

BLESSINGTON DEMESNE LRD

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

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ABBREVIATIONS

AADT	Annual Average Daily Traffic
AA	Archaeological Area
ABP	An Bord Pleanála
A-weighting	A frequency weighting applied to measured or predicted sound levels in order to compensate for the non-linearity of human hearing.
ARN	Affected Road Network
CAFE	Cleaner Air for Europe
CAP23	Climate Action Plan 2023
CARO	Climate Action Regional Office
C&D	Construction and Demolition
CAS	Climate Action Strategy
CEMP	Construction and Environmental Management Plan
CDWMP	Construction Demolition Waste Management Plan
CSM	Conceptual Site Model
CTMP	Construction Traffic Management Plan
DAS	Daily Average Speed
dB	Decibel. The unit of sound pressure level, calculated as a logarithm of the intensity of sound. 0dB is the threshold of hearing, 120dB is the threshold of pain. Under normal circumstances a change of 3dB is a perceptible difference. A change of 10dB corresponds to a halving or doubling of sound.
DoHLGH	Department of Housing, Local Government and Heritage
DHPLG	Department of Housing, Planning and Local Government
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMRA	Eastern and Midland Regional Assembly
EMR	Eastern Midlands Region
ETS	Emissions Trading Scheme
EPA	Environmental Protection Agency
GDSDS	Greater Dublin Strategic Drainage Study
GII	Ground Investigation Ireland
GHGs	greenhouse gases

GSI	Geological Survey of Ireland
IAQM	Institute of Air Quality Management
IPCC	Intergovernmental Panel on Climate Change
LAP	Local Area Plan
L_{Aeq}	is the A – weighted equivalent continuous sound level – the sound level of a steady sound having the same energy as a fluctuating sound over a specified measurement period.
L_{A10}	is the A-weighted noise level which is exceeded for 10% of the specified measurement period. This gives an indication of the upper limit of fluctuating noise such as that from road traffic. L_{1018hr} is the A-weighted $L_{A10,1hr}$ average for the period from 06.00 -24.00hrs.
L_{A90}	is the A-weighted noise level exceeded for 90% of the measurement period and is useful in providing an indication of the background noise level experienced over the measurement period.
L_{AFmax}	is the maximum A-weighted noise level measured during a cycle with a fast time weighting.
L_{ASmax}	is the maximum A-weighted noise level measured during a cycle with a slow time weighting.
L_{AFmin}	is the minimum A-weighted noise level measured during a cycle with a fast time weighting.
L_{day}	Day equivalent level: A-weighted, Leq. Sound Level, measured over the 12-hour period 07.00 - 19.00 hours
L_{den}	Day-evening-night composite level. It is a descriptor of noise level based on energy equivalent noise level (Leq) over a whole day with a penalty of 10 dB(A) for night-time noise (23.00-07.00) and an additional penalty of 5 dB(A) for evening noise (i.e.19.00-23.00).
$L_{evening}$	Evening equivalent level: A-weighted, Leq. Sound Level, measured over the 12-hour period 19.00 - 23.00 hours
L_{night}	Night equivalent level: Leq. A-weighted, Sound Level, measured overnight 23.00 – 07.00 hours.
$L_{Aeq,16 hr}$	16-hour equivalent level: Leq. A-weighted, Sound Level, measured from 07.00 – 23.00 hours.
L_{Ae}	See SEL below.
LRD	Large-scale Residential Development
LOD	Limit of Detection
MMP	Mobility Management Plan
NIAH	National Inventory of Architectural Heritage

NMS	National Monuments Service
NPWS	National Parks and Wildlife Services
NZEB	Nearly Zero-Energy Buildings
NMI	National Museum of Ireland
NPF	National Planning Framework
NTA	National Transport Authority
OSI	Ordnance Survey Ireland
OS	Ordnance Survey
OWMP	Operational Waste Management Plan
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyl
PCUs	Passenger Car Units
PPV	Peak particle velocity expressed in mm/sec is a vibration indicator used for the purposes of assessing potential annoyance to humans or damage to buildings.
RFC	Ratio of Flow to Capacity
RSES	Regional Spatial and Economic Strategy
RWMP	Resource Waste Management Plan
RMP	Record of Monuments and Places
RPS	Record of Protected Structures
Rw	weighted sound reduction index - a single-number quantity which characterises the airborne sound insulation of a material or building element over a range of frequencies. (Laboratory measurement). The apparent Rw is the value as measured in the field.
SEL	– Single Event Level - the dB(A) level which if it lasted for one second would produce the same A-weighted sound energy as the actual event. Also referred to as L_{Ae} .
SUDS	Sustainable Urban Drainage Systems
SMR	Sites and Monuments Record
SSFRA	Site-Specific Flood Risk Assessment
TII	Transport Infrastructure Ireland
TPH	Total Petroleum Hydrocarbons
UNFCCC	United Nations Framework Convention on Climate Change
VDV	Vibration Dose Value is an evaluation of human exposure to vibration in buildings. It is defined in BS6474:2008 as “the fourth root of the integral of the

fourth power of acceleration after it has been frequency weighted. The frequency weighted acceleration is measured as m/s^2 and the time period over which the VDV is measured is in seconds. This yields VDV in $m/s^{1.75}$.

WCC	Wicklow County Council
WEEE	Waste Electrical and Electronic Equipment
WSA	Waste Storage Area

1. INTRODUCTION

1.1 Introduction

MacCabe Durney Barnes, planning consultants, have been commissioned by Cairn Homes Properties Limited, to prepare an Environmental Impact Assessment Report (EIAR) for a proposed development on a site of c.25.14 hectares within the townlands of Blessington Demesne, Newpaddocks and Santryhill, Blessington, Co. Wicklow.

The application site is a greenfield site located on the northwestern edge of Blessington town centre. The subject site form 3 distinct elements; a residential scheme bounding the north eastern edge of Oak Drive, a public park area on the site of the former Blessington Demesne and road element which forms part of the Blessington Inner Relief Road, linking the existing 4-arm roundabout at Blessington Demesne Lands to the N81 in the vicinity of the Roadstone Quarry access road.

The overall aim of this EIAR is to identify and appraise the likely and significant impacts on the environment arising from the proposed development. This exercise is carried out concurrently with the project design process and is documented in this report. It will accompany the application to Wicklow County Council with a view to assessing the likely significant effects of the project on the environment. This assessment will inform the decision as to whether planning permission should be granted.

Chapter 2 of this EIAR report includes a detailed description of the proposed development.

The proposed development consists of a large-scale residential development (LRD) to include:

- 329 residential units including:
- 270 two storey houses (28 no. 2-bed, 218 no. 3-bed, 24 no. 4 bed.) comprising of semi-detached and terraced units
- 47 no. apartments (22 no. 1 bed, 25 no. 2 bed) provided within 1 no. four-storey block.
- 12 no. duplex units within 1 no. three-storey blocks (6 no. 2 bed and 6 no. 3 bed units).
- Car and bicycle parking spaces to include:
- 518 no. car parking spaces for the houses, 54 no. spaces for the apartments and 22 no. spaces for the duplex units.
- 167 bicycle spaces for the duplex units and for the apartments.
- 10.65 ha Town Park;
- 1.04 ha public open space including pocket parks and playgrounds;
- 0.15 ha of communal open space (1,290sqm at Apartments, 224sqm at Duplex units);
- Two new vehicular access off Oak Drive and one new vehicular access off the Blessington Inner Relief Road
- Infrastructure works to serve the housing development to include the internal road network;
- ESB substations/switchrooms, lighting, site drainage works and all ancillary site services and development works above and below ground; and
- temporary permission is also sought for the erection of three marketing signs (4.55 m high and 13.73 sqm each) and a marketing suite.

The development will also include:

- The extension of the Blessington Inner Relief Road (approx. 700m long) from the existing 4-arm roundabout at Blessington Demesne Lands, running north west of Blessington Business Park, and north of the Woodleigh residential area to a new four-arm roundabout junction on the N81 Dublin Road. The new roundabout will consolidate existing junctions with Hollyvalley, Doran's Pit and the Roadstone quarry site.
- A new junction will be provided to the Roadstone Quarry Access Road north of the road's alignment.
- The scheme will comprise a two-lane single carriageway road with cycle lanes and footpaths, landscaping and drainage works (including attenuation ponds & Sustainable Urban Drainage Systems (SUDS)); road signage and all ancillary site services and development works above and below ground.

This EIAR considers the cumulative assessment of the relevant environmental impacts associated with the potential development and the remainder of the lands.

This EIAR was prepared in accordance with the European Union EIA Directive 85/337/EC and amending Directives 97/11/EC, 2003/4/EC, 2011/92/EU and 2014/52/EU and with the transposing legislation, namely Part X of the Planning and Development Act 2000, as amended, and Part 10 of the Planning and Development Regulations 2001, as amended. It has also due regard to the EPA EIA Guidelines of 2022.

1.2 EIA Guidance and Guidelines

This EIAR has been prepared in accordance with the requirements as set out in the EIA Directive (2014/52/EU) and relevant guidelines and recommendation, including:

- Guidelines on the Information to be contained in Environmental Impact Statement (EPA, 2022).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out environment impact assessment, (DHPLG, 2018).
- Circular PL 05/2018 – Transposition into Planning Law of Directive 2014/52/EU amending Directive 2011/92/EU on the effects of certain public and private projects on the environment (the EIA Directive) and Revised Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DHPLG, 2018).
- Advice Notes for Preparing Environment Impact Statements Draft (EPA, 2015).
- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU).
- Circular PL 1/2017 – Implementation of Directive 2014/52/EU on effects of certain public and private projects on the environment (EIA Directive).
- Circular PL 8/2017 – Implementation of Directive 2014/52/EU – Advice on Electronic Notification Requirements.

1.3 Aim of EIA and of the EIAR

This EIAR was prepared in accordance with the European Union (EU) EIA Directive 85/337/EC and amending Directives 97/11/EC, 2003/4/EC, 2011/92/EU and 2014/52/EU and with the transposing

legislation, namely Part X of the Planning and Development Act 2000, as amended, and Part 10 of the Planning and Development Regulations 2001, as amended.

Directive 2014/52/EU 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 upon the examination of the EIAR and other relevant information.

The preparation of the EIAR forms part of the EIA process. Article 1(2)(g) of the 2011 Directive, as amended by 2014 Directive defines Environmental Impact Assessment (EIA) as a process which consists of:

- the preparation by a developer of an EIAR,
- of consultations with the environmental authorities; and
- of the examination by a competent authority of the information presented in the EIAR and any supplementary information provided by the developer or through consultations;
- followed by a reasoned conclusion by the competent authority on the significant effects of the project on the environment, based on the examination discussed above; and
- the integration of this conclusion into any decision.

While the Directive does not specifically define EIAR, the EPA Guidelines considers that an EIAR consists of '*a statement of the effects, if any, which proposed development, if carried out, would have on the environment*'. Developers prepare the EIAR for submission to the Competent Authority, in the case of an LRD, Wicklow County Council.

The 2017 EPA Guidelines identify a prescribed range of environmental factors as follows:

- a) 'Population and human health
- b) Biodiversity, with particular attention to species and habitats protected under Directive 92/42/EEC and Directives 2009/147/EC.
- c) Land, soil, water, air and climate.
- d) Material assets, cultural heritage and landscape.
- e) The interaction between the factors referred to in points (a) and (d).'

Information requirements are set out by the Sixth Schedule of 2001 Regulations. In addition, the directive requires that environmental impact assessments should take account of the impact of the project as a whole, including subsurface and underground where relevant, and during construction.

The Directive also requires that:

- An EIAR should include a description of reasonable alternatives, and an outline of the likely evolution of the current state of the environment without implementation of the project (baseline scenario); and
- A complete data and information of sufficiently high quality.
- The experts involved in the assessment be qualified and competent, with sufficient expertise in the relevant field concerned

Annex II.A of the 2014 Directive required that the following information be provided:

1. '*A description of the project, including in particular:*

- a. *A description of the physical characteristic of the whole project and, where relevant of demolition works;*
 - b. *A description of the location of the project, with particular regard to the environmental sensitivity of geographical areas likely to be affected.*
2. *A description of the aspects of the environment likely to be affected by the project.*
3. *A description of any likely significant effects, to the extent of the information available on such effects, of the project on the environment resulting from:*
 - a. *The expected residues and emissions and the production of waste, where relevant*
 - b. *The use of natural resources, in particular soil, land, water and biodiversity.'*

The key objective of the EIA process is the identification of the likely significant impacts on the environment and to determine how those effects can be eliminated, minimised, or offset. The EIAR presents the information collected during the impact assessment of the proposed development.

1.3.1 Expertise

This chapter of the EIAR was prepared by MacCabe Durney Barnes, planning consultants and drafted by Richard Hamilton, BA, MSc, PGDip EMAE, MIPI, MRTPI, Director. Richard is a Chartered Town Planner with 27 years experience in planning practice and Environmental Impact Assessments (EIA) preparation and management. During that time Richard has successfully delivered a wide range of professional planning consultancy projects and services, including the preparation of inputs into EIARs and EIA screenings for infrastructure, commercial, recreational/cultural facilities and residential development projects as well as Strategic Environmental Assessments. He has a Postgraduate Diploma in Environmental Monitoring and Assessment Engineering from Trinity College Dublin. Richard is a member of the Irish Planning Institute (IPI) and Royal Town Planning Institute (RTPI).

1.4 Screening Requirement for EIA

The process to determine whether an EIA is required for a proposed development is called Screening. This is dependent on mandatory legislative threshold requirements or the type and scale of proposed development and significance or environmental sensitivity of the receiving 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 2001-2018 brought Annex 1 of the EIA Directive directly into Irish planning legislation. The Directive prescribes mandatory thresholds in respect of Annex 1 projects. The EIA Directive provides EU Member States with a 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.

The proposed development falls within the type of development under 10(b)(i) and 10(b)(iv) of Part 2 of Schedule 5 of the Planning and Development Regulations 2001-2021. Category 10(b)(i) refers to 'Construction of more than 500 dwellings'.

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

The overall LRD application site is c.25.14 ha and includes 329 residential units. Having regard to the overall size of the site and to category 10(b)(iv) of Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended, mandatory EIAR is required.

1.5 Scoping

The EPA Guidelines 2022 define scoping as *'a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information'*.

An EIAR scoping report was prepared and submitted informally to Wicklow County Council as part of the pre-application submission made in February 2023.

Good practice requires that potential for likely significant effects throughout different phases of the proposed project are considered as far as possible at scoping stage – whether they would individually require consent or not. These include, as relevant, site investigations, construction, commissioning and operation to eventual decommissioning. Scoping also considers the range of alternatives to be considered in an EIAR.

Wicklow County Council's issued an 'LRD Opinion' (Ref. LRD PP22/80 Blessington Demesne) in May 2023 under section 32D of the Planning and Development Act 2000 as amended. Issues pertaining to environmental considerations have been taken into account in the respective chapters of the EIAR.

1.6 Information to be Contained in an EIAR

Annex IV of the 2014 EIA Directive set out the information for inclusion in an EIAR, as follows:

1. *'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.*
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 (Seveso III) 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.'*

Likely significant effects investigated should be described as follows:

- Direct and indirect;
- Secondary, cumulative, transboundary
- Short-term, medium-term and long-term
- Permanent and temporary
- Positive and negative

The assessment should be carried out having regard to the prevailing environmental objectives of relevance to the project.

The EIAR should also include a description of the forecasting methods or evidence used to identify and assess significant effects on the environment and if difficulties arose during the collation of the information and whether there were any uncertainties.

1.7 Basis for Assessment

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

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

1.8 Impact Assessment and Mitigation

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

The proposed design was developed and the potential impacts of the proposal on the receiving environment were identified. Mitigation measures have been considered where necessary and will be implemented as required.

1.9 Significance of Environmental Issues

The glossaries contained in the Guidelines on the information to be contained in EIAR (EPA, 2012) describes an impact as 'change resulting from the implementation of project.' The following factors were considered when determining the significance of the impact (both positive and negative) of the Proposed Project on the receiving environment:

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

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

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

The Proposed Project presented in the planning application (including the environmental mitigation measures) will be further progressed and refined during the detailed design and construction stages. This includes any mitigation measures contained in such planning permission, as may be granted.

1.10 Quality of Impacts

The assessment of impacts shall have regard to The Glossary of Impacts/ Effects used in the assessment of impacts as per EPA Guidelines as follows:

Positive Impact/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 Impact/Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative Impact/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).

1.10.1 Significance of Impacts/Effects

Imperceptible Impact/Effect	An impact/effect capable of measurement but without noticeable consequences.
Not Significant	An impact/effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Impact/Effect	An impact/effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Impact/Effect	An impact/effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Impact/Effect	An impact/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 Impact/Effect	An impact which obliterates sensitive characteristics.

1.10.2 Duration of Impact/Effect

Momentary Impact/Effects	Effects lasting from seconds to minutes.
Brief Impact/Effects	Effects lasting less than a day.
Temporary Impact/Effects	Effects lasting less than a year.
Short-term Impact/Effect	Impact/Effect lasting one to seven years.
Medium-term Impact/Effect	Impact/Effect lasting seven to fifteen years.
Long-term Impact	Impact/Effect lasting fifteen to sixty years.
Permanent Impact/Effect	Impact lasting over sixty years.
Reversible Impact/ Effects	Effects that can be undone, for example through remediation or restoration.

1.10.3 Types of Impacts

Indirect Impact/Effects (a.k.a. Secondary or Off-site Effects)	Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
Cumulative Impact/Effects	The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.

‘Do Nothing Impact’	The environment as it would be in the future should the subject project not be carried out.
‘Worst case’ Impact/Effect	The effects arising from a project in the case where mitigation measures substantially fail.
Indeterminable Impact/Effect	When the full consequences of a change in the environment cannot be described.
Irreversible Impact/Effect	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Residual Impact/Effect	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
Synergistic Impact/Effects	Where the resultant effect is of greater significance than the sum of its constituents (e.g., combination of SO _x and NO _x to produce smog).

1.11 Format and Structure of the EIA

The format used in this EIAR document is referred to as the ‘grouped format’ in that it seeks to enable the reader to access the issues of interest to them as easily as possible. The EIAR is divided into three Volumes as follows:

- Volume 1: Non-Technical Summary
- Volume II: Main Environmental Impact Assessment Report
- Volume III: Appendices to the Main Environmental Impact Assessment Report

The EIAR has been divided into the following chapters;

- Chapter 1: Introduction;
- Chapter 2: Description of Development;
- Chapter 3: Alternatives Considered;
- Chapter 4: Population and Human Health;
- Chapter 5: Biodiversity;
- Chapter 6: Land, Soil and Geology;
- Chapter 7: Water;
- Chapter 8: Air and Climate;
- Chapter 9: Noise and Vibration;
- Chapter 10: Landscape and Visual Impact;
- Chapter 11: Cultural Heritage and Archaeology;
- Chapter 12: Transportation and Traffic;
- Chapter 13: Material Assets – Waste;
- Chapter 14: Material Assets Utilities;
- Chapter 15: Material Assets: Major Accidents and Disaster;
- Chapter 16: Summary of Mitigation Measures; and

- Chapter 17: Summary of Cumulative Impacts

Each element of the environment is described in a separate chapter generally under the following headings:

- Introduction
- Assessment Methodology
- Characteristics of the Proposed Development
- Baseline Description
- Impact Assessment
- Cumulative Impacts
- Ameliorative, Remedial or Reductive Measures
- Residual Impacts (including worst case scenario)
- Do Nothing Scenario
- Monitoring
- Difficulties Encountered
- Bibliography

1.12 Consultation

Information on all consultation undertaken on the Proposed Project, is noted in each of the respective Chapters as relevant. a summary of the comments and feedback received, is outlined in Chapter 2 of this EIAR.

1.13 EIAR Project Team

The preparation of the EIAR was managed by MacCabe Durney Barnes. It was prepared in parallel to the project design team led by MOLA Architects and DBFL Consulting Engineers.

In accordance with the requirement of the 2014 Directive, specialists were commissioned to prepare the technical chapters. Table 1-1 below presents the team and consultants involved in the preparation of the EIAR.

Table 1-1: EIAR Team

EIAR Section(s)	Firm	Name	Qualifications and Professional Affiliations
Introduction Description of the Development Alternatives Population and Human Health Cumulative and Interaction of Effects	MacCabe Durney Barnes	Richard Hamilton Darragh Friel	Director at MDB. BA, MSc, PGDip Environmental Monitoring and Assessment Engineering, MIPI, MRTPI Planner. MSc in Planning & Development (Queen's University, Belfast 2022) and MA Human Geography (Maynooth

EIAR Section(s)	Firm	Name	Qualifications and Professional Affiliations
Mitigation and Monitoring			University, 2015), as well as a BSc (Hons.) Geography (Maynooth University, 2014)
Biodiversity	Altemar	Bryan Deegan	MCIEEM-Member of the Chartered Institute of Ecology and Environmental Management M.Sc. Environmental Science, BSc (Hons.) in Applied Marine Biology, National Diploma in Applied Aquatic Science, National Certificate in Science (Aquaculture)
Land, Soils and Geology Hydrology and Hydrogeology	Enviroguide	Sam Marchant	BSc, MSc, who is a hydrogeological with Enviroguide Consulting with over 5 years' experience in preparing hydrogeological and environmental risk assessments for a range of project types and geological and hydrogeological settings.
		Gareth Carrol	BA BAI MEnvSc, a Principal Consultant of Enviroguide Consulting with over 10 years' experience of preparing environmental and hydrogeological and assessments of brownfield and greenfield sites for a range of project types and hydrogeological site settings.
		Patrick Higgins	BSc, MSc, MEnvSc CEnv who is Technical Director with Enviroguide Consulting, who is professionally competent and accredited to undertake environmental risk assessments.
Air Quality and Climate Material Assets – Waste	Enviroguide	Laura Griffin	Laura has worked as an Environmental Consultant with Enviroguide since 2021 and has experience preparing

EIAR Section(s)	Firm	Name	Qualifications and Professional Affiliations
			Environmental Impact Assessment (EIA) Screening Reports, Air Quality and Climate, Noise and Vibration, and Material Assets (Waste and Utilities) chapters of EIARs. Laura has a Master of Science (Hons) in Climate Change from Maynooth University and a Bachelor of Arts (Hons) in English and Geography from Maynooth University
Noise and Vibration	Red Kite Environmental	Siobhan Marr	B.Sc. in Analytical Science, M.Tech. in Environmental Management, PGDip Acoustics and Noise Control Engineering. Member of the Institute of Acoustics (MIOA), and Association of Acoustic Consultants Ireland (AACI).
Landscape and Visual Assessment	Cunnane Stratton Reynolds	Jamie Ball Declan O'Leary	Senior Landscape Architect, BA Landscape Architecture (University of Gloucestershire), 1998; MILL, of Cunnane Stratton Reynolds, Director, B.Agr.Sc. (Land Hort) UCD 1986; Post Grad Dip in Landscape Architecture (University of Central England 1993); MILL; of Cunnane Stratton Reynolds. Declan has over 30 years' experience in the design and analysis of landscape and the impacts of change, and the preparation of assessments for inclusion EIAR.
Cultural Heritage (including Archaeology)	IAC Archaeology	Faith Bailey	BA, MA, MCIFA Senior Archaeologist and Cultural Heritage Consultant with IAC Ltd. MA in Cultural Landscape Management
Material Assets - Traffic	DBFL Consulting Engineers	Helen Gendy	Transportation Engineer, who holds a BAI and MAI in Civil,

EIAR Section(s)	Firm	Name	Qualifications and Professional Affiliations
		Shauna Kelly	Structural & Environmental Engineering from Trinity College Dublin 2018.
		Danny Pio Murphy	Transportation Engineer, who holds a BAI and MAI in Civil, Structural & Environmental Engineering from Trinity College Dublin 2021 Transportation Engineer/Planner with over 10 years' industry experience and is an Associate in DBFL Consulting Engineers. Danny Pio holds a BEng (Hons) in Civil and Environmental Engineering from University College Cork, a MEng in Civil Engineering from University College Dublin and PGradDip in Project Management from Trinity College Dublin. He is a chartered engineer (CEng) and member (MIEI) with Engineers Ireland and also has professional memberships with the Transport Planning Society (MTPS) and the Chartered Institute of Highways and Transport (MCIHT).
Material Assets – Utilities	DBFL Consulting Engineers	Jack Butler	BE Civil, Structural and Environmental Engineering, UCC 2018. MIEI
		Brendan Manning	BE Civil, Structural and Environmental Engineering, Edinburgh University. MIEI
Major Risks and Accidents	Enviroguide	Louise Hewitt	Louise has worked as an Environmental Consultant with Enviroguide since 2021 and has experience preparing Environmental Impact Assessment (EIA) Screening Reports and EIAR Chapters for projects of a similar nature and

EIAR Section(s)	Firm	Name	Qualifications and Professional Affiliations
			scale to the Proposed Development. Louise has a Master of Science (Hons) in Environmental Resource Management from University College Dublin and a Bachelor of Science (Hons) in Biology from Maynooth University.

1.14 Non-Technical Summary

It is a requirement of the EPA Guidelines to provide a non-technical summary (NTS) of the EIAR as to facilitate the dissemination of the information contained on the EIAR, including the possible likely significant effects of the project prior to a decision being made by the Competent Authority.

The 2018 *Guidelines for Planning Authorities and An Bord Pleanála on carrying out environment impact assessment* states that the NTS 'should be concise and comprehensive and should be written in language easily understood by a lay member of the public not having a background in environmental matters or an in-depth knowledge of the proposed project.' The NTS can be found in Volume 1 of this EIAR.

1.15 Availability of EIAR Document

This EIAR and the application it accompanies will be available for inspection free of charge or purchased on payment of a specified fee (which fee shall not exceed the reasonable cost of making such a copy) during public opening hours, excluding bank holidays at the following locations:

- The offices of Wicklow County Council, Whitegates, County Buildings, Wicklow Town.

The EIAR and application can be viewed and/or downloaded from the application website:

www.blessingtondemesnelrd.com

1.16 Statement of Difficulties Encountered

The EIAR team did not encounter exceptional difficulties in compiling the information necessary to assess the proposed development. Where specific difficulties arose, these are addressed in the relevant chapter.

1.17 EIA Portal

In accordance with the requirement of Circular PL 8/2017 – Implementation of Directive 2014/52/EU – Advice on Electronic Notification Requirements, the application form, a copy of the site location plan and a proposed public notice were submitted to the EIA Portal. Confirmation of the submission is submitted as part of this application.

1.18 Quotation

The EIAR by its nature contain statements about the proposed development, some of which are positive, and some less than positive. Selective quotation(s) taken out of context can give a misleading impression of the findings of the study. It is strongly recommended that, where possible, quotations be taken from the conclusions of specialists' chapter or from the NTS and not selectively.

1.19 Errors

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

2. DESCRIPTION OF DEVELOPMENT

2.1 Introduction

The EIA Directive requires that an EIAR includes a description of the project comprising information on the site design, size and other relevant features of the project. Recital 22 of the 2014 Directive requires that:

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

This chapter satisfies the requirements of the EIA Directive, providing detail on the location, size and characteristics of the proposed project.

2.1.1 Expertise

This chapter of the EIAR was prepared by MacCabe Durney Barnes, planning consultants and drafted by Richard Hamilton, BA, MSc, PGDip EMAE, MIPI, MRTPI, Director. Richard is a Chartered Town Planner with 25 years experience in planning practice and Environmental Impact Assessments (EIAs) and has a Postgraduate Diploma in Environmental Monitoring and Assessment Engineering from Trinity College Dublin. He has undertaken a range of EIA for strategic infrastructure, commercial and residential developments and Strategic Impact Assessments in association with the plan preparation process.

2.2 Site Location and Surrounding Area

2.2.1 Site Location

The subject site of the proposed development addressed in this EIAR comprises an overall area of c.25.14 hectares within the townlands of Blessington Demesne, Newpaddocks and Santryhill, Blessington, Co. Wicklow. The site is approximately 25km south-west of Dublin and situated on the N81 Road, which connects Dublin to Tullow.

It is located just north-west of Blessington Village, between Glen Ding Woods to the north-west and the Blessington Inner Relief Road to the east and south-east. It occupies the Blessington Desmesne and contains the ruins of Downshire House. There is an attractive Bastion Wood in the middle of the site with a row of trees and hedgerows leading from it up to Glen Ding Woods. The overall site is on an axis with St. Mary's Church in Blessington Village.

The application site is generally a greenfield site located on the northwestern edge of Blessington town centre. The subject site form 3 distinct elements; a residential scheme bounding the north eastern edge of Oak Drive; a public park area on the site of the former Blessington Demesne; and road element which forms part of the Blessington Inner Relief Road, linking the existing 4-arm roundabout at Blessington Demesne Lands to the N81 in the vicinity of the Roadstone Quarry access road.

The residential site this subject site is located to the north-west of Blessington Town Centre area. The site has commercial premises to the south, the GAA club to the north, quarry to the east and existing oak drive to the west.

The proposed Blessington Inner Relief Road (BIRR) is also referred to as the Blessington Inner Relief Street in the EIAR and development application package. The site is located to the north of Blessington town centre between the N81 and the existing roundabout on Oak Drive.

The BIRR site is primarily located on lands previously within the ownership of Roadstone on the quarry access road and lands that were previously used for quarry activities.

Access to the housing element will be from the existing link road that leads up to the Blessington No.1 school to the north.

Phase 1, as granted, incorporated the following: 94no. houses; a creche; a portion of the Town Park; infrastructure including road upgrades; and a 1.08 ha Greenway from the proposed Town Park to the Glen Ding Woods. This is currently under construction.

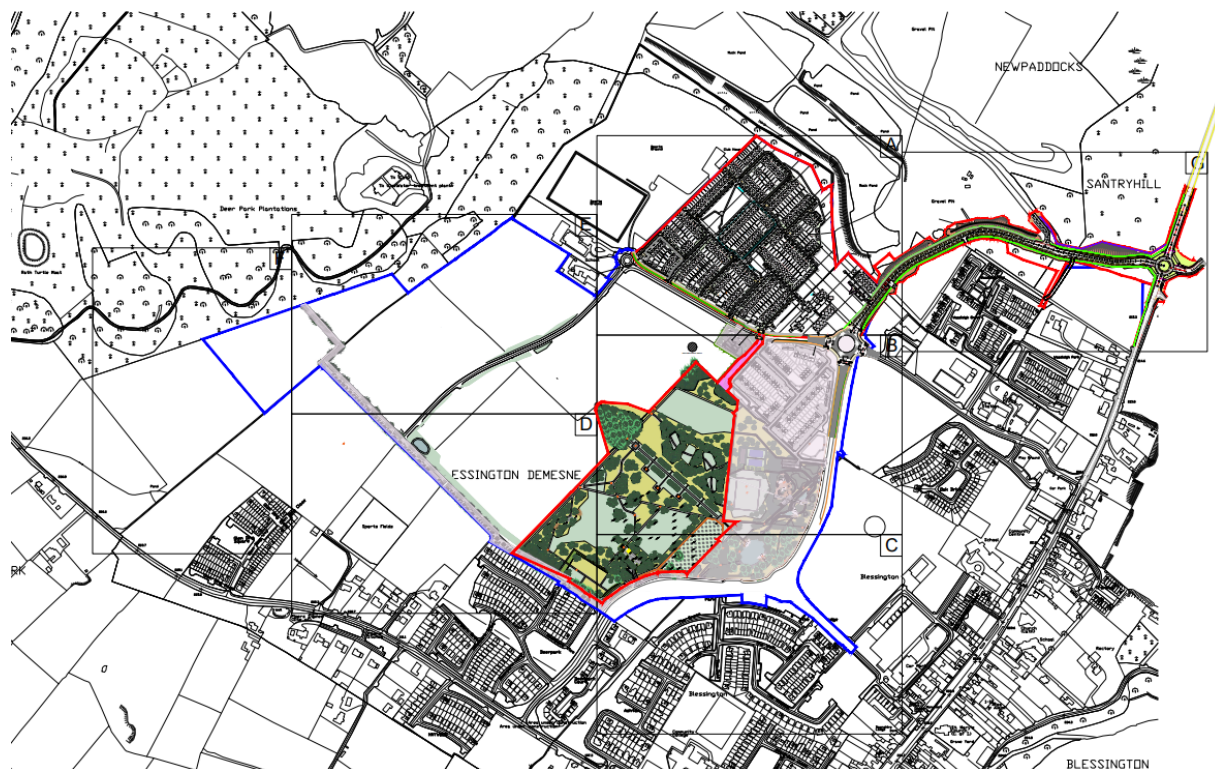


Figure 2-1 Location map (MOLA Architects)

2.2.2 Site context

In the wider landscape, the lands are situated at the western extremity of Blessington town. To the north is mostly agricultural land with traditional hedgerow boundaries. Blessington lakes are located to the south and east, while to the west more agricultural land. In close proximities to the lands are various existing housing developments, the majority of which are to the south and east.

- The subject lands and lands surrounding them contain the remnants of historically significant landscape and built elements, all of which are associated with historic demesne/estate landscape typologies.
- There are two recorded monuments, Downshire House and Deepark. Various landscape features associated with the former Downshire house still exist on site, including old estate walls and a landscape bastion. Remnants of the former geometric style garden boundaries and paths along with some outbuildings remain, albeit in decrepit form.
- The landscape at present could be described as a mix of agricultural and scrub / woodland. Most of the open lands is used as grazing stock for sheep and cattle, while along certain boundaries

there are sections of native woodland and scrub, including the Bastion Wood and the riparian corridor along the eastern site boundary.



Figure 2-2 Aerial View of the Residential and Town Park Site looking south towards Deerpark
(source: MOLA Architects)



Figure 2-3 Aerial view of part of subject site specific to BIRR / Blessington Relief Street

2.2.3 Contiguous Land Use

At the south-east of the site, there are wetlands identified, which are within a flood plain at this area of the site. There is a pond within the wetlands, which will be incorporated into the proposed Town Park. The entrance to the Blessington No.1 National School and GAA sports grounds is to the north of the site. To the south-west of the site is the Deepark housing estate and a number of fields. Further to the south-east is Blessington Village. The Downshire Park housing estate is located to the south of the site with Hazelbrook housing estate located to the east. To the north-east are the Roadstone lands. The site occupies the Blessington Demesne and contains the ruins of Downshire House. The house was burnt down in 1798.

The centre of Blessington Village is within walking distance from the development, being 15 minutes' walk approximately from the proposed LRD residential element. The village contains St Mary's Church, Church of our Lady, and a wide variety of shops and cafes.

