7.7.2.3. Human Health

Emissions of air pollutants are predicted to be significantly below the ambient air quality standards, which are based on the protection of human health. Accordingly, residual impacts to human health during the operational phase are predicted to be **long-term, direct, negative** and **imperceptible**.

7.8. Cumulative Impacts

7.8.1. Construction Phase

According to the IAQM guidance (2014), should the construction phase of the proposed development coincide with the construction phase of any other development within 350 m, then there is the potential for cumulative construction dust impacts. A review of recent planning permissions for the area has been conducted. There are no sites within 350 m of the proposed development that may have coinciding construction phases and therefore there is no potential for cumulative impacts to air quality or climate. This scenario can be considered **neutral**.

7.8.2. Operational Phase

The traffic data reviewed for the operational stage impacts to air quality and climate included the cumulative traffic associated with other existing and permitted developments in the local area. Therefore, the cumulative impact is included within the operational stage impact for the proposed development, as assessed above. The impact is predicted to be **long-term, direct, negative** and **imperceptible** with regards to air quality and climate.

7.9. Monitoring

7.9.1. 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).

7.9.2. 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.

7.10. Reinstatement

Not applicable to air quality and climate.

7.11. Interactions

An adverse impact due to air quality in either the construction or operational phase has the potential to cause human health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact complies with all ambient air quality legislative limits and, therefore, that the predicted residual impact is short-term, direct, negative and imperceptible during the construction phase, and long-term, direct, negative and imperceptible during the operational 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 AADT on roads close to the Site. In this assessment, the impact of the interactions between traffic and air quality during both construction and operational phases, are considered to be imperceptible.

With the appropriate mitigation measures to prevent fugitive dust emissions (refer to Appendix 7.1), it is predicted that there will be no significant interaction between air quality and land and soils.

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, and it has been concluded that the associated impact will be long-term, direct, localised, neutral and imperceptible.

No other noteworthy interactions with air quality and climate have been identified.

7.12. Conclusion

Provided the dust minimisation measures outlined in Section 7.6.1.1 and Appendix 7.1 are adhered to, the predicted residual air quality impacts during the construction phase are short-term, direct, negative, localised and imperceptible. Impacts to climate during the construction phase are predicted to be neutral, direct, imperceptible and short-term.

Air dispersion modelling of operational traffic emissions associated with the proposed development was carried out using the UK DMRB model. 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 imperceptible. Therefore, the operational phase impact to air quality is long-term, direct, localised, negative and imperceptible. Modelling of operational phase CO_2 emissions as a result of the traffic associated with the proposed development was carried out to determine the impact to climate. It was found that emissions of CO_2 will increase by an imperceptible amount as a result of the proposed development and are significantly below the EU 2023 and 2030 GHG targets. The operational phase impact to climate is long-term, direct, negative and imperceptible. In addition, the proposed development has been designed to reduce the impact to climate where possible during operation.

7.13. References

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- UK Highways Agency (2019b) UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate
- UK Office of Deputy Prime Minister (2002) Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance
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8.0. Noise & Vibration

8.1. Introduction

This section of the EIAR has been prepared by AWN Consulting Ltd (AWN) to assess the potential noise and vibration impact of the proposed development in the context of current relevant standards and guidance.

This chapter of the EIAR includes a description of the receiving ambient noise climate in the vicinity of the subject site and an assessment of the potential noise and vibration impact associated with the proposed development during both the short-term construction phase and the long-term operational phase on its surrounding environment. The assessment of direct, indirect and cumulative noise and vibration impacts on the surrounding environment have been considered as part of the assessment. An assessment of noise from existing sources inward on the development has also been completed.

Mitigation measures are included, where relevant, so that noise and vibration associated with the construction and operation of the proposed development is within the guideline values.

This assessment has been prepared by Donogh Casey (Acoustic Technician) who has been working in the field of acoustics since 2018. He is currently a member of the Sound Insulation Testing Register, Ireland (SITRI) and has extensive experience in both building acoustic commissioning and environmental surveying. He is studying for the Institute of Acoustics Diploma in Acoustics and Noise Control.

8.2. Assessment Methodology

The assessment has been undertaken with reference to the most appropriate guidance documents relating to environmental noise and vibration which are set out in the following sections. In addition to specific noise and vibration guidance documents, the following Environmental Protection Agency (EPA) guidelines were considered and consulted in the preparation of this chapter of the EIAR:

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – (EPA, 2022); and
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);

The study has been undertaken using the following methodology:

- An environmental noise survey has been undertaken at the subject site in order to characterise the existing baseline noise environment;
- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development;
- Predictive calculations have been performed during the construction phase of the project 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 development site;
- A schedule of mitigation measures has been proposed to reduce, where necessary, the identified potential outward impacts relating to noise and vibration from the proposed development; and
- An inward noise impact assessment from the existing noise sources on the proposed development.

8.2.1. Construction Phase Noise Impacts

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local Authorities typically control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion. Construction noise sources include construction plant and machinery and construction related traffic on surrounding roads.

8.2.1.1. British Standard BS 5228 – 1:2009+A1:2014

British Standard *BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise* (hereinafter referred to as BS 5228-1:2009+A1:2014) is referenced here for the purposes of setting appropriate construction noise limits for the development. This is the most widely accepted standard for this purpose in Ireland. This document sets out a method whereby construction noise thresholds are determined based on ambient noise level.

Potential noise impacts during the construction stage of a project are often assessed in accordance with BS 5228-1:2009+A1:2014. Various mechanisms are presented as examples of determining if an impact is occurring, these are discussed in the following paragraphs.

ABC Method

The approach adopted here calls for the designation of a noise sensitive location into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a significant noise impact is associated with the construction activities, depending on context.

BS 5228-1:2009+A1:2014 sets out guidance on permissible noise levels relative to the existing noise environment. Table 8.1 sets out the values which, when exceeded, signify a significant effect at the facades of residential receptors.

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A [A]	Category B [B]	Category C [C]
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75
Evenings and weekends D	55	60	65
Night-time (23:00 to 07:00hrs)	45	50	55

Table 8.1. Example Threshold of Significant Effect at Dwellings.

A. Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

B. Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

C. Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

D. 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

For the appropriate assessment period (i.e. daytime in this instance) the ambient noise level is determined and rounded to the nearest 5 dB. If the construction noise exceeds the appropriate category value, then a significant effect is deemed to occur. It should be noted that this assessment method is only valid for residential properties

and if applied to commercial premises without consideration of other factors may result in an excessively onerous thresholds being set.

The closest neighbouring noise sensitive properties are within a number of housing estates that border the proposed development. Cherry Court and The Briars housing estate which borders a section of the proposed development to the East, The Alderbrook housing estate which borders a section of the proposed development to the North, Tara Close which borders a small section of the proposed development to the North-West, and a small number of individual dwellings on Hickey's Lane that border a section of the proposed development to the South and South-East.

Fixed Limits

When considering non-residential receptors, reference is made to BS 5228-1:2009+A1:2014, which gives several examples of acceptable limits for construction noise, the most simplistic being based upon the exceedance of fixed noise limits. For example, paragraph E.2 states: -

"Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut."

Paragraph E.2 goes on to state: -

"Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed: -

70 decibels (dBA) in rural, suburban areas away from main road traffic and industrial noise;

75 decibels (dBA) in urban areas near main roads in heavy industrial areas".

An example of which is Ashbourne Community Centre, located approximately 77m to the North-East of the subject site.

Proposed Threshold Noise Levels

Taking into account the proposed documents outlined above and making reference to the baseline noise environment monitored around the development site (see Section 8.3), BS 5228-1:2009+A1:2014 has been used to inform the assessment approach for construction noise.

The following Construction Noise Threshold (CNT) levels are proposed for the construction stage of this development:

- For residential NSLs it is considered appropriate to adopt 65 - 70 dB(A) CNT depending on location. Given the baseline monitoring carried out, it would indicate that Category A and B values are appropriate using the ABC method.
- For non-residential NSLs it is considered appropriate to adopt the 75 dB(A) CNT, given the urban environment in which the closest commercial properties reside, in line with BS 5228-1:2009+A1.

Interpretation of the CNT

In order to assist with interpretation of CNTs, Table 8.2 includes guidance as to the likely magnitude of impact associated with construction activities, relative to the CNT. This guidance is derived from Table 3.16 of *DMRB: Noise and Vibration* and adapted to include the relevant significance effects from the *EPA Guidelines* (EPA 2022).

Guidelines for Noise Impact Assessment Significance (DMRB)	CNT per Period	EPA EIAR Significance Effects	Determination
Negligible	Below or equal to baseline noise level	Not Significant	Depending on CNT, duration & baseline noise level
Minor	Above baseline noise level and below or equal to CNT	Slight to Moderate	
Moderate	Above CNT and below or equal to CNT +5 dB	Moderate to Significant	
Major	Above CNT +5 to +15 dB	Significant, to Very Significant	
	Above CNT +15 dB	Very Significant to Profound	

Table 8.2. Construction Noise Significance Ratings.

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely impacts during the construction stages.

8.2.1.2. Construction Phase Noise Impacts

In order to assist with the interpretation of construction traffic noise, Table 8.3 includes guidance as to the likely magnitude of impact associated with changes in traffic noise levels along an existing road. This is taken from Table 3.17 of the *DMRB Noise and Vibration* (UKHA 2020).

Magnitude of Impact	Increase in Traffic Noise Level (dB)
Negligible	Less than 1.0
Minor	Greater than or equal to 1.0 and less than 3.0
Moderate	Greater than or equal to 3.0 and less than 5.0
Major	Greater than or equal to 5.0

Table 8.3. Likely Effect Associated with Change in Traffic Noise Level – Construction Phase.

In accordance with the *DMRB Noise and Vibration*, construction noise and construction traffic noise impacts shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

- Ten or more days or night in any 15 consecutive day or nights;
- A total number of days exceeding 40 in any six consecutive months.

8.2.2. Construction Phase – Vibration

Vibration standards address two aspects: those dealing with cosmetic or structural damage to buildings and those with human comfort. For the purpose of this scheme, the range of relevant criteria used for surface construction works for both building protection and human comfort are expressed in terms of Peak Particle Velocity (PPV) in mm/s.

8.2.2.1. Building Damage

With respect to 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 property 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 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above. The standard also notes that

below 12.5 mm/s PPV the risk of damage tends to zero. It is therefore common, on a cautious basis to use this lower value. Taking the above into consideration, the vibration criteria in Table 8.4 are recommended.

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:		
Less than 15Hz	**15 to 40Hz**	**40Hz and above**
12 mm/s	20 mm/s	50 mm/s

Table 8.4. Recommended Vibration Criteria During Construction Phase.

Expected vibration levels from the construction works will be discussed further in Section 8.5.

8.2.2.2. Human Perception

People are sensitive to vibration stimuli at levels orders of magnitude below those which have the potential to cause any cosmetic damage to buildings. There are no current standards which provide guidance on typical ranges of human response to vibration in terms of PPV for continuous or intermittent vibration sources.

BS5228-2:2009+A1:2014, provides a useful guide relating to the assessment of human response to vibration in terms of the PPV. Whilst the guide values are used to compare typical human response to construction works, they tend to relate closely to general levels of vibration perception from other general sources.

Table 8.5 below summarises the range of vibration values and the associated potential effects on humans.

Vibration Level, PPV	Effect
0.140mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies. At lower frequencies people are less sensitive to vibration.
0.3mm/s	Vibration might be just perceptible in residential environments.
1mm/s	It is likely that a vibration level of this magnitude in residential environments will cause complaint.

Table 8.5. Guidance on Effects of Human Response to PPV Magnitudes.

Vibration typically becomes perceptible at around 0.15 to 0.3 mm/s and may become disturbing or annoying at higher magnitudes. However, higher levels of vibration are typically tolerated for single events or events of short-term duration, particularly during construction projects and when the origin and or the duration of vibration is known. For example, ground breaking can typically be tolerated at vibration levels up to 2.5 mm/s if adequate public relations are in place and timeframes are known. These values refer to the day-time periods only.

Interpretation of the Human Response to Vibration

In order to assist with interpretation of vibration thresholds, Table 8.6 presents the significance table relating to potential impacts to building occupants during construction based on guidance from BS5228-2:2009+A1:2014.

Criteria	Impact Magnitude	Significance Rating
≥10 mm/s PPV	Very High	Very Significant
≥1 mm/s PPV	High	Moderate to Significant
≥0.3 mm/s PPV	Medium	Slight to Moderate
≥0.14 mm/s PPV	Low	Not significant to Slight
Less than 0.14 mm/s PPV	Very Low	Imperceptible to Not significant

Table 8.6. Human Response Vibration Significance Ratings.

8.2.3. Operational Phase Noise

8.2.3.1. Mechanical Plant

The most appropriate standard used to assess the impact of a new continuous source (i.e. plant items) to a residential environment is BS 4142 *Methods for rating and assessing industrial and commercial sound* (2014). This standard describes a method for assessing the impact of a specific noise source at a specific location with respect to the increase in "background" noise level that the specific noise source generates. The standard provides the following definitions that are pertinent to this application:

- "*Specific sound level,* $L_{Aeq,\ Tr}$" is equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, *T*. This level has been determined with reference to manufacturers information for specific plant items.

- "*Rating level*" $L_{Ar,Tr}$ is the specific noise level plus adjustments for the character features of the sound (if any), and;

- *"Background noise level"* is the A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, *T*. This level is expressed using the L_{A90} parameter. These levels were measured as part of the baseline survey.

The assessment procedure in BS4142: 2014 is outlined as follows:

1. determine the specific noise level;
2. determine the rating level as appropriate;
3. determine the background noise level, and;
4. subtract the background noise level from the specific noise level in order to calculate the assessment level.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific source will have an adverse impact or a significant adverse impact. A difference of +10 dB or more is likely to be an indication of a significant adverse impact. A difference of around +5 dB is likely to be an indication of an adverse impact, dependent on the context. Where the rated plant noise level is equivalent to the background noise level, noise impacts are typically considered to be neutral.

8.2.3.2. Additional Vehicular Traffic on Surrounding Roads

There are no specific guidelines or limits relating to traffic related sources along the local or surrounding roads. Given that traffic from the development will make use of existing roads already carrying traffic volumes, it is appropriate to assess the calculated increase in traffic noise levels that will arise because of vehicular movements associated with the development. In order to assist with the interpretation of the noise associated with additional vehicular traffic on public roads, Table 8.7 is taken from DMRB Design Manual for Roads and Bridges (DMRB),

Highways England Company Limited, Transport Scotland, The Welsh Government and The Department for Regional Development Northern Ireland, (2020).

Change in Sound Level (dB)	Subjective Reaction	Magnitude of Impact	EPA Glossary of Effects[29]
10+	Over a doubling of loudness	Major	Significant
5 – 9.9	Up to a doubling of loudness	Moderate	Moderate
3 – 4.9	Perceptible	Minor	Slight
0.1 – 2.9	Imperceptible	Negligible	Imperceptible
0	None	No Change	Neutral

Table 8.7. Significance in Change of Noise Level.

The guidance outlined in Table 8.7 will be used to assess the predicted increases in traffic levels on public roads associated with the proposed development and comment on the likely long-term impacts during the operational phase.

8.2.3.3. Noise Creche

For other non-traffic related sources, e.g. the creche, appropriate guidance on internal noise levels for dwellings is contained within BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings. This British Standard sets out recommended noise limits for indoor ambient noise levels in dwellings as summarised in Table 8.8.

Typical Scenario	Design Range, $L_{Aeq,T}$ dB	
	Daytime $L_{Aeq,16hr}$ (07:00 to 23:00hrs)	Night-time $L_{Aeq,8hr}$ (23:00 to 07:00hrs)
Living / Dining Rooms	35 / 40	n/a
Bedrooms	35	30

Table 8.8. Recommended Indoor Ambient Noise Levels.

In relation to assessment of noise levels associated with the creche, it is appropriate to derive external limits based on the internal criteria. This is done by factoring in the degree of noise reduction afforded by a partially open window and typical 15 dB attenuation is noted in this British Standard. Using this correction value across an open window, the following external noise levels would achieve the internal noise levels noted in Table 8.8 above. The creche will not operate during the night-time, i.e. 23:00 to 07:00 hours.

- Daytime / Evening (07:00 to 23:00 hours) 50 – 55 dB $L_{Aeq,1hr}$

Noise emissions from Creche activity will be controlled to ensure that the resultant noise level outside the façade of any nearby dwelling offsite, will not exceed the noise level above.

[29] EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports, (Draft August 2017)

8.2.3.4. Vibration

The development is predominantly residential in nature, therefore it is not anticipated that there will be any impact associated with vibration during the operational phase.

8.2.3.5. Inward Noise – ProPG Planning & Noise

The Professional Practice 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 its 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 "key elements" that include:

  - Element 1 - Good Acoustic Design Process;
  - Element 2 - Noise Level Guidelines;
  - Element 3 - External Amenity Area Noise Assessment

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 8.1 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.

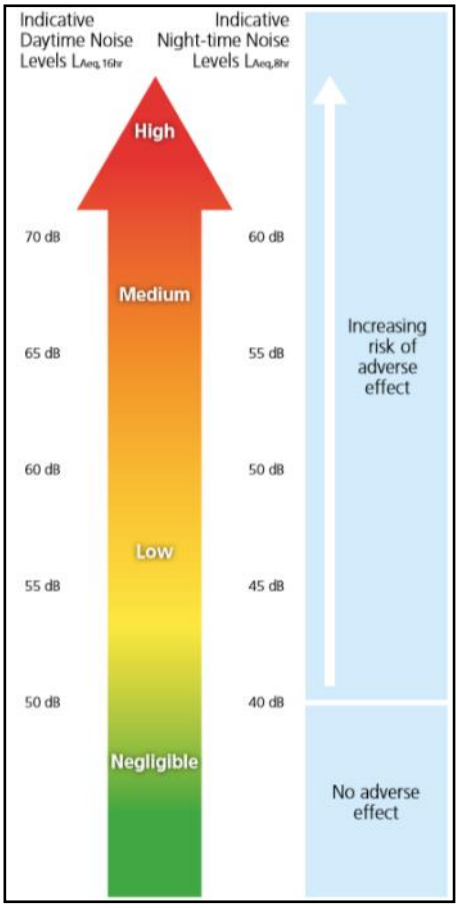


Figure 8.1. ProPG Stage 1 - Initial Noise Risk Assessment.

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). The recommended indoor ambient noise levels are set out in Table 8.9 and are based on annual average data, that is to say they omit occasional events where higher intermittent noisy events may occur.

Activity	Location	Day (07:00 to 23:00hrs) dB $L_{Aeq,16hr}$	Night (23:00 to 07:00hrs) dB $L_{Aeq,8hr}$
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 $L_{Amax,T}$*

Table 8.9. ProPG Internal Noise Levels.

*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 $L_{Aeq,16hr}$."

8.3. Receiving Environmental

The subject site is located to the west of the Dublin Road (R135), west of The Briars residential estate, south-west of Cherry Lane and north-west / south/west of Hickey's Lane. To the south-west are agricultural lands in the Rural Area (i.e., outside of Ashbourne's development boundaries), while to the south-east is existing residential development generally in the form of detached rural houses. To the west are greenfield lands zoned for 'Open Space'. To the north are the existing residential dwellings at Alderbrook Rise, Alderbrook Downs & Alderbrook Heath, while the existing residential dwellings at Tara Close and Tara Court abut the site to the north-west.

It should be noted that the site encircles third-party lands, in the northern part of the site, which are identified as being outside the application site on the submitted site layout plans and do not form part of the subject proposal. The site is accessed via Cherry Lane to the north-east of the site and Hickey's Lane to the south-east of the site, both of which are directly connected to the Dublin Road (R135).

8.3.1. Baseline Noise Environmental

Baseline noise monitoring has been undertaken across the development site to determine the range of noise levels at varying locations across the site.

8.3.1.1. Environmental Noise Survey

An environmental noise survey has been conducted at the site in order to quantify the existing noise environment. The survey was conducted in general accordance with ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise.* Specific details are set out below.

Choice of Measurement Locations

The measurement locations are described below and shown in Figure 8.2.

AML1 Attended measurements located approximately 10m from the North boundary line of the proposed development site.
AML2 Attended measurements located approximately 50m from the West boundary line of the proposed development site .
AML3 Attended measurements located approximately 75m from the South-East boundary line close to Hickey's lane. .
UML4 Unattended measurements located in the Nort-East corner of the proposed development site approximately 10m from R135 .

Figure 8.2. Noise Monitoring Locations (Image Source: Google Maps).

Survey Periods

The noise survey was carried out over the following periods:

Aspect	Survey Position	Survey Period
Noise	AML1	11:52hrs to 15:41hrs on 10 March 2022
	AML2	
	AML3	
	UML4 (unattended)	11:45hrs on 10 March to 17:00hrs on 10 March 2020

Table 8.10. Survey Periods.

Instrumentation

The noise measurements were carried out using the equipment listed below. The instrument was calibrated before and after the survey with no significant drift noted.

Measurement	Manufacturer	Equipment Model	Serial Number	Calibration date
Sound Level Meter	Bruel & Kjaer	Type 2250	3008402	4 November 2021
Sound Level Meter	Rion	NL-52	386771	17 February 2021
Calibrator	Brüel & Kjær	Type 4231	2394086	03 May 2022

Table 8.11. Noise Monitoring Equipment Details.

Measurement Parameters

The noise survey results are presented in terms of the following parameters.

L_{Aeq} is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.

L_{AFmax} is the instantaneous maximum sound level measured during the sample period using the 'F' time weighting.

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

The "A" suffix 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 $2x10^{-5}$ Pa.

Survey Results and Discussion

The results of the noise survey at the four monitoring locations are summarised below.

Location AML1

Date	Time	Measured Noise Levels (dB re. $2x10^{-5}$Pa)		
		L_{Aeq}	L_{Amax}	L_{A90}
10 March 2022	11:52	50	70	47
	13:11	53	71	45
	14:26	51	72	46

Table 8.12. Measured Noise Levels at AML1.

At this location, the primary noise sources were observed to be vehicles passing on the R135, occasional local traffic within the residential estate, Birdsong and occasional aircraft noise. Ambient noise levels were in the range of 50 to 53 dB L_{Aeq}. Background noise levels were in the range of 45 to 47 dB L_{A90}.

Location AML2

Date	Time	Measured Noise Levels (dB re. $2x10^{-5}$Pa)		
		L_{Aeq}	L_{Amax}	L_{A90}
10 March 2022	12:12	48	66	46
	13:30	52	71	45
	14:53	47	62	45

Table 8.13. Measured Noise Levels at AML2.

At this location the primary noise sources were observed to be traffic noise on the R135, occasional local traffic within the residential estate, Birdsong and occasional aircraft noise. Ambient noise levels were of the range of 47 of 52 dB L_{Aeq}. Background noise levels were in the range of 45 to 46 dB L_{A90}.

Location AML3

Date	Time	Measured Noise Levels (dB re. 2x10^{-5}Pa)		
		L_{Aeq}	L_{Amax}	L_{A90}
10 March 2022	12:44	53	71	48
	13:58	50	67	48
	15:26	53	74	49

Table 8.14. Measured Noise Levels at AML3.

At this location the primary noise sources were observed to be from distant vehicle movements along R135, intermittent aircraft, birdsong and a slight breeze was noted rustling nearby vegetation. Ambient noise levels were in the range of 50 to 53 dB L_{Aeq}. Background noise levels were in the range of 48 to 49 dB L_{A90}.

Location UML4

The unattended measurements collected over a several hours on the 10 March 2022 are summarised below.

Date	Time	Measured Noise Levels (dB re. 2x10^{-5}Pa)		
		L_{Aeq}	L_{Amax}	L_{A90}
10 March 2022	Average of measured 5min interval between 11:45 – 17:00	64	73	56

Table 8.15. Measured Noise Levels at UML4.

On installation and collection at this location the primary noise sources were observed to be traffic noise on R135. Daytime ambient noise levels ranged from 61 to 65 dB L_{Aeq} with an average of 64 dB L_{Aeq}. Daytime background noise levels ranged from 51 to 60 dB L_{A90} with an average of 56 dB L_{A90}. Maximum noise levels did not typically exceed 75 dB L_{Amax}.

Survey Summary

The baseline noise levels were typical of an urban location. At Location AML1 the noise environment was dominated by road traffic to the East on the R135, Birdsong and some intermittent aircraft noise. At AML2 and AML3 the noise environment was dominated by distant road traffic to the South as well as birdsong and some intermittent aircraft noise.

8.3.1.2. Do Nothing Scenario

In the absence of the proposed development being constructed, the noise environment at the nearest noise sensitive locations and within the development site will remain largely unchanged.

8.4. Characteristics of the Proposed Development

8.4.1. General Characteristics

The proposed development is located on a greenfield site within the settlement boundary of Ashbourne, to the south-east of Ashbourne town centre and consists of 702 no. dwelling units, 2 no. creches, 4 no. retail units, 1 no. GP practice / medical use unit and all associated ancillary site development works. A detailed description of the development is provided in Chapter 2 of this EIAR (Project Description & Alternatives).

When considering a development of this nature, the potential noise and vibration impact on the surroundings is considered for each of two distinct stages:

- Construction phase; and,
- Operational phase.

The construction phase will involve excavation over the development site, construction of foundations and buildings, landscaping, and vehicle movements to site using the local road network. This phase will generate the highest potential noise impact due to the works involved, however the time frame is short term in nature.

The primary sources of outward noise in the operational context are deemed to be long term in duration and will comprise traffic movements to the development site using the existing road network and plant noise emissions from the completed buildings and commercial units and creches. These issues are discussed in detailed in the following sections.

Inward noise incident on the development from existing noise sources, namely road traffic noise, has also been assessed.

8.5. Potential Impacts

The potential noise and vibration impacts associated with the construction and operational phases of the proposed development are discussed in the following sections.

8.5.1. Construction Phase

8.5.1.1. Noise

The highest potential noise and vibration impact of the proposed development will occur during the construction phase due to the operation of various plant machinery used to construct the various phases in addition to Heavy Goods Vehicles (HGVs) movement to, from and around the site. However, impacts during this phase are short-term in duration.

BS 5228-1 contains noise level data for various construction machinery. The noise levels relating to site clearance, ground excavation, piling, and loading lorries (dozers, tracked excavators and wheeled loaders) are typically in the range of 76 to 82 dB $L_{Aeq,T}$ at a distance of 10 m. For this assessment, a worst-case scenario is assumed of 3 no. such items with a sound pressure level (SPL) of 81 dB at 10 m operating simultaneously along the closest works boundary. This would result in a total noise level of 86 dB at 10 m and an equivalent combined sound power level of 114 dB L_w(A). This worst-case scenario is the typical assumption made for developments of this size, on the basis that it is unlikely that more than 3 no. items of such plant/equipment would be operating simultaneously in such close proximity to each other. A combined construction noise level of 86 dB at 10 m also allows for 5 items of plant with an operational noise level of 78 dB each operating simultaneously along the closest works boundary, which is associated with typical construction mobile plant items, cranes etc., all of which will occur on the site.

Guidance on the approximate attenuation achieved by barriers surrounding the site is also provided in BS 5228-1. It states that when the top of the plant is just visible to the receiver over the noise barrier, an approximate attenuation of 5 dB can be assumed, while a 10 dB attenuation can be assumed when the noise screen completely hides the sources from the receiver.

It is assumed that a standard site perimeter hoarding of 2.4m height will be installed around the site boundary.

The former scenario will be assumed in this case as the nearest noise-sensitive locations first floor partially overlook the site. Table 8.16 shows the potential noise levels calculated at various distances based on the assumed sound power level and attenuation provided by the barrier of 5 dB.

The closest noise sensitive locations have been identified as shown in Figure 8.3 and described below.

NSL 1 A number of residential houses in the Briars housing estate and Cherry close that boarder the proposed development to the East. Placed some 15-25m from the nearest significant site works;
NSL 2 A number of residential houses in the Alderbrook estate that boarded the proposed development to the North. Placed some 15-20m from the nearest significant site works;
NSL 3 A number of residential houses on Tara Close that boarded the proposed development to the West. Placed some 15-20m from the nearest significant site works;
NSL4 A residential house at the end of Hickey's lane, some 30m from the nearest significant site works, located to the west of site.

Review of the baseline noise survey and the Construction Noise Thresholds detailed in Section 8.2.1.1 indicates that the appropriate daytime CNTs for construction noise at residential properties are as follows:

- NSL 1: 65 dB $L_{Aeq,1hr}$
- NSL 2: 65 dB $L_{Aeq,1hr}$
- NSL 3: 65 dB $L_{Aeq,1hr}$
- NSL 4: 65 dB $L_{Aeq,1hr}$
- NSL 5: 65 dB $L_{Aeq,1hr}$

It is assumed that construction works will take place during normal daytime working hours only.

Figure 8.3. Site Context & Noise Assessment Locations (Image Source: Google Maps).

Table 8.16 below presents the predicted daytime noise levels from an indicative construction period at these noise sensitive locations (NSLs).

Description of Noise Source	Sound Power Level (dB L_w(A))	Calculated noise levels at varying distances (dB $L_{Aeq,T}$)					
		15	20	30	40	60	80
3 no. items each with SPL of 81 dB at 10 m or 5 items each with SPL of 78 dB at 10m operating simultaneously.	114	77	75	70	69	65	63

Table 8.16. Predicted daytime noise levels from an indicative construction period.

At a distance of 15m from areas of major construction, representative of NSL1, NSL2 and NSL3 the predicted construction levels are above the 65 dB(A) CNT, of the order of +12 dB, therefore with reference to Table 8.2, it is expected that there will be a negative, significant to very significant and short-term impact associated with general construction at these nearest noise sensitive locations. These predicted effects are presented in the absence of mitigation measures.

At a distance of 30m from areas of major construction, representative of NSL4, the predicted construction levels are marginally above the 65 dB(A) CNT, by a margin of +1 dB. Therefore, a negative, moderate to significant and short-term impact is predicted, in the absence of mitigation.

At a distance of 30m from areas of major construction, representative of NSL4, the predicted construction levels are marginally above the 65 dB(A) CNT, by a margin of +5 dB. Therefore, a negative, moderate to significant and short-term impact is predicted, in the absence of mitigation.

At sensitive locations at distances of 60m and greater from construction works, the predicted construction noise level is within the noise criteria and therefore the predicted effect is negative, moderate and short term.

On review of the surroundings to the proposed development the nearest non-residential receptors were identified as being the Ashbourne Community centre at 85m from the site boundary and the Ashbourne Community school at 125m from the site boundary to the north - east of the site. The predicted construction noise levels at both receptors are below the CNT adopted for non-residential receptors, i.e. 75 dB(A). Therefore, a significant impact is not predicted.

At greater distances predicted construction noise levels are lower, therefore any impact is expected to be negative, moderate and short-term.

Construction Traffic

All construction related vehicles accessing and egressing will do so from the proposed entrances from the Dublin Road to the east of the subject site.

In respect of potential noise impact, traffic volumes would need to increase by 25% or greater along the designated network to result in a negligible (1 dB) increase in traffic noise level. Based on the baseline traffic flows on Dublin Road set out in Chapter 10 (Material Assets – Transportation), in order to reach a level of 25% increase, daily construction traffic would have to reach some 3,210 AADT. Estimated levels of construction traffic is considerably below this value and therefore when compared to the base scenario, no significant increase in traffic noise levels is predicted to occur.

8.5.1.2. Vibration

It is anticipated that excavations will be made using standard excavation machinery, which typically do not generate appreciable levels of vibration close to the source. Taking this into account and considering the distance that these properties are from the works and the attenuation of vibration levels over distance, the resultant vibration levels are expected to be well below a level that would cause disturbance to building occupants or even be perceptible.

For the purposes of this assessment the expected vibration levels during piling assuming augured or bored piles have been determined through reference to published empirical data. The British Standard BS 5228 – Part 2: Vibration, publishes the measured magnitude of vibration of rotary bored piling using a 600mm pile diameter for bored piling into soft ground over rock, (Table D.6, Ref. No. 106):

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

Considering the low vibration levels at very close distances to the piling rigs, vibration levels at the nearest buildings are not expected to pose any significance in terms of cosmetic or structural damage. In addition, the range of vibration levels is typically below a level which would be likely to cause disturbance to occupants of nearby buildings.

Notwithstanding the above, any construction activities undertaken on the site will be required to operate below the recommended vibration threshold set out in Table 8.4 during all activities. Further discussion on mitigation measures during this phase are discussed in Section 8.6.

8.5.2. Operational Phase

8.5.2.1. Mechanical Plant

Building and mechanical services plant items are proposed that will serve the apartments and ground floor retail / medical units.

The selection of building services plant will ensure that noise levels comply with the criteria described in Section 8.2.3.1. It is acknowledged that the selection of the specific plant items is subject to change during the detailed design stage, and this is normal industry practice. However, noise from any new plant items will be designed and/or controlled so as not to give rise to any adverse effects at the nearest noise sensitive locations.

Once operational, if building services plant items are required to serve the commercial and residential aspect of the development, the cumulative operational noise level at the nearest noise external sensitive location will be designed/attenuated to meet the relevant BS 4142 noise criteria for day and night-time periods. The criteria has been selected so that the noise from items of plant does not exceed background noise levels, and hence, as per BS4142 “this is an indication of the specific sound source having a low impact”.

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.

The effect associated with building services plant, once designed to achieve the relevant noise criteria, is

categorised as negative, imperceptible and long-term.

8.5.2.2. Additional Traffic on Adjacent Roads

During the operational phase of the proposed development, there will be an increase in vehicular traffic associated with the site on some surrounding roads.

A traffic impact assessment relating to the proposed development has been prepared by DBFL Consulting Engineers, as part of this EIAR. Using this information, the related noise impacts along the relevant road links has been assessed.

Figure 8.4 below outlines the breakdown of sections of road and Table 8.17 displays the predicted change in noise level at different road links around the site for the year of opening and the design year using the Annual Average Daily Traffic (AADT) flows along the road links under consideration.

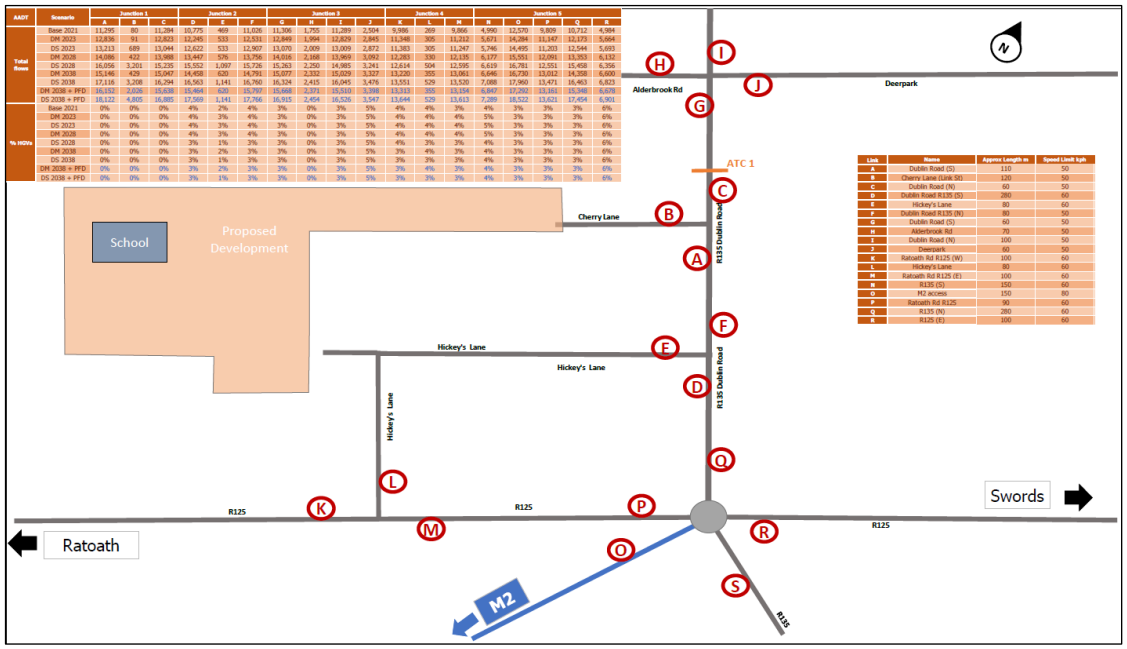


Figure 8.4. Traffic Assessment – Road Links.

Road Link	Opening Year (2023)		
	AADT Without Development	AADT With Development	Change in Noise Level (dB)
A	12,836	13,213	+0.1
B	N/A	N/A	N/A
C	12,823	13,044	+0.1
D	12,245	12,622	+0.1
E	533	533	0.0
F	12,531	12,907	+0.1
G	12,849	13,070	+0.1
H	1,994	2,009	0.0
I	12,829	13,009	+0.1
J	2,845	2,872	0.0
K	11,348	11,383	0.0
L	305	305	0.0
M	11,212	11,247	0.0
N	5,671	5,746	+0.1
O	14,284	14,495	+0.1
P	11,147	11,203	0.0
Q	12,173	12,544	+0.1
R	5,664	5,693	0.0

Table 8.17. Predicted Change in Noise Level associated with Vehicular Traffic.

Road Link	Design Year (2038)		
	AADT Without Development	AADT With Development	Change in Noise Level (dB)
A	15,146	17,116	+0.5
B	N/A	N/A	N/A
C	15,047	16,294	+0.3
D	14,458	16,563	+0.6
E	620	1,141	+2.6
F	14,791	16,760	+0.5
G	15,077	16,324	+0.3
H	2,332	2,415	+0.2
I	15,029	16,045	+0.3
J	3,327	3,476	+0.2
K	13,220	13,551	+0.1
L	355	529	+1.7
M	13,061	13,520	+0.2
N	6,646	7,088	+0.3
O	16,730	17,960	+0.3
P	13,012	13,471	+0.2
Q	14,358	16,463	+0.6
R	6,600	6,823	+0.1

Table 8.18. Predicted Change in Noise Level associated with Vehicular Traffic.

For the opening year (2023) traffic flows, the predicted changes in noise level along the of road links range from +0.0 to +0.1 dB. For the design year (2038) traffic flows, the predicted changes in noise level along the road links range from +0.1 to +2.6 dB.

With reference to Table 8.7, the predicted change in noise level associated with additional traffic on the existing road network, is negligible in magnitude. The impact is therefore imperceptible and long term.

8.5.2.3. Noise from Creche

Measurement of noise levels generated by children playing outdoors at several crèches and kindergartens indicate typical noise levels in the order of 56 dB $L_{Aeq,1hr}$ at distance of 5 metres. The nearest noise sensitive receptors are located at Cherry Court, approximately 70m from the creche located in Block A. Considering the usage of the creche area (e.g. external areas are only expected to be in use for a portion of the 16 hour daytime period) and

the standard noise insulation of the façade, it is predicted that the internal criteria in Table 8.8 will be met in these closest sensitive locations. This is also the case with reference to the second creche located in Block A1 and receptors further away, and therefore the resultant noise impact due to the creches is not significant.

8.5.2.4. Inward Noise Assessment

Acoustic Design Statement – Part 1

The development lands in question are bounded to the east by the Dublin road (R135), which is the dominant noise source in proximity to the development site.

Noise levels at the most exposed sector of the site have been used to determine the noise level at the facades of the closest development buildings, i.e. Block A and Block B in the north eastern area of the site.

The results of the baseline noise survey demonstrate that highest noise levels are experienced along this boundary in proximity to the road edges and reduce considerably by more than 10 dB towards the western and southwestern part of the site, in the absence of any development buildings.

Giving consideration to the noise levels presented in the previous sections, the initial site noise risk assessment has concluded that the level of risk across the site lies within the low to medium noise risk categories.

ProPG states the following with respect to low and medium risks areas:

Low Risk — *At low noise levels, the site is likely to be acceptable from a noise perspective provided that 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 in the finished development.*

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 above it can be concluded that the development site may be categorised as *Low to Medium Risk* and as such the Acoustic Design Statement (following here and also in Section 8.6) is 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 impacts will be avoided in the final development.

It should be noted that ProPG states the following with regard to how the initial site noise risk is to be used,

"2.12 It is important that the assessment of noise risk at a proposed residential development site is not the basis for the eventual recommendation to the decision maker. The recommended approach is intended to give the developer, the noise practitioner, and the decision maker an early indication of the likely initial suitability of the site for new residential development from a noise perspective and the extent of the acoustic issues that would be faced. Thus, a site considered to be high risk will be recognised as presenting more acoustic challenges than a site considered as low risk. A site considered as negligible risk is likely to be acceptable from a noise perspective and need not normally be delayed on noise grounds. A potentially problematical site will be flagged at the earliest possible stage, with an increasing risk indicating the increasing importance of good acoustic design."

Following the guidance contained in ProPG, therefore, it does not preclude residential development on sites that are identified as having medium or high noise levels. It merely identifies the fact that a more considered approach will be required to ensure the developments on the higher risk sites are suitably designed to mitigate the noise levels. The primary goal of the approach outlined in ProPG is to ensure that the best possible acoustic outcome is achieved for a particular site.

Façade Noise Levels

The measured noise levels associated with road traffic have been used to derive an assessment noise level at the façades of the proposed development. Noise spectra for the assessment noise levels are presented below for daytime and night-time.

Maximum noise levels during the day did not typically exceed 75 – 78 dB L_{Amax}. It is therefore reasoned that it is unlikely that night-time maximum levels would be higher. The assessment spectrum for maximum noise levels is presented below.

Facade	Period	Octave Band Centre Frequency (Hz)							L_{Aeq}, dB
		63	125	250	500	1k	2k	4k	
Block A and Block B Northeastern facades	Day	72	63	61	61	63	60	58	
	Night	65	56	54	54	56	53	51	
	Period	63	125	250	500	1k	2k	4k	L_{Amax} dB
	Night	83	74	72	72	74	71	69	78

Table 8.19. Assessment $L_{Aeq,T}$ Noise Levels External to Proposed Development.

Predicted noise levels on several facades are above a level whereby internal noise levels are achieved with standard double glazing and therefore mitigation in the form of enhanced glazing and ventilators will be required.

The specification of this enhanced façade is discussed in Section 8.6.3.3.

External Noise Levels

Balconies and outdoor areas close to the main road in the northeastern sector, i.e. Block A and Block B, are predicted to be above the recommended range of noise levels from ProPG of between 50 – 55 dB $L_{Aeq,16hr}$. Noise levels in the open area to the west of the blocks is expected to be marginally above but will benefit from screening of road traffic noise by the clocks themselves. This is counterbalanced by provision of several outdoor amenity areas within the development which is located away from the main road and traffic noise.

External noise levels within the vast majority of communal open spaces across the development site are predicted to be within the recommended range of noise levels from ProPG of between 50 – 55 dB $L_{Aeq,16hr}$.

It is considered that the objectives of achieving suitable external noise levels is achieved within the overall site, therefore no further mitigation is required to control external noise levels across amenity areas.

8.6. Mitigation Measures

Mitigation measures for the construction phase are set out below in order to reduce potential impacts as far as practicable to within the adopted criteria for noise and vibration.

8.6.1. Construction Phase – Noise

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 outside of normal permitted working hours will be surrounded by an acoustic enclosure or portable screen.

BS 5228 -1:2009+A1 2014 includes guidance on several aspects of construction site practices, which include, but are not limited to: -

- selection of quiet plant;
- noise control at source;
- screening;
- liaison with the public, and;
- monitoring.

Detailed comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise and vibration monitoring, where required.

8.6.1.1. Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. 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 should be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative.

8.6.1.2. Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.
Referring to the potential noise generating sources for the works under consideration, the following best practice migration measures should be considered:

- Where practical, site compounds will be located in excess of 30m from noise sensitive receptors within the site constraints. The use lifting bulky items, dropping and loading of materials within these areas should be restricted to normal working hours.
- For mobile plant items such as 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 should be switched off when not in use and not left idling.

- For concrete mixers, control measures should be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- Demountable enclosures can also be used to screen operatives using hand tools and will be moved around site as necessary.
- All items of plant should 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.

8.6.1.3. Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Construction site hoarding will be constructed around the site boundaries as standard. The hoarding will be constructed of a material with a mass per unit of surface area greater than 7 kg/m^2 to provide adequate sound insulation.

In addition, careful planning of the site layout will also be considered. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.

8.6.1.4. Liaison with the Public

A designated environmental liaison officer will be appointed to site during construction works. Any noise complaints should be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particularly noisy construction activity is planned or other works with the potential to generate high levels of noise, or where noisy works are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

8.6.1.5. Monitoring

Where required, construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion.

Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise*.

8.6.1.6. Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. During excavation/ demolition or other high noise generating works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.

8.6.2. Construction Phase – Vibration

8.6.2.1. The vibration from construction activities will be limited to the values set out in Section 8.2.2. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Limit values have been provided for soundly constructed residential and commercial properties.

8.6.3. Operation Phase – Noise

8.6.3.1. Mechanical Services Plant

Taking into account that sensitive receivers within the development are much closer than off-site sensitive receivers, once the relevant noise criteria is achieved within the development it is expected that there will be no negative impact at sensitive receivers off site, and therefore no further mitigation required.

8.6.3.2. Additional Traffic on Adjacent Roads

During the operational phase of the development, noise mitigation measures with respect to the outward impact of traffic from the development are not deemed necessary.

8.6.3.3. Inward Noise

As is the case in most buildings, the glazed elements and ventilation paths of the building envelope are typically the weakest element from a sound insulation perspective. In general, all wall constructions (i.e. block work 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.

In this instance, the facades highlighted in Figure 8.5 will be provided with glazing and ventilation that achieves the minimum sound insulation performances as set out in Table 8.20 and Table 8.21. Other facades in the development have no minimum requirement for sound insulation.

Mark-up	Octave Band Centre Frequency (Hz)						R_w
	125	250	500	1000	2000	4000	
ORANGE	19	27	36	41	37	42	**37**

Table 8.20. Sound Insulation Performance Requirements for Glazing, SRI (dB).

The overall R_w and $D_{ne,w}$ outlined in this section are provided for information purposes only. The over-riding requirement is the Octave Band sound insulation performance values which may also be achieved using alternative glazing and ventilation configurations. Any selected system will be required to provide the same level of sound insulation performance set out in Table 8.20 and Table 8.21 or greater.

The following performance requirements apply to all ventilation paths from outside the building. This can be achieved by passive acoustic wall or window vents or via mechanical ventilation systems.

Octave Band Centre Frequency (Hz)						$D_{n,e,w}$
125	250	500	1000	2000	4000	
30	33	38	37	36	36	**38**

Table 8.21. Sound Insulation Performance Requirements for Ventilation, $D_{n,e,w}$ (dB).

Figure 8.5. Façade Acoustic Requirements.

It is important to note that the acoustic performance specifications detailed herein are minimum requirements which apply to the overall glazing and ventilation systems. 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.

The assessment has demonstrated that the recommended internal noise criteria can be achieved through consideration of the proposed façade elements at the design stage. The calculated glazing and ventilation 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.

8.6.4. Operational Phase – Vibration

No vibration mitigation measures are required applicable the operational phase.

8.7. Residual Impacts

8.7.1. Construction Phase

The construction noise assessment has shown that predicted noise levels associated with construction activity at distances of 30-45m from nearest NLS, are above the noise criteria and therefore for these works a negative, moderate to significant and short-term effect is predicted.

For the time periods whereby works are taking place close to the site boundary at distances of 15-30m from NSLs, the predicted effect at these nearest NLS is negative, significant to very significant and temporary.

At sensitive locations at distances of 60m and greater from construction works, the predicted construction noise level is within the noise criteria and therefore the predicted effect is negative, moderate and short term.

8.7.2. Operational Phase

8.7.2.1. Additional Vehicular Traffic

The predicted change noise levels associated with additional traffic is predicted to be of imperceptible impact along the existing road networks. In the context of the existing noise environment, the overall contribution of induced traffic is considered to be of ***neutral***, ***imperceptible*** and ***long-term*** impact to nearby residential locations.

8.7.2.2. Mechanical Plant

Assuming the operational noise levels do not exceed the adopted design goals in line with the relevant noise criteria, the resultant residual noise impact from this source will be of ***neutral***, ***imperceptible***, ***long term*** impact.

8.8. Cumulative Impacts

During the construction phase of the proposed development, construction noise on site will be localised and will therefore likely be the primary noise source at the nearest noise sensitive receivers.

Cumulative impacts will need to be considered and managed in the case that the construction phase of the proposed development occurs simultaneously to other permitted developments. It is recommended that liaison between construction sites is on-going throughout the duration of the construction phase. Contractors should schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors. Cumulative construction noise impacts are expected to be negative, significant and short-term.

The contractor will be required to control noise impacts associated with this development in line with the guidance levels included in Table 8.1 and follow the best practice control measures within BS 5228 -1.

Any large scale future projects that are not yet proposed or permitted would also need to be the subject of EIA in turn, to ensure that no significant impacts resulting from noise and vibration will occur as a result of those developments.

8.9. Interactions

8.9.1. General

In compiling this environmental impact assessment, reference has been made to the project description provided by the project co-ordinators, project drawings provided by the project architects and information relating to construction activities provided by the engineers. Noise emission sources from the proposed development during the construction and operational phases will be from construction plant and activity, building services and traffic accessing the development. The noise impact assessment has been prepared in consultation with the design team and traffic engineers. Reference can be made to the relevant chapters for additional information.

8.9.2. Human Health

The potential impacts on human beings in relation to the generation of noise and vibration during the construction phases are that high levels of noise and vibration could cause a degree of nuisance to people in nearby sensitive locations. Implementation of the mitigation measures set out and adherence to good practice noise reducing measures will ensure that the residual impact on human health will be lessened.

Similarly, during the operational phase, plant selections designed to achieve the relevant noise criteria will result in a residual impact that is imperceptible to people in nearby noise sensitive locations.

8.10. Difficulties Encountered

No difficulties were encountered during the preparation of the EIAR chapter.

8.11. References

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – (EPA, 2022);
- BSI (1993). BS 7385: 1993 Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration;
- BS 4142: 2014: Methods for Rating and Assessing Industrial and Commercial Sound;
- BSI (2014). BS 5228-1:2009 +A1:2014 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise;
- BSI (2014). BS 5228-2:2009+A:2014 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration;
- EPA (2020). EPA Maps [Online] Available from gis.epa.ie/EPAMaps;
- ISO (2016). ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures;
- UK Department of Transport (1998). Calculation of Road Traffic Noise;
- UKHA (2020). Design Manual for Roads and Bridges Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2; and
- (IoA, 2017). Professional Practice Guidance on Planning & Noise (ProPG).

9.0. Material Assets: Built Services

9.1. Introduction

This chapter of the EIAR comprises of an assessment of the likely impacts of the proposed development on existing surface water, water supply, foul drainage, and utility services in the vicinity of the site, as well as identifying proposed mitigation measure to minimise any impacts.

The material assets considered in this chapter of the EIAR include Surface Water Drainage, Foul Drainage, Water Supply, Power, Gas and Telecommunications.

Refer to Chapter 2 of the EIAR (Description of the Project & Alternatives) for a detailed site and development description.

9.1.1. Statement of Compliance

In accordance with Article 5(3)(a) of the EU Directive, by appointing DBFL, the Applicants have ensured that this chapter of the EIAR has been prepared by a "competent expert".

This chapter of the EIAR has been prepared Brendan Manning BEng (Hons) CEng MIEI, who has over 10 years' experience in civil engineering and the construction industry.

9.2. Proposed Development

9.2.1. Surface Water Drainage

A surface water drainage network plan is shown in DBFL Consulting Engineers drawing 200059-DBFL-CS-SP-DR-C-1300 is included in Appendix 9.1 showing the location of existing surface water drainage services in the vicinity of the site.

The site has an overall area of approximately 20.04 Ha. The site is bound primarily by existing agricultural land and residential developments to the north. Cherry Lane and Hickeys Lane provide access points to the proposed development off the Dublin Road. The site, predominantly green field, falls within the Meath County Development Plan, 2021-2027.

The site is predominantly greenfield and Slopes from east to west with the exception of a near the school site which slopes from west to east. It is proposed to outfall the attenuated surface water collected from the main residential development to the existing drainage ditch in the southern portion of the site. This ditch discharges to the Fairyhouse stream located to the south of the proposed development which in turn discharges to the Broad Meadow River located approx. 720m of the site's eastern boundary via a hydro brake manhole. There are no watercourses in the immediate vicinity of the site and the site is located approximately 19km west of the Irish Sea. There is an existing drainage ditch located on the opposite side of the Dublin Road which runs in a southerly direction. It is proposed to discharge a portion of the drainage in the northern section of the proposed development to this ditch.

The proposed storm-water proposals and drainage design for the development is generally, a standard gully and pipe-work collection system with an attenuated outfall and associated attenuation storage.

Proposed surface water drains have been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) and BS EN 752: 2008 Drain and Sewer Systems Outside Buildings.

Surface water calculations are based on an allowable outflow / greenfield runoff rate of 41.73 l/sec resulting in a total attenuation volume of 3904m³, as determined in Chapter 6 of the EIAR (Water & Hydrology).

The proposed surface water drainage networks will collect surface water runoff from the site via a piped network. Attenuation of surface water will be provided in six separate attenuation areas before discharging via a hydrobrake manhole and a downstream defender unit. The total amount of storage provided in the stormtech attenuation systems s 2647m³ and the total amount of storage provided in the overground detention basins is 1256m³. A non-return valve will be provided at outlet locations to prevent flood waters from entering the surface water drainage network.

Surface water runoff from the site's road network will be directed to the proposed pipe network via conventional road gullies while surface water runoff from driveways will be captured by permeable paving.

Surface water runoff from roofs will be routed to the proposed surface water pipe network via the porous aggregates beneath permeable paved driveways (providing an additional element of attenuation and treatment).

9.2.2. Foul Water Drainage

A foul water drainage network plan is shown on DBFL drawing 200059-DBFL-CS-SP-DR-C-1300 included in Appendix 9.1. The existing site is greenfield and therefore has no foul loading at present. According to the records, there is an existing 225/300mm foul sewer which is located immediately to the west of the subject site in the Dublin Road as well as an existing foul network located in the existing residential areas to the east of the proposed development.

The proposed internal foul drainage network comprises of a network of 225mm diameter sewers designed based on the topography of the site. The foul drainage system will be completely separate from the surface water drainage system.

Individual houses will be connected to the proposed 225mm diameter internal foul drainage system via individual 100mm pipe connections as per Irish Water Code of Practice for Wastewater Infrastructure.

The foul drainage network for the proposed development has been designed in accordance with the Building Regulations and specifically in accordance with the principles and methods as set out in the Irish Water Code of Practice, IS EN752 (2017), IS EN12056: Part 2 (2000) and the recommendations of the 'Greater Dublin Strategic Drainage Study (GDSDS)'.

A daily foul discharge volume for the proposed development of 309m³ and a maximum total Biological Oxygen Demand (BOD) loading of 119 kg/day has been calculated as outlined in Irish Water's Code of Practice for Wastewater Infrastructure.

A Pre-Connection Feedback Letter has been received from Irish Water outlining that a wastewater connection can be facilitated for the proposed development and is included with the planning application documentation.

9.2.3. Water Supply

A watermain plan is shown on DBFL drawing 200059-DBFL-WM-SP-DR-C-1301 which is included in Appendix 9.2, showing the location of existing surface watermain services in the vicinity of the site.

There is an existing 315mm HDPE watermain located in the Dublin Road along the subject sites eastern

boundary and will serve as a connection for the proposed site. The internal watermain layout will consist of 160mm PE watermains with a number of 110mm PE loops supplied along Local Streets. The watermain serving the proposed link street along the development will consist of a 225mm PE 100 watermain.

All connections, valves, hydrants, meters etc. have been designed and are to be installed in accordance with Irish Water's Code of Practice / Standard Details.

Individual houses will have their own connections from the distribution main via service connections and boundary boxes. Individual service boundary boxes will be of the type to suit Irish Water and to facilitate domestic meter installation.

An average daily domestic demand for the proposed development of approximately 281.4m³ and an average day in peak week demand of 351.8m³ has been calculated as outlined in the Irish Water Code of Practice for Water Infrastructure.

A Pre-Connection Feedback Letter has been received from Irish Water outlining that a water connection can be facilitated for the proposed development and is included with the planning application documentation.

9.2.4. Power

Ashbourne is connected to the national ESB grid network. The proposed development will result in existing overhead line (OHL) infrastructure being relocated underground or redirected along linear green space corridors. An ESB Networks plan is included in Appendix 9.4 showing the location of existing electrical services in the vicinity of the site. There are existing Virgin Media underground services adjacent to and in the above location.

There are records of blue and green lines which are low and medium voltage overhead power lines traversing through the site. These green- MV (10KV/20KV) overhead lines are northwest and southeast of the site. The blue- LV (400V/230V) overhead lines are located to the northeast of the site along Cherry Lane and the southeast of the near Hickey's Lane. These overhead lines will be relocated underground and will be located in green space areas and underneath footpaths within the proposed development. Exact routing and location of sub-stations to be agreed with ESB. ESB will produce proposed layouts prior to construction.

9.2.5. Gas

Gas Networks Ireland (GNI) plans are included in Appendix 9.5 showing the location of existing gas services in the vicinity of the site.

There are no recorded distribution gas mains running through the site. However, there is a medium pressure distribution pipe located on the Dublin Road and Cherry Lane to the east of the subject site. The existing Briars residential development adjacent to the subject site is also serviced by a gas pipe. The proposed development site would be provided with connections from the existing gas network outlined above and in Appendix 9.6. Gas networks and associated pipes/ducting will be located underneath proposed footpaths and roads within the proposed development. The exact routing of same will be agreed with GNI prior to any construction works commencing. GNI will produce a proposed gas network drawing for same.

9.2.6. Telecommunications

Eir plans are included in Appendix 9.6 and Virgin Media network plans are included in Appendix 9.7 which indicates existing telecommunications infrastructure in the vicinity of the site.

Virgin Media have an existing network running along the Dublin Road to the East of the site. Eir also have an existing network running along Cherry Lane, Hickeys Lane and in the existing Briars residential development adjacent to the subject site. A range of voice and broadband fixed and wireless services are available in the area. Ducting for proposed telecommunications infrastructure within the development will generally be located within the proposed developments footpaths. Eir and Virgin Media will provide proposed telecommunications layouts prior to commencement of the development.

9.3. Methodology

As part of assessing the likely impact of the proposed development, surface water runoff, foul drainage discharge and water usage calculations were carried out in accordance with the following guidelines:

- Greater Dublin Strategic Drainage Study (GDSDS).
- Method outlined in Irish Water's Code of Practice for Wastewater Infrastructure.
- Method outlined in Irish Water's Code of Practice for Water Infrastructure.

Assessment of the likely impact of the proposed development on existing material assets in the vicinity of the site included:

- Review of Irish Water utility plans (surface water drainage, foul drainage and water supply).
- Consultation with Irish Water and Meath County Council.
- Submission of a Pre-Connection Enquiry Application to Irish Water.
- Review of ESB Networks Utility Plans.
- Review of Gas Networks Ireland Service Plans.
- Review of Eircom E-Maps.
- Review of Virgin Media Maps.

9.4. Difficulties Encountered

There were no difficulties encountered in compiling and assessing the data for this section of the EIAR.

9.5. Impact Assessment

9.5.1. Do Nothing Scenario

There are no predicted impacts should the proposed development not proceed.

9.5.2. Impact Assessment Methodology

An analysis of the predicted impacts of the proposed development on the services and utilities during and after the construction phase, as per Annex IV of Directive 2014/52/EU, EPA Guidance notes (2017) and Appendix C of the IGI EIS Preparation Guidelines (IGI 2013), is presented in the following section.

The impact assessment was undertaken using the following considerations:

- **Quality of an Impact:** Described as being Positive, Neutral or Negative.

- **Significance of an Impact:** The significance of each impact was considered as having either an Imperceptible/Not Significant, Slight, Moderate, Significant/Very Significant or Profound impact.

- **Duration of Impacts:** The duration of each impact was considered to be either brief, temporary, short-term, medium-term, long-term or a permanent impact. Brief construction impacts are considered to last a day or so, Temporary impacts last less than one year. Short-term impacts are seen as impacts lasting one to seven years. Medium-term impacts are impacts lasting seven to 15 years. Long-term impacts are impacts lasting 15 to 60 years and Permanent impacts are impacts lasting over 60 years

9.5.3. Construction Phase Impacts

The lands comprising the proposed development are in the ownership of the applicant. There are no known rights of way across the proposed development site. The office of Public Works (OPW) retains right of access for maintenance purposes along the Broad Meadow River and the Fairyhouse stream. Potential impacts that may arise during the construction phase include:

- Contamination of surface water runoff due to construction activities.
- Improper discharge of foul drainage from contractor's compound.
- Cross contamination of potable water supply to construction compound.
- Damage to existing underground and over-ground infrastructure and possible contamination of the existing systems with construction related materials.
- Diversion of existing ESB lines may lead to loss of connectivity to and / or interruption of supply from the electrical grid.
- Potential loss of connection and/or interruption to the Gas Networks Ireland; and
- Potential loss of connection and/or interruption to the Telecommunications infrastructure while carrying out works to provide service connections.

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a neutral, short-term, moderate impact.

9.5.4. Operational Phase Impacts

Potential operational phase impacts on the water infrastructure are noted below:

- Increased impermeable surface area will reduce local ground water recharge.
- Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g., along roads and in driveway areas).
- Increased maximum discharge to foul drainage network (Maximum Daily Foul Discharge Volume = 309m³).
- Increased potable water consumption (Average Day / Peak Week Demand = 281.4m³ /351.8m³).
- Contamination of surface water runoff from foul sewer leaks.

Demand from the proposed development during the operational phase is not predicted to impact on the existing power, gas and telecoms network.

Without the consideration of mitigation measures the operational phase of the proposed development will likely have a neutral, permanent, slight impact.

9.5.5. Human Health

From the perspective of the end user of the networks the risks to human health include:

- Contamination of potable water supply. Further consideration of this risk is provided in Chapter 6 of the EIAR.
- Gas leaks or explosions. The installation of services is tightly monitored and controlled by Gas Networks Ireland to ensure the protection of human health. Therefore, the risk of effect on human health is not considered significant.
- Loss of supply of utilities. This is a managed process that is the responsibility of the individual utility supplier and emergency plans will be in place. The effect is therefore considered brief and not significant.

9.5.6. Unplanned Events

The following accidents & disasters involving built services during the construction phase could potentially give rise to a serious incident putting people at risk:

- Excavation works coming into contact with live electricity lines.
- Excavation works causing damage and leaks to gas mains.

A site-specific Construction and Environmental Management Plan (CEMP) will be developed and implemented during the construction phase to mitigate the risks associated with accidents and disasters. The following accidents & disasters involving built services during the operation phase could potentially give rise to a serious incident putting end users at risk:

- Gas explosions.
- Damaged overhead / underground power lines.
- Severe Storms.

9.5.7. Cumulative Impacts

The proposed surface water drainage infrastructure has been designed in accordance with the relevant guidelines. Any other future development in the vicinity of the site would have to be similarly designed in relation to permitted surface water discharge, surface water attenuation and SuDS, therefore, no potential cumulative impacts are anticipated in relation to surface water drainage and flooding.

No potential cumulative impacts are anticipated in relation to wastewater as Irish Water have advised that provision of a wastewater connection is feasible.

No potential cumulative impacts are anticipated in relation to water supply as Irish Water have advised that provision

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a neutral, short-term, slight cumulative impact.

Without the consideration of mitigation measures the operational phase of the proposed development will likely have a neutral, permanent, imperceptible cumulative impact.

9.6. Mitigation

9.6.1. Construction Phase

Please refer to Section 6.6 of the EIAR (Water & Hydrology) for mitigation measures associated with the surface water treatment.

Mitigation measures proposed in relation to the drainage and water infrastructure include the following:

- A site-specific Construction and Environmental Management Plan (CEMP) will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the CEMP.
- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
- The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tinkered off site to a licensed facility until a connection to the public foul drainage network has been established.
- The construction compound's potable water supply shall be located where it is protected from contamination by any construction activities or materials.

Relocation of existing ESB infrastructure will be fully coordinated with ESB Networks to ensure interruption to the existing power network is minimized (e.g. agreeing power outage to facilitate relocation of cables). Ducting and / or poles along proposed relocated routes (to be agreed with ESB) will be constructed and ready for rerouting of cables in advance of decommissioning of existing medium and high voltage power lines to minimize outage durations.

Similarly, relocation of overhead telecommunication lines running through the site will be coordinated with Eir to minimize interruption and ensure that all works are carried in a safe manner. As there are no gas networks running through the site relocation will not be necessary.

9.6.2. Operational Phase

Please refer to Section 6.6 of the EIAR (Water & Hydrology) for mitigation measures associated with the surface water treatment.

All new foul drainage pipes will be pressure tested and will be subject to an internal CCTV survey in order to identify any possible defects prior to being made operational.

No additional mitigation measures are proposed in relation to water supply, however water conservation measures such as dual flush water cisterns and low flow taps will be included in the design.

On completion of the construction phase no further mitigation measures are proposed in relation to the electrical, gas and telecommunications infrastructure

9.7. Residual Impact

9.7.1. Construction Phase

Implementation of the measures outlined in Section 6.6 (Water & Hydrology) of the EIAR will ensure that the potential impacts of the proposed development on water supply, drainage and utilities do not occur during the

construction phase and that any residual impacts will be moderate, short term and will have a neutral effect on the proposed development.

9.7.2. Operational Phase

As surface water drainage, foul water drainage and watermain design has been carried out in accordance with the relevant guidelines, there are no predicted residual impacts on the drainage and water supply arising from the operational phase.

All utilities ducting and diversion will be carried out as per the supplier standards and instructions, therefore the residual impacts are expected to be permanent but imperceptible from the operational phase and will have a neutral impact on the development.

9.7.3. Worse Case Scenario

The following accidents & disasters involving built services during construction could potentially give rise to a serious incident putting people at risk:

- Excavation works coming into contact with live electricity lines.
- Excavation works causing damage and leaks to gas mains.
- Excavation works causing damage to wastewater pipelines and resulting in contamination of the surrounding ground and surface water network.

A site-specific CEMP will be developed and implemented during the construction phase to mitigate the risks associated with accidents and disasters.

The following accidents & disasters involving built services during operation could potentially give rise to a serious incident putting end users at risk:

- Gas explosions. The installation of services is tightly monitored and controlled by Gas Networks Ireland to ensure the protection of human health. The probability of this event occurring is unlikely. Therefore, the risk of effect on human health is not considered significant.
- Contamination of potable water supply. This risk is not considered significant as water quality is tightly monitored by Irish Water. The probability of this event occurring is unlikely. Further consideration is given to this in Chapter 6 of this EIAR.

9.7.4. Monitoring

Please refer to Section 6.6 of the EIAR (Water & Hydrology) for the proposed monitoring in relation to the surface water.

No specific monitoring is proposed in relation to the remaining material assets infrastructure.

9.8. Interactions

Material assets like built services can interact with several other environmental aspects during both the construction and operational phases of the development. These interactions are discussed below.

9.8.1. Transportation

Interactions with Traffic and Transport arise during the construction phase when soil and subsoils generated from excavation on site is being transported to and from the site and raw materials for construction are being imported to the site. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic and drainage / excavation works.

9.8.2. Water

Interactions with Water and Hydrology arise during the construction phase and the operational phase. The surface water drainage infrastructure for the development will collect the rainfall on the site and convey the storm water run-off via tree pits, bio-retention area, rain gardens, infiltration basins, gullies, underground pipes, manholes, catchpit manholes and direct the flows via void arched attenuation systems towards vortex flow restricting devices (Hydrobrake or similar) and petrol interceptors before outfalling to the existing on site open watercourses to the south/existing drainage network to the east. During the construction phase a site-specific CEMP will manage site water and will mitigate the risk of surface contaminants infiltrating into the underlying geology and hydrogeology. Surface water drainage from the operational site has been designed in accordance with Greater Dublin Strategic Drainage Study (GDSDS) and SuDs methods will be used to manage drainage.

9.8.3. Resource & Waste Management

Interactions with Waste Management arise during the construction phase when soil, subsoils and demolition waste associates with Built Services excavations are being transported from the site. These waste materials will require appropriate transport and disposal either off site or recycled on site. A Waste Classification Report for soils and subsoils shall be prepared in order to define appropriate waste disposal outlets.

9.8.4. Noise & Vibration

Development of the site will result in a level of noise and vibration related effects on the surrounding environment during the construction phase. The interaction between Built Services and Noise and Vibration is considered to be moderate and temporary in nature. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic.

9.8.5. Air Quality

There is a potential for soil excavation activity associated with Built Services to impact on air quality in terms of dust generated. Dust generation can also occur during extended dry weather periods as a result of construction traffic. However, the implementation of suitable mitigation measures as outlined in a CEMP for the site will ensure a neutral impact.

9.8.6. Biodiversity / Species & Habitat

Removal of the existing topsoil layer will be required across the site as well as removal of some trees, hedgerows etc. Further details including any potential issues and mitigation measures are outlined in Chapter 4 of the EIAR (Biodiversity).

9.9. References

- Greater Dublin Strategic Drainage Study (2005)
- IS EN 752 (2017) Drain and sewer systems outside buildings - sewer system management
- IS EN 12056 (2000) Gravity drainage systems inside buildings. Sanitary pipework, layout and calculation
- Irish Water Code of Practice for wastewater infrastructure
- Irish Water Standard Details for wastewater infrastructure
- Irish Water Code of Practice for water infrastructure
- Irish Water Standard Details for water infrastructure
- Directive 2014/52/EU of the European parliament and of the council of 16 April 2014
- Guidelines on the information to be contained in environmental impact assessment reports (2017)
- Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (2013)

10.0. Material Assets: Transportation

10.1. Introduction

This chapter of the EIAR assesses and evaluates the likely impact of the proposed development on the existing transportation system in the vicinity of the development site, as well as identifying proposed mitigation measures to minimise any identified impacts arising from the proposed development at Milltown, Ashbourne, County Meath.

The material assets considered in this traffic section include pedestrian, bicycle, public transport (bus, light rail) infrastructure and associated services in addition to the local road network and associated junction nodes.

10.2. Expertise and Qualification

This chapter of the EIAR has been prepared by Mark Kelly BAI, BA, MSc, PGradDip, CEng MIEI of DBFL Consulting Engineers, who has over 9 years' experience in traffic engineering and transportation planning, and Enrique Marenco Jimenez BSc MSc MIEI, of DBFL Consulting Engineers, with over 3 years' experience as a Traffic and Transportation Engineer.

10.3. Study Methodology

The purpose of this assessment is to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of transport impact generated as a result of the proposed residential development. The scope of the assessment covers transport and sustainability issues including vehicular access and pedestrian, cyclist and public transport connectivity. Recommendations contained within this chapter are based on existing and proposed road layout plans, site visits, traffic observations and junction vehicle turning count data. Our methodology incorporated a number of key inter-related stages, including:

- **Background Review**: This important exercise incorporated three parallel tasks which included (a) an examination of the local regulatory and development management documentation; (b) an analysis of previous 'transport' related, strategic and site specific studies of development and transport infrastructure proposals across the Ashbourne Area, and (c) a review of planning applications to establish the legal status of various third party development schemes that were either considered within the strategic 'transport' studies or which have emerged and received full planning permission since.

- **Site Audit**: A site audit was undertaken to quantify existing road network characteristics and identify local infrastructure management arrangements, in addition to establishing the level of accessibility to the site in terms of walking, cycling and public transport. An inventory of the local road network was also developed as this stage of the assessment.

- **Traffic Counts**: Junction Turning Counts and Automatic Traffic Counts were undertaken and analysed with the objective of establishing local traffic characteristics in the immediate area of the proposed residential development.

- **Trip Generation**: A trip generation exercise has been carried out to establish the potential level of vehicle trips generated by the proposed residential development.

- **Trip Distribution**: Based upon existing traffic characteristics and anticipated travel patterns of the proposed residential development, a trip distribution exercise has been undertaken to assign site generated trips across the local network.

- **Network Analysis**: Undertook detailed computer simulations to assess the operational performance of key junctions in the post development 2023 Opening Year, 2028 Interim Year and 2038 Design Year development scenarios in accordance with the NRA/TII document 'Traffic and Transport Assessment Guidelines' (2014).

Our approach to the study accords with policy and guidance both at a national and local level. Accordingly, the adopted methodology responds to best practices, current and emerging guidance, exemplified by a series of publications, all of which advocate this method of analysis. Key publications consulted include;

- *'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment'* (Department of Housing, Planning & Local Government, 2018);
- *'Guidance on the preparation of the Environmental Impact Assessment Report'* (European Commission, 2022);
- *'Guidelines on the information to be contained in Environmental Impact Statements'* (EPA, 2002);
- *'Draft Advice Notes for Preparing Environmental Impact Statements'* (EPA, 2015);
- *'Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports'* (EPA, 2017);
- *Transport Infrastructure Ireland's (TII's) 'Traffic & Transport Assessment Guidelines'* (2014);
- *'Guidelines for the Environmental Assessment of Road Traffic'* (Institute of Environmental Management & Assessment, 2003);
- *'The Dublin City Development Plan 2016 – 2022'* (DCC, 2016);
- *'Transport Strategy for the Greater Dublin Area 2016 – 2035'* (NTA, 2016);
- *'Design Manual for Urban Roads and Streets'* (DTTAS & DHPLG, 2013); *and*
- *'National Cycle Manual'* (NTA, 2011).

The assessment of effects of the proposed development on material assets are assessed in terms of quality (positive, neutral or negative effects), significance (imperceptible, not significant, slight, moderate, significant, very significant or profound effects), extent, context, probability (likely, unlikely effects) and duration (temporary, short term, long term or permanent effects) in line with the criteria set out in Table 3.3 'Description of Effects' of the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (EPA, August 2017).

10.4. Receiving Environment

10.4.1. Site Location

The general location of the subject site in relation to the surrounding road network is illustrated in Figure 10.1 below whilst Figure 10.2 shows the extent of the subject site lands and adjoining properties. The subject site is on the suburban edge of Ashbourne town off the Dublin Road. It is currently in use as agriculture land.

The subject site is approx. 1.3km from Ashbourne Town Centre (15 mins walk or 5 minute cycle) and 22km from Dublin City Centre. The subject will be connected to the current road network through Cherry Lane and Hickey's Lane to Dublin Rd (R135).

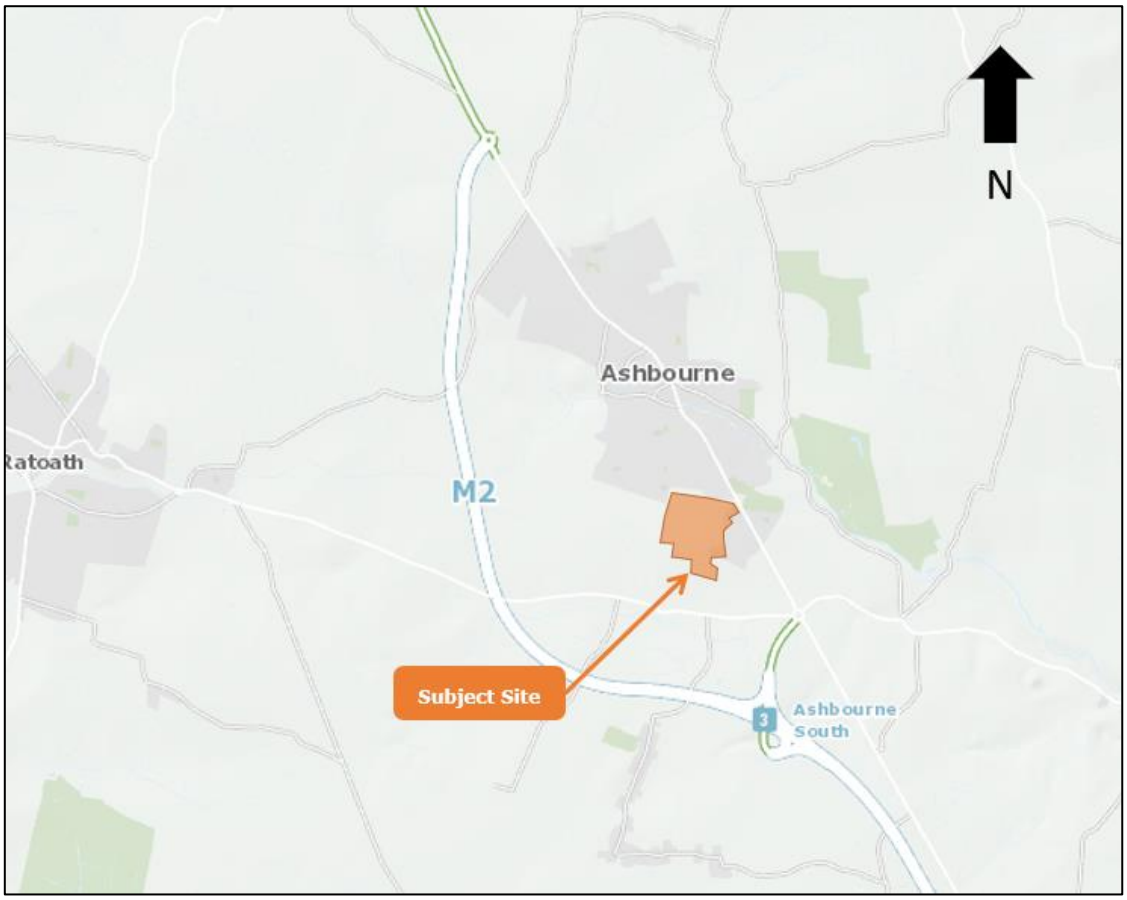


Figure 10.1. Site Location.

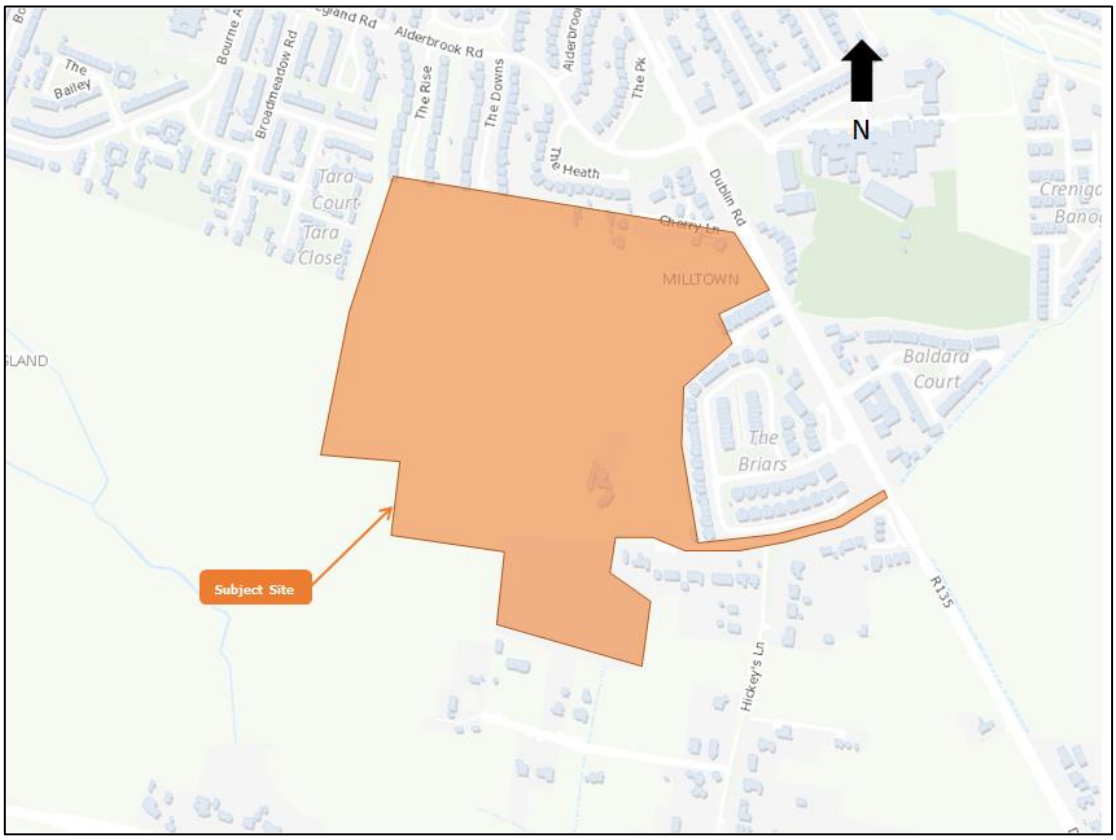


Figure 10.2. Site Location.

10.4.2. Existing Road Network

The subject development site is located west of the Dublin Road (R135). Figure 10.3 below illustrates the location of the subject site within the context of the existing road network.

Figure 10.3. Road Network.

The Dublin Road (R135) is a two-way single carriageway regional road. It connects Ashbourne to Dublin City Centre in addition to providing links to N2/M2 motorway northbound and southbound respectively. The speed limit is 60kph from Nine Mile Roundabout, and it reduces to 50kph on approach to Hickey's Lane.

Figure 10.4. R135 Dublin Road.

The primary access to the subject site will be via Cherry Lane, which is currently a local road that caters for less than 10 houses (cul-de-sac), as shown in Figure 10.5 below. This road will be upgraded and act as the primary access to the proposed development, with pedestrian and cycle facilities on either side of the carriageway.

Figure 10.5. Cherry Lane/Dublin Road R135 Junction.

The proposed secondary access to the development will be via Hickey's Lane. This is rural local road which provides access to residential properties and farms, there are currently no pedestrian or cycle facilities along Hickey's Lane (60kph), as shown in Figure 10.6. Hickey's Lane provides access to the Dublin Road R135 to the east and Ratoath Road R125 to the south.

Figure 10.6. Hickey's Lane/Dublin Road R135 Junction.

Ratoath Road (R125) is located approximately 500m south of the subject site. Ratoath Road is a busy two-way single carriageway regional road (60kph). Travelling west bound along Ratoath Road will connect the subject site to Ratoath, Dunshaughlin and other destinations along the route. Whereas travelling east bound from Nine Mile Stone roundabout, it will connect the site to The Sycamor, Swords and other destinations along the route.

Figure 10.7. R125 Ratoath Road.

The R135 and R125 roads described above converge at the Nine Mile Stone roundabout, which provides access to the M2 Motorway towards Dublin.

The M2 motorway is located approximately 1.5km west of the subject site and can be accessed via interchange 3 from the Nine Mile Stone roundabout. Travelling southbound, the N2/M2 motorway provides connection to the M50

motorway, Dublin Airport and Dublin City Centre. Whereas travelling northbound, Slane, Ardee and several other destinations along the route. The M2 motorway becomes N2 south of the Tyrellstown.

10.4.3. Existing Cycling and Pedestrian Facilities

Dublin Road (R135) offers pedestrian footpaths on both sides of the carriageway from Nine Mile Stone Roundabout to Ashbourne Town Centre, although there is a limited number of pedestrian crossing facilities, particularly controlled pedestrian crossings.

Figure 10.8. Pedestrian facilities on R135 Dublin Road.

Cherry Lane is a local road providing access to less than 10 houses (cul-de-sac), a pedestrian footpath is provided on the northern side of the carriageway for a section of the road. While Hickey's Lane is rural local road which provides access to residential properties and farms, there are no pedestrian facilities along Hickey's Lane (60kph).

The scheme proposals for the subject site will ensure pedestrians are given priority within the internal site layout to ensure desire lines within the site are accommodated, providing a good level of service, ensuring the risk of pedestrian conflict with vehicles is minimised and providing attractive convenient connections to external key walking desire lines.

The proposed new access arrangements to the site will include the provision of dedicated pedestrian crossing facilities along key desire lines.

In terms of cycle infrastructure, the subject site is located within the GDA Cycle Network sector designated as the "Dunshaughlin, Ratoath & Ashbourne". Figure 10.8 below illustrates the existing cycle network in the vicinity of the subject site, with the existing facilities from the GDA Cycle Network Plan (2013) updated with more recent built infrastructures.

There are existing cycle lanes along the following roads within proximity of the subject site:

- Dublin Road – Frederick St (R135). Cycle lanes immediately adjacent to each traffic lane in a North-South direction, starting at Dublin Rd/Alderbrook Rd/Deerpark junction up to Dunnes Stores, through Ashbourne Town.
- Broadmeadow Greenway – Castle St – Killegland. Cycle lanes in a East-West direction from Broadmeadow Greenway up to Ashbourne Education Campus in Killegland.
- Churchfields – Castle St – Killegland St. Cycle lanes linking the Churchfields to Ashbourne Town Centre

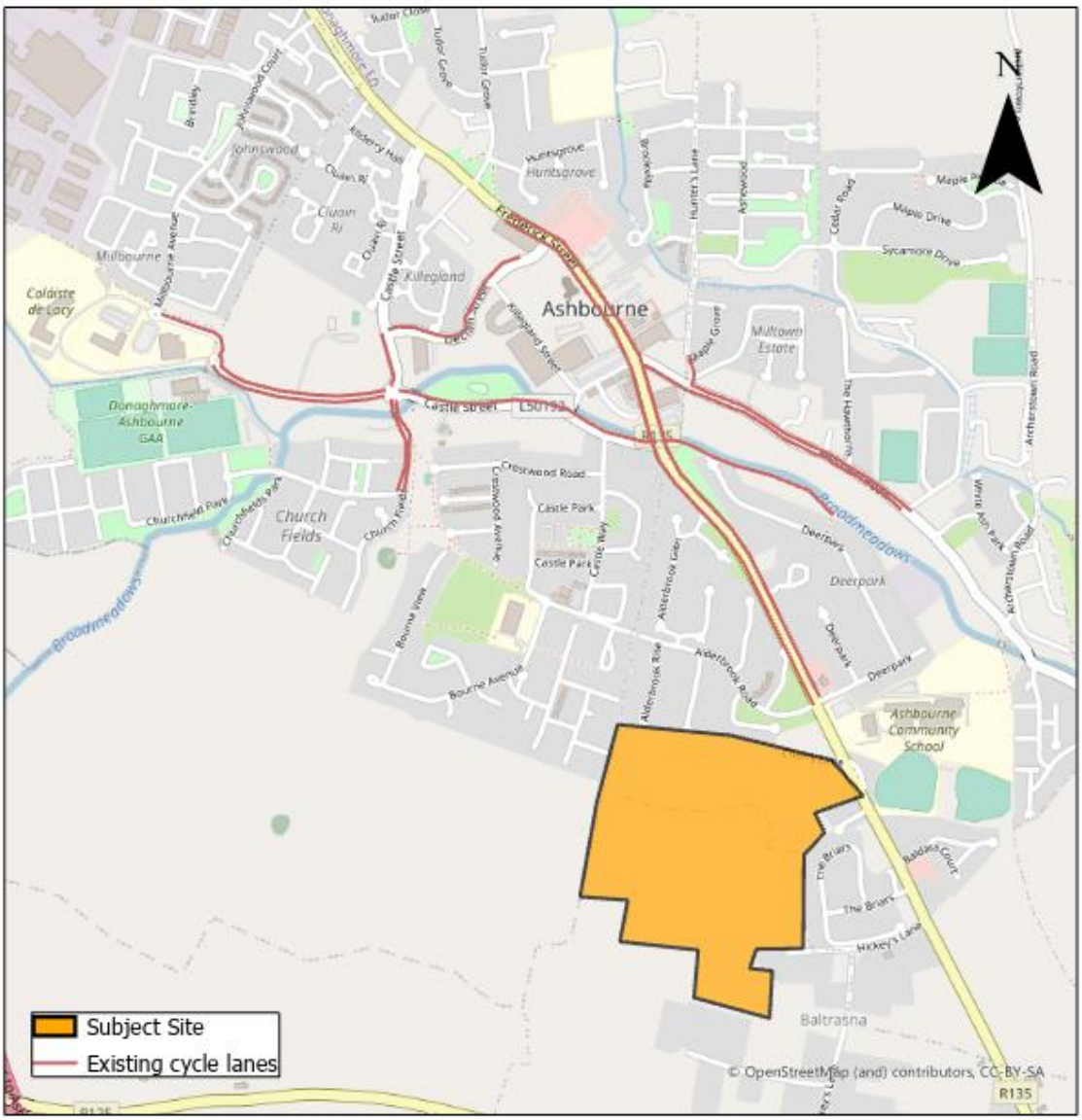


Figure 10.9. Existing Cycle Facilities.

A separate Drawing No. 200059-DBFL-TR-SP-DR-C-1101 is submitted with the planning application which illustrates existing transportation linkages.

10.4.4. Existing Public Transport Facilities

The subject site is well served in terms of public transport provision. Several bus routes connect the area with Dublin City Centre, Dublin Airport, Blanchardstown, Ratoath, Swords or Balbriggan. These routes are outlined below.

- 103 (Dublin – Ashbourne – Ratoath – Tayto Park). Operated by Bus Eireann, it is the service offering the highest frequency, with over 50 services per direction on a weekday and 40 on weekend days. It links Dublin with Ashbourne in 40 minutes, with a frequency of 20 minutes at peak hour.
- 103x (Dublin – Ashbourne – Navan). Operated by Bus Eireann, this route is similar to the 103, with a more direct itinerary non-stop from Ashbourne to Dublin City Centre. There are only 3 services per direction at peak hour.
- 105 (Drogheda – Ashbourne – Ratoath – Blanchardstown). Operated by Bus Eireann, it offers a link with

Blanchardstown Shopping Centre, as well as other services to Dublin City Centre and Dunboyne Train Station. In the other direction, users can access to Drogheda and its Train Station. The route offers 30 service from Monday to Saturday in each direction.

- 109a (Kells – Navan – Dunshaughlin – Ratoath – Ashbourne – Dublin City Centre). Operated by Bus Eireann, it offers a link to Dublin Airport in 30 min, with some services to City Centre and DCU. There are 26-27 services running every day in each direction.
- 193/194 (Ashbourne/Ratoath – Dublin). Operated by Ashbourne Connect, it is a express Ashbourne-Dublin service running only at peak times. There are 5 services on weekdays only, at AM peak towards Dublin, and at PM Peak towards Ashbourne/Ratoath.
- 197 (Swords – Ashbourne). Operated by Go Ahead Ireland, it links Ashbourne with Swords, Pavilions Shopping Centre, Airside, and services to other areas in Fingal.
- Local Link 195 (Ashbourne – Balbriggan). This is a TFI Local Link service running from Monday to Saturday linking Ashbourne with Balbriggan Train Station and small towns in between.
    -

Figure 10.10 below shows the connectivity offered by these routes from Ashbourne with the wider area.

Figure 10.11 illustrate the bus services in the Ashbourne area. Most routes go through Dublin Road R135.

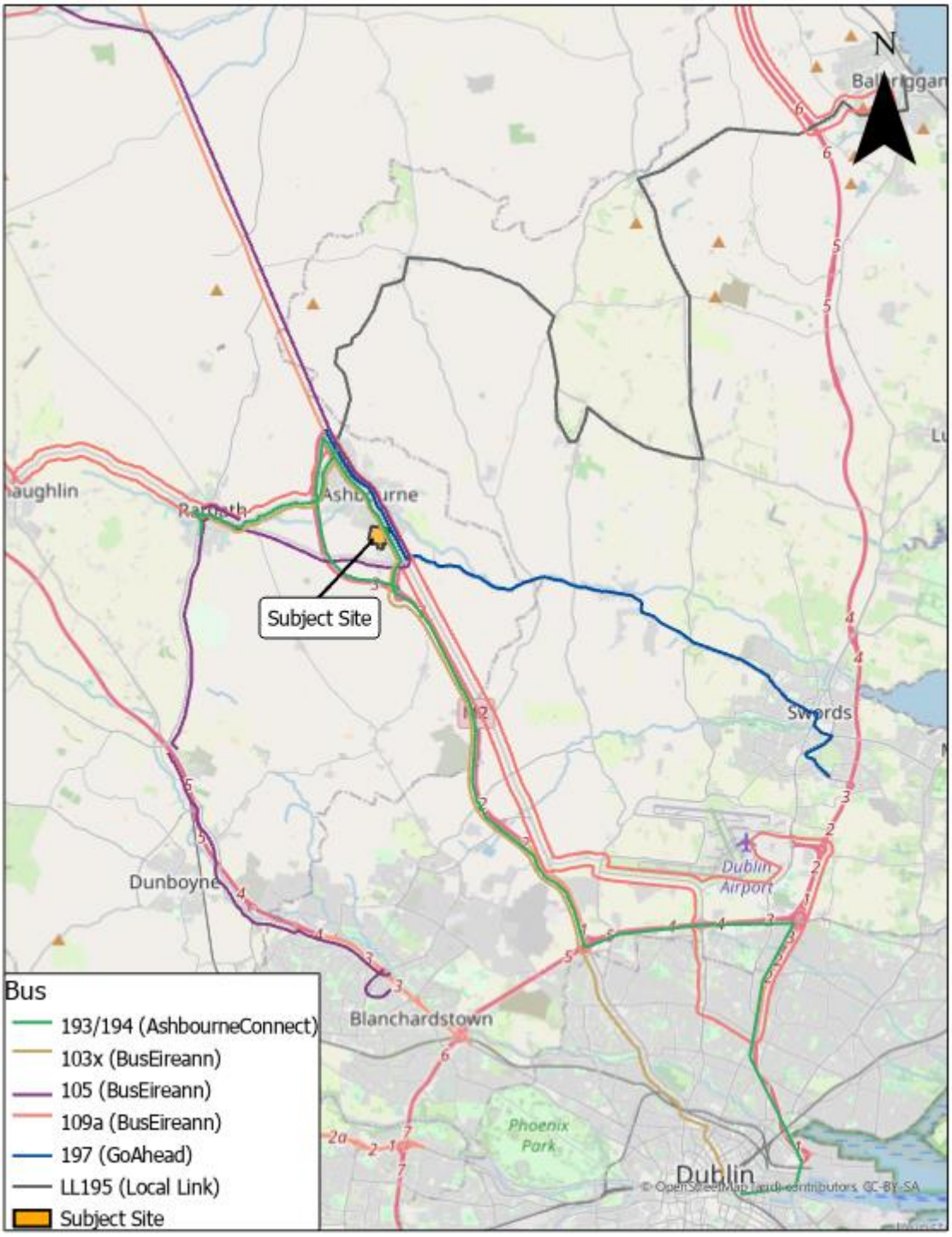


Figure 10.10. Bus Routes serving Ashbourne.

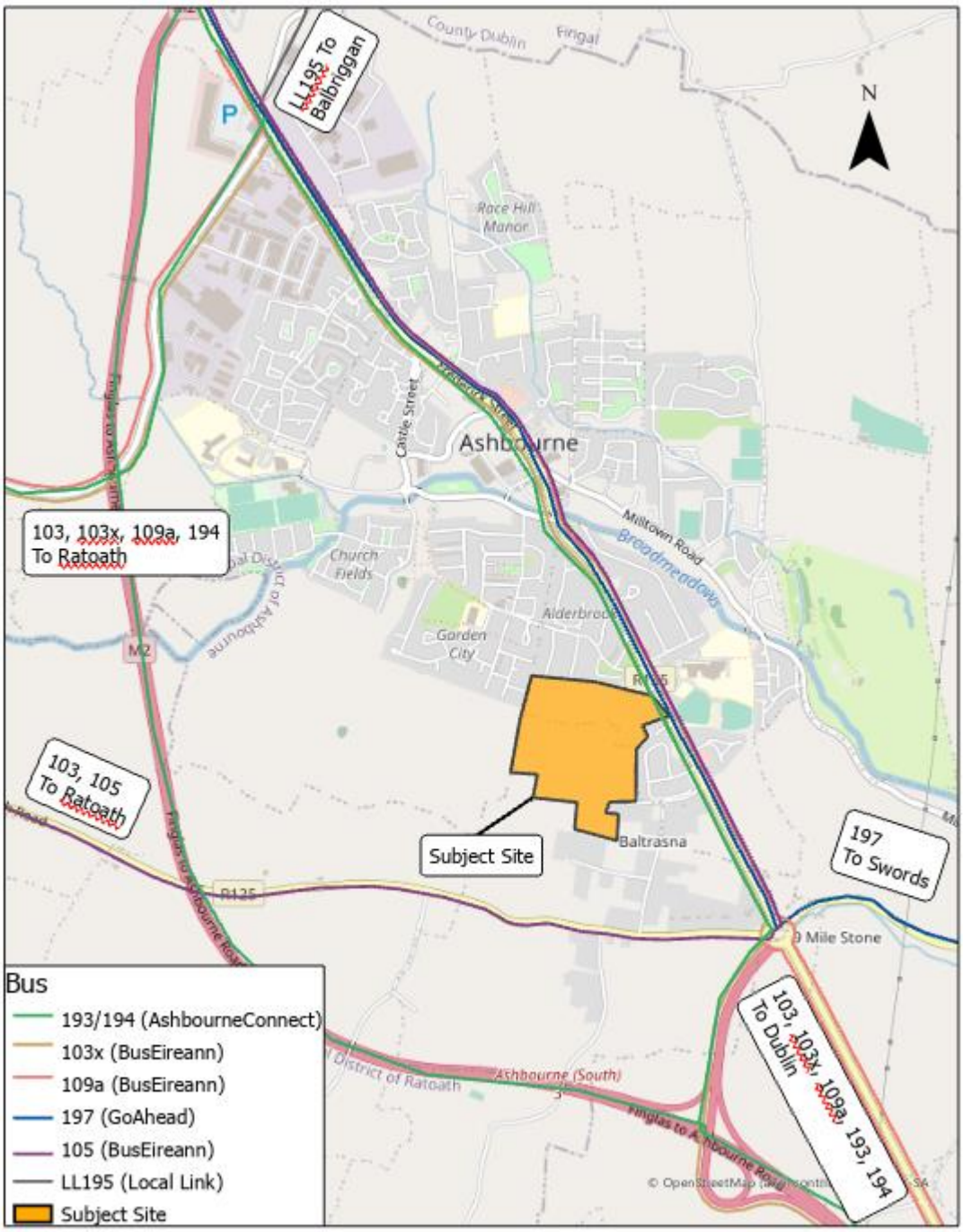


Figure 10.11. Bus Routes serving Ashbourne.

It can be seen in Figure 10.12 below 4no. bus stops are highly accessible from the subject site. These are served by bus routes no. 103, 103x, 105, 109a, 193 & 194. Most routes link with Dublin City Centre, except for most services of 109a heading to Dublin Airport, and services of 105 heading to Blanchardstown. All bus stops are located within 300-400m from the subject site.

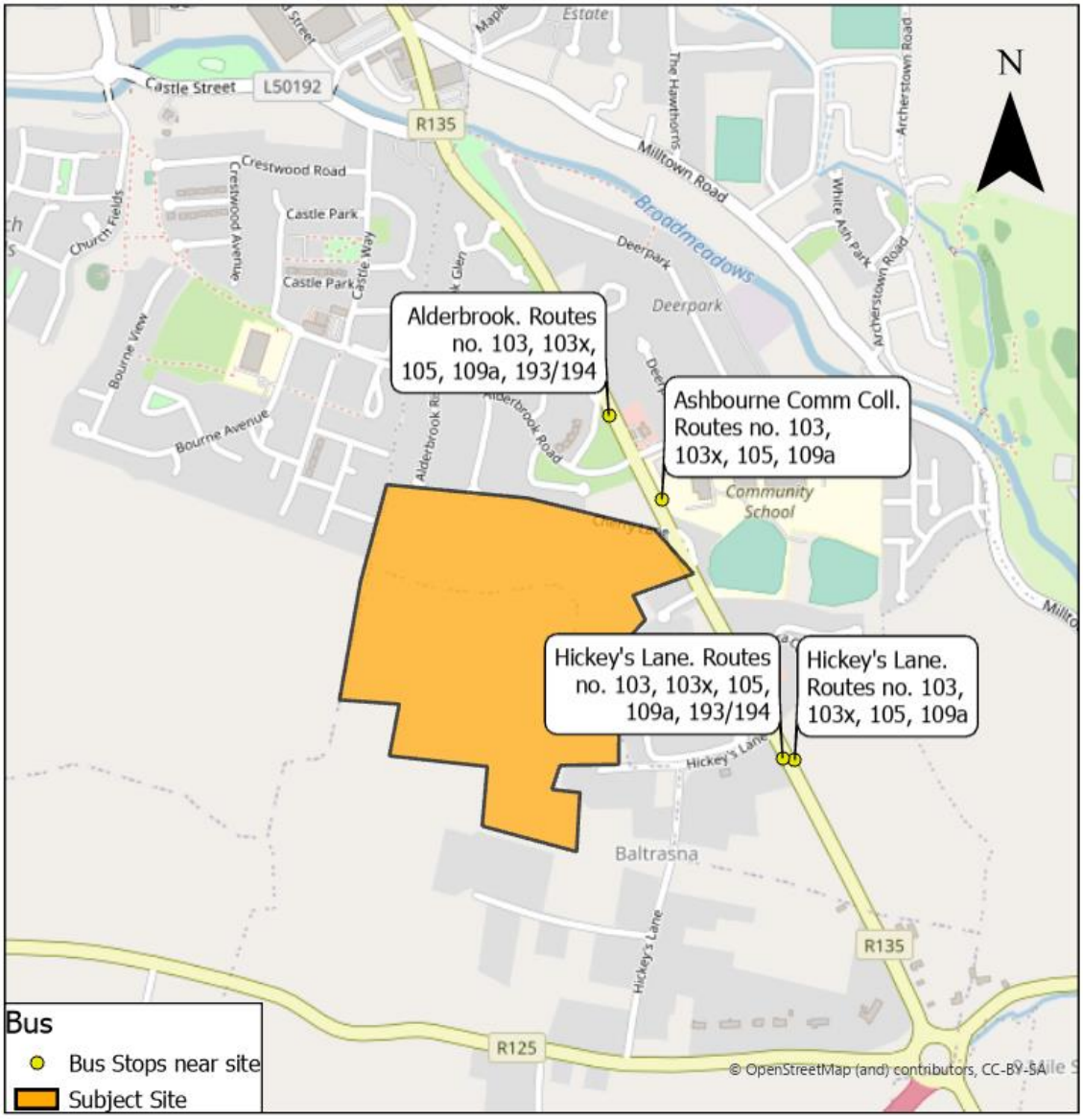


Figure 10.12. Bus Routes serving the subject site.

All the above introduced bus services operate mostly on a daily basis and offer relatively frequent schedules as summarised in Table 10.1 below.

Route	Route	Mon – Fri	Sat	Sun
103	From Dublin to Ashbourne, Ratoath & Tayto Park	52	41	24
103	From Tayto Park, Ratoath & Ashbourne to Dublin	53	42	24
103x	From Dublin to Ashbourne & Navan	3	-	-
103x	From Navan & Ashbourne to Dublin	3	-	-
105	From Drogheda to Ashbourne, Ratoath & Blanchardstown	30	30	12
105	From Blanchardstown, Ratoath & Ashbourne to Drogheda	30	30	12
109a	From Dublin Airport/City Centre to Ashbourne, Ratoath, Dunshaughlin, Navan & Kells	27	27	27
109a	From Kells, Navan, Dunshaughlin, Ratoath & Ashbourne to Dublin Airport/City Centre	27	26	26
193/194	From Ashbourne/Ratoath to Dublin City Centre	5	0	0
193/194	From Dublin City Centre to Ashbourne/Ratoath	5	0	0
197	From Swords to Ashbourne	18	18	15
197	From Ashbourne to Swords	17	17	15
LL195	From Ashbourne to Balbriggan	6	6	0
LL195	From Balbriggan to Ashbourne	5	6	0

Table 10.1. Bus Services.

Detailed transport linkages for the existing scenarios detailing distances to surrounding public transport is presented in a separate Drawing No. 200059-DBFL-TR-SP-DR-C-1101 submitted with the pre-planning application package.

In conclusion, the site is already strategically located to avail of excellent sustainable travel options in the form of public transport as well as walking links. A number of current schemes being developed by the National Transport Authority will see further improvements to infrastructure and services thereby increasing the attractiveness of the use of sustainable modes as means for accessing the development.

10.4.5. Existing Transport Sharing Schemes – Car Sharing

GoCar is car sharing membership-based scheme founded in May 2008. it is headquartered in Dublin and has expanded its services to Galway, Cork, Dundalk, Limerick, Wexford, Waterford and many other areas. After joining the scheme, a member can rent a car or van from €8/hour for a time period of as little as half an hour or 24/7, 365 days a year. The cost of insurance, fuel and parking are covered by the scheme as part of the GoCar membership.

GoCar is a successful on demand mobility initiative and reducing the need for owning private cars, therefore residential developments are now seeking car sharing facilities as part of their development to offset the need for dedicated car parking.

GoCar is available in the vicinity of the subject site with the closest GoCar base being at the car park of Tesco in Ashbourne Town Centre. This is located within approximately 1.1Km or 13 minutes walking distance of the subject site as illustrated in Figure 10.13 below.

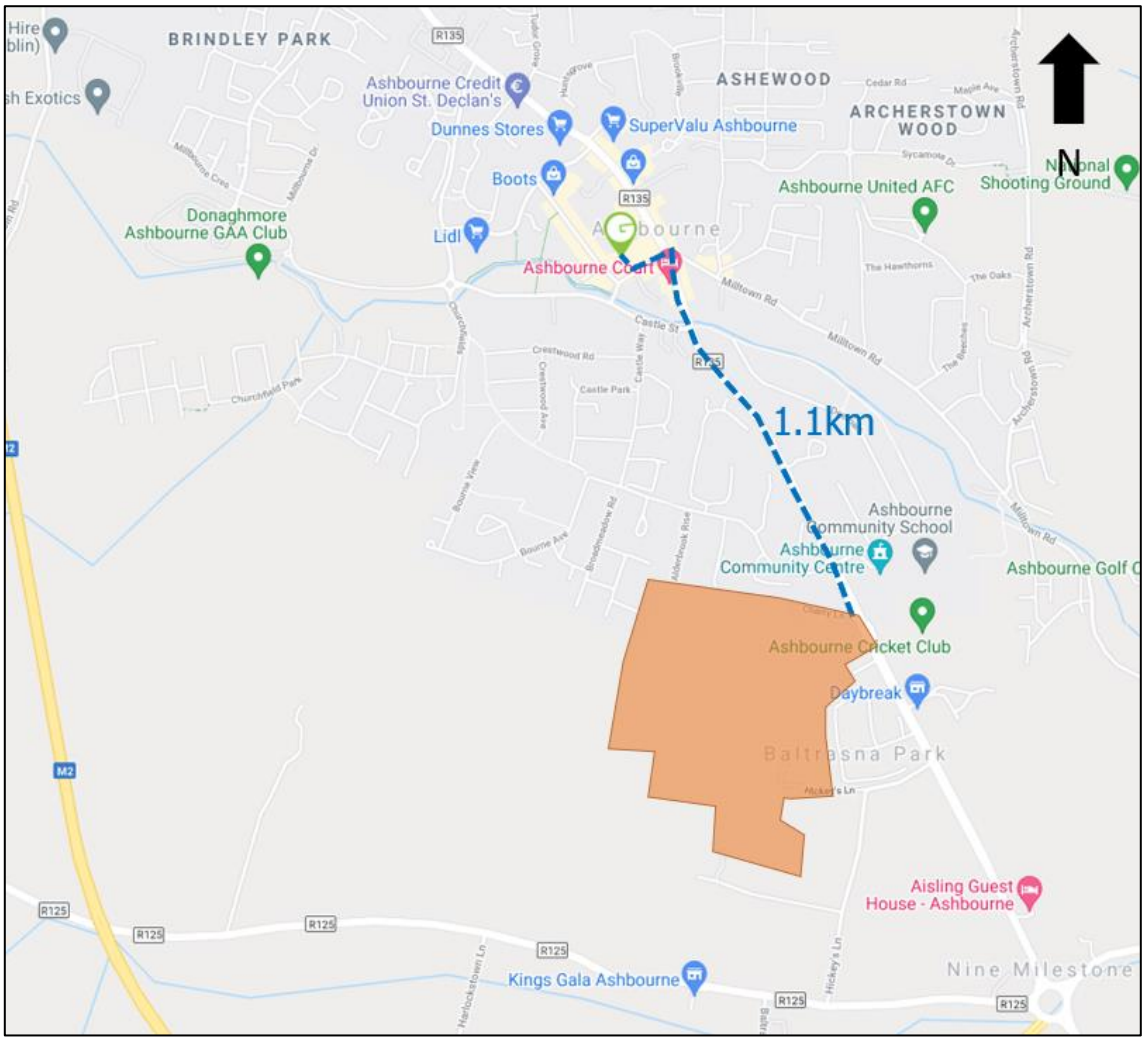


Figure 10.13. GoCar Bases (Source: GoCar).

10.4.6. Local Amenities

The proposed development site is well placed in terms of amenities. There are a comprehensive number of schools located within 2km of the subject site including Ashbourne Community School, Gaelscoil na Cille, St Mary's NS, Ashbourne Educate Together NS, St Declan's National Catholic School, Colaiste de Lacy, and Bumble Bee Daycare.

Furthermore, the subject site benefits from good access to leisure facilities such as Sports centres, playgrounds, and GAA clubs, as well as health centres. In addition, the site is located in close proximity to Ashbourne Town Centre, where there are several supermarkets and retail centres, such as Aldi, Tesco or Dunnes Stores. Figure 10.14 shows indicatively the proximity of the subject site's location in relation to the aforementioned local amenities.

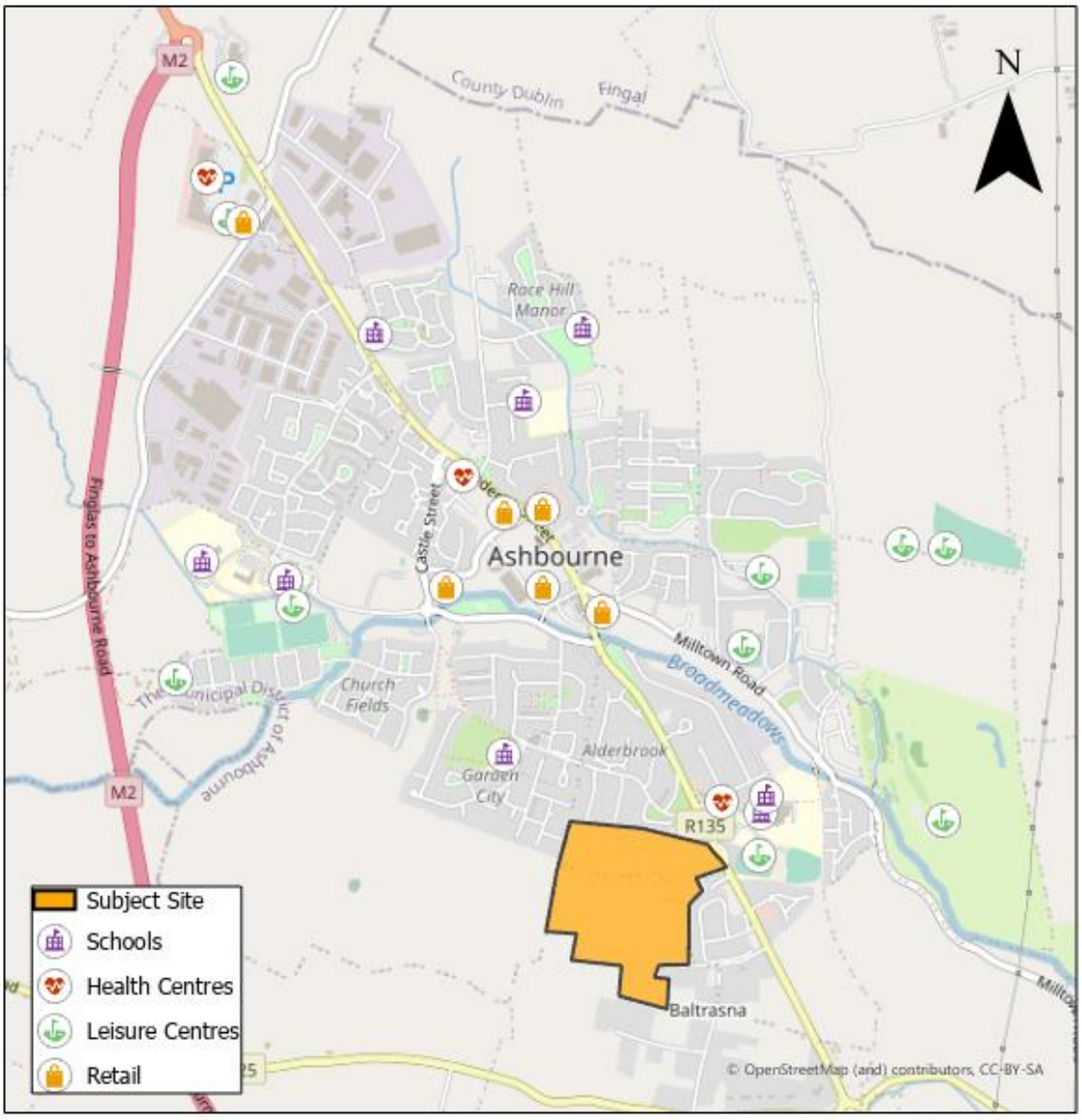


Figure 10.14. Local Amenities and Proximity to Proposed Development.

10.4.7. Walking Accessibility

The pedestrian catchments accessible from the subject site are shown in Figure 10.15 below for different walking times, from 10 minutes to 30 minutes. In 10-minutes walking time, several nearby bus interchanges are reachable, with access to all routes bound for Dublin City Centre; educational facilities Ashbourne Community School and Gaelscoil na Cille, Deerpark Medical Centre, and Ashbourne Cricket Club. In 20-minutes walking time, Ashbourne Town Centre and several amenities can be accessed, including Tesco, Aldi, St Declan's NCS, Ashbourne United pitches, and Ashbourne Golf Club. In 30-minutes walking time, more amenities can be reached, including Ashbourne Educate Together, St Mary's National School, and Ashbourne Health Centre.

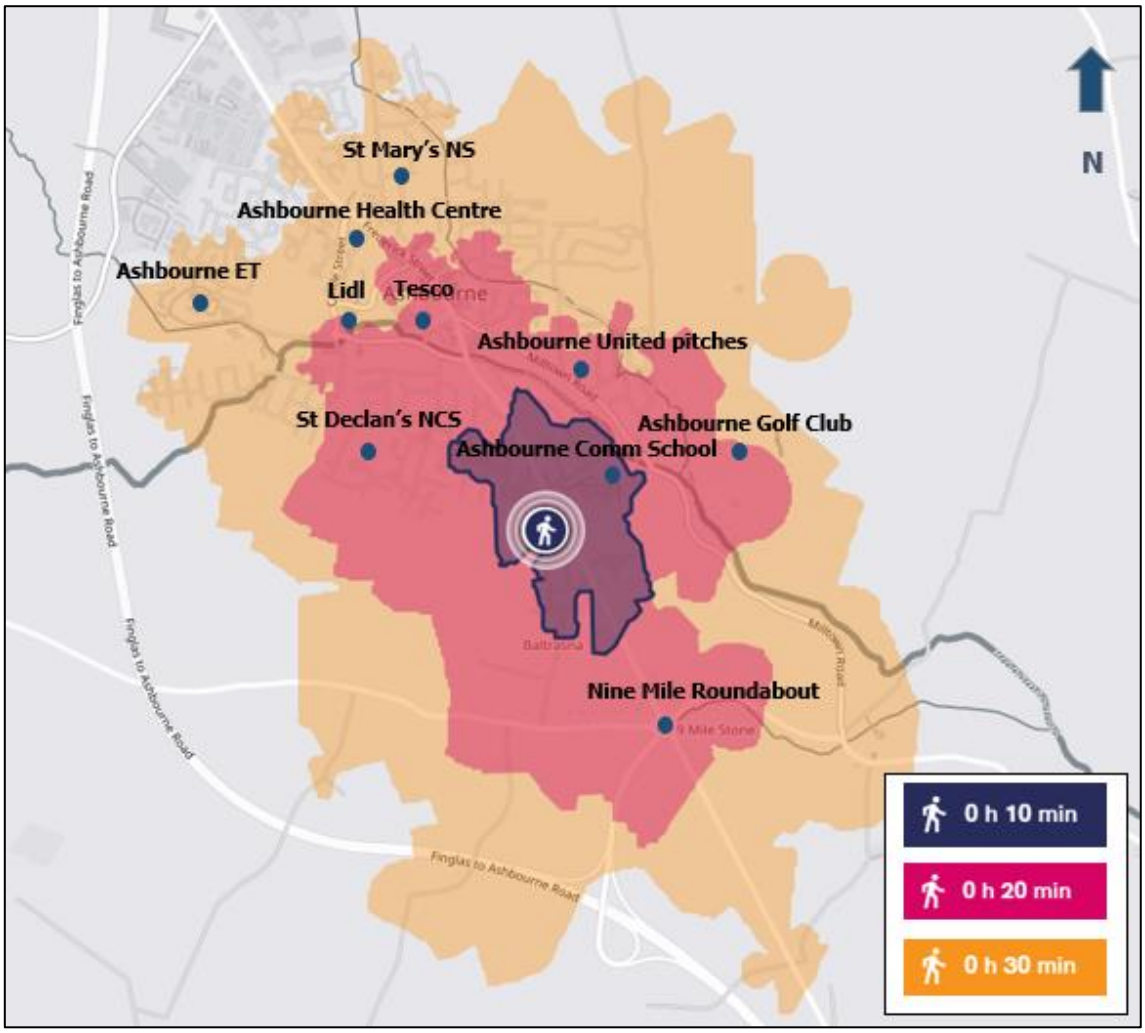


Figure 10.15. Pedestrian Accessibility (Walking Time from Site) (Source: TravelTime platform).

10.4.8. Cycling Accessibility

Figure 10.16. below illustrates cycle travel time catchment areas from the subject site.

In 10 minutes of cycling, Ashbourne Town Centre is accessible, as well as most amenities of Ashbourne, including several schools, leisure centres, health centres and retail.

In 20 minutes of cycling, areas such as Ashbourne Industrial Estate, Ashbourne Retail Park, and Ratoath are accessible.

In 30 minutes of cycling, Curragha, Rolestown, and Kilbridge are reachable, as well as Tayto Park.

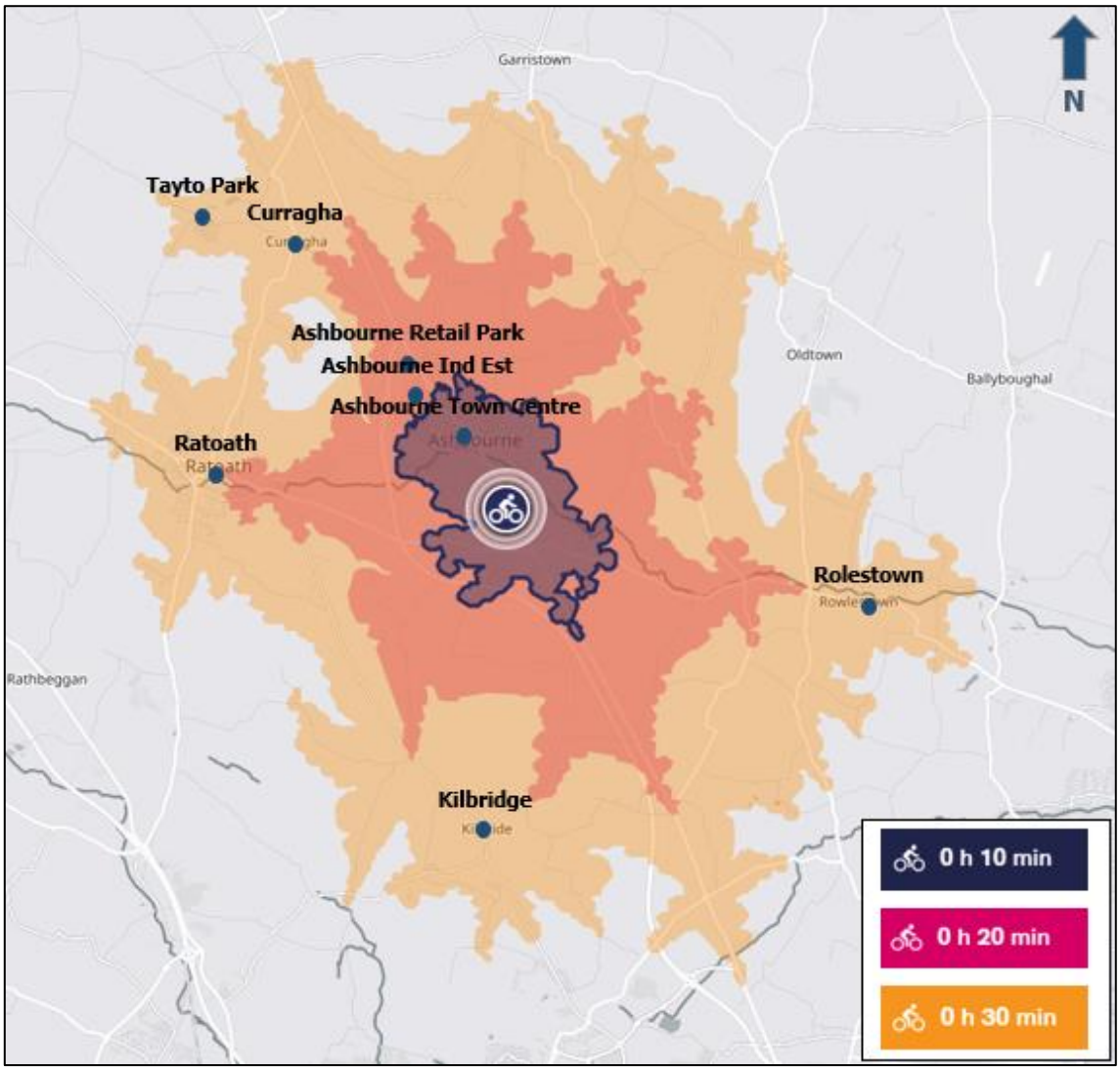


Figure 10.16. Bicycle Accessibility (Cycle Time from Site) (Source: TravelTime platform).

10.4.9. Public Transport Accessibility

In terms of public transport accessibility, the subject site currently benefits from a significant range of bus routes bound for Dublin City Centre and Dublin Airport, as well as frequent services to other parts in the surrounding area, including Ratoath, Tayto Park, Rolestown and Swords.

Ratoath, Tayto Park, Money Hill and other settlements along the N2 route can be reached in 30 minutes using public transport. The accessibility of 45 minutes increases to Swords, Dunboyne, M3 Parkway Train Station, Finglas and neighbourhoods of Dublin City Centre including Phibsborough and Cabra. In 1h using public transport, users can reach Blanchardstown, Dublin Airport, Dunshaughlin, several suburbs in North Dublin City, and Dublin City Centre.

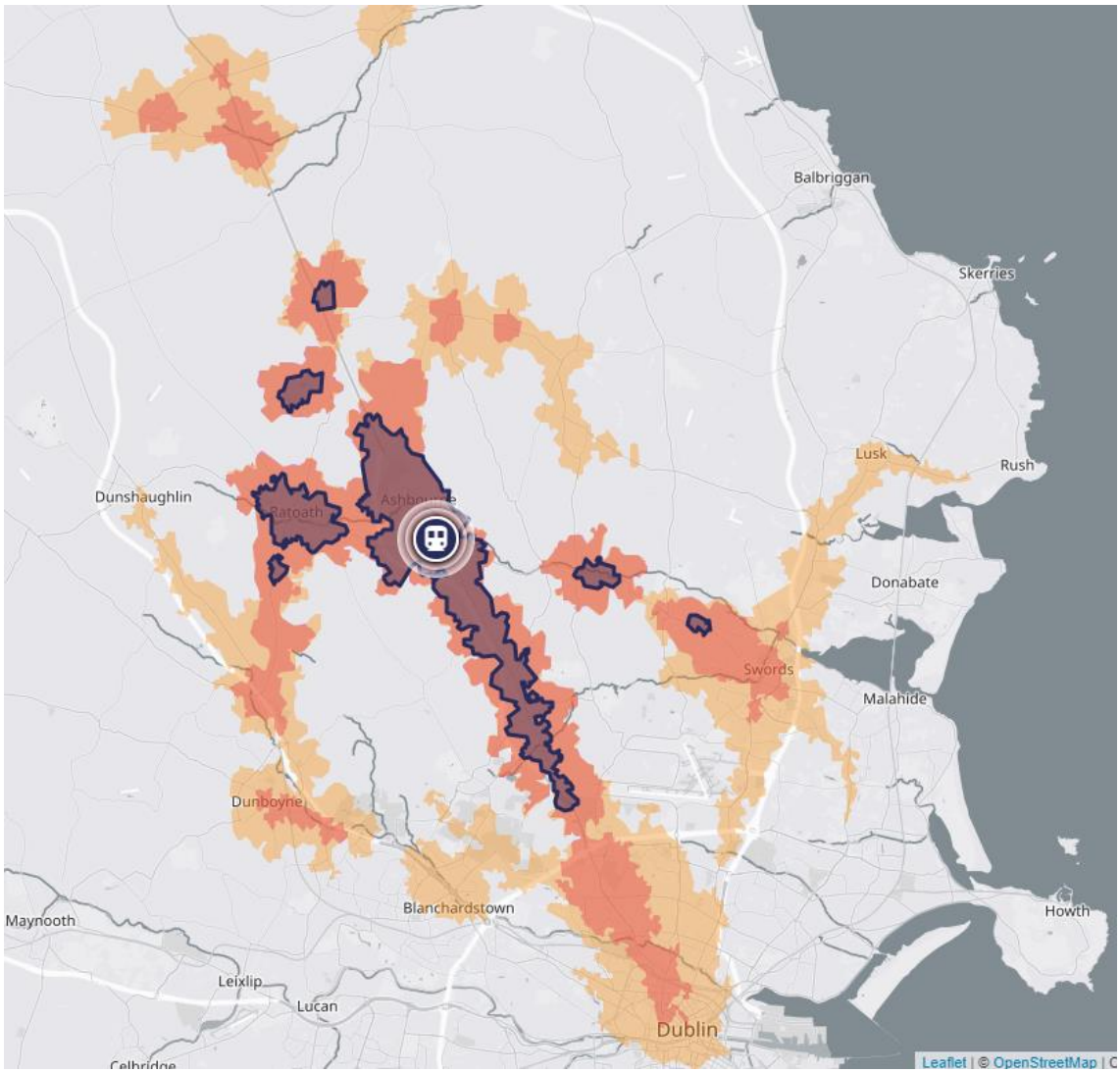


Figure 10.17. Public Transport & Walking Accessibility (Source: TravelTime platform).

10.4.10. Road Safety Review

With the objective of ascertaining the road safety record of the immediate routes leading to/from the subject site, the collision statistics as detailed on the Road Safety Authority's (RSA) website (www.rsa.ie) have been examined. The RSA website includes basic information relating to reported collisions over the most recent twelve-year period from 2005 to 2016 inclusive. The RSA database records detail where collision events have been officially recorded such as when the Garda being present to formally record details of the incident.

Table 10.2 and Figure 10.18 below outline the recorded collisions which have occurred in the immediate vicinity of the site on Dublin Rd (R135) during the study period (2005-2016 inclusive). A cluster of 4 no. minor accidents can be noticed at the Dublin Road/Alderbrook Road/Deerpark junction. All collisions in the area are minor, and mostly affecting cars.

Road Collision Location	No.	Year	Severity	Vehicle / Pedestrian	Circumstances	Day of Week	Time	Speed Limit	No. Casualties
Dublin Rd (R135)	1	2005	Minor	Goods Vehicles	Rear end, straight	Wed	1600-1900	40 KPH	
	2	2013	Minor	Car	Single vehicle only	Sat	2300-0300	50 KPH	1
	3	2010	Minor	Car	Rear end, straight	Sun	1900-2300	50 KPH	1
	4	2009	Minor	Car	Angle, right turn	Sat	0700-1000	50 KPH	1
	5	2015	Minor	Car	Head-on conflict	Sun	1600-1900	60 KPH	3
	6	2015	Minor	Car	Rear end, straight	Thu	1600-1900	80 KPH	3

Table 10.2. Public Transport & Walking Accessibility (Source: TravelTime platform).

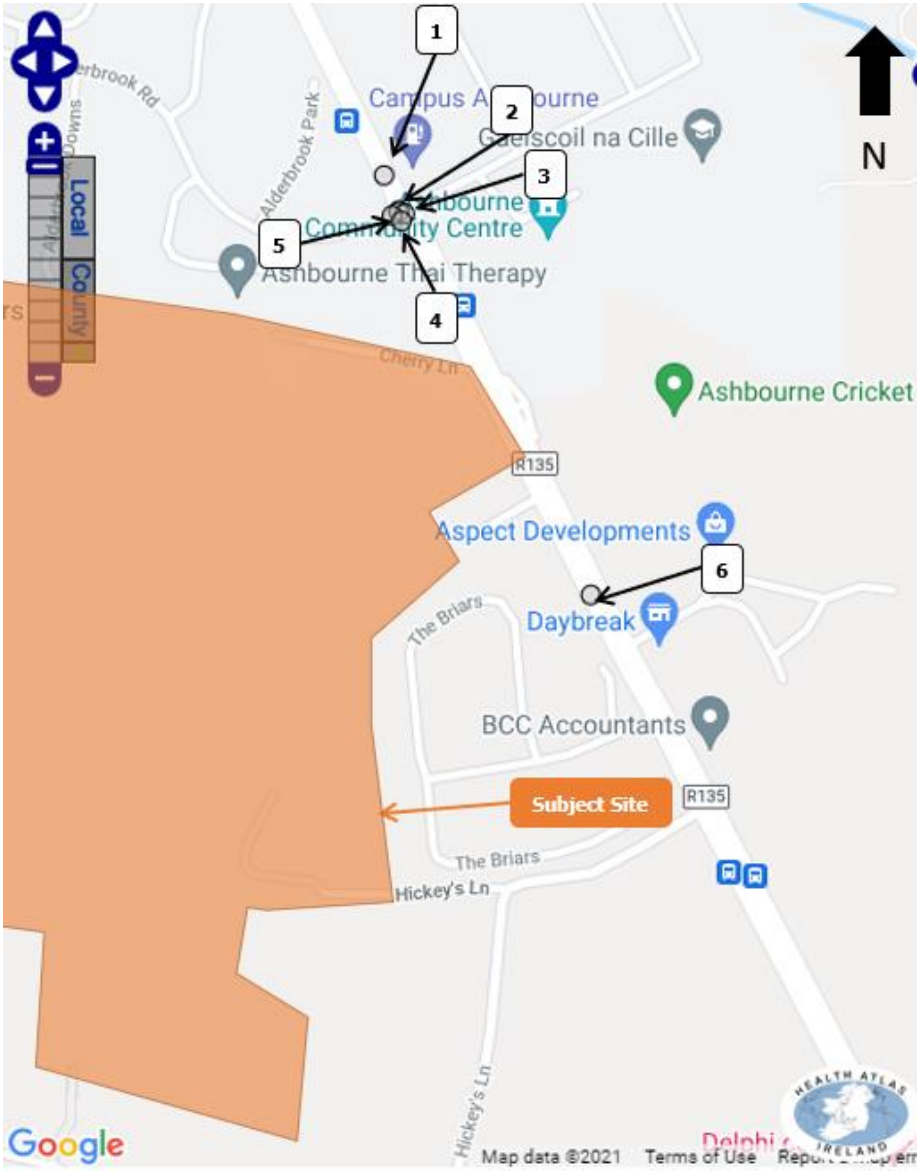


Figure 10.18. Road Collisions in the vicinity of the subject site (Source: RSA).

10.4.11. Proposed Transport Facilities

10.4.11.1. Proposed Cycle Infrastructure

The subject site lies within the Greater Dublin Area Cycle Network Plan Zone 15 under "Dunshaughlin, Ratoath & Ashbourne" as outlined within the Greater Dublin Area Cycle Network Plan (2013).

Figure 10.19 below indicates the proposed cycle routes in the vicinity of the site in accordance with the National Transport Authority's "Greater Dublin Area Cycle Network Plan". The subject site will benefit from the following cycle routes.

- Primary Route AS1 follows Dublin Rd/Frederick St R135 Regional Road through Ashbourne.
- Primary Route AS2 is the Ballybin Loop on west side of Ashbourne to business park.
- Inter-urban Route M15 goes from Dunshaughlin to Ashbourne via Ratoath along quiet back roads, avoiding the busy R125.
- Inter-urban Route M17 is the Ashbourne to Dublin route along the R125 (old N2) on hard shoulders.

Additionally, other feeder routes are projected within Ashbourne, to complement the main ones outlined above.

These proposals have remained for the "Draft 2021 Greater Dublin Area Cycle Network Plan".

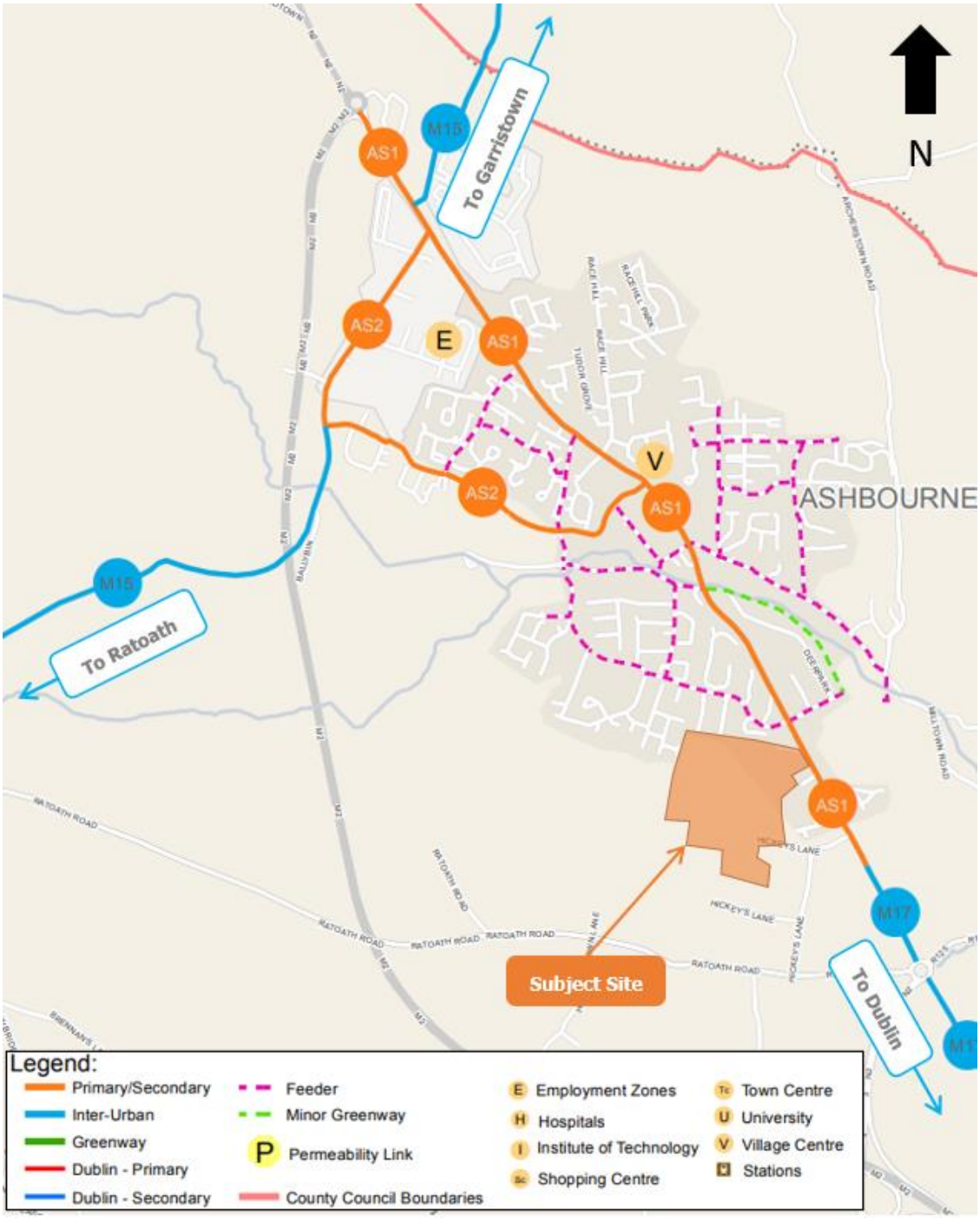


Figure 10.19. Proposed Cycle Facilities (Source: GDA Cycle Network Plan (2013)).

The Draft Cycle Network Plan for the Greater Dublin Area (2021) has also been reviewed. In this version, the "Dunshaughlin, Ratoath & Ashbourne" sheet shows similar routes across Ashbourne. In this document, these are classified as secondary routes, as shown in Figure 10.20.

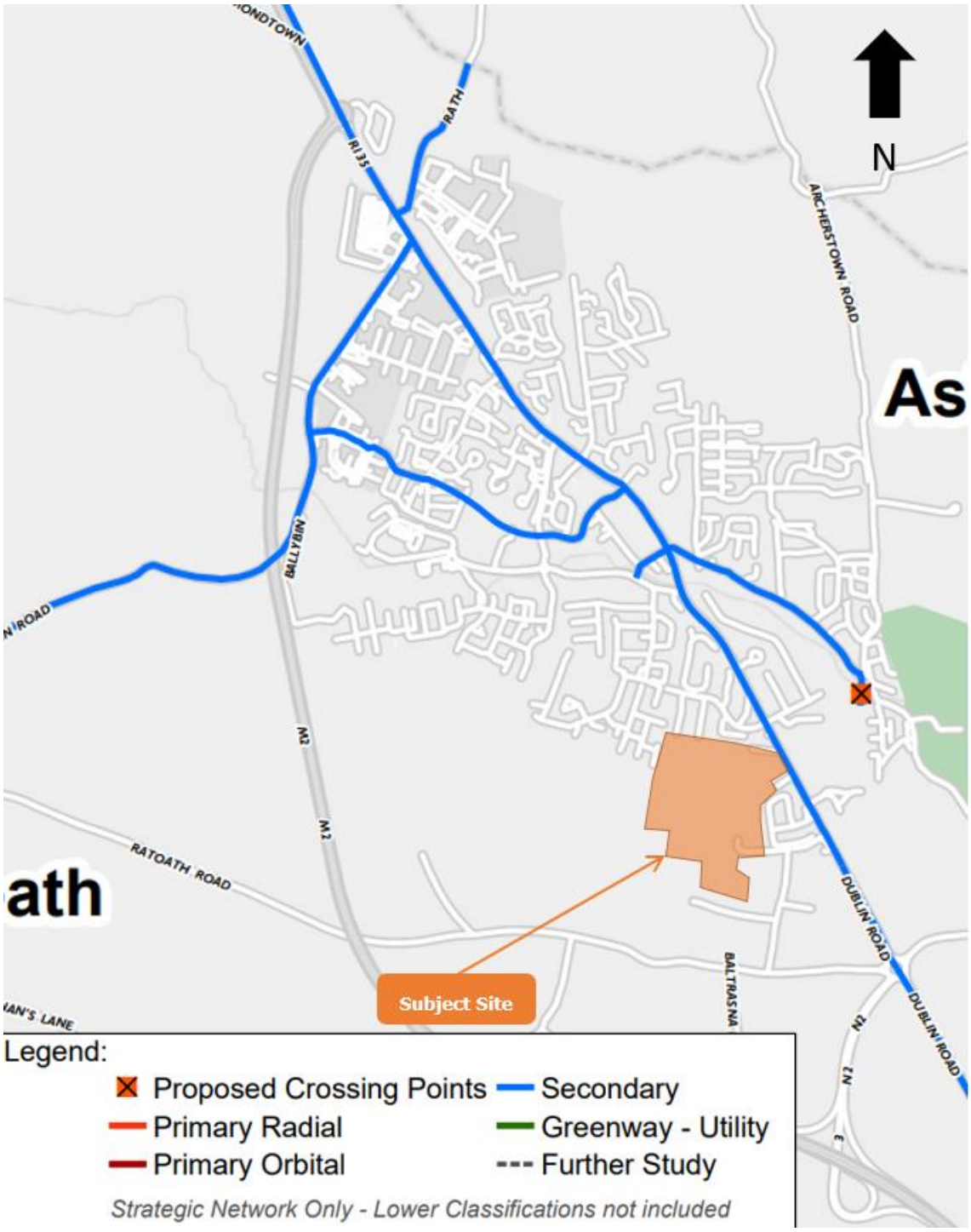


Figure 10.20. Proposed Cycle Facilities (Source: Draft GDA Cycle Network Plan (2021)).

Some of these proposals are already in place, such as the cycle lanes along the R135 between Dunnes Stores and Alderbrook Rd as part of the Primary Route AS1, or the cycle lanes along Castle St and Killegland as part of the Primary Route AS2. Moreover, Meath County Council are carrying out "Ashbourne Main Street Refurbishment Scheme Phase 2", which includes road safety improvements on the R135. The works will commence and tie into Phase I of the Scheme, to the north of Dunnes Stores and extend northwards to the Rath roundabout on the N2 and to the south of the Castle Street and Bridge Street junction extending southwards to the Nine Mile Stone roundabout on the R125. Other items part of Phase 2 of this project are outlined below.

- Provision of new cycle track/lanes on both sides of the R135 from the Ratoath roundabout on the N2 to the Nine Mile Stone roundabout at the Ratoath Road (R125).
- Enhanced pedestrian and cyclist facilities will be provided at each junction along the route, including additional traffic signals and pedestrian crossings to allow integration with the wider network.
- The construction of new footpaths.
- The reduction in width of the existing road carriageway in order to facilitate the new cycle tracks.
- The provision of improved signage, road markings, surfacing and public lighting necessary to provide the above.

Figure 10.21. Ashbourne Main Street Refurbishment Scheme (Source: Meath County Council).

10.4.11.2. Proposed Public Transport Infrastructure

In 2021 the National Transport Authority (NTA) developed Connecting Ireland Rural Mobility Plan. This is a major initiative designed with the aim of increasing connectivity, particularly for people living outside major cities and towns. Currently this project is under public consultation.

The proposed bus network for the wider site area is shown below in Figure 10.22.

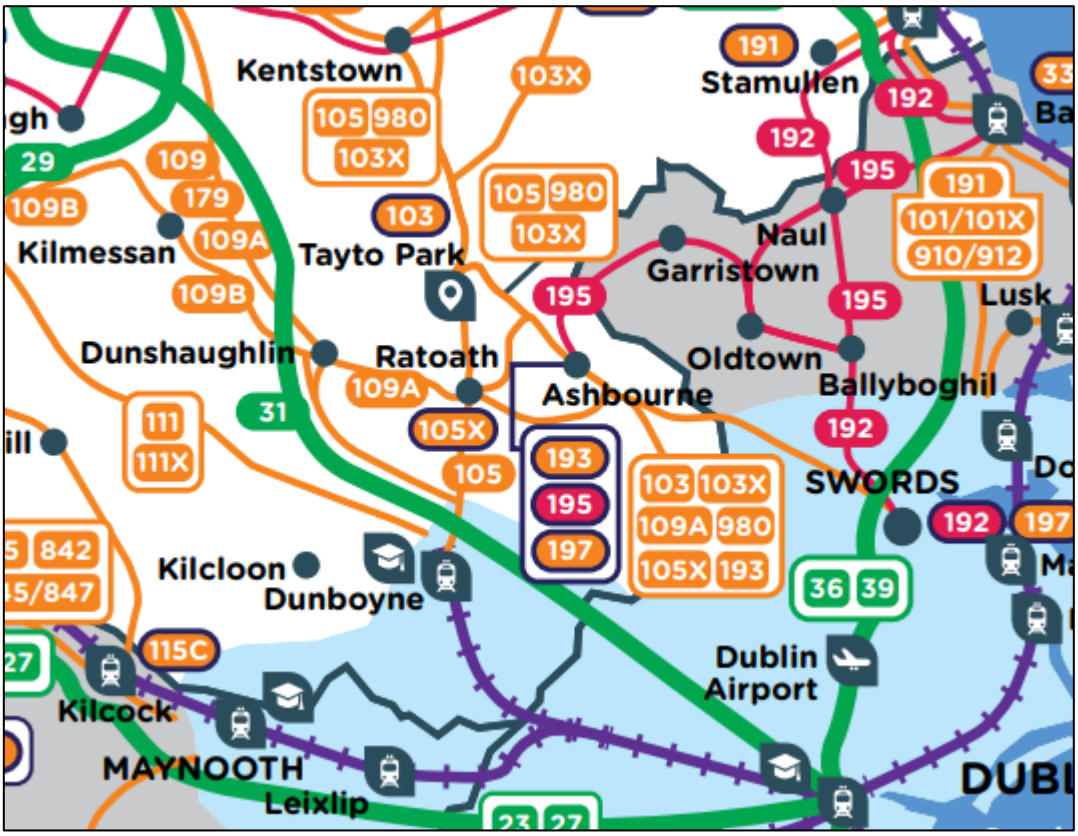


Figure 10.22. Proposed Public Transport Routes in the Vicinity of the Subject Site. (Source: Extract of Meath County Map Connecting Ireland Plan).

The bus routes and numbering will mostly remain the same. The main enhancements affecting the area are summarised below.

- Regional Corridor Proposal no. 31: From Donegal Town to Dublin. It is proposed to increase services between Navan and Dublin, so the minimum frequency is 30 minutes. This could also serve the site as routes no. 105 and 190A will link to this corridor.
- Route 195 (Local Link): From Ashbourne to Balbriggan. It is proposed to alter the route to also serve Ballymadun. The proposed minimum service is 6 return trips from Monday to Saturday and 3 return trips on Sunday.

BusConnects Scheme includes enhancing route 197 from Swords to Ashbourne, with a bus every hour.

The Transport Strategy for the Greater Dublin Area 2022 – 2042 includes a Park and Ride Strategy. This is an analysis of each corridor in Dublin which considers the existing facilities and proposes new Park and Ride sites. These are illustrated in Figure 10.23.

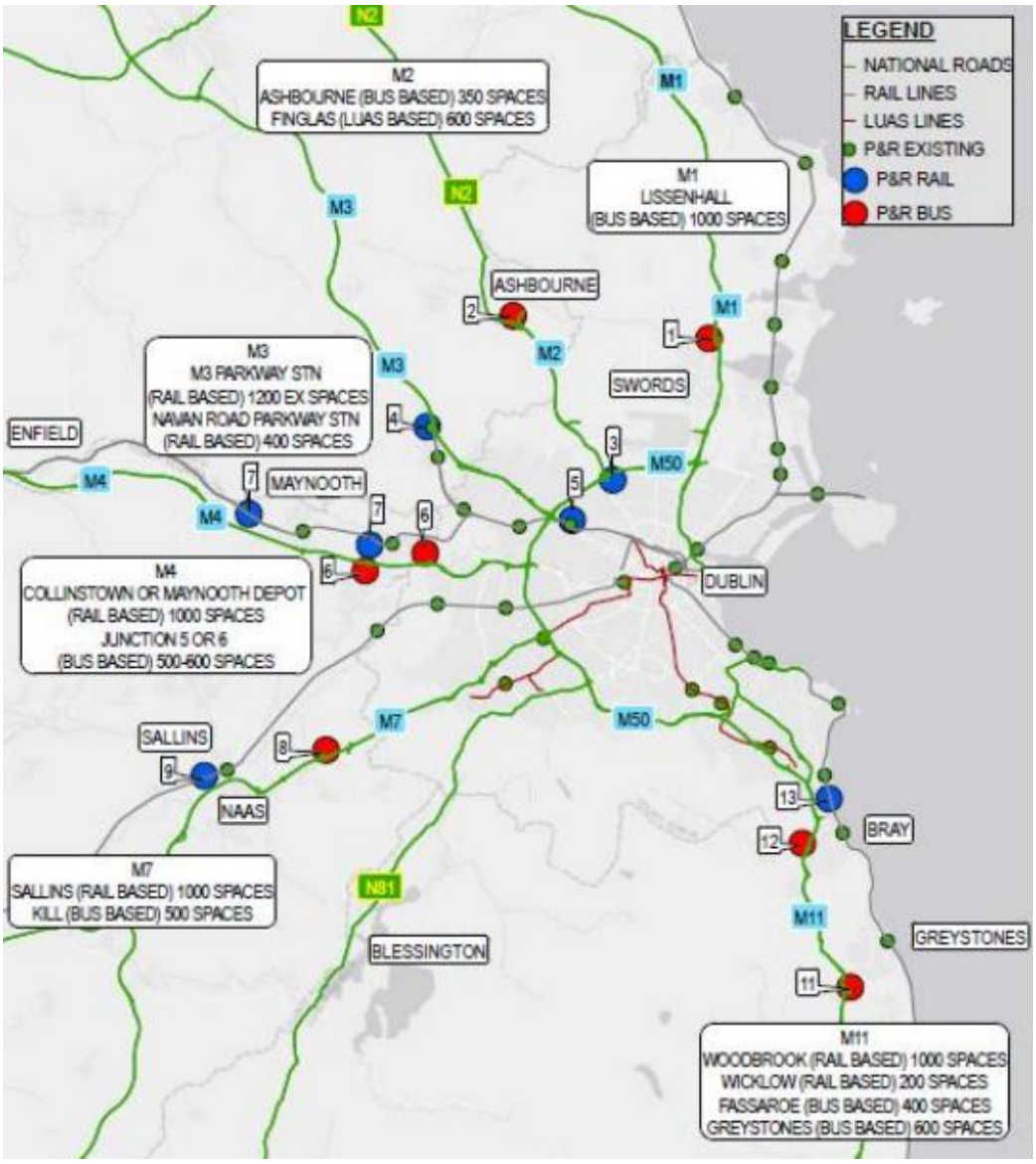


Figure 10.23. Proposed Park and Ride Facilities (Source: Park and Ride Strategy Map).

For the N2/M2 corridor, two sites are proposed: Ashbourne Park and Ride and Finglas Park and Ride.

Ashbourne Park and Ride (P& R no. 2 from Figure 10.23) is a bus-based facility with capacity of 350no. spaces. It is located just off Junction 3 of the M2, 1.2km from the Subject Site, or 2 minutes driving. This will be mainly served by Bus Eireann route no. 103.

Finglas Park and Ride (P& R no. 3 from Figure 10.23) is a Luas-based facility of 600no. space and is part of the Luas Finglas Extension Plan. The Finglas Park and will will be approx. 14km from the Subject Site, which could be driven in 10-14 minutes. Additionally, a new bus terminus is planned is the vicinity as part of the implementation of BusConnects. Further details of this project are outlined below.

Luas Finglas is the proposed extension of the Luas Green Line from its terminus in Broombridge to the north of Finglas in Charlestown, beside the M50/N2 junction. This is a proposal from the Transport Strategy for the Greater Dublin Area 2022 – 2042.

Since work was completed on the Luas Green Line connection to Broombridge in 2017, the potential to extend the line to Finglas has been explored by Transport Infrastructure Ireland (TII) and the National Transport Authority (NTA). The process to identify potential routes to extend the Green Line to Finglas began in 2018, and an Emerging Preferred Route was published in 2021 for public consultation.

The proposed route will include four new stops along its 3.9-kilometre length. These are at St Helena's, Finglas Village, Mellowes Park and Charlestown, as illustrated in Figure 10.24.

Near the stop St Margaret's Road, and close to the M50, a 600-vehicle park and ride facility is proposed. It is proposed a multi-storey Park and Ride and extended supermarket at a currently commercial site, subject to further design and traffic analysis. This will help reduce traffic driving through the area and adjacent villages of Cabra and Phibsborough.