The site is a 40-minute drive from Dublin City Centre and is served by the 65 bus routes. The closest 65 bus stop is situated in Blessington Village. The sites proximity to these amenities makes it a well-connected and sustainable place to live.

2.2.4 Topography and Drainage

A Topographical Survey was undertaken by Apex in September 2019. The site slopes from north-west to south-east at a steep gradient and towards the Blessington Inner Relief Road. The overall site slopes down from Glen Ding Woods, with an overall level difference of 20m from the north-west to the south-east edges of the site. The lowest section of the site, at the Inner Relief Road, is at the same level approximately as the village.

The storm water flooding direction for the whole site leads down from the Glen Ding Woods to the Wetlands at the south-east corner of the site. There is an existing pond and stream in wetlands, at this end of the site.

The Deerpark Stream is located to the east of the subject site and flows in a southerly direction towards the existing pond located near the Blessington Inner Relief Road. It is proposed to discharge controlled surface water outflow to this stream. The Deerpark Stream continues in a southerly direction before discharging to the Blessington Lakes.

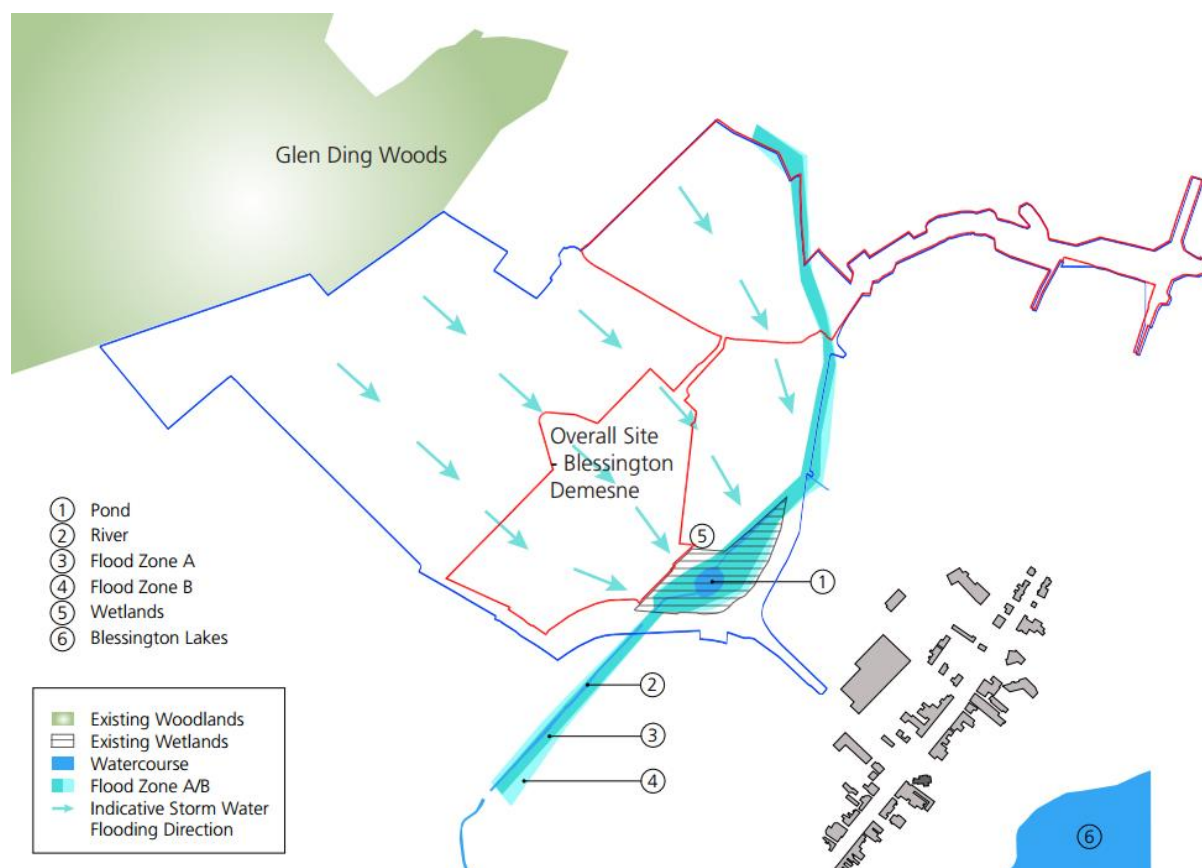


Figure 2-4 Overall slope and water flow character of site (Source: MOLA Architects & DBFL)

2.3 Detailed Description and Physical Characteristics of the Proposed Development

Cairn Homes Properties Limited, intend to apply to Wicklow County Council for permission for a Large-Scale Residential Development at this site c. 25.14 ha on lands within the townlands of Blessington Demesne, Newpaddocks and Santryhill, Blessington, Co. Wicklow. The proposed development will consist of:

The proposed development will consist of:

- 329 residential units including:
 - 270 two storey houses (28 no. 2-bed, 218 no. 3-bed, 24 no. 4 bed.) comprising of semi-detached and terraced units
 - 47 no. apartments (22 no. 1 bed, 25 no. 2 bed) provided within 1 no. four-storey block.
 - 12 no. duplex units within 1 no. three-storey blocks (6 no. 2 bed and 6 no. 3 bed units).
- Car and bicycle parking spaces to include:

- 518 no. car parking spaces for the houses, 54 no. spaces for the apartments and 22 no. spaces for the duplex units.
- 167 bicycle spaces for the duplex units and for the apartments.
- 10.65 ha Town Park;
- 1.041 ha public open space including pocket parks and playgrounds;
- 1,514 sqm of communal open space (1,290 sqm at Apartments, 224 sqm at Duplex units);
- Two new vehicular access off Oak Drive and one new vehicular access off the Blessington Inner Relief Road
- infrastructure works to serve the housing development to include the internal road network;
- ESB substations/switchrooms, lighting, site drainage works and all ancillary site services and development works above and below ground; and
- temporary permission is also sought for the erection of three marketing signs (4.55 m high and 13.73 sqm each) and a marketing suite.

The development will also include:

- The extension of the Blessington Inner Relief Road (approx. 700m long) from the existing 4-arm roundabout at Blessington Demesne Lands, running north west of Blessington Business Park, and north of the Woodleigh residential area to a new four-arm roundabout junction on the N81 Dublin Road. The new roundabout will consolidate existing junctions with Hollyvalley, Doran's Pit and the Roadstone quarry site.
- A new junction will be provided to the Roadstone Quarry Access Road north of the road's alignment.
- The scheme will comprise a two-lane single carriageway road with cycle lanes and footpaths, landscaping and drainage works (including attenuation ponds & Sustainable Urban Drainage Systems (SUDS)); road signage and all ancillary site services and development works above and below ground.

2.3.1 Key Statistics

The table below sets out the key development statistics for the subject site.

Table 2-1: Key Statistics

Development Parameters	Summary
Parameter Site Proposal	25.14 ha gross area; 8.61 ha net area
No. of Residential Units	329
No. of Houses: 270 units comprising:	28 no. 2-bed units 218 no. 3-bed units 24 no. 4-bed units
No. Apartments: 47 units comprising:	22 no. 1-bed units

Development Parameters	Summary
	25 no. 2-bed units
No. duplex units: 12 units comprising	6 no. 2-bed units 6 no. 3-bed
Non-residential uses:	10.65 ha Town Park 1,514 sqm Communal Open Space 1.0 ha Public Open Space (excluding Town Park) 3 no. temporary marketing signs (4.55 m high and 13.73 sqm each) and a marketing suite (80.9 sqm)
Density	38.21 units per ha on net site area
Plot Ratio	0.38 (based on the net site)
Site Coverage	21.9% (based on the net site)
Dual Aspect	51
Car Parking Overall	594 spaces
Bicycle Parking	167 spaces
Height	4 storeys for the apartment block and 3 for the duplexes
Public Open Space	10.65 ha Town Park 1.041 ha Public Open Space (excluding Town Park)
Communal Open Space	1,514 sqm

The breakdown of the overall residential unit types is as follows:

Table 2: Overall Breakdown of Units

Unit Type	1 bed Apartment	2 bed Apartment	2 bed duplex	3 bed duplex	2 bed house	3 bed house	4 bed house	Total
No. of units	22	25	6	6	28	218	24	329
% of overall development	7	8	2	2	9	66	7	100%
% houses / apartments	17.93%				82.07%			100%

Table 3: Breakdown of Apartments (includes duplex units)

Unit Type	1 bed Apartment	2 bed Apartment	3 bed apartment	Total
No. of units	22	31	6	59
% of Apartments	37	52	10	100%

2.3.2 Design rationale

The LRD Planning application is accompanied by a Design Statement prepared by MOLA Architects.

The design rationale for the proposed development is illustrated in the Design Statement and the iterative process has evolved having regard to the Urban Design Manual – a Best Practice Guide (2009). The manual establishes 12 criteria that residential development should be assessed against. Additionally, the design layout has been informed by the following:

- Location,
- Critical demand for housing,
- The physical constraints, which include the archaeological remains and the stream,
- The pattern of development in the area,
- Transport Accessibility,
- The development plan, local area plan and national planning guidance,
- Apartment Design Guidelines,
- Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas,
- The Design Manual for Roads and Urban Streets,
- The Opinion of the Planning Authority;
- The Environmental Impact Assessment Report; and
- The pattern of decisions in the locality and in Wicklow and generally.

The site strategy is based around developing a new neighbourhood that links back to the proposed Town Park and Greenway on the site. The Town Park and the Greenway to Glen Ding Woods create a continuous green route and strengthens the link between the new housing element to the surrounding areas and village. The Town Park will become a new positive focal point in the village as well as a new amenity to the development. The Town Park will incorporate the historical elements which exist on the site.

The existing trees and hedgerows help to retain a rural aspect around the boundary of the scheme. Corner dwellings and corner sites have been designed to provide active frontages. The perimeter of the residential element provides passive surveillance over the new local green spaces and streets.

The Town Park precedent images on this page demonstrate the type of distinctive landscape that will be created within the Town park on the site. The wetlands will give the opportunity to create a unique landscape using the existing landscape environment.

Distinct character areas are provided in the following locations, with variations in finishes and colour:

- Area 1- Houses along the road and main site
- Area 2- Houses along the stream

- Area 3- Apartment and Duplex blocks

2.3.3 Proposed Density

The overall gross site area is 25.14 ha. The net site area is calculated as c. 8.61 ha excluding the zoned open space area and employment area (which essentially only includes woodlands). It also excludes the riparian corridor and associated 25m buffer as non-developable. The proposed density on site is 38.2 units per hectare on a net developable area of 8.61 ha.

The Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas May 2009, section 5.11 promotes a net residential density range in the order of 35-50 dwellings per hectare for 'Outer Suburban/Greenfield sites'. Section 5.11 of the guidance also states that development at net densities of less than 30 dwellings per hectare is generally discouraged in the interests of land efficiency, particularly on sites in excess of 0.5 hectares.

Additionally Circular letter NRUP 02/2021 indicates that for towns between of a population between 5,000 to 50,000, development on outer suburban sites a baseline figure of 30 dwellings per hectare (net) may be considered having regard to the character of the area.

The Wicklow County Development Plan categorises Blessington as a Larger Town and therefore the applicable density standards for the site is: *"Outer Suburban/ Greenfield sites: Minimum density of 35-50 dwellings per hectare."*

2.4 Parkland and Landscaping

A Landscape Strategy Report accompanies the planning application prepared by Kevin Fitzpatrick Landscape Architecture. The landscape strategy aims to integrate the proposed residential development with the existing landscape and create a network of attractive and useable open spaces while contributing to local biodiversity. The public green areas are designed as landscape spaces that offer the opportunity for meeting, walking, interaction with nature and formal and informal play.

In accordance with the Blessington Local Area Plan zoning on site, a 10.65 ha Town Park has been proposed. This is additional to parts of the park already permitted on the landholding and will result in a c.15 ha town park under PA.Reg.Ref. 20/1146, as amended by PA.Reg.Ref.22/1191. The provision of the Town Park at Blessington Demesne will provide for an important town amenity, enhance connections, provide for biodiversity and promote active and passive recreation.

In the Wicklow County Development Plan, public open space is generally required at a rate of 15% of the site area. The development standards of the Wicklow County Development Plan state:

"Where a public park is being provided by the same developer (or by a group of developers in a combined Action Area) in close proximity to the residential development site, the public open space provided on site may be reduced to 7.5% of the residential site area, with the remainder being made up in the park"

Having regard to the above and the first pre-application discussion with Wicklow County Council, the residential open space requirement for the subject site is 7.5% in addition to the proposed 10.65 ha Town Park. The applicants can avail of a lower allocation of public open space on the basis that they are providing the town park.

A linear park is proposed along the Deerpark waterbody, which will enhance the green and blue infrastructure at the subject site.

The ecological corridor defined by the existing stream will be incorporated into the landscape strategy. Where possible, existing levels along the stream will be retained to cause the least disturbance to local ecology and any footpaths are proposed outside of the 10m riparian buffer. The existing vegetation along the stream will be retained and enhanced with pocket planting of other native species including scrub and riparian grasses and perennials. A number of seating spaces have been located to overlook the existing stream and there is a proposed bridge crossing between the main site and the proposed duplexes. The stream will be made inaccessible through the use of dense native scrub and woodland, however some sections will be planted with lower growing plants to ensure some sensory connection with the stream by users. The pedestrian route along the stream is defined by small areas of lawn and natural play routes through micro-woodlands and meadow.

This is aligned with the approach recommended in the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas May 2009. Pocket parks are dispersed across the residential development to provide high-quality amenity space for residents. The location and layout of the open space has been carefully selected and considered to ensure passive surveillance from the residential uses at the site. In total, 1.04 ha of public open space has been provided on the residential section of the site. Based on the net site area, this results in a provision of 12.09% of public open space being delivered within the net site area thereby meeting the open space requirement of the County Development Plan.



Figure 2-5 Landscape masterplan (Source: Kevin Fitzpatrick Landscape Architecture)

A number of SUDS proposals have been put forward including:

- Bioswales within open spaces and alongside internal roads to accommodate stormwater run off and enhance local biodiversity.
- SUDS tree pits within open spaces.
- Bioretention basins which accommodate overflow events and provide landscape features. Create unique and biodiverse habitats within the development.

2.4.1 Town Park Design

The Town Park design incorporates the following elements:

Woodland Belts:

Many of the intermediate spaces and site boundaries throughout the park contain belts of native woodland and wildflower meadow, of note is the high biodiversity woodland to the North of the central avenue. Woodland belts frame open lawn areas, define sub-spaces, provide sensory interest along circulation routes and enhance local biodiversity and green infrastructure links. Woodland belts along site boundaries also provide screening and shelter within the proposed park. Significant amounts of existing woodland within the parkland is to be retained and enhanced with additional native species where required, notably the 'Bastion Wood', in the north of the site.

Play

Natural play spaces are located in the eastern and western sections of the park. The play spaces integrate with the proposed landscape, creating interesting play routes through wildflower meadow, woodland and copses of native trees. There are also large areas of parkland and open lawn throughout the park along with a designated playing field which facilitate active play and recreation.

Important Circulation Routes:

The central avenue through the park physically and visually links two focal landscape features, the pond and the 'Bastion Wood', seating areas and spaces for seating and sculpture are located at each end. The avenue is defined by large parkland trees and mown grass verges. Small seating areas are located adjacent to the avenue providing spaces for passive recreation.

The historic 'Crows Foot' paths have also been reflected in the circulation and provide two important routes through the park. The re-establishment of historical landscape features is another key part of the landscape scheme for the proposed park and various historical elements will become focal points in the new landscape.

Parkland and Open Space:

While much of the space in the park will be made up of woodland and wildflower meadow, a number of lawn areas will be interspersed throughout providing areas devoted to recreation. Large lawns are framed by proposed native woodland, meadow and copses of large parkland style trees, these spaces provide space for active recreation, play and ball games. The large playing field in the middle of the park, to the East of the central avenue, provides similar uses and could be used for more formal team sport situations. Smaller lawns are also proposed throughout the park which provide space for more passive uses.

Potential Community Garden:

In the south-western corner of the site, existing stone walls provide an opportunity for the development of a walled community garden. The current proposal is to retain and restore the existing walls, the area inside the walls is proposed as lawn and wildflower meadow with some copses of native trees framing the space. These simple proposals are not permanent in nature and allow for future development of the space. The space could become an area developed primarily by local residents for growing their own produce and so on. There is sufficient space in this area for hardstanding, storage sheds, polytunnels and separate plots if required.



Figure 2-6 Town Park Masterplan (Source: Kevin Fitzpatrick Landscape Architecture)

2.4.2 Residential Zone landscape

The residential area incorporates the following landscape elements:

Public Open Spaces (POS)

Public Open Spaces (POS) are located throughout the residential element of the scheme, providing a variety of recreational spaces and amenity uses to the future residents. There are 5no. POS provided, separate to the Town Park element, which are counted as the POS provision for the scheme. They account for 1.23ha of open space and 13.8% of the developable area. They are referred as POS A, B, C, D and E.

POS A: Large Open Space

This is the largest POS. A bioretention pond in this open space creates a visually attractive landscape feature and enhances local biodiversity. Seating overlooks the pond and a large central kickabout space.

POS B: Village Green

Play space provided with a central lawn providing passive and active recreation. Seating space provided overlooking the lawn.

POS C: Linear Pocket Park

A Linear Park is designed around the existing historic demesne walls in the south-eastern section of the residential development. Informal play and seating is provided along the route. A large kickabout space provides space for passive and active recreation as well as attenuation.

POS D: Green Open Space

Seating space provided within the natural setting of this open space.

POS E: Green Open Space

Natural landscape open space providing a green buffer to the roundabout at the school.

Linear Green Route Along Existing Stream

A green route is located in the eastern edge of the proposed housing development. This area is part of the riparian way and has steep topography. The landscape proposals in this area are simple and focus on enhancing existing features and local biodiversity. A small seating area is located to overlook the existing stream, parts of which have been opened up and enhanced with a riparian edge.



Figure 2-7 Residential zone (Phase 2) masterplan (Source: Kevin Fitzpatrick Landscape Architecture)

2.4.3 Northern Arm of the Blessington Inner Link Street (formerly known as the Blessington Inner Relief Road)

The development will also include the extension of the Blessington Inner Link Street (BILS) (formerly known as the Blessington Inner Relief Road (BIRR)) (approx. 700m long) from the existing 4-arm roundabout at Blessington Demesne Lands, running north west of Blessington Business Park, and north of the Woodleigh residential area to a new four-arm roundabout junction on the N81 Dublin Road. The new roundabout will consolidate existing junctions with Hollyvalley, Doran's Pit and the Roadstone quarry site. A new junction will be provided to the Roadstone Quarry Access Road north of the road's alignment.

The scheme will comprise a two-lane single carriageway road with cycle lanes and footpaths, landscaping and drainage works (including attenuation ponds & Sustainable Urban Drainage Systems (SUDS)); road signage and all ancillary site services and development works above and below ground.

The provision of this portion of the road will be the most significant contribution to date toward the achievement of long-term road objectives of Wicklow County Council. The construction of the BILS will allow for the deviation of through traffic away from the Main Street.



Figure 2-8 Landscape Plan for Blessington Inner Link Street (BILS) (1) (Source: Cunnane Stratton Reynolds/DBFL)

The completion of the Blessington Inner Link Street is seen as a regional road objective in the Wicklow County Development Plan (2022 – 2028). Regional Road Objective CPO 12.44 states “To support and drive the development and completion of the Blessington Inner Relief Road and upon completion, to significantly improve pedestrian and cycling infrastructure on Blessington Main Street and surrounding town centre local road network” .

This application also includes associated infrastructure comprising a road layout, streets, footpaths, cycle track, grass verge and site services including foul and surface water drainage and watermains in accordance with Wicklow County Council's (WCC) Development Plan (2022-2028) and Irish Water's Code of Practice for Water & Wastewater infrastructure (July 2020).



Figure 2-9 Landscape Plan for Blessington Inner Link Street (BILS) (2) (Source: Cunnane Stratton Reynolds/DBFL)



Figure 2-10 Landscape Plan for Blessington Inner Link Street (BILS) (3) (Source: Cunnane Stratton Reynolds/DBFL)

2.4.4 Connectivity

In terms of access to the Town Park, under phase 1 of the site a vehicular access point was permitted with dedicated car parking provided, which will also service the remainder of the Town Park to be delivered under this application. Various pedestrian and cyclist routes have been designed throughout the Town Park to maximise permeability and connectivity across the application site.

In addition to the vehicular access to the site, the site is highly permeable for walking and cycling with a green link provided between the residential development and the Town Park, which was granted permission under an amendment application to the parent permission PA. Reg. Ref. 22/1191.

The use of lands as a town park and the provision of a greenway to link to Glen Ding Woods and which is permitted under PA. Reg. Ref: 20/1146 will contribute to a positive modal shift owing to proposed connections through the application lands for the pedestrians and cyclists towards the Blessington School no. 1 and the GAA club located north of the landholding. Currently, both of these are geographically isolated and appear remote from the settlement of Blessington.

Local streets within the site are designed in accordance with the Department of the Environment Recommendations for Site Development Works, the Design Manual for Urban Roads and Streets (DMURS) and Local Authority requirements

The standard road cross-sections and construction details provide for

- Internal Local Streets – 5.0 to 5.5m wide carriageway, with 2.0m wide footpath on one / both sides of the street and perpendicular / parallel parking spaces.
- Shared Area / Home zones – 4.8 to 5.0m wide carriageway, with 2.0m wide flush footpath on one side of the street and perpendicular / parallel parking spaces.

2.5 Services

2.5.1 Surface Water Drainage

Surface water runoff from the development will be limited to greenfield runoff rates in accordance with the Greater Dublin Strategic Drainage Study (GDSDS). A SUDS system is proposed in the engineering services drawings. The scheme has been designed to take account of climate change, where it is assumed that rainfall intensities will increase by 20%.

Climate Change

Surface water calculations made for the development use rainfall values for Blessington Demesne, provided by Met Eireann. Rainfall intensities were increased by a factor of 20% to take account of climate change, as required by the GDSDS for surface water drainage design included surface water storage design.

Two separate Site-Specific Flood Risk Assessment's have been prepared by DBFL as part of the application for the proposed residential and town park lands as well as the BIRR.

BILS/BIRR

Existing surface water drainage records were received from Wicklow County Council in March 2021 show an existing 225mm surface water pipe in the existing roundabout on Oak Drive as well as an existing 375mm concrete surface water pipe located in that area. These two surface water sewers discharge to an existing pond located near the existing section of the Blessington Inner Link Street in the former Downshire House lands. This pond forms part of the Deerpark stream which ultimately discharges to the Poulaphouca Reservoir Special Protected Area (SPA).

Existing records received from Wicklow County Council also show an existing 225mm surface water sewer located in Woodleigh Avenue to the south of the proposed scheme. This surface water sewer ultimately discharges to the locations discussed above.

It is envisaged that both networks discussed above would provide adequate locations to discharge the attenuated surface water from the proposed development.

The receiving watercourses for the proposed development will be the Deerpark stream. According to the EPA's online mapping tool the Deerpark stream flows from the Dillons town quarry lands to the north and enters the proposed development near the existing roundabout on Oak Drive before flowing south towards the existing pond in Blessington Demense. The stream continues approximately 2.5 kilometers to the south-west before discharging to the Poulaphouca Reservoir Special Protected Area (SPA).

Surface Water Drainage Strategy

Surface water management for the site is designed to comply with the Greater Dublin Strategic Drainage Study (GDSDS) policies and guidelines and the requirements of Wicklow County Council.

Due to the topography and steep nature of the site it is necessary to split the site into two separate surface water catchments. Catchment A will stretch from the existing roundabout on Oak Drive to chainage 320m on the BIRR. The surface water run-off from this catchment will be attenuated in 2 nr infiltration/detention basins and discharge directly to the Deerpark stream via a flow control manhole near the existing roundabout. Catchment B will stretch from chainage 320m to the new proposed roundabout on the N81 and include the existing sections of the N81 where new kerbs are being added. Surface water from this catchment will be attenuated in an infiltration/detention basin and discharge to the existing surface water drainage network located in Woodleigh Avenue to the south of the development.

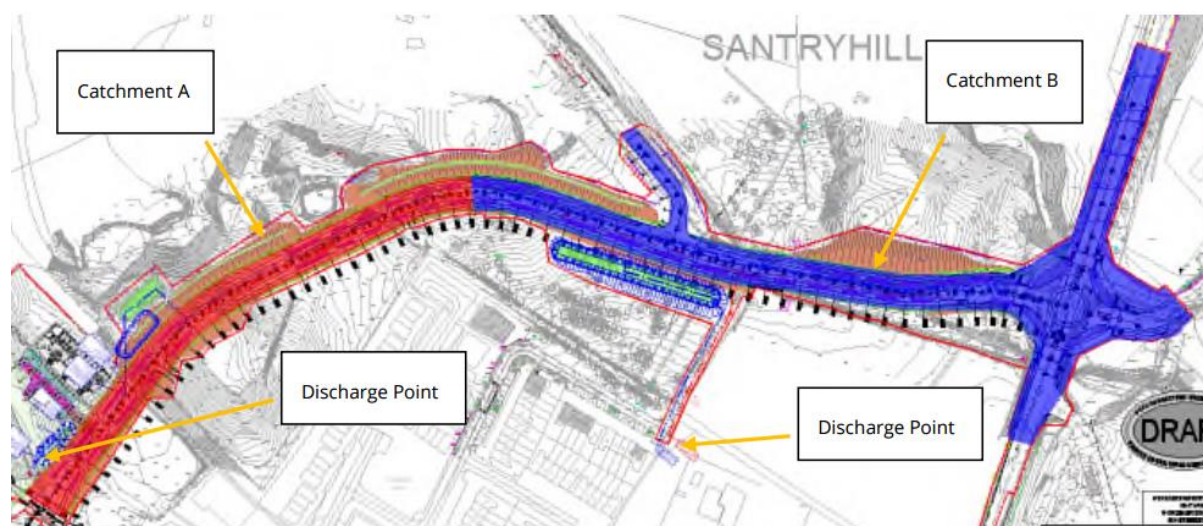


Figure 2-11 Surface Water network catchments (Source: DBFL)

Surface water runoff from the overall development lands will be attenuated to greenfield runoff (Q_{bar}). Surface water run-off from each surface water catchment will be attenuated using a vortex flow control device (Hydrobrake or equivalent) on the surface water outlet from each catchment.

In line with the recommendations of the GDSDS, Greater Dublin Regional Code of Practice for Drainage Works and the SuDS manual, it is proposed to provide a multi-stage attenuation system aimed at providing storm storage facilities and enhancing the quality of surface water runoff from the development.

2.5.2 Foul Water Drainage

According to records received from Irish Water in 2021 there is an existing 225mm concrete foul sewer line located in the existing roundabout on Oak Drive. This 225mm foul sewer runs in a south westerly direction before discharging to an existing 300mm concrete combined sewer in Glenview. This 300mm combined sewer continues in a south westerly direction for approximately 2.0km before it ultimately discharges to the Blessington Wastewater Treatment Plant where it is treated.

Design Strategy

It is envisaged that the proposed development will discharge to the existing 225/300mm foul sewer. All connections are to be agreed with Irish Water prior to commencement.

The design strategy for wastewater for this scheme is to provide an allowance for any future developments within zoned lands that are adjacent to the northern section of the Blessington Inner Link Street. Due to the topography of the site it is necessary to split the site into two separate wastewater catchments. The catchments and outfalls are outlined below:

- 1. Catchment 1 is proposed to discharge to the existing 225mm wastewater sewer located in the roundabout on Oak Drive
- 2. Catchment 2 is proposed to discharge to the existing 225mm wastewater sewer located in Woodleigh Avenue

2.5.3 Water Supply

The subject site has no existing foul loading as it is a greenfield site. According to the records, there is an existing 225/300mm diameter ductile iron water main which runs along the western boundary of the proposed development and runs in a southerly direction towards the Blessington Inner Relief Road. This will provide a suitable connection point for the proposed development. Additionally, there is a 150mm uPVC watermain located within the link road extension which runs towards Blessington GAA club and would provide a suitable connection point. There is an existing 150mm uPVC Irish water network present at the south of the subject site, approximately 1m north off Oak Drive.

Following consultation with Irish Water the proposed upgrades to the Blessington Wastewater Treatment Plant (WWTP) have been granted planning permission and Irish Water have completed these upgrade works.

A Statement Of Design Acceptance (SODA) was issued by Irish Water. It is proposed to connect the proposed new watermain system to the existing 150mm diameter watermain to the south of the subject site on the link road extension. The development will comply with relevant standards.

Watermain Layout Strategy

The water supply strategy for the proposed scheme is to connect to the existing 150mm watermain located in the roundabout on Oak Drive and extend the network to provide an allowance for any future development within all zoned lands adjacent to the new section of the Blessington Inner Link Street. As such a 180mm watermain has been provided on both sides in the footpath of the proposed link street.

2.5.4 Telecommunications

Eir plans are included in Appendix 14F and Virgin Media network plans are included in Appendix 14G which indicates existing telecommunications infrastructure in the vicinity of the site. Eir have an existing network running along the road to the west of the subject site while Virgin Media records show that there are no networks located in the vicinity of the 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.

2.5.5 Natural Gas

Gas Networks Ireland (GNI) plans are included in Appendix 14E 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 along the sites western boundary. 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.

2.5.6 Electricity Supply

ESB Networks have been contacted and an existing ESB network for the area surrounding the proposed development have been obtained. Refer to Appendix 14D. There is an existing Medium Voltage (10kV) Network on Oak Drive to the south of the proposed development which will be used to provide power to the site. A formal application for connection will be made after planning permission is granted.

There are also High Voltage (38kV) overhead lines traversing the site from north to south. Consultation with ESB Networks has taken place and strategy for the diversion and undergrounding of these overhead cables has been agreed.

In order to achieve this undergrounding, a new ESB pylon will be erected at the northern end of the site to allow the overhead lines to drop below ground, Ducting will be provided through the site and beyond the red line boundary at the southern extremity of the site where a new triple end pole structure will be erected on adjacent lands.

Refer to the Landscape Architects drawing for details for the proposed location of the new pylon. ESB standard pylon details are included in appendix B of the Energy Statement and Part L compliance submitted as part of the application, ESB have indicated that a 12m pylon will be required.

2.6 Construction Management

It is envisaged that the development will be delivered with the 5 year timeframe of the permission. A Construction and Environmental Management Plan which has been prepared by DBFL for Cairn Homes, has been reviewed by the relevant EIAR consultants and is included in the LRD application; a refined plan will be put in place by the Contractor to implement the mitigation measures in the Outline Construction and Demolition Waste Management Plan (CDWMP) submitted with the application.

2.6.1 Construction Phase Mitigation / Phasing

The proposed development will be delivered with the 5 year timeframe of the permission. The road will be completed within 12 months of commencement and the rest of the development in 36 months. The park will be delivered within 1 year of commencement. The proposed phasing plan is shown below.

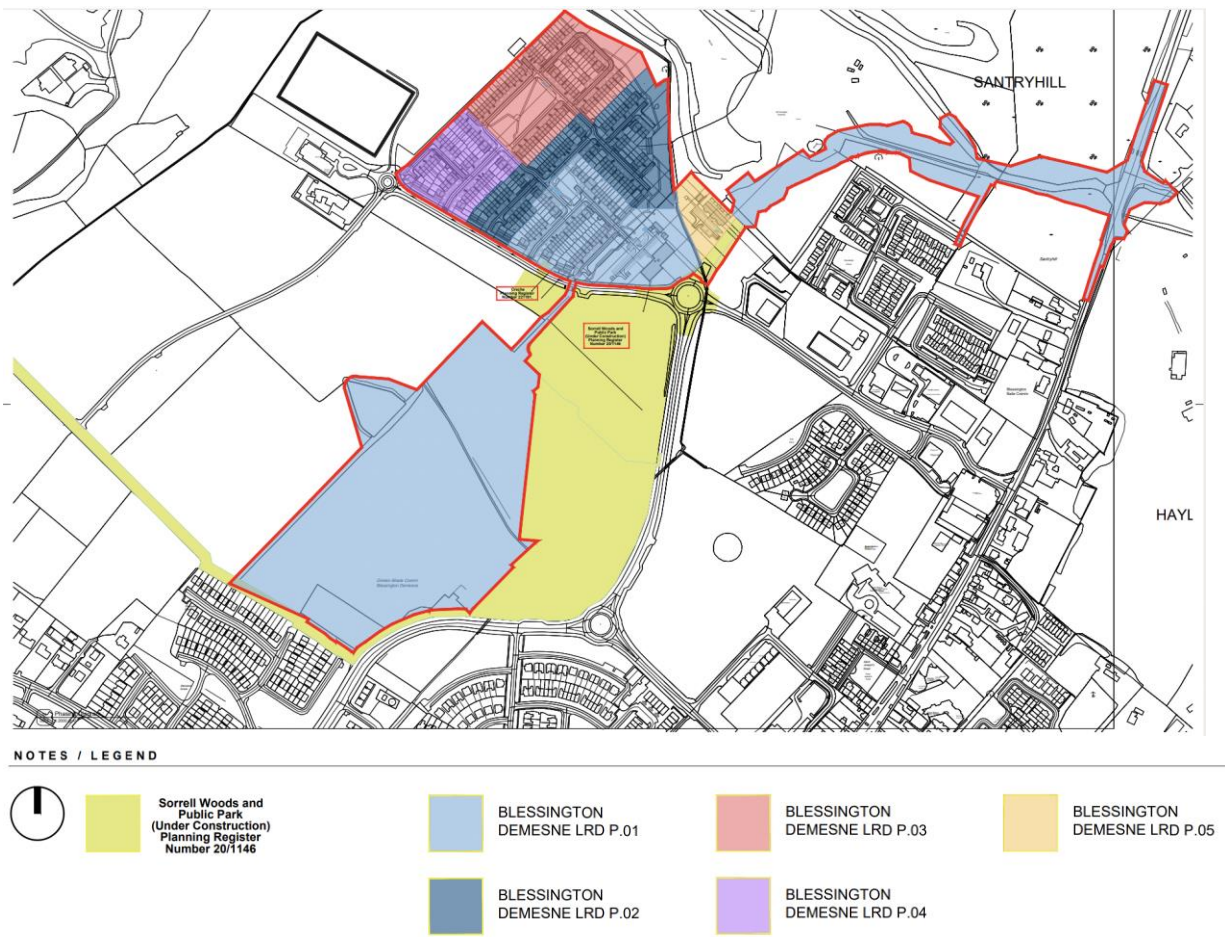


Figure 2-12 Phasing plan

A Construction and Demolition Waste Management Plan has been prepared and is submitted with this LRD planning application. The EIAR chapters contain a range of mitigation measures which will reduce the potential impacts of the proposed development. These mitigation measures are summarised in Chapter 16 of the EIAR.