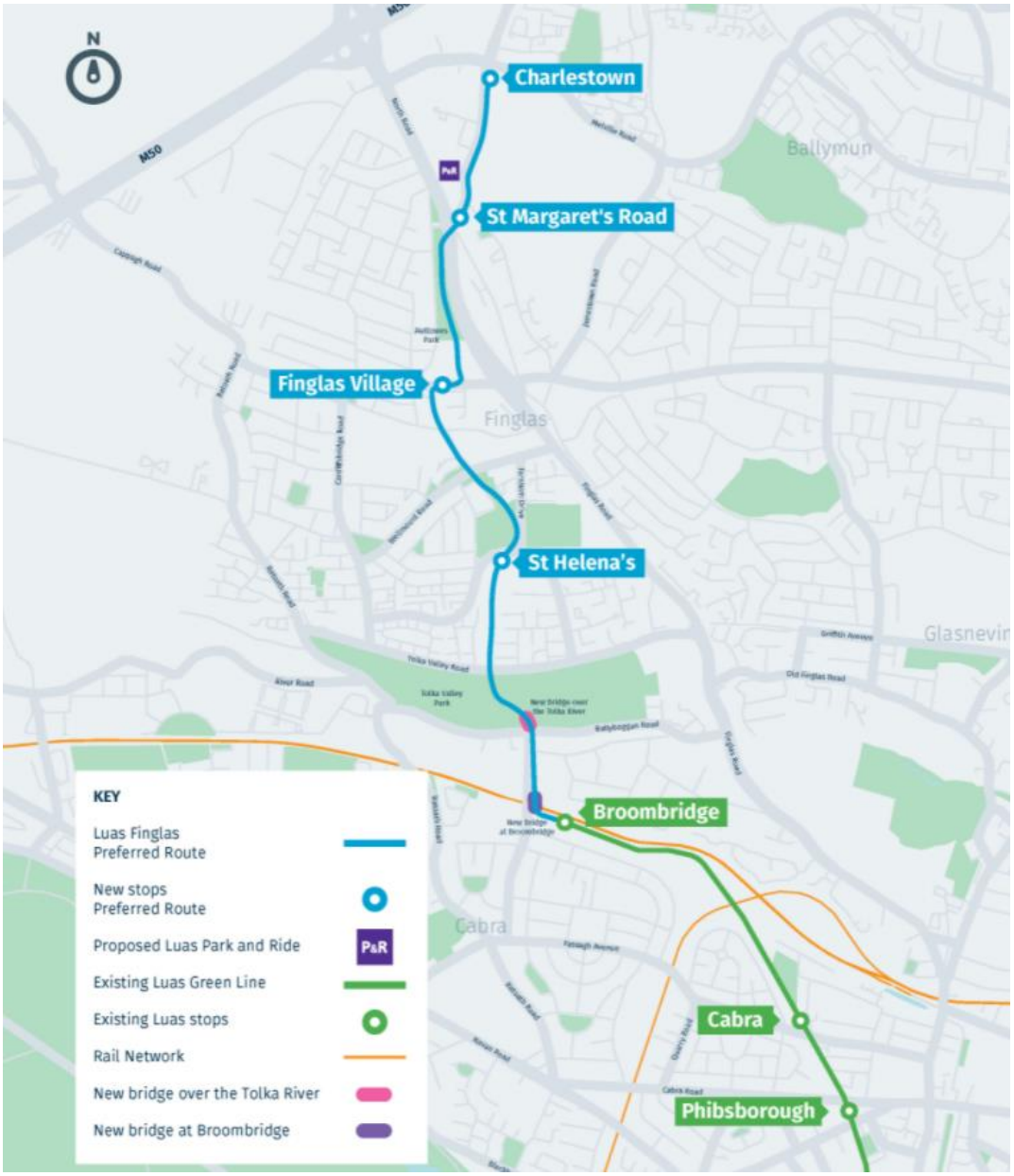


Figure 10.24: Luas Finglas Emerging Preferred Route (Source: Luas Finglas).

Residents from the subject site will benefit from a Park and Ride facility of 600 spaces 14km from the Subject Site, which could be driven in 10-14 minutes. Luas services would take 30 minutes from this point up to Trinity College, in Dublin City Centre, and also, passengers can change to rail services at Broombridge. Moreover, as part of the BusConnects rollout, users of the Park and Ride can continue their journey on several bus routes with the public transport terminus at this point. Furthermore, once BusConnects has been implemented, several high-frequency bus routes will serve the area.

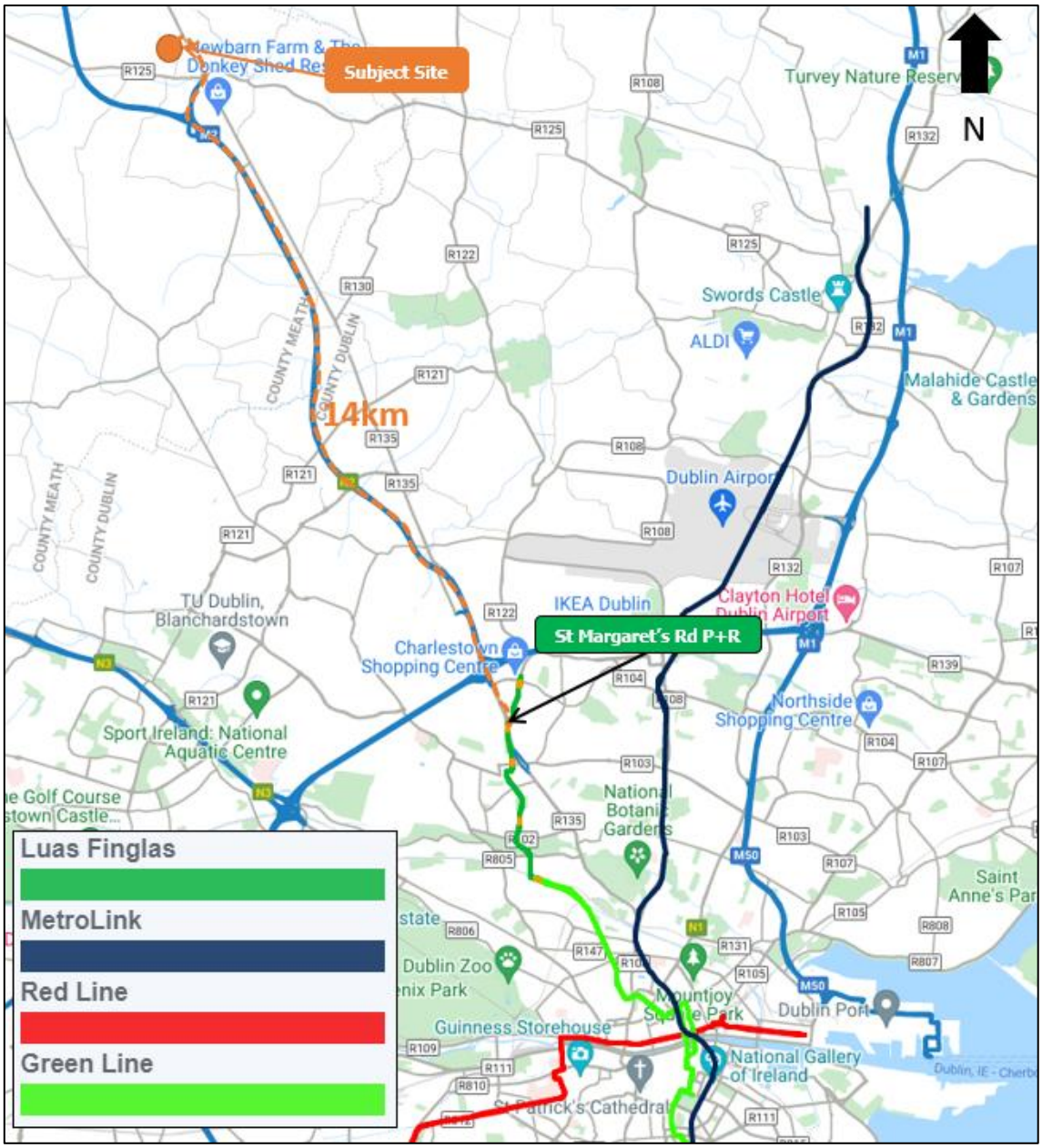


Figure 10.25. Subject site with Luas Finglas.

Detailed transport linkages for the proposed scenarios detailing distances to surrounding public transport is presented in a separate Drawing No. 200059-DBFL-TR-SP-DR-C-1102 submitted with the pre-planning application package.

10.5. Trip Generation and Distribution

10.5.1. Traffic Surveys

With the objective of quantifying the existing baseline traffic movements travelling across the local road network, vehicle counts were undertaken in the proximity of the proposed development in September 2020 and November 2021.

A vehicle turning count survey (Junction Turning Count - JTC) was conducted over a 6-hour period from 07:00 to 10:00 and from 16:00 to 19:00 on Tuesday 22nd September 2020. Maximum Queue lengths were also recorded. The surveys undertaken by specialist survey firm NDC established that the local networks weekday AM and PM peak hours occur between 08:00 – 09:00 and 17:00 – 18:00 respectively. The location of the JTC 1 at R135/Alderbrook Road/Deerpark junction is illustrated in Figure 10.26. below.

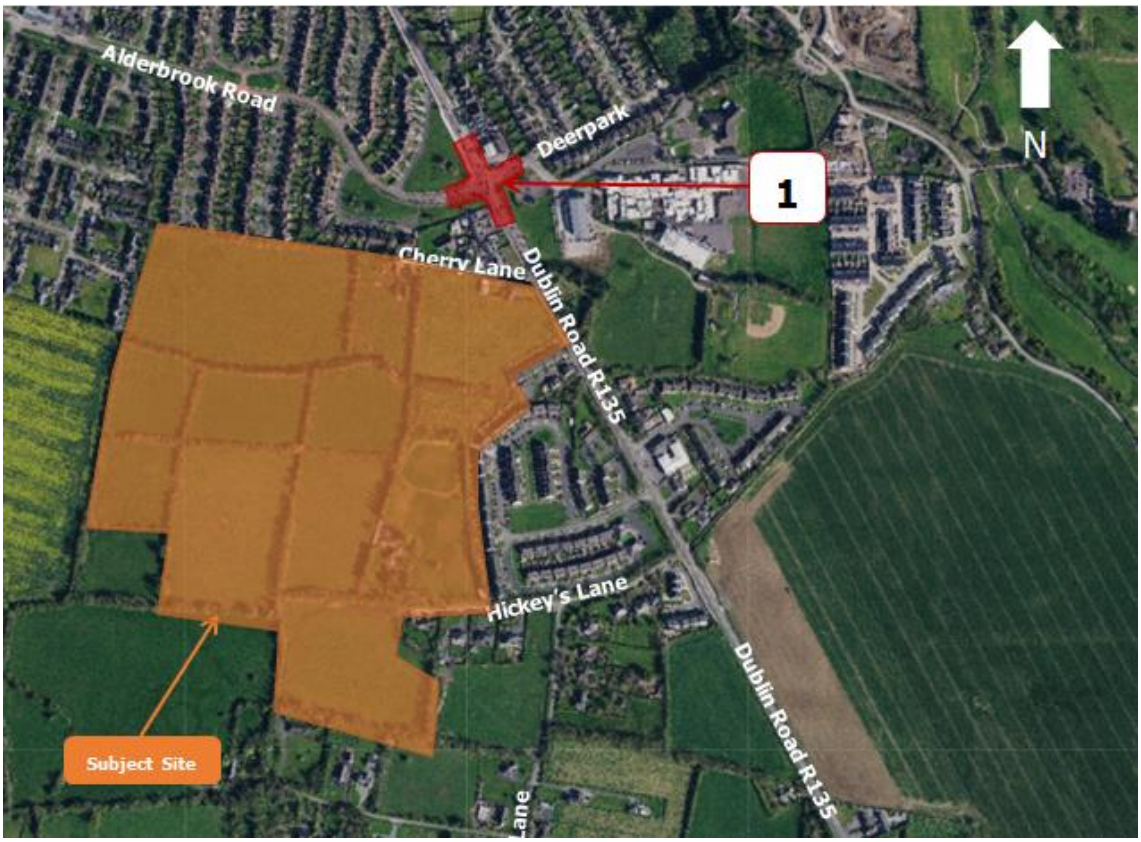


Figure 10.26. JTCs Location Surveyed (2020).

To ensure robust analysis updated traffic surveys were conducted in late November 2021 in order to present updated survey data as well as a wider range of surveyed junctions.

The updated traffic surveys were undertaken by the independent specialist survey firm Tracsis.

Four JTCs (junction turning count) were conducted over a 7-hour period - from 06:00 to 10:00 and from 16:00 to 19:00 on Tuesday 30th November 2021 at the following key junctions:

- JTC 1: Alderbrook Road / R135 / Deerpark (4 Arm Signalised Junction)
- JTC 2: R135/ Hickeys Lane (3 Arm Priority Junction)
- JTC 3: Nine Mile Roundabout (5 Arm Roundabout Junction)
- JTC 4: R125/ Hickeys Lane (3 Arm Priority Junction)

This survey established that the local networks weekday AM and PM peak hours occur between 08:00 – 09:00 and 16:45 – 17:45 respectively.

The following JTC locations are illustrated in Figure 10.27 below.

Figure 10.27. JTCs & ATCs Location Surveyed (2021).

An Automatic Traffic Count (ATC) was also commissioned on the R135, in close proximity to the main site access, illustrated in the Figure above. This ATC survey was undertaken over a one-week period between Monday 29th November and Monday 6th December 2021.

In order to analyse and assess the predicted traffic generation from the proposed residential development upon the site access junctions, a traffic model incorporating local junctions within the proximity of the subject site was created by DBFL Consulting Engineers.

10.5.2. Traffic Growth

In response to the Applicants' proposed construction schedule, this Traffic & Transport Assessment (TTA) adopts an Opening Design Year of 2023, an Interim Future Design Year of 2028 (+5 years) and a long-term Future Design Year of 2038 (+15 years) as per TII guidelines. Although traffic growth may not increase at the rates once predicted, to ensure a robust analysis of the impact of traffic upon the local road network we have adopted growth rates using the Transport Infrastructure Ireland (TII) "Travel Demand Projections".

Table 10.3 within the TII Project Appraisal Guidelines Units 5.3 – Travel Demand Projections (October 2021) provides Link-Based Annual Traffic Growth Factors for the different metropolitan areas within Ireland. The subject site lies within 'Meath' with the growth factors as outlined within Table 10.3 below:

Meath	2016-2030		2030-2040		2040-2050	
	LV	HV	LV	HV	LV	HV
Low Sensitivity Growth	1.016	1.035	1.005	1.016	1.004	1.019
Central Growth	1.017	1.037	1.007	1.019	1.006	1.021
High Sensitivity Growth	1.021	1.040	1.011	1.023	1.012	1.030

Table 10.3: Link-Based Growth Rates: Annual Growth Factors (Source: TII).

Additionally, as part of the traffic assessment undertaken for this Technical Note, the baseline traffic survey data has been adjusted to account for potential lower than normal traffic flows in December 2021 due to Covid 19. The adjustment has been undertaken in reference to Central Statistics Office (CSO) report entitled Transport Bulletin January 2022. An uplift of 10% was applied to convert baseline (December 2021) traffic data to corresponding 2021 data with no Covid 19 (according to the CSO data). This results in a robust and conservative assessment, as providing this uplift of 10% to the base traffic does not take into consideration potential mode shifts to active travel, WFH or a Hybrid option as the new norm etc.

Applying the annual factors (central growth) as outlined in Table 10.3 above for the adopted Opening Year of 2023, the Interim Year of 2028 and Future Design Year of 2038 (+15 years), and the uplift regarding the low traffic flows due to Covid-19, the following growth rates have been adopted to establish corresponding 2023, 2028 and 2038 baseline network flows: -

- 2021 to 2023 – 1.1364 (or 13.64%);
- 2021 to 2028 – 1.2291 (or 22.91%); and
- 2021 to 2038 – 1.3229 (or 32.29%).

10.5.3. Trip Generation – Proposed Development Vehicular Trips

A review of trip generation factors contained within the TRICS database was carried out. TRICS data is primarily UK based, although the number of Irish sites included continues to expand. Nevertheless, we consider that TRICS will provide a reasonable indication of traffic generation from the proposed development.

Notwithstanding the above, internal research undertaken by TRICS has shown that there is no direct evidence of trip rate variation by country or region. The use of English, Scottish or Welsh data can be equally applicable to Ireland if users take into account important site selection filtering factors such as levels of population, location type, local public transport provision, and development size and car ownership level, amongst others.

Data supplied for inclusion in TRICS undergoes a procedure of validation testing, and there is no evidence from this procedure suggesting that data from Ireland bears any significant fundamental differences to that from the other countries included. Consequently, we consider that TRICS will provide a reasonable indication of traffic generation from the proposed development.

Table 10.4 below includes the predicted vehicle trip rates of the potential traffic flows in and out of the proposed development during the morning and evening peak hour periods using data from TRICS.

Units	Units / GFA	AM Peak Hour (08:00-09:00)			PM Peak Hour (16:45-17:45)		
		Arr	Dep	Total	Arr	Dep	Total
Houses	Per Unit	0.139	0.393	0.532	0.335	0.210	0.545
Apartments/duplex	Per Unit	0.061	0.185	0.246	0.207	0.114	0.321

Table 10.4. Proposed Development Trip Rates (TRICS).

The non-residential uses within the development, including the 2 no. creches, 4 no. retail units, and 1 no. GP practice / medical use unit, are not anticipated to generate external vehicle trips as they will be catering towards the residents of the subject site and the local catchment within the community.

The majority of the children attending the crèches will be already be residing in the proposed development and these trips will more than likely be made on foot. It is also anticipated that those employed in the crèche will be living in the locality and will be encouraged to travel to and from work by sustainable modes of transport.

Therefore, all trips for these non-residential aspects have been assumed internal movements which will not affect the road network and have not been included in the traffic model.

Table 10.5 summarises the predicted peak hour AM and PM vehicle trips generated by the proposed development.

Units	Units/GFA	AM Peak Hour (08:00-09:00)			PM Peak Hour (16:45-17:45)		
		Arr	Dep	Total	Arr	Dep	Total
Houses	420 units	58	165	223	141	88	229
Apartments / duplex	282 units	17	52	69	58	32	91

Table 10.5. Proposed Development Vehicle Trips.

It is expected that in 2023, 94 no. houses and a block of 6 no. apartments will be in service, whilst the full Proposed Development will be in place from 2028 onwards. Therefore, the vehicular trips according to the assessed year is outlined below.

Years	Units	AM Peak Hour (08:00-09:00)			PM Peak Hour (16:45-17:45)		
		Arr	Dep	Total	Arr	Dep	Total
2023	94 houses + 6 apts	13	38	52	33	20	53
2028	Whole development	76	217	293	199	120	319
2038	Whole development	76	217	293	199	120	319

Table 10.6. Proposed Development Vehicle Trips.

10.5.4. Trip Generation – Committed Developments

With the objective of providing a robust appraisal for the potential impact on the access junction, the Traffic and Transport Assessment has incorporated a future potential primary school located to the west of the proposed development (Zoned "G1 – Community Infrastructure" in the Meath County Development Plan (2021-2027)), as illustrated in Figure 10.28. It is assumed that this proposed school will cater for approx. 500 no. students, with 30 no. staff members, and 16 no. classrooms. It is expected that the school will be constructed and at full occupancy in 2028.

Figure 10.28: Committed Development Primary School.

Table 10.7 below includes the predicted vehicle trip rates of the potential traffic flows in and out of the committed development during the morning and evening peak hour periods using data from TRICS.

Units	Units / GFA	AM Peak Hour (08:00-09:00)			PM Peak Hour (16:45-17:45)		
		Arr	Dep	Total	Arr	Dep	Total
Primary School	Per student	0.242	0.106	0.348	0.008	0.022	0.029
Discounted trip rate (50%)		0.121	0.053	0.174	0.004	0.011	0.015

Table 10.7. Committed Development Primary School Trip rates.

It is anticipated that the majority of students that will attend the school will live in the proposed development. Therefore, it has been assumed that 50% of the trips will be external, and 50% internal.

Table 10.8 summarises the predicted peak hour AM and PM vehicle trips generated by the committed development Primary School.

Units	Units / GFA	AM Peak Hour (08:00-09:00)			PM Peak Hour (16:45-17:45)		
		Arr	Dep	Total	Arr	Dep	Total
Primary School *Discounted trips by 50%	Total number of trips	36	16	52	1	3	4

Table 10.8: Committed Development Primary School Vehicle Trips.

10.5.5. Trip Distribution & Assignment

The proposed development vehicular trips will benefit from the 2 no. vehicular access points, i.e. Primary Vehicular Access via Cherry Lane and Secondary Vehicular Access via on Hickey's Lane. It has been assumed that the Primary Access on Cherry Lane would cater 80% of the proposed development traffic, whilst the remaining 20% will use the Secondary Access via Hickey's lane (15% via R135, 5% via Ratoath Road), which is a local road and will be updated with footpaths and traffic calming chicanes as outlined in Section 4.

The proposed development trips have been distributed and subsequently assigned across the local road network. In order to establish the origin-destination (O-D) of future development trips to / from the subject lands, 12 no. O-D zones have been applied to the assumed geographical catchment areas of the subject development lands. Figure 10.29 below presents these 12 no. O-D zones relative to the subject development and surrounding lands.

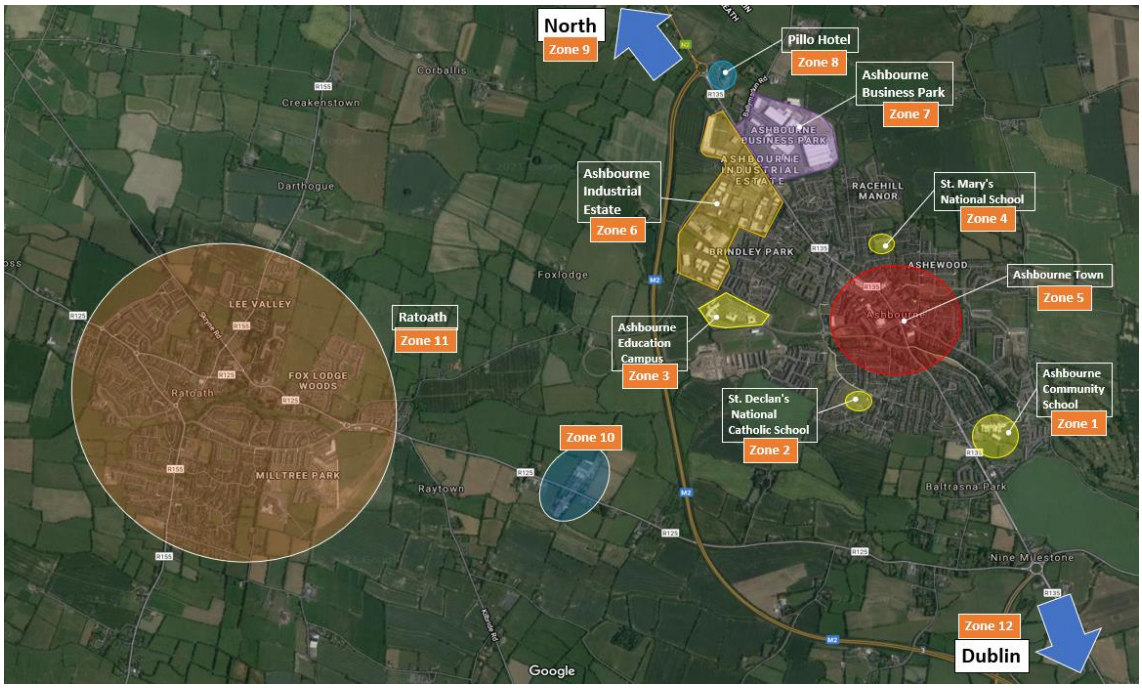


Figure 10.29. Adopted O-D zones.

Based on the aforementioned O-D zones, a proportion of the predicted development trips have been distributed to each O-D zone. These trips have been assigned to the surrounding road network based on the likely route between the subject site and each O-D zone. The quantum of trips assumed to be generated by each O-D zone has been estimated based on the existing / future population characteristics and employment opportunities within each zone.

10.6. Network Impact

10.6.1. Assessment Scenarios

Two different traffic scenarios have been assessed, namely (A) the Do-Minimum traffic characteristics and (B) the Do-Something traffic characteristics.

The Do-Minimum traffic scenario takes into account the base traffic flows and all Committed Developments, i.e. the Primary School located to the west, which is assumed to be constructed and at full occupancy in 2028.

The Proposed Development, including the traffic from residential aspects (houses, apartments, and duplex units), and commercial aspects (creches, shops, cafes and GP Surgery) are then added to the Do-Minimum scenario to obtain the Do-Something scenario.

In summary, the following network modelling scenarios are considered: -

Do Minimum

- A1 – 2021 Base Traffic Flows growthed to 2023
- A2 – 2021 Base Traffic Flows growthed to 2028 + Committed Primary School
- A3 – 2021 Base Traffic Flows growthed to 2038 + Committed Primary School

Do Something

- B1 - 2023 Do Minimum (A1) + Proposed Development (100no. residential units)
- B2 - 2028 Do Minimum (A2) + Proposed Development (Whole Development)

- B3 - 2038 Do Minimum (A3) + Proposed Development (Whole Development)

10.6.2. Assessment Periods

The local road network's area wide AM and PM peak hour flows have been identified as occurring between 08:00 to 09:00 and 16:45 to 17:45 respectively.

10.6.3. Construction Stage Road Network Impacts

All construction activities on-site will be governed by a Construction Traffic Management Plan (CTMP), the details of which will be agreed in full with Meath County Council prior to the commencement of construction activities on site.

The principal objective of the CTMP is to ensure that the impacts of all building activities generated during the construction of the proposed development upon both the public (off-site) and internal (on-site) workers environments, are fully considered and proactively managed / programmed respecting key stakeholders thereby ensuring that both the public's and construction workers safety is maintained at all times, disruptions minimised and undertaken within a controlled hazard free / minimised environment. The impact of the construction period will be temporary in nature.

Construction traffic will generally be confined to weekdays (0700-1900, subject to conditions of a planning permission) and will consist of the following two principal categories:

- Private vehicles owned and driven by site construction staff and by full time supervisory staff.
- Excavation plant, dumper trucks and delivery vehicles involved in site development works and material delivery vehicles for the following: granular fill materials, concrete pipes, manholes, reinforcement steel, ready-mix concrete and mortar, concrete blocks, miscellaneous building materials, etc.

On-site employees will generally arrive before 08:00, thus avoiding the traditional morning peak hour traffic. The traffic surveys conducted by NDC in November 2021 established the morning peak hour as occurring between 08:00 – 09:00. These employees will generally depart after 16:00. Appropriate on-site parking and compounding will be provided to prevent overflow onto the local network. Deliveries will be actively controlled and subsequently arrive at a dispersed rate during the course of the working day.

Based upon the experience of similar developments, a development of this type and scale would at a maximum necessitate approximately 50 staff on site at any one time, subsequently generating no more than 30 two-way vehicle trips during the peak AM and PM periods over the period of the phased construction works. Although the number of staff and light goods vehicles, transporting staff, will fluctuate over the period of construction works, the consideration of the worst-case scenario (50 staff members, 30 LGVs) provides a conservative assessment of the resultant traffic and transportation impacts of the subject development during the construction phase.

It is anticipated that the proposed development would be constructed over a period of approximately 70 months in accordance with the preliminary construction programme. Following the completion of the initial site clearance works, the generation of HGV movements during the build period will be evenly spread throughout the day and as such will not impact significantly during the peak traffic periods. For this scale of development, we do not expect HGV two-way vehicle movements to exceed 16 vehicles per hour during the busiest period of construction 'build' works (Table 10.9).

	HGV	LGV	Total (vehs)	Total (pcus)
Daily	64	60	124	207
AM Peak Hour	16	3	19	40
Afternoon Peak	16	0	16	37
PM Peak Hour	16	3	19	40

Table 10.9. Projected Construction Traffic Flows.

Based on a preliminary review of the existing survey data and proposed site levels we estimate that approximately 130,000 m3 of material will require excavation. Whilst the majority of the material will be reused on-site it is still predicted that approx. 25,000 m3 of material will require removal during the construction phase earthworks. This equates to 1,563 truckloads based on a tipper truck capacity of 16m3. At 8 loads removed per hour, 16 two-way HGV movements per hour and 64 loads removed per day this equates to 25 days of earthmoving works as part of the adopted worst-case assessment to clear the entire site in one single construction activity.

Material to be excavated and removed off site	25,000 m^3
Total no. truckloads to be removed	1563
Loads removed per day	64
Loads removed per hour	8
Two-way HGV movements per hour	16
Days of earthmoving works	25
Weeks of earthmoving activity	5

Table 10.10. Construction Phase Earthworks.

10.6.4. Operational Stage Impacts Road Network Impact

These same thresholds are reproduced in the NRA/TII document entitled Traffic and Transport Assessment Guidelines (2014) provides thresholds in relation to the impact of a proposed development on the local road network. It is considered material when the level of traffic it generates surpasses 10% and 5% on normal and congested networks respectively. When such levels of impact are generated a more detailed assessment should be undertaken to ascertain the specific impact upon the network's operational performance.

For the junction assessed, it can be seen in Table 10.11, that the proposed development upon full completion (2038) would have a considerable impact at the Primary Vehicular Access (Dublin Road/Cherry Lane), and at the secondary access (Dublin Rd/Hickey's Ln). Moreover, the impact is above 5% at Junction no. 3 (Dublin Rd/Alderbrook Road), and Junction no. 5 (Nine Mile Stone Roundabout). The traffic impact at Junction no. 4 (Ratoath Road/Hickey's Lane) is minimal.

**Assumptions: HGV vehicle = 2.3 PCUs, Tipper truck capacity = 16m3, 2 tipper trucks excavating at any one time, trucks departing every 20 minutes.*

Junction ID	Junction/ Location	2023		2028		2038	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1	Dublin Rd/Cherry Ln	4.36%	4.26%	18.92%	20.33%	17.62%	18.89%
2	Dublin Rd/Hickey's Ln	2.93%	2.88%	15.69%	16.73%	14.60%	15.55%
3	Dublin Rd/Alderbrook Rd	1.46%	1.34%	7.31%	7.24%	6.80%	6.72%
4	Ratoath Rd/Hickey's Ln	0.24%	0.35%	3.40%	4.18%	3.16%	3.89%
5	Nine Mile Stone Roundabout	1.50%	1.45%	8.16%	8.16%	7.59%	7.58%

Table 10.11. Network Impact Through Key Junctions.

Figure 10.30 below details the total amount of two-way vehicle trips that will pass through the key off-site junctions in the 2038 Future Design Year and the resulting percentage increase in traffic flows as a result of the traffic generated by the proposed development.

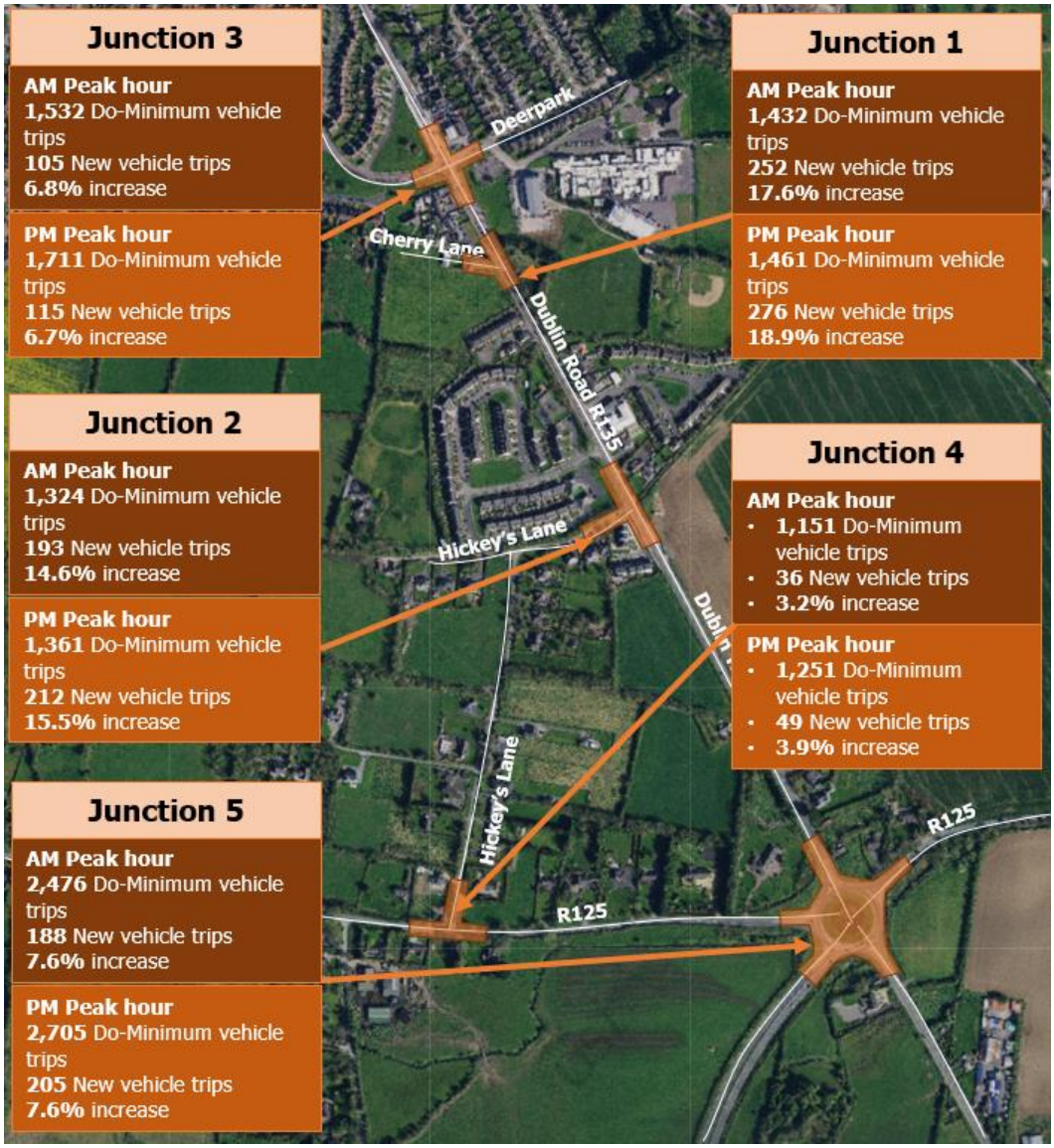


Figure 10.30. Network Impact (2038 Future Design Year).

As shown in Table 10.11 and Figure 10.30 above, the impact on the surrounding road network will be over threshold

for some junctions in the 2038 scenarios:

- **Junction 1:** Dublin Road R135 / Cherry Lane experiences an 17.6% increase in the AM peak, with 252 new vehicle trips, and 18.9% in the PM peak hour, with 276 new vehicle trips.
- **Junction 2:** Dublin Road R135 / Hickey's Lane experiences an increase of 14.6% with 193 new vehicle trips generated in the AM peak hour, and an increase of 15.5% in the PM peak, with 212 new vehicle trips.
- **Junction 3:** Dublin Road R135 / Alderbrook Rd / Deerpark, experiences an increase of 6.8% in the AM peak hour with 105 new vehicle trips, and 6.7% in the PM peak with 115 new vehicle trips.
- **Junction 5**: Nine Mile Stone Roundabout, experiences an increase of 7.6% in the AM peak hour with 188 new vehicle trips, and 7.6% in the PM peak with 205 new vehicle trips.

As noted previously, these are below the TII threshold for assessment for normal and congested networks (10% and 5% respectively). Therefore, a further junction analysis must include Junctions 1 (Dublin Road R135 / Cherry Lane) and Junction 2 (Dublin Road R135 / Hickey's Lane). Furthermore, Junction 3 (Dublin Road R135 / Alderbrook Rd / Deerpark) and Junction 5 (Nine Mile Stone Roundabout) will be included as the 5% threshold is overpassed, and the network could be considered as "congested".

The abovementioned junctions will be further assessed for all scenarios and assessed year in order to determine the performance of the junctions with and without the Proposed Development, using the modelling software TRANSYT, PICADY, and ARCADY.

10.6.5. Junction Analysis. Junction 1: Dublin Road R135 / Cherry Lane

The proposed three-arm Signal Controlled junction shown in Figure 10.30, has been analysed for all design years Do Minimum and Do Something scenarios for the assessment years using the TRANSYT 16 software package. The results of the operational assessment of this junction for the 'Do Minimum' and 'Do Something' scenarios are summarised below.

In the "Do Minimum" and "Do Something" scenarios the four arms were labelled as follows within the ARCADY model:

- Arm A – Dublin Road R135 (S)
- Arm B – Cherry Lane (Link Street)
- Arm C – Dublin Road R135 (N)

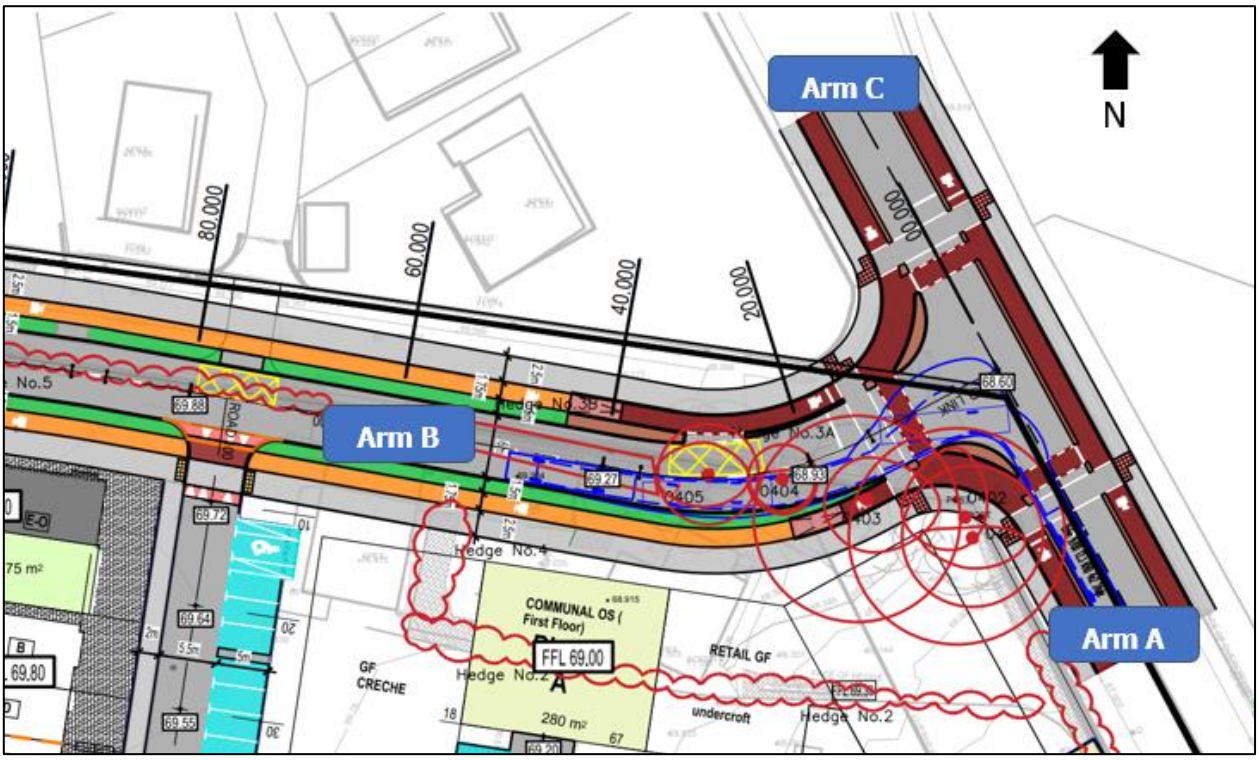


Figure 10.31. Junction 1 Signal Controlled Junction.

The junction has been modelled assuming a cycle time of 120 seconds, with an all-green pedestrian stage and an advanced cycle stage of 8 seconds every cycle.

The Do Minimum of the operational assessment of this signal controlled junction are summarised in Table 10.12 below.

In the 2038 scenario, maximum queues of 21.7 pcu's is experienced along Arm C – Dublin Rd (N), with the highest DoS of 79% and a delay of 28.69 seconds during the AM peak whilst during the PM peak Arm A – Dublin Rd (S) experiences a DoS of 88%, a queue of 28.74 pcu's and a delay of 34.69 seconds.

Therefore, the junction will operate within capacity in all Do Minimum Scenarios.

Year	Scenario	Arm	Arm name	Description	DOS (%)	Mean Delay (s)	Mean Max Queue (pcus)
2023	AM Peak	A	Dublin Road (S)	Straight & Left Turn	55	20.10	11.85
		B	Cherry Lane (Link St)	Right Turn & Left Turn	2	40.51	0.14
		C	Dublin Road (N)	Straight & Right Turn	66	23.32	15.95
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	79	28.81	21.98
		B	Cherry Lane (Link St)	Right Turn & Left Turn	1	40.46	0.00
		C	Dublin Road (N)	Straight & Right Turn	49	18.93	10.06
2028	AM Peak	A	Dublin Road (S)	Straight & Left Turn	61	21.79	14.10
		B	Cherry Lane (Link St)	Right Turn & Left Turn	7	40.96	0.61
		C	Dublin Road (N)	Straight & Right Turn	73	25.88	19.04
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	86	33.92	26.05
		B	Cherry Lane (Link St)	Right Turn & Left Turn	2	40.51	0.14
		C	Dublin Road (N)	Straight & Right Turn	53	19.78	11.38
2038	AM Peak	A	Dublin Road (S)	Straight & Left Turn	66	23.13	15.79
		B	Cherry Lane (Link St)	Right Turn & Left Turn	7	41.01	0.64
		C	Dublin Road (N)	Straight & Right Turn	79	28.69	21.70
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	88	34.69	28.74
		B	Cherry Lane (Link St)	Right Turn & Left Turn	2	43.06	0.17
		C	Dublin Road (N)	Straight & Right Turn	55	18.43	11.93

Table 10.12. Do Minimum Scenario Junction Analysis.

The Do Something of the operational assessment of this signal-controlled junction are summarised in Table 10.13 below.

In the 2038 scenario, maximum queues of 7.46 pcu's is experienced along Arm B – Cherry Lane, with the highest DoS of 77% and a delay of 25.08 seconds during the AM peak whilst during the PM peak Arm A experiences a DoS of 89%, a queue of 31.74 pcu's and a delay of 31.72 seconds.

Therefore, the junction will operate within capacity in all Do Something Scenarios.

Year	Scenario	Arm	Arm name	Description	DOS (%)	Mean Delay (s)	Mean Max Queue (pcus)
2023	AM Peak	A	Dublin Road (S)	Straight & Left Turn	55	19.55	11.90
		B	Cherry Lane (Link St)	Right Turn & Left Turn	14	42.78	1.22
		C	Dublin Road (N)	Straight & Right Turn	66	22.56	15.87
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	80	28.74	22.64
		B	Cherry Lane (Link St)	Right Turn & Left Turn	7	41.88	0.64
		C	Dublin Road (N)	Straight & Right Turn	49	18.47	10.31
2028	AM Peak	A	Dublin Road (S)	Straight & Left Turn	66	22.44	15.76
		B	Cherry Lane (Link St)	Right Turn & Left Turn	62	55.07	6.55
		C	Dublin Road (N)	Straight & Right Turn	75	25.98	19.83
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	88	33.13	29.87
		B	Cherry Lane (Link St)	Right Turn & Left Turn	43	53.28	3.27
		C	Dublin Road (N)	Straight & Right Turn	55	16.97	12.14
2038	AM Peak	A	Dublin Road (S)	Straight & Left Turn	67	21.12	16.46
		B	Cherry Lane (Link St)	Right Turn & Left Turn	73	65.56	7.13
		C	Dublin Road (N)	Straight & Right Turn	77	25.08	21.35
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	89	31.72	31.74
		B	Cherry Lane (Link St)	Right Turn & Left Turn	57	64.31	3.59
		C	Dublin Road (N)	Straight & Right Turn	56	14.99	12.41

Table 10.13. Do Something Scenario Junction Analysis.

10.6.6. Junction Analysis. Junction 2: Dublin Road R135 / Hickey's Lane

Junction Impact analysis results has shown that the priority controlled junction between Dublin Road R135 and Hickey's Lane surpasses the 10% threshold.

The existing three arm priority-controlled junction has been analysed for the 'Do Something' modelling scenario using the Junctions 9 PICADY software package. The results of the operational assessment of this junction during the weekday morning and evening peaks for the Do Nothing scenario is summarised in Table 10.14 and Table 10.15 summarises the Do Something scenario below.

In the "Do Minimum" & "Do Something" scenarios the three arms were labelled as follows within the ARCADY model

- Arm A: Dublin Road R135 (S)
- Arm B: Hickey's Lane
- Arm C: Dublin Road R135 (N)

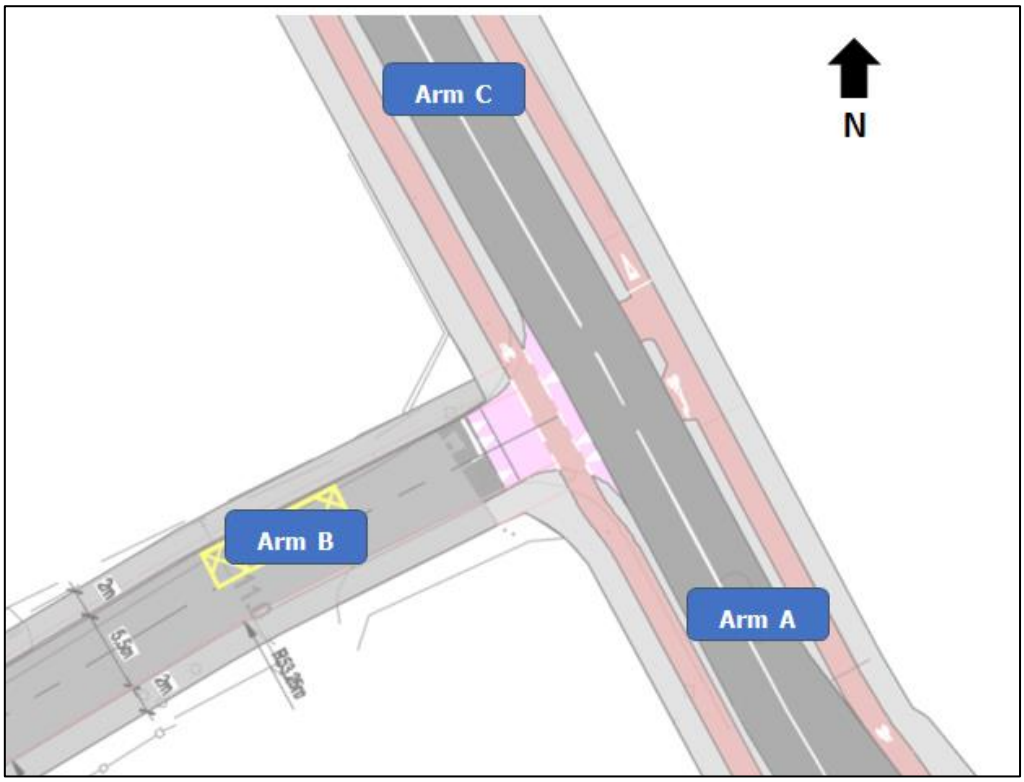


Figure 10.32. Junction 2 Priority Controlled Junction.

The PICADY results (Table 10.14) indicate that the Dublin Road R135 / Hickey's Lane three-arm priority-controlled junction will operate within capacity for all design years for the Do Minimum Scenarios. The junction will operate within capacity in the 2038 AM peak hour with a maximum RFC value of 0.1 and a corresponding queue of 0.1 pcu's being recorded on the Hickey's Lane arm. For the 2038 PM peak hour, results show a maximum RFC value of 0.10 occurring on the same arm, with a corresponding queue of 0.1 pcu's.

Year	Scenario	Arm	Description	Queue (PCU)	Delay (s)	RFC
2023	AM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.10	9.67	0.08
		C	Dublin Road R135 (N)	0.00	7.38	0.02
	PM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.10	10.57	0.09
		C	Dublin Road R135 (N)	0.00	8.59	0.03
2028	AM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.10	9.34	0.09
		C	Dublin Road R135 (N)	0.00	6.91	0.02
	PM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.10	9.61	0.09
		C	Dublin Road R135 (N)	0.00	7.81	0.03
2038	AM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.10	9.83	0.10
		C	Dublin Road R135 (N)	0.00	7.04	0.03
	PM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.10	10.23	0.10
		C	Dublin Road R135 (N)	0.00	8.06	0.04

Table 10.14. Do Minimum Scenario Junction Analysis.

The PICADY results (Table 10.15) indicate that the Dublin Road R135 / Hickey's Lane three-arm priority-controlled junction will operate within capacity for all design years for the Do Something Scenarios. The junction will operate within capacity in the 2038 AM peak hour with a maximum RFC value of 0.22 and a corresponding queue of 0.3 pcu's being recorded on the Hickey's Lane arm. For the 2038 PM peak hour, results show a maximum RFC value of 0.19 occurring on the same arm, with a corresponding queue of 0.2 pcu's.

Year	Scenario	Arm	Description	Queue (PCU)	Delay (s)	RFC
2023	AM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.10	8.88	0.08
		C	Dublin Road R135 (N)	0.00	6.74	0.02
	PM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.10	9.38	0.08
		C	Dublin Road R135 (N)	0.00	7.65	0.03
2028	AM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.30	12.59	0.21
		C	Dublin Road R135 (N)	0.00	7.12	0.03
	PM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.20	12.96	0.17
		C	Dublin Road R135 (N)	0.10	8.58	0.06
2038	AM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.30	13.40	0.22
		C	Dublin Road R135 (N)	0.00	7.26	0.03
	PM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.20	13.80	0.19
		C	Dublin Road R135 (N)	0.10	8.88	0.07

Table 10.15. Do Something Scenario Junction Analysis.

10.6.7. Junction Analysis. Junction 3: Dublin Road R135 / Alderbrook Road / Deerpark

Junction Impact analysis results has shown that the signal-controlled junction Dublin Rd/Alderbrook Rd/Deerpark have a traffic impact over 5%. A further analysis has been carried out.

The existing three arm priority-controlled junction has been analysed for the 'Do Something' modelling scenario using the TRANSYT software package. The results of the operational assessment of this junction during the weekday morning and evening peaks for the Do Nothing scenario is summarised below.

In the " Do Minimum" & "Do Something" scenarios the four arms were labelled as follows within the ARCADY model:

- Arm A: Dublin Road R135 (S)
- Arm B: Alderbrook Road
- Arm C: Dublin Road R135 (N)
- Arm D: Deerpark

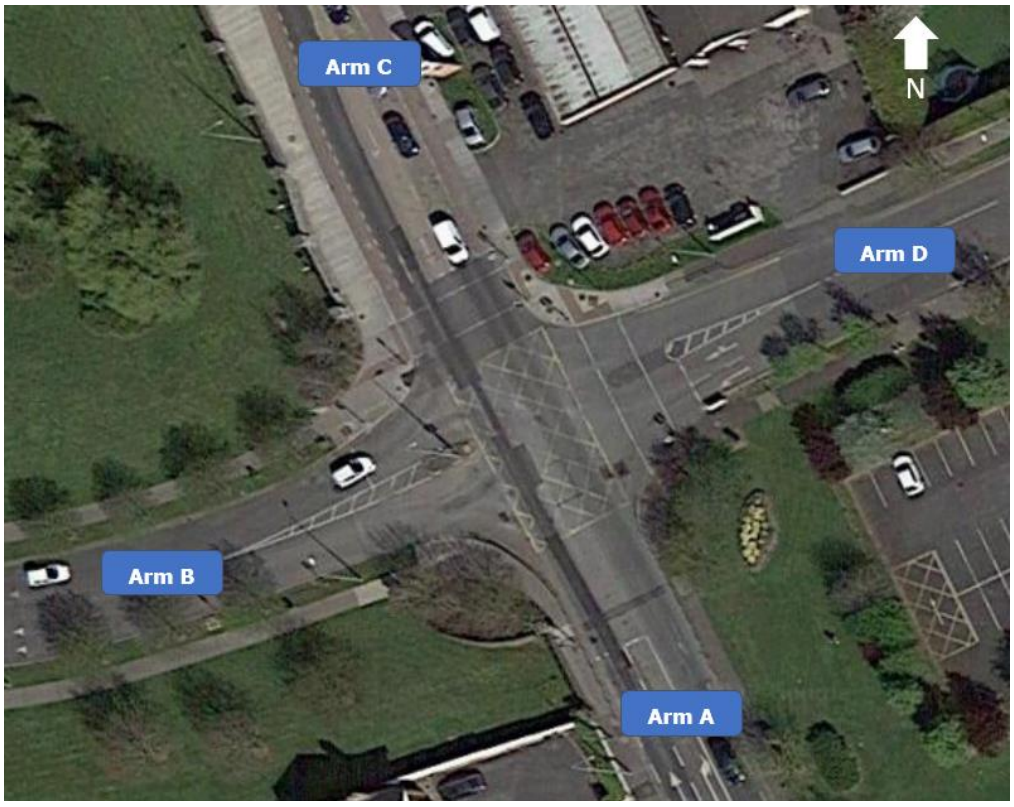


Figure 10.33: Junction 3 Signalised Junction.

The junction has been modelled assuming a cycle time of 100 seconds, with an all-green pedestrian stage and an advanced cycle stage of 8 seconds every cycle.

The TRANSYT results (Table 10.16) indicate that the Dublin Road / Alderbrook Road / Deerpark 4-arm signal-controlled junction will operate within capacity for all design years in the Do Minimum Scenarios. In 2038 AM Peak, the maximum DoS occurs on Arm C Dublin Rd (N), with a value of 81%, a queue of 18 pcus and a delay of 31.80 seconds on the Straight & Left Turn stream. In the PM Peak, the maximum DoS equals to 83% on Arm A Dublin Rd (S) on the Straight and Left Turn stream, with a queue of 20.03 pcus and a delay of 30.24 seconds.

Year	Scenario	Arm	Arm name	Description	DOS (%)	Mean Delay (s)	Mean Max Queue (pcus)
2023	AM Peak	A	Dublin Road (S)	Straight & Left Turn	45	19.58	7.29
				Right Turn	18	15.46	1.62
		B	Alderbrook Rd	Straight, Right & Left Turn	28	35.05	2.52
		C	Dublin Road (N)	Straight & Left Turn	69	25.44	13.39
				Right Turn	4	13.99	0.38
		D	Deerpark	Left Turn	17	33.34	1.46
				Straight & Right Turn	12	32.62	0.99
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	71	23.70	14.71
				Right Turn	7	12.17	0.57
		B	Alderbrook Rd	Straight, Right & Left Turn	30	38.84	2.29
		C	Dublin Road (N)	Straight & Left Turn	56	19.36	10.13
				Right Turn	8	12.26	0.68
		D	Deerpark	Left Turn	11	35.87	0.78
				Straight & Right Turn	26	38.08	1.93
2028	AM Peak	A	Dublin Road (S)	Straight & Left Turn	49	20.36	8.25
				Right Turn	19	15.68	1.81
		B	Alderbrook Rd	Straight, Right & Left Turn	31	35.47	2.77
		C	Dublin Road (N)	Straight & Left Turn	76	28.35	15.76
				Right Turn	5	14.04	0.41
		D	Deerpark	Left Turn	19	33.57	1.62
				Straight & Right Turn	13	32.78	1.09
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	77	26.39	17.07
				Right Turn	7	12.21	0.63
		B	Alderbrook Rd	Straight, Right & Left Turn	33	39.32	2.50
		C	Dublin Road (N)	Straight & Left Turn	61	20.48	11.52
				Right Turn	8	12.33	0.74
		D	Deerpark	Left Turn	12	35.98	0.85
				Straight & Right Turn	28	38.48	2.13
2038	AM Peak	A	Dublin Road (S)	Straight & Left Turn	53	21.11	9.03
				Right Turn	21	15.87	1.96
		B	Alderbrook Rd	Straight, Right & Left Turn	33	35.84	2.97
		C	Dublin Road (N)	Straight & Left Turn	81	31.80	18.00
				Right Turn	5	14.08	0.44
		D	Deerpark	Left Turn	20	33.77	1.73
				Straight & Right Turn	13	32.89	1.16
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	83	30.24	20.03
				Right Turn	8	12.26	0.68
		B	Alderbrook Rd	Straight, Right & Left Turn	35	39.79	2.71
		C	Dublin Road (N)	Straight & Left Turn	66	21.75	12.83
				Right Turn	9	12.40	0.80
		D	Deerpark	Left Turn	12	36.06	0.90
				Straight & Right Turn	30	38.90	2.31

Table 10.16. Do Minimum Scenario Junction Analysis.

The TRANSYT results (Table 10.17) indicate that the Dublin Rd / Alderbrook Rd / Deerpark 4-arm signal-controlled junction will operate within capacity for all design years in the Do Something Scenarios. In 2038 AM Peak, the maximum DoS occurs on Arm C Dublin Rd (N), with a value of 84%, a queue of 19.30 pcus and a delay of 33.95 seconds on the Straight & Left Turn stream. In the PM Peak, the maximum DoS equals to 88% on Arm A Dublin Rd (S) on the Straight and Left Turn stream, with a queue of 22.60 pcus and a delay of 34.81 seconds.

Year	Scenario	Arm	Arm name	Description	DOS (%)	Mean Delay (s)	Mean Max Queue (pcus)
2023	AM Peak	A	Dublin Road (S)	Straight & Left Turn	46	19.81	7.52
				Right Turn	18	15.52	1.70
		B	Alderbrook Rd	Straight, Right & Left Turn	28	35.05	2.52
		C	Dublin Road (N)	Straight & Left Turn	69	25.61	13.50
				Right Turn	4	13.99	0.38
		D	Deerpark	Left Turn	17	33.34	1.46
				Straight & Right Turn	12	32.62	0.99
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	78	29.77	16.67
				Right Turn	7	14.28	0.64
		B	Alderbrook Rd	Straight, Right & Left Turn	25	34.48	2.18
		C	Dublin Road (N)	Straight & Left Turn	62	23.38	11.37
				Right Turn	8	14.40	0.74
		D	Deerpark	Left Turn	9	32.34	0.76
				Straight & Right Turn	21	33.92	1.83
2028	AM Peak	A	Dublin Road (S)	Straight & Left Turn	78	29.77	16.67
				Right Turn	7	14.28	0.64
		B	Alderbrook Rd	Straight, Right & Left Turn	25	34.48	2.18
		C	Dublin Road (N)	Straight & Left Turn	62	23.38	11.37
				Right Turn	8	14.40	0.74
		D	Deerpark	Left Turn	9	32.34	0.76
				Straight & Right Turn	21	33.92	1.83
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	82	29.15	19.31
				Right Turn	8	12.24	0.66
		B	Alderbrook Rd	Straight, Right & Left Turn	34	39.65	2.66
		C	Dublin Road (N)	Straight & Left Turn	68	22.39	13.47
				Right Turn	8	12.33	0.74
		D	Deerpark	Left Turn	13	36.17	0.97
				Straight & Right Turn	28	38.48	2.13
2038	AM Peak	A	Dublin Road (S)	Straight & Left Turn	60	22.81	10.80
				Right Turn	24	16.24	2.26
		B	Alderbrook Rd	Straight, Right & Left Turn	34	35.98	3.05
		C	Dublin Road (N)	Straight & Left Turn	84	33.95	19.30
				Right Turn	5	14.08	0.44
		D	Deerpark	Left Turn	21	33.88	1.80
				Straight & Right Turn	13	32.89	1.16
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	88	34.81	22.60
				Right Turn	8	12.31	0.73
		B	Alderbrook Rd	Straight, Right & Left Turn	37	40.13	2.84
		C	Dublin Road (N)	Straight & Left Turn	72	24.08	15.14
				Right Turn	9	12.40	0.80
		D	Deerpark	Left Turn	14	36.25	1.03
				Straight & Right Turn	30	38.90	2.31

Table 10.17. Do Something Scenario Junction Analysis.

10.6.8. Junction Analysis. Junction 5: Nine Mile Stone Roundabout

Junction Impact analysis results has shown that the Nine Mile Stone Roundabout have a traffic impact over 5%. A further analysis has been carried out.

The existing three arm priority-controlled junction has been analysed for the 'Do Something' modelling scenario using the TRANSYT software package. The results of the operational assessment of this junction during the weekday morning and evening peaks for the Do Nothing scenario is summarised below.

In the "Do Minimum" & "Do Something" scenarios the five arms were labelled as follows within the ARCADY model:

- Arm A: R135 (S)
- Arm B: M2 access
- Arm C: Ratoath Rd R125
- Arm D: Dublin Rd R135
- Arm E: R125

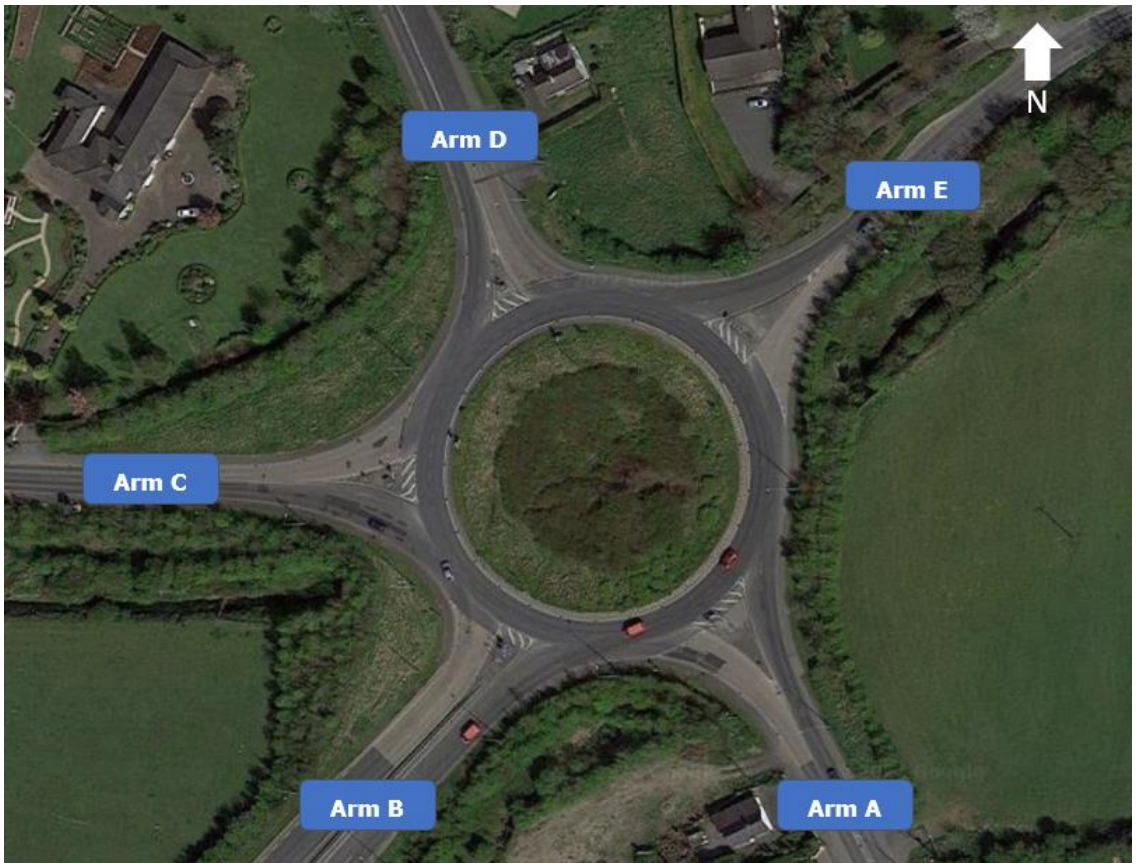


Figure 10.34. Junction 5 Nine Mile Stone Roundabout.

The PICADY results (Table 10.18) indicate that the Nine Mile Stone Roundabout 5-arm roundabout will operate within capacity for all design years in the Do Minimum Scenarios. The maximum RFC occurs in 2038 AM peak on Arm 3 Ratoath Rd, with a value of 53%, a queue of 1.10 pcus, and a delay of 4.68 seconds. In 2038 PM peak, the maximum RFC occurs on Arm 2 M2 access, and equals to 55%, with a queue of 1.2 pcus, and a delay of 3.92 seconds.

Year	Scenario	Arm	Description	Queue (PCU)	Delay (s)	RFC
2023	AM Peak	1	R135 (S)	0.10	2.90	0.13
		2	M2 access	0.20	1.94	0.18
		3	Ratoath Rd R125	0.80	3.99	0.46
		4	R135 (N)	0.70	3.72	0.42
		5	R125 (E)	0.30	3.99	0.24
	PM Peak	1	R135 (S)	0.30	2.90	0.24
		2	M2 access	0.90	3.26	0.47
		3	Ratoath Rd R125	0.30	3.19	0.23
		4	R135 (N)	0.40	2.80	0.29
		5	R125 (E)	0.30	3.17	0.22
2028	AM Peak	1	R135 (S)	0.20	3.08	0.15
		2	M2 access	0.20	2.01	0.20
		3	Ratoath Rd R125	1.00	4.45	0.50
		4	R135 (N)	0.90	4.14	0.47
		5	R125 (E)	0.40	4.36	0.27
	PM Peak	1	R135 (S)	0.40	3.05	0.26
		2	M2 access	1.10	3.62	0.52
		3	Ratoath Rd R125	0.30	3.38	0.25
		4	R135 (N)	0.50	2.95	0.32
		5	R125 (E)	0.30	3.33	0.24
2038	AM Peak	1	R135 (S)	0.20	3.26	0.17
		2	M2 access	0.30	2.07	0.21
		3	Ratoath Rd R125	1.20	4.95	0.55
		4	R135 (N)	1.00	4.61	0.51
		5	R125 (E)	0.40	4.78	0.30
	PM Peak	1	R135 (S)	0.40	3.23	0.29
		2	M2 access	1.30	4.08	0.56
		3	Ratoath Rd R125	0.40	3.59	0.28
		4	R135 (N)	0.50	3.10	0.35
		5	R125 (E)	0.40	3.50	0.27

Table 10.18. Do Minimum Scenario Junction Analysis.

The PICADY results (Table 10.19) indicate that the Nine Mile Stone Roundabout 5-arm roundabout will operate within capacity for all design years in the Do Something Scenarios. The maximum RFC occurs in 2038 AM peak on Arm 4 R135 (N), with a value of 60%, a queue of 1.50 pcus, and a delay of 5.70 seconds. In 2038 PM peak, the maximum RFC occurs on Arm 2 M2 Access, and equals to 62%, with queue of 1.60 pcus, and a delay of 4.71 seconds.

Year	Scenario	Arm	Description	Queue (PCU)	Delay (s)	RFC
2023	AM Peak	1	R135 (S)	0.20	2.93	0.13
		2	M2 access	0.20	1.95	0.18
		3	Ratoath Rd R125	0.80	4.01	0.46
		4	R135 (N)	0.80	3.83	0.43
		5	R125 (E)	0.30	4.05	0.24
	PM Peak	1	R135 (S)	0.30	2.92	0.24
		2	M2 access	0.90	3.31	0.48
		3	Ratoath Rd R125	0.30	3.23	0.23
		4	R135 (N)	0.40	2.83	0.30
		5	R125 (E)	0.30	3.19	0.22
2028	AM Peak	1	R135 (S)	0.20	3.28	0.17
		2	M2 access	0.30	2.06	0.21
		3	Ratoath Rd R125	1.10	4.68	0.52
		4	R135 (N)	1.30	5.00	0.56
		5	R125 (E)	0.40	4.80	0.30
	PM Peak	1	R135 (S)	0.40	3.23	0.29
		2	M2 access	1.30	4.11	0.57
		3	Ratoath Rd R125	0.40	3.64	0.28
		4	R135 (N)	0.60	3.16	0.36
		5	R125 (E)	0.40	3.48	0.26
2038	AM Peak	1	R135 (S)	0.20	3.49	0.19
		2	M2 access	0.30	2.12	0.23
		3	Ratoath Rd R125	1.30	5.24	0.57
		4	R135 (N)	1.50	5.70	0.60
		5	R125 (E)	0.50	5.32	0.33
	PM Peak	1	R135 (S)	0.50	3.43	0.32
		2	M2 access	1.60	4.71	0.62
		3	Ratoath Rd R125	0.40	3.88	0.31
		4	R135 (N)	0.60	3.35	0.39
		5	R125 (E)	0.40	3.67	0.28

Table 10.19. Do Something Scenario Junction Analysis.

10.6.9. Sensitivity Analysis

A sensitivity analysis has been carried out in response to MCC advising that the lands located west of the development (which are currently zoned as F1 – Open Space in the Meath County Development Plan (2021-2027)) could potential be developed in the future, with one of the developments access points via Cherry Lane. It has been advised that this development may cater for approximately 1000 units, with two access points.

As a result, with the objective of providing a robust assessment, DBFL have undertaken a sensitivity test to assess the potential impact on the capacity of Junction no. 1, Junction no. 2, Junction no. 3 and Junction no. 5, due to the inclusion of the potential future development to the east of the subject site.

It has been advised that this development may cater for approximately 800 units, with two access points. Therefore, it has been assumed that half the potential future development may use the Cherry Lane access i.e. 400 no. residential units (240 houses and 160 apartment/duplex units – using the same ratio as the subject development). To assess the worst case scenario, it is assumed that the Potential Future Development will be fully constructed and occupied by 2038.

Table 10.20 summarises the predicted peak hour AM and PM vehicle trips generated by the Potential Future Development, using the same trip rates for residential units of the proposed development.

Years	Units / GFA	AM Peak Hour (08:00-09:00)			PM Peak Hour (16:45-17:45)		
		Arr	Dep	Total	Arr	Dep	Total
Houses	240	33	94	128	80	50	131
Apartments / duplex	160	10	30	39	33	18	51
Total	400	43	124	167	114	69	182

Table 10.20. Potential Future Development Vehicle Trips.

10.6.9.1. Sensitivity Analysis : Junction 1: Dublin Road R135 / Cherry Lane

The proposed three-arm Signal Controlled junction shown in Figure 10.35. has been analysed for the 2038 design year Do Minimum and Do Something scenarios including the Potential Future Development (PFD) using the TRANSYT 16 software package. The results of the operational assessment of this junction for the 'Do Minimum' and 'Do Something' scenarios are summarised in Tables 10.21 and 10.21 respectively.

In the "Do Nothing" and "Do Something" scenarios the four arms were labelled as follows within the ARCADY model:

- Arm A – Dublin Road R135 (S)
- Arm B – Cherry Lane (Link Street)
- Arm C – Dublin Road R135 (N)

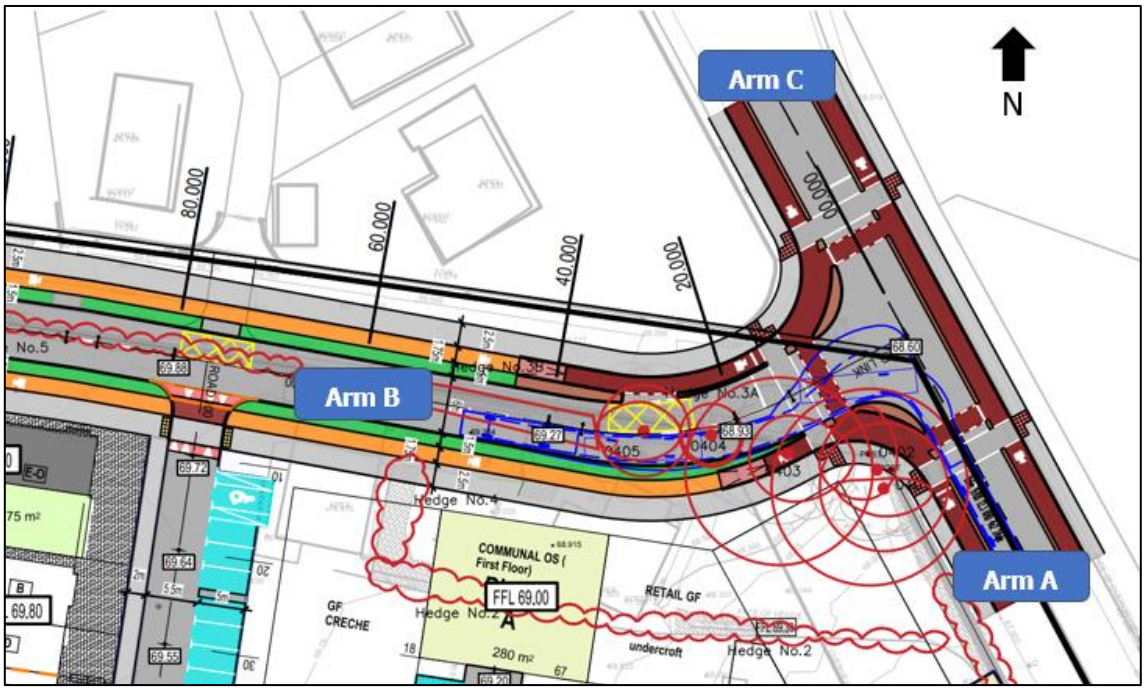


Figure 10.35. Junction 1 Signal Controlled Junction.

The junction has been modelled assuming a cycle time of 120 seconds, with an all-green pedestrian stage and an advanced cycle stage of 8 seconds every cycle.

The Do-Minimum of the operational assessment of this signal controlled junction are summarised in Table 10.21 below.

In the 2038 Do Minimum scenario with the Potential Future Development (PFD), maximum queues of 22.62 pcu's is experienced along Arm C – Dublin Rd (N), with the highest DoS of 80% and a delay of 28.52 seconds during the AM peak whilst during the PM peak, Arm A – Dublin Rd (N) experiences a DoS of 88%, a queue of 30.23 pcus and

a delay of 32.41 seconds.

Year	Scenario	Arm	Arm name	Description	DOS (%)	Mean Delay (s)	Mean Max Queue (pcus)
2038 + PFD	AM Peak	A	Dublin Road (S)	Straight & Left Turn	68	23.88	16.77
		B	Cherry Lane (Link St)	Right Turn & Left Turn	37	46.05	3.63
		C	Dublin Road (N)	Straight & Right Turn	80	29.52	22.62
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	88	32.41	30.23
		B	Cherry Lane (Link St)	Right Turn & Left Turn	27	50.54	1.88
		C	Dublin Road (N)	Straight & Right Turn	55	16.30	11.99

Table 10.21. "Do Minimum" Sensitivity Analysis.

In the 2038 Do Something scenario with the Potential Future Development (PFD), maximum queues of 26.28 pcus are experienced along Arm C – Dublin Rd (N), with the highest DoS of 87% and a delay of 37.54 seconds during the AM peak whilst during the PM peak Arm A experiences a DoS of 94%, a queue of 13.50 pcus and a delay of 42.71 seconds. Therefore, the junction might operate oversaturated on one arm in the 2038 PM Peak scenario with the Potential Future Development, although it will operate within capacity for all remaining scenarios.

Year	Scenario	Arm	Arm name	Description	DOS (%)	Mean Delay (s)	Mean Max Queue (pcus)
2038 + PFD	AM Peak	A	Dublin Road (S)	Straight & Left Turn	77	29.57	20.32
		B	Cherry Lane (Link St)	Right Turn & Left Turn	79	62.05	10.69
		C	Dublin Road (N)	Straight & Right Turn	87	37.54	26.28
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	94	42.71	38.71
		B	Cherry Lane (Link St)	Right Turn & Left Turn	87	106.69	7.48
		C	Dublin Road (N)	Straight & Right Turn	59	15.64	13.50

Table 10.22: "Do-Something" Sensitively Analysis Junction 1.

10.6.9.2. Sensitivity Analysis : Junction 2: Dublin Road R135 / Hickey's Lane

Junction Impact analysis results has shown that the priority controlled junction between Dublin Road R135 and Hickey's Lane works within capacity for all scenarios. Table 10.23 and Table 10.24 summarise The Do Minimum & Do Something scenarios including the Potential Future Development.

In the "Do Minimum" & "Do Something" scenario the three arms were labelled as follows within the ARCADY model:

- Arm A: Dublin Road R135 (S)
- Arm B: Hickey's Lane
- Arm C: Dublin Road R135 (N)

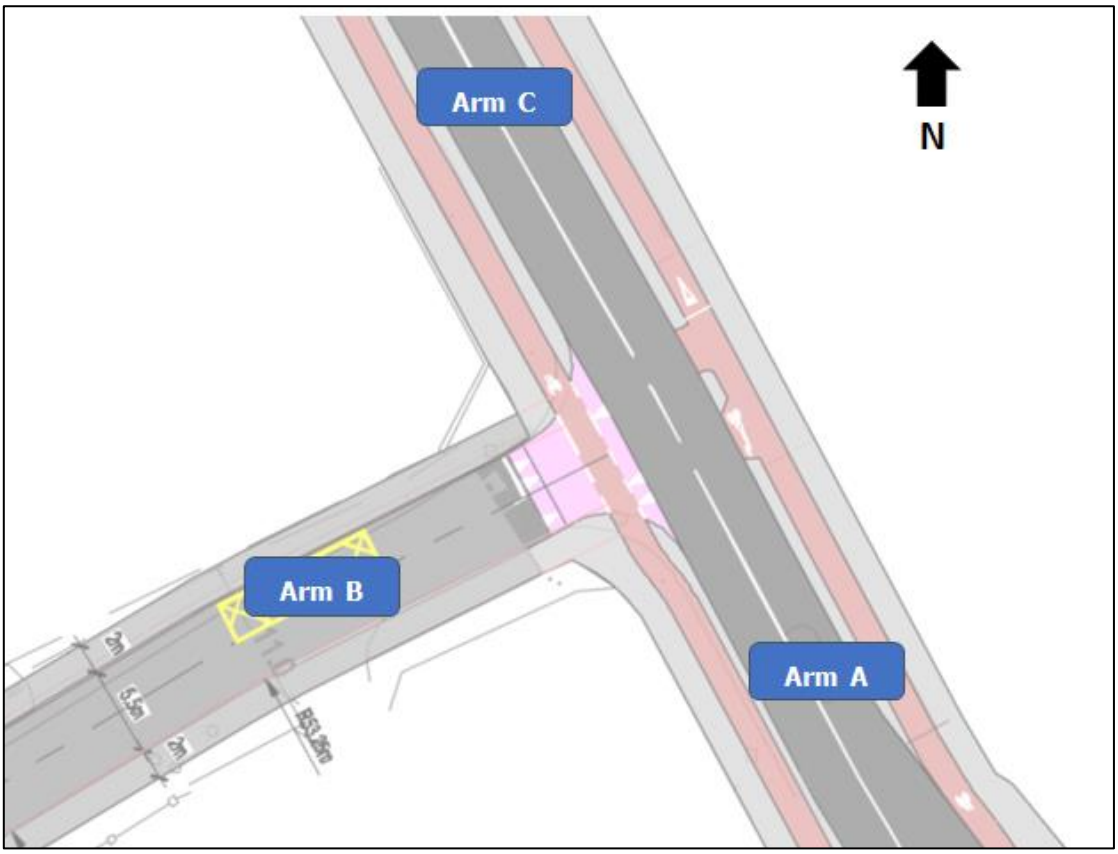


Figure 10.36. Junction 2 Priority Controlled Junction.