The CDWMP outlines the procedures to be followed to ensure the minimal impact of the construction activities on the surrounding residential community and the general public. The plan considers the safety of personnel carrying out the work, visitors to site and any unauthorized persons obtaining access to site.

With reference to the construction phase of the proposed development, the objective of the Construction Waste Management Plan (CDWMP) is to ensure that waste generated during the proposed construction and operation phases will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 – 2013 are complied with.

This EIAR presents proposed mitigation measures to ensure that the planned development of the lands does not generate significant adverse impacts for residential and working communities in the vicinity of the site.

The proposed development, as described, is detailed on the planning application drawings and particulars which accompany the application.

2.6.2 Site Construction Compound

A site compound, visitor & contractor parking area will be established within Cairn Homes existing compound utilised for Phase 1 section of the site. This site will be accessed via the proposed distributor

road off Oak Drive. It is proposed to separate construction traffic and movement from occupied phases of the development as construction progresses.

The compound may be used as material staging areas, temporary car parking for construction workers, site offices and huts, welfare facilities for workers (including changing rooms & lockers), storage of plant and equipment, etc.

The location of the temporary compound is indicated on the site layout. It is noted that the location is indicative, and may change as the scheme is built out.

Designated parking area is provided in the site car park. It is proposed to cater for up to 100 cars /vans in this area to minimise the disruption to the local amenities and parking facilities. There is a designated pedestrian walkway from the car park to the site compound and from the compound the construction works areas located away from the live construction site.

2.6.3 Storage of Waste Policy

In the event of material being temporarily stockpiled on-site for reuse in the proposed development or in the event of material excavated pending waste classification for removal off-site, the material will be temporarily stockpiled in a designated area on-site. Stockpiles of different waste material will be located, maintained, and separated by a sufficient distance to prevent any inadvertent mixing of excavated material. All stockpiles will be clearly identified (e.g., signage) and recorded on a site map. Additional details on the management of stockpiles and procedures to prevent environmental and nuisance issues will be documented in the Construction and Environmental Management Plan (CEMP) which will be developed by the appointed Contractor in advance of construction works commencing on-site.

Any heavily contaminated material/soil that may be encountered will need to be segregated in accordance with the measures outlined in the CEMP for appropriate sampling, waste classification and authorised removal off-site.

The Construction Environmental Site Manager will ensure that site personnel involved in the excavation and removal of waste soil materials at the site are informed of and can identify the different waste types and categories of waste soil materials encountered on-site.

Waste storage, fuel storage and stockpiling and movement are to be undertaken with a view to protecting the underlying soils and groundwater. Waste will be stored on-site, including non-hazardous soil and stone and inert C&D wastes, in such a manner as to:

- Prevent environmental pollution (bundled and/or covered storage, minimise noise generation and implement dust/odour control measures, as may be required);
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling, and recovery; and
- Prevent hazards to site workers and the public during construction phase (largely noise, vibration and dust).

2.6.4 Restrictions on Noise

Site Management will ensure all noise levels in the working area are assessed around the site perimeter and within the site, with the relevant appropriate action to reduce the noise emissions, implemented once the noise levels are known.

2.6.5 Scope of the Proposed Construction Works

An indicative construction sequence is outlined below to show the buildability of the project. The actual construction sequence will be confirmed when a contractor is appointed. The main stages of construction will proceed in a general sequence as follows:-

- Enabling Works including demolition, set-up of site construction facilities service diversion works and tree removal.
- Site clearance will include cut and fill of existing ground profiles and formation of key site features.
- Construction of drainage, water supply and utility service distribution network within the site.
- Construction of buildings.
- Landscaping.
- Building fit-out and commissioning.

The proposed development also includes off-site roads and infrastructure upgrade works to waste water drainage, storm water drainage and water supply services.

2.6.6 Main Stages/phases of Construction

The expected construction staging provides for 5 phases over approximately 3 years. While the pace and timing of this phasing is highly dependent on market conditions, the overall site design and phasing strategy takes account of the road infrastructure, town park and open space provisions associated with each phase, together with the proportional provision of Part V dwellings. However, it is feasible that market conditions would require alterations to any programme which is specified at this time and it is likely that it will be reviewed in the course of construction, if required.

Archaeological monitoring of earthmoving works for site preparation will be undertaken to ensure that any features of an archaeological nature that may be revealed are identified, recorded and fully resolved in accordance with measures detailed in Chapter 11 of this EIAR.

Chapter 5, Land and Soils provides detailed information on excavation material and mineralogy. Chapter 13, Waste Management contains more detailed information on Resource and Waste Management associated with the project.

Mitigation measures to minimise environmental impacts are described in the relevant sections of the EIAR and summarised in Chapter 16.

2.6.7 Construction of Services

Following on from completion of site clearance, site construction activities will focus on the installation of underground utilities to provide the infrastructure required for storm water drainage, foul water drainage, water supply, power and building utility systems.

2.6.8 Hoarding and Site Segregation

The development site is a greenfield site without through traffic or movement. Therefore, while the site boundary is extensive in length it does not readily interact or interfere with adjoining land uses and area residential areas.

Hoarding will be established around the site construction area (where required) before any significant construction activity takes place. Hoardings works will be of the same nature as that carried out for similar operations at most construction and building sites.

Contractors must erect hoarding to a minimum of a 2.4m high in either close-sheeted hoarding as appropriate to the works and as per the contractor's approved site plan. Hoarding must be maintained in a presentable condition to ensure safe passage.

2.6.9 Hours of Working

Working hours will be strictly in accordance with the granted planning conditions with no works on Sundays or Bank Holidays. If work is required outside of these hours, written approval will be sought by the contractor from the Local Authority.

It is anticipated that normal working hours may be 7am to 7pm Monday to Friday and 8am to 6pm on a Saturday. However, it may be necessary to work outside of these hours at night and at weekends during certain activities and stages of the development (e.g. concrete pouring) which will be subject to agreement with the Local Authority.

Deliveries of material to site will be planned to avoid high volume periods. There may be occasions where it is necessary to have deliveries within these times and Contractor will agree with Wicklow County Council as appropriate.

2.6.10 Construction Traffic

The main construction access route will be from the Oak Drive. The CMWP provides details of intended construction practice for the development, including:-

- Location of the site and materials compound(s) including area(s) identified for the storage of construction refuse.
- Location of areas for construction site offices and staff facilities.
- Details of site security fencing and hoardings.
- Details of on-site car parking facilities for site workers during the course of construction
- Details of the timing and routing of construction traffic to and from the construction site and associated directional signage
- Measures to obviate queuing of construction traffic on the adjoining road network.
- Measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network.
- Alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site development works.
- Details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels.
- No parking on access routes. No unloading or blockages of access routes. Such vehicles will be immediately requested to move to avoid impeding works;
- The contractor must appoint a Traffic Management Coordinator responsible for the management of traffic management related activities;

- On site contractors must adhere to the overall traffic management measures for the internal road network from the preferred construction traffic entrance road to their site.

2.7 Energy Statement

This LRD application is accompanied by an Energy Statement prepared by Waterman Moylan. The report identifies the energy standards with which the proposed development will have to comply and also sets out the overall strategy that will be adopted to achieve these energy efficiency targets.

The dwellings will be required to minimise overall energy use and to incorporate an adequate proportion of renewable energy in accordance with Building Regulations Part L 2021, Conservation of Energy & Fuel (hereinafter referred to as "*Part L 2021 Dwellings*").

2.8 Emissions and Waste

2.8.1 Municipal Waste / Waste Management

Enviroguide Consulting has prepared an Outline Construction and Demolition Waste Management Plan (CDWMP) for the Construction Phase of the Proposed Development

The purpose of this outline CDWMP is to provide the information necessary to ensure that the management of surplus material including construction and demolition (C&D) waste at the Site is undertaken in accordance with relevant EU, National and Local Waste Management Policies, Waste Legislation, and Best Practice Guidelines

The outline CDWMP relates to the Pre-Construction Phase of the Proposed Development and will be updated by the appointed Contractor in advance of construction works commencing on-site.

The exact materials and quantities construction waste that will be generated from the proposed works will be audited throughout the project roll-out phase to prevent waste arising in the first place, and to re-use, recycle or recover waste materials where possible

2.8.2 Waste Officer

A member of the construction team will be appointed as the project "Waste Officer" to ensure commitment, operational efficiency and accountability during the Construction Phase of the Proposed Development.

The appointed Waste Officer will have overall responsibility to oversee and record everyday waste management at the Proposed Development Site.

The Waste Officer will have the authority to select a waste team, if required (i.e., members of the site crew that will aid him/her in the organisation, operation and recording of the waste management system implemented on-site).

The Waste Officer will maintain the record keeping system for waste management on-site including maintaining a log of each load of waste materials being transported off-site and maintain a record of all necessary documentation including waste transfer documents and landfill gate receipts in the waste management file.

Authority will be given to the Waste Officer to delegate responsibility to subcontractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

2.8.3 Environmental Consultant

Guidance and support will be provided to the Waste Officer by the appointed Environmental Consultant to ensure the waste management targets and deliverables are maintained to a high standard.

If required, the Environmental Consultant will also be responsible for completing waste classification of surplus soil and stone materials that may require off-site disposal in compliance with all relevant waste management legislation.

2.8.4 Non-Hazardous C&D Waste

The Proposed Development Site is on greenfield lands and there will be no demolition works. During the Construction Phase of the Proposed Development, it is anticipated that there will be some surplus of building materials, such as timber off-cuts, broken concrete blocks, cladding, plastics, metals, and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and supply of materials will also be generated.

2.8.5 Inert and Non-Hazardous Soil and Stone

The Proposed Development will involve excavation of soil during the Construction Phase.

Soil analytical data for samples collected from across the Site are provided in the site investigation report (GII, 2018) and verify that there are no hazardous compounds in the soil sampled at the Site. This will be verified during the groundworks in accordance with the procedures outlined in Section 6.

In order to minimise the requirement for imported aggregates excavated materials will be re-used on Site where fill is required to achieve proposed Site levels and for landscaping.

2.8.6 Other Non-Hazardous Wastes

Waste will also be generated from construction workers (e.g., organic/food waste, dry mixed recyclables (wastepaper, newspaper, plastic bottles, packaging, aluminium cans, tins and 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 infrequently from site offices.

2.8.7 Hazardous Wastes

The Site is greenfield and has not been previously developed and therefore asbestos containing materials (ACMs) will not be generated during the Construction Phase of the proposed Development.

2.9 Methods used for forecasting environmental effects

The methods/methodologies employed to forecast and the evidence used to identify the significant effects on the various aspects of the environment are set out in 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 development, 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 Receiving Environment (Baseline Scenario) sections in the EIAR.

2.10 Transboundary Effects

It is not expected that the development of residential units along with community uses and active open space in Blessington Co. Wicklow would result in likely significant effects on another Member State.

2.11 Consultations

The application site was the subject of consultation with the Planning Authority between 2021 and 2023. A consultation record is also attached as a separate document as part of the application. The table below summarises the key issues and the response to the points discussed.

Table 2-4: Consultations details

Meeting #1	Blessington Demesne Phase 2 s. 247 Meeting 2/9/21
Applicant Representatives	John Grace, Aidan McLernon, Christophe Teevan, Daibhi Mac Domhnaill (Cairn Homes) Marta Jablonska, Naomi Lloyd (MOLA) Jerry Barnes, Sybil Berne (MDB) Kevin Fitzpatrick (KFLA) Kevin Keegan (KSN) Brendan Manning (BM) DBFL Rob Lynch, Paul Duffy (IAC)
Planning authority Representatives	Edel Bermingham (Planning) Holly O'Connor (Planning) Pat Byrne (Blessington Engineer) Aidan Rochford (Engineering) Declan O'Brien (Engineering) Fergal Keogh (Planning)
Issue	Detail
Density and Phasing	Residential: densities are set out in the table of the LAP. Inconsistency between low density in LAP (i.e 20 uph) and core strategy Area C (to the west of Parkland) was unconnected and difficult to justify in sequential test. Not happy to develop this at this time. Should be justified, how does it fit with the rest. It is not sequential. No proposal to progress with development on employment zoned lands.
Park Proposal and Open Spaces	Application will clarify that application is indivisible, and park would be provided. Open space should work with landscape gradient
Housing Design	Character areas will need to be defined and distinguish between houses and duplexes.
Ecology	Appropriate setbacks required from streams. Relationship of duplexes with boundary. How to face stream / ecological corridors.
Archaeology	IAC had discussions with NMS. Larger feature heavily compromised by construction of Oak Drive (50% min), not a full monument at all. Local significance. Feature to be retained near the creche is being avoided. Site is in very poor state.
EIA/AA	Screenings Required
Roads	BIRR outline. Northern section was undergoing route selection at that stage. It will tie at the roundabout. Block A7 and part D may be affected. South BIRR partly falls in KCC. Being assessed at this point in

	<p>time. Route is defined. Delivery of BIRR (Northern and Southern sections) remained to be decided</p> <p>A lot of facilities for pedestrian, cyclists not up to standard, need to update</p> <p>Internal network to address DMURS requirements.</p>
Meeting #2	Blessington Demesne Phase 2 s. 247 Meeting 1/9/22
Applicant Representatives	<p>Aidan McLernon, Christophe Teevan, Finbarr Barry (Cairn Homes)</p> <p>Jerry Barnes, Richard Hamilton, Michelle Ball (MDB)</p> <p>Naomi Lloyd, Hannah Cottrell (MOLA)</p> <p>Brendan Manning (DBFL)</p> <p>Kevin Fitzpatrick (KFLA)</p> <p>Rob Lynch (IAC)</p>
Planning authority Representatives	<p>Suzanne White (Planning)</p> <p>Edel Birmingham (Planning)</p> <p>Declan O'Brien (Engineering)</p> <p>Pat Byrne (Baltinglass Municipal District)</p>
Issue	Detail
Masterplan and Phasing	<p>Phase 1 – Granted permission with elements of the park included; Phase 2: Included entire park and Plot C (remote plot); Phase 3 is the subject site, including 280 units, creche and 15.36 ha Town park.</p> <p>overview of the zoning, green link between residential component and Town Park, dispersed high quality open spaces, houses provided passive surveillance throughout, 25m boundary of hatched space not included in the percentage of open space calculation, 9.18 developable area on site, 2 no. vehicular entrances and pedestrian permeability through the site.</p> <p>Noted his proposal overlaps with the previously granted creche. New size proposed to reflect the additional units proposed. WCC suggested making two separate applications. Applicant to liaise with WCC Childcare Committee to ensure the proposed creche size is considered appropriate.</p>
Density	<p>Proposed density was 30.5 uph. WCC highlighted the next phase of development will need to be reviewed in light of new County Development Plan. Development will be to justify and demonstrate the density is appropriate for the site.</p>
Roads	<p>WCC had previously raised concern over the long straight roads through the scheme. The introduction of cul de sacs is welcome by WCC while retaining the non-motorised permeability to and within the scheme. Provide safe pedestrian access to park</p> <p>SW commented the proposed characters, various heights etc. should be prepared for the next stage of the process.</p> <p>Noted ongoing discussions between Cairn Homes and WCC regarding delivery of BIRR</p>
Services	<p>Noted SUDS Strategies may impact block D.</p> <p>Applicant to liaise with WCC regarding lighting.</p>

	Need to future proof scheme for climate change – SUDs, nature-based solutions, stormwater runoff. FRA will be needed to confirm no flooding from the stream.
EIA and AA	It was noted a full EIAR was to be prepared with information Scoping Report prepared to facilitate consultation and feedback on environmental issues. It was acknowledged a full NIS would be prepared.

Meeting #3	Blessington Demesne Phase 2 LRD Meeting 12/4/23
Applicant Representatives	Christophe Teevan (CT) and Finbarr Barry (FB) – Cairn Homes Jerry Barnes (JB), Sybil Berne (SB), Richard Hamilton (RH) – MacCabe Durney Barnes Naomi Llyod (NL), Hannah Cottrell (HC) – MOLA Brendan Manning (BM) – DBFL Matthew Mulvey (MM) – KFLA
Planning authority Representatives	Suzanne White (SW) - Planning Fergal Keogh (FK) - Planning Declan O'Brien (DOB) - Roads Carol Murphy (CM) - Admin Micheal Flynn (MF) - Roads Pat Byrne (PB) – Blessington Engineer Edel Bermingham (EB) – Planning Mark Costello (MC) - Drainage
Issue	Detail (detail address in MDB Planning Report)
Planning policy	Need to address consistency with Core Strategy and Settlement Strategy of WCC County Development Plan 2022-28 including population and housing targets; and density objectives for Outer Suburban/Greenfield Site
Design	Need to more clearly distinguish character areas and provide appropriate mix of unit types.
Open Space and Landscaping	Detailed landscaping plan and visual assessment to be provided to address hierarchy of spaces and differing user needs (i.e. playgrounds, age-friendly spaces, secure spaces etc).
Phasing	Need to demonstrate phasing plan addresses timely delivery of parkland, services infrastructure and in particular road infrastructure (BIRR).
Roads	Internal layout should address DMURS requirements
Social Infrastructure	Development needs to clarify adequate provision of childcare spaces
Archaeology	Detailed Archaeological assessment to be submitted with application/EIAR
Flooding/Rivers/Surface Water Drainage	Drainage design to include nature-based SUDs where possible.

	Fisheries Guidance for Watercourses and maintenance of appropriate setbacks to Deerpark Stream
CEMP	A detailed Construction Management Plan to be provided

The team engaged with Uisce Eireann, ESB to discuss the proposed development. The team also engaged (by phone and email) with the existing childcare operator and schools in Blessington and surrounding area to determine the existing demand and capacity available. In addition, Wicklow Childcare Committee were contacted with an outline of the proposed development.

3. ALTERNATIVES CONSIDERED AND COMPARISON OF ENVIRONMENTAL EFFECTS

3.1 Introduction

Under the EIA Directive, developers are required to consider reasonable alternatives, in terms of project design, technology, location, size and scale. The Directive requires that an EIAR includes;

‘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.’

The EPA Guidelines further note that a representative range of ‘practical’ alternatives should be considered.

3.1.1 Expertise

This chapter of the EIAR was prepared by MacCabe Durney Barnes, planning consultants and drafted by Richard Hamilton, BA, MSc, PGDip EMAE, MIPI, MRTPI, Director. Richard is a Chartered Town Planner with 25 years experience in planning practice and Environmental Impact Assessments (EIAs) and has a Postgraduate Diploma in Environmental Monitoring and Assessment Engineering from Trinity College Dublin. He has undertaken a range of EIA for strategic infrastructure, commercial and residential developments and Strategic Impact Assessments in association with the plan preparation process.

3.2 Assessment Methodology

The EPA Guidelines notes that different types of alternatives may be considered, namely;

- ‘Do-Nothing’ alternative.
- Alternative locations.
- Alternative processes.
- Alternative mitigation measures.
- Alternative layouts and designs.

The EU EIAR Guidance highlights:

Identifying and considering Alternatives can provide a concrete opportunity to adjust the Project’s design in order to minimise environmental impacts and, thus, to minimise the Project’s significant effects on the environment. Additionally, the proper identification and consideration of Alternatives from the outset can reduce unnecessary delays in the EIA process, the adoption of the EIA decision, or the implementation of the Project.

In this sense the consideration of Alternatives can be understood as an iterative process where Environmental characteristics, constraints and opportunities actively provide feedback to the design process (in light of effects of the project on the environment) which is able to evolve and improve as a result.

The EU Guidelines clarify the Developer needs to provide:

- A description of the reasonable Alternatives studied; and

- An indication of the main reasons for selecting the chosen option with regards to their environmental impacts.

The EU Guidelines advise the following in respect of assessing Alternatives (p.54):

The number of alternatives to be assessed has to be considered together with the type of alternatives, i.e. the 'Reasonable Alternatives' referred to by the Directive. 'Reasonable Alternatives' must be relevant to the proposed Project and its specific characteristics, and resources should only be spent assessing these Alternatives. In addition, the selection of Alternatives is limited in terms of feasibility. On the one hand, an Alternative should not be ruled out simply because it would cause inconvenience or cost to the Developer. At the same time, if an Alternative is very expensive or technically or legally difficult, it would be unreasonable to consider it to be a feasible Alternative.

...Ultimately, Alternatives have to be able to accomplish the objectives of the Project in a satisfactory manner, and should also be feasible in terms of technical, economic, political and other relevant criteria.

In this context, 'Alternative Locations' is set in the context of a comprehensive SEA integrated with the LAP preparation process (having regard to the SEA). In this particular instance, reference is made to:

- The SEA of the Wicklow County Development Plan 2022-2028; and
- The SEA of the Blessington Local Area Plan 2013-2019

The location of development proposed is predicated on strategic plan preparation and environmental analysis of appropriate locations for development. This is also the case with land 'uses'; the plan preparation process deemed the subject lands at Blessington as appropriate for residential, amenity open space /recreation, and road/transport uses. Uses and location are not considered as standalone alternatives as this has been considered and assessed at a strategic level.

Different alternatives can also be considered at different stages of the process. Decisions have been informed by feasibility and environmental considerations, consultations with Wicklow County Council and the feedback of the EIAR team. The main alternatives are presented in the sections hereafter.

The EPA Guidelines state that there is no requirement for a 'mini EIAR' of all alternatives considered. This section therefore presents the main reasons for selecting the chosen alternative taking into account environmental impacts effect of the project on the environment.

3.2.1 Desktop Research – Principal Data Sources

List principal information sources and guidelines for the preparation of the Alternatives section include:

- EPA Guidelines on information to be contained in Environmental Impact Statements (2022) (EPA, 2022) (the EPA Guidelines)
- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017) (the EU EIAR Guidance).
- Wicklow County Council Planning Register files
- Pre-application evolution and development of layout design by MOLA architects and DBFL Engineers

3.3 Alternative Uses

The use or development of the subject lands is subject to a range of regulatory controls that influence inter alia future potential function, design and access to the area. The statutory planning framework for this area is the Wicklow County Development Plan 2022-2028. The zoning map for the town was adopted under the Blessington Local Area Plan 2013 – 2019 and considers a number of ‘permissible in principle’ uses that could be developed on the subject lands. The proposed residential development includes active open spaces and recreational areas.

Having considered the identified need for housing in the Development Plan, the site’s zoning, the patterns of development in the surrounding area of the application site, it is considered that the proposed development puts forward an appropriate balance of development and amenity uses for the site.

3.4 Alternative Processes

The EPA Guidelines considers that with each design solution, there can be several options as to how an activity can be carried out. Under this alternative, different processes pertaining to the construction phase and the operational phase would be considered.

It is not considered to be a relevant consideration for the development of a residential scheme, open space, parkland and roads. The construction and operation comprise generally standard building construction processes. There is also no new, unusual or technically challenging operational techniques required for the operation of the development. As such, there is no specific alternative process, which may be considered.

3.5 Alternative Mitigation Measures

Measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment are described in the EIAR Report. These measures are commonly referred to as ‘Mitigation Measures’, with the exception of the last action, offsetting, which can be considered to be a Compensation Measure.

When considering Alternatives, such Mitigation Measures might influence how Alternatives are assessed. For example, an Alternative might be considered unfeasible until a Developer factors in a Mitigation or Compensation Measure that reduces the impact of the Alternative. In addition, by considering Mitigation Measures when considering all Alternatives, even feasible Alternatives may benefit from a more environmentally sound Project design, ultimately ensuring a high level of environmental protection.

This EIAR outlines mitigation measures under the topics assessed. These are considered to be appropriate to the location, nature and extent of the proposed development and to its potential impacts. Therefore, no alternative mitigation measures have been considered.

3.6 Alternative 1: Do-Nothing’ Alternative

3.6.1 Description

This alternative considers that no development occurs of the application lands, meaning they remain used as grazing and agricultural fields (in the short-term). This alternative is considered as ‘**Alternative 1**’ in the summary table comparing environmental effects.

Section 3.4.2 of the EPA Guidelines notes that the do-nothing alternative is “a general description of the evolution of the key environmental factors of the site and environs if the proposed project did not proceed. It is similar to but typically less detailed than the ‘likely future receiving environment’ description”.

3.6.2 Environmental Effects

Wicklow County Council zoned the lands for residential development and open space and there is an established Road Reservation for the Blessington Inner Relief Road (northern arm) (see Figure 3-1). It is therefore an important consideration that the uses proposed are aligned with those considered by the Blessington LAP and its SEA.

Blessington is designated as a Self Sustaining Growth Town in the County Development Plan. The do-nothing scenario is therefore considered to be an inappropriate, unsustainable and constitutes an inefficient use of residentially zoned lands.

The future use of the lands as open space and the proposals to develop a parkland would not likely occur should the do-nothing alternative be selected.

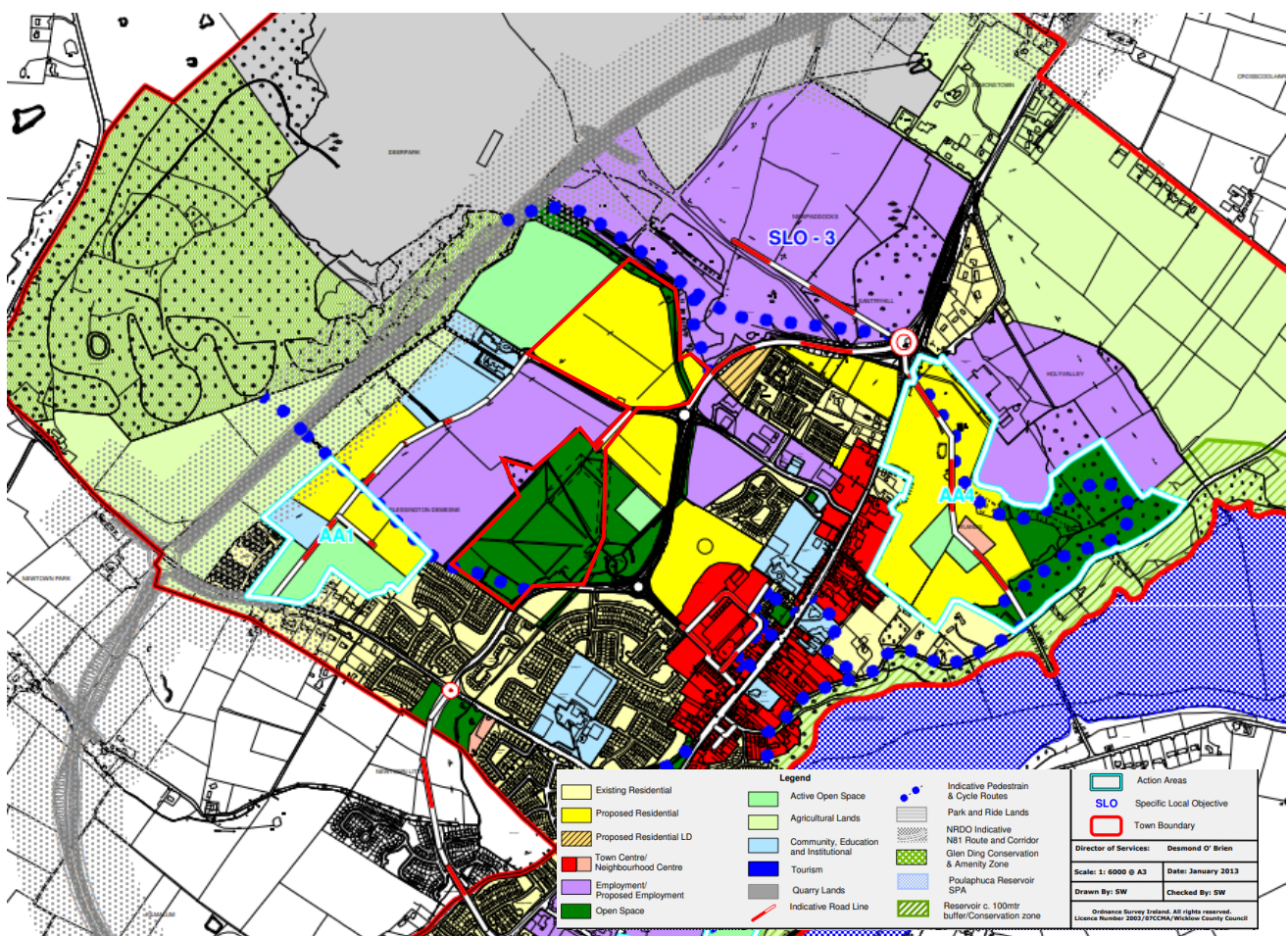


Figure 3-1: Blessington Local Area Plan 2013-2019 Zoning Map (Source: Wicklow County Council)

In addition, the proposed alignment of the relief road falls within the lands subject of this planning application. The road connecting Oak Drive and the N81 would address a statutory objective in the County Development Plan to deliver a relief road for the town centre which services the growing population. It is therefore considered likely that without the delivery of the relief road, traffic congestion would remain at existing levels or worsen.

The do-nothing alternative would obviate any potential short-term construction impacts with associated potential disturbance on local populations. It would have a neutral impact on receiving environment with the maintenance of pasture fields and hedgerows in their current condition. In terms of air, climate, water the potential impact is therefore likely to be neutral.

In the long-term, a 'Do-nothing' Scenario is not considered realistic or reasonable as the statutory planning objectives to support development in this location remain and if feasible, alternative development proposals for residential development would likely be brought forward in due course. In context of delivering housing for the Dublin Region and north-west Wicklow there would be a failure to address an urgent need for housing as expressed in the Government initiative, Housing for All – a New Housing Plan for Ireland (DHLGH, 2021) and the Ireland 2040 National Planning Framework (DHLGH, 2018) (the NPF).

It is considered in this instance that the do-nothing scenario constitutes the baseline against which alternatives, including the chosen alternative are being assessed.

3.7 Alternative Designs

The proposed development is cognisant of and complies with the policies and objectives of (the NPF), the Eastern and Midland Regional Spatial and Economic Strategy (EMRA 2019), the relevant ministerial planning guidelines made under section 28 of the Act, the Wicklow County Development Plan 2022-2028 and the Blessington Local Area Plan 2013-2019.

Alternative layouts and associated distribution of uses have been developed throughout the design process, with a view to minimise impacts on the receiving environment. The alternatives are presented in the following sections.

3.8 Alternative no. 2: Masterplan 2000

This alternative presents the masterplan layout for the subject site that was presented in a planning application lodged with Wicklow County Council in 2000 under Ref. 00/3687. Permission was granted by An Bord Pleanála for a housing development (598 houses), retail, educational & leisure facilities and to construct a portion of Blessington Inner Relief Road on the 13th March 2002. This application was linked to the Town Centre Ref. 01/4436 application. It established the road network for the expansion of Blessington.

This development was developed in part. The permission related to 4 zones. The Landscape Masterplan (Figure 3-1) available in the historic files outlines the zones and open space provision as illustrated in Figure 3-2. Zones 4 and 5 are comparable in use to the development the subject of this EIAR. This drawing also includes the layout of the related application for town centre. The permission granted extended in Zone 2 to lands outside the applicant's ownership which were granted permission in 2022 (P.A Reg.Ref: 20184).

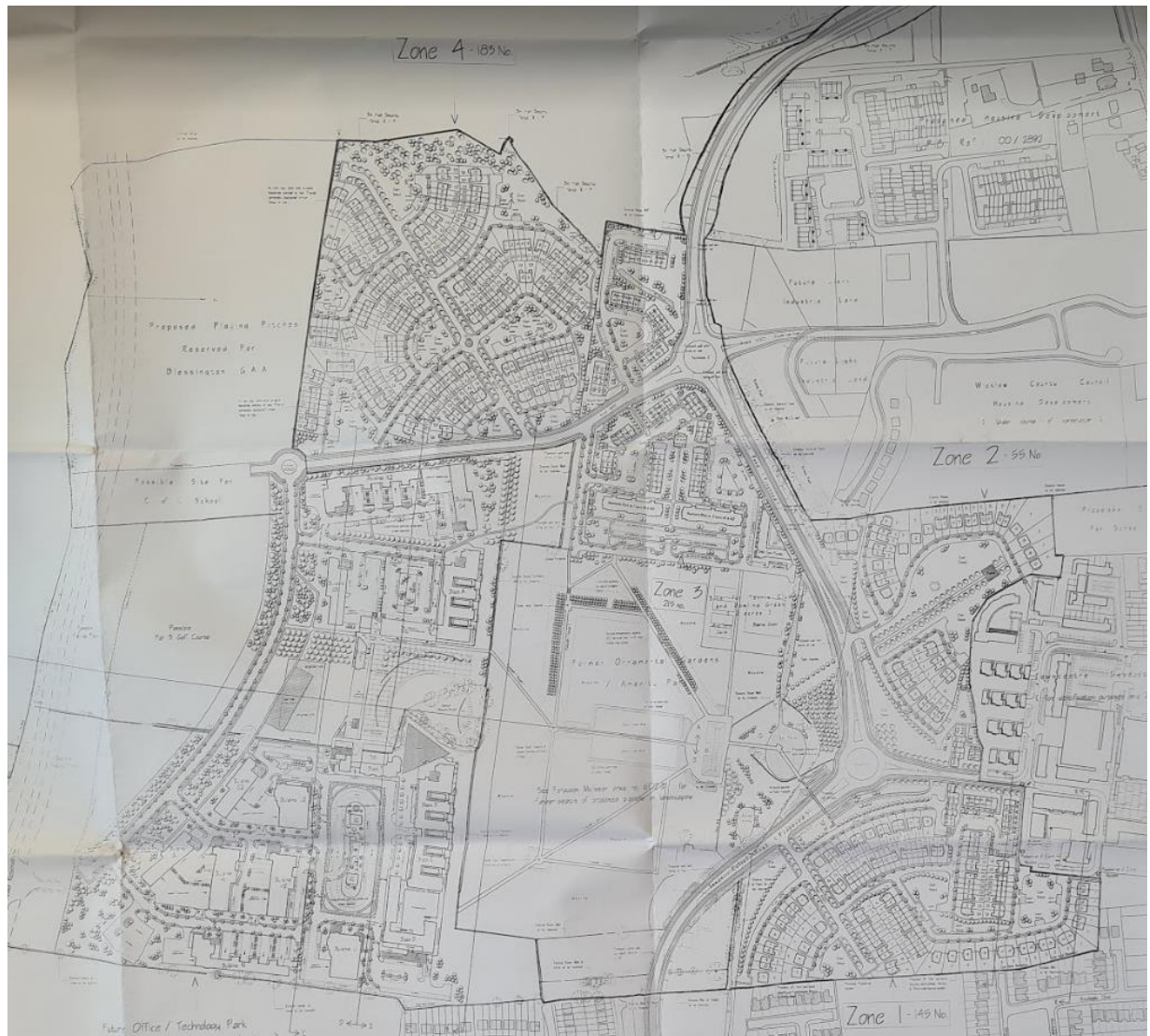


Figure 3-2: Alternative 2: Landscape Masterplan 2000 (Further Information 20/8/2001)

It is notable that the land use distribution under the 2002 Planning Permission was carried forward to the zoning map adopted with the Blessington Local Area Plan. The applicable development management standards are those contained in Appendix 1 of the Wicklow County Development Plan 2022-2028.

The land use zoning layout brought forward in the LAP was analogous with the 'Scenario 2 – Moderate Development Envelope' Alternative, assessed in the SEA of the Blessington Local Area Plan.

Environmental Effects

The EIA Directive requires that the use of materials and natural resources, including land be considered as part of the assessment process and should consider the sustainable availability of these resources. The EPA guidelines provide some clarity in relation to what can be considered under the 'land and soils' topic. It considers the land take to be a consideration for EIA.

The densities considered under the masterplan layout were relatively low and do not put forward the best use of land, a finite resource. Overall, this is considered this alternative is positive in the long term, in that while it does support population growth and community facilities, it does not provide for a sustainable level of density.

3.6.2 Alternative no. 3: Layout submitted as part of the pre-application process to Wicklow County Council

In 2020 Cairn Homes Properties Ltd. sought to progress plans for the Blessington Demesne area for their overall landholding of c 64 ha. (see lands enclosed with blue line below). A masterplan was developed by the applicant's design team, which progressed the layout from the 2000 Masterplan. The subject site was generally referred to as Phase 2. The layout of the design for the subject site evolved from August 2021 to February 2023.

Planning permission was Granted by WCC in June 2021 for Phase 1. This Phase 1 permission is currently under construction by Cairn Homes Properties Ltd. and closely interacts with the development under consideration in this EIAR.

Planning permission was granted on the 20th October 2021 for a development consisting of:

- 91 houses in a mix of detached, semi-detached and terraced houses to include 20 no. 4-bed and 71 no. 3-bed with associated public open space.
- One access off the Blessington Inner Relief Road and one off the School Link Road.
- A 2.66 ha town park to include: play areas, a wetland and meadow, a woodland, the enhancement of an existing pond and of a stream, a fitness trail and a car park (22 no. spaces),
- A 1,082.27 m greenway with possible future connection to Glen Ding Woods to the north;
- Boundary treatment, public lighting, site drainage works, an ESB substation (c.8.3sqm) and all ancillary site services and development works above and below ground.
- Infrastructure works to include the internal road network and part of the Blessington Inner Relief Road connecting to the Oak Drive Roundabout.

The layout is illustrated in Figure 3-3.

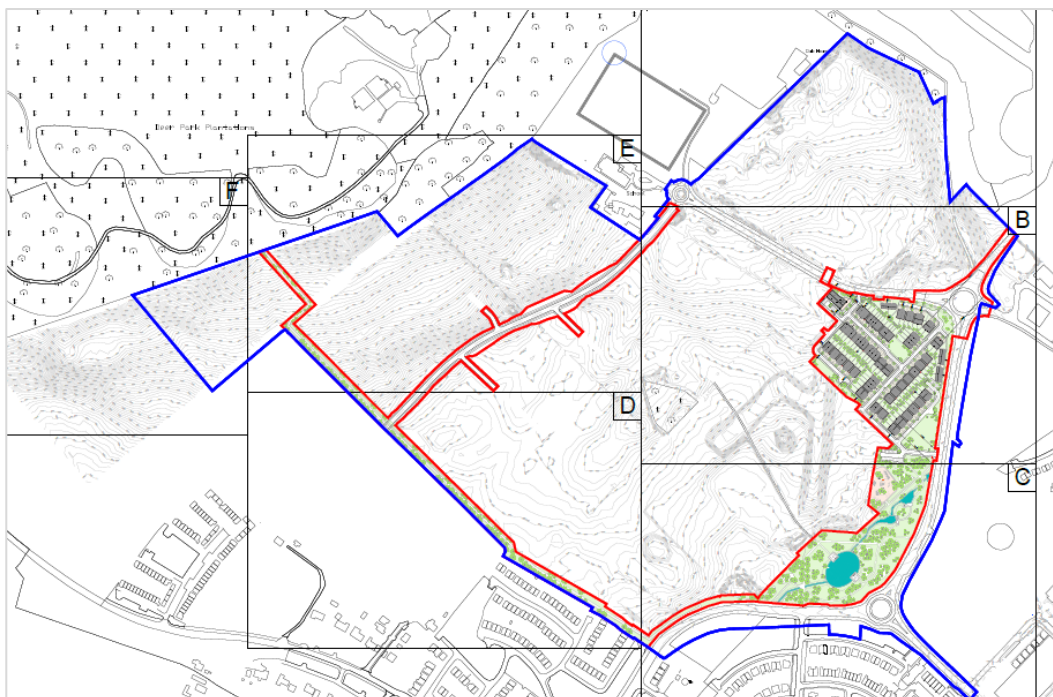


Figure 3-3: Layout of Development permitted in Phase 1 (WCC Ref. 20/1146) (Source: MOLA)

In August 2021 pre-application proposals were submitted to Wicklow County Council for 'Phase 2' of the Blessington Demesne. The development layout illustrated below (Figure 3-4) provided for 344 residential units, 11.85 ha of open space contributing to the new town park, the expansion of creche permitted under PA.Reg.Ref. 20/1146, employment floorspace and road infrastructure.



Figure 3-4 Pre-application layout August 2021

Subsequently, the applicant engaged in further consultation with the planning authority with the submission of a s. 247 request for a Large Scale Residential Development in July 2022, and an LRD Meeting Request in February 2023.

In summary, the proposed development Figure 3-5 consisted of 302 residential units in a mix of houses, duplexes and maisonettes, a 10.65 ha town park and 1.63 ha of public open space. The residential density was 33.9 (based on the developable area).



Figure 3-5 Alternative 3 – Pre-application layout

Environmental Effects

A number of key issues from an environmental perspective arose during the pre-planning phase and influenced the current proposal being considered. These are:

- Whether the density of residential proposed sufficiently addressed sustainable development of greenfield site.
- How the phasing of the scheme could address delivery of appropriate infrastructure (i.e BIRR road)
- The need to ensure that watercourses and riparian zones are sufficiently protected, and Sustainable Urban Drainage Systems (SUDs) are utilised to manage surface water and protect Biodiversity and Water quality.
- Ensure Archaeological sites are considered.
- The layout did not support future connections to adjoining land holdings.

3.9 Alternative no. 4: The proposed development with BIRR

This alternative is in effect the development proposal as described in Chapter 2 of the EIAR. The evolution of the preferred alternative was informed by consultations with WCC, further detailed analysis of the characteristics of subject site by the EIAR team and interaction with the design team having regard to the potential environmental impacts of the project.

Figure 3-6 illustrates the layout design response prepared by the design team led by MOLA Architects from August 2023. Most notable in the final scheme is the introduction of the BIRR road scheme. In response to environmental baseline analysis of the evolving design, it was found that the delivery of this road infrastructure was most beneficial for Blessington Town centre as well as the residential scheme itself. The scheme provides for a higher density of development in a revised layout plan.



Figure 3-6 Alternative 4 – Proposed Development Layout

Environmental Effects

The Alternative 4 layout incorporates the framework of development layout that has evolved from the 2000 masterplan plan for Blessington Demesne. Notably the Parkland area enhances an historic demesne landscape for the benefit of the town and its population (existing and future). The visual impact of this proposal is positive. The plan provides for a high degree of interaction and complementarity with the Phase 1 scheme. The residential layout protects the watercourse (Deerpark Stream) integrating open space proposals. Surface water proposals including SUDs and attenuation measures. The potential impact on watercourses and the conservation objectives of European sites downstream have been carefully considered. The foul water from the site will discharge to the existing foul sewer located to the south of the subject site. The foul water will then discharge to Blessington Wastewater Treatment Plant (WwTP).

3.10 Comparison of Main Environmental Effects

The table below presents a summary of the comparison of environmental effects between the Alternatives Considered. It is notable that aside from 'Do-nothing' the alternatives consider the evolution and development of scenarios that have been established since the 2000 Masterplan. As such, the design alternatives consider nuanced improvements in the layout, which are discreet changes in environmental terms. The 4 Alternatives are considered as positive, neutral or negative. The classification concluded in this table is relative to the other Alternatives and the long term objectives to provide residential, parkland and BIRR (Road connection) for Blessington's development.

Table 3-1: Summary Comparison of the Main Environmental Effects

Topic	Alternative 1 – Do Nothing	Alternative 2 – 2000 Masterplan	Alternative 3 Pre-Application Layout	Alternative 4 – Proposed Development
Population and Human Health	Negative	Positive	Positive	Positive
Biodiversity	Neutral	Neutral	Positive	Positive
Land and Soils	Neutral	Negative	Negative	Neutral
Water	Neutral	Negative	Negative	Neutral
Air and Noise	Neutral	Negative	Negative	Neutral
Air Quality and Climate	Neutral	Neutral	Neutral	Neutral
Noise and Vibration	Neutral	Neutral	Neutral	Neutral
Landscape and Visual	Neutral	Positive	Positive	Positive
Material Assets – Traffic and Transportation	Neutral	Negative	Negative	Positive
Material Assets - Utilities	Neutral	Neutral	Neutral	Positive
Material Assets - Waste	Neutral	Neutral	Neutral	Neutral
Archaeology and Cultural Heritage	Neutral	Neutral	Neutral	Neutral

With reference to Population and Human health, the proposed scheme supports the provision of an important new residential population for Blessington with the inclusion of Parkland Open Space and a hierarchy of amenity spaces. It is considered that Alternative 1 does not support the need to provide additional homes for the population. Alternatives 2 and 3 do not give a sustainable density of development on greenfield lands.

The provision of Open Space to provide an ecological corridor around the stream is a notable feature of Alternatives 2, 3 and 4 with a reduced impact on biodiversity. It will also result in a greatly improved landscape and visual impact. Alternative 4 provides for a more detailed appraisal of SUDs drainage solutions.

The inclusion of an improved layout in Alternative 4 supports pedestrian links through the site, and future access to adjoining lands. This evolved through design iterations in Alternatives 2 and 3.

The subject site has been the subject of a detailed archaeological investigation (including test trenches) and several areas of potential are located within the subject lands. However, there is no distinction between the alternatives in the impact on archaeology. Hence, the alternative comparison is considered 'neutral'.

Air and noise impacts from the alternatives are broadly similar. Principally, these impacts will occur as a result of the construction phase of the development as operational impacts would be largely restricted to traffic and these volumes are generally low. As these impacts can be largely mitigated through good construction practices, the residual impact is considered low and temporary in all cases.

With regard to Material Assets (Utilities and Waste Management), it is considered the alternatives are similar as they would require servicing and also ESB etc. While the additional quantum of houses will result in increased demand for foul and water supply, these can be accommodated, which is confirmed by Irish Water.

Alternative 4 provides for a more sustainable drainage approach without the need for pumping. The approach to managing levels for the southern site area, supports a much more sustainable in the long term which is significant and positive relative to other alternatives.

Crucially, Alternative 4 provides for the development of the BIRR link road. This ensures that the development provides for the implementation of increased capacity in the road and transport network of the town. This will encourage sustainable modes of transport given the proximity of the subject site to the town centre and service facilities.

3.11 Preferred Alternative

With reference to the final layout, the iterative process outlined above, which included alternative site layouts were considered with the objective of producing a new high quality residential development, which has undergone a robust consideration of relevant alternatives having regard to the comparison of environmental effects and meets the requirements of the EIA Directive, based on the multidisciplinary review across all environmental topics.

The proposed design consideration for the subject lands were subject to pre-application meetings with Wicklow County Council as well as a formal LRD meeting with Wicklow County Council.

The environmental issues which most informed the design process related to soil, ecology, archaeology, water, layout and permeability. These considerations have informed the consideration of alternative layouts, open space, the issue of road and access arrangements up to the submission of the current scheme.

In respect of other items, it is noted that a sustainable level of density is proposed having regard to Government Guidance in the Sustainable Residential Development in Urban Areas (2009).

This EIAR describes an iterative process where the environmental assets and sensitivities of the subject lands are considered and assessed as the scheme evolves over time. The EIA process and consultation with Statutory bodies has allowed the creation of greatly improved residential development with reduced environmental impact and a more integrated relationship with the area.

3.12 References

European Commission (2017) Environmental Impact Assessment of Projects, Guidance on the preparation of the EIA Report (Directive 2011/92/EU as amended by 2014/52/EU)

Eastern and Midland Regional Spatial and Economic Strategy (EMRA, 2019)

Government initiative, Housing for All – a New Housing Plan for Ireland (DHLGH, 2021)

Ireland 2040 National Planning Framework (DHLGH, 2018)

SEA of the Wicklow County Development Plan 2022-2028 (Wicklow County Council)

SEA of the Blessington Local Area Plan 2013-2019 (Wicklow County Council)

4. POPULATION AND HUMAN HEALTH

4.1 Introduction

This chapter of the EIAR addresses the likely direct and indirect effects positively or negatively on Population and Human Health of the proposed large-scale residential development at Blessington Demense, Blessington, Co. Wicklow

4.1.1 Expertise

This Chapter was prepared by Darragh Friel, MSc, MA, BA, PGDip, Licentiate Member of RTPI, Planner for MacCabe Durney Barnes. Darragh has over 8 years' experience in Ireland & Brussels providing research, analysis and project support to a variety of projects. Prior to MacCabe Durney Barnes, his roles include GIS & Project Support Consultant based within Uisce Éireann, Research Assistant with Queens University Belfast and Stagiaire at the European Committee of the Regions.

The Chapter was reviewed by Richard Hamilton BA, MSc, PGDip EMAE, MIPI, MRTPI. Richard is a Chartered Town Planner with 27 years experience in planning practice and Environmental Impact Assessments (EIA) preparation and management. During that time Richard has successfully delivered a wide range of professional planning consultancy projects and services, including the preparation of inputs into EIARs and EIA screenings for infrastructure, commercial, recreational/cultural facilities and residential development projects as well as Strategic Environmental Assessments. He has a Postgraduate Diploma in Environmental Monitoring and Assessment Engineering from Trinity College Dublin. Richard is a member of the Irish Planning Institute (IPI) and Royal Town Planning Institute (RTPI).

4.2 Assessment Methodology

The approach is founded on well-established best practices, taking into consideration pertinent guidelines and laws, especially the Guidelines on Information for Environmental Impact Assessment Reports (EPA, 2022) and the European Commission's guidance on Environmental Impact Assessment preparation (2017). The evaluation of the population primarily relies on a thorough review of available information. Its aim is to ascertain the current baseline conditions related to the population and surroundings. This includes the present population, future population estimates, current and future economic undertakings in the region, employment, community infrastructure, and recreational facilities within the specified zones. It is crucial for the Population analysis to demonstrate a keen understanding of local sensitivities and concerns at a very detailed level. This involves considering factors like geographical proximity, established movement patterns, or the ways places have been used in the past that might potentially be impacted.

4.2.1 Desktop Research – Principal Data Sources

The evaluation encompassed researching and analysing existing records to create profiles of the communities that could potentially experience the impacts of the Proposed Project. This analysis conducted via desk-based methods was carried out using data primarily sourced from the below key information sources:

- EPA Guidelines on information to be contained in Environmental Impact Statements (2022) (EPA, 2022) (the EPA Guidelines)
- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017) (the EU EIAR Guidance).

- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017)
- Health in Environmental Impact Assessment – A Primer for a Proportionate Approach (2017) Institute of Environmental Management and Assessment (IEMA)
- Central Statistics Office (CSO) Census of Population, including Census 2016 and 2022;
- Pobal Maps;
- Geodirectory data sourced from www.myplan.ie
- Ordnance Survey of Ireland aerial photography;
- Planning search of recently submitted and granted planning applications for development in the area;
- GeoDirectory;
- Tusla; and
- Department of Education and Skills.

As part of the assessment procedure, various strategic planning guidance documents and technical records were examined. The following documents listed below list key frameworks which were referenced as part of this study:

- Project Ireland 2040 – National Planning Framework (DEHLG 2017);
- Regional Spatial and Economic Strategy (RSES) (EMRA 2019);
- Wicklow County Development Plan 2022-28; and
- Blessington Local Area Plan (LAP) 2013-2019.

4.2.2 Monitoring, Surveys etc

The evaluation of Human Health within the Environmental Impact Assessment Report (EIAR) concentrates on identifying where potential effects on human well-being have been evaluated. It draws from these evaluations to confirm that all pertinent influences on human health – especially local community health – have been adequately examined to mitigate or prevent any adverse effects.

Relevant Guidelines

In addition to the general EIA Guidance documentation outlined above, this assessment has been prepared having regard to the following guidelines:

- The Health Impact Assessment (HIA) Resource and Tool Compilation (United States EPA 2016);
- Health in Environmental Impact Assessment – A Primer for a Proportionate Approach (Institute of Environmental Management and Assessment (IEMA) 2017); and
- Health Impact Assessment Guidance (Institute of Public Health in Ireland 2009).

The European Commission guidance relating to the implementation of the 2014 Directive, in reference to 'human health' states:

'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'.

The 2022 EPA guidelines also note that, in an EIAR; 'the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil etc.', and that, 'assessment of other health & safety issues are carried out under other EU Directives, as relevant. These may include reports prepared under the Integrated Pollution Prevention and Control, Industrial Emissions, Waste Framework, Landfill, Strategic Environmental Assessment [SEA], Seveso III, Floods or Nuclear Safety Directives. In keeping with the requirement of the amended Directive, an EIAR should take account of the results of such assessments without duplicating them'.

Potential impacts of the proposed project on population and human health arise from traffic and transportation, air quality and climate, noise and vibration, townscape and visual, material assets: utilities and the risk of major accidents and/or disasters. These elements are covered in separate sections of this EIAR that are dedicated to each respective subject. This chapter draws on the findings of those assessments included elsewhere in this EIAR which address the potential effects on population and human health.

4.2.3 Site Visit

To define the current receiving surroundings and construct a strong foundational reference for the designated site, the methodology incorporates review of on-site inspections carried out in February and August 2023. The purpose of the site visits was to evaluate and record the land use and property types located within the study area to inform the baseline assessment and to determine the location of potentially sensitive receptors (residential properties/developments, businesses, community infrastructure and recreational amenities). Additionally, GeoDirectory, a comprehensive repository containing information about all buildings in the Republic of Ireland alongside their geographical location, was also used to inform and validate the baseline assessment.

4.2.4 Definition of Study area

Various catchment areas were used around the site to define a study area. This was employed in accordance with previous good practice or where available guidelines. No formal national guidance is available regarding the suitable scope for examining population and human health impacts associated with LRD development. Consequently, professional judgement was exercised in determining the appropriate study area for examination.

A general local catchment of 2 kilometres from the subject site established the framework, encompassing the connection to Blessington settlement (including the town centre at around 2 kilometres). For the appraisal of other social infrastructure within the town, a broader catchment of c.3 kilometres was considered appropriate. Data from the Census encompassed information at the State, County, Town, and Electoral Division levels. While the EIAR primarily focuses on the lands in the immediate vicinity to the development proposal, it also accounts for the wider context of the Blessington settlement, considering significant population attributes and trends.

4.2.5 Consultation

The Population and Human Health segment takes into consideration the development's design scheme and the provision community facilities and amenities as part of the pre-application phase. This chapter mirrors this progression and details responses to issues raised during consultation, outlined in Chapter 2, which hold significance in terms of population and human health considerations. As an element of the Social Infrastructure Audit submitted alongside the planning application, MacCabe Durney Barnes communicated with the existing childcare operators and schools identified within the relevant catchment area of Blessington in relation to their existing capacity.

4.3 Characteristics of the Proposed Development

The proposed development is for a Large-Scale Residential Development on approximately 25.14 hectares of land situated within the townlands of Blessington Demesne, Newpaddocks, and Santryhill, Blessington, Co. Wicklow.

The proposed development will consist of:

- 329 residential units including:
 - 270 two storey houses (28 no. 2-bed, 218 no. 3-bed, 24 no. 4 bed.) comprising of semi-detached and terraced units
 - 47 no. apartments (22 no. 1 bed, 25 no. 2 bed) provided within 1 no. four-storey block.
 - 12 no. duplex units within 1 no. three-storey blocks (6 no. 2 bed and 6 no. 3 bed units).
- Car and bicycle parking spaces to include:
 - 518 no. car parking spaces for the houses, 54 no. spaces for the apartments and 22 no. spaces for the duplex units.
 - 113 bicycle spaces for the duplex units and for the apartments.
- 10.65 ha Town Park;
- 1.041 ha public open space including pocket parks and playgrounds;
- 1,514 sqm of communal open space (1,290 sqm at Apartments, 224 sqm at Duplex units);
- Two new vehicular access off Oak Drive and one new vehicular access off the Blessington Inner Relief Road
- infrastructure works to serve the housing development to include the internal road network;
- ESB substations/switchrooms, lighting, site drainage works and all ancillary site services and development works above and below ground; and
- temporary permission is also sought for the erection of three marketing signs (4.55 m high and 13.73 sqm each) and a marketing suite.

The development will also include:

- The extension of the Blessington Inner Relief Road (approx. 700m long) from the existing 4-arm roundabout at Blessington Demesne Lands, running north west of Blessington Business Park, and north of the Woodleigh residential area to a new four-arm roundabout junction on the N81 Dublin Road. The new roundabout will consolidate existing junctions with Hollyvalley, Doran's Pit and the Roadstone quarry site.
- A new junction will be provided to the Roadstone Quarry Access Road north of the road's alignment.

- The scheme will comprise a two-lane single carriageway road with cycle lanes and footpaths, landscaping and drainage works (including attenuation ponds & Sustainable Urban Drainage Systems (SUDS)); road signage and all ancillary site services and development works above and below ground.

4.4 Baseline Description

A description of the receiving environment relevant to the proposed development in relation to population and human health is given in this section. Specific sections of this EIAR provide the baseline scenario relevant to the environmental effect being assessed. The reason is so as not to duplicate baseline scenarios in this EIAR section. However, the assessment of effects on population and human health refers to those environmental topics under which human health effects may occur (e.g. noise, water quality, air quality, etc.).

The EPA Guidelines 2022 identify sensitive receptors as neighbouring landowners, local communities and other parties likely to be impacted by the proposal. Surrounding developments including homes, schools have been identified. Consideration has also been given to the potential temporary populations such as tourists and the cultural heritage/historical and natural heritage sites they may visit as walkers, cyclists, and drivers.

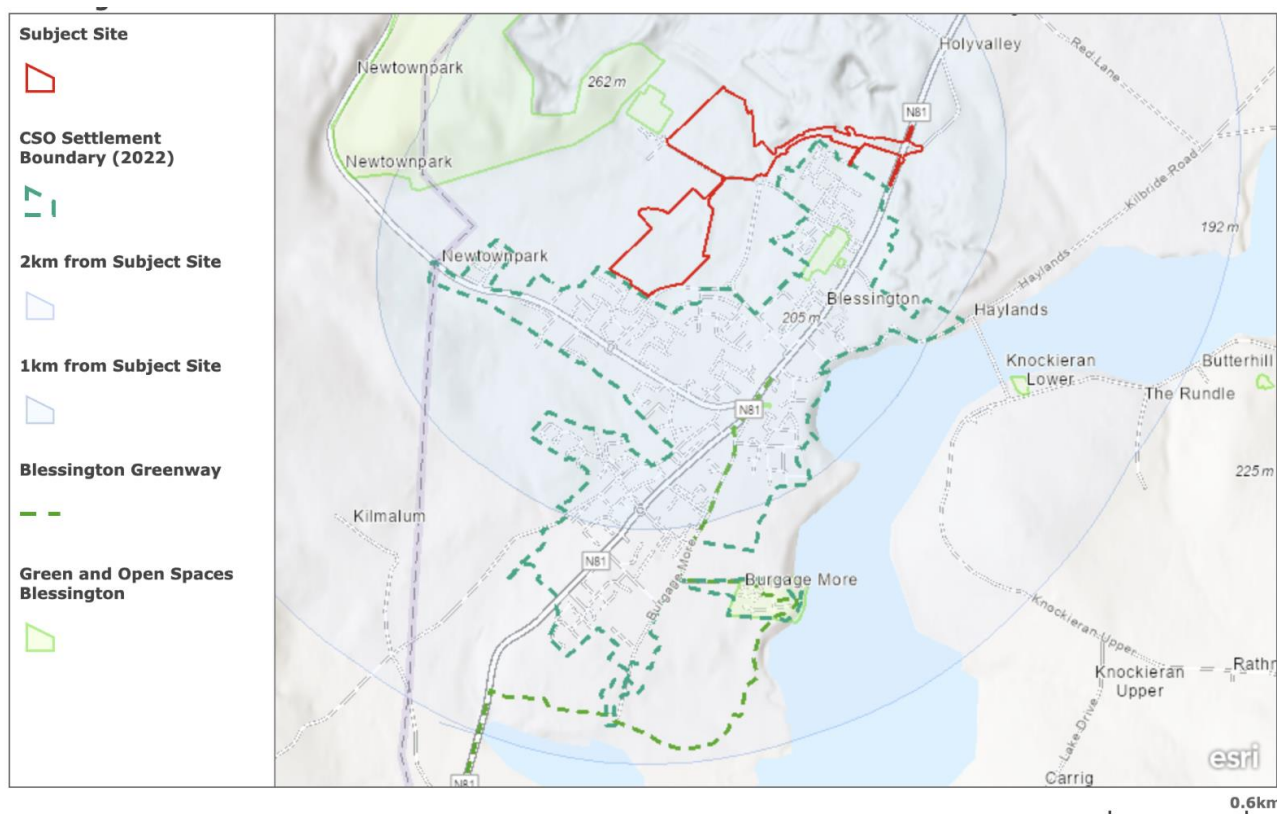
The findings of the 2016 and 2022 census have been used to determine the current population characteristics of the study area with a comparison to Wicklow to benchmark the data. Through understanding the characteristics of the existing population residing in the study area, it is possible to assess the potential impacts that the proposed development will have upon the population.

It should be noted that the description of the baseline environment of those factors under which human health effects might occur has also been addressed elsewhere in this EIAR, under the environmental factors of traffic and transportation, air quality and climate, noise and vibration and material assets.

4.4.1 Land Use and Settlement Patterns

The application relates to development on lands of c.25.14 ha. The site is generally greenfield in nature. The site topography is irregular and generally slopes from the northwest toward the east. There are schools and a wide range of services in the vicinity including Dunnes Stores, a theatre, Main Street, medical provision, sporting and outdoor activities. The site is adjacent to residential development at the southeast, south and southwest. The application site is an irregular shape where a link road forms the site's northwestern perimeter and the Blessington Inner Relief Road (BIRR) bound the southern boundary. A quarry is located generally north of the site. The Blessington no.1 School is located to the west and the Blessington GAA grounds bounds the residential site to the west. Several bus stops exist along the Main Street. Buses provide a service to Dublin (Route No.65) and to Bunclody (Route No. 132). In addition, there is a local link (Route No. 1404) Blessington to Newbridge.

The land use patterns in the vicinity of Blessington, are a varied combination of functions that mirror its urban and rural characteristics. As noted previously, the town functions as a self-sustaining growth centre, accommodating residential, commercial, and service sectors. Beyond its boundaries, the landscape transitions into an amalgamation of agricultural expanses, open green areas, and preserved natural spaces. The rural environs predominantly function as agricultural lands, encompassing livestock and crop cultivation. Furthermore, the proximity of the Blessington Lakes' influences land use, providing source for local leisure activities and water-centric tourism.



Esri, Intermap, NASA, NGA, USGS | Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
 | Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

Figure 4-1 Proposed development area with 1km and 2km catchment

The site is located within the administrative area of Wicklow County Council. The policies and objectives found within the Wicklow County Development Plan 2022-2028. The Blessington Local Area Plan 2013-2019 (the LAP) also provides a relevant planning context for the area, including zoning for Residential, Open Space and Active Open Space.

4.4.2 Demography

Preliminary information for the 2022 census is only available at Electoral Divisions (ED) level. The settlement of Blessington is overlapped with a number of EDs which include a higher number of persons. Notwithstanding this, their analysis would give a good indication of the level of population growth in Blessington. The relevant EDs are: Burgage, Blessington and Newtown.

The population data for the years 2016 and 2022 is presented in the table below.

Table 4-1: Population Change between 2016 and 2022 at ED levels.

Electoral Division	2016	2022	% Change
Burgage	2065	2304	11.6
Blessington	4606	4584	-0.5
Newtown	920	1,035	12.5
Total	7,591	7,923	4.37

The population change over the three EDs was on average 4.37%. For this assessment, it is assumed that the population of the Blessington Settlement has increased by 4.37% by 2022. This allows the analysis in this report to be based on a more factual number and to be cognisant of population growth. On this

basis, going forward, it is assumed that in 2022, the population of Blessington in 2022 is estimated at 5,761 persons.

There is no further 2022 data publicly available. The proposed development in Blessington Demesne is for 329 residential units, including:

- Houses: 270
- Apartments: 47
- Duplex: 12

Applying the average household size for Blessington in 2016 (2.75 persons) to the 329 units of the proposed development could generate an indicative population of 905 persons upon completion and operation.

There are 1,809 households in Blessington, around 40% of which are 1 and 2 persons households. The average household size was 2.75 persons in 2016. The 2016 census shows that 9.3% of the resident population were aged between 0 and 4, or a total of 515 children. A further 778 persons were aged between 5 and 12 years old or 14.1% of the population. The 13 to 18 years old cohort comprises 416 persons or 7.5% of the total population. The settlement's age pyramid is represented in the figure below.

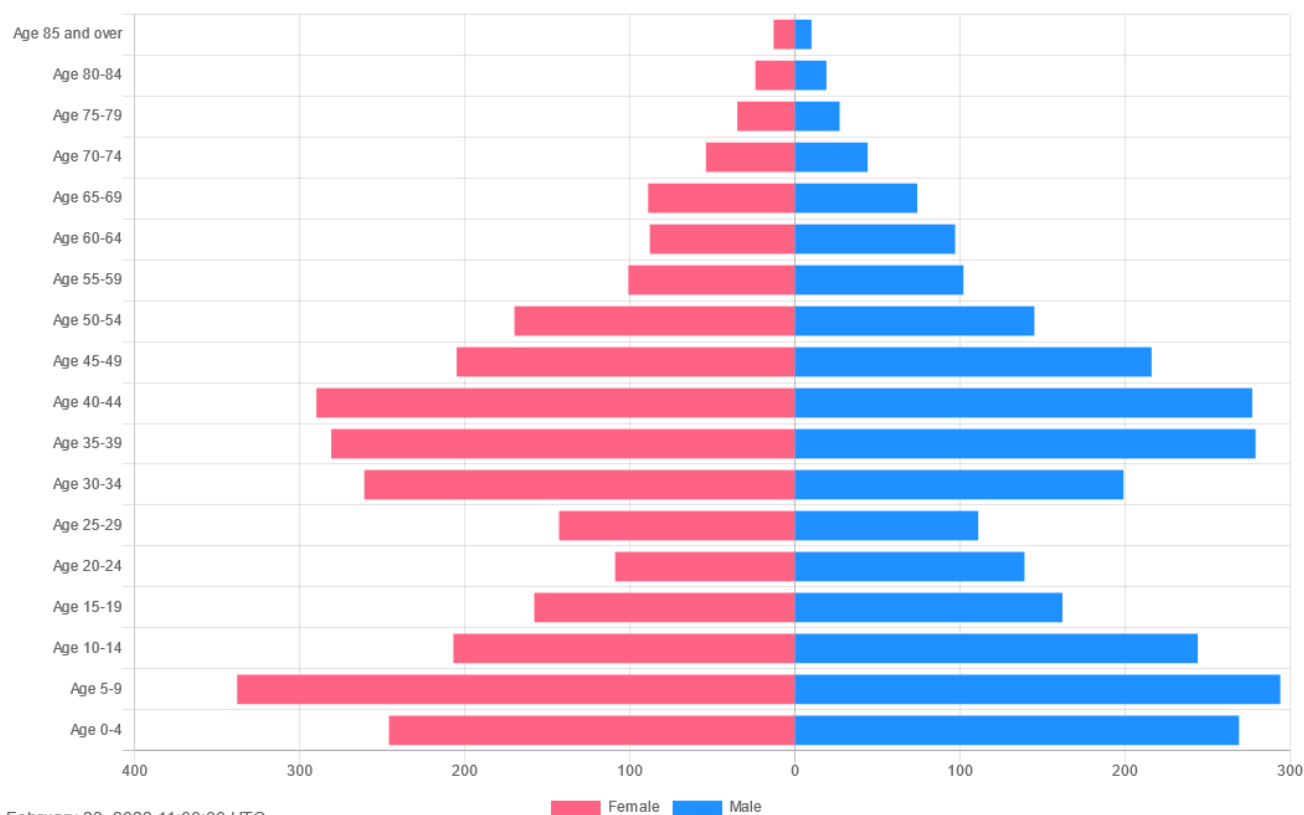


Figure 4-2 Blessington Age Pyramid (source: CSO)

4.1.1 Blessington Population & Growth Target

The key development Plan provisions include the following:

- Blessington is designated as a Level 3 – Self-Sustaining Growth Town

- The town shall provide for local growth in residential, employment and service functions through enhancing the built environment, water services, public transport links and capacity for development.
- The population of the settlement is targeted to increase from 5,234 in 2016 to 6,145 in 2028.
- The town shall be prioritized for moderate growth and investment.
- The town is a relatively strong and active town that acts as the service centre for a wide rural catchment for several villages in County Wicklow and County Kildare.

The overall development strategy for Blessington is to improve the quality of life of the resident population of Blessington by planning for and encouraging the provision of high-quality housing and employment, social and community facilities, and a range of recreational options, in a quality environment. The strategy also seeks to regulate pressures from both urban and rural development, in particular sporadic development in rural areas and development pressures emanating from south-west Dublin by providing a sustainable settlement and growth strategy to create a compact urban form and to enhance the physical, economic and social profile of Blessington.

The population target for Blessington is set out in Table 3.4 of the Wicklow County Development Plan 2022- 2028 as 5,234 in 2016 and a population target of 6,145 in Q2 2028.