The PICADY results (Table 10.23) indicate that the Dublin Road R135 / Hickey's Lane three-arm priority-controlled junction will operate within capacity with the Potential Future Development. In the AM Peak, the junction will have a maximum RFC value of 10% and a corresponding queue of 0.1 pcu's being recorded on the Hickey's Lane arm and a delay of 10.14 seconds, and in the PM peak hour, with an RFC value of 11% occurring on the same arm, with a corresponding queue of 0.1 pcus and a delay of 10.74 seconds.

Year	Scenario	Arm	Description	Queue (PCU)	Delay (s)	RFC
2038 + PFD	AM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.10	10.14	0.10
		C	Dublin Road R135 (N)	0.00	7.12	0.03
	PM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.10	10.74	0.11
		C	Dublin Road R135 (N)	0.00	8.32	0.04

Table 10.23. "Do Minimum" Sensitively Analysis.

In the 2038 AM Peak with the Potential Future Development, the junction will also operate within capacity in a maximum RFC value of 23% and a corresponding queue of 0.3 pcus being recorded on the Hickey's Lane arm, and delay of 14.08 seconds, and in the PM peak hour, with an RFC value of 20% occurring on the same arm, with a corresponding queue of 0.2 pcus, and a delay of 14.84 seconds.

Year	Scenario	Arm	Description	Queue (PCU)	Delay (s)	RFC
2038 + PFD	AM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.30	14.08	0.23
		C	Dublin Road R135 (N)	0.00	7.34	0.03
	PM Peak	A	Dublin Road R135 (S)	-	-	-
		B	Hickey's Lane	0.20	14.84	0.20
		C	Dublin Road R135 (N)	0.10	9.20	0.07

Table 10.24. "Do-Something" Sensitively Analysis.

10.6.9.3. Sensitivity Analysis : Junction 3: Dublin Road R135 / Alderbrook Rd / Deerpark

In the " Do Minimum" & "Do Something" scenarios the four arms were labelled as follows within the ARCADY model:

- Arm A: Dublin Road R135 (S)
- Arm B: Alderbrook Rd
- Arm C: Dublin Road R135 (N)
- Arm D: Deerpark

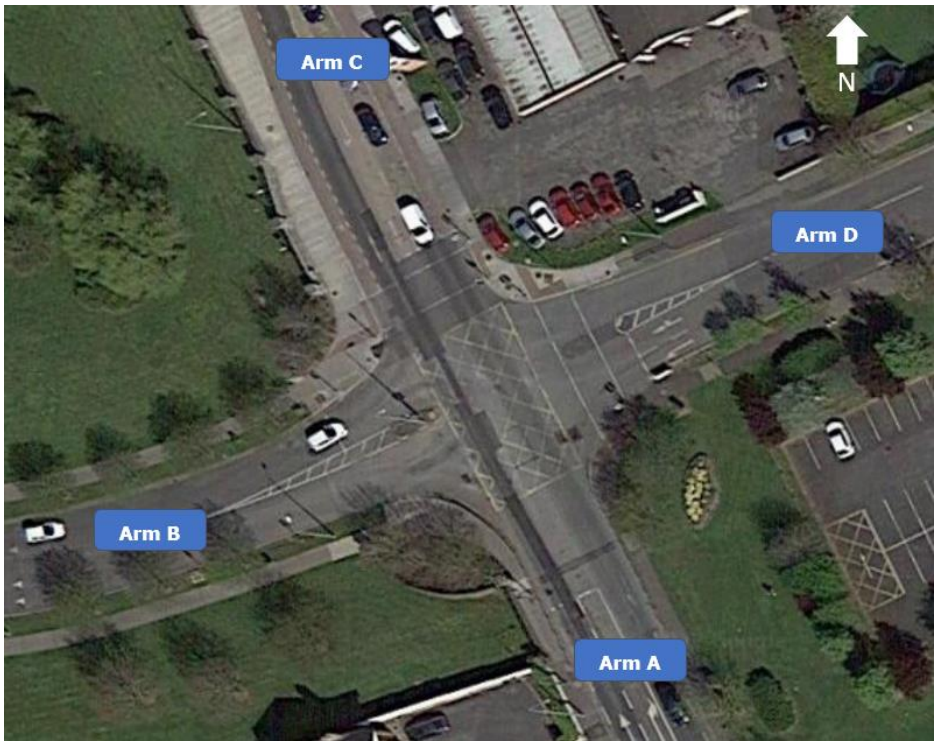


Figure 10.37. Junction 3 Signalised Junction.

In the DM 2038 AM Peak, the highest DOS occurs on Arm C – Dublin Rd (N), on the Straight and Left Turn stream, with a value of 83%, and queue of 18.59 pcus, and a delay of 32.72 seconds. In the PM peak, the highest DOS occurs on Arm A – Dublin Rd (S), on the Straight and Left Turn, with a DOS of 85%, a queue of 21.07 pcus, and a delay of 32.11 seconds.

Year	Scenario	Arm	Arm name	Description	DOS (%)	Mean Delay (s)	Mean Max Queue (pcus)
2038 + PFD	AM Peak	A	Dublin Road (S)	Straight & Left Turn	55%	21.63	9.59
				Right Turn	21%	15.89	1.98
		B	Alderbrook Rd	Straight, Right & Left Turn	34%	35.98	3.05
		C	Dublin Road (N)	Straight & Left Turn	81%	31.21	17.73
				Right Turn	5%	14.08	0.44
		D	Deerpark	Left Turn	19%	33.57	1.62
				Straight & Right Turn	12%	32.65	1.02
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	84%	31.28	20.49
				Right Turn	8%	12.30	0.71
		B	Alderbrook Rd	Straight, Right & Left Turn	36%	39.99	2.79
		C	Dublin Road (N)	Straight & Left Turn	64%	21.15	12.21
				Right Turn	9%	12.40	0.80
		D	Deerpark	Left Turn	13%	36.17	0.97
				Straight & Right Turn	30%	38.90	2.31

Table 10.25. "Do Minimum" Sensitivity Analysis.

In the DS 2038 AM Peak, the highest DOS occurs on Arm C – Dublin Rd (N), on the Straight and Left Turn stream, with a value of 85%, and queue of 19.96 pcus, and a delay of 35.11 seconds. In the PM peak, the highest DOS occurs on Arm A – Dublin Rd (S), on the Straight and Left Turn, with a DOS of 90%, a queue of 24.19 pcus, and a delay of 37.83 seconds.

Year	Scenario	Arm	Arm name	Description	DOS (%)	Mean Delay (s)	Mean Max Queue (pcus)
2038 + PFD	AM Peak	A	Dublin Road (S)	Straight & Left Turn	63%	23.45	11.56
				Right Turn	24%	16.27	2.28
		B	Alderbrook Rd	Straight, Right & Left Turn	34%	36.13	3.16
		C	Dublin Road (N)	Straight & Left Turn	86%	33.11	18.86
				Right Turn	5%	14.08	0.44
		D	Deerpark	Left Turn	19%	33.69	1.69
				Straight & Right Turn	12%	32.65	1.02
	PM Peak	A	Dublin Road (S)	Straight & Left Turn	89%	36.46	23.46
				Right Turn	8%	12.33	0.74
		B	Alderbrook Rd	Straight, Right & Left Turn	38%	40.34	2.92
		C	Dublin Road (N)	Straight & Left Turn	70%	23.21	14.38
				Right Turn	9%	12.40	0.80
		D	Deerpark	Left Turn	15%	36.42	1.10
				Straight & Right Turn	30%	38.90	2.31

Table 10.26. "Do Something" Sensitivity Analysis.

10.6.9.4. Sensitivity Analysis : Junction 5: Nine Mile Stone Roundabout

In the "Do Minimum" & "Do Something" scenarios the five arms were labelled as follows within the ARCADY model:

- Arm A: R135 (S)
- Arm B: M2 access
- Arm C: Ratoath Rd R125
- Arm D: Dublin Rd R135
- Arm E: R125

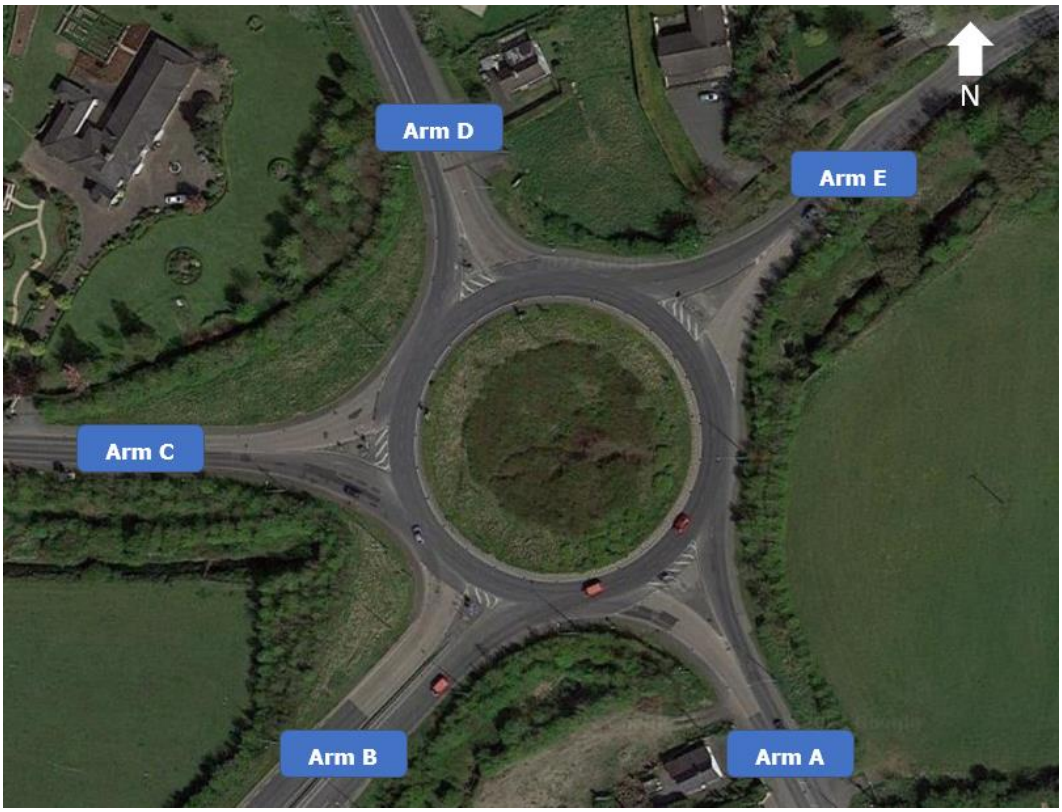


Figure 10.38. Junction 5 Nine Mile Stone Roundabout.

In the DM 2038 AM Peak, the highest RFC occurs on Arm 4 – R135 (N), with a value of 56%, and queue of 1.2 pcus, and a delay of 5.60 seconds. In the PM peak, the highest DOS occurs on Arm 2 –M2 Access, with a RFC of 59%, a queue of 1.40 pcus, and a delay of 4.34 seconds.

Year	Scenario	Arm	Description	Queue (PCU)	Delay (s)	RFC
2038 + PFD	AM Peak	1	R135 (S)	0.20	3.27	0.17
		2	M2 access	0.30	2.04	0.20
		3	Ratoath Rd R125	1.10	4.76	0.53
		4	R135 (N)	1.20	4.82	0.54
		5	R125 (E)	0.40	4.78	0.30
	PM Peak	1	R135 (S)	0.40	3.23	0.29
		2	M2 access	1.30	4.16	0.57
		3	Ratoath Rd R125	0.40	3.61	0.28
		4	R135 (N)	0.60	3.14	0.36
		5	R125 (E)	0.30	3.46	0.26

Table 10.27. "Do Minimum" Sensitivity Analysis.

In the DS 2038 AM Peak, the highest RFC occurs on Arm 4 – R135 (N), with a value of 65%, and queue of 1.80 pcus, and a delay of 6.38 seconds. In the PM peak, the highest DOS occurs on Arm 2 –M2 Access, with an RFC of 64%, a queue of 1.80 pcus, and a delay of 5.07 seconds.

Year	Scenario	Arm	Description	Queue (PCU)	Delay (s)	RFC
2038 + PFD	AM Peak	1	R135 (S)	0.20	3.50	0.18
		2	M2 access	0.30	2.09	0.22
		3	Ratoath Rd R125	1.20	5.02	0.55
		4	R135 (N)	1.70	6.02	0.63
		5	R125 (E)	0.50	5.31	0.32
	PM Peak	1	R135 (S)	0.50	3.43	0.32
		2	M2 access	1.60	4.82	0.62
		3	Ratoath Rd R125	0.40	3.91	0.31
		4	R135 (N)	0.70	3.38	0.40
		5	R125 (E)	0.40	3.63	0.27

Table 10.28. "Do Something" Sensitivity Analysis.

10.7. Network Analysis Conclusions

For **Junction 1** (Dublin Road/Cherry Lane), for the 2038 Do-Something scenario, the TRANSYT indicate that the junction will operate within capacity with a maximum queues of 7.46 pcu's is experienced along Arm B – Cherry Lane, with the highest DoS of 77% and a delay of 25.08 seconds during the AM peak whilst during the PM peak Arm A experiences a DoS of 89%, a queue of 31.74 pcu's and a delay of 31.72 seconds.

To conclude, the Dublin Road/Cherry Lane signalised junction will operate within capacity for all the peak hour scenarios for all the design years assessed. The highest DoS values recorded across the assessment are lower than 90% (0.90) threshold, which would indicate the junction is within capacity. As the above assessment analyses junction operation during the AM and PM peak hours, it represents a worst case scenario.

For **Junction 2**, the PICADY results indicate that the Dublin Road R135 / Hickey's Lane three-arm priority-controlled junction will operate within capacity for all design years for the Do Something Scenarios. There is a maximum RFC value of 0.22 and a corresponding queue of 0.3 pcu's being recorded on the Hickey's Lane arm. For the 2038 PM peak hour, results show a maximum RFC value of 0.19 occurring on the same arm, with a corresponding queue of 0.2 pcu's.

To conclude, the Dublin Road/Hickey's Lane priority-controlled junction will operate well within capacity for all the peak hour scenarios for all the design years assessed. The highest RFC recorded across the assessment is significantly lower than the 0.85 (85%) RFC threshold indicating a poorly performing junction. As the above assessment analyses junction operation during the AM and PM peak hours, it represents a worst case scenario.

For **Junction 3**, the TRANSYT results indicate that the Dublin Rd/Alderbrook Rd/Deerpark four-arm signal-controlled junction will operate within capacity for all design years for the Do Something Scenarios. There is a maximum DoS occurring on Arm C Dublin Rd (N), with a value of 84%, a queue of 19.30 pcus and a delay of 33.95 seconds on the Straight & Left Turn stream. In the PM Peak, the maximum DoS equals to 88% on Arm A Dublin Rd (S) on the Straight and Left Turn stream, with a queue of 22.60 pcus and a delay of 34.81 seconds.

To conclude, the Dublin Rd/Alderbrook Rd/Deerpark will operate well within capacity for all the peak hour scenarios for all the design years assessed. The highest DOS recorded across the assessment is lower than the 90% DOS threshold indicating junction approaching capacity. As the above assessment analyses junction operation during the AM and PM peak hours, it represents a worst case scenario.

For **Junction 5**, the PICADY results indicate that the Nine Mile Stone Roundabout will operate within capacity for all design years for the Do Something Scenarios. The maximum RFC occurs in 2038 AM peak on Arm 4 R135 (N), with a value of 60%, a queue of 1.50 pcus, and a delay of 5.70 seconds. In 2038 PM peak, the maximum RFC occurs on Arm 2 M2 Access, and equals to 62%, with queue of 1.60 pcus, and a delay of 4.71 seconds.

To conclude, the Nine Mile Stone Roundabout will operate well within capacity for all the peak hour scenarios for all the design years assessed. The highest RFC recorded across the assessment is lower than the 0.85 (85%) RFC threshold indicating a poorly performing junction. As the above assessment analyses junction operation during the

AM and PM peak hours, it represents a worst case scenario.

A **Sensitivity Analysis** was undertaken which takes into account the routing of trips from a Potential Future Development (400 residential unit trips) to the west of the Proposed Development via Cherry Lane/R135 junction. These Lands west of the proposed development are currently zoned as "Open Space" in the MCC Development Plan (2021-2027), therefore, this assessment is a worst-case scenario sensitivity test, the lands may not be developed in the future, this potential future development is not a committed development.

This junction will operate within acceptable operational parameters for an signal controlled junction during peak hour traffic conditions in an urban environment subjected to 18 years of traffic growth and the assumption the no mode shift will occur.

Accordingly, the analysis represents a worst case assessment and in reality, following implementation of the subject cycle scheme along the R135, it is expected that a significant uptake in cycling will occur resulting in lower traffic volumes than those predicted in this worst case assessment. Also, the junction has been modelled with an all-green pedestrian stage every cycle, which would unlikely occur.

Junction 1 (Dublin Road/Cherry Lane) operates within capacity (DoS < 90%) for the 2038 Do-Something scenario. The TRANSYT results indicate that maximum queues of 26.28 pcus are experienced along Arm C – Dublin Rd (N), with the highest DoS of 87% and a delay of 37.54 seconds during the AM peak whilst during the PM peak Arm A experiences a DoS of 94%, a queue of 13.50 pcus and a delay of 42.71 seconds.

The Dublin Road/Cherry Lane signalised junction will operate within capacity for the AM peak scenarios, whilst the PM peak shows an oversaturated performance on one arm. The highest DoS recorded across the AM Peak assessment occurred for the 2038 Do Something is lower than the 90% threshold, which means that the operation is within capacity. However, the DOS in the PM is slightly over 90%, which indicates that the junction would be approaching capacity. This assessment analyses junction operation during the AM and PM peak hours, so it represents a worst case scenario.

For **Junction 2**, the PICADY results indicate that the Dublin Road R135 / Hickey's Lane three-arm priority-controlled junction will operate within capacity for all design years for the Do Something Scenarios. The junction will operate within capacity in the 2038 AM peak hour with a maximum RFC value of 23% and a corresponding queue of 0.3 pcus being recorded on the Hickey's Lane arm, and delay of 14.08 seconds, and in the PM peak hour, with an RFC value of 20% occurring on the same arm, with a corresponding queue of 0.2 pcus, and a delay of 14.84 seconds.

To conclude, the Dublin Road/Hickey's Lane priority-controlled junction will operate well within capacity for all the peak hour scenarios for all the design years assessed. The highest RFC recorded across the assessment occurred for the 2038 Do Something PM peak hour with an RFC significantly lower than the 0.85 (85%) RFC threshold indicating a poorly performing junction. As the above assessment analyses junction operation during the AM and PM peak hours, it represents a worst case scenario.

For **Junction 3**, the TRANSYT results indicate that the Dublin Rd/Alderbrook Rd/Deerpark four-arm signal-controlled junction will operate within capacity for all design years for the DS 2038 + Potential Future Development. The highest DOS occurs on Arm C – Dublin Rd (N), on the Straight and Left Turn stream, with a value of 85%, and queue of 19.96 pcus, and a delay of 35.11 seconds. In the PM peak, the highest DOS occurs on Arm A – Dublin Rd (S), on the Straight and Left Turn, with a DOS of 90%, a queue of 24.19 pcus, and a delay of 37.83 seconds.

To conclude, the Dublin Rd/Alderbrook Rd/Deerpark will operate well within capacity for the peak hours in 2038 with the Potential Future Development. The highest DOS recorded across the assessment is lower than the 90% DOS threshold indicating junction approaching capapcity. As the above assessment analyses junction operation during the AM and PM peak hours, it represents a worst case scenario.

For **Junction 5**, the PICADY results indicate that the Nine Mile Stone Roundabout will operate within capacity for 2038 with the Potential Future Development for the Do Something Scenarios. The highest RFC occurs on Arm 4 – R135 (N), with a value of 65%, and queue of 1.80 pcus, and a delay of 6.38 seconds. In the PM peak, the highest DOS occurs on Arm 2 –M2 Access, with an RFC of 64%, a queue of 1.80 pcus, and a delay of 5.07 seconds.

To conclude, the Nine Mile Stone Roundabout will operate well within capacity for all the peak hour scenarios for all the design years assessed. The highest RFC recorded across the assessment is lower than the 0.85 (85%) RFC threshold indicating a poorly performing junction. As the above assessment analyses junction operation during the AM and PM peak hours, it represents a worst case scenario.

10.8. Mitigation Measures

10.8.1. Construction Phase

A Construction and Environmental Management Plan (CEMP) has been prepared as part of the planning application with an associated Preliminary Construction Management Plan (PCMP) which incorporates a range of integrated control measures and associated management activities with the objective of minimising the construction activities associated with the development. The following initiatives will be implemented to avoid, minimise and/or mitigate against the anticipated construction period impacts:

- During the pre-construction phase, the site will be securely fenced off/hoarded off from adjacent properties, public footpaths and roads;
- Appropriate on-site parking (temporary parking for the duration of construction works) and compound area will be provided to prevent overflow onto the local network;
- A large proportion of construction workers are anticipated to arrive in shared transport. It is likely that some numbers of the construction team will be brought to/from the site in vans/minibuses, which will serve to reduce the trip generation potential;
- Delivery vehicles to and from the site will be spread across the course of the working day, therefore, the number of HGVs travelling during the peak hours will be relatively low;
- Truck wheel washes will be installed at construction entrances;
- Any specific recommendations with regard to construction traffic management made by Meath County Council will be adhered to;
- Potential localised traffic disruptions during the construction phase will be mitigated through the implementation of industry standard traffic management measures such as the use of traffic signage. These traffic management measures shall be designed and implemented in accordance with the Department of Transport's Traffic Signs Manual "Chapter 8 Temporary Traffic Measures and Signs for Roadworks" and "Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition" (2010); and
- Site entrance point/s from the public road will be constructed with a bound, durable surface capable of withstanding heavy loads and with a sealed joint between the access and public highway. This durable bound surface will be constructed for a distance of 10m from the public road.
- Material storage zones will be established in the compound area and will include material recycling areas and facilities;
- 'Way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas;
- Dedicated construction haul routes will be identified and agreed with Meath County Council prior to commencement of activities on-site; and
- On completion of the works, all construction materials, debris, temporary hardstands etc. from the site compound will be removed off-site and the site compound area reinstated in full on completion of the works.

The projected increase in vehicle traffic during the operational stage may lead to a slight increase in noise levels during peak trip generation periods, however, implementation of the mitigation measures described in the Noise &

Vibration and Air Quality & Climate chapters of the EIAR will prevent and minimize the potential impacts of this interaction.

10.8.2. Operational Phase

A package of integrated mitigation measures has been identified to off-set the additional local demand that the proposed residential development at the subject site could potentially generate as a result of the forecast increase in vehicle movements by residents of the scheme. The identified measures and associated timescale for their implementation are summarised below.

- **Parking Strategy** - A management regime has been set out in Chapter 5 of the Traffic and Transport Assessment (and accompanies this planning application) which will be implemented by the development's management company to control access to the on-site car parking spaces thereby actively managing the availability of on-site car parking for residents and visitors to the development. This provision equates to a car parking ratio of approximately 1.35 car parking spaces per apartment/duplex unit. The signing of a rental agreement or purchase of one of the proposed residential apartments will NOT include access to a designated on-site parking space. All potential residents (prior to signing rental agreement) will be notified that the proposed scheme is a 'low car allocation' development with no access (or guarantee thereof) to the limited on-site residents car parking provision. Nevertheless, all residents of the proposed residential apartment scheme will have the opportunity to apply to the on-site management company for a resident's car parking permit (updated weekly, fortnightly, monthly, quarterly or annually) and subsequently access to a dedicated (assigned) on-site basement car parking space. A charge will be applied to obtain a permit with the objective of covering the associated management costs and discouraging long term usage of the car parking space.
- **Management** – A preliminary Mobility Management Plan (MMP) has been compiled with the aim of guiding the delivery and management of co-ordinated initiatives by the scheme promotor to be implemented upon occupation of the site. The MMP will ultimately seek to encourage sustainable travel practices for all journeys to and from the proposed development.
- **Infrastructure** – Infrastructure measures identified to reduce reliance of private vehicles include the provision of ample secure cycle parking on site, exceeding minimum guidance (DHPLG), and ensuring a design which promotes permeability for pedestrians and cyclists to, through and from the development.
- **Infrastructure** – Junction enhancement have been identified and proposed at the Cherry Lane site access junction, including pedestrian and cycle facilities, with the objective of creating a highly permeable environment for pedestrians and cyclists.
- **Car Sharing** – The provision of 2 No. dedicated car share (GoCar and development-owned) spaces at the Development for the use of the scheme's residents and staff. The availability of these on-site provide a viable alternative to residents needing to own a private vehicle whilst still having access to a car as and when required. GoCar have provided a letter of intent to provided 2no. car share facilities for use by future residents of the proposed development. GoCar support letter can be found in the Appendices of TTA report which is included in this planning application package and should be read in conjunction with this report.

10.9. Residual Impacts

10.9.1. Construction Phase

Provided the above mitigation measures and management procedures are incorporated during the construction phase, the residual impact on the local receiving environment will be temporary in nature and neutral in terms of quality and effect.

The significance of each of the projected impacts are detailed in Table 10.29 for the following key junctions:

- Junction 1: Dublin Road R135 / Cherry Lane

- Junction 2: Dublin Road R135 / Hickey's Lane
- Junction 3: Dublin Road R135 / Alderbrook Rd / Deerpark
- Junction 4: Ratoath Rd 125 / Hickey's Lane
- Junction 5: Nine Mile Stone Roundabout

The significance of the impacts has been determined in accordance with the classifications stipulated within the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports - (EPA, August 2022).

Junction ID	Junction/ Location	Environment Character	Quality / Scale of Impact	Impact Significance	Duration
1	Dublin Rd/Cherry Ln	Low Sensitivity	Negative - Low	Not Significant	Temporary
2	Dublin Rd/Hickey's Ln	Low Sensitivity	Negative - Low	Not Significant	Temporary
3	Dublin Rd/Alderbrook Rd	Low Sensitivity	Negative - Low	Not Significant	Temporary
4	Ratoath Rd/Hickey's Ln	Low Sensitivity	Negative - Low	Not Significant	Temporary
5	Nine Mile Stone Roundabout	Low Sensitivity	Negative - Low	Not Significant	Temporary

Table 10.29. Impact Significance – Construction Phase.

10.9.2. Operational Phase

In order to analyse and assess the impact of the proposed development on the surrounding road network, a traffic model of the junctions was analysed for the schemes following opening, interim and design years:

- 2023 (94 houses + 6 apartments)
- 2028 (Full development)
- 2038 (Full Development)

The NRA/TII document entitled Traffic and Transport Assessment Guidelines (2014) provides thresholds in relation to the impact of a proposed development on the local road network. It is considered material when the level of traffic it generates surpasses 10% and 5% on normal and congested networks respectively. When such levels of impact are generated a more detailed assessment should be undertaken to ascertain the specific impact upon the network's operational performance. The following key junction has been analysed as it exceeded these thresholds;

- Junction 1: Dublin Road R135 / Cherry Lane.
- Junction 2: Dublin Road R135 / Hickey's Lane.
- Junction 3: Dublin Road R135 / Alderbrook Rd / Deerpark
- Junction 5: Nine Mile Stone Roundabout

There are currently no definitive criteria for assessing "significance of effects" for traffic impacts for EIA in Ireland. As introduced above, TII guidance does provide thresholds for determining when to carry out a traffic assessment for a planning application: if a proposed development is likely to increase traffic by 10% (or 5% in traffic sensitive or congested areas), the planning application should be accompanied by a traffic assessment. It should be noted that the TII guidance does not provide criteria for assessing significance of impacts for EIA purposes.

The UK's Institute of Environmental Management and Assessment (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic' (2003) recommends a range of indicators for determining the significance of the relief from severance advises that changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes respectively. Additionally, it is generally accepted that traffic flow increases of less than 10% on uncongested roads are generally considered to be 'not significant', given that daily variations in background traffic flow may vary by this amount.

Based on this methodology for determining the significance of changes, the prevailing traffic levels local to the proposed development and professional judgement, a significance effect rating has been assigned to the different levels of potential traffic increases (see Table 10.30). To ensure the robustness of the assessment these ratings are more conservative than outlined in the IEMA guidelines. This is intended to guide the assessment of the likely effects of the proposed development.

Junction ID	Junction/ Location	Impact Scale	Quality of effects	Significance of effects
1	Dublin Rd/Cherry Ln	19%	Negative	Moderate
2	Dublin Rd/Hickey's Ln	16%	Negative	Moderate
3	Dublin Rd/Alderbrook Rd	7%	Negative	Slight
4	Ratoath Rd/Hickey's Ln	4%	Negative	Not Significant
5	Nine Mile Stone Roundabout	8%	Negative	Slight

Table 10.30. Impact Significance – Operational Phase.

As mentioned in Section 10.5. these 4 no. junctions has been further analysed with modelling software TRANSYT, PICADY and ARCADY. The results are outlined below.

Junction 1 Dublin Road/Cherry Lane signalised junction will operate within capacity for all the peak hour scenarios for all the design years assessed. The highest DoS values recorded across the assessment are lower than 90% (0.90) threshold, which would indicate the junction is within capacity. As the above assessment analyses junction operation during the AM and PM peak hours, it represents a worst case scenario.

Junction 2 Dublin Road/Hickey's Lane priority-controlled junction will operate well within capacity for all the peak hour scenarios for all the design years assessed. The highest RFC recorded across the assessment is significantly lower than the 0.85 (85%) RFC threshold indicating a poorly performing junction.

Junction 3 Dublin Rd/Alderbrook Rd/Deerpark will operate well within capacity for all the peak hour scenarios for all the design years assessed. The highest DOS recorded across the assessment is lower than the 90% DOS threshold indicating junction approaching capacity.

Junction 5 Nine Mile Stone Roundabout will operate well within capacity for all the peak hour scenarios for all the design years assessed. The highest RFC recorded across the assessment is lower than the 0.85 (85%) RFC threshold indicating a poorly performing junction.

The implementation of the mitigation measures outlined above, including the MMP, will ensure that the residual effect on the local receiving environment is both managed and minimised.

10.10. Monitoring

10.10.1. Construction Phase

During the construction stage, the following monitoring exercises are proposed:

- Compliance with construction vehicle routing practices;
- Compliance with construction vehicle parking practices;
- Internal and external road conditions; and
- Timing of construction activities.

10.10.2. Operational Phase

As part of the MMP process, bi-annual post occupancy surveys are to be carried out in order to determine the success of the measures and initiatives as set out in the proposed MMP document. The information obtained from the monitoring surveys will be used to identify ways in which the MMP measures and initiatives should be taken forward in order to maintain and further encourage sustainable travel characteristics.

10.11. Reinstatement

10.11.1. Construction Phase

The construction works areas will be reinstated following completion of development with landscaped areas provided where proposed. The majority of works will be restricted to the footprint of the site for the proposed development with upgrades required to public road to construct the proposed site access junctions including toucan crossings as well as service connections . Excavated topsoil and subsoil will be reused in reinstatement and landscaping where appropriate or dealt with in the appropriate manner i.e. sent for soil recovery as appropriate.

10.11.2. Operational Phase

No reinstatement requirements have been identified in relation to the operational phase of the proposed development.

10.12. Interactions

The following summaries briefly outline the interaction between each factor discussed in this EIAR and transportation. Further reference should be made to Chapter 14 'Interactions and Cumulative Impacts' for a detailed account of potential interactions and resulting impacts.

10.12.1. Air Quality

Overall, the impact of the interaction between air quality and traffic is considered long-term, slight negative and not significant. Refer to the relevant chapters for additional information.

10.12.2. Noise and Vibration

The noise emission sources from the proposed development during the construction and operational phases will be from traffic. The noise impact assessment has been prepared in consultation with the design team and traffic engineers. Refer to the relevant chapters for additional information.

10.12.3. Population

Construction and operational stage traffic and traffic management measures have the potential to affect journey amenity or economic activity as a result of increased congestion or access restrictions.

The increased infrastructure for sustainable travel modes can contribute towards modal shift in travel patterns and increased physical activity. Employment and economic activity will be generated during the construction stage of the project. Refer to the relevant chapters for additional information.

10.12.4. Land and Soils

The volumes of surplus soils generated by the scheme and the earthworks import requirement will affect construction stage traffic generation. Measures to optimize design and minimize material generation are detailed in the relevant chapters.

10.12.5. Water and Hydrology

Construction and operational stage traffic have the potential to impact on water quality via hydrocarbon spills and leaks and via increased sediment/particle loading on trafficked surfaces. Measures to mitigate against impacts are detailed in Chapter 6.

10.12.6. Construction & Demolition Waste Management

It is important that construction and operational impacts in relation to issues that may arise along the local road network, in addition to increases in vehicle emissions and waste attributable to the proposed scheme, are addressed. Suitable mitigation measures aimed at reducing these impacts are identified below and further detailed in Chapter 11.

The principle of 'Duty of Care' in Waste Management Act 1996-2008 states that the waste producer is responsible for waste from the time it is generated through to its legal disposal (including its method of disposal). Waste materials generated by earthworks, demolition and construction activities will be managed according to the Department of the Environment, Heritage and Local Government's 2006 Publication – Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects.

Waste minimisation and prevention shall be the main responsibility of the Contractor who will ensure the following:

- Use of precast / prefabricated materials where possible;
- "Cut" materials generated by the construction works to be re-used onsite where possible, through various works resulting in a;
    - Reduction in the requirement for virgin aggregate materials from quarries;
    - Reduction in energy required to extract, process and transport virgin aggregates; and
    - Reduced HGV movements associated with the delivery of imported aggregates to the site.
- Materials will be ordered on a 'just in time' basis to prevent over supply and site congestion;
- Materials will be correctly stored and handled to minimise the generation of damaged materials;
- Materials will be ordered in appropriate sequence to minimise materials stored on site; and
- Sub-contractors will be responsible for similarly managing their wastes.

The minimisation and prevention of wastes will reduce the total number of HGVs accessing and egressing the site through the appointed haulage routes and thereby reduce the potential impact on the site's surrounding traffic network.

Construction and demolition waste will be managed in accordance with a Construction & Demolition Waste Management Plan which outlines the planning, prevention, management, duty of care and tracking of all construction and demolition waste.

Construction and demolition will be planned to identify and implement ways to prevent, reduce, reuse and recycle waste. Work will be planned with waste minimisation in mind.

10.12.7. Operational Waste Management

The typical non-hazardous and hazardous wastes that will be generated at the proposed development will include the following: Dry Mixed Recyclables (DMR), organic waste, glass and Mixed Non-Recyclable (MNR) / general waste. Wastes will be segregated into the above waste types to ensure compliance with waste legislation and guidance while maximising the re-use, recycling and recovery of waste with diversion from landfill wherever possible.

Waste storage and collection arrangements at the proposed development have been prepared with due consideration of the proposed site layout and location as well as best practice standards, local and national waste management requirements including those of DCC. In particular, consideration has been given to the following documents:

- BS 5906:2005 Waste Management in Buildings – Code of Practice;
- EMR Waste Management Plan 2015 – 2021;
- Meath County Development Plan (2021 – 2027) and
- DoHLGH, Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2020).

There are numerous private contractors that provide household and commercial waste collection in the Ashbourne area. All waste contractors servicing the proposed development must hold a valid waste collection permit for the specific waste types collected. All waste collected must be transported to registered, permitted and / or licensed facilities only.

It is recommended that waste collection times / days are staggered for the different waste types to reduce the number of bins required to be presented for collection / emptying at the collection points within and outside the site at any one time.

Waste will be presented for collection in a manner that will not endanger health, create a risk to traffic, harm the environment or create a nuisance through odours or litter.

10.13. Cumulative Impacts

The analysis detailed above represents an appraisal in terms of potential cumulative impacts for a typical weekday as it is focused upon the key two busiest periods of the day (e.g. AM and PM peak hours). During the other 22 hours of the day, traffic flows are predicted to be significantly lower resulting in the network operating with additional reserve capacity to that forecast for the peak hour periods.

Furthermore, if any of the adjacent zoned lands in the area were to be developed, aside from those included as a committed development, this would have an effect on the local road network. However, the scale of any potential impact would be fully assessed during the planning procedures for any of these individual third-party developments (which currently do not benefit from planning permission).

Nevertheless, the utilisation of TII's growth rates does take some account of the potential additional traffic that such third party sites could generate. The TII Project Appraisal Guidelines (PAG) have been utilised to determine the traffic growth forecast rates for the Dublin Metropolitan Area as outlined in Section 15.5.2.7 of this chapter. The

traffic growth forecast rates within the PAG ensures local and regional variations and demographic patterns are accounted for.

In reference to the findings of the network simulation and associated junction modelling analysis undertaken and detailed in the previous section, the proposed priority-controlled site access junctions will have sufficient reserve capacity to accommodate the associated future increases in additional traffic movements.

		Impact Without Mitigation					Mitigation Measures	Monitoring	Impact With Mitigation / Monitoring				
Likely Significant Effect	Extent	Quality	Significance	Duration	Type	Probability			Quality	Significance	Duration	Type	Probability
Congestion on the local road network as a result of HGVs during the Construction Stage.	Local	Negative	Significant	Short-Term	Direct	Likely	An appropriate control and routing strategy for HGVs and the phasing of construction vehicles throughout the day.	Compliance with construction vehicle routing practices.	Neutral	Slight	Short-Term	Direct	Un-Likely
Additional HGVs required due to improper storage, material damage or lack of reuse of construction materials.	Local	Negative	Moderate	Short-Term	Direct	Likely	Material storage zones will be in use as well as the conducting of regular inventory checks to ensure reuse of available material.	Compliance with construction waste management practices.	Neutral	Not Significant	Short-Term	Direct	Un-Likely

Table 10.31. Summary of Construction Phase Likely Significant Effects with and without out Mitigation / Monitoring.

		Impact Without Mitigation					Mitigation Measures	Monitoring	Impact With Mitigation / Monitoring				
Likely Significant Effect	Extent	Quality	Significance	Duration	Type	Probability			Quality	Significance	Duration	Type	Probability
An increase in traffic flow causes capacity issues at local junctions	Local	Negative	Significant	Medium-term	Direct	Un-Likely	A detailed parking management strategy and MMP have outlined the various methods with which private car ownership will be deterred and sustainable transport options promoted.	Bi-annual occupancy surveys as part of the MMP process will be conducted to determine efficacy of measures and to further encourage a modal shift.	Neutral	Slight	Medium-term	Direct	Un-Likely

Table 10.32. Summary of Operational Phase Likely Significant Effects with and without out Mitigation / Monitoring.

10.14. 'Do Nothing' Impacts

The construction works areas will be reinstated following completion of development with landscaped areas provided where proposed. The majority of works will be restricted to the footprint of the site for the proposed development with upgrades required to public road to construct the proposed site access junctions including toucan crossings as well as service connections . Excavated topsoil and subsoil will be reused in reinstatement and landscaping where appropriate or dealt with in the appropriate manner i.e. sent for soil recovery as appropriate.

In the absence of the proposed development, the overall operational performance of the existing junctions on the surrounding road network will be impacted by the forecast background network traffic growth (should that growth arise) and the following potential future primary school.

Primary school catering for 500 students, with 30 staff members and 16 classrooms.

10.15. Difficulties Encountered in Compiling the Chapter

There were no material difficulties encountered in compiling and assessing the data for this EIAR sufficient to prevent modelling of the likely transport effects of the proposed development. The analysis reported within this chapter is based upon the traffic survey data specifically commissioned for this appraisal and undertaken in September 2020 and in November 2021. Due to the Covid-19 pandemic, traffic surveys were repeated to prepare a more robust and realistic traffic model.

10.16. Conclusion

The purpose of this EIAR chapter was to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of transport impact generated as a result of the construction and operational phases of the proposed residential development.

It is concluded that there are no traffic or transportation related reasons that should prevent the granting of planning permission for the proposed residential development.

10.17. References

- 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment' (Department of Housing, Planning & Local Government, 2018);
- 'Guidance on the preparation of the Environmental Impact Assessment Report' (European Commission, 2017);
- 'Guidelines on the information to be contained in Environmental Impact Statements' (EPA, 2002);
- 'Draft Advice Notes for Preparing Environmental Impact Statements' (EPA, 2015);
- 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, 2022);
- Transport Infrastructure Ireland's (TII's) 'Traffic & Transport Assessment Guidelines' (2014);
- 'Guidelines for the Environmental Assessment of Road Traffic' (Institute of Environmental Management & Assessment, 2003);
- 'The Meath County Development Plan (2021 – 2027' (MCC, 2021);
- 'Transport Strategy for the Greater Dublin Area 2016 – 2035' (NTA, 2016);
- 'Draft Transport Strategy for the Greater Dublin Area 2022-2042' (NTA, 2022)
- 'Design Manual for Urban Roads and Streets' (DTTAS & DHPLG, 2013); and
- 'National Cycle Manual' (NTA, 2011).
- Bus Connects website (www.busconnects.ie);
- Traffic Signs Manual 'Chapter 8 Temporary Traffic Measures and Signs for Roadworks', Department of Transport;

- 'Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition' (Department of Transport, 2010);
- Transport For Ireland website (www.transportforireland.ie);
- 'Greater Dublin Area Cycle Network Plan' (National Transport Authority, 2013);
- Ordnance Survey Ireland (www.osi.ie);
- 'Guidelines for Traffic Impact Assessments', (The Institution of Highways and Transportation, 1994);
- Transport Infrastructure Ireland (www.tii.ie).

11.0. Material Assets: Resource & Waste Management

11.1. Introduction

This chapter of the EIAR evaluates the impacts, if any, which the proposed development may have on Material Assets as defined in Directive 2014/52/EU, the EPA EIA Report Guidelines 2022 and EPA Draft Advice Notes for EIS 2015.

This chapter has also been prepared to address the issues associated with material assets during the construction and operational phases of the proposed development as described in Chapter 2 of this EIAR.

This chapter of the EIAR was completed by Niamh Kelly and Chonaill Bradley. Chonaill Bradley is a Principal Environmental Consultant in the Environment Team at AWN. He holds a BSc in Environmental Science. He is an Associate Member of the Institute of Waste Management (CIWM). Chonaill has over seven years' experience in the environmental consultancy sector. Niamh Kelly is an environmental consultant in the waste management section of AWN Consulting Ltd. She holds an MSc. in International Disaster Management from the University of Manchester, and a B.A. in Earth Sciences from Trinity College Dublin. She has prepared the Waste Management EIAR chapter for various developments including residential and commercial.

A site-specific Resource Waste Management Plan (RWMP) has been prepared by AWN Consulting Ltd to deal with waste generation during the demolition, excavation and construction phases of the proposed development and has been included as Appendix 11.1. The RWMP was prepared in accordance with the Environmental Protection Agency's (EPA) document 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and 'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects' document produced by the National Construction and Demolition Waste Council (NCDWC) in conjunction with the Department of the Environment, Heritage and Local Government (DoEHLG)(2006).

A separate Operational Waste Management Plan (OWMP) has also been prepared for the operational phase of the proposed development and is included in Appendix 11.2 of this chapter.

The chapter of the EIAR has been prepared in accordance with European Commissions Guidelines, Guidance on the preparation of the Environmental Impact Assessment Report (2017), the EPA Guidelines on the Information to be contained in EIAR (2022) and the EU Commission Notice on changes and extensions to projects, 2021.

These documents will ensure the management of wastes arising at the development site in accordance with legislative requirements and best practice standards.

11.2. Assessment Methodology

The assessment of the impacts of the proposed development, arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management; including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

This chapter of the EIAR is based on the proposed development, as described in Chapter 2 (Description of Project and Alternatives) and considers the following aspects:

- Legislative context;
- Construction phase (including demolition, site preparation and excavation);

- Operational phase; and
- Decommissioning Phase

A desktop study was carried out which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the Construction and Operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction and operational phases of the proposed development have been calculated and are included in Section 11.4 of this chapter. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and National Waste Statistics and data recorded from similar previous developments.

Mitigation measures are proposed to minimise the effect of the proposed development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal. This information is presented in Section 11.6 of this chapter.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 5 of this EIAR (Land, Soils & Geology).

11.2.1. Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation and control, which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended). European and national waste management policy is based on the concept of 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (Figure 11.1).

Figure 11.1. Waste Hierarchy (Source: European Commission).

EU and Irish National waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products. (Figure 11.2).

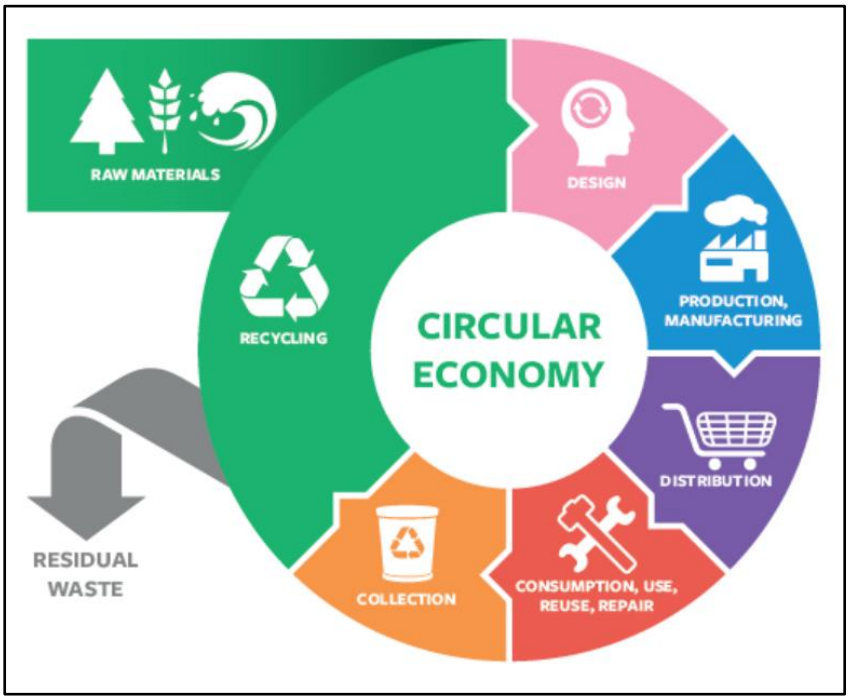


Figure 11.2. Circular Economy (Source: Repak).

The Irish government issues policy documents which outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document, Waste Action Plan for a Circular Economy – *Waste Management Policy in Ireland, was published in 2020* and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan*, A Resource Opportunity, in 2012.*

One of the first actions to be taken from the WAPCE was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, using Less' (2021) to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021). The guidance documents, Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects and Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers (FÁS & Construction Industry Federation, 2002), were also consulted in the preparation of this assessment.

There are currently no Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including the *Eastern Midlands Regional (EMR) Waste Management Plan 2015 – 2021*, *BS 5906:2005 Waste Management in Buildings – Code of Practice*, the Meath County Council (MCC) Waste Management (Segregation, Storage & Presentation of Household and Commercial Waste) Bye-Laws (2018), the EPA National Waste Database Reports 1998 – 2019 and the EPA National Waste Statistics Web Resource.

11.2.2. Terminology

Note that the terminology used herein is consistent with the definitions set out in Article 3 of the Waste Framework Directive. Key terms are defined as follows:

Waste - Any substance or object which the holder discards or intends or is required to discard.

Prevention - Measures taken before a substance, material or product has become waste, that reduce:

a) the quantity of waste, including through the re-use of products or the extension of the life span of products;
b) the adverse impacts of the generated waste on the environment and human health; or
c) the content of harmful substances in materials and products.

Reuse - Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Preparing for Reuse - Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.

Treatment - Recovery or disposal operations, including preparation prior to recovery or disposal.

Recovery - Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Waste Framework Directive sets out a non-exhaustive list of recovery operations.

Recycling - Any recovery operation by which waste materials are reprocessed into products, materials or

substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Disposal - Any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I of the Waste Framework Directive sets out a non-exhaustive list of disposal operations.

11.3. Receiving Environment

In terms of waste management, the receiving environment is largely defined by MCC as the local authority responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the EMR Waste Management Plan 2015-2021 (currently under review to be replaced in 2022) and the Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland.

The waste management plans set out the following targets for waste management in the region:

- A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 55% of managed municipal waste by 2025; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Plan sets out the strategic targets for waste management in the region and sets a specific target for Construction & Demolition (C&D) waste of "70% preparing for reuse, recycling and other recovery of construction and demolition waste" (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

Ireland achieved 84 per cent material recovery of such waste in 2019, and therefore surpassed the 2020 target and is currently surpassing the 2025 target. The National Waste Statistics update published by the EPA in November 2021 identifies that Ireland's current against "Preparing for reuse and recycling of 50% by weight of household derived paper, metal, plastic & glass (includes metal and plastic estimates from household WEEE)" was met for 2020 at 51% however they are currently not in line with the 2025 target (55%).

The Meath County Development Plan 2021 – 2027 (2021) set out objectives and policies for the MCC area which reflect those sets out in the regional waste management plan.

In terms of physical waste infrastructure, MCC no longer operates any municipal waste landfill in the area. There are a number of waste permitted and licensed facilities located in the EMR Waste Region and Ireland for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, municipal waste landfills, material recovery facilities and waste transfer stations.

However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability.

11.4. Characteristics of the Proposed Development

The proposed development will consist of 702 no. dwellings, comprised of 420 no. houses, 38 no. duplex units and 244 no. apartments, The proposed development also provides for the following uses: 2 no. creches 4 no. retail units, and a GP practice / medical use unit. The proposed development site is located to the west of the R135 Dublin Road, south of existing housing at Alderbrook Rise, Alderbrook Downs & Alderbrook Heath, east of existing housing at Tara Close & Tara Court, south of Cherry Lane and west of Hickey's Lane.

A full description of the proposed development can be found in Chapter 2 of this EIAR (Description of the Project & Alternatives). The characteristics of the proposed development that are relevant in terms of waste management are summarised below.

11.4.1. Demolition Phase

There will be waste materials generated from the demolition of some of the existing building 4 and hardstanding areas on site to accommodate the extension connection.

Further detail on the waste materials likely to be generated during the demolition works are presented in the project-specific RWMP in Appendix 11.1. The RWMP provides an estimate of the main waste types likely to be generated during the construction and demolition phase of the proposed development. The reuse, recycling / recovery and disposal rates have been estimated using the EPA National Waste Reports and the developments targeted recycling and reuse rates and these are summarised in Table 11.1.

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	25.9	0	0.0	85	22.0	15	3.9
Concrete, Bricks, Tiles, Ceramics	146.9	30	44.1	65	95.5	5	7.3
Plasterboard	11.5	30	3.5	60	6.9	10	1.2
Asphalts	2.9	0	0.0	25	0.7	75	2.2
Metals	43.2	5	2.2	80	34.6	15	6.5
Slate	23.0	0	0.0	85	19.6	15	3.5
Timber	34.6	10	3.5	60	20.7	30	10.4
Asbestos	0.2	0	0.0	0	0.0	100	0.2
Total	**288.2**		**53.1**		**200.0**		**35.1**

Table 11.1. Estimated off-site Reuse, Recycle and Disposal Rates for Demolition Waste.

11.4.2. Construction Phase

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The appointed Contractor will be contractually required to ensure that oversupply

of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

There will be soil, stones made ground excavated to facilitate construction of new foundations and the installation of underground services. The development Engineers (DBFL) have estimated that 75,000m^3 of material will need to be excavated to do so. It is currently envisaged that 60,000m^3 of the material will be able to be retained and reused onsite. The remaining material will need to be removed offsite due to the limited opportunities for reuse on site. This will be taken for appropriate offsite reuse, recovery, recycling and / or disposal.

If any material that requires removal from the site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under Article 27 classification (European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011). For more information in relation to the envisaged management of by-products, refer to the RWMP (Appendix 11.1).

In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2019). Environmental soil analysis will be carried out prior to removal of the material on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste, including potential pollutant concentrations and leachability. It is likely that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment / recovery or exported abroad for disposal in suitable facilities.

Waste will also be generated from construction phase workers e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and, potentially, sewage sludge from temporary welfare facilities provided on-site during the Construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific RWMP (Appendix 11.1). The RWMP provides an estimate of the main waste types likely to be generated during the Construction phase of the proposed development. These are summarised in Table 11.2.

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	1669.6	10	167.0	80	1335.7	10	167.0
Timber	1416.6	40	566.6	55	779.1	5	70.8
Plasterboard	505.9	30	151.8	60	303.6	10	50.6
Metals	404.7	5	20.2	90	364.3	5	20.2
Concrete	303.6	30	91.1	65	197.3	5	15.2
Other	758.9	20	151.8	60	455.3	20	151.8
Total	5059.3		1148.5		3435.3		475.6

Table 11.2. Predicted on and off-site reuse, recycle and disposal rates for construction waste.

11.4.3. Operational Phase

An OWMP has been prepared for the proposed project and is included in Appendix 11.2. The OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the development during the operation phase, including dry mixed recyclables, organic waste and mixed non-recyclable waste as well as providing a strategy for the management of waste glass, batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil and furniture.

The total estimated waste generation for the proposed project for the main waste types based on the AWN Waste Generation Model (WGM) is presented in Tables 11.3 below and is based on the uses and areas as advised by the project architects. Further unit breakdowns can be found in Appendix 11.2.

Waste type	Waste Volume (m^3/week)	
	Residential Waste (Combined)	Commercial Waste (Combined)
Organics	13.31	0.50
DMR	94.30	6.60
Glass	2.57	0.17
MNR	49.59	4.87
Confidential Paper	-	0.18
Medical Waste	-	0.14
Total	**159.77**	**11.40**

Table 11.3. Waste Generation During Operational Phase.

The residents, retail tenants, creche tenants and medical unit tenants will be required to provide and maintain appropriate waste receptacles within their units to facilitate segregation at source of these waste types. The location of bins within the units will be at the discretion of the residents, commercial tenants, creche tenants and hotel operator. As required, the residents and commercial tenants will need to bring these segregated wastes from their units to their allocated Waste Storage Areas (WSAs).

The OWMP seeks to ensure the proposed project contributes to the targets outlined in the 'EMR Waste Management Plan 2015-2021' and the MCC Waste Bye-Laws.

Mitigation measures proposed to manage impacts arising from wastes generated during the operational phase of the development are summarised in Section 11.6.

11.5. Potential Impacts of the Proposed Development

This section details the potential waste effects associated with the proposed development.

11.5.1. Construction Phase

The proposed development will generate a range of non-hazardous and hazardous waste materials during site demolition, excavation and construction (see appendix 11.1 for further detail). General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by construction employees, including food waste. Waste materials will be required to be temporarily stored in the construction site compound or adjacent to it, on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be *short-term, significant* and *negative.*

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be *Long-term, significant* and *negative.*

Wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. There are numerous licensed waste facilities in the EMR which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the Development Site would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local and regional environment is likely to be *short-term, significant* and *negative.*

There is a quantity of excavated material which will need to be excavated to facilitate the proposed development. A detailed review of the existing ground conditions on a regional, local site-specific scale are presented in Chapter 5. It is anticipated that c. 15,000 m^3 of excavated material will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of mitigation, the effect on the local and regional environment is likely to be *short-term, significant* and *negative.*

11.5.2. Operational Phase

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. In the absence of mitigation, the effect on the local and regional environment is likely to be long-term, significant and negative.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The knock-on effect of litter issues is the presence of vermin in affected areas. However, in the absence of mitigation, the effect on the local and regional environment is likely to be short-term, significant and negative.

It is anticipated that Waste contractors will be required to service the proposed development on a scheduled basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local and regional environment is likely to be long-term, significant and negative.

11.5.3. Do Nothing Scenario

If the proposed development was not to go ahead (i.e. in the Do-Nothing scenario) there would be no demolition, excavation or construction at this site. Current or operational waste would continue to be generated at the same levels. There would, therefore, be a neutral effect on the environment in terms of waste.

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

11.6. Remedial and Mitigation Measures

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

The concept of the 'waste hierarchy' is employed when considering all mitigation measures. The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal.

11.6.1. Construction Phase

The following mitigation measures will be implemented during the construction phase of the proposed development:

As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of The EPA, *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for*

Construction & Demolition Projects' (2021) and is included as Appendix 11.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 11.1) in agreement with MCC and in compliance with any planning conditions, or submit an addendum to the RWMP to MCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases.

A quantity of topsoil and sub soil will need to be excavated to facilitate the proposed development. The Project Engineers have estimated that 15,000m^3 of excavated material will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented:

- Building materials will be chosen to 'design out waste';
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
    - Concrete rubble (including ceramics, tiles and bricks);
    - Plasterboard;
    - Metals;
    - Glass; and
    - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal);
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, and the EMR Waste Management Plan 2015 – 2021. It

will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

11.6.2. Operational Phase

As previously stated, a project specific OWMP has been prepared and is included in Appendix 11.2. The mitigation measures outlined in the OWMP will be implemented in full and form part of mitigation strategy for the site.

- The Operator/Facilities Management of the site during the operational phases will be responsible for ensuring – allocating personnel and resources as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery at the site of the proposed development.

In addition, the following mitigation measures will be implemented:

- The Operator/Facilities Management will ensure on-site segregation of all waste materials into appropriate categories, including (but not limited to):
  - Organic waste;
  - Dry Mixed Recyclables;
  - Mixed Non-Recyclable Waste;
  - Glass;
  - Waste electrical and electronic equipment (WEEE);
  - Batteries (non-hazardous and hazardous);
  - Cooking oil;
  - Light bulbs;
  - Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.);
  - Furniture (and from time-to-time other bulky waste); and
  - Abandoned bicycles
  -
- The Operator/Facilities Management will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials;
- The Operator/Facilities Management will ensure that all waste collected from the Site of the proposed Development will be reused, recycled, or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and
- The Operator/Facilities Management will ensure that all waste leaving the Site will be transported by suitable permitted contractors and taken to suitably registered, permitted, or licensed facilities.

These mitigation measures will ensure the waste arising from the proposed development during the operational phase is dealt with in compliance with the provisions of the Waste Management Act 1996 as amended, associated regulations, the Litter Pollution Act 1997, the EMR Waste Management Plan 2015 – 2021 and the MCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

11.7. Residual Impacts of the Proposed Development

The implementation of the mitigation measures outlined in Section 11.5 will ensure that targeted rates of reuse, recovery and recycling are achieved at the site of the Proposed Development during the construction and operational phases. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

11.7.1. Construction Phase

A carefully planned approach to waste management as set out in Section 11.6.1 and adherence to the RWMP (which includes mitigation) (Appendix 11.1) during the construction phase will ensure that the predicted effect on the environment will be ***short-term*, *imperceptible* and *neutral*.**

11.7.2. Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 11.6.2 will promote resource efficiency and waste minimisation. When the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be ***long-term, imperceptible and neutral.***

11.7.3. Conclusion

Assuming the full and proper implementation of the mitigation measures set out herein and, in the RWMP (Appendix 11.1), no likely significant negative effects are predicted to occur as a result of the construction or operational of the proposed development.

11.8. Cumulative Impact Assessment

As has been identified in the receiving environment section all cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

11.8.1. Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase.

Due to the high number of waste contractors in the Meath region as provided from the National Waste Collection Permit Office and the Environmental Protection Agency there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all the developments.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the effect will be **short-term, imperceptible and neutral**.

11.8.2. Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area, and the indicative future masterplan development, will be required to manage

waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such the effect will be a **long-term, imperceptible** and **neutral**.

11.9. Monitoring

As has been identified in the receiving environment section all cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

11.9.1. Construction Phase

The management of waste during the construction phase should be monitored to ensure compliance with relevant local authority requirements, and effective implementation of the RWMP including maintenance of waste documentation. The management of waste during the operational phase should be monitored to ensure effective implementation of the OWMP by the facilities management company and the nominated waste contractor(s).

11.9.2. Operational Phase

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction phases where there is a potential for waste management to become secondary to progress and meeting construction schedule targets. The mitigation measures in the RWMP specifies the need for a waste manager to be appointed who will have responsibility to monitor the actual waste volumes being generated and to ensure that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the waste manager should will identify the reasons for targets not being achieved and work to resolve any issues. Recording of waste generation during the project will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future projects

11.10. Reinstatement

The proposed development may be decommissioned at some stage in the future. At that time, a demolition or refurbishment plan will be formulated for the decommissioning phase of the proposed development to ensure no waste nuisance occurs at nearby sensitive receptors.

11.11. Difficulties Encountered in Compiling the Chapter

Until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

There is a number of licensed, permitted and registered waste facilities in the Meath and EMR regions and across Ireland and Northern Ireland. However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability. The waste facilities selected will ultimately be selected to minimise the environmental impacts on the surrounding environment.

11.12. Interactions

11.12.1. Land, Soil & Geology

During the construction phase, excavated soil, stone and made ground (c. 75,000m3) will be generated from the excavations required to facilitate site levelling, construction of the basement and construction of new foundations. It is estimated that c. 15,000m3 of excavated material will need to be removed off-site. Where material has to be taken off-site it will be taken for reuse or recovery, where practical, with disposal of last resort. Adherence to the mitigation measures in Chapter 5, 11 and the requirements of the RWMP will ensure the effect is **long-term, imperceptible and neutral.**

11.12.2. Material Assets: Transportation

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the proposed project. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movements will be imperceptible in the context of the overall traffic and transportation increase and has been addressed in Chapter 10 (Material Assets: Transportation). Provided the mitigation measures detailed in Chapter 10, 11 and the requirements of the OWMP (included as Appendix 11.2) are adhered to, the effects should be short to long-term, imperceptible and neutral.

11.12.3. Population & Human Health

The potential impacts on human beings in relation to the generation of waste during the construction and operational phases are that the incorrect management of waste could result in littering which could cause a nuisance to the public and attract vermin. A carefully planned approach to waste management and adherence to the project specific RWMP and OWMP will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be **long-term, imperceptible and neutral.**

11.13. Conclusion

This chapter has reviewed and analysed the potential and the predicted the impact of the proposed development with regards to waste management. These impacts have been considered for both the construction and operational phases of the Proposed Development. The cumulative impact of the proposed development and surrounding developments have also been considered.

Provided all mitigation measures as set out in this chapter and the attached RWMP, the overall predicted impact of the proposed development is **long-term, imperceptible** and **neutral**.

11.14. References

- Waste Management Act 1996 - 2021 (No. 10 of 1996) as amended.
- Protection of the Environment Act 2003, (No. 27 of 2003) as amended.
- Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended
- Eastern Midlands Region Waste Management Plan 2015 – 2021 (2015).
- Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
- European Commission, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017).

- Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022)
- Forum for the Construction Industry – Recycling of Construction and Demolition Waste.
- Department of Communications, Climate Action and Environment (DCCAE), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (Sept 2020).
- DCCAE, *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less'* (2021)
- Environmental Protection Agency (EPA) *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)*
- Department of Environment, Heritage and Local Government, *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).
- FÁS and the Construction Industry Federation (CIF), Construction and Demolition Waste Management – a handbook for Contractors and site Managers (2002).
- Meath County Council (MCC), Meath County Development Plan 2021-2027 (2021)
- Meath County Council (MCC) 'Waste Management (Segregation, Storage and Presentation of Household & Commercial Waste Bye-Laws' (2018).
- BS 5906:2005 Waste Management in Buildings – Code of Practice
- Planning and Development Act 2000 (No. 30 of 2000) as amended
- Environmental Protection Agency (EPA), Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2015)
- Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
- EPA, *European Waste Catalogue and Hazardous Waste List* (2002)
- EPA, National Waste Database Reports 1998 – 2019.
- US EPA, *Characterisation of Building Uses* (1998);
- EPA and Galway-Mayo Institute of Technology (GMIT), EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned (2015)

12.0. Cultural Heritage (Archaeological & Architectural)

12.1. Introduction

This chapter of the EIAR has been prepared by Jordan Hanson, BA, MA of Archaeology Plan and assesses the potential environmental effects on cultural heritage resulting from a strategic housing development in Ashbourne, Co. Meath.

The focus of this chapter of the EIAR is placed on the archaeological and architectural heritage of the development's planning boundary and immediate vicinity, hereafter referred to as the Study Area. Both components of cultural heritage have been assessed and outlined in detail, with any effects arising from the proposed development appraised. Relevant and targeted mitigation measures aimed at avoiding, reducing, or remedying any potential impacts have also been recommended.

The proposed development will be situated in the townlands of Baltrasna and Milltown, located immediately south of Ashbourne town. The subject site is located west of the R135 Dublin Road, and south of the residential housing at Alderbrook Rise, Alderbrook Downs, and Alderbrook Heath. The subject site is also east of existing housing at Tara Close and Tara Court, and south of Cherry Lane and west of Hickey's Lane.

12.2. Assessment Methodology

The data gathered for this assessment was acquired during two phases of investigation. The initial research phase consisted of a paper survey of historical, archaeological, architectural, cartographic, and aerial records pertaining to the Study Area. A field inspection of the Study Area was conducted during this phase to understand the conditions and topography of the planning boundary. The second phase of investigation consisted of archaeological test-trenching, which was carried out in August 2022.

12.2.1. Legislation and Guidance

Consideration has been given to the following legislative documents regarding cultural heritage and planning in Ireland:

- National Monuments Act 1930 to 2014
- The Planning and Development Acts 2000 to 2021
- Planning & Development Regulations 2001–2022
- Heritage Act, 1995, as amended
- Heritage Act 2018
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht and Islands
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999

This chapter of the EIAR document has been prepared with reference to the specific criteria set out in the EIA Directive (2011/92/EU) as amended by Directive 2014/52/EU. Furthermore, the Environmental Protection Agency's *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA 2022) has been consulted to best describe potential environmental impacts or effects.

12.2.2. Effect Assessment Criteria

This assessment describes various potential effects on cultural heritage utilising the definitions set out on page 50 of the Environmental Protection Agency's 2022 guidelines, summarised below in Table 12.1. The quality, significance, and duration of any impact or effect incurred on archaeological and architectural heritage is described using these criteria.

Description of Effects based on EPA (2022) Guidelines	
Quality of Effect	Positive Effects: A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
	Neutral Effects: No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative/Adverse Effects: A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance).
Significance of Effect	Imperceptible: An effect capable of measurement but without significant consequences
	Not Significant: An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight 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 effect which obliterates sensitive characteristics.
Duration of Effect	Momentary Effects: Effects lasting from seconds to minutes.
	Brief Effects: Effects lasting less than a day.
	Temporary Effects: Effects lasting less than a year.
	Short-term Effects: Effects lasting one to seven years.
	Medium-term Effects: Effects lasting seven to fifteen years.
	Long-term Effects: Effects lasting fifteen to sixty years.
	Permanent Effects: Effects lasting over sixty years.
	Reversible Effects: Effects that can be undone, for example, through remediation or restoration.

Table 02.1. Description terminology for potential effects (after EPA 2022, 50).

12.2.3. The Study Area

For the purpose of this EIAR chapter the Study Area describes the area of the developmental planning boundary, and includes the surrounding area extending 1000 metres from that planning boundary.

12.2.4. Baseline Survey of the Study Area

A paper survey was conducted for this assessment, and the following sources were used as research material:

- Record of Monuments and Places (RMP)
- Record of Protected Structures (RPS)

- National Inventory of Architectural Heritage (NIAH)
- Meath Industrial Heritage Survey (MIHS)
- Excavation Bulletin (1970–2022)
- Topographical Files of the National Museum of Ireland
- Cartographic sources pertaining to the Study Area
- Aerial Imagery

Record of Monuments and Places (RMP)

The proximity of the Study Area to known and identifiable archaeological monuments and sites has been considered. This has been facilitated through the utilisation of the Archaeological Constraint Maps, in conjunction with the County Record of Monuments and Places. Any sites or monuments recorded on the RMP are afforded statutory protection, under the National Monuments Act.

The Record of Monuments and Places (RMP) comprise the following elements: (i) Letter or Letters indicating County (ME=Meath); (ii) A three-digit number indicating the relevant Ordnance Survey Sheet Number (e.g. 045); (iii) A three, four or five digit number indicating the dedicated number of the individual site or monument.

The data utilised for this chapter were sourced from the online records of the RMP (www.archaeology.ie) and the paper files held by the National Monuments Service (NMS).

Record of Protected Structures (RPS)

The proximity of known Protected Structures in relation to the Study Area has been considered. Any structure deemed to be of particular interest by a local authority (architectural, historical, archaeological, artistic, cultural, scientific etc.) can be added to the Record of Protected Structures (RPS). This status can afford any Protected Structure a protective safeguard under the Planning and Developments Acts 2000–2021, with the overall aim of conserving the structural character of the entity,
The Record of Protected Structures data has been sourced and utilised from the *Meath County Development Plan 2021–2027*.

National Inventory of Architectural Heritage (NIAH)

The proximity of known buildings and structures listed in the National Inventory of Architectural Heritage (NIAH) has been considered in relation to the Study Area. This list comprises a record of significant structures, evaluated in terms local, regional, national and international significance. The inclusion of buildings or structures on the NIAH register does not afford statutory protection.
The data relating to NIAH buildings and structures was accessed using www.buildingsofireland.ie.

Meath Industrial Heritage Survey (MIHS)

The inventory of the Meath Industrial Heritage Survey (MIHS) was consulted to identify any nearby listed sites and structures associated with industrial heritage.
The data relating to MIHS for Ashbourne was accessed using www.meath.ie.

Excavations Bulletin (1970–2022)

Archaeological investigations have previously taken place nearby to the Study Area. These programmes have taken place within the wider Ashbourne area as well as along the routeway of the M2 motorway. An analysis of these investigations was undertaken to measure the extent and nature of archaeological features encountered in the local area during these programmes.

The data utilised for the archaeological excavations nearby was sourced from the Excavations Bulletin (ed. Isabel Bennett) published on at www.excavations.ie.

Topographical Files of the National Museum of Ireland

The files held in the National Museum of Ireland have been consulted, in relation to the Study Area and surrounding locale. Collectively known as the Topographical Files, they provide information on artefacts, their find spots, and any field monuments that have been notified to the National Museum.

Folklore and Traditions

Folklore, traditions, and oral history are a non-tangible heritage assets that are included as components of Cultural Heritage. These heritage assets can often provide valuable qualitative historical data. They can offer insight into and support the archaeological record.
The folklore records for the Study Area were accessed at www.duchas.ie.

Cartographic sources pertaining to the Study Area

Historic maps and cartographic resources showing the Study Area and general environs were consulted and examined during the preparation of this chapter.
The cartographic resources used were:

- Down Survey Maps (1655–1656): Barony Map of Ratoath, Paris Map of Ratoath
- 6-inch Ordnance Survey Map (1829–1842)
- The Primary Valuation of Ireland (1847–1864)
- 25-inch Ordnance Survey Map (1897–1912)

Aerial Imagery

Aerial photographs sourced from Google Earth (www.earth.google.com) were analysed for this study to assess land-use and environmental changes to the Study Area. The aerial imagery for the following years were examined:

- 2008
- 2013
- 2017
- 2019
- 2022

Meath County Development Plan 2021–2027

The regional development plan for County Meath has been consulted, in order to assess the current policies and framework in place in relation to Cultural Heritage. This policy was access online at www.consult.meath.ie.

12.2.5. Definitions and Abbreviations Used

Archaeological Heritage

Archaeological Heritage is a component of cultural heritage, and is a finite non-renewable resource. Archaeology describes the study of the past, and is conducted through the analysis and examination of material cultural remains.

Human-made entities such as buildings, monuments, structures, artefacts, features, and landscapes can all be classed as material culture, and together form the basic components of archaeological heritage. As most archaeological remains lie at sub-surface levels (i.e. in the ground), developments which involve earth-moving or disturbance require appropriate mitigation measures to be in place to mitigate resulting negative effects.

Architectural Heritage

The architectural heritage of the Study Area has been detailed and assessed. Architectural heritage is a term primarily used to refer to human-made architectural features, buildings, and structures, rather than artefacts or archaeological features. However, there can be a great overlap between both architectural heritage and archaeological heritage, whereby an entity falls under both categories. Article 1 of the Convention for the Protection of the Architectural Heritage of Europe 1985 (Granada Convention) defines "architectural heritage" as:-

1. monuments: all buildings and structures of conspicuous historical, archaeological, artistic, scientific, social or technical interest, including their fixtures and fittings;
2. groups of buildings: homogeneous groups of urban or rural buildings conspicuous for their historical, archaeological, artistic, scientific, social or technical interest which are sufficiently coherent to form topographically definable units;
3. sites: the combined works of man and nature, being areas which are partially built upon and sufficiently distinctive and homogeneous to be topographically definable and are of conspicuous historical, archaeological, artistic, scientific, social or technical interest.

Industrial Heritage

In the Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes (ICOMOS 2011), the following definition is used to describe the characteristics of industrial heritage:-

"The industrial heritage consists of sites, structures, complexes, areas and landscapes as well as the related machinery, objects or documents that provide evidence of past or ongoing industrial processes of production, the extraction of raw materials, their transformation into goods, and the related energy and transport infrastructures" (ICOMOS 2011, The Dublin Principles, 1).

Abbreviations used

- AFM – Annals of the Four Masters
- AU – Annals of Ulster
- CS – Chronicon Scottorum
- DoEHLG – (former) Department of the Environment, Heritage and Local Government
- ICOMOS – The International Council on Monuments and Sites
- LAP - Local Area Plan
- MCDP - Meath County Development Plan
- MIHS - Meath Industrial Heritage Survey
- NIAH - National Inventory of Architectural Heritage
- NMI - National Museum of Ireland
- NMS – National Monuments Service
- OS - Ordnance Survey
- RMP - Record of Monuments and Places
- RPS - Record of Protected Structures

12.2.6. Placename Analysis

The placenames of the surrounding locale were explored, in order to understand possible historical, cultural, or folkloristic links to the Study Area. The data used in this study derived from www.logainm.ie.

12.2.7. Field Inspection

A field inspection was undertaken within the planning boundary of the proposed development by a qualified archaeologist on Monday 25 January 2021, in order to aid documentary research.

12.3. Receiving Environment

The Study Area occupies the townlands of Baltrasna and Milltown, in the Parishes of Ratoath and Donaghmore, respectively. These lands are sited within the Barony of Ratoath, south of Ashbourne town, and in the south-eastern lands of County Meath. The subject site is bounded by Cherry Lane to the north, with the Dublin Road, the Briars, and the Cherry Court residential estates bordering to the east. At the south-east there are houses near Hickey's Lane, with residential estates to the north-west, and farmland to the south and west. In total, the planning boundary occupies an area of 20.04 Ha

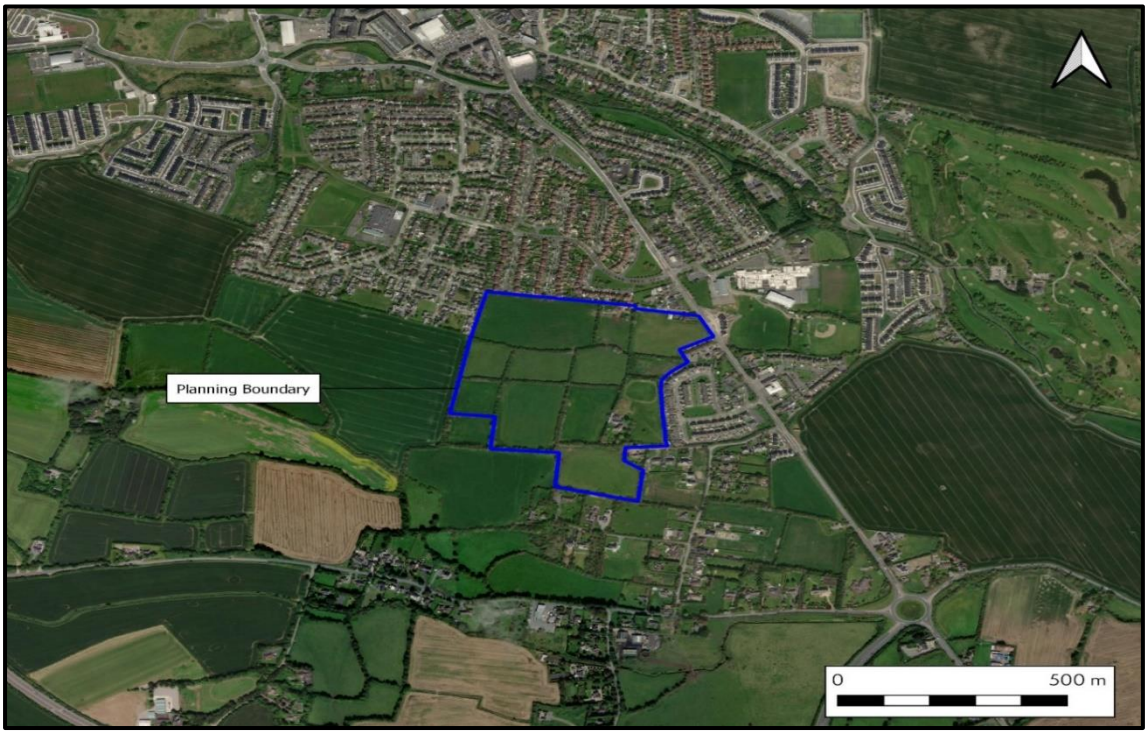


Figure 12.1. Location map showing the planning boundary of the Proposed Development (Google Earth).