Level	Settlement	Population 2016	Population target Q2 2028	% of total County growth to Q2 2028 by tier	
1	Bray	29,646	38,565	KEY TOWNS	49%
2	Wicklow - Rathnew	14,114	18,515		
3	Arklow	13,226	15,419	SELF SUSTAINING GROWTH TOWNS	25%
	Greystones - Delgany	18,021	21,727		
	Blessington	5,234	6,145		

Figure 4-3: WCC County Development Plan settlement hierarchy and population targets

The housing growth distribution is provided in Table 3.5 of the County Development Plan. The 2016 Blessington housing stock is 1,914 and the Q2 2028 housing stock target is 393. By 2031, the total housing growth for Blessington is anticipated to be 519.

Level	Settlement	Housing Stock 2016	Completions 2017-2020	Estimated completions 2021-Q2 2022	Housing Growth Q3 2022-Q2 2028	Housing Growth Q3 2028-Q4 2031	Total Housing Growth 2016-2031
1	Bray	11,232	165	100	4,026	771	5,062
2	Wicklow - Rathnew	5,456	650	200	1,267	275	2,392
3	Arklow	5,406	165	100	790	166	1,221
	Greystones - Delgany	6,766	875	400	508	170	1,953
	Blessington	1,914	5	40	393	81	519

Figure 4-4: Settlement Housing Growth analysis from WCC County Development Plan

Under section 3.4, the council notes that 'in the assessment of applications for new housing development (or mixed-use development of which housing forms a significant component) the Council will strictly adhere to the compact growth, sequential development and phasing principles set out in this plan'.

Section 6.3.4 on phasing, provides further details. It considers that development should generally follow the sequential approach. These states:

- 'Development shall extend outwards from the centre of settlements with undeveloped land closest to the centre and public transport routes being given preference, i.e. 'leapfrogging' to peripheral areas shall be resisted;
- A strong emphasis shall be placed on encouraging infill opportunities and better use of under-utilised land; and
- Areas to be developed shall be contiguous to existing developed areas.'

The development complies with the above principles insofar as it is the closest landbank from the Main Street, located just over 500m east of the site. It is immediately adjacent to the built fabric of Blessington. Immediately adjacent to the site to the west, is the Blessington GAA ground, which is adjacent to the Blessington School No.1, which is somewhat remote from the rest of the settlement of Blessington. On this basis, development at this site is therefore appropriate and will benefit the town by reconnecting different parts of the settlement.

4.1.2 Economic Activities & Employment

In Blessington the working population (15-64 years) accounts for 63% of the total population. This broadly compares to Wicklow at 64%. The Wicklow County Development Plan 2022-2028 highlights Blessington's designation as a Level 3 – Self-Sustaining Growth Town, signifying its pivotal role as a centre for development. The designation entails a comprehensive strategy aimed at fostering local expansion across residential, employment, and service sectors. The town's commitment to bolstering its infrastructure, water services, public transportation networks, and developmental capacities underscores its dedication to growth. With a targeted population increase from 5,234 residents in 2016 to an anticipated 6,145 by 2028, Blessington is poised for measured and deliberate advancement, attracting substantial investments to fuel its progress. Serving as a robust service centre for numerous villages in both County Wicklow and County Kildare, Blessington's strategic significance is rooted in its location along the N81 route, strategically positioned at the entrance to the western area of the County and in proximity to the bustling Dublin metropolitan region. The town benefits from a dependable quality bus service, facilitated by established entities such as Dublin Bus and Bus Eireann, contributing to its strong connectivity. It is imperative to safeguard lands within the existing N81 corridor from development, aligning with the necessity for realignment.

Furthermore, Blessington stands to capitalise on its potential as a tourist attraction, particularly through the Blessington Greenway walk leading from the town to the renowned Russborough House. The town's advantageous positioning along the N81 route, coupled with seamless accessibility to Dublin and the M50, presents a favourable opportunity to expand its employment infrastructure and cultivate economic ties with the Kildare Cluster, encompassing Newbridge, Naas, and Kilcullen.

4.1.3 Health Demographics

61.6% of the population in the Blessington Electoral Division reported themselves to be in 'very good health' and 28.2% responding as having 'good health' according to the 2016 census, whilst conversely around 1.22% reported themselves to be in bad or very bad health. This compares favourably to a County wide figure of 62.5% in good health and 0.2% in bad health.

Table 4-2 Health Status for Blessington ED (Census, 2016)

General Health (2016 Census) for Blessington ED	Percentage of Population
Very Good	61.55%
Good	28.18%
Fair	6.86%
Bad	1.09%
Very Bad	0.13%

A recent study was commissioned by the Blessington District Forum and the Wicklow County council, 'Blessington Health Check' (2020). The study provides a baseline of existing socioeconomic and environmental conditions in Blessington and outlines a series of actions and recommendations that can positively improve Blessington centre and surroundings.

4.1.4 Social Infrastructure

This section presents the findings of an audit of community infrastructure situated within 3km of the subject site. Community infrastructure includes a wide range of services and facilities that contribute to quality of life. The purpose of reviewing current provision of community infrastructure is to ascertain the likely future need for facilities and services in the area. MacCabe Durney Barnes undertook an audit of existing social and community infrastructure in the vicinity of the site (May, June and July 2023). A Social Infrastructure Audit accompanies this report.

The National Planning Framework outlines the broad national objectives for residential development in the State. This high-level objective is filtered downwards to be integrated into the RSES for the Eastern and Midland Region. National Policy Objective 33 seeks to *"prioritise the provision of new homes at locations that can support sustainable development and at an appropriate scale of provision relative to location"*.

The Regional and Economic Spatial Strategy 2019-2031 (RSES) prepared for the Eastern & Midland Regional Assembly (EMRA) seeks to support the implementation of Project Ireland 2040 and the economic policies and objectives of the Government by providing a long-term strategic planning and economic framework for the development of the region. RPO 9.13, states *"to ensure that new social infrastructure facilities are accessible and inclusive for a range of users"* is a regional policy objective (RPO) within the RSES which supports the provision of, and access to social infrastructure in a town setting. The RSES also states that *"Local authorities and relevant agencies shall ensure that new social infrastructure developments are accessible and inclusive for a range of users by adopting a universal design approach and provide for an age friendly society in which people of all ages can live full, active, valued and healthy lives"*.

The Wicklow County Development Plan states where *"new significant or mixed-use development proposals may be required to provide a social and community facility/ facilities as part of the proposed development or the developer may be required to carry out a social infrastructure audit, to determine if social and community facilities in the area are sufficient to provide for the needs of the future residents. Where deficiencies are identified, proposals will be required to either rectify the deficiency, or suitably restrict or phase the development in accordance with the capacity of existing or planned services"*.

The Blessington Local Area Plan 2013-2019 includes objective CD 1 requiring “to ensure sufficient lands are zoned for community needs within the plan area and to implement the objectives of the Chapter 15 ‘Social and Community Infrastructure’ of the Wicklow County Development 2010 - 2016 as applicable to the plan area”.

The Wicklow County Development Plan 2022-2028 states CPO 7.3 to support and facilitate the delivery and improvement of community facilities in accordance with the ‘Hierarchy Model of Community Facilities’ prepared under the Development Levy Scheme (under Section 48 of the Planning and Development Acts) (as set out on Table 7.1 of this chapter). While the above ‘Hierarchy Model of Community Facilities’ provides an extensive list of community infrastructure, the Council recognises that needs may differ from area to area over time and therefore it is recognised that additional community infrastructure needs may arise, and such facilities will be facilitated where considered appropriate.

4.1.5 Primary School Demand

Data was extracted from the statistics published by the Department of Education’s website. There are 7 no. primary schools in Blessington and environs. The total number of enrolments at these schools is 991 for the year 2022/2023. The enrolment figures were obtained for three academic years 2020-2021, 2021-2022 and 2022-2023 to allow for comparison. The schools are listed with their current enrolment numbers in the table below. Each primary school was contacted by email to determine the available capacity in May and June 2023. A copy of the information received are appended to the SIA accompanying this application.

Table 4-3 List of Primary Schools for Blessington and surrounding areas

School	Address	20/21	21/22	22/23	% Change	Gender	Available Capacity
Blessington No. 1 School	Blessington Demesne	199	192	203	2	Mixed	29
St Mary’s Junior School	Main Street, Blessington	254	240	236	- 7	Mixed	0
Gaelscoil na Lochanna	Cill Moloma, Kilmalum	184	169	163	- 11	Mixed	77
Blessington Educate Together NS	Red Lane, Blessington	53	74	90	70	Mixed	14
Lacken NS	Lacken, Blessington	105	102	94	-10	Mixed	45
Valleymount NS	Valleymount, Glenbride, Valleymount, Blessington, Co. Wicklow	104	113	116	12	Mixed	No response received
Kilbride National School	Manor Kilbride	98	99	89	- 9	Mixed	No response received
Total Enrolments		997	989	991	-0.6		165

Having reviewed enrolment at primary level in Blessington, numbers are generally stable with minor changes over the years. The LAP states a need for up to 1,352 primary school places by 2022. However, the actual number of children enrolled in the 7 primary schools is below this projected figure. The audit has identified c. 165 spaces available within the existing primary schools. Furthermore, in cases such as Blessington Educate Together National School it was noted that the school could possibly be expanded at its existing premises. Also, the information received from Gaelscoil na Lochanna highlights that the school is due to relocate to a new site where its capacity would be capable of accommodating 480 pupils.

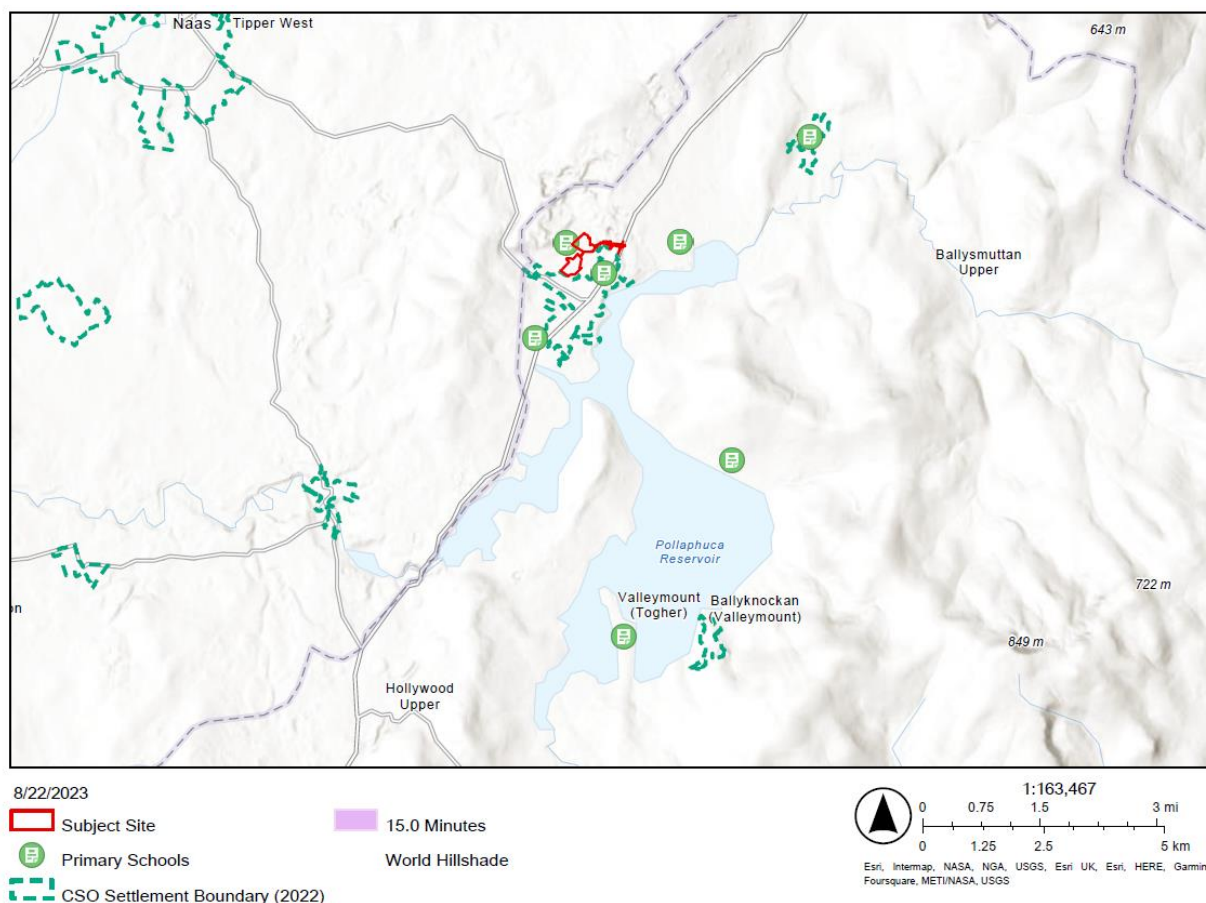


Figure 4-5 Primary schools map

4.1.6 Secondary School Demand

As for the primary level, data was obtained from the Department of Education to gauge enrolment in the secondary level. There is one post-primary school, Blessington Community College, with 624 children enrolled for the year 2022-2023. The school was contacted to determine their available capacity, and while there is a waiting list currently in operation, it should be noted that under the Department of Education's

Table 4-4: Secondary School for Blessington and surrounding areas

School	Address	Level	20/21	21/22	22/23	% Change	Gender	Ethos	Available Capacity
Blessington Community college	Naas Road, Blessington	Post Primary	564	584	624 (624 according to Department of Education)	43	Mixed	Multi-denominational	12 on waiting list

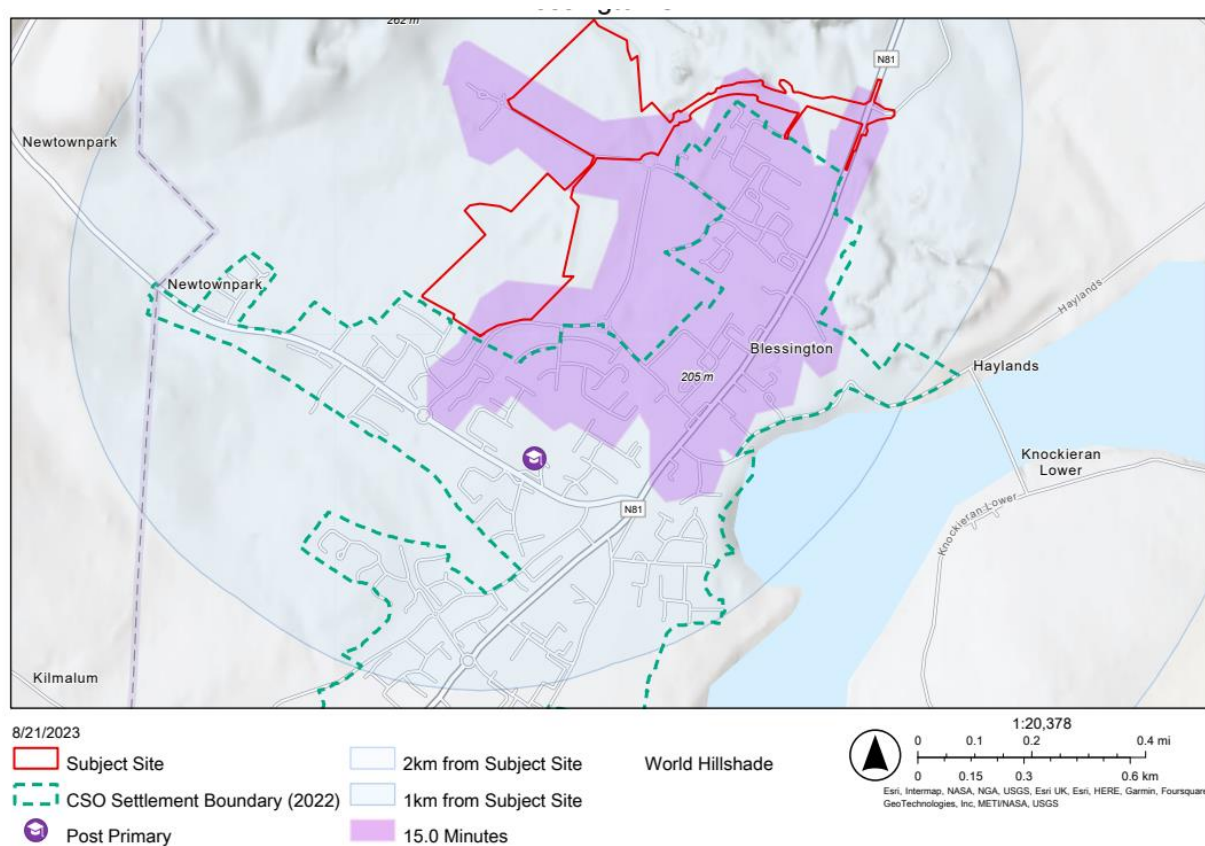


Figure 4-6: Existing Post-Primary Schools in the Study Area

4.1.7 Further Education

One further education was identified, the Blessington Further Education and Training Centre provides training courses for adults returning to education and sessional classes in gardening, art and other hobbies. There were 564 enrolments in the school in September 2021.

4.1.8 Open Space, Sports & Leisure

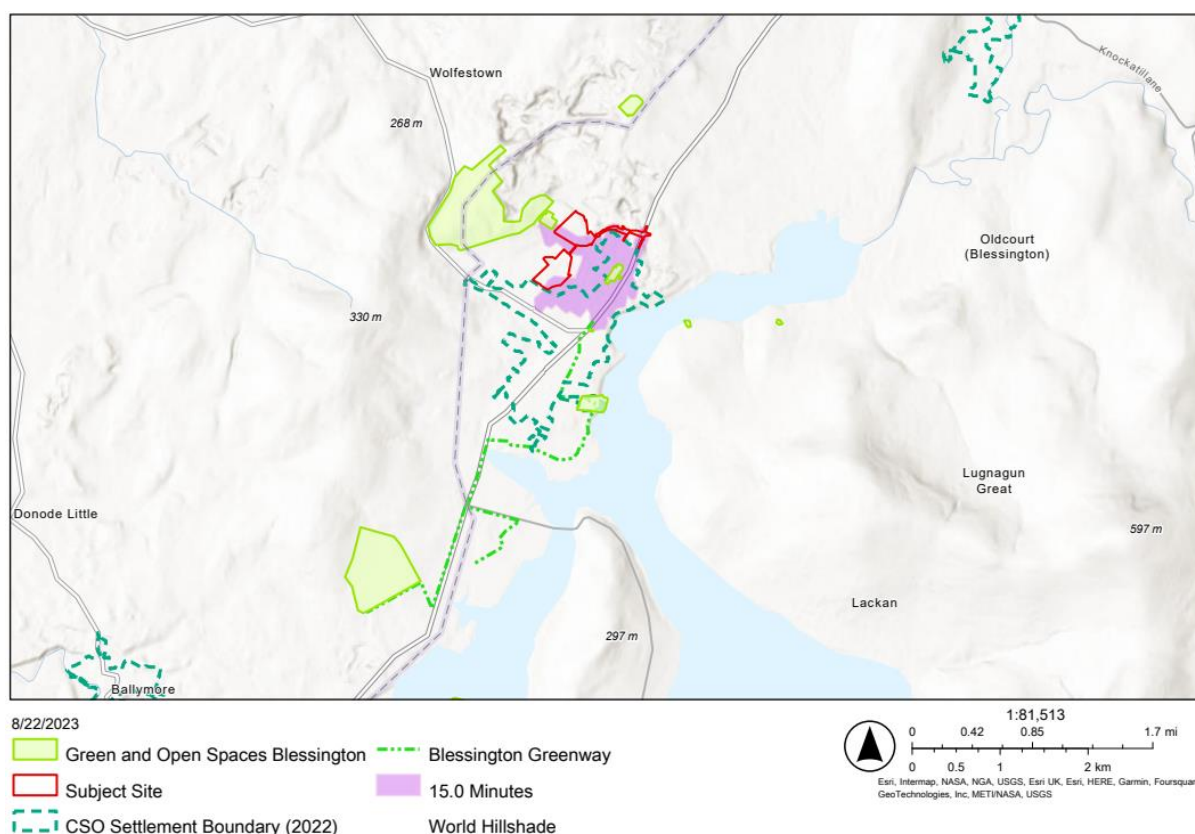
Blessington is located beside the Poulaphouca Reservoir commonly known as the Blessington Lakes, at the foot of the Wicklow mountains in an area of natural beauty. The Blessington Greenway has been partially completed to 6.5 kms of shared cycle and walkway designed for leisure and family users. The 6.5 km trail walk loops from the town, through woodland to Russborough house. The Greenway is to be developed to 43 kilometres of cycle and walking routes that loop from Blessington around the Lake, through the villages of Ballyknockan, Vallemount and Lacken and will be a valuable resource to the residents for recreation and leisure activity. The grounds of Russborough house with a 200 acre estate is owned and run by the Alfred Beit foundation is available for public access but there are fees to access some activities and full access of the grounds.

Outdoor recreation amenities in the town include a playground with outdoor fitness equipment and a skatepark. These amenities are located adjacent to the Aldi carpark and the industrial park.

The Avon holiday resort and outdoor activity centre has been developed to take advantage of the natural assets and recreation potential in the area. The centre is privately run, and charges apply for access to the many outdoor activities, mostly water-based activities that are on offer.

Table 4-5: List of Open Space facilities for Blessington and surrounding areas

Name of Facility	Description of Facility	Address	Distance from Site (km)
Blessington Greenway Trail	Walking Hiking and Cycling	Troopersfield, Co. Wicklow	1.7
Russborough House and Parkland	Heritage, Outdoor adventure centre, National Bird of Prey Centre	Russborough, Co. Wicklow, W91 W284	5.6
Playground, Equipment and Skatepark	Fitness and Outdoor play area in Town centre,	Oak Dr, Haylands, Blessington, Co. Wicklow	0.5
Glending Woods	Forest Trail	Red Lane, Co. Wicklow	0.5
Avon Holiday Resort	Outdoor activities	The Burgage, Blessington, Co. Wicklow, W91 HFX3	1.7

**Figure 4-7: Green and Open Spaces in Blessington**

In addition, it is worth noting that some parts of the new Town Park have been granted planning permission in 2021 and 2023 respectively. The permission covered the provision of an informal grass playing field, a bowling green and tennis court, in addition to a large playground.

There are several specific clubs and leisure facilities in Blessington, including a GAA club with 8 ha of playing pitches located immediately adjacent to the site. The Blessington AFC pitches, and club is located 4.6 km north of town centre at Crosschapel off the N81. The club has 2 playing pitches and 1 training pitch.

Table 4-6: Sports and Leisure Facilities

Name of Facility	Address	Description	Distance from Site (km)
Blessington GAA and grounds	Oak Drive, Blessington, Co. Wicklow	Site 8ha, 4 playing pitches, clubhouse	Adjacent
Blessington AFC Crosschapel	Crosscoolharbour, Crosschapel, Co. Kildare	2 playing pitches, changing room	1.4
Blessington Lakes Sailing Club	Blessington, Co. Wicklow	Sailing club	1.9
Three Castles Rowing	Knockieran Lower, Blessington, Co. Wicklow	Rowing club	1.4
CP Outdoor Centre, Russborough	Russborough, Blessington, Co. Wicklow, W91 W284	Adventure Centre	4.5
Blessington Lakes Golf Club	Boystown, Baltyboys, Co. Wicklow, W91 TE80	Golf Club	6
Tulfarris Golf Club	Tulfarris Hotel & Golf Resort, Blessington Lakes, Rathballylong, Blessington, Co. Wicklow, W91 EE95	Golf Club	5.9
Blessington Boxing Club	Butterhill Lane, Blessington, County Wicklow	Boxing Club	2.5
Outdoor Gym Blessington	Peter Finnegan Park, Troopersfield	Fitness Trail	1.1
St Kevin's Hall	Blessington Main Street	Main hall with stage	0.5
St Joseph's Hall	Naas Road, Blessington	Community hall	1

It should be noted that, even though it is not identified in the table above, there is a pop-up swimming pool in Blessington. St Kevin's Hall and St Joseph's Hall also host a range of sports and community activities.

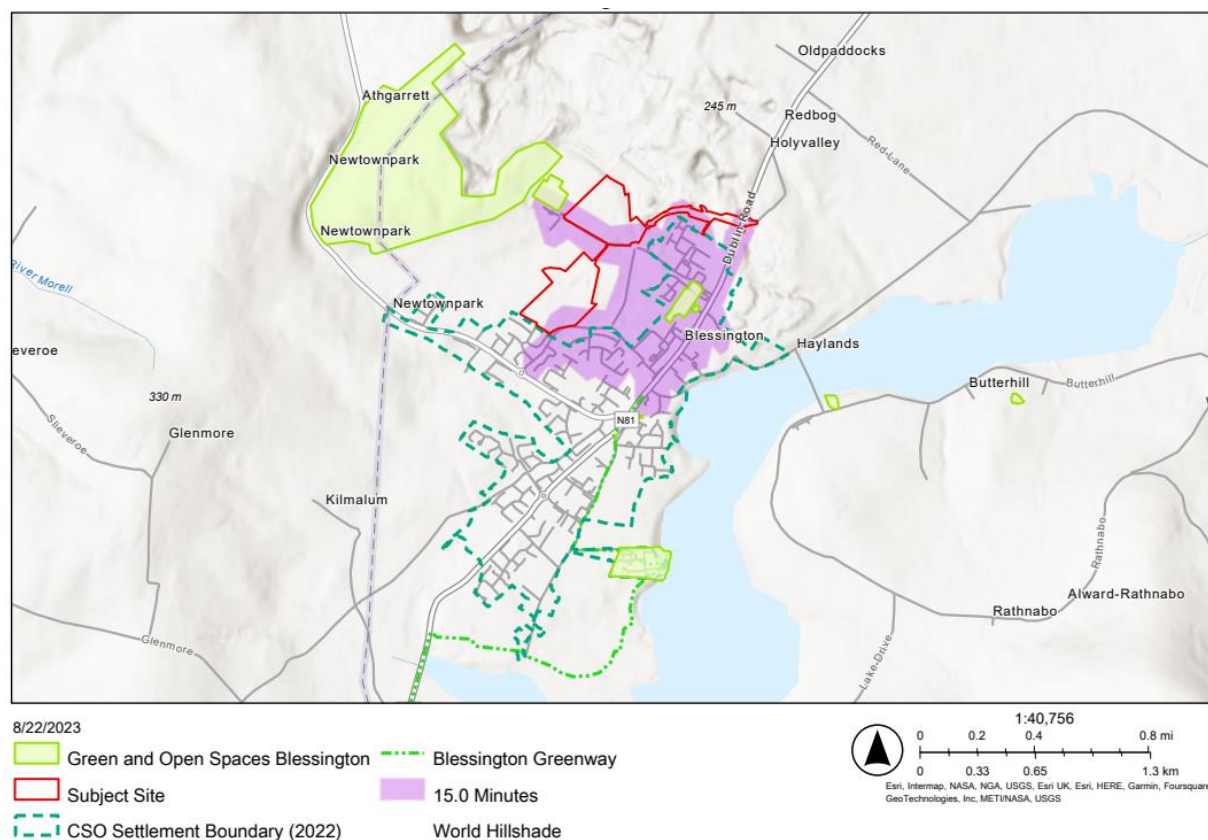


Figure 4-8: Sports and Leisure in Blessington

4.1.9 Childcare Facilities

Preschool data was extracted from a range of sources including Pobal, the Department of Education and Skills' and Tusla's inspections reports, the Wicklow County Council Planning Register and the Wicklow County Childcare Committee website. The following Table sets out each childcare facility registered with Tusla. According to Tusla's registration list from August 2022. The table sets out the distance from the site, service type, total capacity and vacancies.

Each facility were then contacted to validate the data. An email/ phone survey was conducted in June and July 2023 to determine the spare capacity, if any, within the area. Wicklow Childcare Committee were contacted in June 2023 in relation to the proposed development. A copy of the information received from the Childcare Committee and childcare operators are appended to this report.

Table 4-7: List of Childcare Facilities for Blessington and surrounding areas

Name of Facility	Address	Description	Capacity	Vacancies	Distance from Site (km)
Bláth na hóige Montessori School	St Kevins Community Centre, The Green, Blessington, Co. Wicklow	Montessori	51	No response received	0.8
Cocoon Childcare	New Town Centre, Haylands, Blessington, Co. Wicklow	Montessori	123 (145 according to Tulsa)	43	0.4
Happy Faces Community Playschool	Blessington Further Education Centre Blessington, Ireland Co Wicklow	Montessori	21 (22 according to Tulsa)	6	1.5

Name of Facility	Address	Description	Capacity	Vacancies	Distance from Site (km)
Little Explorers Preschool	Baltyboys Lower, Ireland Co. Wicklow	Preschool, sessional	30	0	4.5
Sakura	Main Street Blessington	Montessori	52	No response received	0.7
Naíonra Lacain	Lacken, Blessington, Co. Wicklow	Preschool	22	No response received	5.2
Total				49	

It was not possible to determine the available capacity of all five childcare facilities in the study area. In total, 3 childcare facilities provided details of their available capacity. Based on the survey conducted two childcare facilities indicated they have availability, amounting to approximately 49 places available in existing childcare facilities across the study area as seen in the table above. It is assumed that there is no spare capacity in the creches which did not provide a response, as this effectively constitutes the worst-case scenario.

In addition to the existing childcare facilities identified in Blessington, it is necessary to consider permitted childcare services that can serve the proposed development. Under PA. Reg. Ref. 22/1191 an amendment application to PA. Reg. Ref. 10/1146 was granted by Wicklow County Council, which included increasing the permitted creche in size from 304 sqm to 538 sqm and this will be capable of accommodating 100 children catering for permitted and future development.

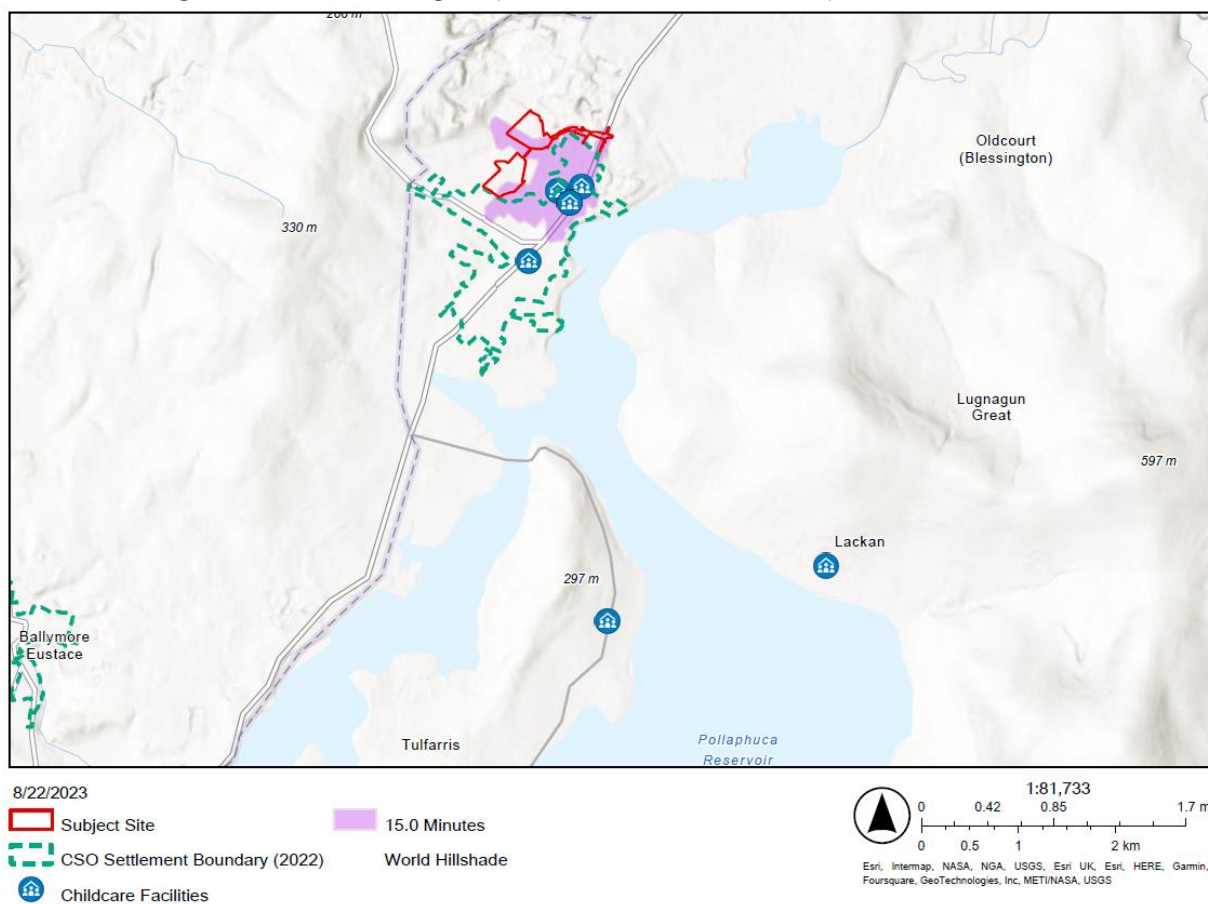


Figure 4-9 Childcare facilities map

4.1.10 Health Facilities & Social Services

Primary care services are broadly defined as the health or social care services that a person can use and find in a community, outside of a hospital setting. Primary Care includes GPs, Public Health Nurses and a range of other services provided through your Local Health Office, by the HSE (Health Service Executive).

Blessington is located around 18km south from Tallaght Hospital using the N81. It is also accessible by public transport with the Dublin Bus no. 65. Tallaght University Hospital offers a wide range of services, including emergency services. Overall, there is an established network of health care facilities in existence to date. There is also pharmacies, dentists and optometrists operating in the catchment area, concentrated in the town centre.

Table 4-8: List of Health Facilities for Blessington and surrounding areas

Name	Location	Distance from site
HSE Blessington Primary Care Centre	Blessington Business Park, Blessington	0.4
Blessington Family Practice	Main St, Blessington	0.89
Blessington Medical, Centric Health	Mc Greals Primary Care Centre Blessington Business Park, Blessington	0.4
Spectrum Foot Clinics - Chiropody & Podiatry Blessington	Mc Greals Primary Care Centre Blessington Business Park, Blessington	0.3
Blessington Dental	1 Millbank, Blessington	0.9
Method Physiotherapy	Unit 3, The Enterprise Units, Blessington	0.3
Centric Mental Health Clinic	Blessington Business Park, Blessington	0.4

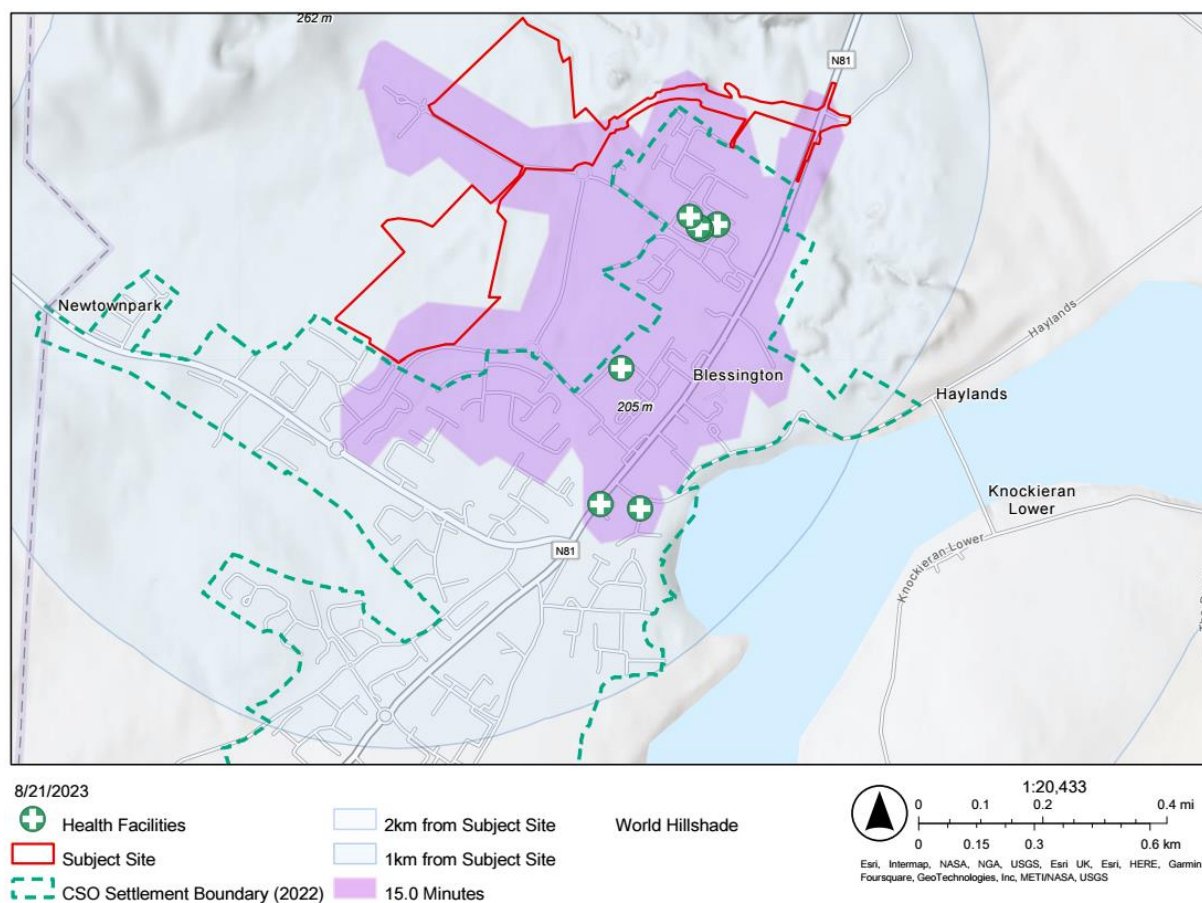


Figure 4-10: Health facilities map

4.1.11 Community Facilities

There is a community centre in Blessington town, St Kevin's Hall on Main Street, the centre has a sports hall with a stage, 3 function rooms and a kitchen. The centre is currently used by Montessori schools, local sports and community groups. St Joseph's Hall fulfils similar functions. The table below summarises the available community facilities in Blessington.

Table 4-9: List of Community for Blessington and surrounding areas

Name	Location	Community Uses	Distance (km)
St. Kevin's Community Centre	Main St. Haylands, Blessington	Available Daytime, Evenings, Weekend Indoors: Montessori School, Brownies, Girl guides, Ladybirds, Fencing, Parent & Toddler Group, Women's Shed, Coffee morning Older persons, KWETB training, Bowls Club, All Star Dancing Outdoors: Craft Market, Car Boot Sale, Junior Rugby training	0.5
		Available Daytime, Evenings	1

Name	Location	Community Uses	Distance (km)
St. Josephs Hall & Parish Centre	Church of Our Lady Parish Office, Coimin Centre, Blessington	Irish Dancing, Rehearsal space 2 Theatre groups (Blessington Theatre closed currently) AA, INSINK youth group. Parish Centre, Meetings Yoga, Daycare Elderly 2 days/ week. Historical group, Cancer support	
Blessington Library	New town Centre, Blessington	Community room & open area for community-oriented, non-profit making events, free of charge. Book Clubs, Knitters Group, Older Persons groups	0.6
Blessington Men's Shed	The Old Library, Baltinglass Road		1
West Wicklow Youthreach Blessington	Blessington Further Education Centre		1.6
Coimín Centre	Haylands	Meeting rooms for rent with fully equipped kitchen Daycare for the elderly	0.7
Blessington Library	New town Centre, Blessington		0.6
Tramway Theatre Blessington	Haylands, Blessington		0.5

In addition, KARE has a base in Blessington, adjacent to the Blessington School 1. This organisation provides support to people who an intellectual disability and their families. There is a range of community groups active in Blessington to cover a variety of interests including but not limited to retirement groups, book club, bridge, etc.

Blessington has a library a located off the Main Street on Red Lane, already highlighted in the preceding section. The public library provides books and resources, operates a musical instrument lending bank and provides a space for cultural and community event. The Tramway Theatre located at Haylands provides a venue for local theatre, choral and other performance. The theatre opened in 2007. Two local theatre groups use the local hall at St Josephs to rehearse.

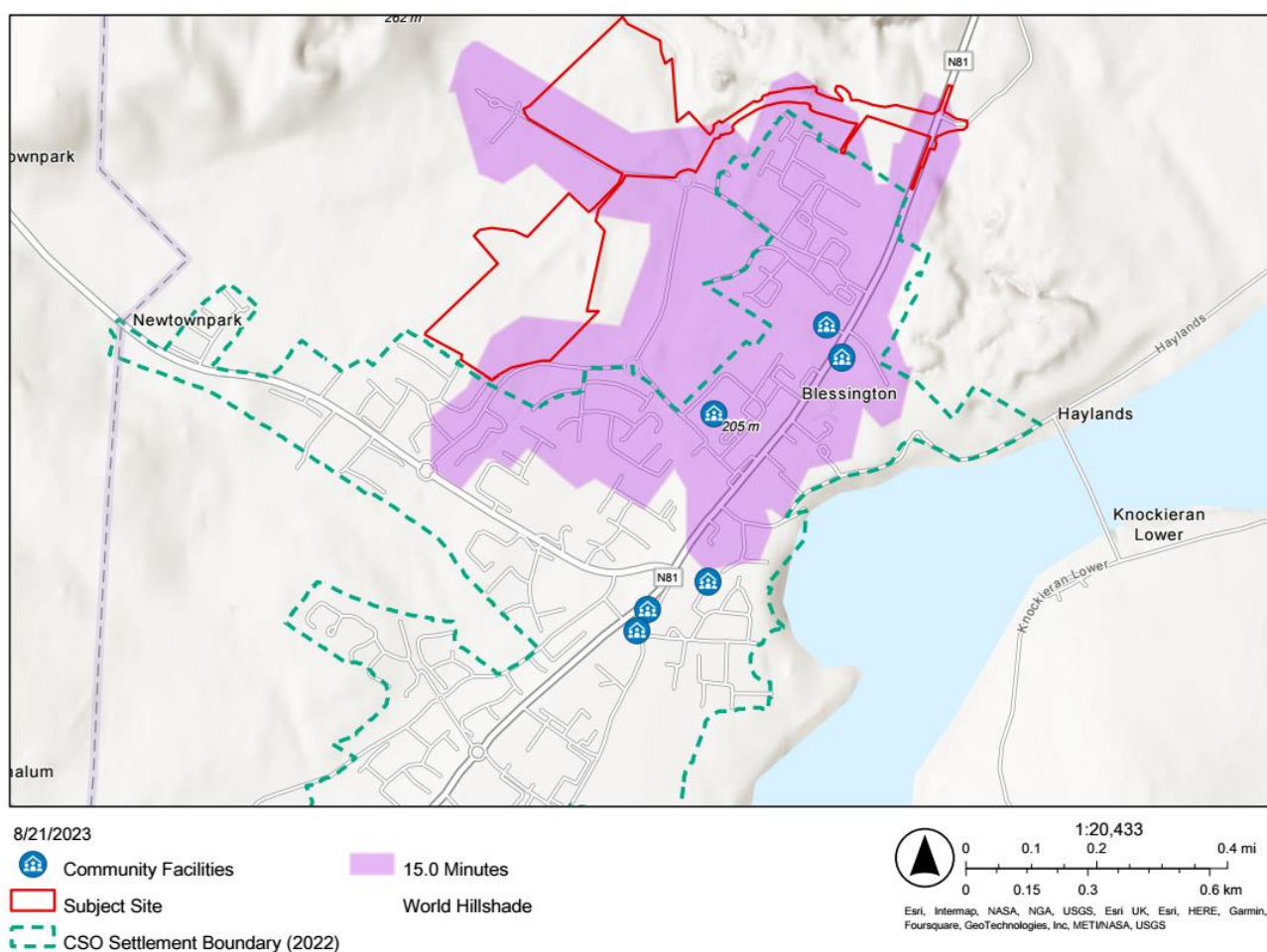


Figure 4-11: Community facilities map

4.1.12 Retail & Entertainment

The Wicklow County Development plan identifies Blessington as a Level 3 town in the retail hierarchy of the county. This means that in a market town like Blessington serving a wide catchment including the surrounding rural population it is the principal shopping destination in the area. The plan states that a good range of comparison shopping with a mix of retail types, leisure / cultural facilities and a range of cafes and restaurants will be provided. For a population of 10,000-40,000 the guideline of lettable retail space would be 10,000-25,000 sqm.

The convenience shops Supervalu, Aldi and Dunnes serve the town. There are a small number of convenience shops available. The Issues paper for the LAP in 2009 states that there was 2,900 sqm net convenience retail provision in Blessington. Aldi have built a shop since then adding 990sqm of floorspace, bringing the current total to approximately 3,300 sqm. A recent survey conducted in 2020 reports that shoppers are satisfied with the convenience shopping on offer but there is a demand for comparison shops and particularly cafes and restaurants in the town.

Table 4-10: Extract from the Wicklow Development Plan 2022-28 Retail Category versus Floor Space

Retail Category	Target *	Actual
Convenience	2,000	3,300

Comparison	4,000-5,000	1,422**
Total	6,000	5,722

*Wicklow Development plan 2022-2028

**Co Wicklow 2007 Retail floorspace

The actual available retail provision for convenience and comparison is falling short of the target.

4.1.13 Cultural & Arts Facilities

Blessington has a library located off the Main Street on Red Lane, already highlighted in the preceding section. The public library provides books and resources, operates a musical instrument lending bank and provides a space for cultural and community event. The Tramway Theatre located at Haylands provides a venue for local theatre, choral and other performance. The theatre opened in 2007. Two local theatre groups use the local hall at St Josephs to rehearse.

Table 4-11: List of Cultural & Arts facilities for Blessington and surrounding areas

Name	Location	Distance (Km)
Blessington Library	New town Centre, Blessington	0.6
Tramway Theatre Blessington	Haylands, Blessington	0.5
The Artists Court Yard	Russborough House	4.5

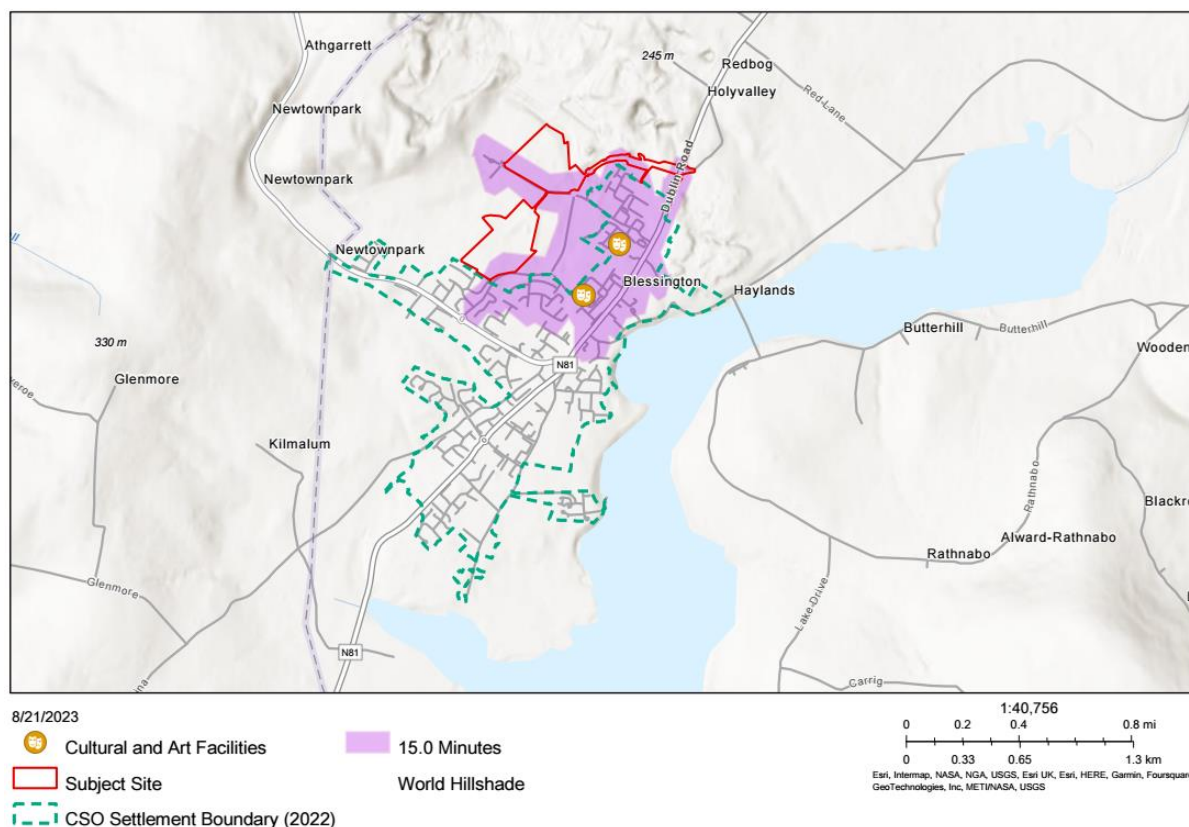


Figure 4-12: Cultural & Arts facilities map

4.5 Assessment of Effects

4.1.14 Construction Phase

Generally, the potential impacts arising during the construction phase relate to quality of life including visual impact / amenity, noise, air quality and transport. Where relevant, these impacts have been considered in the relevant chapters of the EIAR and will be minimised or mitigated where appropriate. It is unlikely that these impacts will be of a scale to either give rise to significant short-term negative disturbance to the existing population.

The construction phase will generate increased employment and capital spend on materials and services, which will benefit the local economy. It is estimated that the number of workers employed during the construction phase (as described in Chapter 2) will average between 190 and 200 people, up to a maximum of 250.

In addition to direct employment, there will be substantial off-site employment and economic activity associated with the supply of construction materials and the provision of services such as professional firms supplying professional services to the project.

The effect on Population will be moderate, positive and short-term in terms of socio-economic impact and moderate and negative, slight and temporary in terms of disturbance to daily activities the local population may experience from construction activity at the subject site.

4.1.15 Operational Phase

The operational phase is considered to have likely significant positive long-term impacts on human beings in relation to the provision of additional residential units, open space, community facilities, active open space (sports field) childcare provision, to cater for the demands of a growing population in accordance with the residential zoning objectives pertaining to the site. The proposed development will introduce a new residential population on a greenfield site 500m from the town centre of Blessington.

The provision of 329 quality homes within the proposed development will have a significant permanent positive impact on the population in the area, contributing to the settlement's growth in a compact manner and accommodating a substantial portion of the planned population growth of Blessington.

Based on the average household size for Blessington settlement (2016 Census) of 2.75 per household, the development would accommodate a new population of approx. 905 persons upon completion. This population will also generate additional spending within the area, which will likely have a permanent moderate positive impact on economic activity in the EIAR study area.

It is considered that there is sufficient capacity in the study area to cater for the demand generated by the proposed development. In terms of Population, any impact on social infrastructure in Blessington would be imperceptible and there would be a neutral to slight positive long-term impact on the Population in terms of addressing education (pre-school) and community needs.

4.6 Cumulative Impacts

The proposed development will introduce a new residential population on a greenfield site west of Blessington town centre. Based on the average household size for Blessington settlement (2016 Census) of 2.75, the development would create a new population of the order of 905 persons upon completion. Through the provision of public parkland and BIRR road link to the N81, the proposed development is integral to the sustainable development of Blessington. The provision of roads, community social infrastructure is integral to the scheme.

A search in relation to plans and projects that may have the potential to result in cumulative impacts was carried out. Data sources included the following:

- Wicklow County Council (planning and roads section);
- An Bord Pleanála website;
- Wicklow County County Development Plan 2022-2028;
- Blessington Local Area Plan (LAP), 2013-2019;
- EIAR Portal.

Permissions of relevance are outlined below.

P.A Reg.Ref. 00/3687

Permission was granted for a housing development (598 houses), retail, educational & leisure facilities and to construct a portion of Blessington Inner Relief Road on the 13th March 2002. This application was linked to the Town Centre Ref. 01/4436 application below.

This development was developed in part. The full application is not available on the Council website. The permission related to 4 zones. The Landscape Masterplan available in the historic files outlines the zones and open space provision as illustrated in Figure 5. This drawing also includes the layout of the related application for town centre. The permission granted extended in Zone 2 to lands outside the

applicant's ownership which are the subject of a current planning application P.A Reg.Ref: 20/0184 see Table 2 below.

Condition 5 stated in relation to Phase 2, that Phase 2 shall consist of Zones 2, 3 and 4 and that inter alia, no development shall commence in phase 2 until a list of items had been completed including the landscaping in accordance with the submission, the tender documents signed for the Wastewater Treatment Plan, the theatre constructed (which appears to relate to the Town Centre development, not this application).

Condition 39 stated the landscaping shall be in accordance with the EIS submission. Within the open space were ornamental gardens, bowling and tennis.

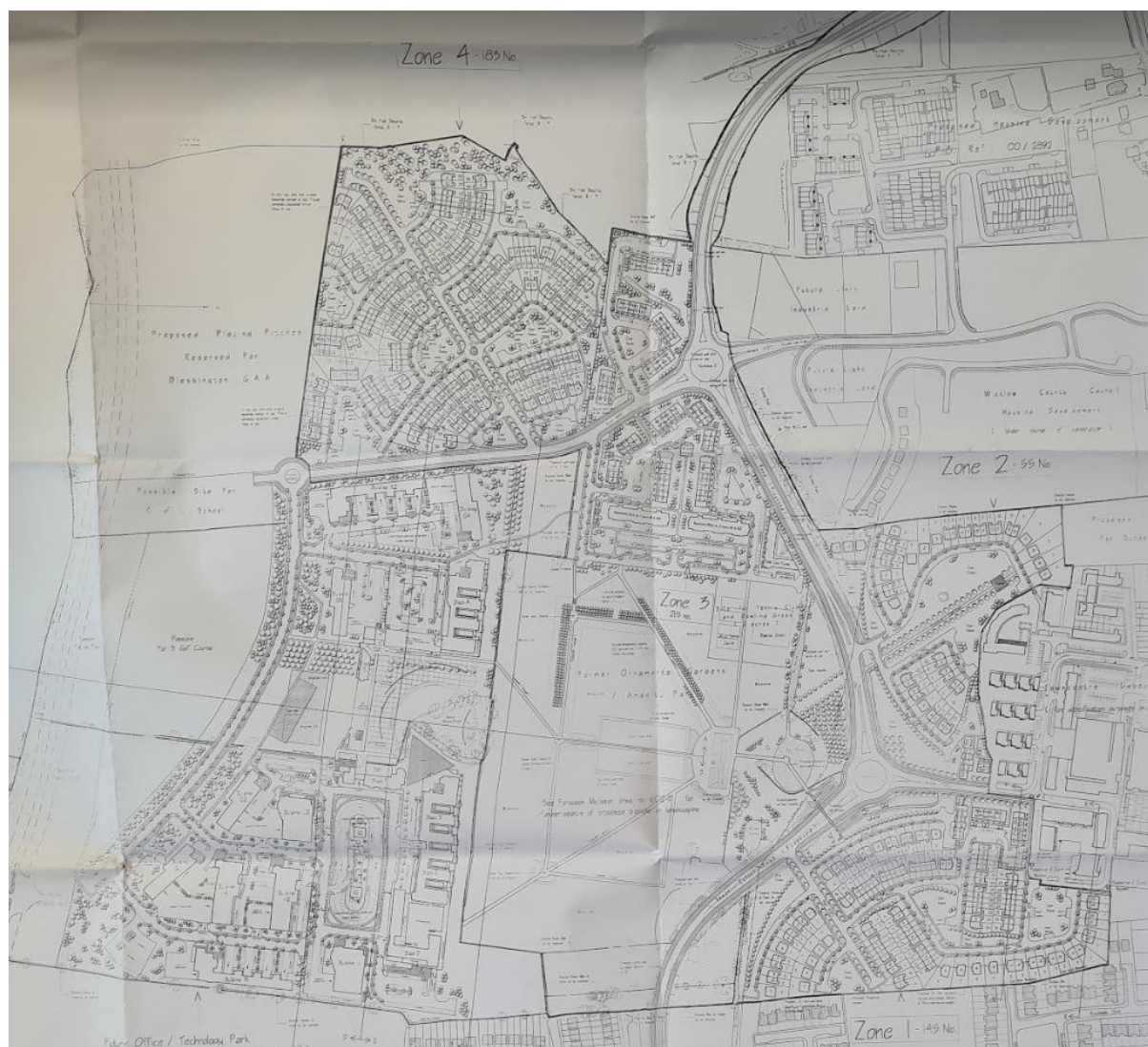


Figure 4-13: landscape Masterplan (Further Information 20/8/ 2001)

Table 4-12: Amendments to PA. Reg. Ref. 00/63

Ref	Status	Summary	Note
00/3687	Parent Grant	13/03/02 598 houses, retail, education and leisure facilities, together with the construction of the inner relief road at Blessington, subject to 39 conditions	Limited files available Partially complete

Ref	Status	Summary	Note
126585	03/09/2012	Extension of time	Expired 07/01/2018
04/1617 ABP 27.20163	Split decision 02/06/05	Amendments to 00/3687 to comprise of 102 dwellings in lieu of 55 dwellings minor amendments to the layout of roads and associated services together with modification of planning conditions 5 & 18, .r.r.00/3687 in relation to phasing & infrastructure. The Board (a) granted permission for amendments to already approved housing development to comprise of 102 number dwellings, (b) refuse permission for modification of planning conditions 5 and 18 Ref.00/3687 in relation to phasing and infrastructure provision.	
05/2282	04/04/05 Grant	Amendments to include 18 no. 2 bedroom apartments (in lieu of 6 no. townhouses and 1 no. apartment) to be located in 3 storey gate building (block 18) provision of additional car parking spaces and ancillary works	
05/2933	12/07/05 Grant	Amendments comprising of alterations to portion of Blessington Inner Relief Road (BIRR) to tie in with existing road in Deerpark Estate including vertical and horizontal realignment of carriageway and construction of pedestrian crossing	
09/781	14/08/09 Grant	Amendments (1) proposed 1.2m high railing along eastern boundary of Downshire Park adjoining Town Centre site and (2) modification of condition number 3 of planning permission ref 00/3687 in relation to the occupancy of certain residential units in zone 1 (and all residential units on Zone 2, Zone 3 and Zone 4 of the overall residential development in line with current Wicklow County Council 'Population & Settlement Strategy' Level 4, Policy SS2, Wicklow County Development Plan 2004 - 2010	

P.A. Reg. Ref: 20/1146

This permission related to Phase 1 of the current development. Planning permission was granted on the 20th October 2021 for a development consisting of:

- 91 houses in a mix of detached, semi-detached and terraced houses to include 20 no. 4-bed and 71 no. 3- bed with associated public open space.
- One access off the Blessington Inner Relief Road and one off the School Link Road.

- A 2.66 ha town park to include: play areas, a wetland and meadow, a woodland, the enhancement of an existing pond and of a stream, a fitness trail and a car park (22 no. spaces),
- A 1,082.27 m greenway with possible future connection to Glen Ding Woods to the north;
- Boundary treatment, public lighting, site drainage works, an ESB substation (c.8.3sqm) and all ancillary site services and development works above and below ground.
- Infrastructure works to include the internal road network and part of the Blessington Inner Relief Road connecting to the Oak Drive Roundabout.
- Temporary permission is also sought for the erection of two marketing signs (4.55 m high and 13.73 sqm each).

The layout is illustrated in the figure below.

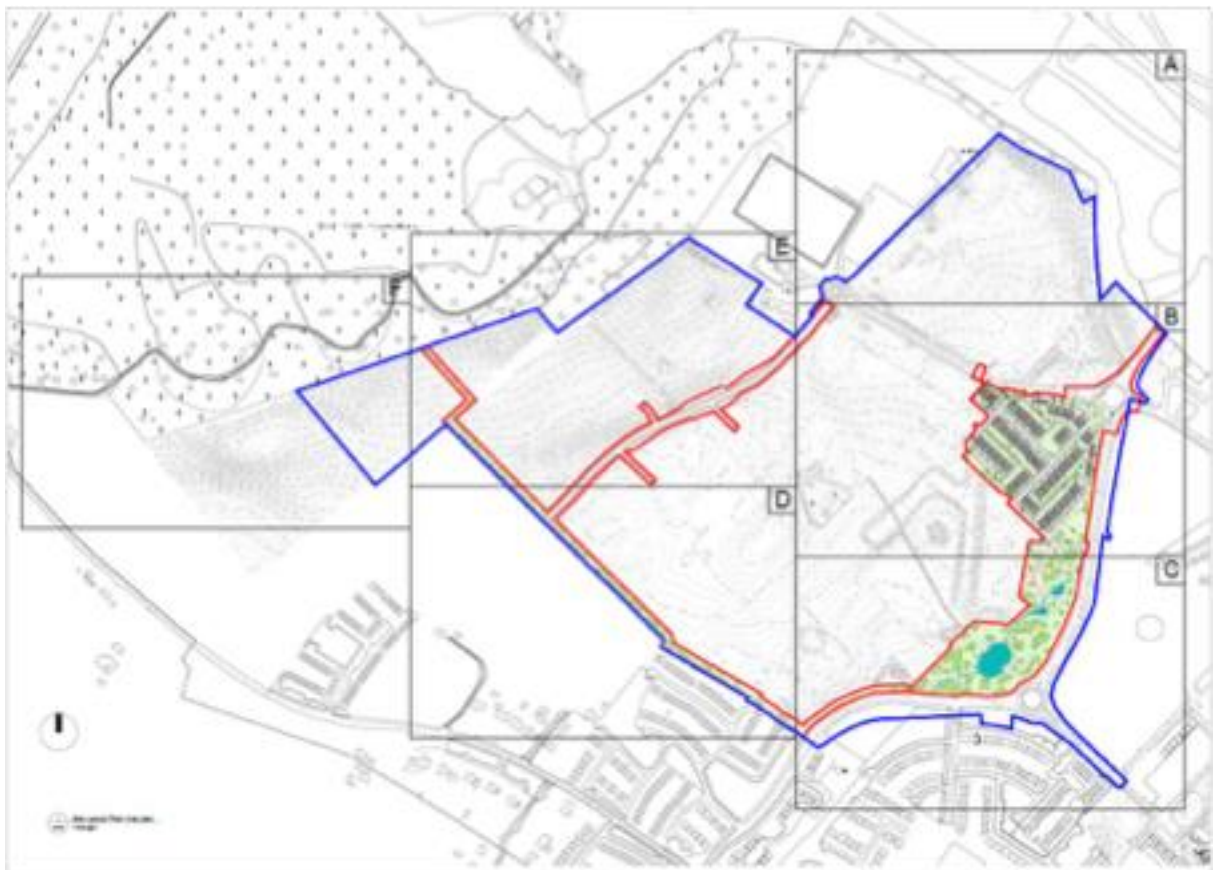


Figure 4-14: Layout of Development permitted in Phase 1

On foot of a further information request, the development was amended to include 94 units and a creche. A total of 25 conditions were appended to the permission.

PA. Reg. Ref. 22/483

This application was lodged 04/05/2022 on the applicant's landholdings. The proposed development comprised:

- A new Town Park totalling 15.36 ha, consisting of play areas, a wetland and meadow, tree planting, landscaping, the enhancement of an existing pond and of a stream, a fitness trail, a large oval sports playing area, a walled garden, footpaths, two car parks with (22 no. spaces and 24 no. spaces), 20 cycle parking spaces;

- 57 no. 2 storey houses in a mix of semi-detached and terraced houses to include 45 no. 3-bed and 12 no. 4-bed units;
- 0.26 ha of associated public open space and play area to serve the housing development;
- Infrastructure works to serve the housing development to include the internal road network and part of the Blessington Inner Relief Road connecting to the Oak Drive Roundabout and a vehicular and pedestrian access off the Blessington Inner Relief Road to serve the southern Town Park car park and access to the north Town Park car park via the access road permitted under P.A. Reg. Ref: 20/1146;
- Boundary treatment, public lighting, site drainage works, 1 no. ESB substation (c. 10.99 sqm) and all ancillary site services and development works above and below ground.
- Temporary permission is also sought for the erection of two marketing signs (4.55 m high and 13.73 sqm each).

The layout is illustrated in the figure below.



Figure 4-15: Layout of Development Proposed in Phase 2 (Source: Mola)

This application was withdrawn by the applicant on 13/10/2022.

PA. Reg. Ref. 22/1191

An amendment planning application for the parent permission P.A. Reg. Ref: 20/1146 was submitted to the Planning Authority on 11th November 2022. The proposed amendments consisted of:

- Repositioning of the creche, increase in size from 304 sqm to 538 sqm, and an increase in the permitted number of associated car parking spaces from 7 to 20;
- The inclusion of an area of active open space within the Town Park and of a new pedestrian link from Oak Drive towards the future phases of the Town Park; and
- Alterations to the site boundaries to include a change in the original site area from 9.56 ha to 11.86 ha. The layout is illustrated in the figure below.

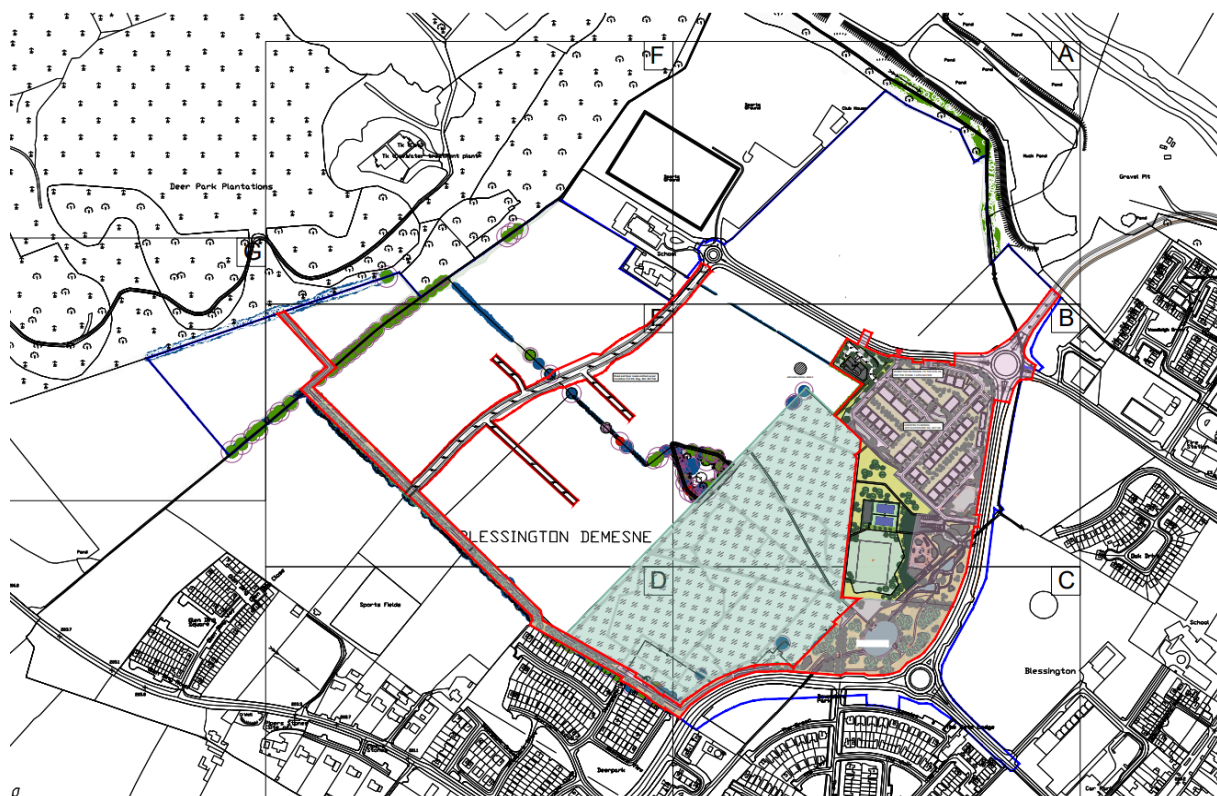


Figure 4-16: PA. Reg Ref 22/1191 Layout of application

The application was granted permission on 12th January 2023. 4 no. conditions were attached to the permission.