The proposed development will consist of approximately 702 no. dwellings, comprised of

- 420 no. 2 & 3 storey, 2, 3, 4 & 5 bed houses
- 38 no. 2 & 3 bed duplex units in 19 no. blocks
- 244 no. 1, 2 & 3 bed apartments in 20 no. buildings

The proposed development also provides for the following uses:

- 2 no. creches accommodated
- 4 no. retail units
- GP practice / medical use unit

Access to the proposed developmend will be facilated through two routes:

- Cherry Lane to the north-east, off the R135 Dublin Road, via a new proposed internal access road
- Hickey's Lane to the east, off the R135 Dublin Road, including pedestrian and cycle paths

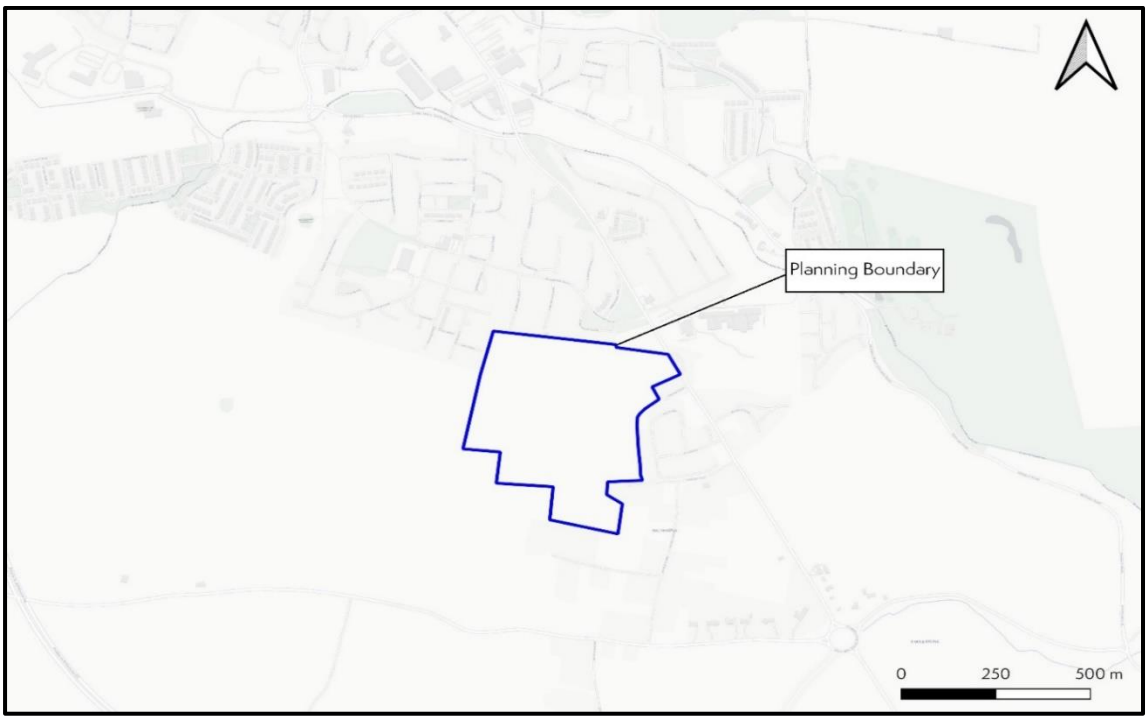


Figure 12.2. Location map showing the planning boundary of the Proposed Development (OSI).

The planning boundary of the proposed development comprises a collection of elevation fields of farmland, altogether forming a sub-rectangular footprint. A twelfth field (Field 11) was included in the initial assessment for the site but does not form part of the current proposed development. This field has an in situ residence, while three other residences occupy the northern border of the Study Area along Cherry Lane in Fields 2 and 3.

The Baltrasna-Milltown parish and townland boundary bisects the northern two-thirds of the Study Area and runs east-west. The lands north of this boundary are situated within the Milltown townland, and include Fields 1, 2, and 3. The lands to the south lie within the Baltrasna townland, and include Fields 4, 5, 6, 7, 8, 9, 10, 11, and 12.

The townland of Killegland is situated to the immediate west of the planning boundary. The proposed development's western border is marked by a contiguous north-south running boundary, comprised of the Killegland-Milltown parish and townland boundary in the north, and the Killegland-Baltrasna parish and townland boundary in the south.

Figure 12.3. Map of the planning boundary showing the numbered field system.

12.3.1. Planning Context in Relation to Cultural Heritage

12.3.1.1. Meath County Development Plan 2021-2027

Chapter 8 of the *Meath County Development Plan 2021–2027 (MCDP)* addresses issues relating to cultural heritage, whilst also setting out a range of relevant policies and objectives under relevant headings. This assessment has been drafted in cognisance of all of the stated policies and related objectives.

Archaeological Heritage

Section 8.6 of the MCDP is concerned with Archaeological Heritage, and sets out the following heritage policies and objectives (MCDP 2021):-

- **HER POL 1** To protect sites, monuments, places, areas or objects of the following categories
  - Sites and monuments included in the Sites and Monuments Record as maintained by the National Monuments Service of the Departments of Culture, Heritage and the Gaeltacht;
  - Monuments and places included in the Record of Monuments and Places as established under the National Monuments Acts;
  - Historic monuments and archaeological areas included in the Register of Historic Monuments as established under the National Monuments Acts;
  - National monuments subject to Preservation Orders under the National Monuments Acts and national monuments which are in the ownership or guardianship of the Minister for Culture, Heritage and the Gaeltacht or a local authority;

- Archaeological objects within the meaning of the National Monuments Acts; and Wrecks protected under the National Monuments Acts or otherwise included in the Shipwreck Inventory maintained by the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht.

- **HER POL 2** To protect all sites and features of archaeological interest discovered subsequent to the publication of the Record of Monument and Places, in situ (or at a minimum preservation by record) having regard to the advice and recommendations of the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht and The Framework and Principles for the Protection of the Archaeological Heritage (1999).
- **HER POL 3** To require, as part of the development management process, archaeological impact assessments, geophysical survey, test excavations or monitoring as appropriate, for development in the vicinity of monuments or in areas of archaeological potential. Where there are upstanding remains, a visual impact assessment may be required**.**
- **HER POL 4** To require, as part of the development management process, archaeological impact assessments, geophysical survey, test excavations or monitoring as appropriate, where development proposals involve ground clearance of more than half a hectare or for linear developments over one kilometre in length; or developments in proximity to areas with a density of known archaeological monuments and history of discovery as identified by a suitably qualified archaeologist.
- **HER POL 5** To seek guidance from the National Museum of Ireland where an unrecorded archaeological object is discovered, or the National Monuments Service in the case of an unrecorded archaeological site.
- **HER OBJ 1** To implement in partnership with the County Meath Heritage Forum, relevant stakeholders and the community the County Meath Heritage Plan and any revisions thereof.
- **HER OBJ 2** To ensure that development in the vicinity of a Recorded Monument or Zone of Archaeological Potential is sited and designed in a sensitive manner with a view to minimal detraction from the monument or its setting.
- **HER OBJ 3** To protect important archaeological landscapes from inappropriate development
- **HER OBJ 4** To encourage the management and maintenance of the County's archaeological heritage, including historic burial grounds 2, in accordance with best conservation practice that considers the impact of climate change.
- **HER OBJ 5** To promote awareness of, and encourage the provision of access to, the archaeological resources of the county.
- **HER OBJ 6** To work in partnership with key stakeholders to promote County Meath as a centre for cultural heritage education and learning through activities such as community excavation and field/summer schools.

Architectural Heritage

Section 8.7 of the MCDP is concerned with Architectural Heritage, and sets out the following relevant policies and objectives (MCDP 2021):-

- **HER POL 14** To protect and conserve the architectural heritage of the County and seek to prevent the demolition or inappropriate alteration of Protected Structures.
- **HER POL 15** To encourage the conservation of Protected Structures, and where appropriate, the adaptive re-use of existing buildings and sites in a manner compatible with their character and significance. In certain cases, land use zoning restrictions may be relaxed in order to secure the conservation of the protected structure.

- **HER POL 16** To protect the setting of Protected Structures and to refuse permission for development within the curtilage or adjacent to a protected structure which would adversely impact on the character and special interest of the structure, where appropriate.
- **HER POL 17** To require that all planning applications relating to Protected Structures contain the appropriate accompanying documentation in accordance with the Architectural Heritage Protection Guidelines for Planning Authorities (2011) or any variation thereof, to enable the proper assessment of the proposed works.
- **HER POL 18** To require that in the event of permission being granted for development within the curtilage of a protected structure, any works necessary for the survival of the structure and its re-use should be prioritised in the first phase of development.
- **HER OBJ 15** To review and update the Record of Protected Structures on an on-going basis and to make additions and deletions as appropriate.
- **HER OBJ 16** To identify and retain good examples of historic street furniture, e.g. cast-iron post boxes, water pumps, light fixtures and signage, as appropriate.
- **HER OBJ 17** To promote best conservation practice and encourage the use of appropriately qualified professional advisors, tradesmen and craftsmen, with recognised conservation expertise, for works to protected structures or historic buildings in an Architectural Conservation Area.
- **HER OBJ 18** To provide detailed guidance notes and continue to develop the Council's advisory/educational role with regard to heritage matters and to promote awareness, understanding and appreciation of the architectural heritage of the County.
- **HER OBJ 19** To commission a study over the lifetime of the Plan to assess the significance of the Mass Rocks and Holy Wells throughout County Meath.

Industrial Heritage

Section 8.7.4 of the MCDP is concerned with Industrial Heritage, and sets out the following relevant policies and objectives (MCDP 2021):-

- **HER POL 24** To encourage appropriate change of use and reuse of industrial heritage structures provided such a change does not seriously impact on the intrinsic character of the structure and that all works are carried out in accordance with best conservation practice, subject to compliance with normal planning criteria.
- **HER POL 25** To protect and enhance the built and natural heritage of the Royal Canal and Boyne Navigation and associated structures and to ensure, in as far as practically possible, that development which may impact on these structures and their setting be sensitively designed with regard to their character and setting. Development of the project will be subject to the outcome of the Appropriate Assessment process.
- **HER OBJ 26** To require an architectural / archaeological assessment, as appropriate, which references the Meath Industrial Heritage Survey and other relevant sources, for all proposed developments on industrial heritage structures or sites.
- **HER OBJ 27** To carry out Phase 2 of the Industrial Heritage Survey which will comprise a field survey and assessment of surviving structures and sites and consider (if appropriate) proposing them for addition to the Record of Protected Structures.

12.3.2. Placename Analysis

The placenames of the surrounding townlands comprising the Study Area are detailed below. The Irish translations and possible meanings were explored using www.logainm.ie.

Placename	Irish Equivalent	Meaning
Archerstown	*Baile an Áirséaraigh*	Town/townland/homestead of *Áirséaraigh*
Baltrasna	*An Baile Trasna*	Town/townland/homestead of the cross
Donaghmore	*Domhnach Mór*	Place of the great/big church
Harlockstown	*Baile Harlóg*	Town/townland/homestead of the Harlock
Milltown	*Baile an Mhuilinn*	Town/townland/homestead of the mill
Killegland	*Cill Dhéagláin*	Church of Declan
Ashbourne	N/A	Ashbourne

Table 12.2. Townland placenames of the Study Area.

12.3.3. Field Inspection

A field inspection was undertaken within the planning boundary of the Proposed Development by a qualified archaeologist on Monday 25 January 2021. The outdoor conditions were bright and frosty. In total, 10 of 12 fields were accessible and viewed on this date, with Fields 7 and 11 being inaccessible. Fields 1–6 were accessed via Cherry Lane to the north of the planning boundary, whilst Fields 8–10 were accessed via Hickey's Lane to the south-west.

Field 1

Figure 12.5. View of Field 1, facing NNW.

Field 1 was sub-rectangular in plan and used for pastural functions at this date. A gentle declining slope from the north running to south was noted. Flooding was present near the south-eastern corner of the field, before the point where the ground level rises. The northern and western boundaries were noted to be modern – the north being a concrete wall and the west a mixture of fencing of back gardens. The southern boundary comprised a deep ditch with a mature and overgrown hedge, and conformed to the alignment of the Baltrasna-Milltown townland boundary. The eastern boundary separates Field 1 from Field 2, and was comprised from a mature hedgerow with a shallow ditch. Modern gates provide access to Field 2 and Field 5.

Field 2

Figure 12.6. View of Field 2, facing E.

The north and north-west portions of this rectangular field were occupied by two bungalows and various small farmyard buildings, with the properties accessible at the end of Cherry Lane. The buildings were located on the most elevated part of the field that slopes gently down to the south. At the end of the slope, a low escarpment was noted, close to where the ground level rises towards the south. The escarpment appears deliberate, and was noted to be even and regular, and ran diagonally across the bottom of the field. An uneven patch of ground to the south of the escarpment with tall weeds was noted, but proved to be overgrown concrete rubble.

Access to Field 6 was noted at the bottom of the field, through a gap in the Baltrasna-Milltown townland boundary. A gate to Field 1 through the western hedge was also present. The boundary that divides Fields 2 and 3 was noted to be a mature overgrown hedgerow, with associated ditch visible. No access route between Fields 2 and 3 was found.

Field 3

Figure 12.7. View of Field 3, facing E.

This field was noted to have an uneven shape in plan, and its long tufted grass suggests that the field was not used agriculturally in recent times. Access was gained over a bank at the end of Cherry Lane, which appeared to be used locally based on visible tracks marks from field walkers. The field was noted to be gently undulating with the highest points to the south and west, with gentle declinations from those points. An east-west running low linear rise was noted towards the north of the field, in line with the rear of the properties situated on the south side of Cherry lane.

The hedgerow noted to the west borders Field 2. The southern boundary was noted to be comprised from a mature overgrown hedgerow to the west, and a concrete wall to the east. The eastern boundary was also a mature hedgerow, bordering along the R135. A gap in this hedge at the southeast corner was identified, which may have been used locally for access. The northern boundary was noted at the rear of a private property and Cherry Lane.

Field 4

Figure 12.8. View of Field 4 facing S.

Field 4 was found to be sub-square in plan, with mature hedgerows forming all four boundaries. The Baltrasna-Milltown boundary marked the northern limits. This field was utilised as pasture, with a gentle slope running from the west to the east. One access point was noted, comprised of a gap through the hedge near the north-east corner, leading to Field 5.

Field 5

Figure 12.9. View of Field 5 facing S.

Field 5 was sub-rectangular in plan, with a low ridge or hilltop sloping from the centre in all directions, except south-west. The southern boundary was found to be a mature hedge and bank, with the Baltrasna-Milltown boundary

marking the northern limits. A hedge and shallow ditch formed the eastern boundary, where stones were visible as a revetment on the eastern side of the ditch. The western boundary was noted to be comprised from a mature hedgerow and ditch. Gaps in this hedges allowed access to Fields 1, 4 and 6.

Field 6

Figure 12.10. View of Field 6 facing N.

Field 6 was sub-square in plan with slight undulations. The northern boundary was comprised from the Baltrasna-Milltown townland boundary. The southern boundary was noted to be comprised from a mature hedge and bank, with the addition of post and wire fencing. The eastern boundary was also formed by a bank with a mature hedgerow. Two access points were noted – one to the north leading into Field 2, and one to the west leading into Field 5.

Field 7

Field 7 could not be accessed.

Field 8

Figure 12.11. View of Field 8 facing N.

Field 8 was noted to be square in plan, and sloped gently from the east, north and north-west to the west and south-west. The ground at the west and south-west was found to be waterlogged. The pasture was surrounded by mature hedgerows on all four sides with three gaps in the eastern hedge, permitting access from Field 9.

Field 9

Figure 12.12. View of Field 9 facing N.

Field 9 was noted to have a rectangular shape in plan, with the highest point at the north. A gentle slope was noted running to the west, south, and east. Six access points to the field were noted, including three gaps in the western hedgerow into Field 8, and three gaps in the eastern hedgerow leading into Fields 10 and 12.

Field 10

Figure 12.13. View of Field 10 facing NW.

Field 10 was rectangular in plan with gentle undulations, but no prevailing slope. However, an area of waterlogged ground along the northern boundary was noted. The northern boundary was noted to be a mature hedgerow with a bank and shallow ditch. The western boundary possessed was a hedgerow possessing two gaps, which allowed access into Field 9. The southern boundary was also a mature hedgerow with an access point near the south-west corner leading into Field 12. The ground along the southern hedgerow in Field 10 was noted to be higher than that of Field 12 (on the other side of the boundary). The eastern boundary was a hedge of recently planted evergreens, with a post and wire fence.

Field 11

Access was not gained to Field 11.

Field 12

Figure 12.14. View of Field 12 facing SE.

Field 12 possessed an irregular shape in plan, with a modern private property occupying what would have been the north-east corner. A low natural mound was noted, roughly central in this field, with a gentle slope in all directions. The western side of the field was found to be waterlogged and flooded, mostly in a natural depression that stretched from the west to the north.

The eastern boundary was a mature hedgerow with a ditch, located a small distance from the northern hedges. The southern boundary was a mature hedgerow, noted to possess a deep recently cleared ditch. This hedge appeared very overgrown towards the west, and the ditch was no longer visible at this point. The western boundary was a mature hedgerow with a ditch. The northern boundary was a mature hedgerow and a revetted embankment in poor condition. The boundary surrounding the private property to the north-east was comprised of recently planted trees and shrubs.

Three access points were noted in this field. The main access was through a modern farm gate at the end of Hickey's Lane at the north-east corner. A gap through the western hedgerow near the north-west corner led into Field 9, and a gap in the north-west corner led through the northern boundary into Field 10.

12.3.4. Historical Background

Early Medieval Period (400–1100 AD)

Christianity arrived in Ireland during the 5th century AD, which was followed by the construction of churches, and later on, ecclesiastical centres. While the early structures and church buildings were made from wood or perishable materials (O'Sullivan et al. 2014), they were later replaced with stone structures.

Dunshaughlin was likely the largest nearby ecclesiastical centre, situated approximately 9km to the west of the Study Area. The town derives its placename from *Domneach Seachnaill*, the church of Sechnall, which was reputedly founded around 443 AD (O'Donovan 1856, 135). Sechnall was a contemporary and relative of St Patrick (Gwynn & Hadcock 1970, 35). The Annals of Ulster record the cleric's arrival to Ireland alongside Auxilius and Iserninus in 439 AD to aid Patrick's mission (AU 439).

Closer to the Study Area, an early medieval ecclesiastical site was situated at Killegland, approximately 600m to the north of the planning boundary. This site was associated with St Declán, the patron saint of the dynastic group known as the Déise. The placename Killegland likely derives from *Cill Dhéalgáin,* the church of Declán (cited in RMP File ME045-004). The *Life of St Declán of Ardmore* records that Declán visited Brega during the 5th century AD, which is described as "the original territory which belonged to his race previous to the expulsion of his ancestors" (Power 1914, Entry 32). In the account Declán was treated hospitably by the king of Tara during his visit, and was granted land to construct a monastery (ibid).

During the 7th century, at the same time that Christianity's influence was strengthening, the Study Area was situated within *Deisceart Breg*, the southern portion of the Kingdom of Brega. This faction originated as a branch of the southern Uí Néill, the *Síl nÁedo Sláine* (descendants of Áed Sláine), and included territories in Meath, as well as portions of Dublin and southern Louth. This area, generally bounded between the River Boyne and the River Liffey, was referred to as *Mag Breg*; the plain of Breg.

The Kingdom of Brega had two main dynastic branches, with the Uí Chonaing group ruling the northern kingdom from Cnogba (Dowth), and the Uí Chernaig group ruling the southern kingdom from Lagore (Loch Gabor). A battle between both groups in Emlagh (near Kells) was recorded in 688, which is surmised to have resulted in the official splitting of the factions, and resulted in an Uí Chernaig victory (Ó Cróinín 2008, 204). Muirchú, a missionary of St Patrick, highlighted the political significance of Brega during the 7th century: "*in campo Breg maximo, ubi erat regnum maximum nationum harum",* meaning "in the great plain of Breg, because it was there that there was the greatest kingdom among these tribes" (Bieler 1979, 82).

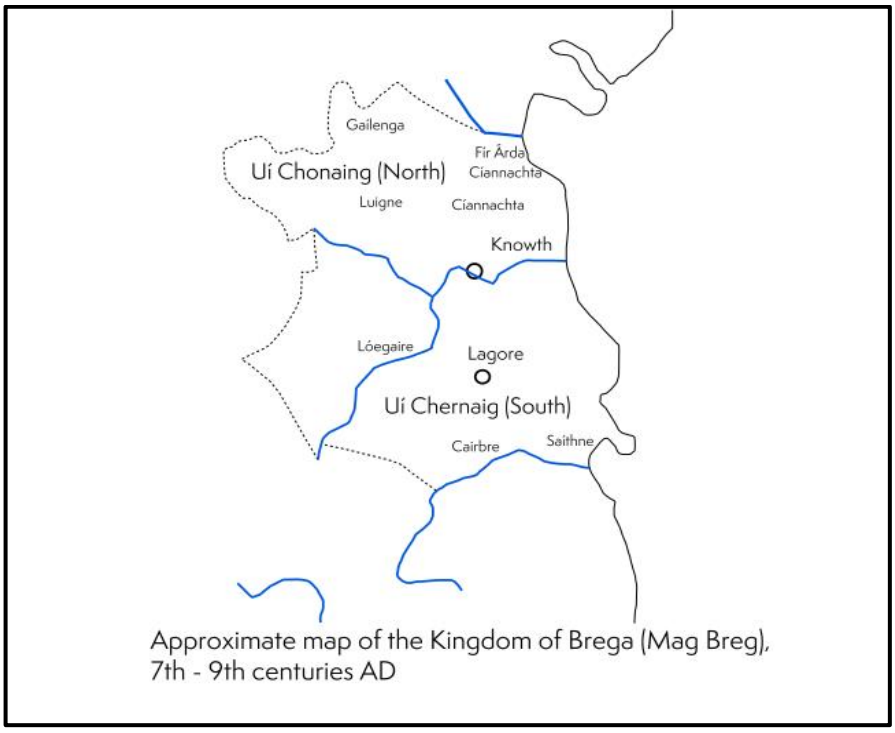


Figure 12.15. Map showing the approximate limits of the Kingdom of Brega between the 7th and 9th centuries AD.

The Uí Chernaig rulers resided at the crannog at the royal site of Lagore, situated approximately 8km to the west of the Study Area. From there, the dynasty held strong ties to the nearby ecclesiastical centres of Dunshaughlin and Trevet (Charles-Edwards 2000, 273; Bhreathnach 1999, 4, 18).

The Viking raids on Ireland began towards the eclipse of the 8th century, with Rathlin Island raided by 795 AD, and attacks occurring more frequently thereafter (MacShamhráin 2004, 128). By 837 AD, the Vikings had travelled inland into Brega territory along the waterways of the Boyne, where there plundered ecclesiastical sites and settlements (AU 837; CS 837; AFM 836). In 849 AD, Tigernach, the king of Lagore, aided Máel Sechanill, the king of Tara, when he plundered the Viking settlement of Dublin (CS 847; AFM 847). In 850 AD, the annals record that Cineád, the Uí Chonain king of Ciannachta, razed Lagore, Trevet, and plundered the lands of Uí Néill (CS 848; AU 848; AFM 848). The crannog at Lagore was ultimately destroyed by Vikings 934 AD (Edwards, 1996, 38-41), and the Uí Chernaig's kingdom was incorporated into the larger southern Uí Néill kingdom of Meath/'Mide' (Byrne 2001, 46, 87-93, 268).

Medieval Period (1100–1600 AD)

The Study Area was included in a grant of land awarded to Hugh de Lacy by Henry II in 1172, which comprised "the land of Meath in as full a measure as Murchadh Ó Maelshechlainn or anyone before or after him held it" (Otway-Ruthven 1968, 52–3). By referencing the native king Murchadh's rule some twenty years prior, Henry II ignored the claims to Meath made in the interim by other Anglo-Normans, specifically Richard de Clare (Murphy & Potterton 2010, 93). The grant was offered to de Lacy as a "liberty", a royal franchise awarded in return for his service to the king (Graham 1975, 225).

De Lacy established his stronghold at Trim (approximately 25km north-west of the Study Area), and subinfeudated his newly acquired territory. In this division system, land was maintained by de Lacy via the creation of seignorial manors, with the remainder granted to sub-tenants (Graham 1975, 226). Consequently, a settlement pattern indicative of manorial villages and associated market towns was introduced (Graham 1975, 223). Anglo-Norman manors were often sited in the same area as the medieval parish of the same name (Murphy 2008, 119). Earlier territorial divisions were also often maintained, with manors incorporating pre-existing settlements into the new manorial centres (MacCotter 2005, 310).

In reference to the Study Area, the administrative centre of Hugh de Lacy's manor was at Ratoath, approximately 4.5km to the west. A defensive motte was constructed here, with Ratoath developing into a successful urban centre largely due to its fertile land (Murphy & Potterton 2010, 465). A smaller surviving motte (RMP ME045-007) to the east of the Study Area at Donaghmore may indicate that Donaghmore Parish represented a separate infeudation of the "Liberty of Meath" (Fallon 2009).

The lands at Baltrasna and the adjoining townland Kilrue were likely in possession of the Berford lineage during the early 14th century. The early records of this lineage are scarce, however it is thought that the Berfords were feudatories of the de Lacy family in Herefordshire, arriving to Ireland during the early stages of de Lacy's conquest of Meath (Fallon 2009). D'Alton (1855, II, 732) states that the Berford name is first attested to in Ireland during the reign of Edward I, with Richard de Berford being appointed Chancellor of Ireland by 1314. Consolidating their Irish dynasty, the Berfords acquired extensive lands as free tenants of the de Lacy family (Gallwey 1979, 89- 90), including lands within the parish of Ratoath from the early 14th century (Orpen 1921, 73–4).

In 1403, a Simon 'Berfford' was appointed to assess and array the men of the Barony of Ratoath (D'Alton 1855, 732). Following his death 10 years later, Simon Berford's estate was vested in the Crown, during the minority of his heir (ibid).

The *Calendar of the Patent and Close Rolls of Chancery in Ireland* contains a brief reference to Baltrasna from 1537, which may be indicative of the perceived quality of the local lands. In the reference, witnesses are called upon to bear signature that the land of 'Baltrastyn' was moorland, and distinct from other nearby lands:

"Depositions of witnesses in a suit respecting the moor of Baltrastyn, with verification of signatures of Roger Bege, of Boranston, and .John Barnewall, of Kilbrue, by whom the depositions had been taken 12 years previously. The witnesses proved that from the Knock to Fitzlenyston [Fleenstown] had been called Fitzlenyston's Green, and the rest had been called the moor of Baltrastyn. Enrolled at the request of Patrick Sedgrawe [Segrave], of Killeglan, gent."(Morrin 1862, Hen. VIII, 34).

In 1549, a deed lists an inventory of lands including Baltrasna, Kilrue, and Donaghmore as in possession of "Symon Byrford of Kylrowe" (Curtis 1941, 42). This is the earliest reference showing the Berford ownership of Baltrasna, although it is likely that the family held it earlier, given that the Baltrasna and Kilrue townlands adjoin.

Post-medieval Period (1600–1900)

The will of John Berford, dating from 1633, includes include "1 gardin" and "20 acr' arrabil" in "Ballytreston", and reaffirms the possession of the lands mentioned earlier in the 1549 deed (Vicars 1897, 32; Inquisitions, Meath, Charles I, 88). Although the Berfords remained in possession of the Study Area's lands at this time, their hold declined during the latter half of 17th century, largely resulting from political turmoil and war.

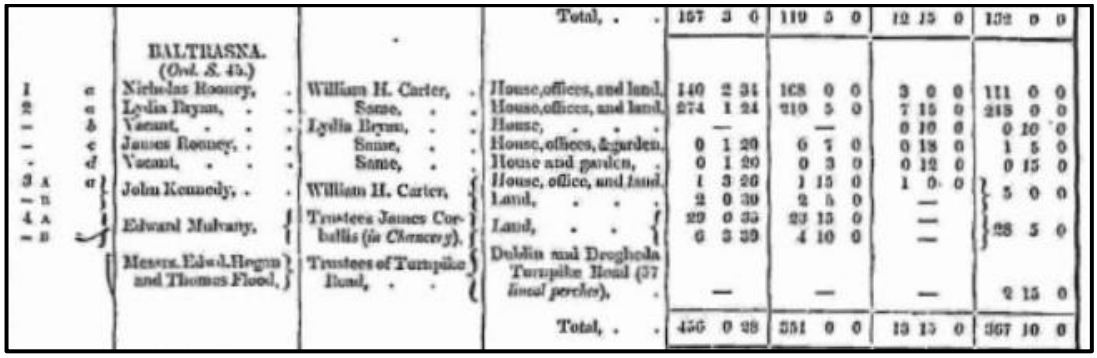
The Civil Survey, which reflects land ownership in 1640, documents the proprietors, inventory, and inhabitants of the Study Area's townlands. In the "Parish of Rathtooth", four houses are recorded at 'Baltrasney' under the proprietary of Richard Berford of Ballibine and Michael Berford of 'Kilrow' (Simington 1940, 102). In the "Parish of Donomoore", an old chapel, a farmhouse, and six cottages are recorded at 'Milltowne', under proprietary of "Patr[ick] Segrave of Killeglan" and "James Barnwall of Archerstown" (ibid, 100). Nearby, the "Parish and Towne of Killiglan", which would later become Ashbourne, is listed as possessing a castle, a stone house with out-houses, a church, a mill, and "divers cabins" with "Patr[ick] Segrave" listed as the proprietor at this time (ibid).

The Civil Survey records that Baltrasna was in the joint possession of Richard Berford of Kilrue and his nephew Michael Berford during the mid-17th century. Following the Cromwellian conquest of Ireland (1649–1653), Richard Berford's lands at Baltrasna were seized, with his death recorded in 1662 (Fallon 2009). Michael was indicted for involvement in the rebellion, resulting in him consequently forfeiting his land. This was reversed after the restoration of Charles II in 1663 (Gallwey 1979, 98-99; Tallon 2006, 42-44), with Michael Berford dying later in 1691.

Michael Berford's Catholic son, Ignatius, was outlawed for high treason during the Williamite War (1688–1691), and his lands (including 'Baltrasney') were granted to Rudolf Kien, a page in King William's bedchamber (Simms 1976, 86). This was later reversed, and Michael's widow Margery Berford partially recovered some of those lands in 1703 through her later husband George Lowther (Gallwey 1979, 101–102).

The *Survey of Catholic Estates in Leinster 1690* lists Catholic landownership during the Williamite War. The document indicates that Sir Anthony Molady possessed significant acreage (260 plantation acres) at 'Ballrasny', with the principal tenant being Patrick Roe (Loeber et al. 2001). Molady was a Catholic captain in the army of King James, and was indicted for treason in 1691 (D'Alton 1885, II, 41–43). In contrast, Michael Berford's possession at this time was 24 acres, with the principal tenant Widow Reriling (ibid).

The Carter family appears to have held the largest parcel of land at Baltrasna after its confiscation from the Berford family, passing through a number of hands in the interim, including the Earl of Arran. The Carters are listed as the main landholders in Baltrasna in Griffith's Valuations (1847–1864), as well as Killegland (excluding the village).



				Total, . .	157	3	0	119	5	0	12	15	0	132	0	0
		BALTRASNA. (*Ord. S. 45.*)														
1	a	Nicholas Rooney, .	William H. Carter, .	House, offices, and land,	140	2	34	108	0	0	3	0	0	111	0	0
2	a	Lydia Byrne, . .	Same, . .	House, offices, and land,	274	1	24	210	5	0	7	15	0	218	0	0
—	b	Vacant, . . .	Lydia Byrne, . .	House, . . .		—			—		0	10	0	0	10	0
—	c	James Rooney, . .	Same, . .	House, offices, & garden,	0	1	20	0	7	0	0	18	0	1	5	0
.	d	Vacant, . . .	Same, . .	House and garden, .	0	1	20	0	3	0	0	12	0	0	15	0
3	A a	John Kennedy, . .	William H. Carter,	House, office, and land,	1	3	26	1	15	0	1	0	0	5	0	0
—	B			Land, . . .	2	0	39	2	5	0	—					
4	A	Edward Mulvany,	Trustees James Corballis (*in Chancery*),	Land, . .	29	0	35	23	15	0	—			28	5	0
—	B				0	3	39	4	10	0	—					
		Messrs. Edwd. Hogan and Thomas Flood,	Trustees of Turnpike Road, . .	Dublin and Drogheda Turnpike Road (37 *lineal perches*), .		—			—			—		2	15	0
				Total, . .	456	0	23	351	0	0	13	15	0	367	10	0

Figure 12.16. Residents of Baltrasna during the 19th century, shown listed in the index accompanying Griffith's *The Primary Valuation.*

Traffic to and from the Study Area was boosted by the construction of the Great Slane Road in 1807, by William and Richard Bourne. Running from Dublin to Slane, the road was utilised by both mail coaches and stagecoaches. Like the other turn-pike roads that had been constructed since the early 18th century, the 'Slane Road' was established as a toll-road, and cut across the existing road and field systems (see Andrews 1964; Broderick 1996). Taylor and Skinner's map of roads from Dublin (1777, 40) depicts the route of this turn-pike road prior to its completion, where it was described as "The proposed road thro the Commons of Kilsaloghan is Four furlongs shorter than by Chapelmidway & Greenoge".

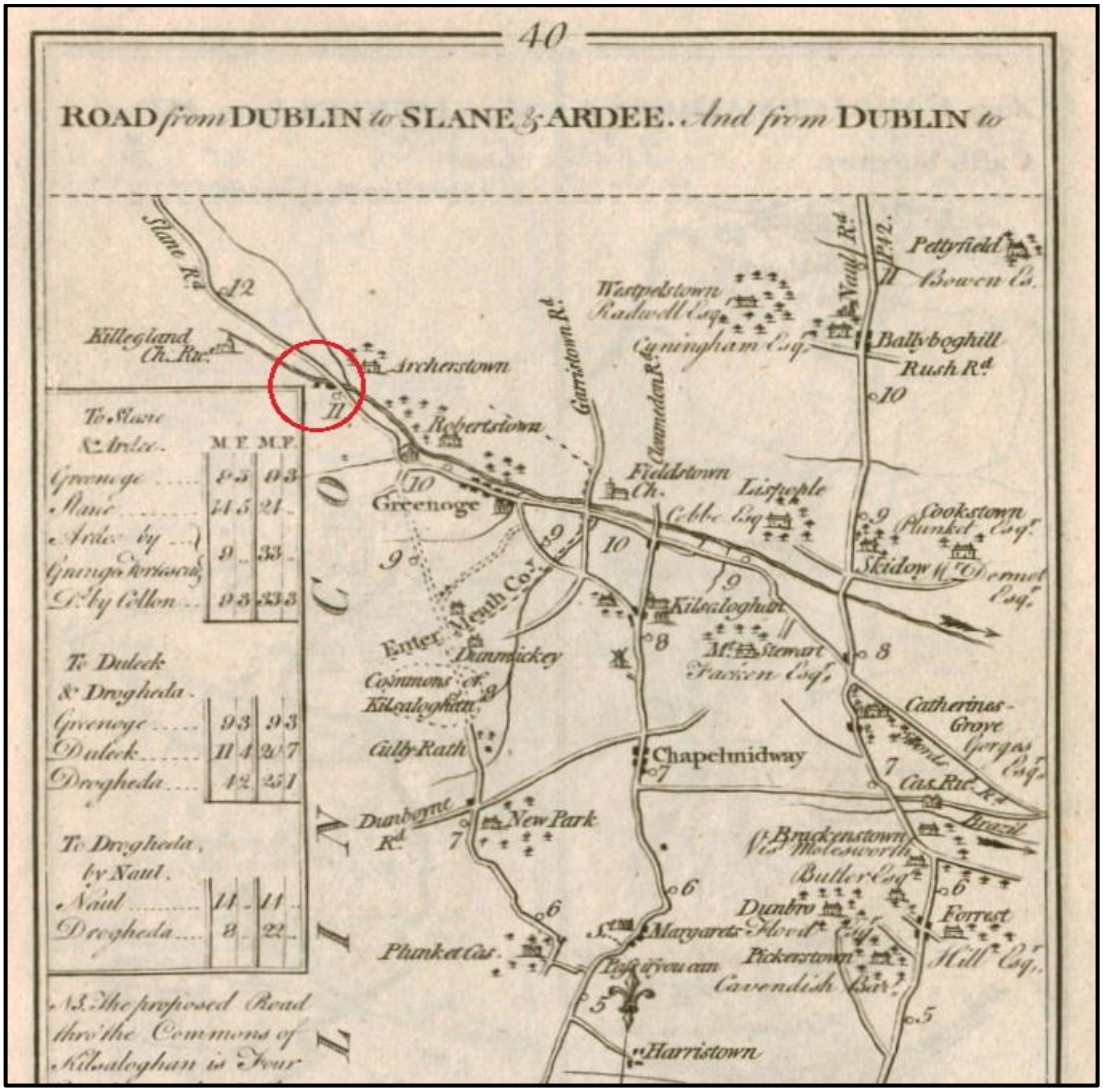


Figure 12.17. Taylor and Skinner's *Map of Roads from Dublin* (1777, 40), showing the proposed Great Slane Road and the Study Area circled in red.

By around 1800, the Dublin to Belfast mail coach via Slane was established. With its first stop located at Killegland, this service utilised the newly made Slane Road. The village of Ashbourne was formed sometime after 1820, when Frederick Bourne financed a ten-mile section of road from Dublin to Killegland (http://ash2020.com/about-ashbourne). Having seen the potential of Killegland for development purposes, Bourne purchased the lands in the vicinity of the coach stop in addition to planning several streets, forming the new village at Ashbourne, named after himself (Cogan n.d., 32; Aalen et al. 1997, 191). By 1837, Ashbourne contained 60 houses with 473 inhabitants, a constabulary police station, a Roman Catholic chapel, as well as a dispensary (Lewis 1837, 137). The same author notes that all 473 inhabitants resided in the "post-town" of Killegland (ibid).

The 19th century *Tithe Applotment Books* show relevant details pertaining to the Baltrasna between 1832 and 1837. These resources inventoried the occupiers of agricultural holdings, and assessed the tithes due to the church in respect of these lands. Henry Carter is recorded as possessing 86 acres in 'Little Baltrasna', and 169 acres in 'Big Baltrasna (*Tithe Applotment Books*, National Archives, MFA 53/1 – 114). The books indicate that the Carter family held lands.

The Primary Valuation of Ireland referred to as Griffith's Valuation (1847–1864) recorded landholders and holdings on a county-by-county basis. The document records that northern lands (Milltown) of the planning boundary were

owned by William O'Hara, and comprised of land occupied by William Woods. Similarly, the lands within the Baltrasna townland, were owned by William H. Carter, and occupied by Nicholas Rooney.

12.3.4.1. Folklore and Traditions

Folklore, traditions, oral lore and history are a non-tangible heritage assets that are included as components of Cultural Heritage. These heritage assets can often provide valuable qualitative historical data, and can both offer insight into and support the archaeological record.

A manuscript compiled by the children of Dunshaughlin National School recorded the existence of a surviving folk custom in Ashbourne, referred to as "the wren", which would take place on St. Stephen's Day (Irish Folklore Commission 1938, 324).

The same document details the discovery of two stone chairs at the site of Killegland Castle (RMP ME045-005, uncovered by an individual named Mr. Armstrong (ibid, 341).). The record notes that the stone artefacts were retained in Mr. Armstrong's at the time of the folklore project's initiation.

12.3.5. Archaeological Background

To prepare this chapter on cultural heritage, the archaeological background of the Study Area has been appraised. This has been facilitated using the records pertaining to Recorded Monuments, the National Museum of Ireland's Topographical Files, and data derived from past archaeological investigations. Together, these sources detail part of the archaeological record for the Study Area.

12.3.5.1. Record of Monuments and Places (RMP)

There are no Recorded Monuments within the planning boundary of Study Area, however, 44 Recorded Monuments are situated within 1km of this boundary (see Appendix 1). The closest Recorded Monument (ME045-067) is situated approximately 125m west of Field 4/Field 8 of the current Proposed Development.

The greatest proportion of the surrounding archaeological monuments and sites is situated in Ashbourne, to the north-west of the planning boundary. The area to the south is similarly densely populated with Recorded Monuments. The 10 Recorded Monuments closest to the planning boundary are outlined below.

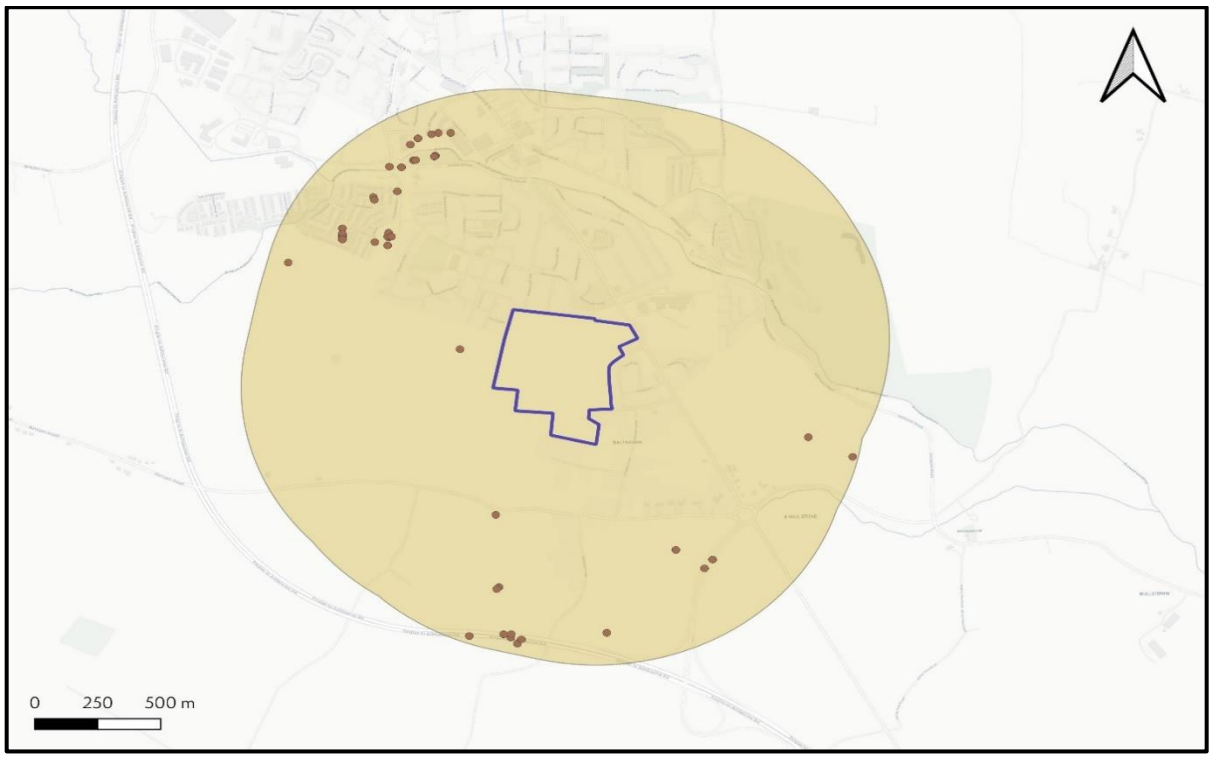


Figure 12.18. Map showing the RMPs within a 1km buffer of the planning boundary's borders.

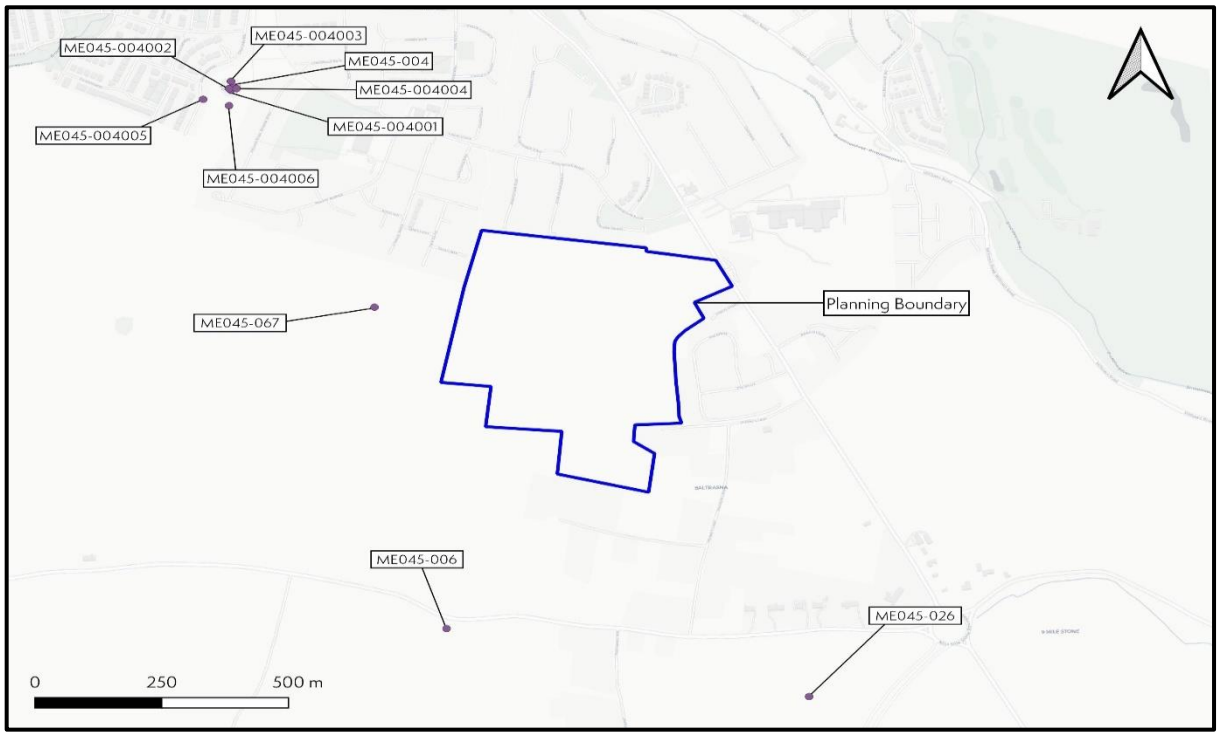


Figure 12.19. Map showing the closest RMPs to the planning boundary.

ME045-067 Ringfort

The closest monument to the Study Area is a ringfort located approximately 125m to the west. It is situated on an elevation in an otherwise level landscape, and is defined by a single fosse, visible on OSI aerial images from 2005. Additionally, the cropmark of a sub-circular enclosure measuring approximately 50m E-W and 45m N-S is visible on Google Earth imagery from 2008 and 2018.

ME045-006 Burial Ground

Human remains were discovered in a field during the digging of house foundation trenches in 1963, at a depth of 500mm below the ground surface. This field is situated approximately 450m to the south of the Study Area. It contains a curvilinear boundary on its eastern side, which was possibly the original boundary of a cemetery. All of the burials were extended and oriented W-E, with no examples having stone protection or linings. At least seven individuals were identified, including four males and three females aged between 25 and 50.

ME045-026 Souterrain

Ploughing activities in 1986 led to the identification of an Early Christian 'L'-shaped stone-built souterrain, approximately 670m to the south of the Study Area. This feature consisted of a passage with two beehive-shaped chambers. The main passage was neatly blocked towards the original entrance and had a trap feature. The surrounding area was subsequently investigated, and produced twelve artefacts and three bone collections (Feeley 1991, 151-153). Some for these items were dated to between the 8th–9th century AD, whilst a separate sherd of pottery found on the surface in plough soil was found to be 13th century in date (Topographical File reference 1A/45/86).

The souterrain feature is located within the south-western corner of a larger square or rectilinear enclosure measuring 110–140m in width. There is a possible opening or entrance feature along the western side of this enclosure, with possible outcropping within the northern interior. There is no indication of a perimeter fosse or embankment, nor of any other internal features.

ME045-004 Church

A church at Killegland is listed in the ecclesiastical taxation of Pope Nicholas IV (Cal. Doc. Ire., Vol. 5, 254; Sweetman 1875–1886). The construction of this church is associated with St Declán, although any local knowledge of this connection no longer survives. The parish church of Killegland was amongst the possessions of St Thomas' Augustinian abbey at its suppression in 1540 (White 1943, 36). Reverend J. Ussher described the church and chancel as ruined in 1622 (Erlington 1847-64, 1). Cogan (1862-70, 2, 383) describes the church as measuring "70 feet by 20 feet and 10 inches". It is situated approximately 700m north-west of the Study Area.

ME045-04001 Graveyard

Graveyard associated with the nearby church at Killegland. It comprises a sub-circular area, defined by a masonry wall. Most headstones located within date to c. 1900, although a prone-lying headstone in the church is marked with the date 1724.

ME045-04002 Ringfort

Inside the perimeter of the graveyard (ME045-04001) is a rath which survives as a sub-circular area defined by an earthen bank. No fosse or entrance can be identified. A souterrain (ME045-004002-) that probably relates to the use of the rath was recorded in 1982.

ME045-04003 Souterrain

A souterrain was discovered during a clean-up of the graveyard in 1982, and was recorded by M. Clinton. The original entrance was in the bank of the rath (ME045-004002-) at the north, and from here the N-S corbelled and lintelled passage proceeds south and curves slightly to the west as it enters an oval corbelled chamber. This was closed by a single large capstone which was removed in 1982 when entry was gained. However, the capstone was damaged at that time and the souterrain is now sealed in concrete (Feeley 2001, 53-4, No. 47).

ME045-04004 Ecclesiastical enclosure

The principal feature is a wide, round-bottomed and steep-sided fosse which was sampled at five points west of the graveyard. The fosse was filled with mid to dark brown silts and clays, from which no artefacts were recovered although there were some animal bones. There is an unexcavated causeway that is edged with stones on either side at the north-west (Halliday 2007, 18-22). The interior was cut by numerous ditches and gullies but there were also some corn-drying kilns and two souterrains. There were also numerous lengths of various ditches and pits. Recovered artefacts including bone combs, lignite bracelets, pins, iron knives, bone needles and unidentified iron objects suggest a date in the 8th to 11th century AD.

ME045-04005 Souterrain

The souterrain consists of a passage aligned N-S which had a circular beehive chamber at the southern end. Only the basal courses of the passage and chamber survived. It is now preserved in the fallow area (radius c. 30m) around the graveyard (Halliday 2007, 18-19)

ME045-04006 Souterrain

This souterrain was located c. 25m south of the graveyard at Killegland Church. A rectangular entrance chamber consisting of only the basal courses has a cross-wall with an opening on the north side. It led to the slightly curving passage extending ESE, of which only the basal courses survived. The passage was roughly parallel with the southern ditch of the ecclesiastical enclosure (ME045-004004-), and at the eastern end was a circular beehive chamber with drystone walls (Halliday 2007, 18-19).

12.5.3.2. Previous Archaeological Investigations in the vicinity of the Study Area

Archaeological investigations have taken place within the planning boundary of the proposed development, in Ashbourne, as well as the surrounding lands. A number of investigations took place within Ashbourne town to the north of the Study Area's planning boundary, whilst significant excavations were also completed in advance of the construction of the M2 Motorway scheme to the south and west. The investigation programmes with the most significant findings have been outlined below.

Archaeological excavations within Ashbourne

Ashbourne has seen over twelve archaeological excavations, with most carried out in advance of commercial and residential developments in the town (see Appendix 3). The most significant investigations and their findings are listed below.

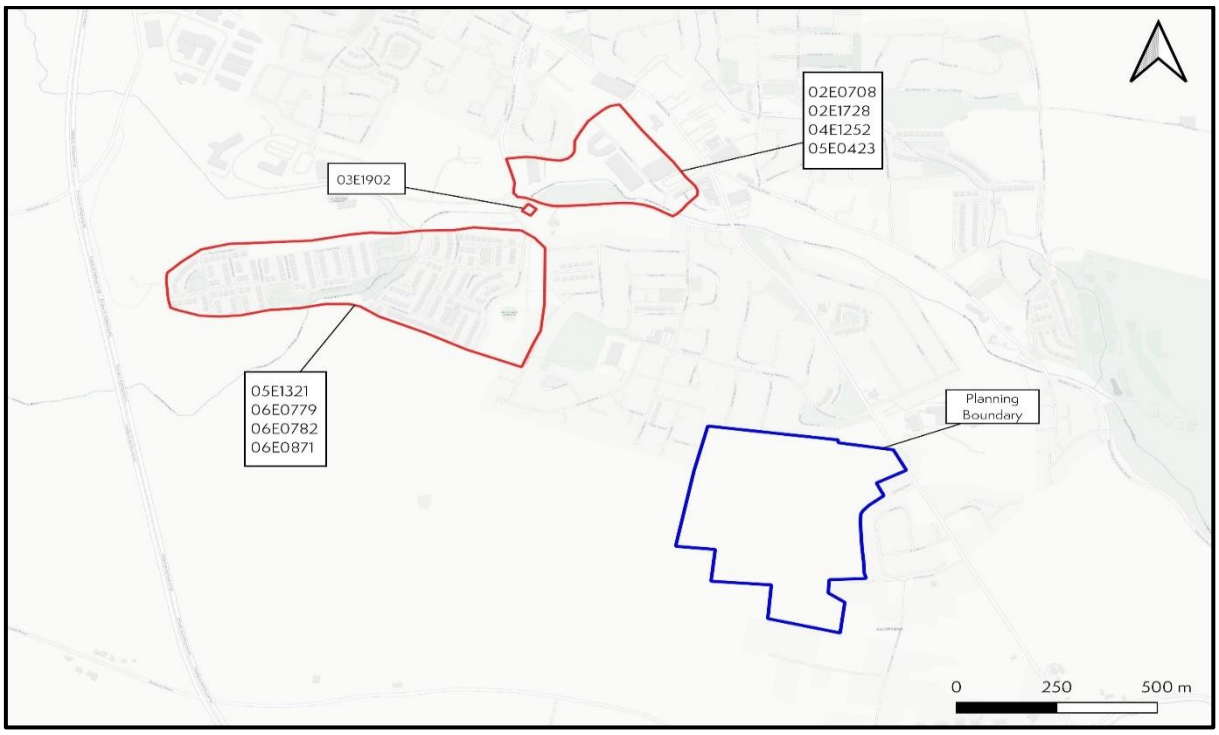


Figure 12.20. Map showing archaeological excavations within Ashbourne.

Substantial archaeological works were carried out north and south of the Broadmeadow River at Killegland. Frazer (02E0708) uncovered the structural remains of a tower house, thought to be Killegland Castle, which is believed to have been destroyed by the end of the 19th century. North of the castle site, Frazer (02E1728) identified the remains of a medieval millrace and associated earthworks nearby to the Broadmeadow River. Under excavation licence 04E1252, Frazer identified a partially enclosed medieval settlement, consisting of structural remains of at least two buildings, upslope from the millrace (02E1728). At Castle Street, the remains of a possible prehistoric burnt mound were identified by Frazer (05E0423), in addition to evidence for medieval field systems, post-medieval structural remains, and a metalled surface

Near Castle Street, Carroll (03E1902) identified a cobbled fording site west at the Broadmeadow River, situated to the west of Killegland Castle.

Extensive archaeological investigations were carried out in the Churchfields lands in advance of the construction of residential estates, adjacent to the church at Killegland (RMP ME045-004). In the vicinity of the church, Halliday (05E1321; 06E0779; 06E0782) uncovered substantial evidence for medieval activity, including enclosure ditches, pits, post-holes, metalled surfaces, souterrains, and possible kilns. Kavanagh (06E0871) later investigated the Churchfields area further, and identified multiple ring-ditches, enclosures, pits, souterrains, and kilns.

Archaeological excavations in advance of the M2 Motorway

Twelve archaeological excavations were carried out in advance of the construction of the M2 motorway, within approximately 1km of the Study Area (see Appendix 4). The most significant investigations and their findings are listed below.

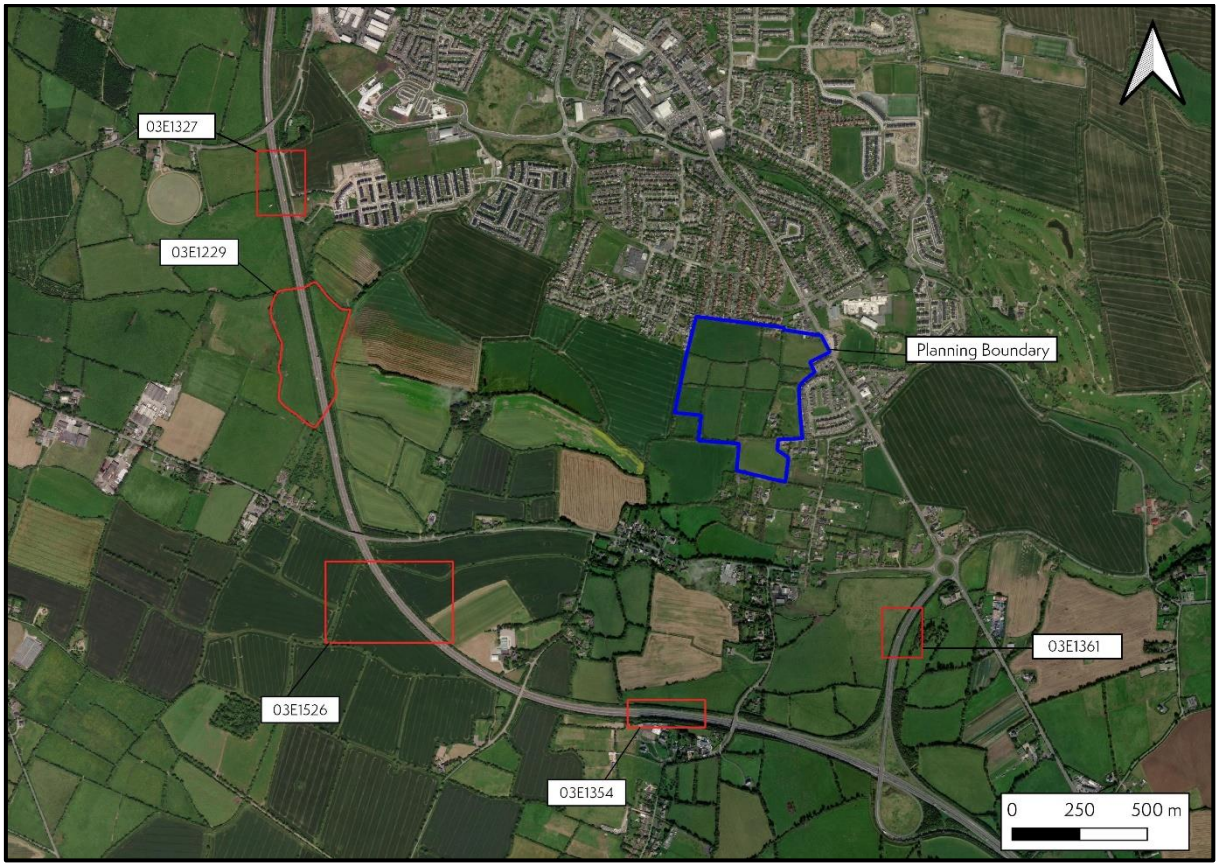


Figure 12.21. Map showing archaeological excavations in advance of the M2 Motorway (Google Earth).

At Raystown, Seaver (03E1229) excavated a substantial early medieval settlement to the west of the proposed development. At that site, archaeologists excavated an enclosed cemetery, with adjacent habitation zones, cereal drying kilns, millraces and mill structures.

McGowan (03E1327) excavated multiple prehistoric wells, pits, a kiln and burnt features at Killegland and Ballybin, north-west of the Proposed Development. Evidence for metalworking was identified via kilns, copper alloy objects and metallurgical waste (slag), whilst siliceous waste hinted at glass production in the area.

At Baltrasna Sites 17 and 18, Fallon (03E1354) identified prehistoric features and artefacts, spanning from the Late Neolithic to the Iron Age. Included among the finds were Neolithic lithic tools (stone scrapers) as well as Bronze Age cordoned urn ceramic sherds. Evidence for a possible farming settlement nearby and the remains of a Late Medieval field system were also recorded.

At Baltrasna Site 15 to the south-east of the proposed development, the base of a natural hill referred to as 'Cnoc Neil' was excavated by Murray (03E1361). At the base, the remains of two prehistoric burnt mounds were identified, complete with wooden troughs.

O'Connor (03E1526) uncovered evidence for extensive prehistoric activity at Harlockstown. During the excavation, archaeologists uncovered a Final Neolithic/Early Bronze Age cremation pit, an Early Bronze Age crouched inhumation burial with accompanying food vessels, as well as evidence for Iron Age metalworking activities.

12.3.5.2. Topographical Files

There are five NMI topographical files from Baltrasna and the surrounding townlands. The most significant entry, NMI Record IA 25/63, records seven human skeletons, comprised from three females and four males aged between 25 and 40. These human remains were found lying west-east with no associated structures or grave-goods, approximately 430m south of the planning boundary. This location is also a Recorded Monument (RMP Ref. ME045-006 Burial Ground).

NMI Reference	Location	Description	Distance from Study Area
IA/25/63	Baltrasna	Human bone near R125 next to Souterrain, in field SW of roundabout	560m
IA/187/1989	Baltrasna	Sherd of Medieval pottery in field SW of roundabout	580m
IA/178/56	Donaghmore	Burials found nearby (not acquired) on Milltown Road	1.39km
IA/45/86	Baltrasna	Souterrain	560m
2010:85	Baltrasna	Human remains	N/A

Table 12.3. Topographical Files pertaining to the Study Area.

12.3.6. Architectural Background

In order to prepare this chapter on cultural heritage, the architectural background of the Study Area has been appraised. This has been facilitated using the records pertaining to Protected Structures, the National Inventory of Architectural Heritage, as well as the Meath Industrial Heritage Survey records. Together, these architectural records represent the architectural heritage of the Study Area.

12.3.6.1. Record of Protected Structures

There are no Protected Structures within the planning boundary of the Study Area. The closest Protected Structure, Killegland Cemetery (MH045-100), lies approximately 600m to the north-west. Another Protected Structure, the Church of Immaculate Conception, lies approximately 900m to the north, adjacent to the Parish Hall (MH045-101).

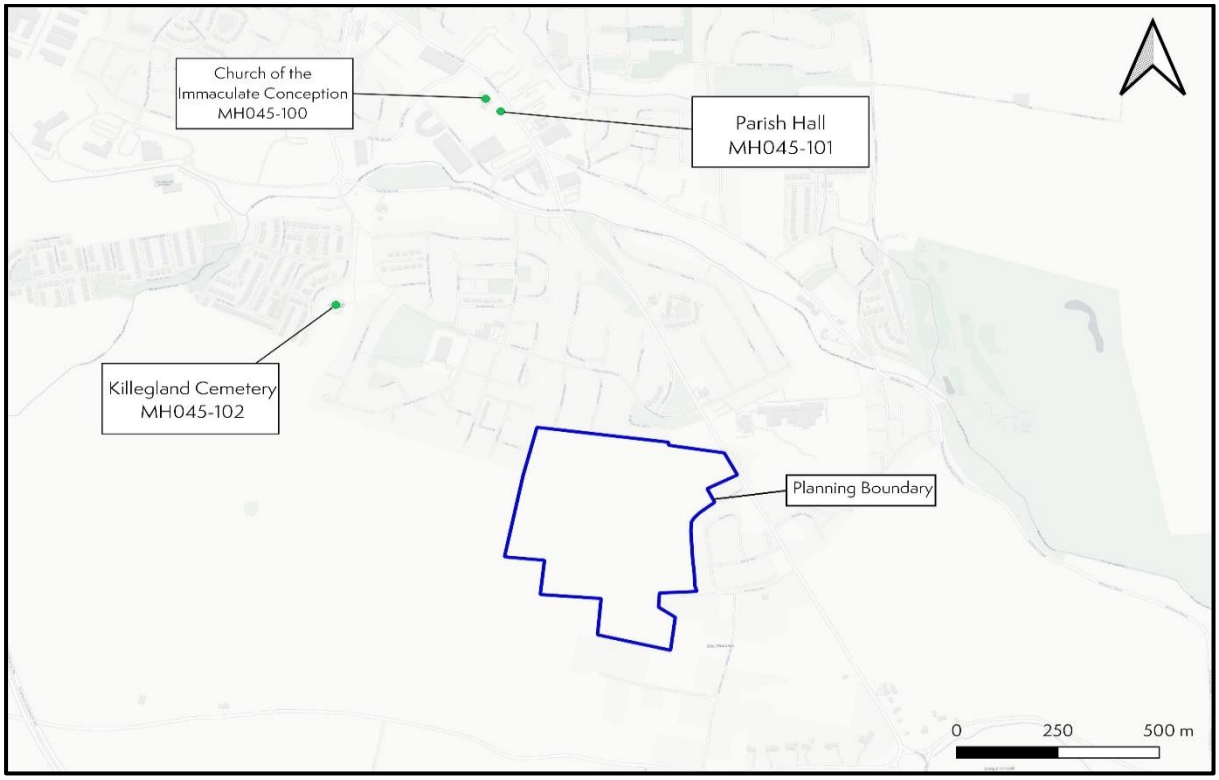


Figure 12.22. Map showing RPS structures within the Study Area.

RPS Reference	Name	Description	Distance from Study Area
MH045-100	Church of the Immaculate Conception	Detached gable fronted church built c. 1882. Five-bay side elevations to nave, and apse to south-west with sacristy to south. Pitched slate roof with terracotta ridge cresting and ashlar limestone bellcote to entrance gable.	900m
MH045-101	Parish Hall	Detached four-bay single-storey parish hall, built c. 1882, with gabled porch. Pitched slate and artificial slate roof with copper vents and red brick chimneystacks. Roughcast rendered walls with render plinth and render plaque.	900m

MH045-102	Killegland Cemetery	A cemetery with the ruins of a small stone church.	600m

Table 12.4. RPS structures within the Study Area.

12.3.6.2. National Inventory of Architecture Heritage (NIAH)

There are no listed NIAH buildings within the planning boundary of the Study Area. The Church of the Immaculate Conception (14337001) is a listed NIAH building, as is the Parish Hall (14337002), with both buildings situated approximately 900m to the north of the Study Area.

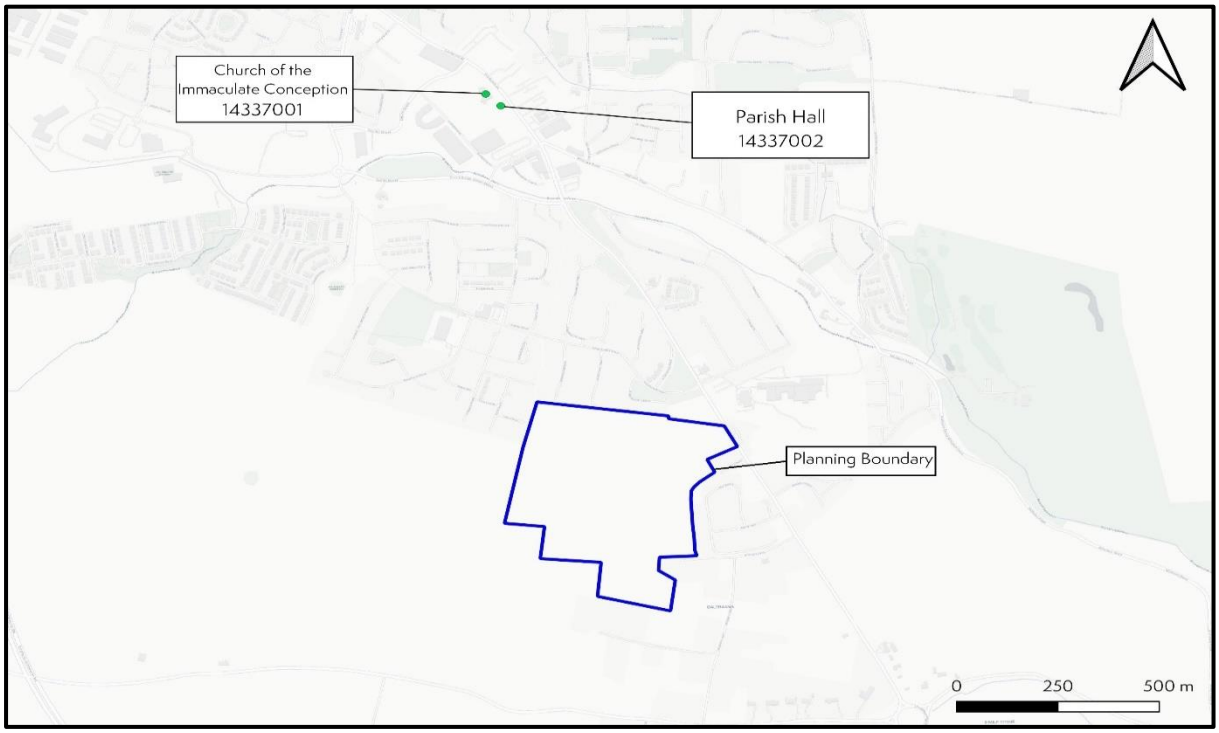


Figure 12.23. Map showing NIAH structures within the Study Area.

NIAH Reference	Name	Description	Distance from Study Area
14337001	Church of the Immaculate Conception	Detached gable fronted church built c. 1882. Five-bay side elevations to nave, and apse to south-west with sacristy to south. Pitched slate roof with terracotta ridge cresting and ashlar limestone bellcote to entrance gable.	900m
14337002	Parish Hall	Detached four-bay single-storey parish hall, built c. 1882, with gabled porch. Pitched slate and artificial slate roof with copper vents and red brick chimneystacks. Roughcast rendered walls with render plinth and render plaque.	900m

Table 12.5. NIAH structures within the Study Area.

12.3.6.3. Meath Industrial Heritage Survey (MIHS)

There are no industrial heritage sites or structures situated within the planning boundary of the Study Area. However, there are eight industrial heritage sites recorded in the wider vicinity of Ashbourne. The closest record, Milltown Bridge (045-010), is situated approximately 470m north-east of the planning boundary.

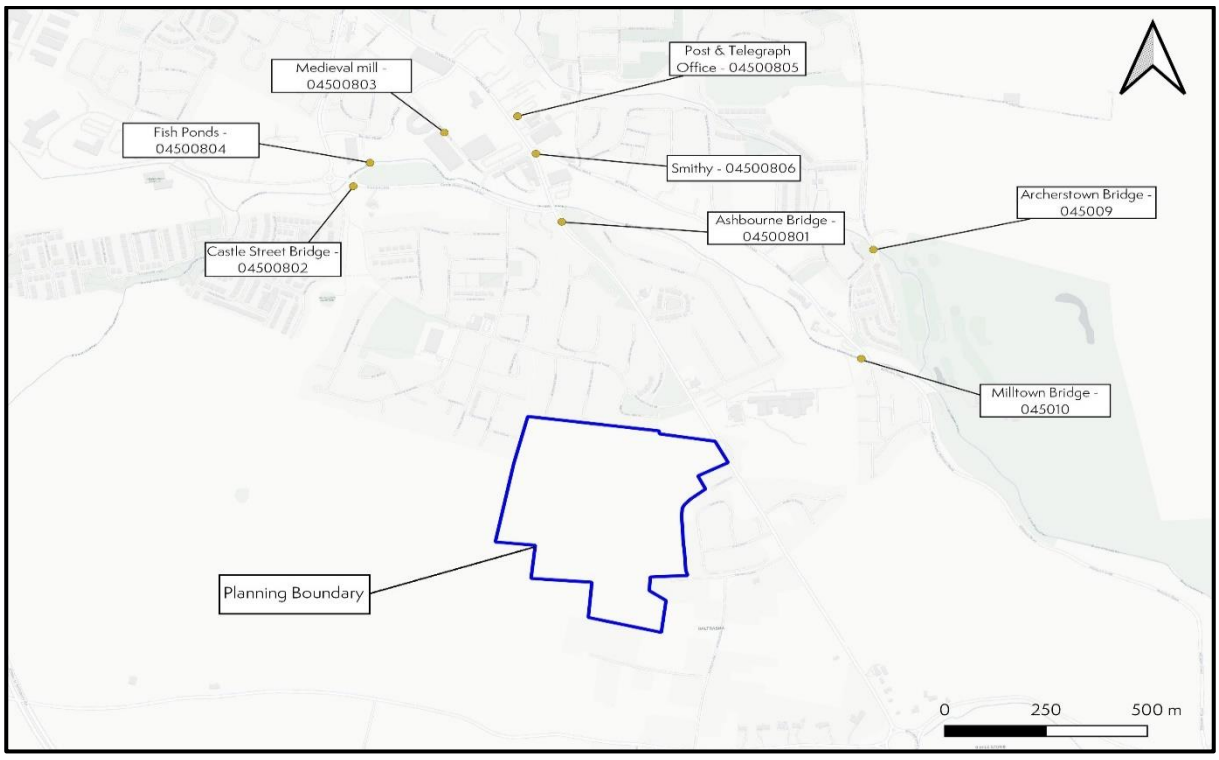


Figure 12.24. Map showing MIHS structures within the Study Area.

MIHS Reference	Name	Type	Distance from Study Area
045-00801	Ashbourne Bridge	Bridge	640m
045-00802	Castle Street Bridge	Bridge	920m
045-00803	Medieval mill	Mill (Medieval)	915m
045-00804	Fish ponds	Fish Pond	925m
045-00805	Post & Telegraph Office	Post Office	890m
045-00806	Smithy	Smithy	810m
045-009	Archerstown Bridge	Bridge	855m
045-010	Milltown Bridge	Bridge	470m

Table 12.6. MIHS structures within the Study Area.

12.3.7. Cartographic Analysis

The earliest accurate depiction of the Study Area dates to the mid-17th century, with the general setting shown on the parish and barony maps of the Down Survey (1655–6). The later advancement of surveying methods and cartographic standards during the 19th century culminated in the creation of the ordnance survey maps. These maps, drafted by the Royal Engineers, depict the Study Area in finer detail, highlighting field boundaries, land divisions, as well as structures.

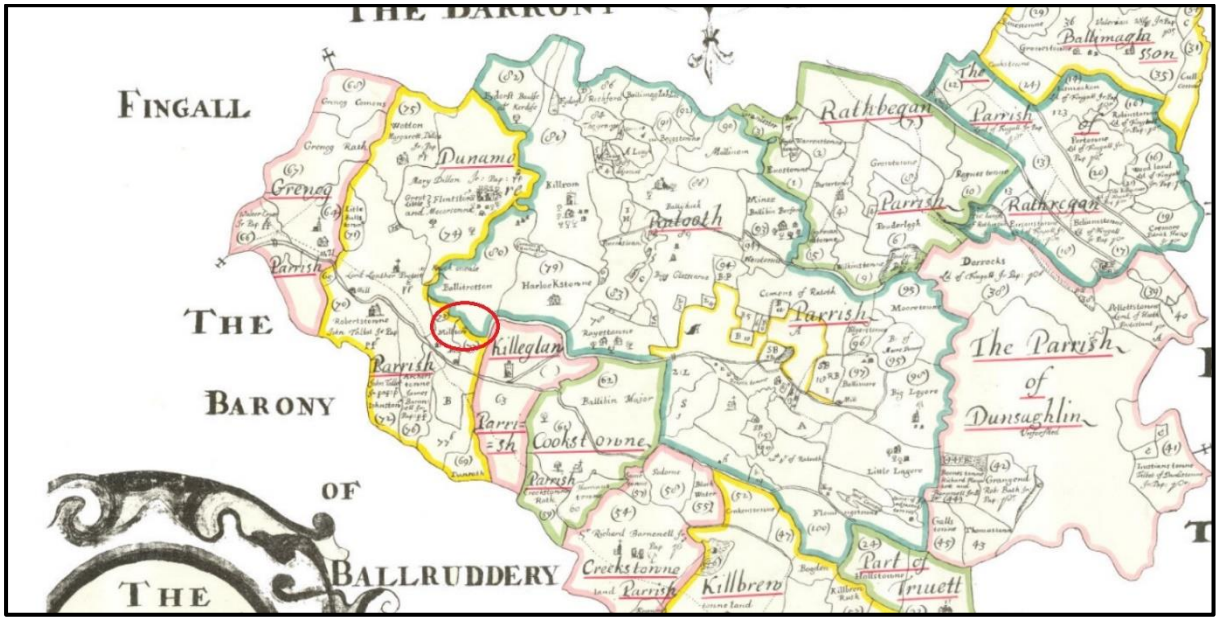


Figure 12.25. ***The Down Survey Barony Map of Ratoath*** **(1655-6), with the Study Area circled in red.**

The Down Survey Barony Map of Ratoath (1655-6) shows Milltown, Baltrasna ('Ballitrosson'), in addition to Killegland ('Killeglan'). There is a mill structure at Milltown, situated on the Broadmeadow River, as well as a house structure (within approximately 1km of the Study Area). The land at Baltrasna appears void of settlement features, while that at Killegland is marked by a fortified building, possibly the "castle" referenced in the Civil Survey (Simington 1940, 98).

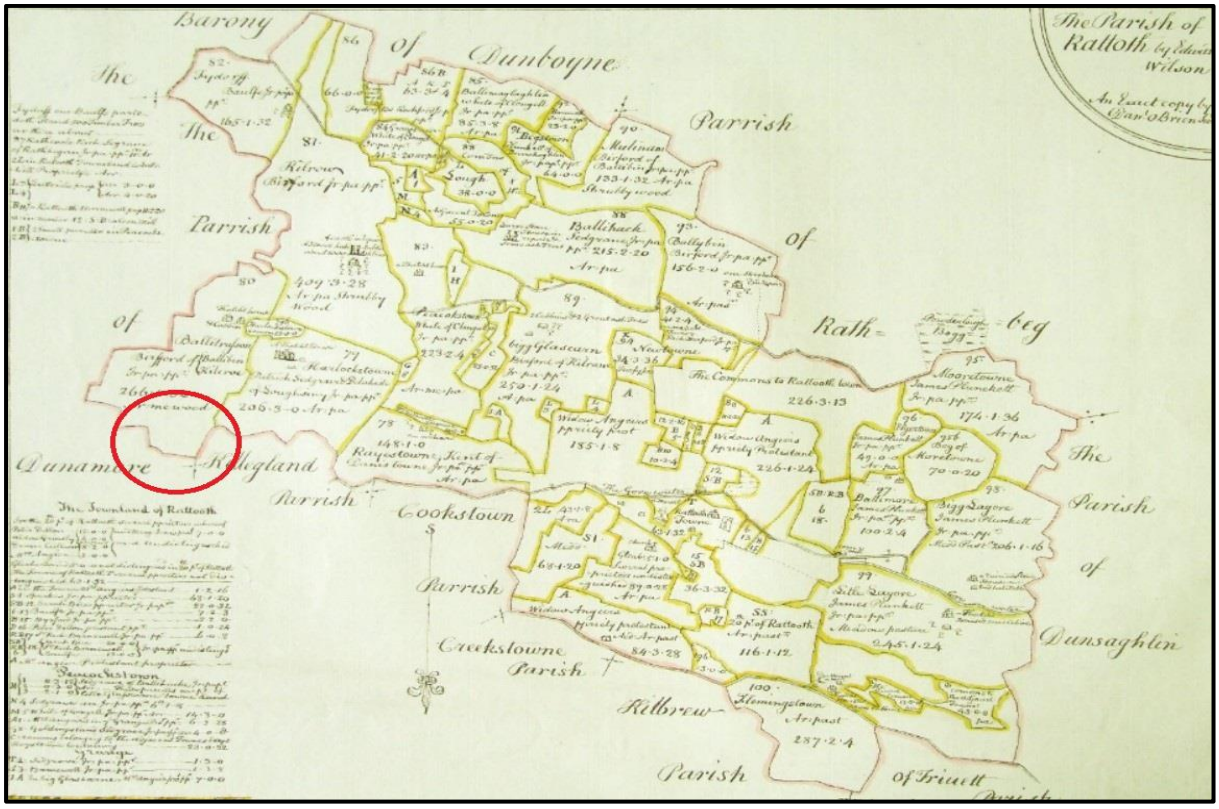


Figure 12.26. ***The Down Survey Parish Map of Ratoath*** **(1655–6), with the Study Area circled in red.**

The Down Survey Parish Map of Ratoath (1655–6*)* depicts evidence of settlement in Baltrasna ('Ballitrasson'), showing 'thatchd' houses and 'cabins'. The census of 1659 corroborates this depiction of settlement, listing sixteen heads of household residing in 'Baltrasney', whilst at Killegland 37 heads of household are listed (Pender 1939, 486–487). 'Birford of Ballibin/Kilcroe' is written within Baltrasna's borders, referencing the Berford family's ownership of Baltrasna. Milltown is not depicted on this map.

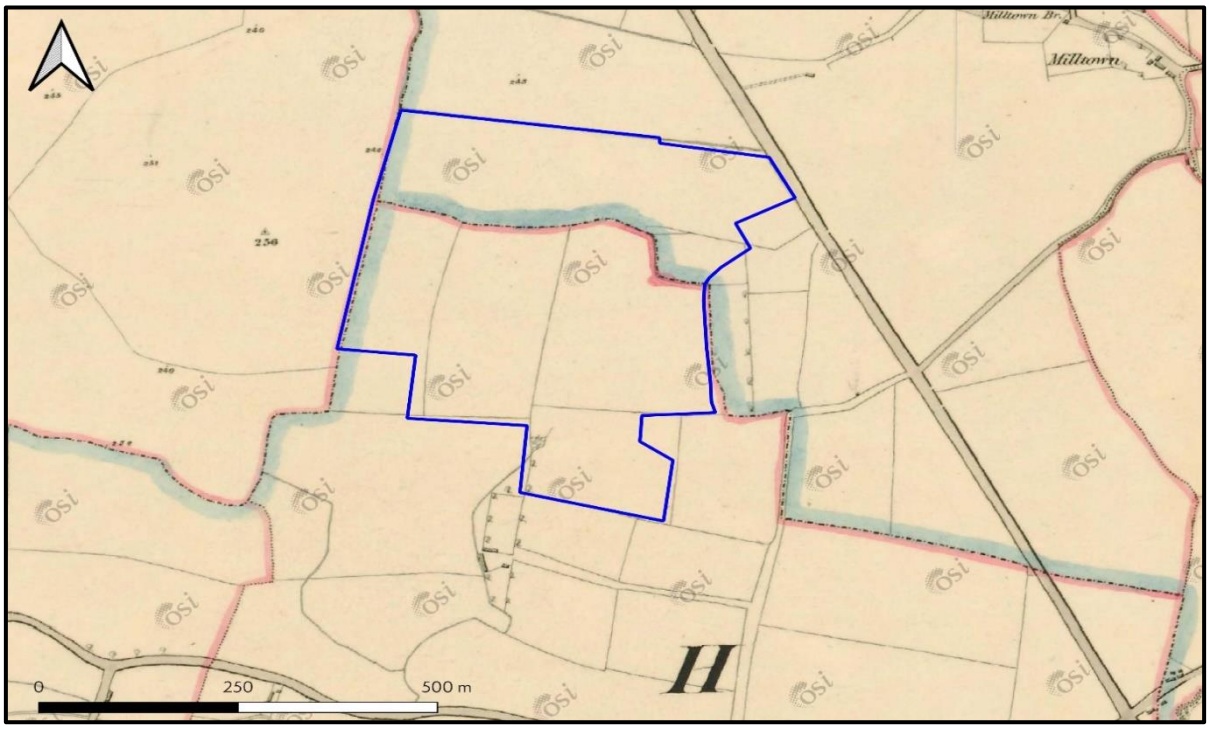


Figure 12.27. 6-inch Ordnance Survey Map (1837–1842), with the planning boundary shown in blue.

The Study Area can be seen on the historic 6-inch Ordnance Survey Map (1837–1842). On this map, the current planning boundary encompass six separate parcels of land. An east-west running parish and townland boundary (Baltrasna-Milltown) divides the fields into northern and southern allotments: two-thirds of the Study Area are situated within the Baltrasna townland, with the remaining two fields within the Milltown townland. Similarly, the Killegland-Milltown and Killegland-Baltrasna parish and townland boundaries can be seen bordering the western side of the Study Area. The historic Slane Road can be seen to the immediate east of the Study Area, running north-west towards Ashbourne village. No structures or buildings are depicted within the Study Area's planning boundary during this time.

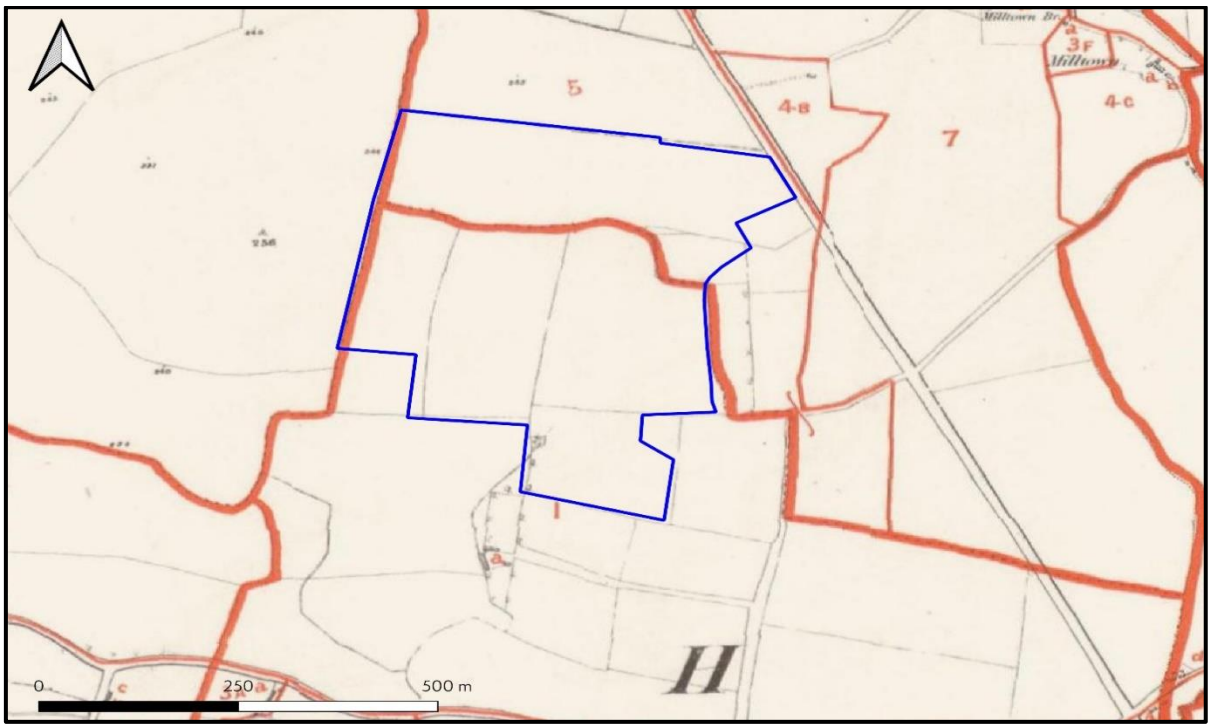


Figure 12.28. ***The Primary Valuation of Ireland*** **(1847–1864) with the planning boundary shown in blue.**

The Primary Valuation of Ireland, referred to as Griffith's Valuation (1847–1864) depicts the Study Area during the 1850s. The overall land zoning remains similar to that shown in the earlier OS map. The Baltrasna-Milltown parish and townland boundary, the field divisions and the Slane Road remain unchanged. The valuation document records that the lands in the northern Milltown townland, denoted by the number '5', are owned by William O'Hara, comprised of land occupied by William Woods. Similarly, the lands within the Baltrasna townland, denoted by the number '1', are owned by William H. Carter, and contain land centred on the house to the south of the Study Area, occupied by Nicholas Rooney.

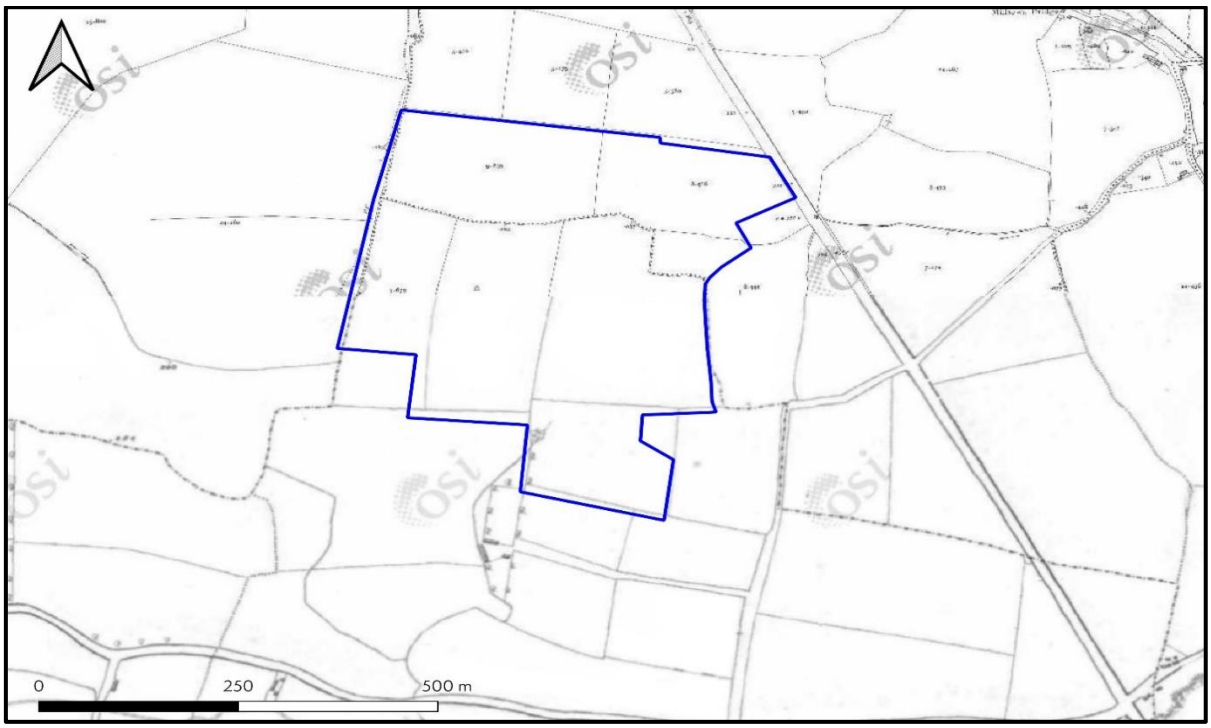


Figure 12.29. 25-inch Ordnance Survey Map (c. 1912), with the planning boundary shown in blue.

The Study Area remains relatively unchanged on the historic 25-inch Ordnance Survey Map (c. 1912). The Baltrasna-Milltown parish and townland boundary and the Slane Road remain unchanged. The large field immediately north of the Baltrasna-Milltown townland boundary becomes subdivided, splitting into two smaller allotments. No structures or buildings are depicted within the Study Area's planning boundary during time.

The 1912 OS map indicates that many of the planning boundary's field divisions were formed after this date. The northernmost portion of the planning boundary comprises a large irregular field, which today corresponds to Fields 1, 2, and 3. Similarly, the fields south of the Baltrasna-Milltown parish and townland boundary amount to four adjoined plots, which today correspond to Fields 4, 5, 6, 8, 9, 10, and 11. The small plot designated as Field 7 is shown, and was in existence by 1913.

12.3.8. Aerial Imagery Analysis

Satellite imagery of the Study Area captured between the years 2008–2022 has been consulted and utilised for the preparation of this chapter. While there are some minor changes in land use and residential construction projects, the overall planning boundary of the Study Area has remained largely unchanged.

Figure 02.30. Aerial photograph of the planning boundary from 2008 (Google Earth).

The imagery dating from 2008 shows the same field divisions that are present today. These divisions comprise 12 [sub]-rectangular parcels of land, separated by the Baltrasna-Milltown parish and townland boundary which runs east-west. The Killegland-Milltown (truncated) and Killegland-Baltrasna parish and townland boundaries can be seen bordering the western extent of the Study Area. In the large field west of the Killegland-Baltrasna parish and townland boundary (left middleground), a sub-circular crop mark can be seen, which represents a possible ringfort. This cropmark is a Recorded Monument (ME045-067). The former Slane Road, now the R135, borders the eastern perimeter of the Study Area and runs into Ashbourne. The area immediately north of the Study Area in Ashbourne is well developed, in comparison to that south of the planning boundary. Similarly, the eastern area near the Briars estate (right middleground) is more developed than the western lands opposite, which appear to be largely agricultural.

Figure 12.31. Aerial photograph of the planning boundary from 2013 (Google Earth).

No major changes to the Study Area are depicted on the imagery dating from 2013. Track marks from agricultural machinery can be seen within the fields of the planning boundary, most evident in fields 1, 3 , 8, 9, 10, 12. The field immediately west of the Study Area shows similar marks.

Figure 12.32. Aerial photograph of the planning boundary from 2017 (Google Earth).

Excluding the construction of smaller buildings and land-use developments east of the Study Area (right background), no major changes to the Study Area are depicted on the imagery dating from 2017. Darker patches are visible in a number of fields within the planning boundary, which may be either shadows, track marks (Fields 1, 2, and 9), or muddy areas void of grass (caused by access/egress).

Figure 12.33. Aerial photograph of the planning boundary from 2019 (Google Earth).

Agricultural marks and machinery route tracks can be seen within the Study Area's perimeter in the imagery dating from 2019, indicating the land's primary use during this period. No major developments or significant changes can be seen elsewhere in the vicinity.

Figure 02.34. Aerial photograph of the planning boundary from 2022 (Google Earth).

The imagery from 2022 confirms that no major developments or land alterations have taken place in the Study Area from 2019 to present. Similarly, the images show that the planning boundary's primary use agricultural in nature. The colour of the vegetation within the planning boundary is lighter, perhaps indicative of dry conditions or a lack of rainfall.

12.3.9. Geophysical Survey 2022

A geophysical survey was carried out in the fields of the planning boundary by Leigh, under licence 22-R-0015 (see Appendix 2). In total, ten fields were investigated, with two of the eastern fields (Field 7 and Field 11) not included in the survey. The geophysical survey indicated the presence of at least five circular features (6–7m in diameter) of archaeological potential, possibly representing small sub-circular enclosures or barrows. Two larger sub-circular features (11.5m and 15m in diameter) were also indicated by geophysical responses, possibly representing enclosure sites. An irregular response likely to correspond to a ditched feature with burnt material was registered in Field 9, whilst elsewhere the presence of smaller pit-like features was suggested by responses.

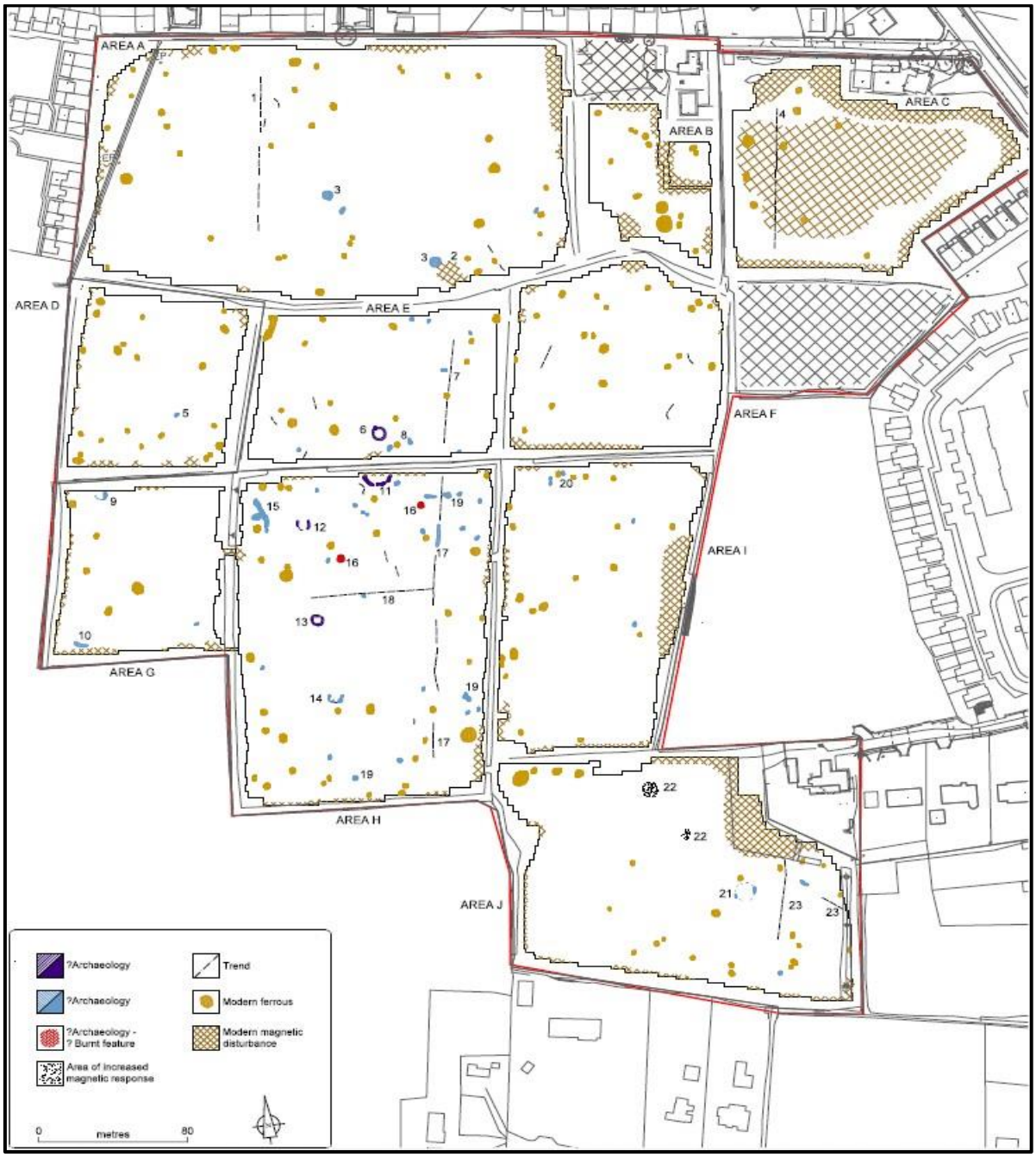


Figure 12.35. Results of Leigh's 2022 geophysical survey, with potential archaeological features highlighted.

12.3.10. Archaeological Test-Trenching Programme 2022

An archaeological test-trenching programme was carried out within the planning boundary of the proposed development by Archaeology Plan. The testing programme was conducted over ten days from the 8th–19th August 2022. The testing was carried out in very warm, sunny and dry conditions.

The test-trenching programme was informed by the 2022 geophysical survey data, with targeted test trenches placed in areas of suggested archaeological significance. A summary of the archaeological findings from the testing programme has been outlined below, categorised by field number. Further test-trenching data is included in the appendix (see Appendix 5), whilst all figures and plates will be included in the archaeological testing report after completion.

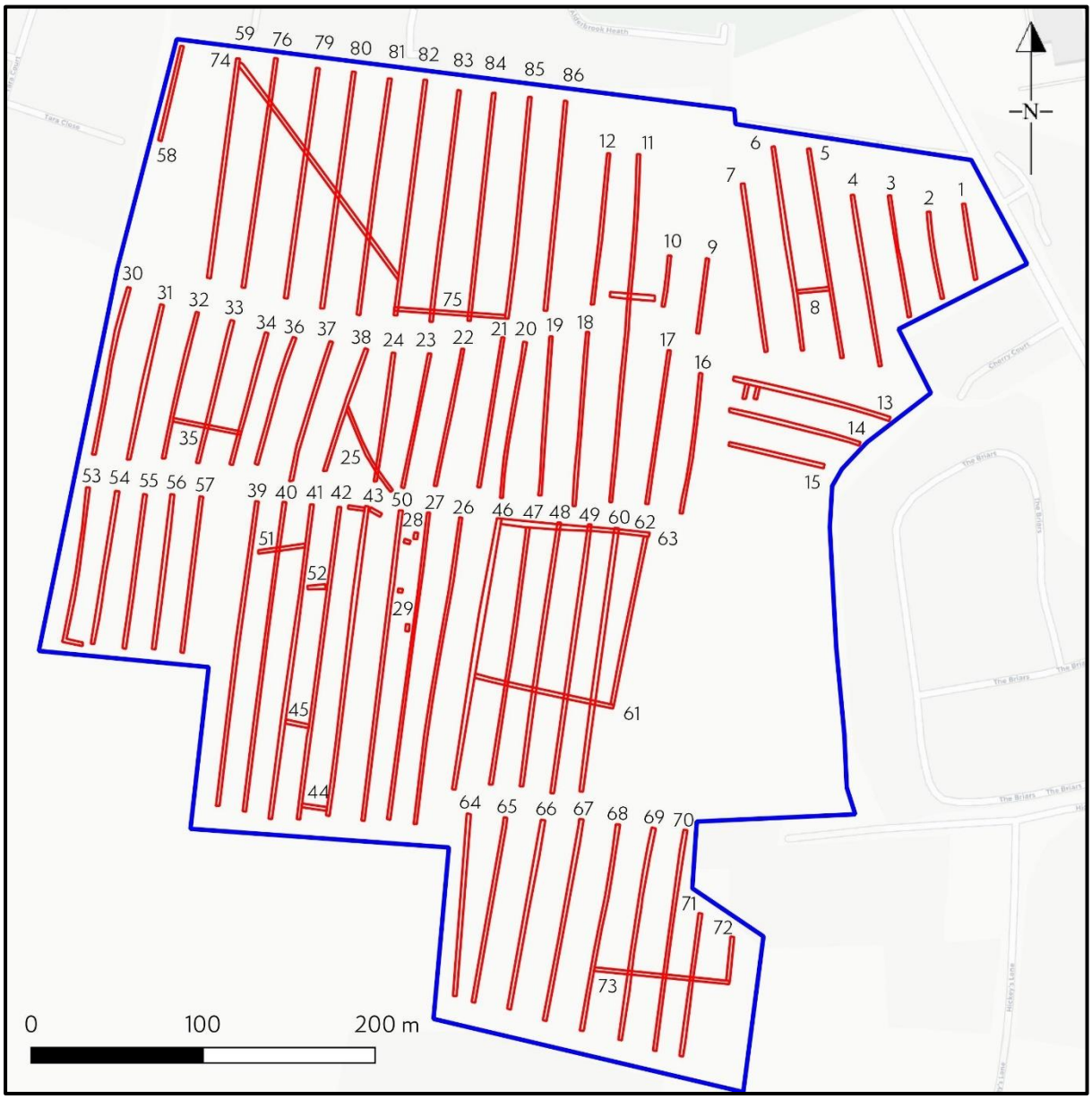


Figure 12.1. Test-trenching programme of the planning boundary, showing numbered test trenches.

Soil profile and attributes

The topsoil covering the planning boundary was generally a brown silty clay with moderate stone inclusions. This material ranged in depth depending on topography, but generally measured between 0.20m–40m.

In certain places within the planning boundary, the topsoil overlaid a compact mixed plough soil, which was noted to consist of a mottled brown, orange and grey silty clay with inclusions of brick, post-medieval ceramics, glass, and occasional pebbles. This material measured 0.05m-0.08m in thickness, and overlaid the natural subsoil and a number of cut features.

The natural subsoil similarly varied across the planning boundary. A stony boulder clay was identified in the western end of the subject site to the south, which gave way to a yellow-brown clay centrally within the site. The latter material in turn gave way to a mottled compact boulder clay to the east. Further to the north, stonier bands were evident along the central portions of the planning boundary, and a limestone bedrock outcrop was identified east of centre along Trench 6. Smaller bedrock and natural gravel outcrops and also were identified towards the western end of Trenches 7 and 8, which were at the top of the slope within Field 3.

Field 1

In this field, twenty pits, four curvilinear features, three post-holes, two linear features and a burnt spread were identified. The archaeology was noted to be relatively sporadic across the field.

Field 2

A burnt spread was identified at the southern end of the field, just north of the Baltrasna-Milltown parish and townland boundary ditch.

Field 3

A single pit was identified towards the western portion of the field.

Field 4

No archaeology was found.

Field 5

A ring-ditch was identified in the south, with pits to the west in Trenches 36 and 37. Little surviving archaeology was uncovered to the north and east.

Field 6

Two possible sections of a metalled surface, a curvilinear feature in Trench 20 in the east, and two possible pits were identified in this field.

Field 7

A burnt mound with an associated trough, pits and possible post-holes were identified in Field 7.

Field 8

A metalled surface was identified in the second, third, and fourth test trench from the west in Field 8, along the northern side and running towards the north-western corner. A charcoal-rich feature (central-western trench), and other similar charcoal features were identified in the west of the field.

A potential burnt mound site was partially exposed to the south-west, and a number of features containing charcoal and burnt clay were present in the south-eastern corner of the field.

Field 9

Trench 28 contained burnt clay, a curvilinear feature, and a charcoal pit. A linear feature was also uncovered to the north-west, in addition to a pit to the west in Trench 40. In Trench 41, a pit was identified to the north, as well as a ring-ditch.

The remains of a ring-ditch were found in Trenches 42 and 43. In the same trench, the remains of a possible structure with associated post-holes and a hearth was identified, in addition to a pit and a possible slot trench to the south. A pit was identified in Trench 44.

Pits with charcoal inclusions were identified in Trench 50, whilst pits, post-holes and curvilinear features were found in Trench 51. Trench 52 contained a pit and a linear feature.

In Trench 77 a burial was identified (west, at the top of Trench 43), with a ringditch uncovered in Trench 78 (east, at the top of Trench 43).

Figure 12.37. Plan showing test trenches and identified archaeological features in Field 9, overlaid onto Leigh's 2022 geophysical survey data.

Field 10

Three pits with burnt stone and charcoal were identified to the north-west. A pit with burnt bone and charcoal inclusions was found in Trench 49.

Field 12

A probable linear paleochannel with possible stake-holes in the base was identified in this field. A burnt mound was identified at northern end of the field in Trench 67, spanning approximately 1.2m in depth and 5m in width. Nothing

was identified to the south.

Significance of Archaeological remains identified during testing

The test-trenching programme conducted within the planning boundary confirmed the presence of significant archaeological features within Fields 2, 3, 5, 7, 9, and 12. The archaeology identified in Fields 2, 3, and 7 was overall noted to be quite contained.

Fields 1, 6, 8, and 10 were found to contain less substantial archaeology.

Field 4 contained no archaeology.

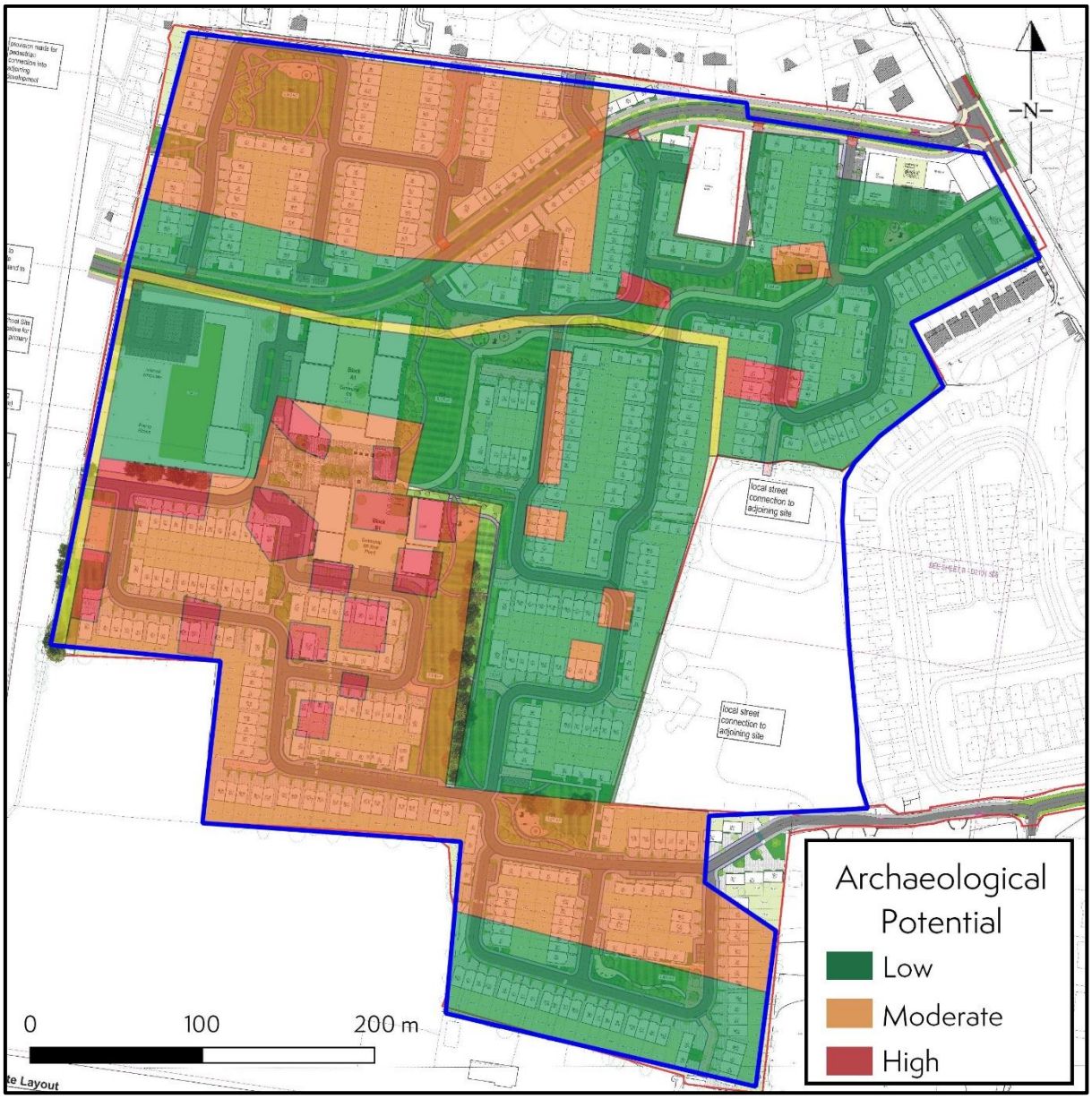


Figure 12.38. Development plan showing areas of archaeological potential within the planning boundary.

12.4. Potential Impact of the Proposed Development

The potential impact of the Proposed Development on the archaeological and architectural heritage of the Study Area has been considered.

Archaeological Heritage (Receptors)	**Impact or Effect**
Archaeological features and deposits	Permanent profound negative
Recorded Monuments	Neutral (no effect)
Parish and townland boundaries	Permanent profound negative
Architectural Heritage (Receptors)	**Impact or Effect**
Protected Structures	Neutral (no effect)
NIAH Structures	Neutral (no effect)
MIHS Structures	Neutral (no effect)

Table 12.7. Effects of the Proposed Development on Cultural Heritage.

12.4.1. Construction Phase

Archaeological Heritage

Archaeological features and deposits

A number of archaeological features and deposits were identified during the 2022 test-trenching programme. In areas of planned ground disturbance and excavation, the Proposed Development would have a permanent profound negative physical effect on any identified archaeological features or deposits present. This impact can be characterised by the damaging, truncation, or destruction of archaeological features or deposits, to the extent that they can no longer be preserved in situ, or archaeologically excavated and recorded.

The central, north-eastern, and southernmost areas of the planning boundary represent areas of low archaeological potential.

The north-western, central, south-western and south-eastern portions of the planning boundary are areas of moderate archaeological potential.

The areas of high archaeological potential are mostly concentrated to the south of the Baltrasna-Milltown parish and townland boundary. These smaller areas of enhanced archaeological potential are situated generally within zones deemed to be of moderate potential. However, two similar zones of high archaeological potential lie to the north and east of the same parish boundary.

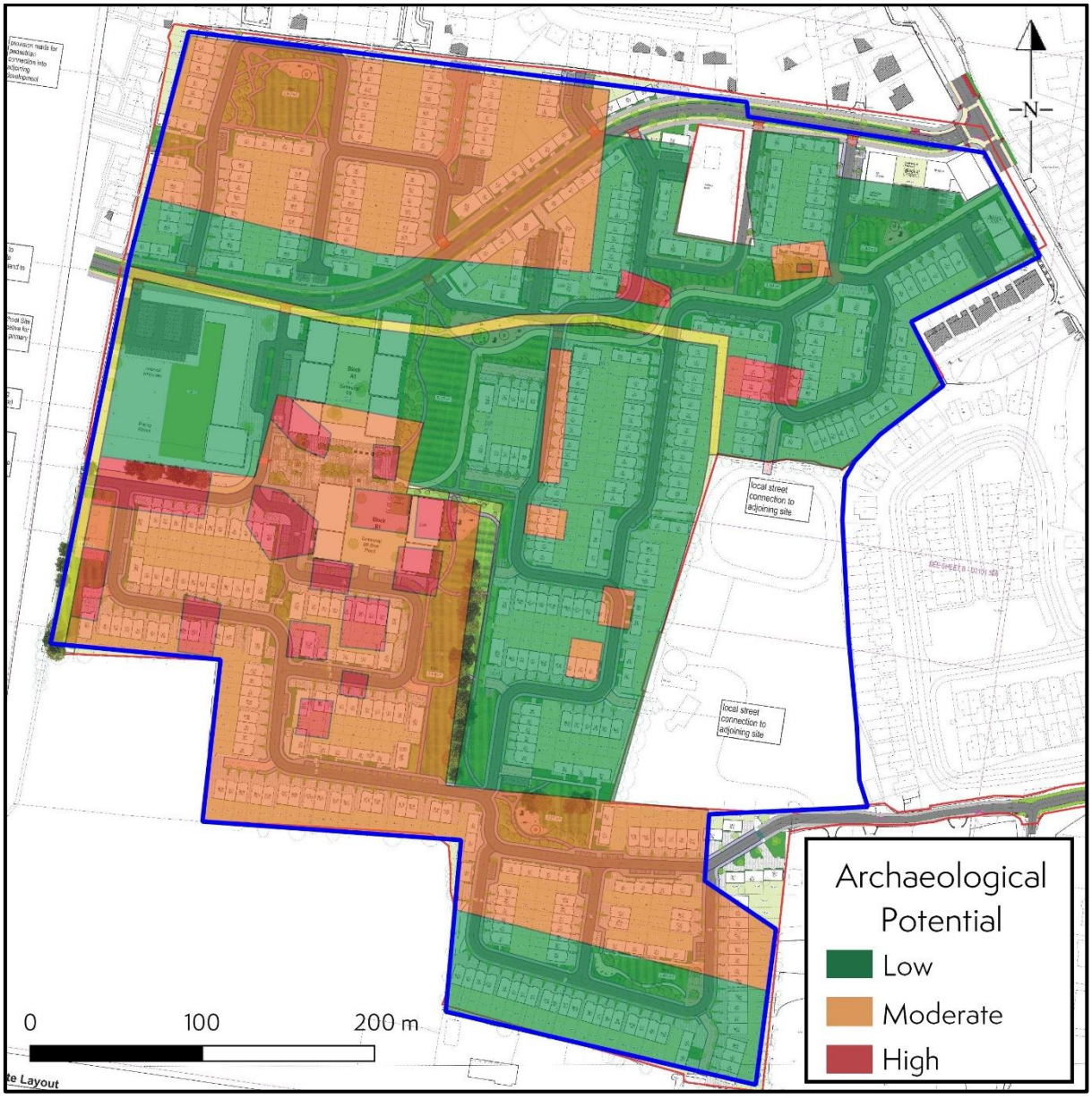


Figure 12.39. Development plan showing areas of archaeological potential within the planning boundary.

ME045-067 Ringfort

Although no Recorded Monuments would be physically impacted by the proposed development, a Recorded Monument (ME045-067) is situated to the immediate west of the planning boundary, approximately 125m away in a large field. This archaeological receptor is categorised as a ringfort, and was identified by the presence of cropmarks visible in aerial imagery. On the basis of this monument's classification, it could be reasonably expected to encounter early medieval archaeological features associated with settlement, metallurgy, domestic or agricultural activities within its vicinity. Given the close proximity of the monument to the Proposed Development's planning boundary, it is likely that at least a portion of any surviving archaeological features traverse the parish and townland boundary (Killegland-Baltrasna) into the footprint of the subject site. Should any associated unidentified archaeological features or deposits be situated within the planning boundary, the Proposed Development would incur a permanent and profound negative effect on them.

Figure 12.40. Map showing RMP ME045-067 to the west of the planning boundary.

Parish and townland boundaries

It has been noted that three parish and townland boundaries divide and border the Study Area, which are considered archaeological receptors. Parish and townland boundaries frequently traverse and respect boundaries established in earlier periods. Due to this, those areas directly surrounding such boundaries are often zones of heightened archaeological potential. During the Construction Phase, the Proposed Development would have a permanent profound negative physical effect on any archaeological features situated within these zones, without appropriate mitigation measures.

The northernmost receptor, the Killegland-Milltown boundary, has been truncated and borders only the top one-third of the planning boundary. The Baltrasna-Milltown parish and townland boundary runs through the upper portion of the planning boundary, whilst the Killegland-Baltrasna boundary marks the western border of the Study Area.

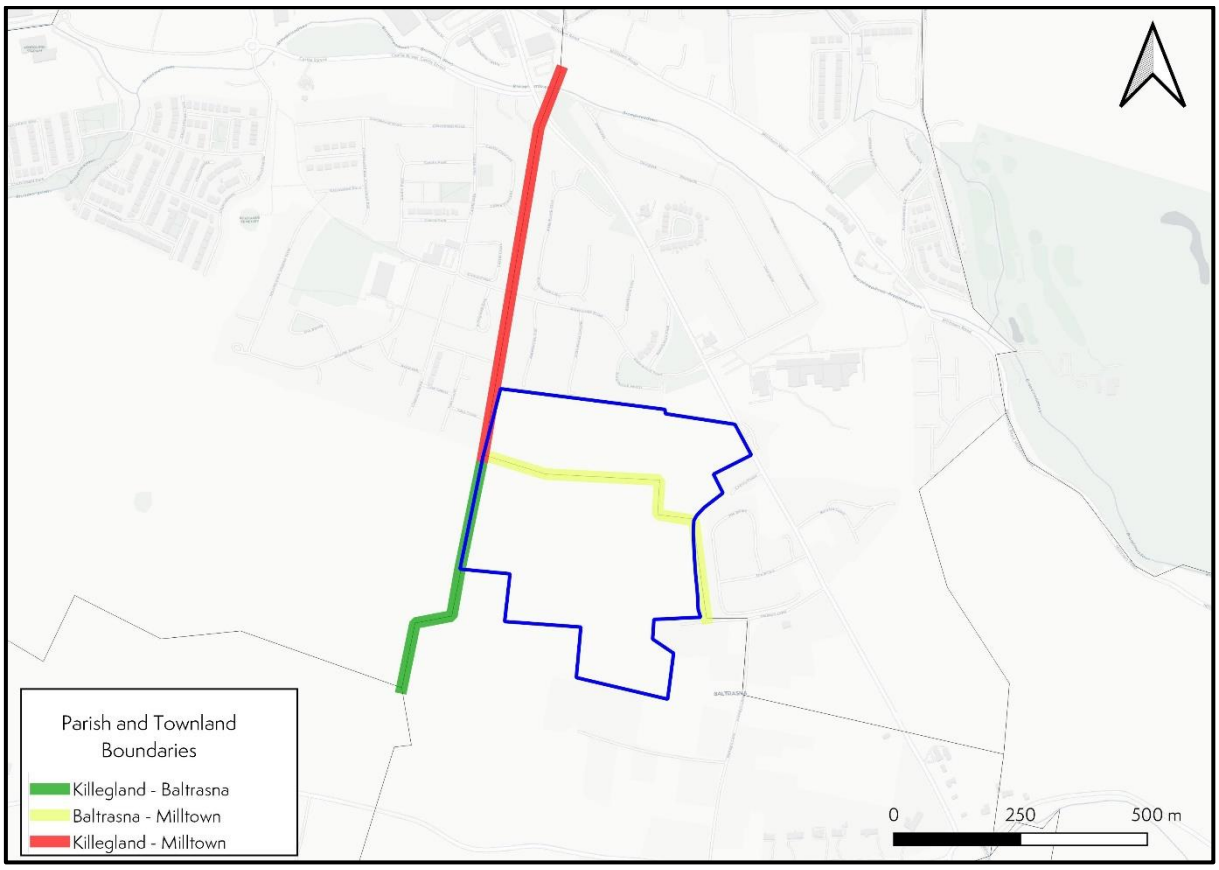


Figure 12.41. Map showing the parish and townland boundaries of the developmental planning boundary.

Architectural Heritage

During the construction phase, there would be a neutral effect (no effect) on the architectural heritage of the Study Area. This impact can be characterised by a lack of physical or visual effects incurring on the architectural receptors, with the resulting conditions allowing these structures to be preserved and remain unaltered.

There are no Protected Structures, NIAH listed buildings, or MIHS sites situated within the planning boundary of the Study Area. An adequate buffer of at least 470m exists between the Study Area and the closest architectural receptor, Milltown Bridge (MIHS 045-010), with most other architectural receptors situated further north in Ashbourne.

12.4.2. Operational Phase

Archaeological Heritage

It is anticipated that there would be an imperceptible neutral effect upon any surviving archaeological features and or deposits after the transition from the Construction Phase to the Operational Phase. Any archaeological receptors, known or unknown, that survive the Construction Phase are unlikely to be further affected once the Proposed Development is complete.

Architectural Heritage

It is anticipated that there would a neutral effect (no effect) on the architectural heritage of the Study Area after the transition from the Construction Phase to the Operational Phase.

12.4.3. Worse Case Impact

Archaeological Heritage

The worst case impact for the archaeological resource would entail the Construction Phase commencing without appropriate mitigation measures in place. This could be characterised by the damaging or destruction of archaeological features and deposits, without preservation in situ and/or preservation by record.

Architectural Heritage

As the architectural heritage of the Study Area is not at risk of adverse negative effects (damage, demolition, or alteration) by the Proposed Development, there would be applicable no worst case impact scenario.

12.4.4. Do-Nothing Impact

Archaeological Heritage

The Do-Nothing Impact would result in a profound positive effect on the archaeological heritage of the Study Area. This can be characterised by the lack of disturbance and alteration to the lands within the planning boundary. The resulting by-product in this scenario in relation to archaeological heritage would be preservation in situ. This method is considered best practice and allows for the preservation of archaeological material for future research using non-invasive techniques.

Architectural Heritage

The Do-Nothing Impact would have a neutral effect (no effect) on the architectural heritage of the Study Area. As there is no threat of disturbance or damage to these receptors by the construction of the proposed development, the conditions of a Do-Nothing Impact scenario are identical to those that would result from the development.

12.5. Mitigation Measures

Mitigation or ameliorative measures can describe corrective measures that are reasonably practicable, in the context of potential likely and significant environmental effects. Such mitigation measures can include avoidance, reduction and remedy, as outlined in Section 4.7 of the *Development Management Guidelines for Planning Authorities* (2007), to reduce or eliminate the impact of significant adverse effects.

The recommended mitigation measures are outlined below and have been based on the results of the test-trenching programme within the planning boundary.

12.5.1. Construction Phase

Archaeological Heritage

Figure 12.42 illustrates the archaeological potential of the planning boundary in relation to recommended mitigation measures. Subject to approval from the National Monuments Service, it is recommended that:

- Areas shaded in orange, if due to be impacted upon by any development, should be archaeologically stripped of topsoil and fully excavated under licence from the National Monuments Service prior to any groundworks.

- The topsoil stripping of the areas shaded in yellow, if due to be impacted upon by any development, should be monitored under archaeological supervision under licence from the National Monuments Service. Should any archaeological remains be identified, these should be fully excavated in advance of groundworks.
- The dwellings to the south of Cherry Lane, the lane itself and the farmyard at the eastern end of the lane are included in the areas to be monitored. The farmyard at the eastern end of Hickey's Lane to the south has also been included. It is unknown what the potential for archaeology is in these areas at present. These areas may require limited or intermittent monitoring during the removal of the upstanding buildings and the insertion of services.
- The townland boundary between Baltrasna and Milltown, which also forms the parish boundary between Ratoath and Donaghmore appears to follow the route of a watercourse used since prehistory. Five sections should be excavated through this ditch to further assess whether there is any survival of earlier versions of the ditch elsewhere within the planning boundary. A strip 5m in width on either side of the ditch should be monitored under archaeological supervision to assess for additional prehistoric remains along the line of the ditch. The western side of the planning boundary is bounded by the ditch forming the townland boundary between Milltown, Baltrasna, and Killegland. The parish boundary between Killegland and Ratoath also follows this ditch. The places where the Proposed Development impacts on this ditch should be monitored under archaeological supervision. Two sections should be recorded across the ditch.
- Those areas shaded in green require no further archaeological works.

Greenspaces within the development have been shaded in green, indicating that they should require no further archaeological works. It is recommended that these areas be fenced or cordoned off prior to and during groundworks within the planning boundary. By enclosing these areas prior to and during groundworks, there can be no impact on archaeology situated there. This mitigation strategy is only valid should no ground level reduction take place within the greenspace areas. If ground level reduction is required within the areas prior to the creation of greenspaces, archaeological monitoring may be required

Figure 12.42. Colour-coded plan showing recommendations for archaeological areas within the planning boundary.

Architectural Heritage

Mitigation measures would not be applicable during any stage, as the proposed development is anticipated to have a neutral (no effect) on architectural heritage of the Study Area.

12.5.2. Operational Phase

Archaeological Heritage

It is anticipated that there would be an imperceptible neutral physical effect on any archaeological features that survive the transition from the Construction Phase to the Operational Phase. Archaeological receptors within the planning boundary are unlikely to be further affected once the Strategic Housing Development is complete, and therefore additional mitigation measures during this stage are not necessary.

Architectural Heritage

Mitigation measures would not be applicable during any stage, as the proposed development is anticipated to have a neutral effect (no effect) on the architectural heritage of the Study Area.

12.6. Residual Impacts

Archaeological Heritage

It is anticipated that there would be no residual impact on the archaeological heritage of the Study Area following the implementation of appropriate mitigation measures. Furthermore, should any archaeological features or deposits with the planning boundary be preserved in situ, then the residual impact on those entities would be long-term, imperceptible and positive.

Architectural Heritage

There would be no residual impact on the architectural heritage of the Study Area.

12.7. Cumulative Impacts

There are no ongoing or scheduled large residential developments in the vicinity of the proposed development. However, two areas are scheduled for development. Approximately 200m to the east of the proposed development at Hickey's Lane, a small application (planning ref. 2270) for six two storey residential houses is currently pending. Elsewhere, approximately 1.4km to the north of the planning boundary and north of Archerstown Wood, a development containing c. 75 dwellings on zoned land is scheduled (planning ref. AA150947; AA201692; 21939).

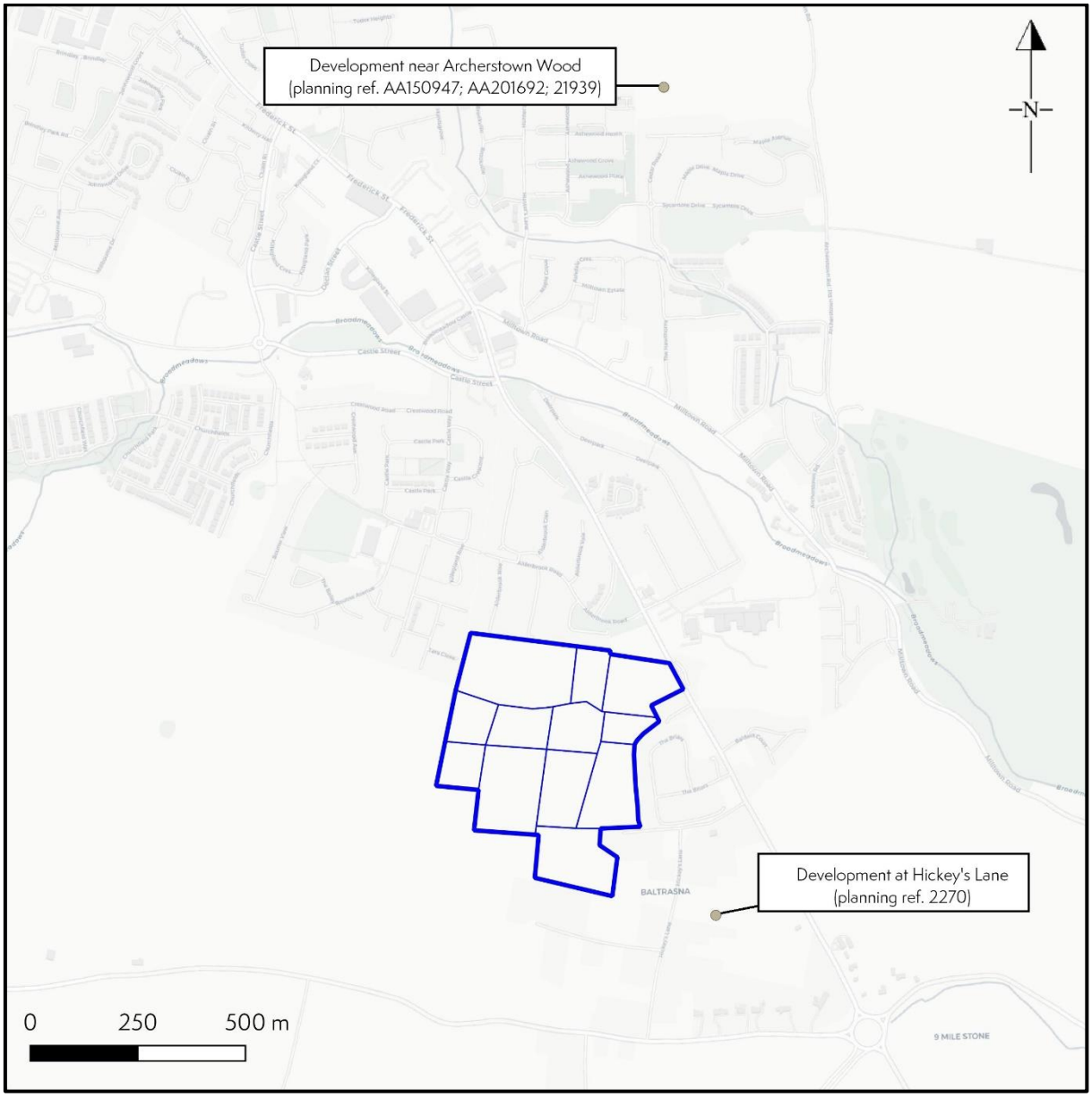


Figure 12.43. Map showing cumulative developments nearby to the planning boundary.

Archaeological Heritage

It is anticipated that the scheduled developments at Hickey's Lane (planning ref. 2270), and that north of Archerstown Wood (planning ref. AA150947; AA201692; 21939) would have no effect on the Proposed Development or its archaeological resource.

A residential development at Churchfield to the north-west of the Proposed Development is already complete (planning ref. AA140846), and appropriate mitigation measures were implemented prior to the development to excavate and record features of the archaeological resource (Halliday 05E1321; Halliday 06E0782). The implementation of proactive mitigation measures incurred a significant positive effect on the local archaeological resource, with substantial data and archaeological evidence for multi-period activity in the wider Ashbourne area being recorded.

Architectural Heritage

It is anticipated that the scheduled developments at Hickey's Lane (planning ref. 2270), and that north of Archerstown Wood (planning ref. AA150947; AA201692; 21939) would have no effect on the proposed development or the architectural heritage of the Study Area.

12.8. Interactions

Potential effects have been identified between different environmental factors, outlined below.

Cultural Heritage (Archaeological & Architectural) and Material Assets (Built Services)

Construction Phase: Any ground reduction works or excavations made to facilitate site services and utilities have the potential to interact with archaeology. Without appropriate mitigation measures (described in section 1.5), a permanent profound negative effect would be incurred on sub-surface archaeological features and deposits.

Cultural Heritage (Archaeological & Architectural) and Land, Soils & Geology

Construction Phase: Any ground reduction, trenches, or trial pits associated with geological and geochemical investigations have the potential to interact with archaeology. Without appropriate mitigation measures (described in section 1.5), a permanent profound negative effect would be incurred on sub-surface archaeological features and deposits.

12.9. Difficulties Encountered

No difficulties were encountered during the preparation of this chapter.

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13.0. The Landscape

13.1. Introduction

This chapter of the EIAR considers the potential effects on the landscape and visual resource in the area arising from the proposed development. A full description of the proposed development, development lands and all associated project elements is provided in Chapter 2 of this EIAR. The nature and probability of effects on the landscape and visual resource in the area arising from the overall project has been assessed. The assessment comprises:

- A review of the existing receiving environment.
- Prediction and characterisation of likely impacts;
- Evaluation of effects significance; and
- Consideration of mitigation measures, where appropriate.

The proposed development will consist of the construction of a strategic housing development of 702 no. units ranging from 3 to 6 storeys and a mix of non-residential uses including 2 no. creches, 4 no. retail units and 1 no. GP/medical use unit, future school and playing field site, a neighbourhood park, various smaller public and communal open spaces and shared footpaths/cycle routes.

The proposed development also provides for: hard and soft landscaping; boundary treatments; public realm works; car parking; bicycle stores and shelters; bin stores; lighting; plant rooms; and all ancillary site development works above and below ground

Key issues in relation to landscape and visual impact include:

- The change from semi-rural agricultural fields to extensive urban village on the southern edge of Ashbourne town. From a green backdrop to a built form.
- The height/prominence /visibility of some blocks, up to 6 stories, and their impact locally as well as on wider sensitive visual receptors /Landscape Character Area

13.1.1. Competency of Assessor

This Landscape and Visual Impact Assessment was carried out by chartered landscape architect Ronan Finnegan, BSc, PG Dip, CMLI of Cunnane Stratton Reynolds. He has over thirteen years' experience as a landscape architect which has involved undertaking Landscape and Visual Impact Assessments (LVIA) for a broad range of development types including large residential, infrastructure and renewable energy projects located across Ireland and the UK. Oversight of the LVIA chapter was provided by Lucy Carey, MILI, Director of Cunnane Stratton Reynolds.

13.1.2. Legislation

The importance of the role of landscape and protection of its character through establishing planning policies and designations as part of the decision making at national through to county council level is governed by the Planning and Development Act 2000-2022 (as amended).

The Planning and Development Act has applied the same meaning to landscape as in Article 1 of the European Landscape Convention (ELC) 2000, ratified by Ireland in 2004. Which states Landscape as being an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors. The Irish Government has produced the National Landscape Strategy 2014-2025 to implement the ELC which aims to implement six core objectives through decision making including recognise landscape in law, national

landscape character assessment, landscape policies, increased landscape awareness, education and public participation.

13.2. Assessment Methodology

The Landscape and Visual Assessment (LVIA) was informed by a desktop study and a survey of the site and receiving environment in October 2021. The assessment is in accordance with the methodology prescribed in the Guidelines for Landscape and Visual Impact Assessment, 3rd edition, 2013 (GLVIA) published by the UK Landscape Institute and the Institute for Environmental Management and Assessment and the relevant updates and Clarifications as issued by the Landscape Institute.

13.2.1. Definition of Landscape

Ireland is a signatory to the European Landscape Convention (ELC). The ELC defines landscape as 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors'. This definition is important in that it expands beyond the idea that landscape is only a matter of aesthetics and visual amenity. It encourages a focus on landscape as a resource in its own right - a shared resource providing a complex range of cultural, environmental and economic benefits to individuals and society.

As a cultural resource, the landscape functions as the setting for our day-to-day lives, also providing opportunities for recreation and aesthetic enjoyment and inspiration. It contributes to the sense of place experienced by individuals and communities and provides a link to the past as a record of historic socio-economic and environmental conditions.

As an environmental resource, the landscape provides habitat for fauna and flora. It receives, stores, conveys and cleans water, and vegetation in the landscape stores carbon and produces oxygen. As an economic resource, the landscape provides the raw materials and space for the production of food, materials (e.g. timber, aggregates) and energy (e.g. carbon-based fuels, wind, solar), living space and for recreation and tourism activities.

13.2.2. Forces of Landscape Change

Landscape is not unchanging. Many different pressures have progressively altered familiar landscapes over time and will continue to do so in the future, creating new landscapes. For example, within the receiving environment, the environs of the proposed development have altered over the last thousand years, from wilderness to agriculture and settlement or townscape.

Many of the drivers for change arise from the requirement for development to meet the needs of a growing population and economy. The concept of sustainable development recognises that change must and will occur to meet the needs of the present, but that it should not compromise the ability of future generations to meet their needs. This involves finding an appropriate balance between economic, social and environmental forces and values.

The reversibility of change is an important consideration. If change must occur to meet a current need, can it be reversed to return the resource (in this case, the landscape) to its previous state to allow for development or management for future needs.

Climate change is one of the major factors likely to bring about future change in the landscape, and it is accepted to be the most serious long-term threat to the natural environment, as well as economic activity (particularly primary production) and society. The need for climate change mitigation and adaptation, which includes the management of water and more extreme weather and rainfall patterns, is part of this.

13.2.3. Guidance

Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity.

The methodology for assessment of the landscape and visual effects is informed by the following key guidance documents, namely:

- Guidelines for Landscape and Visual Impact Assessment, 3rd Edition 2013, published by the UK Landscape Institute and the Institute of Environmental Management and Assessment (hereafter referred to as the GLVIA).
- Guidelines on the Information to be Contained in Environmental Impact Reports (EIAR) 2022 , published by the Environmental Protection Agency
- Meath County Development Plan 2021-2027

Key Principles of the GLVIA

Use of the Term 'Effect' vs 'Impact'

The GLVIA advises that the terms 'impact' and effect' should be clearly distinguished and consistently used in the preparation of an LVIA.

'Impact' is defined as the action being taken. In the case of the proposed development, the impact would include the construction of the buildings and associated boundaries and external areas.

'Effect' is defined as the change or changes resulting from those actions, e.g. a change in landscape character, or changes to the composition, character and quality of views in the receiving environment. This report focusses on these effects.

Assessment of Both 'Landscape' and 'Visual' Effects

Another key distinction to make in a LVIA is that between landscape effects and the visual effects of development.

'Landscape' results from the interplay between the physical, natural and cultural components of our surroundings. Different combinations of these elements and their spatial distribution create distinctive character of landscape in different places. 'Landscape character assessment' is the method used in LVIA to describe landscape, and by which to understand the potential effects of a development on the landscape as 'a resource'. Character is not just about the physical elements and features that make up a landscape, but also embraces the aesthetic, perceptual and experiential aspects of landscape that make a place distinctive.

Views and 'visual amenity' refer to the interrelationship between people and the landscape. The GLVIA prescribes that effects on views and visual amenity should be assessed separately from landscape, although the two topics are inherently linked. Visual assessment is concerned with changes that arise in the composition of available views, the response of people to these changes and the overall effects on the area's visual amenity.

13.2.4. Methodology for Landscape Assessment

In Section 5 of this report the landscape effects of the development are assessed. The nature and scale of changes to the landscape elements and characteristics are identified, and the consequential effect on landscape character and value are discussed. Trends of change in the landscape are taken into account. The assessment of significance of the effects takes account of the sensitivity of the landscape resource and the magnitude of change to the landscape which resulted from the development.

Sensitivity of the Landscape Resource

The sensitivity of the landscape is a function of its land use, landscape patterns and scale, visual enclosure and the distribution of visual receptors, and the value placed on the landscape. The nature and scale of the development in question is also taken into account. For the purpose of assessment, five categories are used to classify the landscape sensitivity of the receiving environment.

Sensitivity	Description
Very High	Areas where the landscape exhibits a very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The character of the landscape is such that its capacity for accommodating change in the form of development is very low. These attributes are recognised in landscape policy or designations as being of national or international value and the principle 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 character of the landscape is such that it has limited/low capacity for accommodating change in the form of development. These attributes are recognised in landscape policy or designations as being of national, regional or county value and the principle management objective for the area is conservation of the 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 to / degradation / erosion of elements and characteristics. The character of the landscape is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the principle 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 of the landscape 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 where the principle management objective is 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 of the landscape is such that its capacity for accommodating change is high; where development would make no significant change or would make a positive change. Such landscapes include derelict industrial lands or extraction sites, as well as sites or areas that are designated for a particular type of development. The principle management objective for the area is to facilitate change in the landscape through development, repair or restoration.

Table 13.1. Categories of Landscape Sensitivity.

Magnitude of Landscape Change

The magnitude of change is a factor of the scale, extent and degree of change imposed on the landscape with reference to its key elements, features and characteristics (also known as 'landscape receptors'). Five categories are used to classify magnitude of landscape change.

Magnitude of Change	Description
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 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 13.2. Categories of Landscape Change.

Significance of Effects

In order to classify the significance of effects (both landscape and visual), the predicted magnitude of change is measured against the sensitivity of the landscape/viewpoint, using the following guide. There are seven classifications of significance, namely: (1) imperceptible, (2) not significant, (3) slight, (4) moderate, (5) significant, (6) very significant, (7) profound.

		Sensitivity of the Landscape Resource				
		Very High	**High**	**Medium**	**Low**	**Negligible**
Magnitude of Change	**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 13.3. Guide to Classification of Significance of Landscape Effects.

The matrix above is used as a guide only. The assessor also uses professional judgement informed by their expertise, experience and common sense, to arrive at a classification of significance that is reasonable and justifiable.

Landscape effects are also classified as positive, neutral or negative/adverse (See definitions in Section 2.6). Development has the potential to improve the environment as well as damage it. In certain situations, there might be policy encouraging a type of change in the landscape, and if a development achieves the objective of the policy the resulting effect might be positive, even if the landscape character is profoundly changed.

13.2.5. Methodology for Visual Assessment

In Section 7 of this report the visual effects of the development are assessed. Visual assessment considers the changes to the composition of views, the character of the views, and the visual amenity experienced by visual receptors. The assessment is made for a number of viewpoints selected to represent the range of visual receptors in the receiving environment. The significance of the visual effects experienced at these locations is assessed by measuring the viewpoint sensitivity against the magnitude of change to the view resulting from the development.

Sensitivity	Description
Very High	Viewers at iconic viewpoints - towards or from a landscape feature or area - that are recognised in policy or otherwise designated as being of high value or national value. This may also include residential viewers who are focussed to a large extent on the view.
High	Viewers at viewpoints that are recognised in policy or otherwise designated as being of value, or viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features) and views which are highly valued by the local

	community. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes.
Medium	Viewers considered of medium susceptibility, such as locations where viewers are travelling at slow or moderate speeds through or past the affected landscape in cars or on public transport, where they are partly but not entirely focused on the landscape, or where the landscape has some valued views. The views are generally not designated, but which include panoramic views or views judged to be of some scenic quality, which demonstrate some sense of naturalness, tranquillity or some rare element in the view.
Low	Viewers at viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities such as shopping, etc. The view may present an attractive backdrop to these activities but there is no evidence that the view is valued, and not regarded as an important element of these activities. Viewers travelling at high speeds (e.g. motorways) may also be generally considered of low susceptibility.
Negligible	Viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities such as shopping where the view has no relevance or is of poor quality and not valued.

Table 13.4. Categories of Viewpoint Sensitivity.

Magnitude of Change to the View

Classification of the magnitude of change takes into account the size or scale of the intrusion of development into the view (relative to the other elements and features in the composition, i.e. its relative visual dominance), the degree to which it contrasts or integrates with the other elements and the general character of the view, and the way in which the change will be experienced (e.g. in full view, partial or peripheral, or glimpses). It also takes into account the geographical extent of the change, the duration and the reversibility of the visual effects.
Five categories are used to classify magnitude of change to a view:

Magnitude of Change	Description
Very High	Full or extensive intrusion of the development in the view, or partial intrusion that obstructs valued features or characteristics, or introduction of elements that are completely out of character in the context, to the extent that the development becomes the dominant the composition and defines the character of the view and the visual amenity.
High	Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.
Medium	Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.
Low	Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.
Negligible	Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.

Table 13.5. Categories of Visual Change.

Significance of Visual Effects

As for landscape effects, in order to classify the significance of visual effects, the magnitude of change to the view is measured against the sensitivity of the viewpoint, using the guide in Table 13.5 above.

13.2.6. Quality and Timescale

Qualitative Impacts

The predicted impacts are also classified as beneficial, neutral or adverse. This is not an absolute exercise; in particular, visual receptors' attitudes to development, and thus their response to the impact of a development, will vary. However, the methodology applied is designed to provide robust justification for the conclusions drawn. These qualitative impacts/effects are defined as:

- Adverse – Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished;
- Neutral - Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;
- Beneficial – improves landscape(townscape)/view quality and character, fits with the scale, landform and pattern and enables the restoration of valued characteristic features or repairs / removes damage caused by existing land uses.

Timescale of the Impacts

Impacts/effects are also categorised according to their longevity or timescale:

- 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
- Permanent – Lasting over sixty years.

A statement is made as to the appropriateness of the proposed development based on the combined assessment of the predicted landscape and visual effects. This methodology, in accordance with the various guidelines for LVIA, results in a conclusion as to the appropriateness of the proposed development based on objective assessment of its likely landscape and visual impacts.

13.2.7. Statement on Limitations and Difficulties Encounters

The site assessment has carried out from within the proposed development site and surrounding publicly accessible lands and routes only. As such it does not involve assessing directly from private lands e.g., a resident's garden or internal outward views from their house. Instead, professional judgement and experience has been used when considering the potential visual impacts on these affected receptors where no direct access is possible.

13.3. Receiving Environment

This section is divided into a review of landscape related Planning Policy as set out in the adopted Meath County Council Development Plan 2021-2027 and associated documents, and a description of the study area informed by desktop assessment and field visit.

The Site forms eleven fields, three dwelling of which two are derelict falling under two landholdings. This section and report will collectively reference these lands as the Site.

The following review of the planning policy will consider the policies and objectives relevant to landscape relating to the overall Site but will note any variations which may relate specifically to only part of the Site's lands e.g., zoning objective.

13.3.1. Relevant Planning Policy

The following statutory plans are referenced in this section, owing to their relevance to the site location and its proposed development:

- Meath County Development Plan 2021-2027
- Ashbourne Local Area Plan 2009-15

13.3.1.1. Meath County Development Plan 2021-2027

The **Meath County Development Plan 2021-2027 (hereafter referred to as the 'Plan'/CCDP)** contains a range of policies relevant to establishing the landscape and visual values and sensitivities for the site and site environs. These are set out below.

It is the stated the core strategy will through the plans' policies and objectives will deliver county wide a number of key aims which include:

- *To provide the policy framework for the settlement strategy and Local Area Plans, particularly in relation to land use zoning and population distribution.*
- *To ensure the co-ordination of infrastructural investment with settlements identified for future growth.*
- *To facilitate the population growth of Meath up to a projected population of 228,300 in the plan period and ensure the distribution of this population is targeted towards the growth centres identified in the RSES.*

The town of Ashbourne is classed as a Self Sustaining Growth Town which falls outside of the wider Dublin Metropolitan Area, see **Figure 13.1**. This settlement type is described by the CDP as:

Towns with a moderate level of jobs and services – includes subcounty market and commuter towns with good transport links and capacity for continued commensurate growth to become more self-sustaining.

The main focus of the core strategy for this settlement type will be:

consolidation and the provision of employment opportunities in tandem with population growth in order to allow these centres to become more self sufficient. The availability of infrastructural services and community infrastructure will also be an important factor in determining the quantum of new housing and population growth that these settlements could absorb.

Figure 13.1. Core Strategy Map (Source: Meath County Council).

Policies of the Council's Core Strategy include:

CS OBJ 2:

To ensure that sufficient zoned lands are available to satisfy the housing requirements of the County in designated settlements over the lifetime of the Plan

CS OBJ 4:

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

CS OBJ 13:

Support the implementation of the National Climate Change Strategy and the National Climate Change Adaption Framework Building Resilience to Climate Change 2012 through the County Development Plan and through the preparation of a Climate Change Adaptation Plan in conjunction with all relevant stakeholders

Settlement and Housing

SH POL 2:

To promote the consolidation of existing settlements and the creation of compact urban forms through the utilisation of infill and brownfield lands in preference to edge of centre locations.

SH POL 3:

To support the creation of healthy and sustainable communities that encourages and facilitates walking and cycling and general physical activity through the implementation of best practices in urban design that promotes

permeability and interconnecting spaces

SH POL 7:

To encourage and foster the creation of attractive, mixed use, sustainable communities that include a suitable mix of housing types and tenures with supporting facilities, amenities, and services that meet the needs of the entire community and accord with the principles of universal design, in so far as practicable.

SH POL 8:

To support the creation of attractive residential developments with a range of housing options and appropriate provision of functional public and private open space that is consistent with the standards and principles set out in the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas and the associated Urban Design Manual – A Best Practice Guide, DEHLG (2009) and any subsequent Guidelines.

SH POL 9:

To promote higher residential densities in appropriate locations and in particular close to town centres and along public transport corridors, in accordance with the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas, DEHLG (2009)

SH POL 10:

To require that applications for residential development take an integrated and balanced approach to movement, place making, and streetscape design in accordance with the requirements of the Design Manual for Urban Roads and Streets, DTTS and DECLG (2013 and updated in 2019).

SH POL 13:

To promote innovation in architectural design that delivers buildings of a high-quality that positively contributes to the built environment and local streetscape.

Built Heritage

HER POL 16:

To protect the setting of Protected Structures and to refuse permission for development within the curtilage or adjacent to a protected structure which would adversely impact on the character and special interest of the structure, where appropriate.

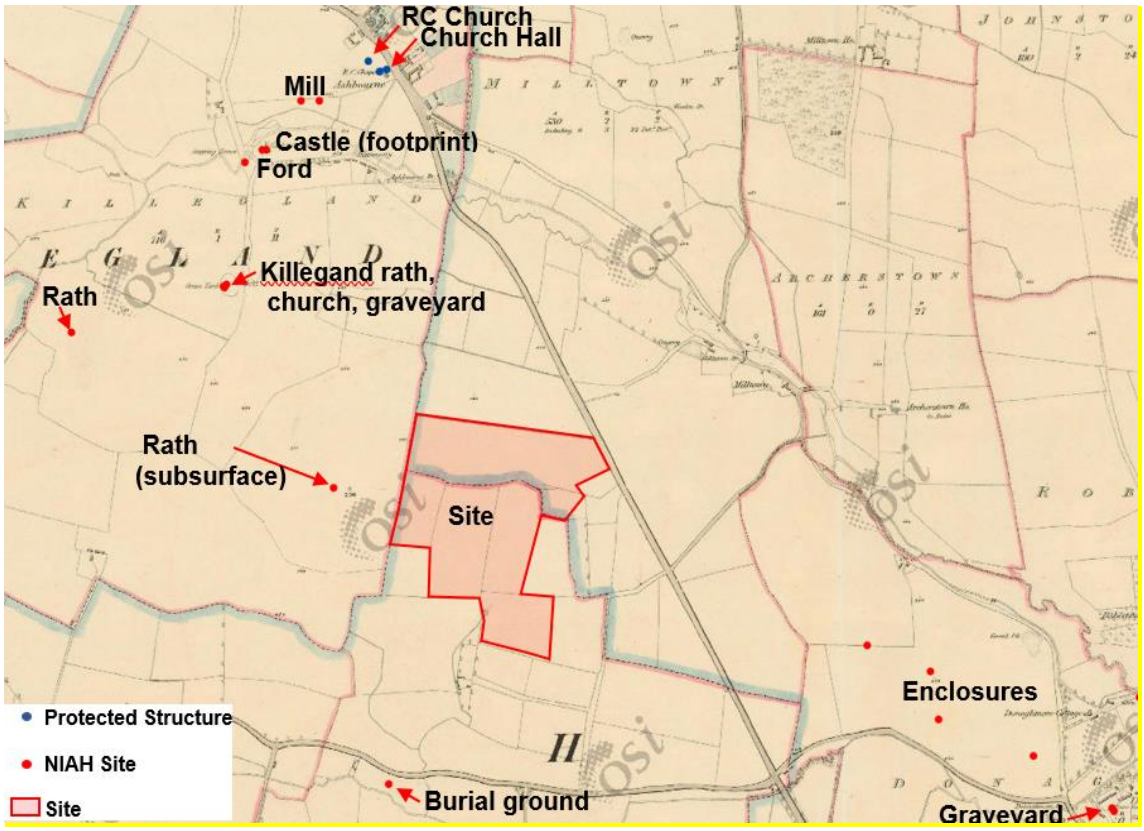

Figure 13.2. Protected Structures and NIAHs in the vicinity of the Site (Source: 6" Historic Map).