4.1.16 Relevant Planning History – Surrounding Site

The following planning history in the surrounding area is of relevance to the subject proposal:

Table 4-13: List of planning history for the surrounding area

Ref	Lodge	Status	Summary	Density	Address	Applicant
20/184 (ABP Ref. PL 27.308578)	25/02/20	Granted by ABP (with revised conditions) 27.01.22	PHASE 1 (2.97 ha) Nursing home, 120 no. bedspaces 77 dwellings	39 units per ha. (overall MP 35 units per ha)	Blessington Demesne	Glenveagh Homes Limited
20/362	12/4/20	Granted 09/10/20	PHASE 2 (3.43 Ha) 96 dwellings	33 per ha	Blessington Demesne	Glenveagh Homes Limited
ABP 306777 SHD	3/3/20	Refused 10/08/20 This was the subject of a High Court case which quashed the refusal	360 no. residential units (11.83ha)	36 units per ha on site area of c. 10. ha	Kilamalum Road, Co.Wicklow /Co.Kildare	Windlynn Ltd

Ref	Lodge	Status	Summary	Density	Address	Applicant
		by An Bord Pleanála				
21/1068	27/08/22	Granted 16/08/22	69 no. Residential units	33 per ha	Kilmalum Road (Burgage More townland), Blessington,Co. Wicklow	Windlynn Limited & Two Mile House Construction Ltd
19/1020 ABP 306425	17/9/19	17/02/21	58 apartments, three blocks, up to 4 storeys (0.56 ha site)	103 per ha	Blessington Demesne (off Main St)	Glengolden Builders Ltd
19/940	26/8/19	Granted 02/04/20	104 no. bed nursing home	N/A	Main St. Downshire Hotel Blessington	Downshire Lodge Nursing Home Ltd & Downshire Place Independent Living Ltd
19/693 (ABP Ref. 306198)	28/6/19	Grant by ABP 12/5/20	56 no. residential units	30 units per ha	Burgage More, Blessington	TD Housing Limited
20/108	5/2/20	Notification to grant- 31/7/20	45 no residential units 24 houses/12 apartments	21.5 per ha	The Rectory, Kilbride Rd, Blessington,	Blessington Rectory SPV Ltd
Part 8	24/11/22	Approved	106 residential units and a creche	33ha per ha	Burgage More, Blessington	Wicklow County Council

4.7 Mitigation Measures

Mitigation measures relating to those factors under which human health effects might occur have been addressed elsewhere in this EIAR, under the environmental factors of traffic and transportation, air quality and climate, noise and vibration, townscape and visual and material assets: utilities.

Avoidance, remedial and mitigation measures describe any corrective or mitigative measures that are either practicable or reasonable, having regard to the potential likely and significant environmental impacts. A CEMP prepared by DBFL on behalf of the applicant Cairn Homes, is included with the LRD application material.

4.7.1 Construction Phase

A range of construction related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics examined and the inter-relationships between each topic. These remedial and mitigation measures are likely to result in any significant and likely adverse environmental impacts on population and during the construction phases being avoided.

In order to protect the amenities enjoyed by nearby residents, premises and employees a Construction Environmental Management Plan (including traffic management) shall be submitted by the contractor and implemented during the construction phase. This will mitigate potential local disturbance or severance to local populations that may arise from construction activity.

With reference to the construction phase of the proposed development, the objective of the Construction Waste Management Plan prepared by Enviroguide is to ensure that waste generated during the proposed construction and operation phases will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 - 2013 are complied with. A Construction and Environmental Management Plan prepared by DBFL also accompanies the LRD planning application to support the management of construction activities within appropriate environmental operational standards. The operational phase is considered to have likely significant positive impacts on human beings in relation to the provision of additional residential units, open space, community facilities, active open space (sports field) childcare provision, to cater for the demands of a growing population in accordance with the residential zoning objectives pertaining to the site.

4.7.2 Operational Phase

During the operational phase of the development the design of the scheme has undergone a Road Safety Audit and has had regard to Design Manual for Urban Roads and Streets (DMURS) during its design. This will promote a pedestrian friendly environment, promoting sustainable development and reducing the influence of cars. This has the potential to reduce accidents within the proposed development.

4.7.3 Human Impacts

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

4.7.3.1 Construction Phase

The proposed development is predominantly residential in character, and it is considered that the greatest health and safety risks will be posed during the construction phase of the proposed development. As with any construction site, there will be potential risks to the health and safety in terms of injury or death of construction personnel on-site due to the usage of large, mobile machinery as well as heavy equipment and materials. An Outline Construction Demolition and Waste Management Plan (CDWMP) has been prepared by Enviroguide. This outline plan will be further updated by the contractor and agreed with Wicklow County Council prior to commencement to any construction works on site.

The construction activities will occur in the context of a green-field site, and there are no existing residents at this location that may be disrupted by these works.

Potential impacts on pedestrians, cyclists and on traffic flow were assessed and the potential impacts were found to be negative, but short term and not significant.

Chapter 8 (Air Quality and Climate) identifies that the greatest potential impact on air quality during the demolition and construction phase of the proposed development is from soil excavation and construction dust emissions and the potential for nuisance dust. The Air Quality Assessment considers the potential likelihood and magnitude of dust generation during demolition, earthworks, construction and movement of heavy vehicles, and concluded that there is a low risk of significant dust soiling or human health impacts occurring as a result of the proposed development. Prior to mitigation the impact to air quality will be negative, short-term and imperceptible.

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. In terms of noise, the threshold or limit values for the site development and construction phases will not be exceeded on the basis of the assessments undertaken in Section 9.5.1. Therefore, the impact of construction of the proposed development with mitigation measures in place is likely to be indirect, short-term, negative and slight with respect to human health.

DBFL will prepare an CEMP which is a preliminary plan outlining the description of the proposed works and how these works will be managed for the duration of the construction on site. The CEMP presents the potential environmental impacts, the proposed management and monitoring methodologies based on the concept of Best Practice and the proposed mitigation measures to be implemented on site, having regard to assessment in this EIAR.

The CEMP will include the following:

- Description of the proposed works;
- Roles and responsibilities as they related to the CEMP;
- Site logistics outlining details on programme and phasing, working hours/periods, and site housekeeping;
- Traffic management;

Environmental impacts and mitigation requirements for the control of the following:

- Surface water quality;
- Waste management;
- Air quality; and
- Noise and vibration.

The plan shall be updated by the contractor and agreed with Wicklow City Council (WCC) by the appointed Contractor in advance of the construction phase.

4.7.3.2 Operational Phase

The proposed development is in line with the site-specific zoning objective and will consist of 329 residential units, park and distributor road (street). Due to the nature of the development, there will be few hazards associated with the operational phase of the development and therefore no potential significant negative impact in terms of health and safety. The potential impacts on cycling and pedestrians will be positive, given the permeable layout, additional open and recreational space included in the development and proximity to local facilities.

A lack of adequate recreation or amenity facilities has the potential to negatively impact human mental and / or physical health. The proposed layout provides for excellent public amenity facilities, including public open space. This will be of benefit to future residents and existing residents in the local environs. The operational phase of the proposed development, in terms of recreation and amenity facilities will, therefore, have a permanent significant **positive impact** on Human Health.

The air quality assessment (Chapter 8) determined that the Operational Phase air quality impact is negligible and therefore no site-specific mitigation measures are required. For the operational phase, the impact to air quality from traffic emissions during the operational stage would be negative, local, long-term and imperceptible.

The Noise Assessment (Chapter 9) considers it is unlikely that individual Noise Sensitive Receptors (NSRs) will be affected at levels exceeding the noise criteria for short term site development and construction activities. Although the limits are not expected to be exceeded based on above predictions in Section 9.5.1.4, mitigation measures to minimise the impact of site development and construction noise on the nearest NSRs and to ensure compliance with construction noise criteria are set out in Section 9.8 - Ameliorative, Remedial and Reductive Measures.

As a result of these measures, it is considered that there will be no significant negative impacts on the health of future site users, and any effects would be negligible.

4.8 Residual Impacts

Following implementation of the mitigation measures outlined in relevant sections of this EIAR, the residual impact on population and human health is considered to be positive moderate long term in delivering the residential population for Blessington consistent to the Council's development objectives in the County Plan, Local Area Plan for the locality.

The proposed mitigation measures will avoid, prevent, or reduce impacts on the human environment during the construction and operational phases of the proposed development. Residual impacts are those which remain following the implementation of the proposed mitigation measures, however no significant adverse residual impacts have been identified.

The land will have a suburban character. However, this change is in context with the specific zoning of the site and for residential / public green space development and the impact is considered acceptable

when balanced with the other positive impacts on amenity, such as the provision of active public amenity spaces, much needed housing in the city regional wide context, employment, and local services.

4.8.1 Do Nothing Scenario

Under a do-nothing scenario the lands would remain in agricultural use. This represents a negative moderate medium to long-term impact for Blessington and north County Wicklow arising from the loss of population and material assets due to the increase in the housing stock and social infrastructure that would be available in the area. In terms of Human Health, a do-nothing scenario is considered slight negative impact in the medium term as the recreation and community facilities associated with the development would not be delivered for the population.

4.9 Monitoring

Measures to avoid negative impacts on Population and Human Health have been integrated into the design and layout of the proposed development. Compliance with the proposed design and layout in accordance with the terms and conditions of a permission will be a condition of any permitted development. Monitoring will be undertaken by the Building Regulations certification process and by the requirements of specific conditions of a planning permission. Monitoring of compliance with Waste and Environmental controls requirements will be in accordance with the CEMP and CDWMP.

Table 4-14 Summary of Impacts

Nature of Effect	Impact	Mitigation	Monitoring
Residential population growth	Positive long-term impact on population	Proximity to local facilities, service and infrastructure	Housing completion statistics and Census, safety data, etc.
Local amenity	Demand for Community and Recreation facilities	Parkland provided as part of Scheme. New distributor road/street provided in scheme	Compliance with planning permission and development phasing
Social Infrastructure	Demand for Community and Recreation facilities	Provision of creche (earlier phase) and proximity to local schools	Creche and school enrolment
Environmental Impacts during construction process	Possible short term impacts due to disturbance	Compliance with CEMP and CDWMP	CEMP / CDWMP will be responsibility of construction personnel in liaison with local authority and statutory bodies

Monitoring measures for all Chapters are summarised in Chapter 17 Summary of Mitigation and Monitoring.

4.10 Difficulties Encountered

There were no significant difficulties encountered in compiling the information contained in the Population and Human Health Chapter. While Census 2022 data is available, it does not include a

comprehensive breakdown of population at ED level and therefore the profile of the population is reliant on dated census data (2016). In addition, the 2022 data pertaining to health has not yet been released. It is not anticipated that any future revision of figures/data would result in a significant impact upon the findings of this assessment or the conclusions reached.

4.11 References

- EPA Guidelines on information to be contained in Environmental Impact Statements (2022) (EPA, 2022)
- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017)
- Health in Environmental Impact Assessment – A Primer for a Proportionate Approach (2017) Institute of Environmental Management and Assessment (IEMA)
- Health Impact Assessment Guidance (2021) Institute of Public Health in Ireland;
- Central Statistics Office (CSO) Census of Population, including Census 2016 and Census 2022.
- Pobal Maps
- Geodirectory data sourced from www.myplan.ie
- Ordnance Survey of Ireland aerial photography
- Planning search of recently submitted and granted planning applications for development in the area
- Tusla
- Department of Education

5. BIODIVERSITY

5.1 Introduction

This Chapter of the EIAR was prepared by Altamar Ltd and assesses the biodiversity of the proposed project area and the potential impacts of the proposed Project on the ecology of the surrounding area within the potential Zone of Influence (ZOI). The proposed residential development (referred to as 'the proposed Project'), is located within the townlands of Blessington Demesne, Newpaddocks and Santryhill, Blessington, Co. Wicklow.

This Chapter also outlines, the potential impact of the proposed development (in the absence of mitigation), the standard construction, operational and monitoring measures that are proposed to minimise potential impacts and to improve the biodiversity potential of the Site of the proposed Project. The residual impacts (post mitigation) and cumulative impacts are also assessed.

Desk studies were carried out to obtain relevant existing biodiversity information within the Zone of Influence (ZOI). As outlined in CIEEM (2018) The 'zone of influence' for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries.' Best Practice In line with best practice guidance an initial zone of influence be set at a radius of 2km for non-linear projects (IEA, 1995). However, there is a watercourse within the proposed development site and it is proposed to carry out instream works and reprofiling works in the vicinity of the watercourse. As a result, the potential ZOI extends beyond the site, with the potential for downstream impacts to extend the ZOI beyond the site outline via the watercourse and surface water drainage networks respectively. In relation to the ZOI as a result of the works, this was extended to include designated conservation sites within Poulaphouca Reservoir. Details of the proposed development are seen in Chapter 2 of the report. The proposed layout, drainage strategy and landscape design were reviewed to inform this assessment. Further, the EIAR was reviewed including, the Development Description, Land and Soils (Chapter 6), Water (Chapter 7), and the Air and Climate (Chapter 8) of the EIAR. The assessment extends beyond the immediate proposed Project Site to include those species and habitats that are likely to be impacted upon by the proposed Project.

The programme of work in relation to biodiversity aspects of the EIAR have been designed to identify and describe the existing ecology of the area and detail sites, habitats or species of conservation interest. It also assesses the significance of the likely impacts of the proposed Project on the biodiversity elements and outlines measures to alleviate identified impacts. The residual impacts (post mitigation) and cumulative impacts are also assessed. A bat assessment report has also been prepared and included at Appendix 5A. A wintering bird assessment was carried out by Hugh Delaney and is seen in Appendix 5B.

5.1.1 Expertise

Altamar Ltd. is an established environmental consultancy that is based in Greystones and has been in operating in Ireland since 2001. This chapter of the EIAR has been prepared by Bryan Deegan of Altamar Limited. Bryan Deegan MCIEEM is the Managing Director of Altamar Ltd. and holds a M.Sc. Environmental Science, BSc (Hons.) in Applied Marine Biology and a National Diploma in Applied Aquatic Science. He has over 28 years' experience as an environmental consultant in Ireland and was

the lead ecologist for this project. Hugh Delaney, a freelance ecologist (Birds primarily) with an experienced background in bird surveying on numerous sites with ecological consultancies over 10+ years. Hugh, a lifelong birder, is local to the Dun Laoghaire-Rathdown area in Dublin and is especially familiar with the bird life and its ecology in the environs going back over 30 years. Emma Peters holds a BSc in Environmental Science and has 6 years ecological experience. She is trained in habitat restoration with a focus to increase biodiversity. She is also an active CIEEM and bat conservation Ireland member.

Previous projects where Altamar were the lead project ecologists include the Lidl Ireland GmbH regional distribution centres in Newbridge and Mullingar, 18 airside projects for the Dublin Airport Authority (DAA) at Dublin Airport and 7 fibre optic cable landfalls in Ireland including the New York to Killala cable project in 2015. He is a competent expert in accordance with the EIA Directive 2014/52/EU.

5.2 Assessment Methodology

A Natura Impact Statement (NIS), in accordance with the requirements of Article 6(3) of the EU Habitats Directive, has been produced by Altamar Limited. It was determined that:

'Following the implementation of the mitigation measures outlined, the construction and operation of this development would not be deemed to have a significant adverse effects on the integrity of European sites. No significant impacts are likely on European sites, alone in combination with other plans and projects based on the implementation of standard construction phase mitigation measures.'

This report presents an Appropriate Assessment Screening and NIS for the proposed development. It outlines the information required for the competent authority to screen for appropriate assessment and to determine whether or not the proposed development, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the sites' conservation objectives, will adversely affect the integrity of the European site.'

5.2.1 Desktop Research – Principal Data Sources

A pre-survey data search (desktop study) was carried out in January 202 and updated in August 2023. This included examining records and data from the National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC), and Environmental Protection Agency (EPA); in addition to aerial, 6-inch maps and satellite imagery.

5.2.2 Monitoring, Surveys etc

Field surveys were carried out based on the schedule of fieldwork elements outlined in Table 5.1. The assessment was carried out in accordance with the following best practice methodology: EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022), Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (EC, 2013), EU EIAR Guidance and Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland (CIEEM, 2018). The site was surveyed in accordance with the Heritage Council's Best Practice Guidance for Habitat Survey and Mapping (Habitats were identified in accordance with Fossitt's Guide to Habitats in Ireland (Fossitt, 2000). The surveys were carried out in the appropriate survey seasons for mammals, wintering birds, flora and bats. There are no limitations in relation to the surveys carried out for the proposed development.

5.2.3 Site Visits

Table 5-1 : Fieldwork Dates

Survey	Dates
Habitat and Flora Assessment	7 th September 2020, 3 rd April 2022, 9 th September 2022, 16 th April 2023 and 15 th August 2023,
Terrestrial Mammal	3 rd April 2022, 16 th April 2023
Bat Assessment	10 th August 2020, 7 th September 2020, 16 th August 2023.
Wintering bird Assessment	November 15 th 2021, November 27 th 2021, December 13 th 2021, December 28 th 2021, January 5 th 2022, January 30 th 2022, February 12 th 2022, February 20 th 2022, March 7 th 2022 & March 25 th , 2022.

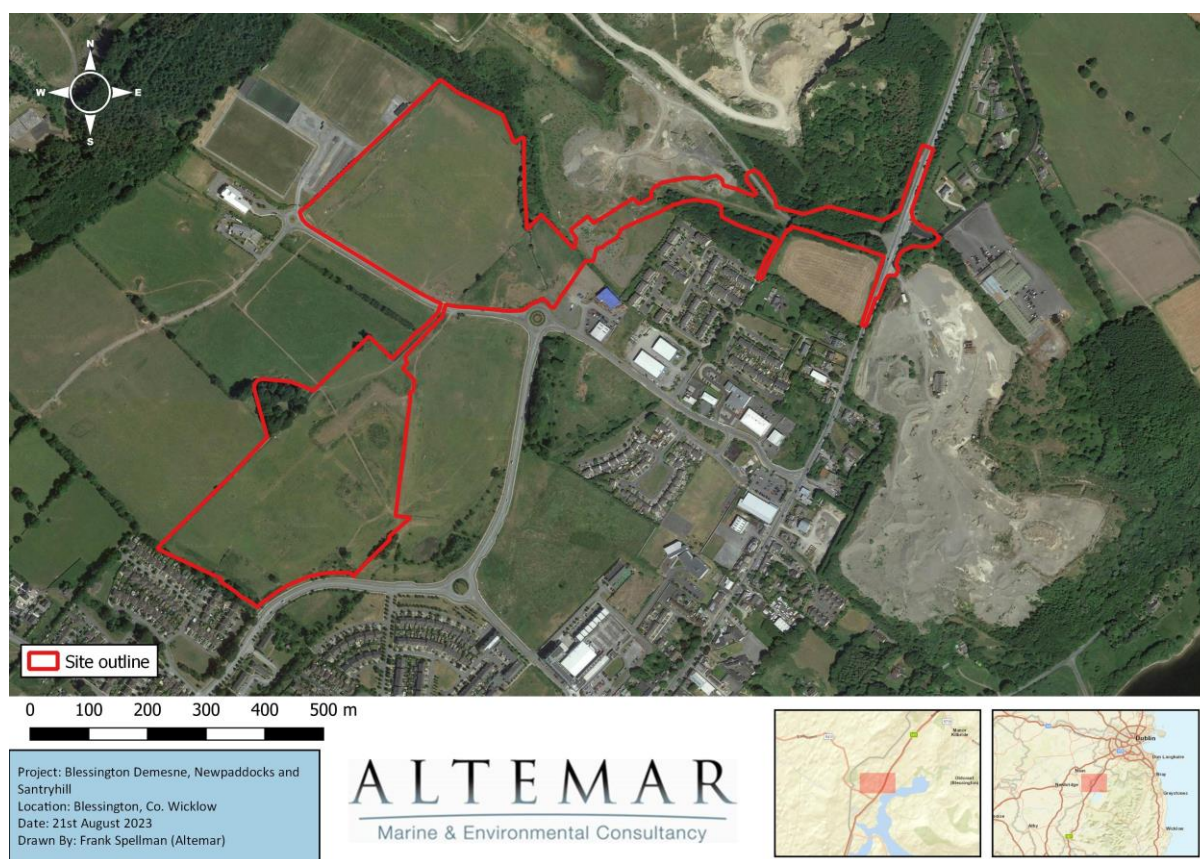


Figure 5-1: Satellite Image of the Site of the Proposed Project

5.2.4 Definition of Study area

The study area (as defined by the red line) is within the townlands of Blessington Demesne, Newpaddocks and Santryhill, Blessington, Co. Wicklow. The Deepark Stream (designated as Liffey_040 in WFD data) flows through the site and ultimately discharges to the Poulaphouca Reservoir. The subject site includes a portion of Dillonsdown Quarry to the north, Roadstone Blessington to the east, the town of Blessington to the south and Blessington GAA grounds and agricultural fields to the west.

5.2.5 Consultation

Consultation was carried out with the project team in relation to the proposed project. Rare and protected species data was acquired from the National Parks and Wildlife Service (NPWS) and the National Biodiversity Data Centre.

5.3 Characteristics of the Proposed Development

Cairn Homes Properties Limited intend to apply for permission for a Large-Scale Residential Development at this site c. 25.14 ha on lands within the townlands of Blessington Demesne, Newpaddocks and Santryhill, Blessington, Co. Wicklow. The proposed development will consist of:

- 329 residential units including:
 - 270 two storey houses (28 no. 2-bed, 218 no. 3-bed, 24 no. 4 bed.) comprising of semi-detached and terraced units
 - 47 no. apartments (22 no. 1 bed, 25 no. 2 bed) provided within 1 no. four-storey block.
 - 12 no. duplex units within 1 no. three-storey blocks (6 no. 2 bed and 6 no. 3 bed units).
- Car and bicycle parking spaces to include:
 - 540 no. car parking spaces for the houses, 47 no. spaces for the apartments with 3 accessible parking spaces and 18 no. spaces for the duplex units with 2 accessible parking spaces.
 - 32 bicycle spaces for the duplex units and 81 spaces for the apartments.
- 10.65 ha Town Park;
- 0.74 ha public open space including pocket parks and playgrounds;
- 0.038 ha of communal open space (284sqm at Apartments, 96sqm at Duplex units);
- Two new vehicular access off Oak Drive and one new vehicular access off the Blessington Inner Relief Road
- infrastructure works to serve the housing development to include the internal road network;
- ESB substations/switchrooms, lighting, site drainage works and all ancillary site services and development works above and below ground; and
- temporary permission is also sought for the erection of 3 marketing signs and marketing suite.

The development will also include:

- The extension of the Blessington Inner Relief Road (approx. 700m long) from the existing 4-arm roundabout at Blessington Demesne Lands, running north west of Blessington Business Park, and north of the Woodleigh residential area to a new four-arm roundabout junction on the N81 Dublin Road. The new roundabout will consolidate existing junctions with Hollyvalley, Doran's Pit and the Roadstone quarry site.
- A new junction will be provided to the Roadstone Quarry Access Road north of the road's alignment.
- The scheme will comprise a two-lane single carriageway road with cycle lanes and footpaths, landscaping and drainage works (including attenuation ponds & Sustainable Urban Drainage Systems (SUDS)); road signage and all ancillary site services and development works above and below ground.

5.4 Baseline Description

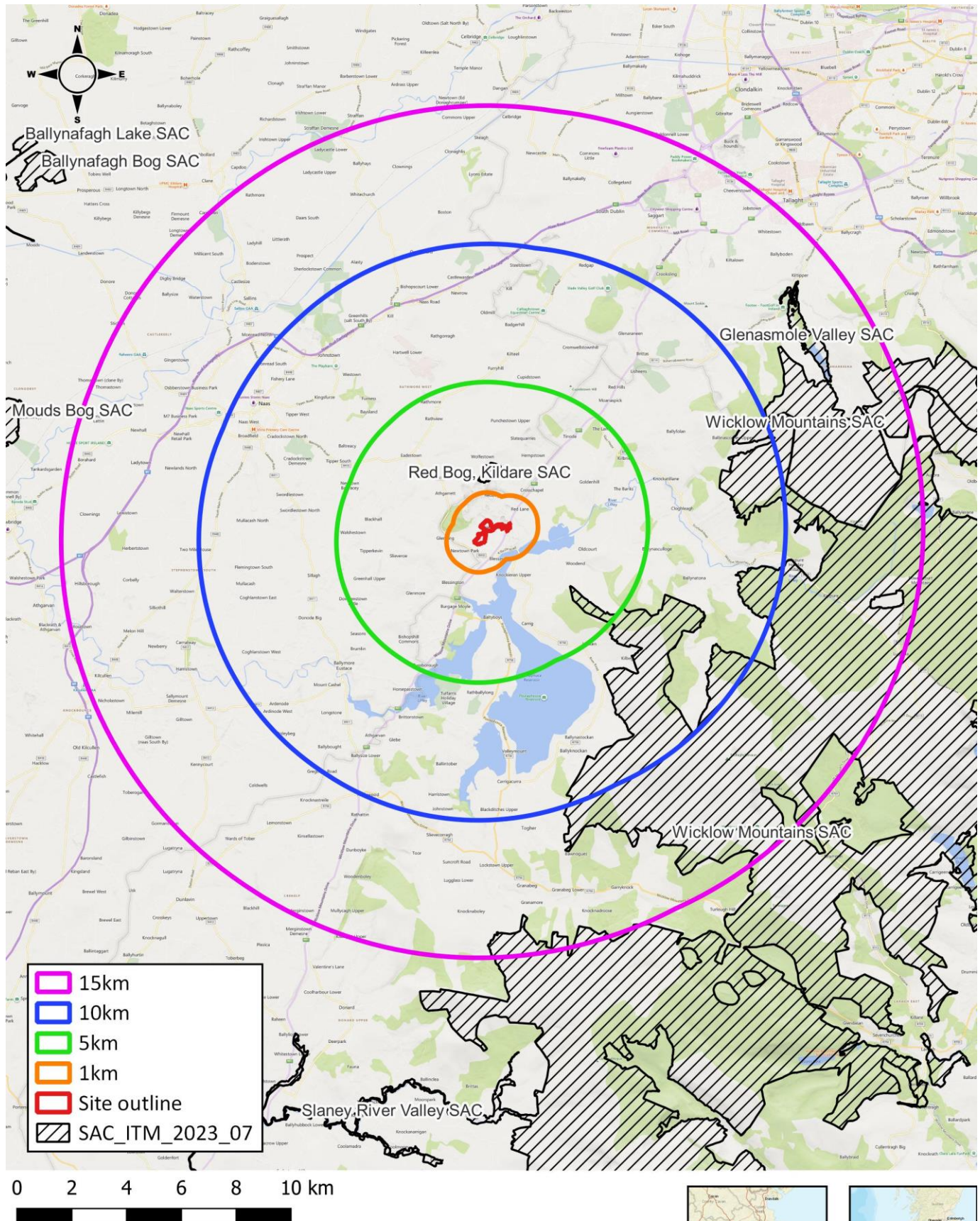
5.4.1 Designated Conservation Sites

Designated sites are presented in Figures 5.2 (SAC within 15 km), 5.3 (SPA within 15 km), 5.4 (NHA and pNHA within 15 km), 5.5 (watercourses in proximity to the Site), 5.6 (watercourses and SAC within 1 km), 5.7 (watercourses and SPA within 1 km) and 5.8 (watercourses and pNHA within 1 km).

It should be noted that the Site of the proposed Project is not wholly or partly within a designated conservation site. The closest European site is Poulaphouca Reservoir SPA, which is 0.7 km from the proposed Project. The nearest SAC is Red Bog, Kildare SAC, which is located 1.3 km from the Site. There are no designated NHA within a 15 km radius; however, the nearest pNHA (Poulaphouca Reservoir pNHA) is 0.6 km from the Site. There are no designated Ramsar sites within a 15 km radius of the proposed development. The distance and details of the conservation sites within 15 km of the proposed Project are presented in Table 5.2. There is a direct hydrological pathway from the proposed Project to the Poulaphouca Reservoir SPA & pNHA via surface water runoff and instream works. Surface water runoff will ultimately outfall to the Deerpark Stream (designated as Liffey_040 in WFD data), a watercourse that flows through the subject site and ultimately discharges to the Poulaphouca Reservoir.

Table 5-2: Distances to Designated Conservation Sites within 15 km

European Site	Distance	Direct Hydrological / Biodiversity Connection
<i>Special Areas of Conservation</i>		
Red Bog, Kildare SAC	1.3 km	No
Wicklow Mountains SAC	3 km	No
Glenasmole Valley SAC	12.3 km	No
<i>Special Protection Areas</i>		
Poulaphouca Reservoir SPA	0.7 km	Yes (hydrological)
Wicklow Mountains SPA	6.1 km	No
<i>NHA/pNHA/Ramsar</i>		
Poulaphouca Reservoir pNHA	0.6 km	Yes (hydrological)
Red Bog, Kildare pNHA	1.3 km	No
Kilteel Wood pNHA	6.1 km	No
Liffey Valley Meander Belt pNHA	6.7 km	No
Slade Of Saggart And Crooksling Glen pNHA	7.8 km	No
Newtown Marshes pNHA	9.1 km	No
Grand Canal pNHA	9.4 km	No
Liffey at Osbertstown pNHA	11.9 km	No
Hollywood Glen pNHA	12.1 km	No
Glenasmole Valley pNHA	12.3 km	No
Lugmore Glen pNHA	12.3 km	No
Ballinagee Wood pNHA	13.7 km	No
Liffey Bank Above Athgarvan pNHA	15 km	No

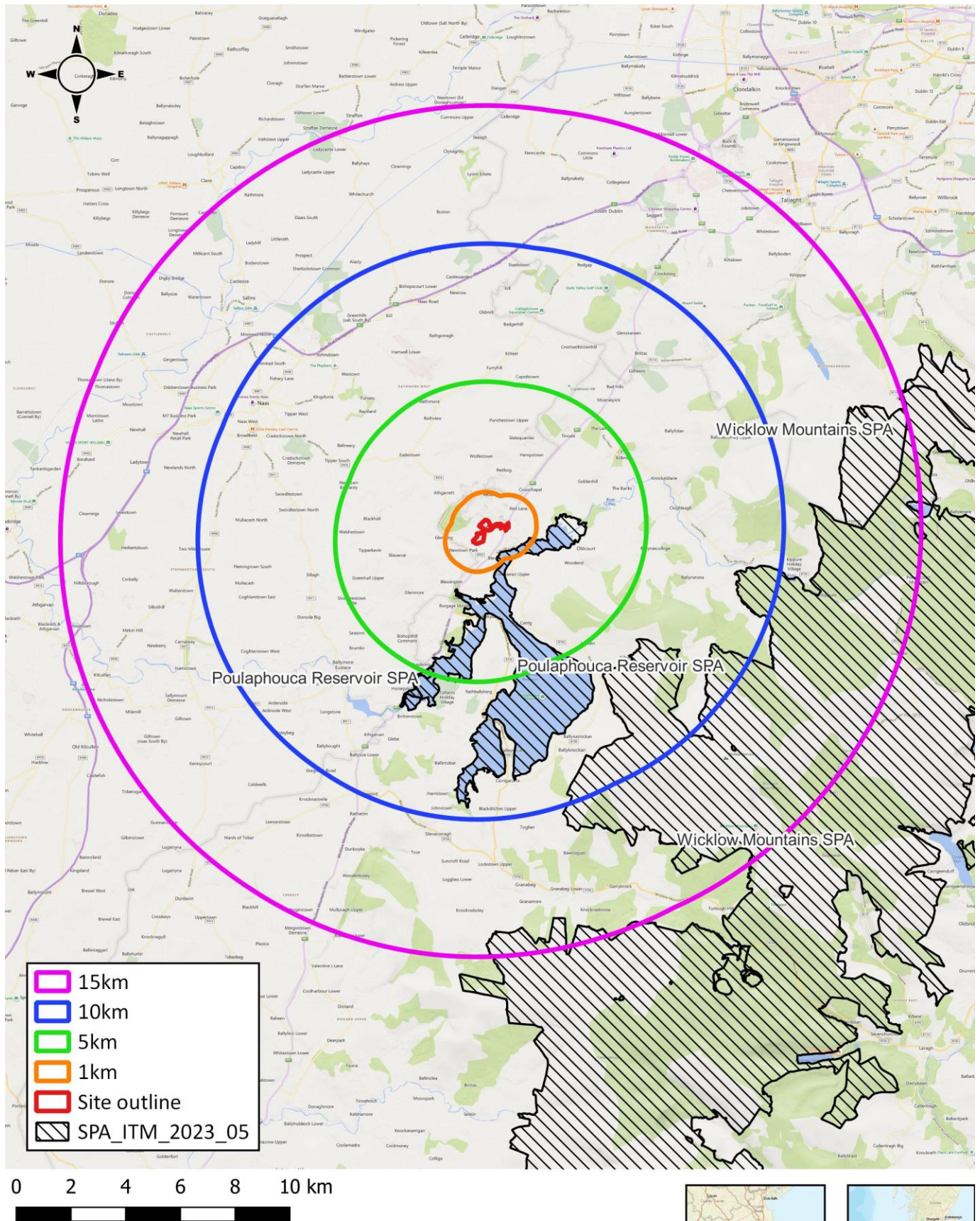


Project: Blessington Demesne,
Newpaddocks and Santryhill
Location: Blessington, Co. Wicklow
Date: 15th August 2023
Drawn By: Frank Spellman (Altamar)

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Figure 5-2: SACs within 15km of the proposed development



Project: Blessington Demesne,
Newpaddocks and Santryhill
Location: Blessington, Co. Wicklow
Date: 15th August 2023
Drawn By: Frank Spellman (Altamar)