Natural Heritage

HER POL 27:

To protect, conserve and enhance the County's biodiversity where appropriate.

HER POL 28:

To integrate in the development management process the protection and enhancement of biodiversity and landscape features wherever possible, by minimising adverse impacts on existing habitats (whether designated or not) and by including mitigation and/or compensation measures, as appropriate.

HER POL 31:

To ensure that the ecological impact of all development proposals on habitats and species are appropriately assessed by suitably qualified professional(s) in accordance with best practice guidelines – e.g. the preparation of an Ecological Impact Assessment (EcIA), Screening Statement for Appropriate Assessment, Environmental Impact Assessment, Natura Impact Statement (NIS), species surveys etc. (as appropriate)

HER POL 37:

To encourage the retention of hedgerows and other distinctive boundary treatments in rural areas and prevent loss and fragmentation, where practically possible. Where removal of a hedgerow, stone wall or other distinctive boundary treatment is unavoidable, mitigation by provision of the same type of boundary will be required.

HER POL 38:

To promote and encourage planting of native hedgerow species in new developments and as part of the Council's own landscaping works.

HER POL 39:

To recognise the archaeological importance of townland boundaries including hedgerows and promote their protection and retention.

HER POL 40:

To protect and encourage the effective management of native and semi-natural woodlands, groups of trees and individual trees and to encourage the retention of mature trees and the use of tree surgery rather than felling, where possible, when undertaking, approving or authorising development.

Landscape

HER OBJ 48:

To support the aims and objectives of the European Landscape Convention by implementing the relevant objectives and actions of the National Landscape Strategy 2015-2025 and any revisions thereof.

Landscape Character Assessment.

The county was divided up into 4 generic landscape character types (LCTs) and subdivided into 20 geographical specific landscape character areas (LCAs) as part of a Landscape Character Assessment in 2007.

The Landscape Character Assessment places a value on each landscape character area ranging from exceptional high to low. Subsequent to the type and value being identified, the sensitivity of each character area is defined as the ability to accommodate change or intervention without suffering unacceptable effects to its character and values. Sensitivity is evaluated using criteria ranging from very high to low. It should however be noted, that the GLVIA (2013) states that sensitivity of a landscape is linked directly to the proposed change. The landscape is further judged on its level of importance from a local, regional, national to international scale.

The Site lies within the Lowland Landscape LCT and The Ward Lowlands LCA. This LCA has been deemed to have Low landscape value, High landscape sensitivity and a landscape of Regional Importance, as illustrated in Figures 13.3 and 13.4.

Key characteristics of The Ward Lowlands LCA include:

- Mix of pasture and arable farmland Settlements of Ashbourne and Ratoath with both under significant pressures due to proximity to Dublin metropolitan area.
- Ashbourne has a significant volume of new development in the form of commercial warehouses, retail units and large-scale residential schemes that have developed with no coherent structure.
- Ashbourne town centre is a mix of vernacular buildings and large scale shopping complexes that are out of character with the scale of the town and poorly integrated with each other. Older housing estates to the southwest of the town are more attractive. The surrounding landscape is degraded with the edge of the town creating a distinct urban fringe that is out of character with the rural setting.
- The landscape has a degraded quality due to the lack of management, loss of hedgerows and larger fields adjacent to the continually expanding urban fringe. The development of these towns threatens to erode the rural character of the area.

The recommendations for this LCA within the LCA study include: "*Improvements to the condition of existing hedgerows, consolidating the urban fringes with appropriate landscape treatment to soften urban edges and provide opportunities for public access and recreation in proximity to population centres*."

The potential capacity of the LCA determined by the study includes: "*Low potential capacity to accommodate multi-house developments due to the significant growth of this type of development in recent years. Such development should be limited to the existing urban areas, which have been designated to accommodate such growth, and in these locations they should be very carefully planned in terms of location, scale and design to mitigate against potential adverse impacts, particularly cumulative impacts."*

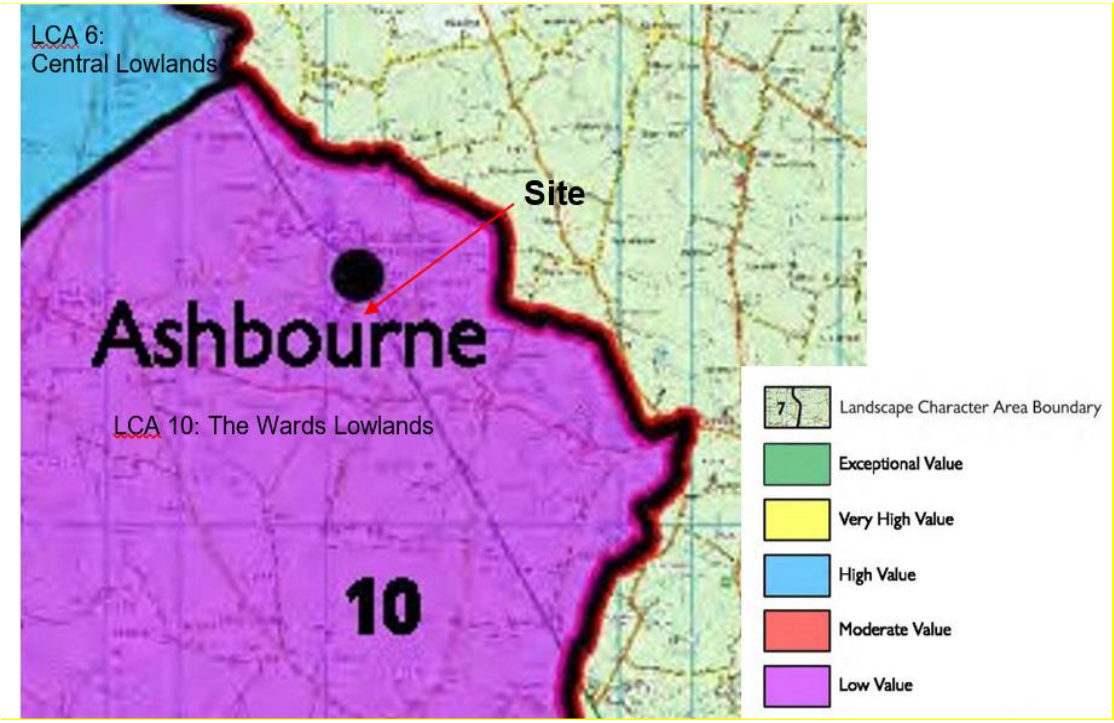

Figure 13.3. Landscape Character Areas (Source: Meath County Council).

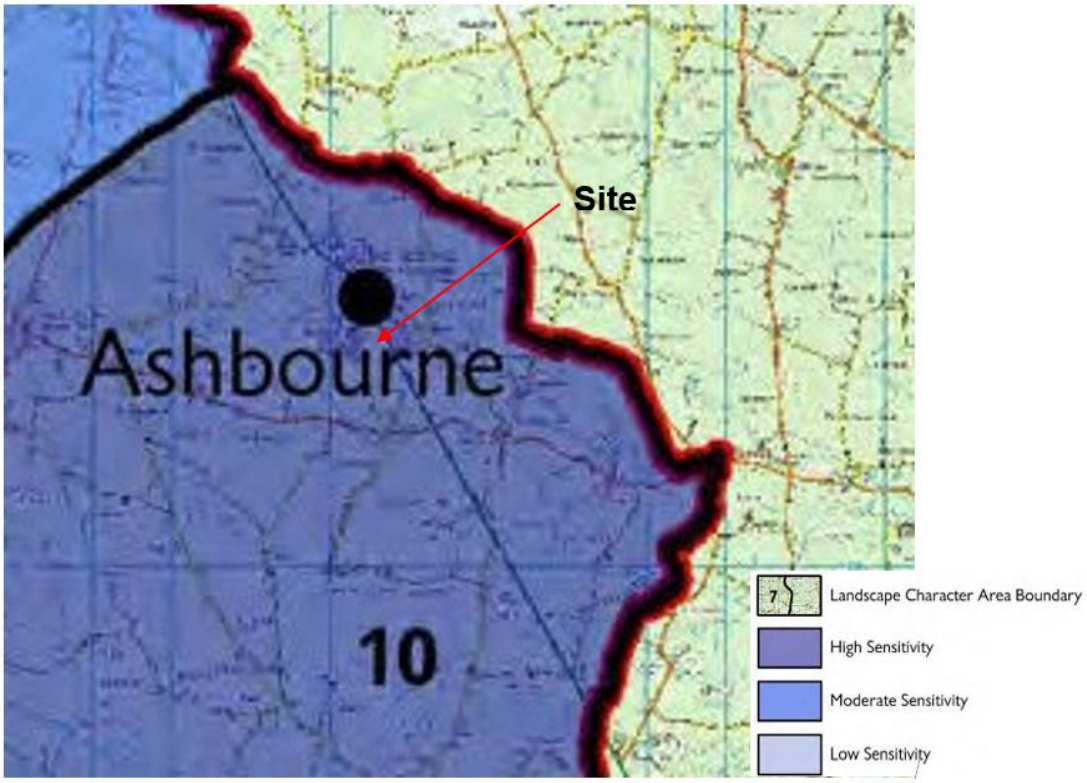

Figure 13.4. Landscape Sensitivity (Source: Meath County Council).

HER POL 52:

To protect and enhance the quality, character, and distinctiveness of the landscapes of the County in accordance with national policy and guidelines and the recommendations of the Meath Landscape Character Assessment (2007) in Appendix 5, to ensure that new development meets high standards of siting and design.

HER POL 53:

To discourage proposals necessitating the removal of extensive amount of trees, hedgerows and historic walls or other distinctive boundary treatments.

HER OBJ 49:

To ensure that the management of development will have regard to the value of the landscape, its character, importance, sensitivity and capacity to absorb change as outlined in Appendix 5 Meath Landscape Character Assessment and its recommendations.

HER OBJ 50:

To require landscape and visual impact assessments prepared by suitably qualified professionals be submitted with planning applications for development which may have significant impact on landscape character areas of medium or high sensitivity.

Views and Prospects

HER OBJ 56

To preserve the views and prospects listed in Appendix 10, in Volume 2 and on Map 8.6 and to protect these views from inappropriate development which would interfere unduly with the character and visual amenity of the landscape.

The nearest MCC view and prospect is no. 73 located approximately 6.5km northwest of the Site. This view is looking east-northeast and oriented away from the Site which is not visible within this view.

Green Infrastructure

HER POL 55

To recognise the economic, social, environmental and physical value of Green Infrastructure

HER POL 56:

To require that all Land Use Plans protect, manage and provide where possible green infrastructure in an integrated and coherent manner.

13.3.1.2. Ashbourne Local Area Plan 2009-15 and Volume 2 CDP

The Ashbourne Local Area Plan (LAP) set out objectives of Meath County Council the sustainable growth of the town. The 2009-15 LAP was amended to account for the policies and objectives of the previously adopted 2013-2019 CDP including land zoning objectives.

Volume 2 of the current adopted CDP provides a written statement for Ashbourne town, the strategic vision for the future development of Ashbourne will focus on:

"*For Ashbourne to develop as a vibrant, modern and integrated town around a strong employment and service centre, where future growth builds upon the town's expansion and investment to support a sustainable, diverse and attractive settlement."*

The CDP has identified the Site as one of 4 masterplan areas within Ashbourne which are to ensure an integrated approach to phasing, management and development of these lands. The Site along with one neighbouring field forms Master Plan 18 which is described as:

Master Plan 18 (MP18) relates to the lands at Milltown to the south of Ashbourne and has an area of c.19.9 hectares. It is intended that these lands shall provide a primary school site, lands for recreational uses, including playing fields, and lands for residential development. The development of the lands shall be on a phased basis to be agreed as part of the preparation of the Master Plan.

Accordingly, the CDP's written statement states the following policy and objectives:

ASH POL 1:
To support the consolidation of development of Ashbourne which facilitates the provision of residential development and employment, retail, community, and recreational facilities in order to create a more compact and self-sufficient settlement.

ASH OBJ 13:
To examine the feasibility of a new junction on the R135 that could serve development lands on Hickeys Lane and facilitate a new access to Ashbourne Community College, in consultation with all relevant stakeholders.

ASH OBJ 21:
To facilitate the development of a primary school, in association with the Department of Education, on suitably located lands that would meet the educational requirements of the future population of Ashbourne.

ASH OBJ 24:
To support the utilisation of sustainable principles in the design, planning and development of residential schemes throughout the town.

Land Zoning:

The Site's existing agricultural lands are zoned for A2: residential use and G1: Community Infrastructure use. The below zoned objectives relate to the Site and immediate lands within Ashbourne.

A1: Existing Residential

To protect and enhance the amenity of developed residential communities.

A2: New Residential

To provide for new residential communities with ancillary community facilities, neighbourhood facilities as considered appropriate.

F1: Open Space

To provide for and improve open spaces for active and passive recreational amenities.

G1- Community Infrastructure

To provide for necessary community, social, and educational facilities

MP 18

The Site falls within the masterplan area MP 18 which is zoned for A2: residential use and G1: Community Infrastructure.

MP 21

This masterplan area falls directly west of area MP18 and is zoned for F1- Open Space.

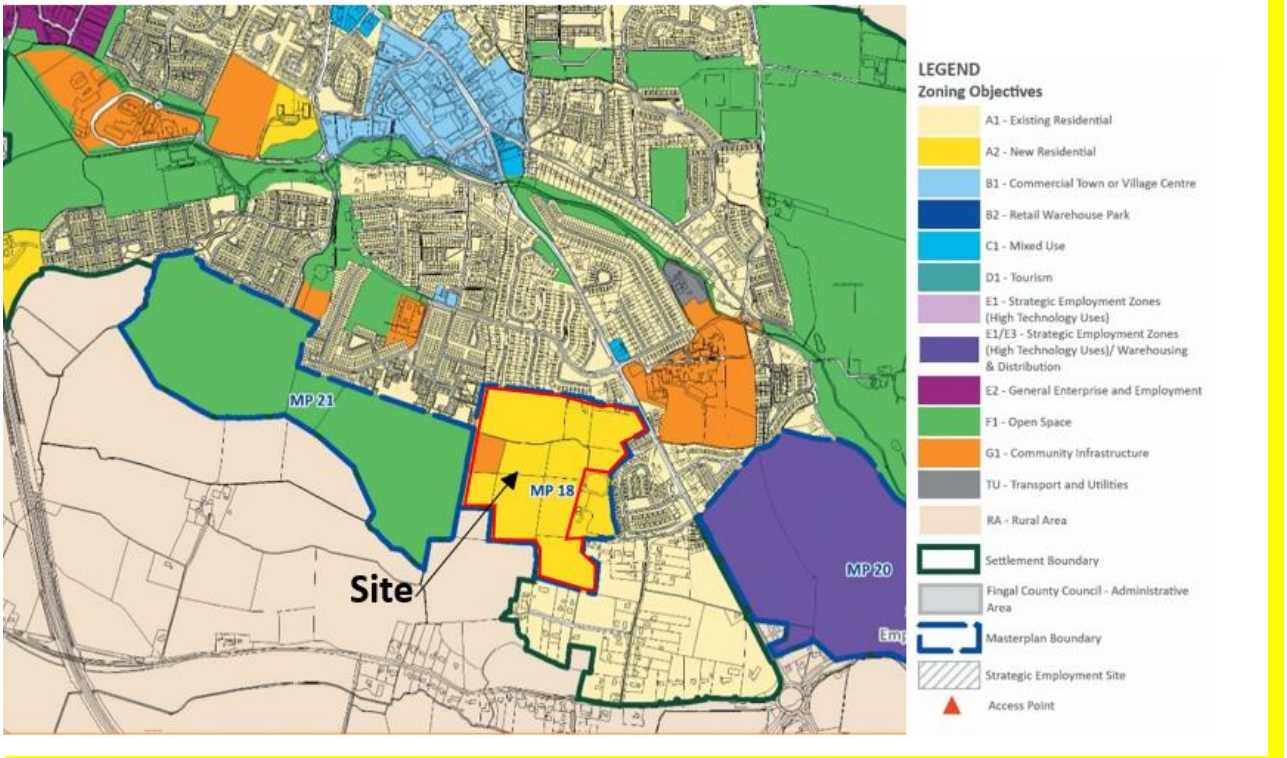

Figure 13.5. Land Use Zoning Objectives Map (Source: Meath County Council).

13.3.1.3. Planning Policy Summary

- Increased residential density and improved sustainable use of lands for housing
- Variety in the housing stock
- The principles of good urban and public realm design
- Creating attractive, mixed use, healthy sustainable communities
- Protection and retention of hedgerows, trees and woodlands and planting of native species
- Protection and management of existing green infrastructure
- No Site specific landscape, heritage and biodiversity designations.
- The transformative change envisaged in the amendment Asbourne LAP and CDP written statement including for the Site's Masterplan area 18.

13.3.2. Planning Permission

Planning permission has been previously sought on the southern end of the Site but these applications have either been refused or incomplete, as detailed in the table below.

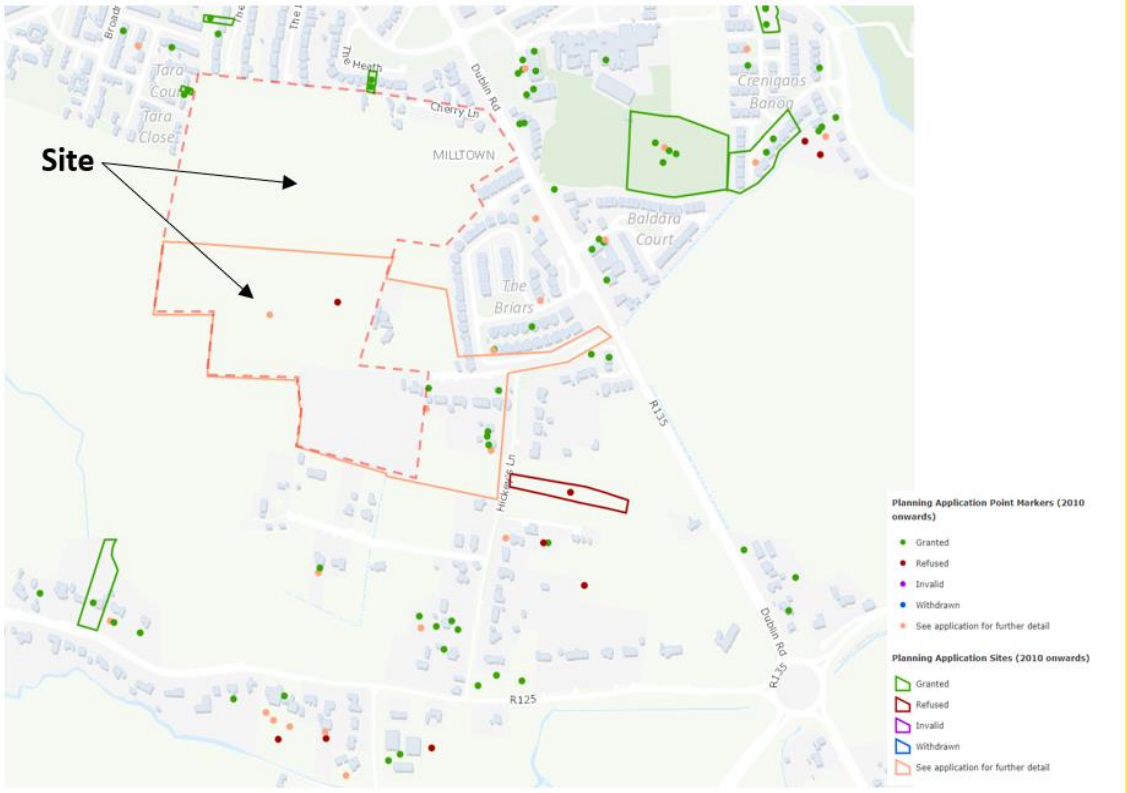

Figure 13.6. Planning Applications across the Site and surroundings (Source: Meath Council County).

Planning Reference & Status	Development Description
MCC Ref: DA140010 **ABP Appeal Ref: PL.17.243223** **Refused**	for permission with a life of ten years, for development at a site measuring c. 9.9 ha on Hickey's Lane, bounded generally by the Dublin Road (N2) and The Briars Estate to the east, agricultural lands to the north and west, by low density detached housing to the south and east on Hickey's Lane, in the townlands of Baltrasna and Milltown, Ashbourne, Co. Meath. The development will consist of 188 no. dwellings (68 no. 4-bed semi-detached houses, 100 no. 3-bed semi-detached houses, 20 no. 4-bed-detached houses), all in two storey buildings with roof mounted solar panels; 1 no. Creche (c. 277m2) in a two-storey building, together with an outdoor amenity space (c.198m2); 1 new vehicular entrance point on the eastern boundary of the site to Hickey's Lane to serve the entire development; the proposal involves upgrade works to the section of Hickey's Lane from the new entrance on Hickey's Lane which connects the site with the Dublin Road (N2); all ancillary and associated site development and landscape works; demolition of a habitable dwelling

	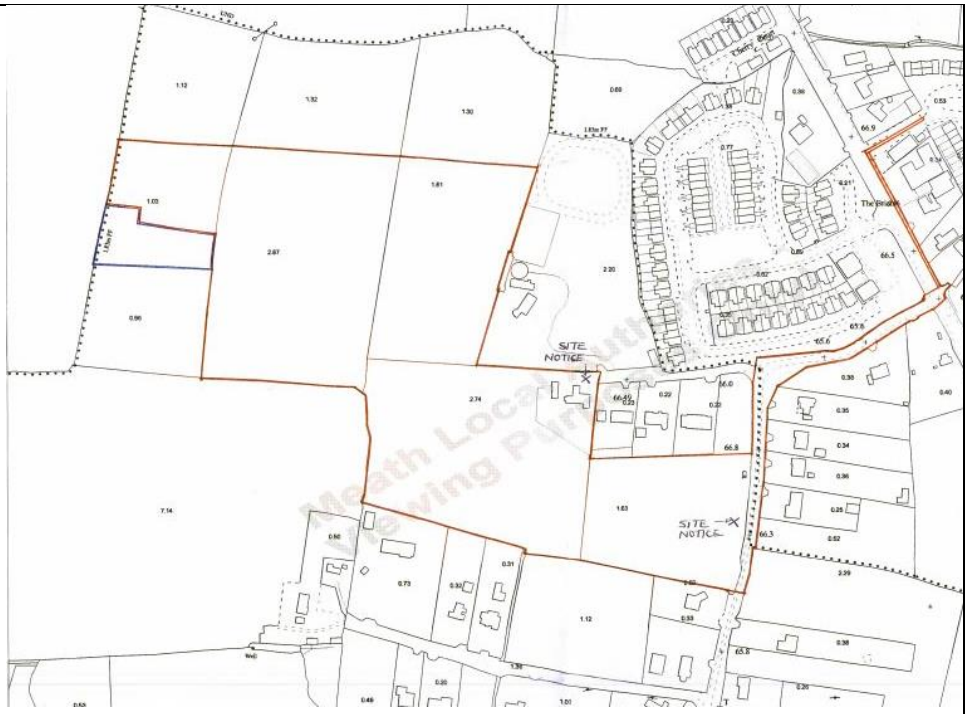
MCC Ref: DA130952 **Incomplete Application**	for permission with a life of ten years, for development at site measureing c. 10.1 ha on Hickey's Lane, bounded generally by the Dublin Road (N2) and The Briars Estate to the east, agricultural lands to the north and west by low density detached housing to the south and east on Hickey's Lane, in the townlands of Baltrasna and Milltown, Ashbourne, Co. Meath. The development will consist of 200 no. dwellings (80 no. 4-bed semi-detached houses, 100 no. 3-bed semi-detached houses, 20 no. 4-bed-detached houses), all in two storey buildings all with roof mounted solar panels; 1 no. Creche (c. 277m2) in a two-storey building, together with an outdoor amenity space (c.198m2); 1 new vehicular entrance point on the eastern boundary of the site to Hickey's Lane to serve the entire development; the proposal involves upgrade works to the section of Hickey's Lane from the new entrance on Hickey's Lane which connects the site with the Dublin Road (N2); all ancillary and associated site development and landscape works; demolition of a habitable dwelling

Table 13.6. Planning History.

13.3.3. Description of the Receiving Environment

13.3.3.1. Description of the Site and Immediate Environs

The subject site is described below in terms of:

- Location and overview;
- Site boundaries;
- Topography and drainage;
- Access;
- Vegetation and natural heritage;
- Built and cultural heritage;
- Character;
- Landscape and visual amenity.

Location and Overview

The site is situated on the southeastern end of Ashbourne town. Ashbourne is a satellite town that has grown from a small village, Cill Dhéagláin (meaning the Church of Déaglán, www.logainm.ie), to becoming the second largest town in Meath and which also services as a commuter town to the wider Dublin region.

The site sits within the townlands of Milltown and Baltrasna, approximately 0.95km from the town centre of Ashbourne. It is accessed via Cherry Lane and Hickeys Lane both directly from off the R135 Dublin road, east of the site, and which is the main road leading to the town centre.

The total site area is 19.2 ha. The land is divided into 11 fields of grassland divided by boundary hedgerows with some edges backing onto residential areas. Contained within the site are three dwellings of which two are of a derelict state.

Figure 13.7. Location of site within context of Ashbourne and environs.

Site boundaries

The site consists of several fields with most of these outer and internal boundaries contained by mature dense hedgerows. The northernmost boundaries are bounded by a mix of houses/rear gardens and typically contained by hedgerow or garden walls except for the more opened rear ends of properties off Tara Court to the northwest.

The northeastern corner of the site is bounded by a short section of the R135 road, approximately 84m. Part of the eastern boundary is bounded by the rear walls of the houses within the Cherry Court and some houses of the Briars estates. The southeastern and southern edges are bounded by the mature boundary vegetation to the rear or side gardens of adjacent houses. The remaining boundaries to the south and west are next to the adjoining farmland.

Northwestern and northern boundaries towards houses off Tara Court, Alderbrook Rise and Alderbrook Downs.

Southern boundary with filtered views of adjacent properties through boundary hedgerow.

Topography & Drainage

The various fields across the Site are generally flat to gently sloping with the exception of the central area which rises to form a local hill albeit contained by the immediate field's tall mature hedgerows. Levels range from around 66m AOD along the east to around 71m AOD in the west, with the central area reaching around 74m AOD.

Drainage reflects the above topography with a number of field drains created along the field boundaries but which are heavily overgrown by vegetation. There are no stream or river passing through or bounding the Site.

View north from hill within the site with roof tops within neighbouring Alderbrook housing estate visible above the site's boundary vegetation.

View south from hill within the site enclosed by the boundary vegetation of the site and the surrounding fields.

Access

The six fields in the northern halve of the Site are accessed from off Cherry Lane which leads onto the the R135 Dublin Road. The remaining five fields on the southern part of the Site are accessed off Hickey's Lane which leads onto both the R135 Dublin Road and R125 Rathoath Road.

Above left Cherry Lane access road

Above right Hickey's Lane access road

Vegetation and natural heritage

The field boundaries consist predominantly of mature hedgerows and trees with some mature trees of stature. Some of the hedgerows have been left unmanaged for some time resulting in them encroaching onto the adjacent drainage ditches. These hedgerows are predominantly hawthorn along with blackthorn, elder, brambles and dog rose and some more ornament species found along residential boundaries. Ash is the prominent trees species

through these hedgerows with some Oak, Sycamore and Great Willow present. Other tree species are found next to the residential boundaries and include Beech, Birch, Scots Pine, other conifers, and ornament species.

The farmland between the hedgerow boundaries consists of improved grassland used for grazing and silage.

Mature hedgerow within the Site.

Built and cultural heritage

There are no protected structure or monuments on the site. There are three bungalows within the site of which the two along Cherry Lane are both derelict and the one at the end of Hickey's Lane is occupied. All houses are modern in character. Amongst these properties are some stone byres and other metal sheds, none of which has any significant historic or architectural interest.

Character

The general character of the lands proposed for development is of an area of farmland set within the periphery of Ashbourne town with several existing residential estates and suburban housing directly bordering the Site. The mature hedgerows boundary across most of the Site provide a rural characteristic and degree of enclosure which can contribute value and continuity in any new development.

Landscape and visual amenity.

The hedgerow boundaries help to contain the Site and provide a mature landscape setting. Views from within the Site and towards it, including the elevated area, are limited to the immediate residential areas and surrounding farmland along the boundary edges with no visual interaction with the wider visual amenity of Ashbourne town.

13.3.3.2. Wider Environs

As described in Section 13.1.1 above the site lies within The Ward Lowlands LCA, as illustrated in Figures 13.2 and 13.3. This LCA has been deemed to have Low landscape value, High landscape sensitivity and of Regional landscape importance.

The Meath County Council landscape character assessment describes the significant pressure the rural landscape across this LCA is under due to the recent improved roads and infrastructure and notable growth of Ashbourne and Rathoath settlements due to their proximity to Dublin.

Geology, topography & drainage

The underlying geology is primarily Carboniferous Limestone overlaid by glacial deposits of boulder clays, karmes and esker which have shaped a largely flat lowland plain, lands typically between 50 to 90m AOD. The nearest river is the Broadmeadows River which flows through the centre of Ashbourne and is located approx. 680 lin.m east of the Site as it flows through Ashbourne Golf club.

Landcover, field patterns and vegetation

The landscape is well drained and when not urbanised, forming industrial areas or infrastructure the lands are primarily in tillage and pasture. Fields are irregular form and vary from small to medium in scale. Hedgerows are mature with often significant mature tree lines creating attractive framed rural roads interspersed with views across the adjacent countryside where vegetation is lower. Small mature copses are scattered through the landscape while young dense linear woods follow the motorway route.

Built and cultural heritage

The landscape contains buildings and structures of heritage interest creating a distinctive character when traveling around rural roads and through the town, see Figure 2. These tend to be of local significance – places of worship, civic buildings, burial grounds, defence structures of a small scale but offering a richness to the landscape.

Protected structures within Ashbourne town include along the main street include of the Church of the Immaculate Conception church, parish hall and milestone. Closer to the site is the Killegland Cemetery approx. 580m to the northeast. The nearest recorded monument is the outline of a rath within the centre of the field next to the site's western boundary, however this feature is hidden below the ground surface.

Killegland Church and Graveyard

Church of the Immaculate Conception and parish hall

Settlements, Landscape Character and Visual Amenity

Ashbourne and Ratoath are part of expanding urban and economic development of settlements within the southeastern part of County Meath.

Ashbourne itself has seen significant expansion in recent years including large scale industrial, retail and housing with no coherent structure, and more is planned which will see an evolving larger urban centre and population.

The landscape has a low amenity value, as views are predominantly contained by modern residential developments which along with industrial and retail developments have created a distinct urban fringe out of character with the surrounding rural landscape.

Ashbourne town centre along the R135 Dublin Road.

Housing developments at Alderbrook and The Briars Estates, Ashbourne

13.3.4. Summary of Landscape Characteristics and Values

The conservation and enhancement values of the Site are set out in this section.

Conservation values

These include:

- Rural characteristics of the fields that make up the site;
- Conserving trees/treelines and hedgerows across the site
- Cherry Lane and Hickey's Lane interface – character and semi-rural setting of these lanes
- Visual amenity of the Site and containment within the wider area

Enhancement values

These include:

- Zoning Objectives for Ashbourne as an expending urban centre
- Zoning of the Site lands for residential development and community infrastructure.
- Proximity to the town centre.
- Landscape and environs on urban-rural fringe
- Improvements to existing boundaries.

13.4. Potential Impacts of the Development

13.4.1. Construction Phase

The construction phase is expected to be phased over a number of years, due to the disruptive nature of development effects will generally be adverse where experienced but temporary.

13.4.2. Operational Phase

The potential operational impacts include the:

- Potential changes to the The Wards Lowlands Landscape Character Area
- Complete transformation from rural farmland to urban / suburban landscape / built-up area
- Loss of hedgerows / trees
- Introduction of an extensive range of residential buildings into the landscape / view
- Introduction of new infrastructure – roads, cycle paths and pedestrian paths and associated movement into the view
- Potential change in the skyline
- Introduction of an urban landscape/townscape
- Establishment of new elevations and/or vegetation and planting in the streets, open spaces, gardens and along sections of the site boundary

13.5. Predicted Landscape Impacts

13.5.1. Construction Phase

Construction phase will be programmed over a number of years resulting in ongoing infrastructure, building and related works for some period of time. These are generally destructive and visually adverse in nature.

The landscape sensitivity is described in Section 1.2 above i.e. *Medium*. The magnitude of change is described below and at construction phase would also affect the wider landscape setting. Change, involves the development of fields for an urban development of scale. Therefore the magnitude of change is Medium.

The significance of this change is Moderate.

Qualitatively this change would be Neutral … *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality*, in the Construction Stage or Temporarily.

13.1.1. Operational Phase

The sites '*Enhancement Values*' reflect a significant body of policy that is supportive of major landscape change at this location to a new residential community. The site currently presents an urban-rural fringe with development potential through appropriate design.

The sites '*Conservation Values*' predominantly reflect the distinctive enclosed mature field boundaries across most of the Site. These tree lines and hedgerows can contribute to the evolving urban landscape across the Site and to the relationship with the eastern entrances connecting to the R152 Dublin Road.

The '*Impact*' of the development is the change of the site from farmland with some derelict properties, to a new residential area of scale on the southeastern end of Ashbourne town. Whilst some trees and hedgerows will be affected, the new development has been laid out to incorporate existing landscape features where feasible. The proposed development has been prepared in accordance with best practice urban design guidelines.
The '*Effects*' of this in terms of alteration of the landscape character are assessed below.

Landscape '*Sensitivity*' is 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 to / degradation / erosion of elements and characteristics. The character of the landscape is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the principle management objective may be to consolidate landscape character or facilitate appropriate, necessary change.*

The '*Magnitude of Change*' is 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.*

*(*This reflects the Development Plan zoning, which has determined the acceptability of this land for residential and community use)

The effect is of Moderate Significance .

Qualitatively the landscape effect is Neutral - *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

This recognises that, whilst the change in character from farmland to urban is important, it reflects land use policy for the site and has been applied to the site as per the best practice in terms of urban design, open space

development and Green Infrastructure policy i.e. the change is from farmland with derelict properties to a quality urban townscape on the southeastern fringes of Ashbourne town.

This effect would be Permanent.

This reflects change to the areas landscape character. Changes to views and visual amenity are assessed for individual viewpoints below.

13.6. Predicted Visual Impact

13.6.1. Zone of Visual Influence and Potential Visual Receptors

Based on the assessment of the landscape characteristics, values and sensitivities 14 viewpoints located along the local road network were selected for the assessment of visual effects of the proposed development. The onsite site survey concluded that due to screening effects of the site's high field boundaries together with the surrounding topography, housing density and existing vegetation cover visual effects in views from many areas around the subject site will be none to negligible. On this basis the following 14 representative viewpoints were selected for assessment and photomontages.

Figure 13.8. Location of representative viewpoints.

No.	Receptor and views	Rationale for selection
VP01	Looking south from Alderbrook Park housing estate open space	Local residences
VP02	Looking southwest from junction road on Dublin Road, opposite Alderbrook housing estate and community centre	Local residences, community centre, road junction
VP03	Looking South from Alderbrook Downs	Local residences
VP04	Looking east from Tara Close	Local residences
VP05	Looking south from along Cherry Lane	Local residences & site entrance
VP06	Looking southwest from Dublin Road between edges of Cnoc Nell Grove and Chery Court estates	Local residences & approach road into Ashbourne
VP07	Looking southwest from within Cherry Court Estate	Local residences
VP08	Looking west from open space at Briars Housing estate	Local residences
VP09	Looking west from Hickey's Lane by nearest group of houses	Local residences & site entrance
VP10	Looking west from Hickey's Lane at entrance between two houses	Local residences
VP11	Looking north from short lane off Hickey's lane, view between the 2 houses	Local residences
VP12	Looking northwest from R135 Dublin Road on edge of town	Approach road into Ashbourne
VP13	Looking northeast from R125 Rathoath Road,	Local residences
VP14	View southeast from nearest Protected Structure - old grave yard and church ruin	Protected structure

Table 13.7. Proposed Viewpoints.

13.6.2. Photography and presentation of viewpoints

Each Viewpoint is illustrated by a photograph showing the existing view and the verified photomontage showing the proposed development.

Verified photomontages have been produced by 3D Design Bureau and are presented in a separate booklet with a map of their locations, see Appendix 13-1. Verified photographs and photomontages have been taken with a wide angle focal length (FL) and prime lens to allow representation of the development within its context. In all visualisations, the extent of the 50mm FL view has been indicated for reference, which is broadly equivalent to the c.40 degree Horizontal Field of View (HfoV) and is representative of what the human eye perceives and reflects the requirements of the Landscape Institute Technical Guidance Note on Visual Representation 2019.

To correctly view the photomontage at the correct scale the extents of the 50mm lens or 40 degree angle of view should be extended to A3 in size and viewed at arms length. This can be done by printing a hard copy or, more easily, digitally on screen, allowing reference back to the wider angle to understand the context.

There are also 9 Computer Generated Images (CGI) included within the Verified Views and CGI booklet of Appendix 13-1. These help to provide visual representations of the Proposed Development as viewed from within the site itself and are further discussed in the architectural design and landscape design rationale statements. However, only the 14 verified photomontages from the surrounding area are considered within the following visual

assessment.

Viewpoint Descriptions

Each viewpoint is described below in its existing condition and the effects of the proposed development. The descriptions, including of the change / effects, focus primarily on the extent of the 50mm image, but refer to the wider context, as appropriate, to inform analysis.

Temporary effects at Construction phase are briefly described.

Effects at Operational phase are described in more detail.

13.6.3. Viewpoints Assessment

Viewpoint 1 - Looking south from Alderbrook Park housing estate open space

Existing View

The view is located next to a public open space and adjoining houses within the Alderbrook Estate. The viewpoint is located approximately 187m north of the nearest boundary.

The view looks southwards across the adjoining green space towards the houses at the southern boundary in the background. Directly off the park are a number of houses. Various trees through the open space and adjoining streets help to break up the views towards the houses within the estate.

The view of an established residential area.

Therefore, the viewpoint sensitivity is High - *……. viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features) and views which are highly valued by the local community…..*

Visual Impacts and Effects

Construction Phase

Views of the construction phase will be limited to activity on the upper levels within the Proposed Development nearest to its northeastern end. The existing estate's houses and tree cover help to restrict the views, with slightly increased views in winter when the trees are lacking vegetation coverage.

The magnitude of change would be Low, the significance of effect would be Moderate-Slight Adverse Temporary.

Operational Phase

The upper floors and rooflines of the proposed developments nearest new housing will be partial visible through gaps in the existing estate houses and tree cover. The new housing will be setback from the site boundary and only slightly add to the existing housing visible across this residential area.
The Magnitude of change would be **Low-** *Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity*

The significance of effect would be Moderate-Slight in the Short, Medium and Long Term.

Qualitatively the impact would be Neutral i.e. *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

Viewpoint 2 - Looking southwest from junction road on Dublin Road, opposite Alderbrook housing estate and community centre.

Existing View

The view is located next to the road junction of the R135 Dublin Road, Deerpark and Alderbrook Road with these minor roads leading off to the community centre, school and residences. The viewpoint is located approximately 81.5m northwest of the Site.

The foreground is dominated by the flow of traffic on the main road into Ashbourne and various street furniture elements near the busy junction. Trees line the roadside edge of the community centre opposite while mature trees present further along the roadside into the middle and background view help screen views of the various houses and buildings. The two trees on the northeastern corner of Site are a dominant feature in the middle ground view, with some partial views of site's other hedgerows and trees along its nearest boundaries.

This is a view from a busy urban transport corridor on the edge of the town. The trees along the route provide a distinct visual feature which break up the roofscapes. It is representative of views experienced by road users and pedestrians.

Therefore, the viewpoint sensitivity is Medium - Viewers considered of medium susceptibility, such as locations where viewers are travelling at slow or moderate speeds through or past the affected landscape in cars or on public transport, where they are partly but not entirely focused on the landscape, or where the landscape has some valued views. The views are generally not designated, but which include panoramic views or views judged to be of some scenic quality, which demonstrate some sense of naturalness, tranquillity or some rare element in the view.

Visual Impacts and Effects

Construction Phase

Views of the construction phase will be clearly visible of the site's northeastern corner as the existing boundary trees and hedgerows will be removed to accommodate the site works. Where there will be notable views of a range of construction activity occurring on these lands. The hoarding along the boundary edges will help restrict views of the ground level works while temporary scaffolding surroundings will partially contain upper floor views as the building works progress.

The magnitude of change would be High, the significance of effect would be Significant Adverse Temporary.

Operational Phase

The distinct group of trees on the edge of the site will be replaced by a group 4-6 storey apartment blocks on the corner which will be fully visible. There will be new animated activity around the external spaces of the new public realm next to the apartments and various service units at ground level. New traffic light controls located opposite the main entrance will add a new junction with increased movement of vehicles off Hickeys Lane heading to/from the proposed development The scale and location of the new buildings will mean they will be prominent features on the corner of the site and southern end of the town of Ashbourne. Here the 6-storey building will form a landmark building on approach to the town. The other apartments on either side will be stepped down and are partially

softened by the new street trees in front of them.

The magnitude of change would be High – *Extensive intrusion of the development in the view …… to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.*

The significance the effect is Significant in the Short, Medium and Long Term.

Qualitatively the impact would be to Adverse:- *Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished.*

This would revert to Beneficial i.e. improves landscape(townscape)/view quality and character, fits with the scale, landform and pattern ……. repairs / removes damage caused by existing land uses. In the Medium to Long Term as the building becomes visually established as a landmark feature within the end of the town.

Viewpoint 3 - Looking South from Alderbrook Downs

Existing View

The view is located within a residence street within the Alderbrook estate, located approximately 66m north northeast of the Site.The estate wall marks the Site's northern boundary edge. The view is representative of views experienced by local residents.

The view looks southwest towards the estate's boundary wall with the various street trees, houses and cars prevalent within the foreground. A large mature tree is visible directly behind this wall located on the Site boundary. Background views are contained by the upper canopies of the mature trees and boundary hedgerows found further within the southerly part of the Site.
The view of an established residential area backing onto a mature rural aspect.

Therefore, the viewpoint sensitivity is High - *……. viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features) and views which are highly valued by the local community…..*

Visual Impacts and Effects

Construction Phase

Views of the construction phase will be limited to activity on the upper levels within the Proposed Development nearest to its northern end for most receptors. Some extended views of the works within the site being possible only from the gable windows of the end houses. The existing estate's houses and tree cover help to restrict the views, with slightly increased views in winter when the trees are lacking vegetation coverage.

The magnitude of change would be Low, the significance of effect would be Moderate-Slight Adverse Temporary.

Operational Phase

The upper floors and rooflines of the proposed developments nearest new housing will be visible above the existing boundary wall, running parallel to the existing housing. There will some partial views of other houses set slightly further back within the proposed development although these are filtered by the existing site's boundary vegetation and street trees in Alderbrook Downs, with some increased views possible during the winter months when the trees are lacking vegetation cover. The proposed development will slightly add to the number of

residential properties visible within this cul de sac, being viewed as an extension to an existing area of established housing.

The magnitude of change would be Low

The significance of effect would be Moderate-Slight Neutral in the Short, Medium and Long Term.

Qualitatively the impact would be Neutral i.e. *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

Viewpoint 4 - Looking east from Tara Close

Existing View

The view is from the western end of the Tara Close. The view is looking east towards the Site and the viewpoint is located approximately at 90m. The view is representative of views experienced by local residents.

The view is looking towards the small cluster of houses and parked vehicles within the close. The group of trees visible in the middle ground are located along the Site's western edge. The houses visible at the end of the close next to these trees have open views onto the Site, not shown here.

The view is from a small residential area with a rural backdrop

The viewpoint sensitivity is High - …..viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features) and views which are highly valued by the local community…

Visual Impacts and Effects TBC

Construction Phase

Views of the construction phase will be largely contained by the large existing retained boundary trees which will form part of the new open space. Limited views will be possible to the right (south) of the tree as the works occur on the nearest housing, with slight increase in filtered views further within the site during the winter months when the tree lacks leaf cover.

The magnitude of change would be Low, the significance of effect would be Moderate-Slight Adverse Temporary.

Operational Phase

The existing low boundary right of the retained mature trees will allow views across to the gable end of the nearest house on the proposed development's western boundary. The scale of the proposed building will be reflective of those within the neighbouring established residential area off Tara Close. Lesser views of the upper portions of other buildings within the western end of the Site are possible filtered through the neighbouring garden and boundary trees, being greater in winter months.
This view will be softened further by the proposed tree planting along the edges of the adjoining proposed open space.

The magnitude of change would be Low

The significance of effect would be Moderate-Slight Neutral in the Short, Medium and Long Term.

Qualitatively the impact would be Neutral i.e. *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

Viewpoint 5 - Looking south from along Cherry Lane

Existing View

The view is from along Cherry Lane one of the access roads leading into the Site. The viewpoint is located within at 0m within the Site limits next to a group of houses on the lane. The view is representative of local residents.

The view is looking across to the Site's existing hedgerow which largely contains outward views from this point. Some of the upper canopies of trees further within the Site are visible in the background. Partial views of housing within the nearby Cherry Court housing estate are visible in the middle ground from the upper floor views of the house next to this viewpoint.

The view is of rural farmland on the edge of the urban-rural transition.

The viewpoint sensitivity is High - *Viewers at viewpoints that are recognised in policy or otherwise designated as being of value, ….. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes. ……. The principle management objective for the view is its protection from change that reduces visual amenity.*

Visual Impacts and Effects

Construction Phase

There would be clear views of the siteworks occurring on the laneway and within the farmland directly south of these receptors. The hoarding along the boundary edges will help restrict views of the ground level works while temporary scaffolding surroundings will partially contain upper floor views as the building works progress. The laneway will itself serve as the main construction access to the northern part of the proposed development and be upgraded to provide a new road, cycle and footpath into the new development.

The magnitude of change would be High, the significance of effect would be Very Significant Adverse Temporary.

Operational Phase

The immediate views onto the existing agricultural lands will be replaced by a new residential area, with direct views across to the new 3 storey housing blocks on the opposite side of the former laneway. The proposed street trees along the new road and next to some houses will help soften these buildings solid building form.The small group of residence by this point will also experience open to filters views of the new apartment blocks on the site's northeast corner, to the left (east) of the captured view. The quiet laneway will also be significantly altered in its appearance to provide a new road, path and cycleway with street trees to service the new housing. This will bring about a new flow of vehicle traffic and pedestrians passing by the existing residences.

The change would introduce an extension to the urban limits of the town of Ashbourne which is inline with the planning policy for this area of the town.

The magnitude of change would be High – Extensive intrusion of the development in the view …… to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.

The significance the effect is Very Significant Adverse in the Short, Medium and Long Term.

Qualitatively the impact would be to Adverse:- Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished.

Viewpoint 6 - Looking southwest from Dublin Road between edges of Cnoc Nell Grove and Chery Court estates

Existing View

The view is from the R135 Dublin Road between two housing estates. The viewpoint is located approximately 27.54m from the Site's northeastern roadside boundary edge. The view is representative of road users, pedestrian and residents.

In the foreground the view is of the site's existing hedgerow and prominent trees on its boundary corner on the western side of the main road into Ashborune. The various street signage and lighting add urban elements into this view. In the middle to background the view along the road towards the town centre is softened by the trees on eitherside of the road. Elevated views into the Site are possible from resident's first floor windows.

The view is from a busy road but has an attractive semi rural-urban setting

Therefore, the viewpoint sensitivity is Medium - Viewers considered of medium susceptibility, such as locations where viewers are travelling at slow or moderate speeds through or past the affected landscape in cars or on public transport, where they are partly but not entirely focused on the landscape, or where the landscape has some valued views. The views are generally not designated, but which include panoramic views or views judged to be of some scenic quality, which demonstrate some sense of naturalness, tranquillity or some rare element in the view.

Construction Phase

Views of the construction phase will be clearly visible of the site's northeastern corner as the existing boundary trees and hedgerows will be removed to accommodate the site works. Where there will be notable views of a range of construction activity occurring on these lands. The hoarding along the boundary edges will help restrict views of the ground level works while temporary scaffolding surroundings will partially contain upper floor views as the building works progress.

The magnitude of change would be High, the significance of effect would be Significant Adverse Temporary.

Operational Phase

The distinct group of trees on the edge of the site will be replaced by a group 4-6 storey apartment blocks on the corner which will be fully visible. The new buildings will be located between a gap between the Cherry Court Housing estate and the houses by the end corner of Hickey's Lane, creating a continuous line of buildings. The buildings are intentionally stepped down from the corner end. There will be new animated activity around the external spaces of the new public realm next to the apartments and various service units at ground level. Planting in the form of street trees, hedges, shrubs will be added along the proposed development's edges which will help to soften the appearance of the built elements. The scale and location of the new buildings will mean they will be prominent features on the corner of the site and southern end of the town of Ashbourne. Here the 6-storey building will form a new landmark building visible on approach to the town which helps to define the edge of the town.

Views looking down the road towards the centre of Ashbourne remain unaffected.

The magnitude of change would be High – *Extensive intrusion of the development in the view …… to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.*

The significance of the effect is Significant and would remain so in the Short, Medium and Long Term.

Qualitatively the impact would be to Adverse:- *Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished.*

This would revert to Beneficial i.e. improves landscape(townscape)/view quality and character, fits with the scale, landform and pattern ……. repairs / removes damage caused by existing land uses. In the Medium to Long Term as the building becomes visually established as a landmark feature within the end of the town.

Viewpoint 7 - Looking southwest from within Cherry Court Estate

Existing View

The view is from the Dublin Road opposite the small Chery Court housing estate. The view is a close range view with the site boundary 98m to the southwest. The view is representative of the views experienced by residential receptors.

The view is looking at 2-storey residential dwelling and their front driveways in the foreground and middle ground. The majority of receptors within this small estate experience views onto the rear of the nearest houses within the neighbouring briars estate are also visible from this group, but not contained in the captured image..

Peering above the boundary wall are a number of trees along the adjoining Site's eastern boundary while other trees and hedgerows visible against the background are field boundaries found further within the Site.
The view is of a pleasant rural backdrop from a modern residential area.

The viewpoint sensitivity is High - *Viewers at viewpoints that are recognised in policy or otherwise designated as being of value, ….. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes. …… The principle management objective for the view is its protection from change that reduces visual amenity.*

Visual Impacts and Effects

Construction Phase

Views of the construction phase will be greatest from the site works occurring within the eastern end of the proposed development. The loss of field boundary trees will allow some extended first floor views of the works across other parts of the site. Ground level views are restricted by the existing estates high boundary wall.

The magnitude of change would be Medium, the significance of effect would be Significant Adverse Temporary.

Operational Phase

The line of the existing field boundary trees will be removed and views across to the surrounding agricultural lands

will be replaced by new housing. The addition of the new housing will fully enclose this estate along with those visible within the existing Briar estate to the south.

The magnitude of change would be Medium, *…..introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity*
The significance of effect would be Significant in the Short, Medium and Long Term.

Qualitatively the impact would be Neutral i.e. *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

Viewpoint 8 - Looking west from open space at Briars Housing estate

Existing View

The view is from open space within the Briars housing estate. This view is looking west towards the Site boundary 238m away. The view is representative of local residents.

In the foreground can be seen the grass over the public open space some young trees are visible planted along the edges of the green. In the midde ground are 2 storey houses which contain most of the view. However, the gaps between the groups of houses allow views of the taller trees within and adjacent to the Site boundary.

This is an attractive residential setting or view.

The viewpoint sensitivity is High - Viewers at viewpoints that are recognised in policy or otherwise designated as being of value, ….. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes. …… The principle management objective for the view is its protection from change that reduces visual amenity.

Visual Impacts and Effects

Construction Phase

Views toward the proposed development will be restricted by the existing houses and surrounding field boundary hedgerow vegetation.

The magnitude of change would be None, the significance of effect would be None.

Operational Phase

There will be no impacts or effects on this view as the proposed development will be screened by the estate's houses and intervening field boundary vegetation.

The magnitude of change would be None, the significance of effect would be None.

Viewpoint 9 - Looking west from Hickey's Lane by nearest group of houses

Existing View

The view is along the access road to the Site looking west towards the Site boundary 21m away. The view is representative of local residents.

The foreground view is occupied by the front entrances of the closest residences. The middle ground view is enclosed by the boundary vegetation, roofline and garage of the property located within the site. The tops of trees visible in the background peering above the roofline of the same property are located along the field boundaries within the Site.

The view is representative of nearby residential receptors on urban fringe.

The viewpoint sensitivity is High - Viewers at viewpoints that are recognised in policy or otherwise designated as being of value, ….. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes. ……. The principle management objective for the view is its protection from change that reduces visual amenity.

Visual Impacts and Effects

Construction Phase

Views of the construction phase will be greatest from the site works occurring within the southeastern end of the proposed development, nearest to these residential receptors. Further buffered by the retained field boundary hedgerow. The existing bungalow within this part of the site which is partially visible and a tree will be removed. Although most residents in this group are facing away from the site works some will experience a notable increase in traffic, during working hours, as the road will be used to access the southern end of the site.

The magnitude of change would be Low, the significance of effect would be Moderate-Slight Adverse Temporary.

Operational Phase

The view would change from a minor road leading to former farmhouse and farmland to one leading into a new housing estate. Several of the proposed development's houses nearest to the site boundary will be partially visible. These are softened by the retaining field boundary hedgerow and the new tree planting along the street and small open space.

Most views of the houses along the laneway are orientation away from the proposed development or contained by their high garden hedgerows. Looking onto the partial hedgerow boundary of the neighbouring Briars Housing estate. The nearest house to the proposed development will have filtered views through the adjoining retained hedgerow of the nearest proposed house. There will be some lesser views possible of upper attic and corner window on the gable ends of some other existing houses within the group. There will also be a change to the appearance of the laneway opposite the existing houses from a quiet cul de sac to a busy residential road with footpath/cycleway. Although many views towards the road are limited to upper floors by the boundary garden hedges.

The magnitude of change would be Medium, *…..introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity*

The significance of effect would be Significant in the Short, Medium and Long Term.

Qualitatively the impact would be Neutral i.e. *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

Viewpoint 10 - Looking west from Hickey's Lane at entrance between two houses

Existing View

The view is between a gap between these two house looking west to the Site boundary 147m away. The view is representative of local residents.

The view looks across to the this group of two storey dwellings and their grounds which occupy most of the foreground and middle ground view. Against the background are a line of trees marking the Site's boundary.

The view is small modern residential group with the boundary vegetation of the site making a strong contribution to the view.

The viewpoint sensitivity is High - Viewers at viewpoints that are recognised in policy or otherwise designated as being of value, ….. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes. ……. The principle management objective for the view is its protection from change that reduces visual amenity.

Visual Impacts and Effects

Construction Phase

There will be filtered views through and above the existing hedgerow of the site works occurring along the proposed development's southeastern development. These views will be more apparent during the winter months when the hedgerow lacks leaf coverage.

The magnitude of change would be Low, the significance of effect would be Moderate-Slight Adverse Temporary.

Operational Phase

The roofline of the group of houses along the proposed development's southeastern end will be clearly visible above the retained boundary field hedgerow. There will be some filtered views of the houses through minor gaps in the retained boundary hedgerow, which will be greatest in the winter months.

The magnitude of change would be Medium, *…..introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity*

The significance of effect would be Significant in the Short, Medium and Long Term.

Qualitatively the impact would be Neutral i.e. *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

Viewpoint 11 - Looking north from short lane off Hickey's lane, view between the 2 houses

Existing View

The view is between a gap between these two house looking north to the Site boundary 108.5m away. The viewpoint is representative of local residents.

Similar to the previous viewpoint 10, most of the view consists of the garden vegetation, gates and buildings

within this group of houses. The various trees visible in the background run along the boundary between the gardens and the Site.

The view is from a pleasant residential area with the boundary vegetation of the properties and Site making a strong contribution to the view.

The viewpoint sensitivity is High - *Viewers at viewpoints that are recognised in policy or otherwise designated as being of value, or viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features) and views which are highly valued by the local community…..*

Visual Impacts and Effects

Construction Phase

There will be filtered views through and above the existing hedgerow of the site works occurring along the proposed development's southern development. These views will be more apparent during the winter months when the hedgerow lacks leaf coverage.

The magnitude of change would be Low, the significance of effect would be Moderate-Slight Adverse Temporary.

Operational Phase

The roofline of the group of houses along the proposed development's southern end will be clearly visible above the retained boundary field hedgerow. There will be some filtered views of the houses through minor gaps in the retained boundary hedgerow, which will be greatest in the winter months. Replacing views of agricultural land to one of a new residential area.

The magnitude of change would be Medium, *…..introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity*

The significance of effect would be Significant in the Short, Medium and Long Term.

Qualitatively the impact would be to Adverse:- *Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished.*

Viewpoint 12 - Looking northwest from R135 Dublin Road on edge of town

Existing View

The view is from the main road leading into Ashbourne from the southern routes including the M2 motorway and regional roads. This view is looking northwest to the Site boundary 473m away. The viewpoint is representative of road users and pedestrians.

The foreground view, when not obstructed by passing traffic, is looking across to the grass verge with large road lighting and signage and high field hedgerow behind it.

The roofline of houses within the Baltrasna Manor estate are visible in the middleground. The mature trees tops within the background view mark intervening field boundary although the Site itself is not visible.

The view is from a busy road but has ana attractive semi rural-urban setting with a mix of rural and some urban elements within the view.

Therefore, the viewpoint sensitivity is Medium - Viewers considered of medium susceptibility, such as locations where viewers are travelling at slow or moderate speeds through or past the affected landscape in cars or on public transport, where they are partly but not entirely focused on the landscape, or where the landscape has some valued views. The views are generally not designated, but which include panoramic views or views judged to be of some scenic quality, which demonstrate some sense of naturalness, tranquillity or some rare element in the view.

Visual Impacts and Effects TBC

Construction Phase

The construction phase works will be barely perceptible due to the distance and presence of the intervening hedges and trees.

The magnitude of change would be Negligible, the significance of effect would be Not Significant Neutral Temporary.

Operational Phase

The proposed development will be barely visible within the view being largely screened by trees and hedgerows along the intervening fields and roadside boundaries. The upper portions of the central blocks of apartment are visible but softened by existing trees. The taller 6-storey block on the northeastern corner of the site is similar well screened by mature trees along the road, with only its uppermost portions visible. The building will be of a similar scale to these mature trees and not unduly protrude against the skyline. Visibility of these taller elements within the proposed development will be slightly increased during the winter months as the intervening trees lack leaf cover.

The magnitude of change would be Low - *Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.*

The significance of effect would be Slight in the Short, Medium and Long Term.

Qualitatively the impact would be Neutral i.e. *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

Viewpoint 13 - Looking northeast from R125 Ratoath Road

Existing View

The view is from the regional road next to a cluster of ribbon development on the outskirts of the town. This view is looking northeast with the Site boundary 478m away. The viewpoint is representative of local residents.

The foreground view looks across the road to the fenced grounds of the new residential property. A mature tree lined hedgerow is visible in the middle ground behind the same property. Minor gaps in this hedgerow provide some limited visibility of intervening mature field boundaries and those within the southern end of the Site.
The view is of an established semi-urban ribbon development residential area with a rural backdrop.

The viewpoint sensitivity is High - *Viewers at viewpoints that are recognised in policy or otherwise designated as being of value, or viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features) and views which are highly valued by the local community…..*

Visual Impacts and Effects

Construction Phase

Views toward the proposed development will be restricted by the intervening field boundary hedgerow vegetation. The magnitude of change would be None, the significance of effect would be None.

Operational Phase

There will be no impacts or effects on this view as the proposed development will be screened by the intervening field boundary vegetation.

The magnitude of change would be None, the significance of effect would be None.

Viewpoint 14 - View southeast from nearest Protected Structure - old grave yard and church ruin

Existing View

The view is from within the graveyard near to the old church ruins looking southwest towards the Site 601m away. The view is representative of the historic site.

A number of graves, church ruins and outline of a rath within this historic site are visible in the foreground. The old field hedgerow partially filter views of the rear garden and two storey houses on Borne View in the middle ground. Breaks in this row of houses provides partial background views of roofline of other houses further within the Bourne housing estate.

The existing Site is not visible from this viewpoint as any views are fully screened by the intervening housing estate.

Although this historic feature has been enclosed by housing estate its setting is of local historic importance. Therefore, the viewpoint sensitivity is High - *……. viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features) and views which are highly valued by the local community…..*

Visual Impacts and Effects

Construction Phase

Views toward the proposed development will be restricted by the existing houses within the Bourne housing estate. The magnitude of change would be None, the significance of effect would be None.

Operational Phase

There will be no impacts or effects on this view as the proposed development will be screened by the existing houses within the Bourne housing estate.

The magnitude of change would be None, the significance of effect would be None.

13.7. Summary of Visual Effects

The following table summarises the results of the assessment of the effects of the proposed development on the visual resource in the construction and operational phase.

VPNo.	Location	Sensitivity	Degree of Change	Significance and Qualitatively
				Construction Phase -Temporary
VP01	Looking south from Alderbrook Park housing estate open space	High	Low	Moderate-Slight and Adverse
VP02	Looking southwest from junction road on Dublin Road, opposite Alderbrook housing estate and community centre	Medium	High	Significant and Adverse
VP03	Looking South from Alderbrook Downs	High	Low	Moderate-Slight and Adverse
VP04	Looking east from Tara Close	High	Low	Moderate-Slight and Adverse
VP05	Looking south from along Cherry Lane	High	High	Very Significant and Adverse
VP06	Looking southwest from Dublin Road between edges of Cnoc Nell Grove and Chery Court estates	Medium	High	Significant and Adverse
VP07	Looking southwest from within Cherry Court Estate	High	Medium	Significant and Adverse
VP08	Looking west from open space at Briars Housing estate	High	None	No effect
VP09	Looking west from Hickey's Lane by nearest group of houses	High	Low	Moderate-Slight and Adverse
VP10	Looking west from Hickey's Lane at entrance between two houses	High	Low	Moderate-Slight and Adverse
VP11	Looking north from short lane off	High	Low	Moderate-Slight and Adverse

	Hickey's lane, view between the 2 houses			
VP12	Looking northwest from R135 Dublin Road on edge of town	Medium	Negligible	Not Significant
VP13	Looking northeast from R125 Rathoath Road,	High	None	No effect
VP14	View southeast from nearest Protected Structure – old grave yard and church ruin	High	None	No effect

Table 13.8. Summary of Visual Effects at Construction Phase.

View	Location	Sensitivity	Degree of Change	Significance and Quality		
				Short Term	Medium Term	Long Term
1	Looking south from Alderbrook Park housing estate open space	High	Low	Moderate-Slight & Neutral	Moderate-Slight & Neutral	Moderate-Slight & Neutral
2	Looking southwest from junction road on Dublin Road, opposite Alderbrook housing estate and community centre	Medium	Medium	Significant & Adverse	Significant & Beneficial	Significant & Beneficial
3	Looking South from Alderbrook Downs	High	Low	Moderate-Slight & Neutral	Moderate-Slight & Neutral	Moderate-Slight & Neutral
4	Looking east from Tara Close	High	Low	Moderate-Slight & Neutral	Moderate-Slight & Neutral	Moderate-Slight & Neutral
5	Looking south from along Cherry Lane	High	High	Very Significant Adverse	Very Significant Adverse	Very Significant Adverse
6	Looking southwest from Dublin Road between edges of Cnoc Nell Grove and Chery Court estates	Medium	High	Significant & Adverse	Significant & Beneficial	Significant & Beneficial
7	Looking southwest from within Cherry Court Estate	High	Medium	Significant & Neutral	Significant & Neutral	Significant & Neutral
8	Looking west from open space at Briars Housing estate	High	None	No Effect	No Effect	No Effect
9	Looking west from Hickey's Lane by nearest group of houses	High	High	Significant & Neutral	Significant & Neutral	Significant & Neutral

10	Looking west from Hickey's Lane at entrance between two houses	High	Medium	Significant & Neutral	Significant & Neutral	Significant & Neutral
11	Looking north from short lane off Hickey's lane, view between the 2 houses	High	Medium	Significant & Adverse	Significant & Adverse	Significant & Adverse
12	Looking northwest from R135 Dublin Road on edge of town	Medium	Low	Slight & Neutral	Slight & Neutral	Slight & Neutral
13	Looking northeast from R125 Rathoath Road,	High	None	No Effect	No Effect	No Effect

Table 13.9. Summary of Visual Effects of the Operational Phase.

13.8. Do-Nothing

Were the Proposed Development not to go ahead the existing lands would continue to be farmed similar to their existing agricultural use. Some of the existing houses and sheds within the northern part of the site which have been left derelict are likely to further physically deteriorate overtime if left unused and detract from the local character.

Given that all of the Proposed Development site is strategically zoned for residential use it is envisaged that some form of this development type would occur on these lands overtime resulting in a similar change to landscape character and visual amenity as that predicted for this application.

13.9. Cumulative Effects

A review of Meath County Council online planning search facility was undertaken but there are no other applications of note with the potential for cumulative landscape or visual effects with the proposed development. Thus, there will be no cumulative impacts and effects.

13.10. Mitigation and Enhancement

Landscape Masterplan for the proposed development site,. The landscape masterplan has influenced the overall site layout through the proposed development design evolution, see Appendix 13-2 and supporting planning documents (LMP drawings 21659-3-100 to 105, section drawings 21659-3-201-203 and the Landscape Design Rationale Report) for further information on the proposals.

Construction Phase

The landscape proposals for the proposed development site include retaining existing landscape features wherever possible including areas of scrub, hedgerows, trees and drainage ditches.
The works around the existing vegetation to be cleared and retained will be supervised by the clerk of works ecologist and project arborist. Protection measures will be outlined in the Environmental Management Plan which will help protect these features. Retained trees and hedgerows will be protected by installation of fencing in accordance with *BS5837:2012: Trees in Relation to Construction* around the root protection areas (RPAs) as per the arborists Arboricultural Impact Assessment (AIA) report. Areas of soil outside the main site works will be fenced off to prevent compaction. Where the soil will be disturbed by the site works it will be removed and stored elsewhere on site and reused across the Proposed Development for landscaping including use as a seedbank for wildflowers.

Visual impacts will be mitigated through the appropriate site management measures and work practices to ensure the site is kept tidy, dust is kept to a minimum, and that public areas are kept free from building material and site rubbish. Works will be carried at agreed hours with the council.

Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate. Similarly, other structures including the site compound and scaffolding will be temporary in nature and contained with the works area.

Operational Phase

The retained landscape features will be incorporated into the overall landscape proposal which will bolster the existing green and blue infrastructure of the existing proposed development site and immediate surroundings.

An existing line of mature ash trees within the southern part of the Proposed Development site will be incorporated as a key feature within the new neighbourhood park. The various public open spaces will include valuable functioning SUD features.

Planting across the proposed development will include trees, hedges, shrubs, wildflower meadow, amenity/private grassland. The planting will consist of a range of suitable native and non-native non-invasive species which across the various open spaces and gardens will help to soften the appearance of the buildings and act as a visual barrier to reduce potential visual impacts.

The existing retained hedgerows along the perimeter of the proposed site acts an importance physical and visual barrier to the surrounding areas of housing and farmland. Tree lines are proposed across the proposed development to add structure and act as vertical screens. The retained and enhanced hedgerows and new planting will help to connect with the existing landscape features within the surroundings and strength the green infrastructure.

Habitat housing will include the placement of log piles (created from felled trees within the proposed development site), bird and bat boxes at locations through the Proposed Development as determined by the ecologist clerk of works.

Pathways are designed to allow good legibility for all abilities users across the Proposed Development and to directly connect onto the R135 Dublin Road providing access into Ashbourne town. Pedestrian access is provided onto the existing residential area to the west with access points designed to allow for future potential access points into the zoned development lands directly to the west of the Site.

The lighting across the proposed development will be designed to prevent light spillage pollution into the surrounding urban and rural areas.

13.11. Monitoring Measures

The landscape mitigation and enhancement measures are incorporated into the proposed development's landscape masterplan, see Appendix 13-2. The masterplan proposals include a range of hard and soft landscaping. The soft landscape measures include the retainment of existing hedgerows and trees, suds drainage and planting of grasses, wildflowers, shrubs and trees. The successful establishment of the planting will be key to helping to fully integrate the proposed development's built structure into the surrounding landscape and provide a visual buffering of the proposed development's built elements from surrounding visual receptors. The mitigating effects of which have been considered when determining the predicted landscape and visual effects in the assessment above.

In order to ensure the success of the proposed landscape planting and retained vegetation, implemented during the construction phase, the appointed landscape contractor will be required to undertake and maintain the planting in accordance with the proposed landscape maintenance and management plans. There will be a minimum 18 months defects period on all soft landscape works implemented. Thereafter the landscaping will be maintained in perpetuity consecutive 12 months periods. This regular maintenance/inspection of the planting across the proposed development helps to ensure the planting becomes established over the initial years and that any failed planting is duly replaced.

13.12. Residual Effects

The landscape impact during the construction phase will result in a disruption from construction activity e.g. machinery, site compounds across the proposed development site bringing about a permanent change to the

landuse. The mitigation measures will seek to minimise the impacts e.g. through implementing the CEMP and protecting retained vegetation, but the resulting residual effects as assessed above will have a significance of effect of Moderate Adverse Temporary.

At the operational phase there will be a permanent change in character from the existing abandoned lands to one of housing across the proposed development site. This change in character is reflective of the current transition from a rural to urban landscape occurring within this part of Ashbourne. As assessed above this will result in a significance of the effect of Moderate Neutral Long Term.

The visual impact during the construction phase will occur due to the visibility of certain construction activity across the proposed development e.g. workers, machinery and lighting. Although these impacts can be reduced by implementing the CEMP they can't be fully mitigated out. As outlined above this activity will have a significance of effect as Moderate Adverse Temporary.

Once complete the proposed development will at the operational phase result in a permanent change to views and visual amenity of the existing landscape use to a new housing development. Mitigation and avoidance measures through the design process seek to reduce the potential visual impacts. However, elements of the pproposed ddevelopment will still be visible from the above assessed receptors and local area after such measures are implemented including the growth overtime of planting. As assessed above the visual effects on these receptors range will have a significance of effect ranging from Slight to Very Significant adverse, neutral or beneficial qualities and Long Term. Views from viewpoint 2 and 6 change to beneficial in the medium-long term as the building becomes established as a key positive feature in the views at the entrance to the town.

13.13. Interactions

The potential for interactions with Biodiversity include the adverse effects through the loss of hedgerows and trees along the field boundaries which alter the site's landscape character and creates potential for opening that may increase the visibility of the proposed development. The landscape masterplan through mitigation and enhancement measures will have beneficial biodiversity effects through increase diversity of species through the former farmland including trees and wildflower mixes.

The potential for interaction with Transport include the increased vehicle, cyclist and pedestrian through the site and connecting laneways which will alter the landscape character and visual amenity as a result of significant increased traffic levels through the former farmland and immediate area.

The potential interaction with Land, Soils & Geology will occur with the siteworks with earthworks and movement of soil during the construction phase which will adversely affect the site's existing landscape characteristics.

13.14. Conclusion

This report has assessed the landscape and visual effects of the proposed residential development at the Hickey's Lane Ashbourne. The subject lands are zoned for New Residential use and the proposed application meets that need. The proposed design reflects a considered form and materiality of development that is sensitive to its context and although some existing rural landscape features are lost, an appropriate new urban character is created that contributes positively to local place-making.

Landscape Effects

The Landscape 'Sensitivity' is assessed as Medium.

The 'Magnitude of Change' is Medium

The Significance of the effect is Moderate

Qualitatively the landscape effect is Neutral

This recognises that, whilst the change in character from agricultural lands to urban is important, it reflects land use policy for the site and has been applied to the site as per the best practice in terms of urban design, open space development and Green Infrastructure policy i.e. the change is from agricultural lands on the urban fringe to a quality urban townscape as part of the urban expansion of the southern end of Ashbourne town.

Visual Effects

The predicted visual effects of the proposed development will have a significance ranging from No effect to Very Significant and adverse or neutral depending on the proposed development's degree of visibility and changes to the existing views experienced by the affected receptors. Out of the 14 representative viewpoints 6 of them were determined to likely to experience Significant and adverse or neutral quality and 1 viewpoint having has Very Significant and adverse quality Long Term on existing views. Although two of these, viewpoints 2 and 6, will revert to be beneficial in the medium-long term as the as the initial becomes an established feature in the urban context of these views.

Overall, the visibility of the proposed development will be limited to local receptors within the immediate vicinity of the site. Potential views of most affected receptors typically consist of a small part of the proposed development being visible protruding above the existing retained perimeter boundary hedgerows or walls. Greater views occur by the site's northeast corner which will be open allowing views directly across to the new buildings and revised Cherry Lane. Here the new corner 6 storey building will form a distinct landmark building visible along the southern edge of the town.

Cumulative Effects

There are no other known developments that have the potential for cumulative landscape and visual effects with the proposed development.

Summary

The proposed development will be well integrated within a landscape undergoing change through sensitive place-making. The proposals will be in keeping with change proposed in local planning policy for the proposed development site lands and surrounding lands which supports the sustainable expansion of the southern end of Ashbourne town.

13.15. References

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Part C – Interactions & Mitigations

14.0. Identification of Significant Impacts / Interactions

14.1. Identification of Significant Effects

The purpose of this chapter of the EIAR is to draw attention to significant interaction and interdependencies in the existing environment. In preparing the EIAR, each of the specialist consultants have and will continue to liaise with each other and will consider the likely interactions between effects predicted as a result of the proposed development during the preparation of the proposals for the subject site and this ensures that mitigation measures are incorporated into the design process.

This approach is considered to meet with the requirements of Part X of the Planning and Development Act 2000 (as amended) and Schedules 5, 6 and 7 of the Planning and Development Regulations (as amended). The detail in relation to interactions between environmental factors will be covered in each chapter of the EIAR.

This chapter collates the significant interactions between the different disciplines outlined throughout this EIAR. Table 14.1. (included at the end of this chapter) provides a matrix which summarises the significant interactions associated with the proposed development.

The description of effects is in accordance with Table 3.4. of the EPA's 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' 2022 (see Figure 14.1. below). These Guidelines note that *"The relevant terms listed in the table below can be used to consistently describe specific effects. All categories of terms do not need to be used for every effect".*

Quality of Effects It is important to inform the non-specialist reader whether an effect is positive, negative or neutral.	**Positive Effects** A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
	Neutral Effects No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative/Adverse Effects A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance).
Describing the Significance of Effects 'Significance' is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful (also see *Determining Significance*).	**Imperceptible** An effect capable of measurement but without significant consequences.
	Not Significant An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight Effects An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate Effects An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant Effects An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
	Very Significant An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
	Profound Effects An effect which obliterates sensitive characteristics.
Describing the Extent and Context of Effects Context can affect the perception of significance. It is important to establish if the effect is unique or, perhaps, commonly or increasingly experienced.	**Extent** Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
	Context Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)

Figure 14.1 Descriptions of Effects (as per Table 3.4. of the 2022 EPA Guidelines).

Describing the Probability of Effects Descriptions of effects should establish how likely it is that the predicted effects will occur so that the CA can take a view of the balance of risk over advantage when making a decision.	**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.
Describing the Duration and Frequency of Effects 'Duration' is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful.	**Momentary Effects** Effects lasting from seconds to minutes.
	Brief Effects Effects lasting less than a day.
	Temporary Effects Effects lasting less than a year.
	Short-term Effects Effects lasting one to seven years.
	Medium-term Effects Effects lasting seven to fifteen years.
	Long-term Effects Effects lasting fifteen to sixty years.
	Permanent Effects Effects lasting over sixty years.
	Reversible Effects Effects that can be undone, for example through remediation or restoration.
	Frequency of Effects Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).

Figure 14.1 (Continued) Descriptions of Effects (as per Table 3.4. of the 2022 EPA Guidelines).

All environmental factors are interlinked to a degree such that interrelationships exist on numerous levels. Interactions within the study area can be one-way interactions, two-way interactions and multiple-phase interactions which can be influenced by the proposed development. As this EIAR document has been prepared by a number of specialist consultants, an important aspect of the EIA process is to ensure that interactions between the various disciplines have been taken into consideration.

This chapter of the EIAR was prepared by Tracy Armstrong, BA, MRUP, MIPI, MRTPI, Planning Consultant of Armstrong Fenton Associates, who is a Corporate member of the Irish Planning Institute and has 17 no. years post qualification experience. Tracy has experience in preparing and coordinating EIARs for a variety of projects and has also been involved in the coordination of a wide range of developments including residential and commercial developments.

All of the potential significant effects of the proposed development and the measures proposed to mitigate them have been outlined in the preceding chapters of this EIAR. However, for any development with the potential for significant environmental effects, there is also the potential for interaction amongst these potential significant effects. The result of interactive effects may exacerbate the magnitude of the effects or ameliorate them, or have a neutral effect.

The purpose of this requirement of an EIAR is to draw attention to significant interaction and interrelationships in the existing environment. Armstrong Fenton Associates Planning Consultants, in preparing and co-ordinating this EIAR ensured that each of the specialist consultants liaised with each other and dealt with the likely interactions between effects predicted as a result of the proposed development during the preparation of the proposals for the subject and ensuring that appropriate mitigation measures are incorporated into the design process.

Having regard to the approach taken, the aspects of the environment likely to be significantly affected by the proposed development, during both the construction and operational phases, have been considered in detail in the relevant chapters of this EIAR document. In addition, likely interactions between one topic and another have been discussed, where relevant, by the relevant specialist consultant(s).

The primary interactions can be summarised as follows:

- Population and Human Health, Air Quality & Climate, Noise & Vibration, Transportation and Resource & Waste Management
- Biodiversity, Lands, Soils & Geology, Water & Hydrology, Noise & Vibration and Resource & Waste Management
- Lands, Soils & Geology, Water & Hydrology, Biodiversity, Air Quality & Climate, Noise & Vibration, Transportation and Resource & Waste Management
- Water & Hydrology, Lands, Soils & Geology, Biodiversity, Air Quality & Climate, Noise & Vibration, Transportation and Resource & Waste Management
- Air Quality & Climate, Population and Human Health, Water & Hydrology and Transportation
- Noise & Vibration and Population and Human Health,
- Built Services, Biodiversity, Lands, Soils & Geology, Water & Hydrology, Air Quality & Climate, Noise & Vibration and Transportation
- Transportation, Population and Human Health, Water & Hydrology, Lands, Soils & Geology, Air Quality & Climate and Noise & Vibration
- Cultural Heritage, Lands, Soils & Geology and Built Services
- The Landscape Biodiversity, Lands, Soils & Geology and Transportation
- Resource & Waste Management, Population and Human Health, Lands, Soils & Geology, and Transportation

Where there are identified associated and inter-related potential likely and significant impacts which are more comprehensively addressed elsewhere in this EIAR document, these are referred to. However, the reader is directed to the relevant environmental topic chapter of this EIAR document for a more detailed assessment.

During the Operational Phase, it is anticipated that water and traffic will be the key environmental factors impacting upon population and human health as a new residential landscape will be created. The increase in population will result in increased traffic and increased demands on water supply and increased requirements for wastewater treatment. These are addressed in the appropriate sections of this EIAR.

The relevant consultants liaised with each other and the project architects, engineers and landscape architects, where necessary, to review the proposed scheme and incorporate suitable mitigation measures, where necessary. As demonstrated throughout this EIAR, most inter-relationships are neutral in impact when the mitigation measures proposed are incorporated into the design, construction or operation of the proposed development.

Where appropriate, the relevant impact areas are considered in grouped form, as set out below.

14.2. Description of Significant Interactions

14.2.1. Interactions between Lands, Soils & Geology and Transportation

Interactions with Traffic and Transport arise during the construction phase when soil and subsoils and demolition waste are being transported to and from the site and raw materials for construction are being imported to the site. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic.

14.2.2. Interactions between Lands, Soils & Geology and Water

Interactions with Water and Hydrology arise during the construction phase and the operational phase. The surface water drainage infrastructure for the development will collect the rainfall on the site and convey the storm water run-off via tree pits, bio-retention area, rain gardens, infiltration basins, gullies, underground pipes, manholes, catchpit manholes and direct the flows via void arched attenuation systems towards vortex flow restricting devices (Hydrobrake or similar) and petrol interceptors before outfalling to the existing on site open watercourses to the south/existing drainage network to the east. During the construction phase a site-specific CEMP will manage site water and will mitigate the risk of surface contaminants infiltrating into the underlying geology and hydrogeology. Surface water drainage from the operational site has been designed in accordance with Greater Dublin Strategic Drainage Study (GDSDS) and SuDs methods will be used to manage drainage.

14.2.3. Interactions between Lands, Soils & Geology and Resource & Waste Management

Interactions with Waste Management arise during the construction phase when soil, subsoils and demolition waste are being transported from the site. These waste materials will require appropriate transport and disposal. A Waste Classification Report for soils and subsoils shall be prepared in order to define appropriate waste disposal outlets.

14.2.4. Interactions between Lands, Soils & Geology and Noise & Vibration

Development of the site will result in a level of noise and vibration related effects on the surrounding environment during the construction phase. The interaction between Soils, Land and Geology and Noise and Vibration is considered to be moderate and temporary in nature. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic.

14.2.5. Interactions between Lands, Soils & Geology and Air Quality

There is a potential for soil excavation activity to impact on air quality in terms of dust generated. Dust generation can also occur during extended dry weather periods as a result of construction traffic. However, the implementation of suitable mitigation measures as outlined in a CEMP for the site will ensure a neutral impact.

14.2.6. Interactions between Lands, Soils & Geology and Biodiversity / Species & Habitat

Removal of the existing topsoil layer will be required across the site as well as removal of some trees, hedgerows etc. Further details including any potential issues and mitigation measures are outlined in Chapter 4 of the EIAR (Biodiversity).

14.2.7. Interactions between Water & Hydrology and Transportation

Interactions with Traffic and Transport arise during the construction phase when excavations are undertaken on sire and potential groundwater is encountered. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic and also mitigation measures will be provided to control groundwater on site.

14.2.8. Interactions between Water & Hydrology and Land, Soils and Geology

Interactions with Land and Soils arise during the construction phase and the operational phase. The surface water drainage infrastructure for the development will collect the rainfall on the site and convey the storm water run-off via tree pits, bio-retention area, rain gardens, infiltration basins, gullies, underground pipes, manholes, catchpit manholes and direct the flows via void arched attenuation systems towards vortex flow restricting devices (Hydrobrake or similar) and petrol interceptors before out falling to the existing on site open watercourses to the south/existing drainage network to the east. During the construction phase a site-specific CEMP will manage site water and will mitigate the risk of surface contaminants infiltrating into the underlying geology and hydrogeology. Surface water drainage from the operational site has been designed in accordance with Greater Dublin Strategic Drainage Study (GDSDS) and SuDs methods will be used to manage drainage.

14.2.9. Interactions between Water & Hydrology and Biodiversity / Species & Habitat

Removal of the existing topsoil layer will be required across the site as well as removal of some trees, hedgerows etc. Further details including any potential issues and mitigation measures are outlined in Chapter 4 (Biodiversity). Harmful materials on site like plastics and different types of material dust can get into a water source and cause pollution. Measures must be in place to prevent this from occurring

14.2.10. Interactions between Water & Hydrology and Noise and Vibration

Development of the site will result in a level of noise and vibration related effects on the surrounding environment during the construction phase. The interaction between Water and Hydrology and Noise and Vibration is considered to be moderate and temporary in nature. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic.

14.2.11. Interactions between Water & Hydrology and Air Quality

There is a potential for excavation activity to impact on air quality in terms of dust generated. Dust generation can also occur during extended dry weather periods as a result of construction traffic. However, the implementation of suitable mitigation measures as outlined in a CEMP for the site will ensure a neutral impact.

14.2.12. Interactions between Water & Hydrology and Resource & Waste Management

Interactions with Waste Management arise during the construction phase when soil, subsoils and demolition waste from excavations are being transported from the site. These waste materials will require appropriate transport and disposal. A Waste Classification Report for soils and subsoils shall be prepared in order to define appropriate waste disposal outlets.

14.2.13. Interactions between Air Quality & Climate and Population and Human Health

An adverse impact due to air quality in either the construction or operational phase has the potential to cause human health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact complies with all ambient air quality legislative limits and, therefore, that

the predicted residual impact is short-term, direct, negative and imperceptible during the construction phase, and long-term, direct, negative and imperceptible during the operational phase.

14.2.14. Interactions between Air Quality & Climate and Transportation

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 AADT on roads close to the Site. In this assessment, the impact of the interactions between traffic and air quality during both construction and operational phases, are considered to be imperceptible. With the appropriate mitigation measures to prevent fugitive dust emissions (refer to Appendix 7.1), it is predicted that there will be no significant interaction between air quality and land and soils.

14.2.15. Interactions between Air Quality & Climate and Water & Hydrology 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, and it has been concluded that the associated impact will be long-term, direct, localised, neutral and imperceptible.

14.2.16. Interactions between Noise and Vibration and Human Health

The potential impacts on human beings in relation to the generation of noise and vibration during the construction phases are that high levels of noise and vibration could cause a degree of nuisance to people in nearby sensitive locations. Implementation of the mitigation measures set out and adherence to good practice noise reducing measures will ensure that the residual impact on human health will be lessened. Similarly, during the operational phase, plant selections designed to achieve the relevant noise criteria will result in a residual impact that is imperceptible to people in nearby noise sensitive locations.

14.2.17. Interactions between Built Services and Transportation

Interactions with Traffic and Transport arise during the construction phase when soil and subsoils generated from excavation on site is being transported to and from the site and raw materials for construction are being imported to the site. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic and drainage / excavation works.

14.2.18. Interactions between Built Services and Water

Interactions with Water and Hydrology arise during the construction phase and the operational phase. The surface water drainage infrastructure for the development will collect the rainfall on the site and convey the storm water run-off via tree pits, bio-retention area, rain gardens, infiltration basins, gullies, underground pipes, manholes, catchpit manholes and direct the flows via void arched attenuation systems towards vortex flow restricting devices (Hydrobrake or similar) and petrol interceptors before outfalling to the existing on site open watercourses to the south/existing drainage network to the east. During the construction phase a site-specific CEMP will manage site water and will mitigate the risk of surface contaminants infiltrating into the underlying geology and hydrogeology. Surface water drainage from the operational site has been designed in accordance with Greater Dublin Strategic Drainage Study (GDSDS) and SuDs methods will be used to manage drainage.

14.2.19. Interactions between Built Services and Resource & Waste Management

Interactions with Waste Management arise during the construction phase when soil, subsoils and demolition waste associates with Built Services excavations are being transported from the site. These waste materials will require appropriate transport and disposal either off site or recycled on site. A Waste Classification Report for soils and subsoils shall be prepared in order to define appropriate waste disposal outlets.

14.2.20. Interactions between Built Services and Noise & Vibration

Development of the site will result in a level of noise and vibration related effects on the surrounding environment during the construction phase. The interaction between Built Services and Noise and Vibration is considered to be moderate and temporary in nature. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic.

14.2.21. Interactions between Built Services and Air Quality

There is a potential for soil excavation activity associated with Built Services to impact on air quality in terms of dust generated. Dust generation can also occur during extended dry weather periods as a result of construction traffic. However, the implementation of suitable mitigation measures as outlined in a CEMP for the site will ensure a neutral impact.

14.2.22. Interactions between Built Services and Biodiversity / Species & Habitat

Removal of the existing topsoil layer will be required across the site as well as removal of some trees, hedgerows etc. Further details including any potential issues and mitigation measures are outlined in Chapter 4 of the EIAR (Biodiversity).

14.2.23. Interactions between Transportation and Air Quality

Overall, the impact of the interaction between air quality and traffic is considered long-term, slight negative and not significant. Refer to the relevant chapters for additional information.

14.2.24. Interactions between Transportation and Noise and Vibration

The noise emission sources from the proposed development during the construction and operational phases will be from traffic. The noise impact assessment has been prepared in consultation with the design team and traffic engineers. Refer to the relevant chapters for additional information.

14.2.25. Interactions between Transportation and Population and Human Health

Construction and operational stage traffic and traffic management measures have the potential to affect journey amenity or economic activity as a result of increased congestion or access restrictions. The increased infrastructure for sustainable travel modes can contribute towards modal shift in travel patterns and increased physical activity. Employment and economic activity will be generated during the construction stage of the project. Refer to the relevant chapters for additional information.

14.2.26. Interactions between Transportation and Land, Soils and Geology T

The volumes of surplus soils generated by the scheme and the earthworks import requirement will affect construction stage traffic generation. Measures to optimize design and minimize material generation are detailed in the relevant chapters.

14.2.27. Interactions between Transportation and Water and Hydrology

Construction and operational stage traffic have the potential to impact on water quality via hydrocarbon spills and leaks and via increased sediment/particle loading on trafficked surfaces. Measures to mitigate against impacts are detailed in Chapter 6.

14.2.28. Interactions between Resource and Waste Management and Land, Soils & Geology

During the construction phase, excavated soil, stone and made ground (c. 75,000m3) will be generated from the excavations required to facilitate site levelling, construction of the basement and construction of new foundations. It is estimated that c. 15,000m3 of excavated material will need to be removed off-site. Where material has to be taken off-site it will be taken for reuse or recovery, where practical, with disposal of last resort. Adherence to the mitigation measures in Chapter 5, 11 and the requirements of the RWMP will ensure the effect is **long-term, imperceptible and neutral.**

14.2.29. Interactions between Resource and Waste Management and Transportation

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the proposed project. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movements will be imperceptible in the context of the overall traffic and transportation increase and has been addressed in Chapter 10 (Material Assets: Transportation). Provided the mitigation measures detailed in Chapter 10, 11 and the requirements of the OWMP (included as Appendix 11.2) are adhered to, the effects should be short to long-term, imperceptible and neutral.

14.2.30. Interactions between Resource and Waste Management and Population & Human Health The potential impacts on human beings in relation to the generation of waste during the construction and operational phases are that the incorrect management of waste could result in littering which could cause a nuisance to the public and attract vermin. A carefully planned approach to waste management and adherence to the project specific RWMP and OWMP will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be **long-term, imperceptible and neutral.**

14.2.31. Interactions between Cultural Heritage (Archaeological & Architectural) and Built Services Construction Phase: Any ground reduction works or excavations made to facilitate site services and utilities have the potential to interact with archaeology. Without appropriate mitigation measures (described in section 1.5), a permanent profound negative effect would be incurred on sub-surface archaeological features and deposits.

14.2.32. Interactions between Cultural Heritage (Archaeological & Architectural) and Land, Soils & Geology Construction Phase: Any ground reduction, trenches, or trial pits associated with geological and geochemical investigations have the potential to interact with archaeology. Without appropriate mitigation measures (described in section 1.5), a permanent profound negative effect would be incurred on sub-surface archaeological features and deposits.

14.2.33. Interactions between Landscape and Biodiversity

The potential for interactions with Biodiversity include the adverse effects through the loss of hedgerows and trees along the field boundaries which alter the site's landscape character and creates potential for opening that may increase the visibility of the proposed development. The landscape masterplan through mitigation and enhancement measures will have beneficial biodiversity effects through increase diversity of species through the former farmland including trees and wildflower mixes.

14.2.34. Interactions between Landscape and Transport

The potential for interaction with Transport include the increased vehicle, cyclist and pedestrian through the site and connecting laneways which will alter the landscape character and visual amenity as a result of significant increased traffic levels through the former farmland and immediate area.

14.2.35. Interactions between Landscape and Land, Soils & Geology

The potential interaction with Land, Soils & Geology will occur with the siteworks with earthworks and movement of soil during the construction phase which will adversely affect the site's existing landscape characteristics.

14.3. Description of Significant Interactions

Schedule 6 Item 2 (b) of the Planning and Development Regulations, 2001 (as amended) requires that proposed developments are examined with regard to the inter-relationship of aspects referred to in Item 2 (b) of Schedule 6. The matrix incorporated in Table 14.1 over inter-relates the various chapters of this EIAR to the various impact headings referred to in Schedule 6 Item 2 (b) of the Planning and Development Regulations, 2001 (as amended). The matrix also indicates where these statutory information requirements have been incorporated in this EIAR. It should be emphasised that this matrix does not represent a form of relative assessment of impacts, but merely identifies and amalgamates areas of principal interaction and significance.

		Interaction of Impacts / Identification of Significant Effects										
Chapter No.	Chapter Heading in EIAR	Population & Human Health	Biodiversity	Land, Soils, & Geology	Water & Hydrology	Air Quality & Climate	Noise & Vibration	Material Assets: Built Services	Material Assets: Transportation	Material Assets: Resource & Waste Management	Cultural Heritage (Archaeological & Architectural)	The Landscape
3	Population & Human Health		-	-	-	✓	✓	-	✓	✓	-	-
4	Biodiversity	-		✓	✓	-	✓	-	-	-	-	✓
5	Land, Soils, & Geology	-	✓		✓	✓	✓	-	✓	✓	-	-
6	Water & Hydrology	-	✓	✓		✓	✓	-	✓	✓	-	-
7	Air Quality & Climate	✓	-	-	✓		-	-	✓	-	-	-
8	Noise & Vibration	✓	-	-	-	-		-	-	-	-	-
9	Material Assets: Built Services	-	✓	✓	✓	✓	✓		✓	✓	-	-
10	Material Assets: Transportation	✓	-	✓	✓	✓	✓	-		-	-	-
11	Material Assets: Resource & Waste Management	✓	-	✓	-	-	-	-	✓		-	-
12	Cultural Heritage (Archaeological & Architectural)	-	-	✓	-	-	-	✓	-	-		-
13	The Landscape	-	✓	✓	-	-	-	-	✓	-	-	
✓ Area of Principal Interaction												

Table 14.1. Interactions Matrix.

14.4. Other Impacts

4.1.1. Direct and Indirect Effects Resulting from the Use of Natural Resources

Schedule 6 Item 2 (c) of the Planning and Development Regulations, 2001(as amended), requires that an EIAR contains a description of the likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative) of the proposed development on the environment resulting from the use of natural resources. No likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative) of the proposed development on the environment are expected to arise from the use of natural resources.

4.1.2. Direct and Indirect Effects Resulting from Emission of Pollutants, Creation of Nuisances and Elimination of Waste

Schedule 6 Item 2 (c) of the Planning and Development Regulations, 2001(as amended), requires that an EIAR contains a description of the likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative) of the proposed development on the environment resulting from the emission of pollutants, the creation of nuisances and the elimination of waste. No likely significant effects on the environment are expected to arise from the emission of pollutants, the creation of nuisances or the elimination of waste.

14.5. Residual Impacts and Cumulative Impacts

Residual impacts can be defined as the final impacts that occur after proposed mitigation measures have taken effect. Many of the findings of the EIA have been incorporated into the design of the development and have contributed to the reduction or amelioration of potential impacts. Where residual impacts arise, they are detailed in the relevant chapters and further mitigation measures detailed where necessary.

Cumulative impacts are defined as: “The addition of many small impacts to create one larger, more significant, impact” (EPA 2002). Cumulatively, these impacts may be significant if they occur close together in terms of location and time. The cumulative impact of the proposed development is categorised as neutral and moderate.

As outlined in Chapter 2 the EIAR, where relevant, the EIAR also takes account of other development(s) within the area. The proposed development has the potential for cumulative, secondary and indirect impacts particularly with respect to such topics as traffic which in many instances are often difficult to quantify due to complex inter-relationships. However, all cumulative, secondary and indirect impacts are unlikely to be significant and, where appropriate, have been fully addressed in the relevant specialist chapters of this EIAR.

To determine traffic impacts in Chapter 10, the traffic generated by the proposed development is combined with the baseline traffic generated by the traffic on the road network in the area. The potential traffic impacts from other developments were also considered in the assessment (e.g. residential developments - adjacent to the site to the south and east).

Each of the relevant specialists has considered the potential for cumulative impact in preparing their assessments. While there is the potential for negative impacts to occur during the construction stage of the scheme, with the implementation of the appropriate mitigation outlined in the EIAR, the residual cumulative impact is not considered to be significant.

14.6. Environmental Commitments and Mitigation Measures

Mitigation measures to be adopted during the construction and operational phases of the proposed development are detailed within each chapter of the EIAR. These measures should be implemented through planning conditions imposed by the planning authority / An Bord Pleanála.

Mitigation measures will be managed by the contractor(s) as part of the Construction Management Plan and by the developer/ landowners thereafter.

14.7. Conclusions

The EIAR (Volume II) has regard to and builds on the environmental assessments prepared during the preparation and adoption of the Meath County Development Plan 2021-2027.

The EIAR has considered the likely, significant, adverse effects of the proposed project on the receiving environment.

Mitigation measures are included, to avoid and / or reduce impacts on the environment where considered necessary. This includes mitigation measures incorporated into the design of the proposed development.

The EIAR concludes that there are no material or significant environmental issues arising which were not anticipated by the Meath County Development Plan 2012-2027 and considered in its Strategic Environmental Assessments.

15.0. Summary of EIA Mitigation and Monitoring Measures

15.1. Introduction

The central purpose of EIA is to identify potentially significant adverse impacts at the pre-consent stage and to propose measures to mitigate or ameliorate such impacts. This chapter of the EIAR document has been prepared by Armstrong Fenton Associates and sets out the range of methods described within the individual chapters of this EIAR document which are proposed as mitigation and for monitoring. It is intended that this chapter of the EIAR document will provide a useful and convenient summary to the competent/consent authority of the range of mitigation and monitoring measures proposed. This chapter of the EIAR was prepared by Tracy Armstrong, BA, MRUP, MIPI, MRTPI, Planning Consultant of Armstrong Fenton Associates, who is a Corporate member of the Irish Planning Institute and has 17 no. years post-qualification experience. Tracy has experience in preparing and coordinating EIARs for a variety of projects and has also been involved in the coordination of a wide range of developments including residential and commercial developments.

EIA related conditions are normally imposed by the competent/consent authority as part of conditions of planning consent and form a key part of the Impact Anticipation and Avoidance strategy. Monitoring of the effectiveness of mitigation measures put forward in the EIAR document, both by the competent authorities and the developer, is also an integral part of the process

In the case of mitigation and monitoring measures it is important for all parties to be aware of the administrative, technical, legal and financial burdens that can accompany the measures proposed. It is also important to ensure that, where monitoring is provided for, it is clearly related to thresholds, which, if exceeded, cause a clearly defined set of actions to be implemented.

15.2. Mitigation Strategies

There are three established strategies for impact mitigation - avoidance, reduction and remedy. The efficacy of each is directly dependent on the stage in the design process at which environmental considerations are taken into account (i.e. impact avoidance can only be considered at the earliest stage, while remedy may be the only option available to fully designed projects).

1. Mitigation by Avoidance

Avoidance is generally the fastest, cheapest and most effective form of impact mitigation. Environmental effects and consideration of alternatives have been taken into account at the earliest stage in the project design processes. The consideration of alternatives with respect to the development of the subject lands has been described in Chapter 2 of the EIAR.

2. Mitigation by Reduction

This is a common strategy for dealing with effects which cannot be avoided. It concentrates on the emissions and effects and seeks to limit the exposure of the receptor. It is generally regarded as the "end of pipe" approach because it does not seek to affect the source of the problems (as do avoidance strategies above). As such this is regarded as a less sustainable, though still effective, approach.

Reducing the Effect : This strategy seeks to intercept emissions, effects and wastes before they enter the

environment. It monitors and controls them so that acceptable standards are not exceeded. Examples include wastewater treatment, filtration of air emissions and noise attenuation measures.

Reducing Exposure to the Impact: This strategy is used for impacts which occur over an extensive and undefined area. Such impacts may include noise, visual impacts or exposure to hazard. The mitigation is effected by installing barriers between the location(s) of likely receptors and source of the impact (e.g. sound barriers, tree screens or security fences).

3. Mitigation by Remedy

This is a strategy used for dealing with residual impacts which cannot be prevented from entering the environment and causing adverse effects. Remedy serves to improve adverse conditions which exist by carrying out further works which seek to restore the environment to an approximation of its previous condition or a new equilibrium.

15.3. Mitigation and Monitoring Measures

The following provides a list, for ease of reference, of the mitigation and monitoring measures recommended in each chapter of the EIAR.

15.3.1. Population and Human Health

15.3.1.1. Construction Phase

During the construction phase a number of mitigating measures should be considered, including inter alia:

- Restrict working hours from 07.00 to 19.00 Mondays to Fridays inclusive, between 09.00 to 13.00 on Saturdays. No general works are envisaged to be carried out on Sundays. Should there be a need to work Sundays/Bank Holidays, a written request will be made to MCC for permission to do so. Any conditions from MCC relating to out of hours working will be followed including any required notifications to relevant parties
- Maintain a Traffic Management Plan (TMP) in effect for duration of works
- Adherence to the CMP & RWMP
- A CEMP will be agreed with the Planning Authority upon receipt of planning permission. The construction of the proposed development shall adhere to the relevant provisions of this Plan; and;
- As part of the CEMP, maintain a Dust and Noise abatement plan in operation.

15.3.1.2. Operational Phase

Where relevant, mitigation measures to address the potential impacts of noise, air traffic etc. on people are included in the appropriate chapters of this EIAR. No likely significant impacts have been identified for population, or land use, accordingly no mitigation measures are required for the operational phase. The proposed development has been designed to avoid significant impacts in relation to local amenities and recreational facilities by:

- Incorporating the provision of a new childcare facilities within the design proposal.
- Incorporating the provision of a new local services by including for 4 no. retail units and 1 no. GP /medical use unit within the design proposal.

- Reserving a site to accommodate a potential new primary school, dependent on confirmation from the Department of Education and Skills for the need for same.
- The provision of c. 28,885 sq.m of public open space representing c. 15.5% of the 'A2' zoned residential lands
- Providing new pedestrian and cyclist links to local amenities and facilities.

Accordingly, no further mitigation measures are required.

15.3.1.3. Monitoring

Construction Phase

In respect of the impacts assessed above, the contractor will monitor development during the construction phase to ensure compliance with the parameters of the CMP / the conditions of the grant of permission. Remedial action will be taken, if required, to ensure construction activities conform to its requirements.

Operational Phase

No additional monitoring is proposed for the operational phase other than that proposed in other chapters of this EIAR.

15.3.2. Biodiversity

15.3.2.1. Construction Phase

Habitats

Retention and Protection of Vegetation during Construction

Any vegetation (including trees, hedgerows or scrub adjacent to, or within, the proposed development boundary) which is to be retained shall be afforded adequate protection during the construction phase in accordance with the Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (National Roads Authority, 2006b), as follows:

- All trees within the proposed development boundary that are to be retained, both within and adjacent to the proposed development boundary (where the root protection area of the tree extends into the proposed development boundary), will be fenced off at the outset of works and for the duration of construction to avoid structural damage to the trunk, branches or root systems of the trees. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree. The RPA will be defined based upon the recommendation of a qualified arborist;
- Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it;
- The area within the RPA will not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) or concrete washout areas will not be undertaken within 10 m of any retained trees, hedgerows and treelines;

- A qualified arborist shall assess the condition of, and advise on any repair works necessary to, any trees which are to be retained or that lie outside of the proposed development boundary but whose RPA is impacted by the works. Any remedial works required will be carried out by a qualified arborist;
- A buffer zone of at least 5m will be maintained between construction works and retained hedgerows to ensure that the root protection areas are not damaged.

Protection of Vegetation from Dust during Construction

To control dust emissions during construction works standard mitigation measures shall include: spraying of exposed earthwork activities and site haul roads during dry and/or windy conditions; provision of wheel washes at exit points; control of vehicle speeds with adequate signage, and speed restrictions (20 km/h on any un-surfaced site road); covering of haulage vehicles; and, sweeping of hard surface roads. These procedures will be strictly monitored and assessed on a daily basis.

Dust screens will be implemented at locations where there is the potential for air quality impacts on sensitive ecological receptors (i.e. within 100m of the works) during the construction phase.

Protection of water quality

Mitigation measures to protect surface water in the receiving environment during construction will include the following:

- Entry to the drainage ditches when wet by vehicles and/or personnel will not be permitted under normal circumstances.
- There will be no direct discharges to surface waters
- Prior to any machinery working on site for any purpose, the working area will be marked out with wooden stakes and where deemed necessary, hazard tape will be erected to identify the working limits
- Working limits to be checked at the end of every day by the Site Manager
- Provision of measures to prevent the release of sediment during the construction work will be installed prior to any site clearance. In respect to works adjacent to the drainage ditches with flowing water, these measures will include the use of silt fences, sedimentation mats etc.
- Provision of exclusion zones and barriers (sediment fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the receiving water environment
- Temporary construction surface drainage and sediment control measures will be in place before earthworks commence
- If pouring of cementitious materials is required for the works adjacent to surface water drainage features, or drainage features connected to same, this will be carried out in the dry
- Discharge water generated during placement of concrete will be removed off site for treatment and disposal
- Where stockpiling is required, temporary stockpiles will be located >50 metres from any water features. Three sides will be surrounded with silt fences with access from the fourth (uphill) side. Sides will be smoothened and collection of run-off discharged to a settlement pond or similar.
- The contractor will avoid work involving moving of soil during heavy rainfall to minimise potential for entrainment of silt. Where forecasts indicate heavy rainfall events, works should be rescheduled accordingly and stockpiles of fine-grained material will be carried out
- Pumped concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to surface water. Concrete washout areas will be located remote from any surface water drainage features to avoid accidental discharge to watercourses

- No storage of hydrocarbons or any polluting chemicals will occur within 50m of the surface water network. Fuel storage tanks will be bunded to a capacity at least 110% of the volume of the storage tank (plus an allowance of 30mm for rainwater ingress). Re-fuelling of plant will not occur within 50m of the surface water network and only in bunded refuelling areas
- Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures
- Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste
- Contaminated groundwater, if encountered on site, could result in contaminated waters being discharged from the construction site. Any such contaminated waters will be treated using best practice (as described in Chapter 6 of the EIAR, Land, Soils & Geology), appropriate measures/controls dependent on the nature of the contamination prior to discharge to the surface water network
- There will be no direct pumping of contaminated water from the works to the surface water drainage/stream network at any time
- Foul drainage from site offices and compounds, where not directed to the existing wastewater network, will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations, to prevent the pollution of watercourses
- An Emergency Response Plan detailing the procedures to be undertaken in the event of flooding, a spill of chemical, fuel or other hazardous wastes, a fire, or non-compliance incident will be prepared
- Ensure site staff are trained in the implementation of the Emergency Response Plan and the use of any spill control equipment as necessary
- The contractor will employ an environmental specialist who will monitor water quality upstream and downstream of the area of works. Data on pH, conductivity, and suspended solids will be collected as follows;
    - Twice weekly visits during general site works
    - Daily site visits during key construction activities (to be agreed between the environmental specialist and Meath County Council), e.g. during installation of the proposed outfall, during and immediately after clearance of on-site vegetation.
    - Event inspection e.g. following heavy rainfall events or during concreting works
- Monitoring will be undertaken for a period of at least two months prior to works commencing and one-month post construction. Trigger concentrations should be agreed at commencement and based on the baseline established in the two months prior to works commencing.
- All monitoring data should be collated to show trends for indicator parameters pH, conductivity, suspended solids and hydrocarbons, and will be shared at regular intervals with Meath County Council.

  These mitigation measures are for the protection of the water quality within the local receiving drainage network only, and not for the protection of European Sites downstream as there are no significant effects likely to arise on European sites as a result of water quality impacts associated with the proposed development, as discussed above in Section 5.6.

Fauna

Badgers

The mitigation measures described below follow the recommendations set out in the Guidelines for the Treatment of badgers during the Construction of National Road Schemes (National Roads Authority, 2006). These guidelines set out the best practice approach in considering and mitigating impacts on badgers during construction works.

Whilst no badger setts were identified within the proposed development, badger could potentially establish new setts in the future within the ZoI of the proposed development. Therefore, a pre-construction check of all suitable habitat

within the proposed development boundary will be required within 12 months of any constructions works commencing. Any new badger setts present will be afforded protection in line with the requirements set out in the TII/NRA guidance document as follows:

- Badger setts will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage
- No heavy machinery shall be used within 30m of badger setts; lighter machinery (generally wheeled vehicles) shall not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance shall not take place within 10m of sett entrances
- During the breeding season (December to June inclusive), none of the above works shall be undertaken within 50m of active setts, nor blasting or pile driving within 150m of active setts
- Works can be undertaken within these zones following consultation with, the approval of and, if required, under the supervision of a badger ecologist
- During construction, the use of egress ramps in any pits or holes that have been dug on site is required. This will allow for any mammal species that have fallen in, to allow to escape and be unharmed by construction activities.

As the proposed development will not result in the permanent loss of any badger setts, there is no requirement to construct any artificial setts as part of the mitigation strategy.

Other Mammals

The construction phase of the proposed development is not deemed to affect the local mammal population and will not result in a likely significant negative effect, at any geographic scale. However, mitigation is provided should small mammals (*e.g.* pygmy shrew and hedgehog) become trapped in excavations or pits required for construction activities. During construction, the use of egress ramps in any pits or holes that have been dug on site is required. This will allow for any mammal species that have fallen in, to allow to escape and be unharmed by construction activities.

Otter

The mitigation measures as described above in Section 5.8.1.1 to protect water quality within the local receiving environment, will also mitigate for habitat degradation impacts on otter species.

Birds

Vegetation (e.g. hedgerows, trees, scrub) will not be removed, between the 1st March and the 31st August, to avoid direct impacts on nesting birds.

Amphibians

Disturbance and Mortality Risk

If works to clear any of the habitat features suitable to support amphibian species (i.e. wet drainage ditches or wet grassland) are to begin during the season where frogspawn or tadpoles may be present (February – mid-summer), or where breeding adult newts, their eggs or larvae may be present (mid-March – September), a pre-construction survey will be undertaken to determine whether breeding amphibians are present.

In the case of common frog, any frog spawn, tadpoles, juvenile or adult frogs present will be captured and removed from affected habitat with a hand net and translocated to the nearest area of available suitable habitat beyond the ZoI of the proposed development.

In the case of smooth newt, individuals will be captured and removed from affected habitat either by hand net or by trapping and translocated to the nearest area of available suitable habitat, beyond the ZoI of the proposed development. If used, the type and design of traps shall be approved by the NPWS. This is a standard and proven method of catching and translocating smooth nest.

If the size or depth of the habitat feature is such that it cannot be determined whether all amphibians have been captured, it will be drained under the supervision of a suitably experienced ecologist to confirm that no amphibian species remain before it is destroyed or infilled. Any mechanical pumps used to drain the habitat feature will have a screen fitted, and be sited, such that no amphibian species can be sucked into the pump mechanism.

Any capture and translocation works shall be undertaken immediately in advance of site clearance/construction works commencing.

Bats

Measures to Protect Bats during the Removal of Potential Roost Features

All bat species and their roost sites are strictly protected under both European and Irish legislation including:

- Wildlife Act 1976 and Wildlife (Amendment) Act, 2000 (S.I. No. 38 of 2000)
- Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna 1992 (Council Directive 92/43/EEC)
- European Communities (Birds and Natural Habitats) Regulations, 2011

It is an offence under Section 23 of the Wildlife Acts 1976-2017 and under Section 51 of the European Communities (Birds and Natural Habitats) Regulations, 2011 to kill a bat or to damage or destroy the breeding or resting place of any bat species. Under the European Communities (Birds and Natural Habitats) Regulations it is not necessary that the action should be deliberate for on offence to occur. This places an onus of due diligence on anyone proposing to carry out works that might result in such damage or destruction. Under Section 54 of S.I. 477 of 2011, a derogation may be granted by the Minister where there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range. Given that the proposed development will result in the loss of a confirmed bat roost, a derogation licence under Section 54 of S.I. 477 of 2011 will be required[30].

The following mitigation measures are proposed in relation to structures with confirmed bat roosts, or are considered to have the potential to support roosting bats:

- Demolition of structures with confirmed bat roosts (i.e. BB 7), and of buildings considered to have potential to support roosting bats, will be undertaken between March and September, in daylight hours, during dry mild weather when daytime temperatures are above 10°C. Spring and autumn coincide with periods when bats are active, but are at least risk from disturbance as they are not undergoing hibernation or raising young.
- All structures with confirmed bat roosts, will be re-examined immediately prior to the demolition to assess whether bats are present at the time of demolition. This will be an all-night examination to determine if bats enter the building during the night or early morning. This will provide adequate information to proceed with demolition, unless weather conditions were unsuitable for feeding bats, and prevented a pre-demolition survey from taking place. If bats are present, then they will require exclusion from the property over several nights or if possible physical removal by hand by a licenced bat specialist to be placed in a bat box or similar for release in the evening after capture. If any roosts are identified within the buildings due for removal, a derogation licence will be required from the NPWS and appropriate alternative roosting sites will be provided in the form of bat boxes.
- For structures which have not been confirmed as bat roosts that are due to be demolished but are regarded to have potential for bats, a bat detector survey of the property to be demolished will be carried out. If demolitions are proposed during the period of May to August and a bat roost is confirmed to be present, the proposed demolition will not be permitted. This will be an all-night survey undertaken during suitable weather conditions to determine if bats enter the building during the night or early morning. If bats are present, then they will

[30] If another bat roost is identified during pre-construction stage in a structure or tree, a derogation licence will be sought from NPWS.

require exclusion from the property over several nights or if possible, bats present will be physically removed by hand by a licensed bat specialist and placed in a bat box and then released in the evening after capture.

- Once structures containing roosts are deemed to be clear of bats, the bat specialist will be on site to supervise the demolition procedure until the structure is no longer deemed able to support a bat roost. Bats may re-enter a partially demolished structure overnight so the bat specialist will be required to be present during demolition works until they are completed.
- Buildings confirmed as bat roosts proposed for demolition will be marked on the ground with agreed paint marking to permit identification by Contractors.

Measures to Protect Bats during Vegetation Clearance

- The following mitigation measures are proposed in relation to those trees identified as having potential to support roosting bats (Figure 5.6). Bats could occupy suitable roosting features at any time prior to the commencement of works. Therefore there is an inherent risk that bats could be affected by the proposed felling works. The following mitigation procedures will be followed:
- Felling of confirmed and potential tree roosts will be only undertaken during the periods April –September as during this period bats are capable of flight and may avoid the risks from tree felling if proper measures are undertaken, but also are not in hibernation. There are no trees with high bat roosting potential, and only one tree with potential is being removed under the development footprint
- Use of detectors alone may not be sufficient to record bat emergence and re-entry in darkness. Therefore, prior to felling of confirmed and potential tree roosts, an emergence survey using infra-red illumination and video camera(s) and bat detectors will be carried out on the night immediately preceding the felling operation to determine if bats are present
- Where it is safe and appropriate to do so for both bats and humans, such trees may be felled using heavy plant to push over the tree. In order to ensure the optimum warning for any roosting bats that may still be present, the tree will be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. The tree should then be pushed to the ground slowly and should remain in place until it is inspected by a bat specialist
- Trees should only be felled "in section" where the sections can be rigged to avoid sudden movements or jarring of the sections
- Where remedial works (e.g. pruning of limbs) is to be undertaken to trees deemed to be suitable for bats, the affected sections of the tree will be checked by a bat specialist (using endoscope under a separate derogation licence held by that individual) for potential roost features before removal. For limbs containing potential roost features high in the tree canopy, this will necessitate the rigging and lowering of the limb to the ground (with the potential roost feature intact) for inspection by the bat specialist before it is cut up or mulched. If bats are found to be present, they will be removed by a bat specialist licenced to handle bats and released in the area in the evening following capture
- If any bat tree roosts are confirmed, and will be removed by the proposed felling works, then a derogation licence will be required from the NPWS and appropriate alternative roosting sites will be provided in the form of bat boxes. The specifications, type, location and number of bat boxes (at least one box per roost lost) will be advised by the site ecologist, which will be determined by the species of bat that is identified roosting within the tree deemed for removal.

Measures to Control and Reduce Light Spill During Construction

Lighting of the site during construction is designed in accordance with the following guidance:

- Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2020)
- Bats & Lighting - Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, December 2010)
- Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008).

During construction, any external lighting to be installed, including facilitating night-time working or security lighting, on the site shall be sensitive to the presence of bats in the area, downlighting, and time limited. Lighting of sensitive wildlife areas and primary ecological corridors (e.g. along the hedgerows/treelines, boundaries of the site) and light pollution in general will be avoided. Light levels during construction in these areas will be maintained at baseline levels where possible, at a Lux level of 0.1 or below.

Monitoring of light levels along the treelines and hedgerows will be undertaken pre-construction, during-construction and post-construction to identify any areas where light spill is affecting background levels during construction. Where monitoring detects light spill is affecting these habitat areas, remedial measures, such as censored lighting or low column height lights, and will be implemented to ensure that background light levels are maintained.

Measures to prevent habitat loss impacts

The proposed development will result in a total loss of c. 1.8km of hedgerows and 69 trees, therefore replacement planting is required to ensure that there will be no impact on commuting and foraging local bat species as a result of the proposed development. Whilst the majority of hedgerows and treelines along the boundaries of the site, and some hedgerows within the central sections are to be retained, local bat species will be impacted by the loss of suitable foraging and commuting habitat. The planting regime proposed of native hedgerows will link to hedgerows along the boundaries that are being retained and augmented. New wetland planting and native woodland areas are also proposed that will merge with existing hedgerows, to ensure corridor routes for local faunal species will be maintained. A green-spine' is proposed which links the site from east to west, and north to south. Semi-mature native trees will be planted, including species such as; *Fagus sylvatica, Quercus petraea, Alnus glutinosa, Betula pendula, Populus tremula, Prunus avium,* and *Pinus sylvestris.* Hedgerow and large shrub species being proposed to be planted include; *Fugus sylvatica, Sambucus nigra, Salix cinerea, Ilex aquifolium, Corylus avellana, Salix caprea, Crataegus monogyna,* and *Ligustrum vulgare*[31].

Planting of diverse native meadow mixes, and woodland/understory shrub planting is also proposed in a number of areas throughout the proposed development. This will benefit the overall biodiversity of the site, and increase the number of invertebrates, thereby benefitting foraging bats, birds and mammals within the local area. This planting as part of the landscaping will complement the development and its incorporation into the surrounding area. It will also help to provide good quality and sustainable long-term tree cover and as it establishes and grows in size, it will be continuously mitigating any negative impacts created with the loss of the existing hedgerow and tree vegetation to facilitate the proposed development. This planting will also help strengthen the existing field network of hedgerows and ensure good connectivity through the finished landscaped development.

15.3.2.2. Operational Phase

Habitats

Mitigation measures to protect surface water in the receiving local environment in the during operation are detailed in Chapter 7: Water, and include:

Continued management, monitoring and maintenance of the waste water treatment systems in accordance with the

[31] Residential Development at Hickey's Lane, Ashbourne. Landscape Design Report Planning Stage, Cunnane Stratton Reynolds, Land Planning & Design, August 2022.

EPA licence requirements;

- Filter drains to the rear of housing;
- Permeable paving to all private parking areas;
- Rainwater butts (200l) to the rear downpipes of the houses;
- Filter swales adjacent to roadways where feasible;
- Runoff from the site will be attenuated within the on-site attenuation tanks, swales, and a hydrobrake will also be employed to control the rate of discharge. In combination, these SuDS measures significantly reduce the volume and rate of surface water discharging from the site.
- Pedestrian/green links to drain to surrounding landscape for reduction and treatment of run-off; permeable paving, swales, infiltration basins, tree pits, rain gardens and petrol interceptors;
- Grassed/landscaped detention basin;
- Silt-trap/catchpit manholes; and
- Hydrobrake limiting flow to Qbar Greenfield rates.

Fauna

Bats

There will be an increase in lighting levels across the site during operation, as the site is largely currently unlit. Measures can be undertaken to reduce this impact on foraging and commuting local bats. This will include careful consideration of light placement on buildings, column heights and luminaire design. Luminaires will selected which do not emit UV light (e.g. metal halide and fluorescent light sources should be avoided), and luminaries are designed using full cut off to ensure there is no direct upward light. The threshold increment is included in the lighting calculations to that luminaries are not a glare source, with the lighting designed to dim by 25% from 00:00 to 06:00. However, even with mitigation in place, there is likely to be a residual impact on bats as a result of disturbance from lighting within the site.

Birds

Re-planting of treeline, hedgerow and scrub habitats within/alongside the proposed development as detailed in the landscape drawings will over time provide suitable compensatory habitat for the breeding bird species to expand, and disturbance/displacement impacts occurring during the construction phase should reduce.

To further minimise the effects of breeding habitat loss, a total of 15 nest boxes will be erected by a qualified ecologist. The siting and type of nest boxes will be decided on by an ecologist at locations adjacent to where new trees will be planted or at suitable retained vegetation along the proposed development boundary.

15.3.2.3. Monitoring

See mitigation above.

15.3.3. Land, Soils and Geology

15.3.3.1. Construction Phase

Stripping of Topsoil

Stripping of topsoil will be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development.

At any given time, the extent of topsoil strip (and consequent exposure of subsoil) will be limited to the immediate vicinity of active work areas.

Topsoil stockpiles will be protected for the duration of the works and not located in areas where sediment laden runoff may enter existing surface water drains. These stockpiles will be monitored throughout the construction phase.

Topsoil stockpiles will also be located so as not to necessitate double handling.

Excavation of Subsoil Layers

The design of road levels and finished floor levels has been carried out in such a way as to minimise cut/fill type earthworks operations.

The duration that subsoil layers are exposed to the effects of weather will be minimised. Disturbed subsoil layers will be stabilized as soon as practicable (e.g. backfill of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping).

Similar to stripped topsoil, stockpiles of excavated subsoil material will be protected for the duration of the works. Stockpiles of subsoil material will be located separately from topsoil stockpiles. These stockpiles will be monitored throughout the construction phase. Monitoring of ground conditions and stability of excavations will be monitored on an on-going basis.

Measures will be implemented to capture and treat sediment laden surface water runoff (e.g. sediment retention ponds, surface water inlet protection and earth bunding adjacent to open drainage ditches).

Weather Conditions

Typical seasonal weather variations will also be taken account of when planning stripping of topsoil and excavations with an objective of minimising soil erosion and silt generation. The approach of extreme weather events will be monitored to inform near-term operational activities.

Surface Water Runoff

Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate. Monitoring of these sediment control measures will be undertaken throughout the construction phase.

Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds.

On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion.

Concrete batching will take place off site, wash down and wash out of concrete trucks will take place off site and any excess concrete is not to be disposed on site.

Surface water discharge points during the construction phase are to be agreed with Meath County Council's Environment Section prior to commencing works on site.

Water Pumped from Excavations

Rainwater pumped from excavations is to be directed to on-site settlement ponds.

Groundwater pumped from excavations is to be directed to on-site settlement ponds.

On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion. Monitoring of same will be undertaken.

Surface water discharge points during the construction phase will be agreed with Meath County Council prior to commencing works on site

Construction Traffic

Earthworks plant and vehicles delivering construction materials to site will be confined to predetermined haul routes around the site.

Vehicle wheel wash facilities will be installed in the vicinity of any site entrances and road sweeping implemented as necessary in order to maintain the road network in the immediate vicinity of the site. The cleanliness of the adjacent road network will be monitored throughout the construction phase.

Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods.

A construction traffic management plan will be prepared by the contractor prior to any works commencing on site.

Accidental Spills and Leaks

In order to mitigate against spillages contaminating underlying soils, all oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area.

Refueling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any surface water inlets and outlets (when not possible to carry out such activities off site).

A response procedure shall be put in place to deal with any accidental pollution events and spillage kits shall be available and construction staff will be familiar with the emergency procedures and use of the equipment.

Monitoring of all fuel / oil storage areas will be undertaken and spill kits will be available on site.

Geological Environment

A more detailed Ground Investigation will be undertaken prior to construction to verify the Preliminary Ground Investigation and where possible the works will be designed to minimize the bedrock excavation required. At any given time, the extent of exposed bedrock will be limited to the immediate vicinity of active work areas. Where bedrock is encountered, it will be crushed, screened and tested for use within the designed works to reduce the volume of material required to leave site. This will also reduce the volume of material to be imported to the site.

With the consideration of mitigation measures the construction phase of the proposed development will likely have an overall Neutral, Short Term, imperceptible residual impact.

15.3.3.2. Operational Phase

For the operational phase no specific mitigation measures are proposed as there will be no further impact on soils and the geological environment.

15.3.3.3. Monitoring

Proposed monitoring by the main contractor during the construction phase in relation to the soil and geological environment are as follows:

- Adherence to the Construction and Environmental Management Plan (CEMP).
- Construction monitoring of the works (e.g. inspection of existing ground conditions on completion of cut to road sub-formation level in advance of placing capping material, stability of excavations etc.).
- Inspection of fuel / oil storage areas and having spill kits available to hand.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities.
- Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill, protection of soils for removal from site from contamination).
- Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.).

No ongoing monitoring is proposed on completion of the construction phase

15.3.4. Water & Hydrology

15.3.4.1. Construction Phase

- A Construction and Environmental Management Plan will be submitted with the application documentation and will be implemented by the contractor during the construction phase. Site inductions will include reference to the procedures and best practice as given in the CEMP.

- All water pumped from excavations will be directed to on-site settlement ponds for treatment to reduce pollution to acceptable levels before being discharged to the local environment at a controlled rate.

- Surface water runoff from areas stripped of topsoil, from the construction compound, and from access tracks will be directed to on-site settlement ponds for treatment to reduce pollution to acceptable levels before being discharged to the local environment at a controlled rate.

- Weather conditions and seasonal weather variations will be taken into account when planning stripping of topsoil and excavations, with an objective of minimizing soil erosion and silt run-off. Short term weather forecasts will also be taken into account.

- In order to mitigate against spillages contaminating the surrounding surface water and hydrogeological environments, all oils, fuels, paints and other chemicals shall be stored in a secure bunded hardstand area in the construction compound. Refuelling and servicing of construction machinery will take place in a designated hardstand area which will be remote from any surface water inlets and outlets (where it is not possible to carry out such activities off site). Hydrocarbon spill kits will be available and to hand for refuelling crews in the event of any spills.

- Concrete batching will take place off site and wash out of concrete chutes will take place at designated locations in the site and the washout of truck drums will take place after back at the batching plant to minimise pollution release within the subject site.

- Discharge from any vehicle wheel wash areas will be directed to on-site settlement ponds for treatment prior to discharge to the local environment.

- Groundwater pumped from excavations is to be directed to on-site settlement ponds for treatment prior to discharge to the local environment.

15.3.4.2. Operational Phase

The design of proposed site levels (roads, finished floor levels etc.) was completed to replicate existing surface contours, break lines etc., therefore replicating existing overland surface water flow paths, to minimise changes to the site characteristics and not concentrating water run-off in any particular location(s).
Surface water runoff from the site will be attenuated to the existing greenfield runoff rate as outlined in the Greater Dublin Strategic Drainage Study (GDSDS). Surface water discharge rates will be controlled by 7 no. Hydrobrake type vortex flow control devices, located at all attenuation areas, in conjunction with attenuation storage in both locations.

The design of the proposed development incorporates the following SuDS surface water treatment train solutions:

- Permeable paving in driveway areas.
- Surface water runoff from roofs will be routed to the proposed surface water pipe network via the porous aggregates beneath permeable paved driveways.
- Surface water runoff from roads, where allowable, will drain to swales for treatment and runoff reduction.
- Attenuation of the 100-year return event storms with a 20% allowance for climate change.
- Installation of 7 No. flow control devices (Hydrobrake or similar) limiting surface water discharge from the site to greenfield runoff rates at the outfalls to the Fairyhouse stream and Broad Meadow River.
- Surface water discharge to pass via 7 No. Class 1 fuel / oil separator (sized in accordance with permitted discharge from the site).
- Non-Return Valve fitted at outlet locations to prevent any water from the Fairyhouse stream or the drainage ditch from draining back into the systems.

15.3.4.3. Monitoring

Proposed monitoring in relation to the water and hydrogeological environment are as follows:

- Inspection and maintenance of fuel / oil separators.
- Inspection and maintenance of the internal road network for wear and tear that could cause silt release.
- Inspection and maintenance of attenuation and hydrobrake infrastructure.
- During the operational phase, an inspection and maintenance contract is to be implemented in relation to the proposed Class 1 fuel / oil separators, hydrobrakes and attenuation facilities.

15.3.5. Air Quality & Climate

15.3.5.1. Construction Phase

Air Quality

The pro-active control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the dust management plan. The key aspects of controlling dust are listed below. Full details of the dust management plan can be found in Appendix 7.1. In

summary the measures which will be implemented will include:

- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.
- Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.
- Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph.
- Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

Climate

Impacts to climate during the construction stage are predicted to be imperceptible however, best practice measures can be incorporated to ensure potential impacts are lessened. These include:

- 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.

15.3.5.2. Operational Phase

No mitigation measures are required for the operational phase of the proposed development as it is predicted to have an imperceptible impact on ambient air quality and climate.

15.3.5.3. Monitoring

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).

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.

15.3.6. Noise & Vibration

15.3.6.1. Construction Phase

Noise

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 outside of normal permitted working hours will be surrounded by an acoustic enclosure or portable screen.

BS 5228 -1:2009+A1 2014 includes guidance on several aspects of construction site practices, which include, but are not limited to: -

- selection of quiet plant;
- noise control at source;
- screening;
- liaison with the public, and;
- monitoring.

Detailed comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise and vibration monitoring, where required.

Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. 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 should be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative.

Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.
Referring to the potential noise generating sources for the works under consideration, the following best practice migration measures should be considered:

- Where practical, site compounds will be located in excess of 30m from noise sensitive receptors within the site constraints. The use lifting bulky items, dropping and loading of materials within these areas should be restricted to normal working hours.
- For mobile plant items such as 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 should be switched off when not in use and not left idling.
- For concrete mixers, control measures should be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- Demountable enclosures can also be used to screen operatives using hand tools and will be moved around site as necessary.
- All items of plant should 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

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Construction site hoarding will be constructed around the site boundaries as standard. The hoarding will be constructed of a material with a mass per unit of surface area greater than 7 kg/m^2 to provide adequate sound insulation.

In addition, careful planning of the site layout will also be considered. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.

Liaison with the Public

A designated environmental liaison officer will be appointed to site during construction works. Any noise complaints should be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particularly noisy construction activity is planned or other works with the potential to generate high levels of noise, or where noisy works are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. During excavation/ demolition or other high noise generating works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent

unacceptable disturbance at any time.

Vibration

The vibration from construction activities will be limited to the values set out in Section 8.2.2. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Limit values have been provided for soundly constructed residential and commercial properties.

15.3.6.2. Operational Phase

Noise

Mechanical Services Plant

Taking into account that sensitive receivers within the development are much closer than off-site sensitive receivers, once the relevant noise criteria is achieved within the development it is expected that there will be no negative impact at sensitive receivers off site, and therefore no further mitigation required.

Additional Traffic on Adjacent Roads

During the operational phase of the development, noise mitigation measures with respect to the outward impact of traffic from the development are not deemed necessary.

Inward Noise

As is the case in most buildings, the glazed elements and ventilation paths of the building envelope are typically the weakest element from a sound insulation perspective. In general, all wall constructions (i.e. block work 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.

In this instance, the facades highlighted in Figure 8.5 will be provided with glazing and ventilation that achieves the minimum sound insulation performances as set out in Table 8.20 and Table 8.21. Other facades in the development have no minimum requirement for sound insulation.

Mark-up	Octave Band Centre Frequency (Hz)						R_w
	125	250	500	1000	2000	4000	
ORANGE	19	27	36	41	37	42	**37**

Table 8.20: Sound Insulation Performance Requirements for Glazing, SRI (dB).

The overall R_w and $D_{ne,w}$ outlined in this section are provided for information purposes only. The over-riding requirement is the Octave Band sound insulation performance values which may also be achieved using alternative glazing and ventilation configurations. Any selected system will be required to provide the same level of sound insulation performance set out in Table 8.20 and Table 8.21 or greater.

The following performance requirements apply to all ventilation paths from outside the building. This can be achieved by passive acoustic wall or window vents or via mechanical ventilation systems.

Mark-up	Octave Band Centre Frequency (Hz)						R_w
	125	250	500	1000	2000	4000	
ORANGE	30	33	38	37	36	36	**38**

Table 8.21: Sound Insulation Performance Requirements for Ventilation, $D_{n,e,w}$ (dB).

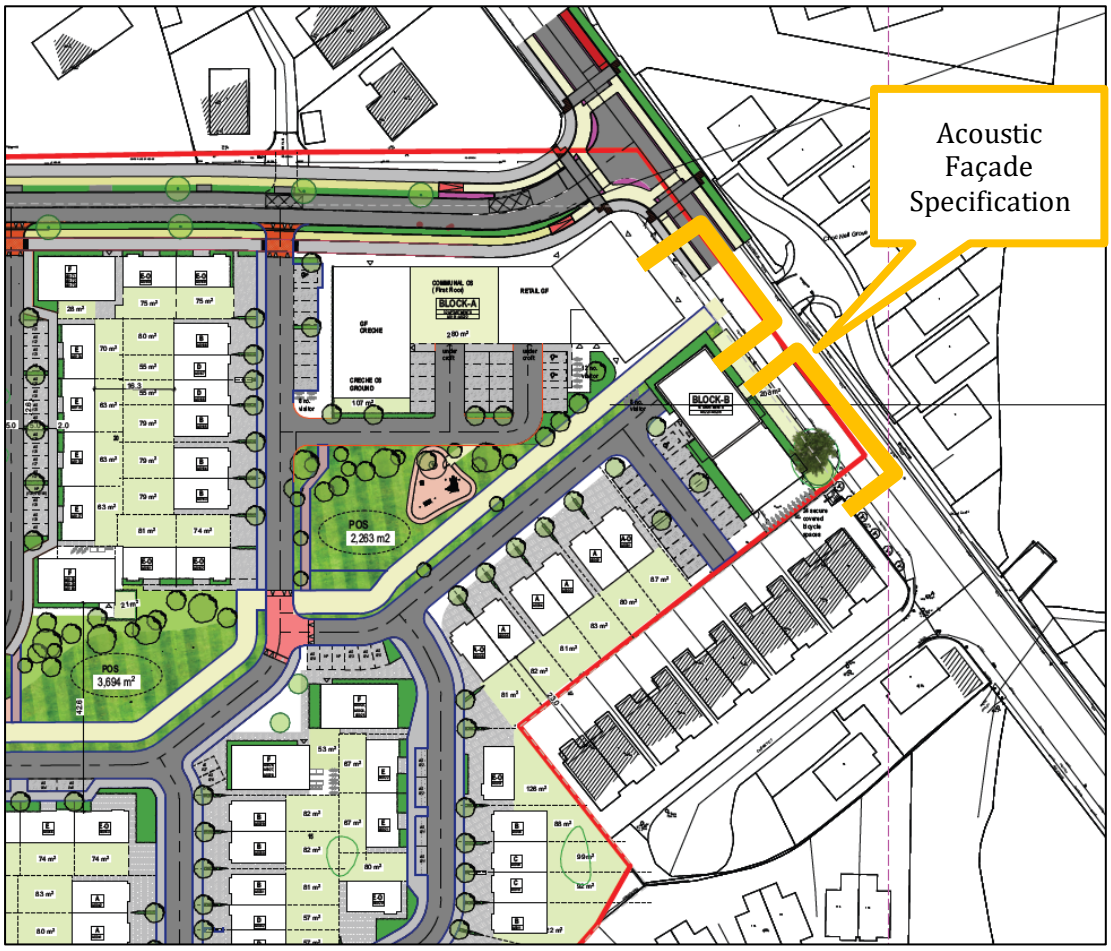

Figure 8.5: Façade Acoustic Requirements.

It is important to note that the acoustic performance specifications detailed herein are minimum requirements which apply to the overall glazing and ventilation systems. 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.

The assessment has demonstrated that the recommended internal noise criteria can be achieved through consideration of the proposed façade elements at the design stage. The calculated glazing and ventilation 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.

Vibration

No vibration mitigation measures are required applicable the operational phase.

15.3.6.3. Monitoring

Construction Phase

Where required, construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion.

Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise*.

15.3.7. Material Assets: Built Services

15.3.7.1. Construction Phase

Please refer to Section 6.6 of the EIAR (Water & Hydrology) for mitigation measures associated with the surface water treatment.

Mitigation measures proposed in relation to the drainage and water infrastructure include the following:

- A site-specific Construction and Environmental Management Plan (CEMP) will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the CEMP.
- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
- The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tinkered off site to a licensed facility until a connection to the public foul drainage network has been established.
- The construction compound's potable water supply shall be located where it is protected from contamination by any construction activities or materials.

Relocation of existing ESB infrastructure will be fully coordinated with ESB Networks to ensure interruption to the existing power network is minimized (e.g. agreeing power outage to facilitate relocation of cables). Ducting and / or poles along proposed relocated routes (to be agreed with ESB) will be constructed and ready for rerouting of cables in advance of decommissioning of existing medium and high voltage power lines to minimize outage durations.

Similarly, relocation of overhead telecommunication lines running through the site will be coordinated with Eir to minimize interruption and ensure that all works are carried in a safe manner. As there are no gas networks running through the site relocation will not be necessary.

15.3.7.2. Operational Phase

Please refer to Section 6.6 of the EIAR (Water & Hydrology) for mitigation measures associated with the surface water treatment.

All new foul drainage pipes will be pressure tested and will be subject to an internal CCTV survey in order to identify any possible defects prior to being made operational.

No additional mitigation measures are proposed in relation to water supply, however water conservation measures such as dual flush water cisterns and low flow taps will be included in the design.

On completion of the construction phase no further mitigation measures are proposed in relation to the electrical, gas and telecommunications infrastructure

15.3.7.3. Monitoring

Please refer to Section 6.6 of the EIAR (Water & Hydrology) for the proposed monitoring in relation to the surface water.

No specific monitoring is proposed in relation to the remaining material assets infrastructure.

15.3.8. Material Assets: Transportation

15.3.8.1. Construction Phase

A Construction and Environmental Management Plan (CEMP) has been prepared as part of the planning application with an associated Preliminary Construction Management Plan (PCMP) which incorporates a range of integrated control measures and associated management activities with the objective of minimising the construction activities associated with the development. The following initiatives will be implemented to avoid, minimise and/or mitigate against the anticipated construction period impacts:

- During the pre-construction phase, the site will be securely fenced off/hoarded off from adjacent properties, public footpaths and roads;
- Appropriate on-site parking (temporary parking for the duration of construction works) and compound area will be provided to prevent overflow onto the local network;
- A large proportion of construction workers are anticipated to arrive in shared transport. It is likely that some numbers of the construction team will be brought to/from the site in vans/minibuses, which will serve to reduce the trip generation potential;
- Delivery vehicles to and from the site will be spread across the course of the working day, therefore, the number of HGVs travelling during the peak hours will be relatively low;
- Truck wheel washes will be installed at construction entrances;
- Any specific recommendations with regard to construction traffic management made by Meath County Council will be adhered to;
- Potential localised traffic disruptions during the construction phase will be mitigated through the implementation of industry standard traffic management measures such as the use of traffic signage. These traffic management measures shall be designed and implemented in accordance with the Department of Transport's Traffic Signs Manual "Chapter 8 Temporary Traffic Measures and Signs for Roadworks" and "Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition" (2010); and
- Site entrance point/s from the public road will be constructed with a bound, durable surface capable of withstanding heavy loads and with a sealed joint between the access and public highway. This durable bound surface will be constructed for a distance of 10m from the public road.
- Material storage zones will be established in the compound area and will include material recycling areas and facilities;
- 'Way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas;
- Dedicated construction haul routes will be identified and agreed with Meath County Council prior to commencement of activities on-site; and
- On completion of the works, all construction materials, debris, temporary hardstands etc. from the site compound will be removed off-site and the site compound area reinstated in full on completion of the works.

The projected increase in vehicle traffic during the operational stage may lead to a slight increase in noise levels during peak trip generation periods, however, implementation of the mitigation measures described in the Noise & Vibration and Air Quality & Climate chapters of the EIAR will prevent and minimize the potential impacts of this interaction,

15.3.8.2. Operational Phase

A package of integrated mitigation measures has been identified to off-set the additional local demand that the proposed residential development at the subject site could potentially generate as a result of the forecast increase in vehicle movements by residents of the scheme. The identified measures and associated timescale for their implementation are summarised below.

- **Parking Strategy** - A management regime has been set out in Chapter 5 of the Traffic and Transport Assessment (and accompanies this planning application) which will be implemented by the development's management company to control access to the on-site car parking spaces thereby actively managing the availability of on-site car parking for residents and visitors to the development. This provision equates to a car parking ratio of approximately 1.35 car parking spaces per apartment/duplex unit. The signing of a rental agreement or purchase of one of the proposed residential apartments will NOT include access to a designated on-site parking space. All potential residents (prior to signing rental agreement) will be notified that the proposed scheme is a 'low car allocation' development with no access (or guarantee thereof) to the limited on-site residents car parking provision. Nevertheless, all residents of the proposed residential apartment scheme will have the opportunity to apply to the on-site management company for a resident's car parking permit (updated weekly, fortnightly, monthly, quarterly or annually) and subsequently access to a dedicated (assigned) on-site basement car parking space. A charge will be applied to obtain a permit with the objective of covering the associated management costs and discouraging long term usage of the car parking space.
- **Management** – A preliminary Mobility Management Plan (MMP) has been compiled with the aim of guiding the delivery and management of co-ordinated initiatives by the scheme promotor to be implemented upon occupation of the site. The MMP will ultimately seek to encourage sustainable travel practices for all journeys to and from the proposed development.
- **Infrastructure** – Infrastructure measures identified to reduce reliance of private vehicles include the provision of ample secure cycle parking on site, exceeding minimum guidance (DHPLG), and ensuring a design which promotes permeability for pedestrians and cyclists to, through and from the development.
- **Infrastructure** – Junction enhancement have been identified and proposed at the Cherry Lane site access junction, including pedestrian and cycle facilities, with the objective of creating a highly permeable environment for pedestrians and cyclists.
- **Car Sharing** – The provision of 2 No. dedicated car share (GoCar and development-owned) spaces at the Development for the use of the scheme's residents and staff. The availability of these on-site provide a viable alternative to residents needing to own a private vehicle whilst still having access to a car as and when required. GoCar have provided a letter of intent to provided 2no. car share facilities for use by future residents of the proposed development. GoCar support letter can be found in the Appendices of TTA report which is included in this planning application package and should be read in conjunction with this report.

15.3.8.3. Monitoring

Construction Phase

During the construction stage, the following monitoring exercises are proposed:

- Compliance with construction vehicle routing practices;
- Compliance with construction vehicle parking practices;
- Internal and external road conditions; and
- Timing of construction activities.

Operational Phase

As part of the MMP process, bi-annual post occupancy surveys are to be carried out in order to determine the success of the measures and initiatives as set out in the proposed MMP document. The information obtained from the monitoring surveys will be used to identify ways in which the MMP measures and initiatives should be taken forward in order to maintain and further encourage sustainable travel characteristics.

15.3.9. Material Assets: Resource and Waste Management

15.3.9.1. Construction Phase

The following mitigation measures will be implemented during the construction phase of the proposed development:

As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of The EPA, *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)* and is included as Appendix 11.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 11.1) in agreement with MCC and in compliance with any planning conditions, or submit an addendum to the RWMP to MCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.

- The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases.

A quantity of topsoil and sub soil will need to be excavated to facilitate the proposed development. The Project Engineers have estimated that 15,000m^3 of excavated material will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented:

- Building materials will be chosen to 'design out waste';
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
  - Concrete rubble (including ceramics, tiles and bricks);
  - Plasterboard;
  - Metals;
  - Glass; and
  - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal);
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, and the EMR Waste Management Plan 2015 – 2021. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

15.3.9.2. Operational Phase

As previously stated, a project specific OWMP has been prepared and is included in Appendix 11.2. The mitigation measures outlined in the OWMP will be implemented in full and form part of mitigation strategy for the site.

- The Operator/Facilities Management of the site during the operational phases will be responsible for ensuring – allocating personnel and resources as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery at the site of the proposed development.

  In addition, the following mitigation measures will be implemented:

- The Operator/Facilities Management will ensure on-site segregation of all waste materials into appropriate categories, including (but not limited to):
  - Organic waste;
  - Dry Mixed Recyclables;
  - Mixed Non-Recyclable Waste;
  - Glass;

- Waste electrical and electronic equipment (WEEE);
- Batteries (non-hazardous and hazardous);
- Cooking oil;
- Light bulbs;
- Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.);
- Furniture (and from time-to-time other bulky waste); and
- Abandoned bicycles

- The Operator/Facilities Management will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials;
- The Operator/Facilities Management will ensure that all waste collected from the Site of the proposed Development will be reused, recycled, or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and
- The Operator/Facilities Management will ensure that all waste leaving the Site will be transported by suitable permitted contractors and taken to suitably registered, permitted, or licensed facilities.

These mitigation measures will ensure the waste arising from the proposed development during the operational phase is dealt with in compliance with the provisions of the Waste Management Act 1996 as amended, associated regulations, the Litter Pollution Act 1997, the EMR Waste Management Plan 2015 – 2021 and the MCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

15.3.9.3. Monitoring

As has been identified in the receiving environment section all cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

Construction Phase

The management of waste during the construction phase should be monitored to ensure compliance with relevant local authority requirements, and effective implementation of the RWMP including maintenance of waste documentation. The management of waste during the operational phase should be monitored to ensure effective implementation of the OWMP by the facilities management company and the nominated waste contractor(s).

Operational Phase

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction phases where there is a potential for waste management to become secondary to progress and meeting construction schedule targets. The mitigation measures in the RWMP specifies the need for a waste manager to be appointed who will have responsibility to monitor the actual waste volumes being generated and to ensure that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the waste manager should will identify the reasons for targets not being achieved and work to resolve any issues. Recording of waste generation during the project will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future projects

15.3.10. Cultural Heritage (Archaeological and Architectural)

15.3.10.1. Construction Phase

Archaeological Heritage

Figure 12.42 illustrates the archaeological potential of the planning boundary in relation to recommended mitigation measures. Subject to approval from the National Monuments Service, it is recommended that:

- Areas shaded in orange, if due to be impacted upon by any development, should be archaeologically stripped of topsoil and fully excavated under licence from the National Monuments Service prior to any groundworks.
- The topsoil stripping of the areas shaded in yellow, if due to be impacted upon by any development, should be monitored under archaeological supervision under licence from the National Monuments Service. Should any archaeological remains be identified, these should be fully excavated in advance of groundworks.
- The dwellings to the south of Cherry Lane, the lane itself and the farmyard at the eastern end of the lane are included in the areas to be monitored. The farmyard at the eastern end of Hickey's Lane to the south has also been included. It is unknown what the potential for archaeology is in these areas at present. These areas may require limited or intermittent monitoring during the removal of the upstanding buildings and the insertion of services.
- The townland boundary between Baltrasna and Milltown, which also forms the parish boundary between Ratoath and Donaghmore appears to follow the route of a watercourse used since prehistory. Five sections should be excavated through this ditch to further assess whether there is any survival of earlier versions of the ditch elsewhere within the planning boundary. A strip 5m in width on either side of the ditch should be monitored under archaeological supervision to assess for additional prehistoric remains along the line of the ditch. The western side of the planning boundary is bounded by the ditch forming the townland boundary between Milltown, Baltrasna, and Killegland. The parish boundary between Killegland and Ratoath also follows this ditch. The places where the Proposed Development impacts on this ditch should be monitored under archaeological supervision. Two sections should be recorded across the ditch.
- Those areas shaded in green require no further archaeological works.

Greenspaces within the development have been shaded in green, indicating that they should require no further archaeological works. It is recommended that these areas be fenced or cordoned off prior to and during groundworks within the planning boundary. By enclosing these areas prior to and during groundworks, there can be no impact on archaeology situated there. This mitigation strategy is only valid should no ground level reduction take place within the greenspace areas. If ground level reduction is required within the areas prior to the creation of greenspaces, archaeological monitoring may be required

Figure 12.42. Colour-coded plan showing recommendations for archaeological areas within the planning boundary.

Architectural Heritage

Mitigation measures would not be applicable during any stage, as the proposed development is anticipated to have a neutral (no effect) on architectural heritage of the Study Area.

15.3.10.2. Operational Phase

Archaeological Heritage

It is anticipated that there would be an imperceptible neutral physical effect on any archaeological features that survive the transition from the Construction Phase to the Operational Phase. Archaeological receptors within the planning boundary are unlikely to be further affected once the Strategic Housing Development is complete, and therefore additional mitigation measures during this stage are not necessary.

Architectural Heritage

Mitigation measures would not be applicable during any stage, as the proposed development is anticipated to have a neutral effect (no effect) on the architectural heritage of the Study Area.

15.3.10.3. Monitoring

Refer to mitigation above.

15.3.11. The Landscape

Construction Phase

The landscape proposals for the Proposed Development site include retaining existing landscape features wherever possible including areas of scrub, hedgerows, trees and drainage ditches.

The works around the existing vegetation to be cleared and retained will be supervised by the clerk of works ecologist and project arborist. Protection measures will be outlined in the Environmental Management Plan which will help protect these features. Retained trees and hedgerows will be protected by installation of fencing in accordance with *BS5837:2012: Trees in Relation to Construction* around the root protection areas (RPAs) as per the arborists Arboricultural Impact Assessment (AIA) report. Areas of soil outside the main site works will be fenced off to prevent compaction. Where the soil will be disturbed by the site works it will be removed and stored elsewhere on site and reused across the Proposed Development for landscaping including use as a seedbank for wildflowers.

Visual impacts will be mitigated through the appropriate site management measures and work practices to ensure the site is kept tidy, dust is kept to a minimum, and that public areas are kept free from building material and site rubbish. Works will be carried at agreed hours with the council.

Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate. Similarly, other structures including the site compound and scaffolding will be temporary in nature and contained with the works area.

Operational Phase

The retained landscape features will be incorporated into the overall landscape proposal which will bolster the existing green and blue infrastructure of the existing Proposed Development site and immediate surroundings.

An existing line of mature ash trees within the southern part of the Proposed Development site will be incorporated as a key feature within the new neighbourhood park. The various public open spaces will include valuable functioning SUD features.

Planting across the Proposed Development will include trees, hedges, shrubs, wildflower meadow, amenity/private grassland. The planting will consist of a range of suitable native and non-native non-invasive species which across the various open spaces and gardens will help to soften the appearance of the buildings and act as a visual barrier to reduce potential visual impacts.

The existing retained hedgerows along the perimeter of the proposed site acts an importance physical and visual barrier to the surrounding areas of housing and farmland. Tree lines are proposed across the Proposed Development to add structure and act as vertical screens. The retained and enhanced hedgerows and new planting will help to connect with the existing landscape features within the surroundings and strength the green

infrastructure.

Habitat housing will include the placement of log piles (created from felled trees within the Proposed Development site), bird and bat boxes at locations through the Proposed Development as determined by the ecologist clerk of works.

Pathways are designed to allow good legibility for all abilities users across the Proposed Development and to directly connect onto the R135 Dublin Road providing access into Ashbourne town. Pedestrian access is provided onto the existing residential area to the west with access points designed to allow for future potential access points into the zoned development lands directly to the west of the Site.

The lighting across the Proposed Development will be designed to prevent light spillage pollution into the surrounding urban and rural areas.

Monitoring

The landscape mitigation and enhancement measures are incorporated into the proposed development's landscape masterplan, see Appendix 13-2. The masterplan proposals include a range of hard and soft landscaping. The soft landscape measures include the retainment of existing hedgerows and trees, suds drainage and planting of grasses, wildflowers, shrubs and trees. The successful establishment of the planting will be key to helping to fully integrate the proposed development's built structure into the surrounding landscape and provide a visual buffering of the proposed development's built elements from surrounding visual receptors. The mitigating effects of which have been considered when determining the predicted landscape and visual effects in the assessment above.

In order to ensure the success of the proposed landscape planting and retained vegetation, implemented during the construction phase, the appointed landscape contractor will be required to undertake and maintain the planting in accordance with the proposed landscape maintenance and management plans. There will be a minimum 18 months defects period on all soft landscape works implemented. Thereafter the landscaping will be maintained in perpetuity consecutive 12 months periods. This regular maintenance/inspection of the planting across the proposed development helps to ensure the planting becomes established over the initial years and that any failed planting is duly replaced.