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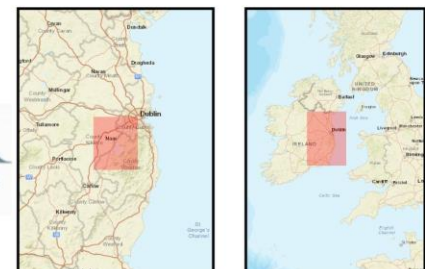
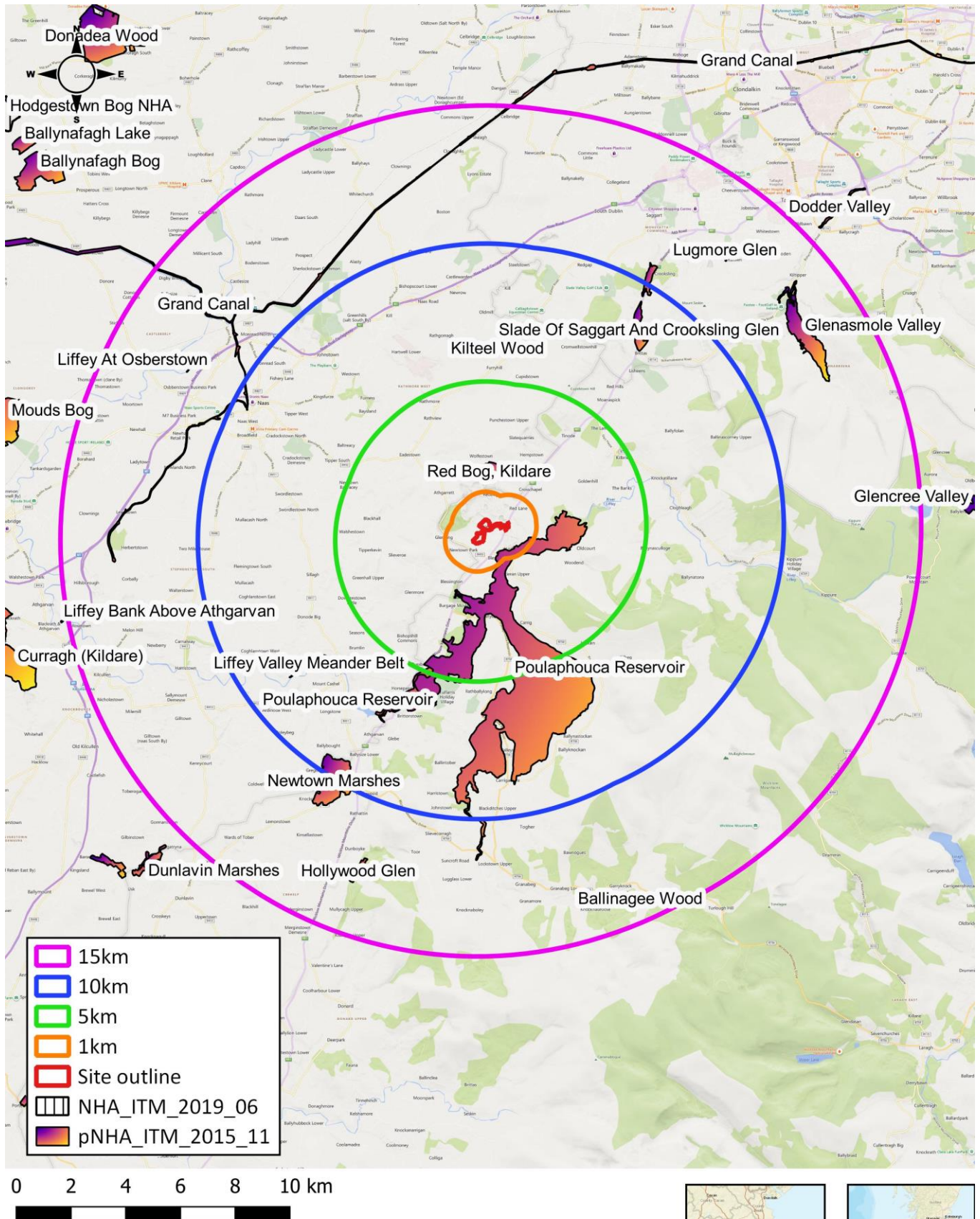


Figure 5-3: SPAs within 15km of the proposed development



Project: Blessington Demeane,
Newpaddocks and Santryhill
Location: Blessington, Co. Wicklow
Date: 15th August 2023
Drawn By: Frank Spellman (Altamar)

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Figure 5-4: NHAs and pNHAs within 15km of the proposed develop

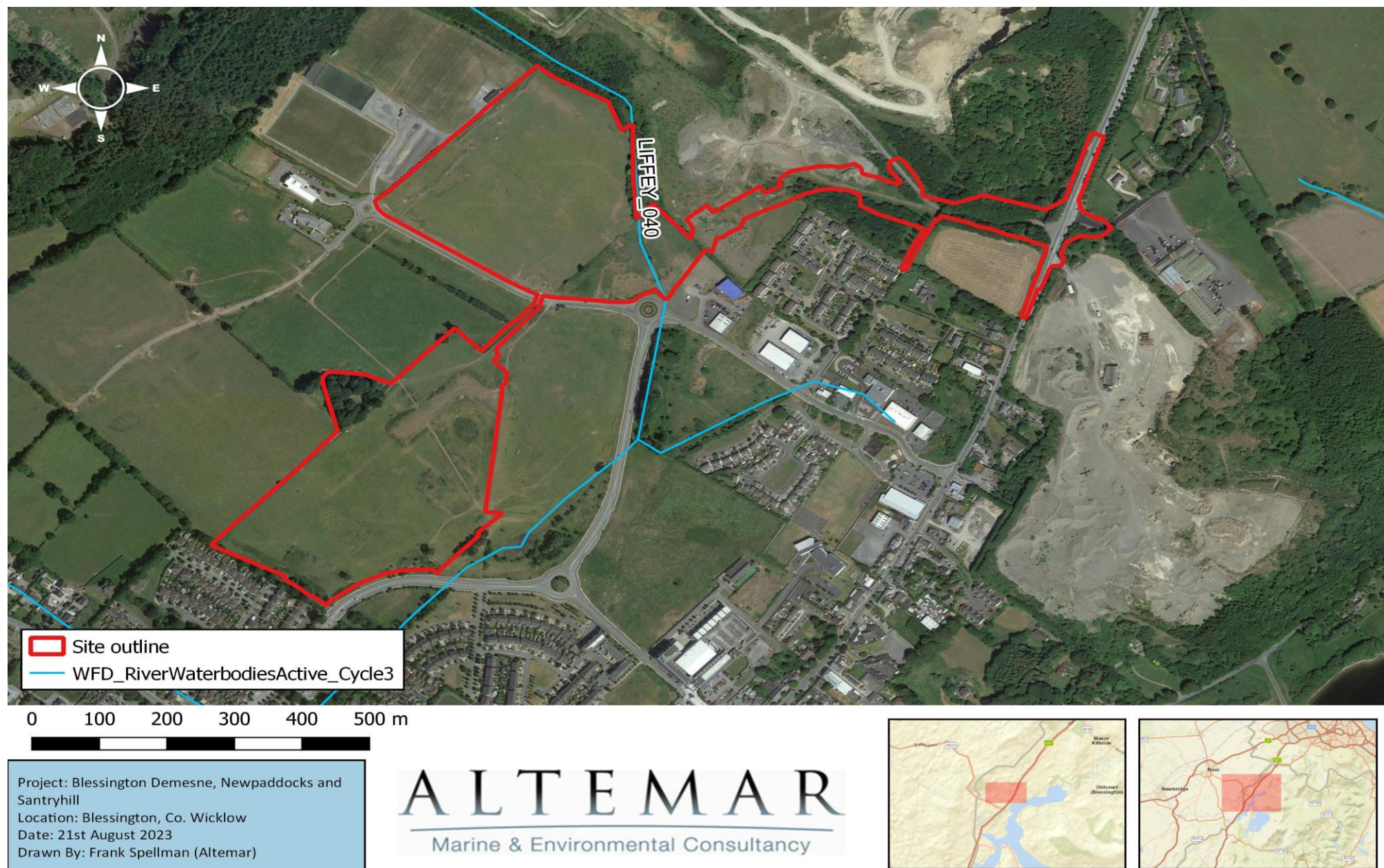


Figure 5-5: Waterbodies and Sources Proximate to the Proposed Development

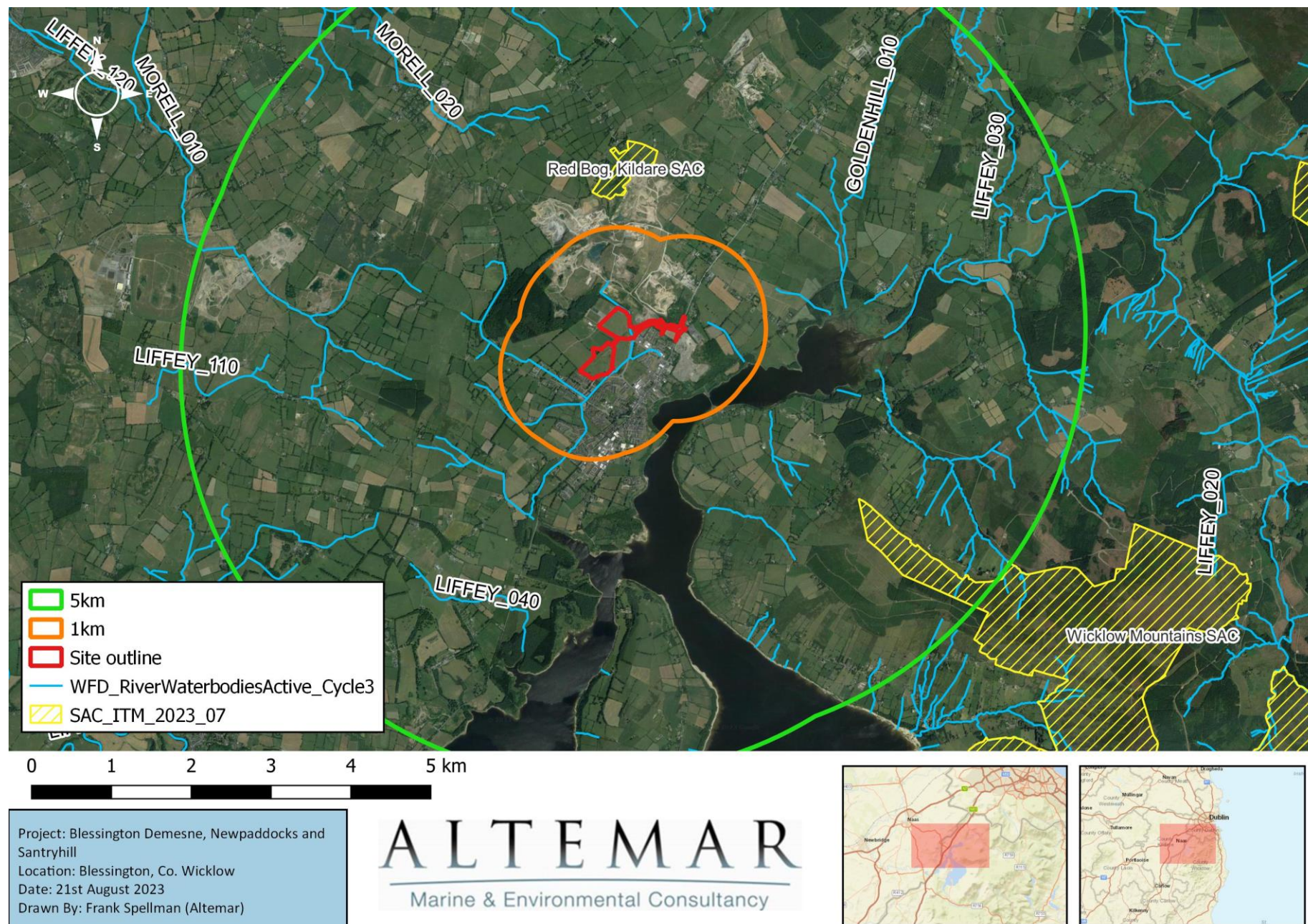
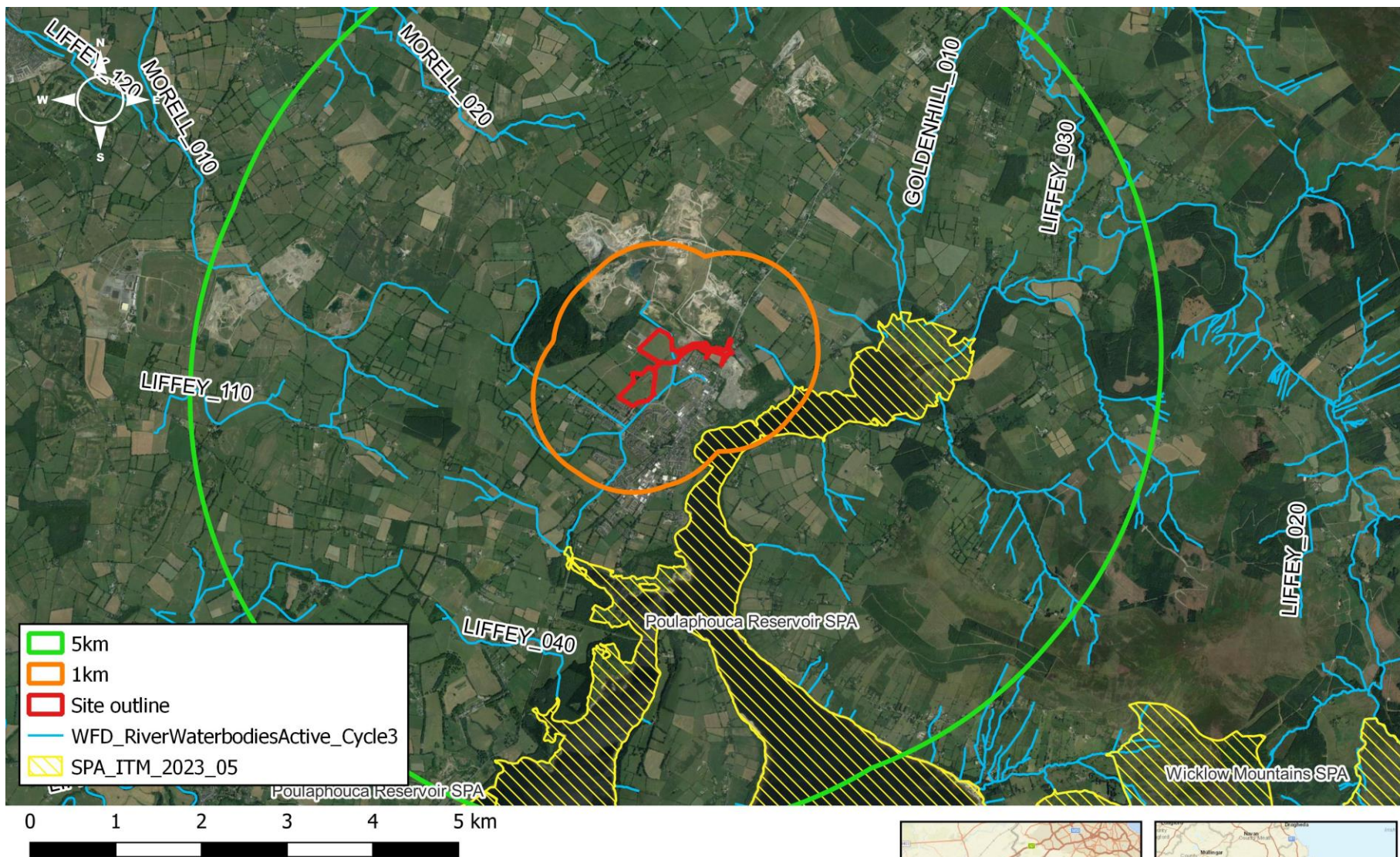


Figure 5-6: Waterbodies and SACs Proximate to the Proposed Development



Project: Blessington Demesne, Newpaddocks and Santryhill
 Location: Blessington, Co. Wicklow
 Date: 21st August 2023
 Drawn By: Frank Spellman (Altamar)

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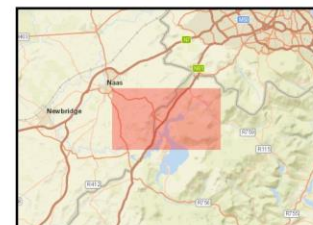


Figure 5-7: Waterbodies and SPAs Proximate to the Proposed Development

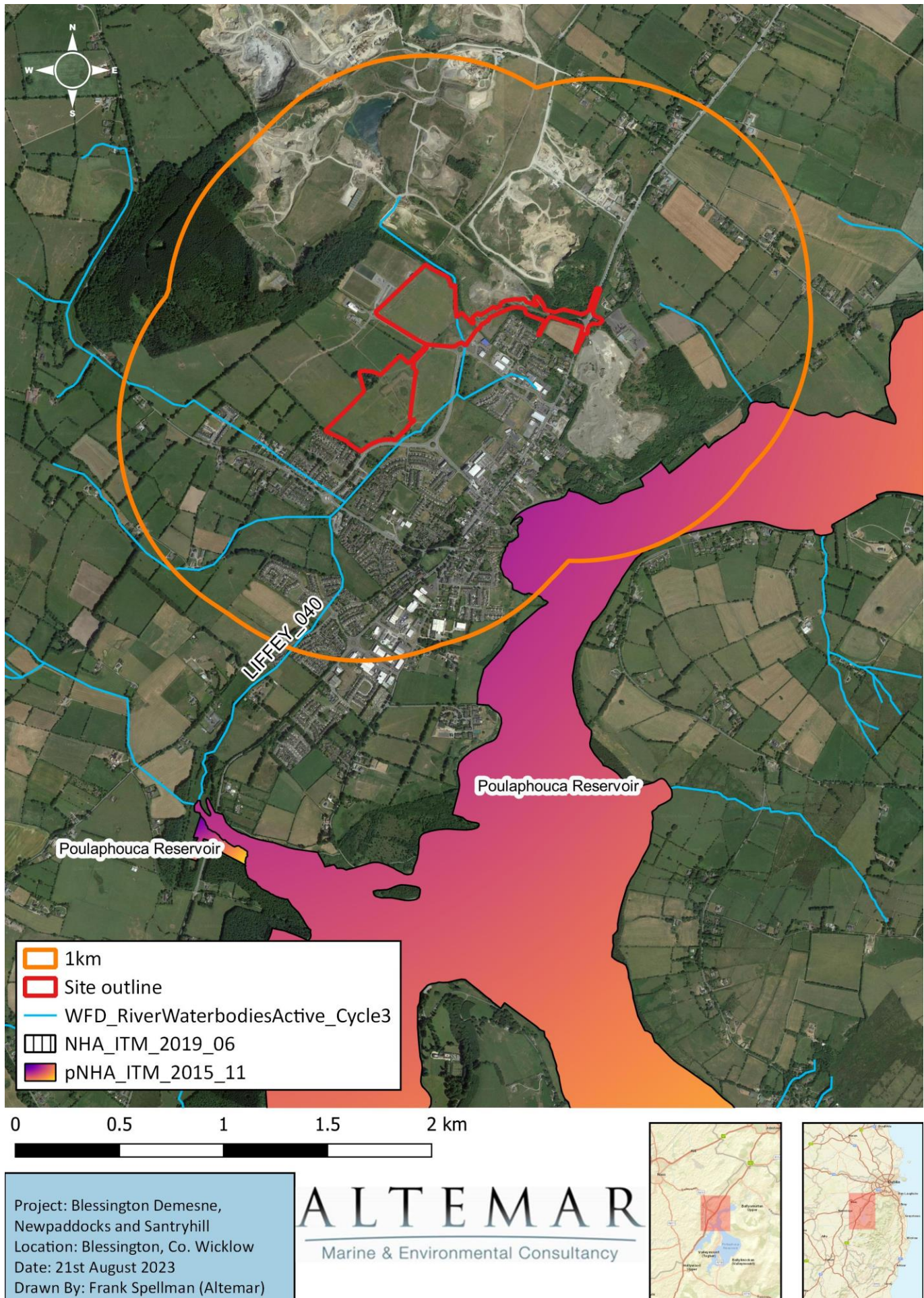


Figure 5-8: Waterbodies and pNHAs Proximate to the Proposed Development

5.5 Baseline Records

The NBDC's online viewer was consulted in order to determine the extent of biodiversity and species of interest in the area. An assessment of the Site-specific area was carried out and it recorded no species of interest. Two 2 km² grids that encompass the proposed development site were assessed (N91S & N91X) as the proposed development site is located in both grids. Table 5.3 provides a list of all species recorded in the 2 km² grid area.

Table 5-3 NBDC Records of Rare, Protected and Invasive Species within the 2 km² grids (N91S & N91X)

Species Recorded (N91S)	Species Recorded (N91X)
<i>Andrena (Andrena) fucata</i>	Barn Swallow (<i>Hirundo rustica</i>)
<i>Andrena (Leucandrena) barbilabris</i>	Black-headed Gull (<i>Larus ridibundus</i>)
<i>Barn Swallow (Hirundo rustica)</i>	Brown Rat (<i>Rattus norvegicus</i>)
<i>Cherry Laurel (Prunus laurocerasus)</i>	Common Goldeneye (<i>Bucephala clangula</i>)
<i>Common Frog (Rana temporaria)</i>	Common Grasshopper Warbler (<i>Locustella naevia</i>)
<i>Common Kestrel (Falco tinnunculus)</i>	Common Kestrel (<i>Falco tinnunculus</i>)
<i>Common Starling (Sturnus vulgaris)</i>	Common Lizard (<i>Zootoca vivipara</i>)
<i>Common Wood Pigeon (Columba palumbus)</i>	Common Pheasant (<i>Phasianus colchicus</i>)
<i>Dingy Skipper (Erynnis tages)</i>	Common Snipe (<i>Gallinago gallinago</i>)
<i>Douglas Fir (Pseudotsuga menziesii)</i>	Common Starling (<i>Sturnus vulgaris</i>)
<i>Eastern Grey Squirrel (Sciurus carolinensis)</i>	Common Swift (<i>Apus apus</i>)
<i>Eurasian Badger (Meles meles)</i>	Common Wood Pigeon (<i>Columba palumbus</i>)
<i>Eurasian Red Squirrel (Sciurus vulgaris)</i>	Daubenton's Bat (<i>Myotis daubentonii</i>)
<i>Feral Ferret (Mustela furo)</i>	Eastern Grey Squirrel (<i>Sciurus carolinensis</i>)
<i>House Sparrow (Passer domesticus)</i>	Eurasian Badger (<i>Meles meles</i>)
<i>Japanese Knotweed (Fallopia japonica)</i>	Eurasian Curlew (<i>Numenius arquata</i>)
<i>Mallard (Anas platyrhynchos)</i>	European Rabbit (<i>Oryctolagus cuniculus</i>)
<i>Nomada panzeri</i>	Great Cormorant (<i>Phalacrocorax carbo</i>)
<i>Pine Marten (Martes martes)</i>	Greater White-fronted Goose (<i>Anser albifrons</i>)
<i>Pipistrelle (Pipistrellus pipistrellus sensu lato)</i>	Greylag Goose (<i>Anser anser</i>)
<i>Red Deer (Cervus elaphus)</i>	House Martin (<i>Delichon urbicum</i>)
<i>Sand Martin (Riparia riparia)</i>	House Sparrow (<i>Passer domesticus</i>)
<i>Sycamore (Acer pseudoplatanus)</i>	Large Red Tailed Bumble Bee (<i>Bombus (Melanobombus) lapidarius</i>)
<i>West European Hedgehog (Erinaceus europaeus)</i>	Lesser Black-backed Gull (<i>Larus fuscus</i>)
<i>Yellowhammer (Emberiza citrinella)</i>	Lesser Noctule (<i>Nyctalus leisleri</i>)
	Mallard (<i>Anas platyrhynchos</i>)
	Northern Lapwing (<i>Vanellus vanellus</i>)
	Pipistrelle (<i>Pipistrellus pipistrellus sensu lato</i>)
	Red-footed Falcon (<i>Falco vespertinus</i>)
	Rock Pigeon (<i>Columba livia</i>)
	Sand Martin (<i>Riparia riparia</i>)
	Scarce Blue-tailed Damselfly (<i>Ischnura pumilio</i>)
	Sky Lark (<i>Alauda arvensis</i>)
	Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)
	Water Rail (<i>Rallus aquaticus</i>)

<i>West European Hedgehog (Erinaceus europaeus)</i> <i>Whooper Swan (Cygnus cygnus)</i>
--

An assessment of files received from the NPWS (Code No. 2022_120), which contain records of rare and protected species and grid references for sightings of these species, was carried out. Common Frog (*Rana temporaria*) was recorded proximate to the site boundary in 2010. No other species of conservation importance were noted at high resolution within 1 km² based on NPWS records. However, it should be noted that the Poulaphouca Reservoir SPA (0.7 km) & pNHA (0.6 km) is proximate to the proposed development.

5.6 Site Survey

Habitat and flora assessments

Habitat and flora assessments were carried out and the habitats within the proposed development site were classified according to Fossitt (2000) (Figure 5.9).

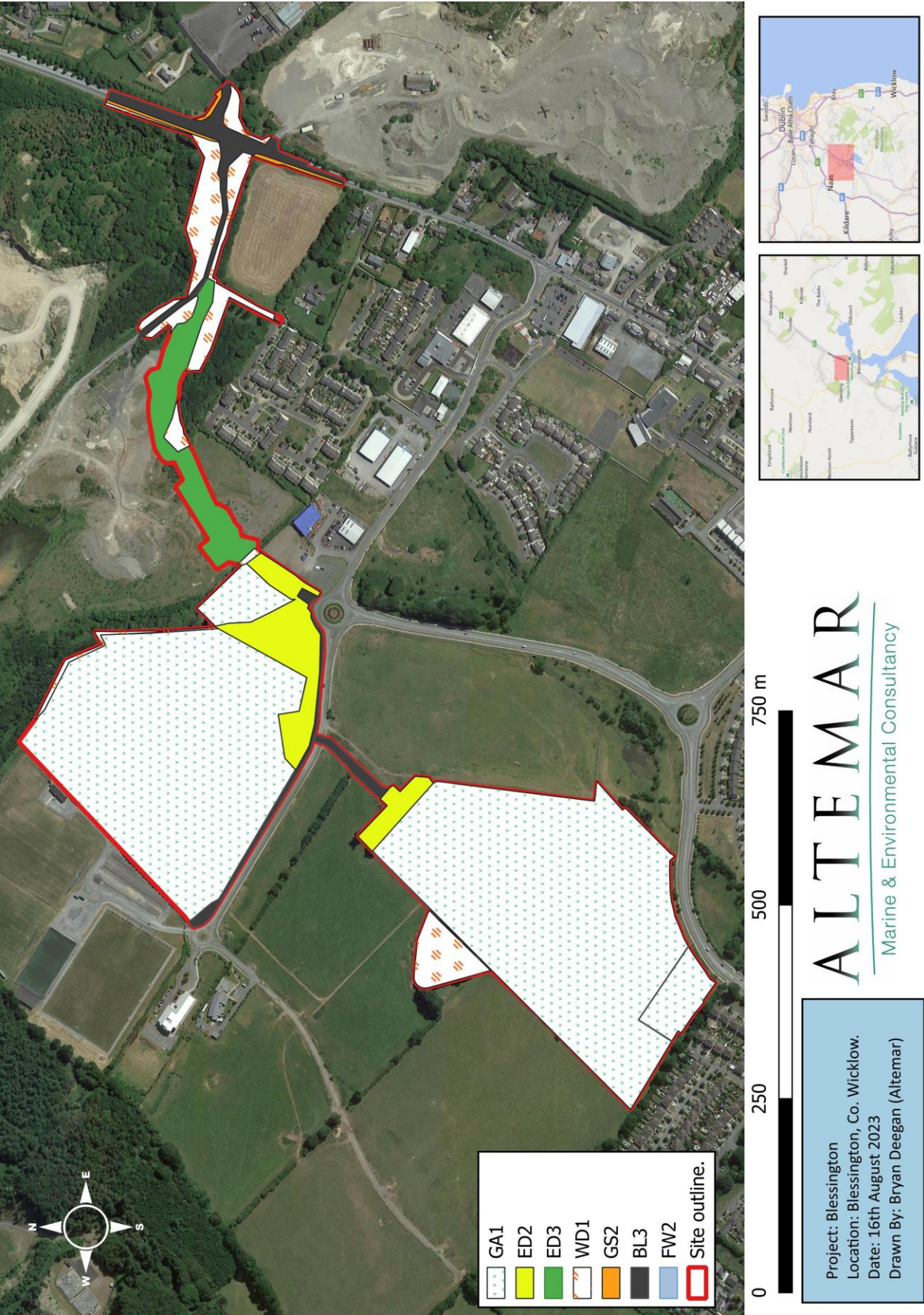


Figure 5-9: Fossitt Habitats on site (see habitat descriptions for Fossitt codes below).

GA1-Improved Agricultural Grassland

The proposed development site consists largely of agricultural grassland which forms part of an active farm grazed by cattle and sheep. As seen in Figure 5.9, the proposed site comprises of two fields. The first field is situated in the south-west of the site bordered by fencing, stone walls, and tree line. Flora species in GA1 (both fields) consisted of creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), plantains (*Plantago spp.*), thistles (*Cirsium vulgare*), common vetch (*Vicia sativa*), docks (*Rumex spp.*), pineappleweed (*Matricaria discoidea*), and nettle (*Urtica dioica*). The first field also had marsh woundwort (*Stachys palustris*), rushes (*Juncus spp.*) and common chickweed (*Stellaria media*). The second field is lined by evergreen trees on the western boundary and a mixture of native deciduous trees on the eastern boundary running south. A stream runs along this boundary, although outside the site outline. Flora found here were autumn hawkbit (*Scorzoneroidea autumnalis*), willowherb (*Epilobium spp.*), daisy (*Bellis perennis*), common knapweed (*Centaurea nigra*) and common ragwort (*Jacobaea vulgaris*).



Plate 1. Agricultural grassland.

WD1-(Mixed) Broad-leaf woodland

The forest to the east of the site mainly consists of mature beech (*Fagus sylvatica*) trees lining the entrance road to the nearby quarry. On the northern side of the entrance is a mixture of young trees consisting of ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), oak (*Quercus spp.*), cedar (*Cedrus spp.*), elder (*Sambucus nigra*), and sitka spruce (*Picea sitchensis*). The ground is covered with leaf litter with some scrubs of bramble (*Rubus fruticosus agg.*), ivy (*Hedera helix*), hawthorn (*Crataegus monogyna*), tutsan (*Hypericum androsaemum*), alder (*Alnus glutinosa*), dog wood (*Cornus sanguinea*) and gorse (*Ulex europaeus*). Flora found scattered were herb robert (*Geranium robertianum*), buttercup (*Ranunculus spp.*), nettle (*Urtica dioica*), willowherb (*Epilobium spp.*), thistle (*Cirsium spp.*), speedwell (*Veronica montana*), silverweed (*Potentilla anserina*), wild strawberry (*Fragaria vesca*), selfheal (*Prunella vulgaris*), lady fern (*Athyrium filix-femina*), male fern (*Dryopteris affinis*), and spike moss (*Selaginellaceae spp.*). The trees are covered in various mosses and lichens indicating good air quality.

A small amount of snowberry (*Symphoricarpos albus*), cherry laurel (*Prunus laurocerasus*), and butterfly bush (*Buddleja davidii*) was noted on the outskirts of the forest cover. An existing concrete dry culvert is under the N81 which appears to be part of the roadstone infrastructure. It is expected that this is used as a biodiversity corridor.



Plate 2. (Mixed) Broad-leaf Woodland



Plate 3. (Mixed) Broad-leaf Woodland within the quarry site.



Plate 4. Existing dry culvert (Roadstone infrastructure) under the N81.

ED3-Recolonising Bare Ground

This habitat contained thistle (*Cirsium spp.*), silverweed (*Potentilla anserina*), hawkbit (*Scorzoneroide autumnalis*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*), spikemoss (*Selaginellaceae spp.*), birdsfoot trefoil (*Lotus corniculatus*), yarrow (*Achillea millefolium*), eyebrite (*Euphrasia nemorosa*), buttercup (*Ranunculus spp.*), ribwort plantain (*Plantago lanceolata*), herb robert (*Geranium robertianum*), hogweed (*Heracleum sphondylium*), and knapweed (*Centaurea nigra*). Some growths of gorse (*Ulex europaeus*), bramble (*Rubus fruticosus agg.*), hawthorn (*Crataegus monogyna*), and willow (*Salix spp.*) were also recorded. This area is used by deer to access the stream (Figure 5.9).



Plate 5. Recolonising Bare Ground

BL3-Built Land

These areas are spread across the site, primarily acting as entrance ways and roads. They are heavily used by lorries and no biodiversity was recorded in these areas.

ED2-Spoil and bare ground

These areas are active construction sites or being used to store gravel, sand, or machinery. No notable biodiversity was found here.

GS2-Dry meadows and grassy verges

This area is located along the major roadways and consists of thistle (*Cirsium spp.*), silverweed (*Potentilla anserina*), hawkbit (*Scorzoneroide autumnalis*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*), yarrow (*Achillea millefolium*), eyebrite (*Euphrasia nemorosa*), buttercup (*Ranunculus spp.*), ribwort plantain (*Plantago lanceolata*), herb robert (*Geranium robertianum*), hogweed (*Heracleum sphondylium*), bush-vetch (*Vicia sepium*), great mullein (*Verbascum thapsus*), oxeye-daisy (*Leucanthemum vulgare*), burnet-saxifrage (*Pimpinella saxifraga*), red champion (*Silene dioica*), and creeping cinquedoil (*Potentilla reptans*).



Plate 6 View of grassy verge

FW2-Depositing / lowland rivers

Along the northeastern boundary of the northernmost field runs a watercourse. It is lined by WD1 woodland on both sides. A mixture of reeds and grasses lined the ground cover of the banks. This stream has potential to support frogs. No instream biodiversity was noted. Deer tracks were recorded from the forest to the stream. This stream comes back into the site having passed under the most northern roundabout and Oak Drive and flows to Pollaphuca Reservoir SPA.



Plate 7 Watercourse at the southern end of the site.



Plate 8. Disused Burrow on the northern side of the mature triangular woodland.

Invasive Species

Cherry laurel (*Prunus laurocerasus*) and butterfly-bush (*Buddleja davidii*) were noted on site. No invasive animal species listed under the European Communities (Birds and Natural Habitats) Regulations 2011, Section 49, the Third Schedule: Part 1 (Plants) or Part 2A (Animals) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) were noted onsite. No terrestrial or aquatic invasive species such as Japanese knotweed, giant rhubarb, Himalayan balsam, Giant hogweed etc. that could hinder removal of soil from the site during groundworks were noted.

Fauna Assessments

Mammal assessments were carried out on the 3rd April 2022 and the 16th April 2023. Bat surveys including bat emergent/detector surveys were carried out on the 10th August 2020, 7th September 2020 and 16th August 2023.

Terrestrial Mammals

Tracks of sika deer (*Cervus nippon*), rabbit (*Oryctolagus cuniculus*), and fox (*Vulpes vulpes*) were noted onsite.. Sika deer are considered non-native but are protected under the Wildlife Acts 1976 to 2021 (the Wildlife Act). Sika deer can be hunted under a licence granted by National Parks and Wildlife Service under section 29 of the Wildlife Act. No terrestrial mammal species of conservation importance was noted on-site during surveys. A disused Burrow on the northern side of the mature triangular woodland

Amphibians and Reptiles

No amphibians or reptiles were noted onsite. However, given the fact that there is a watercourse onsite and a pond beside the sire within the Roadstone site, it is likely that frogs are present onsite.

Birds

The following bird species were noted onsite (**Table 5-4**). It should be noted that the qualifying interests of proximate designated conservation sites were not noted onsite. It is not considered that the proposed development site is an ex-situ site for qualifying interests of designated conservation sites. As outlined in the Wintering Bird Assessment (Appendix 5B) 38 bird species were recorded at Blessington Demesne lands during the 10 winter bird surveys from November 2021-March 2022. In the context of wintering bird species that are red listed as species of conservation concern in the revised Birdwatch Ireland List of birds of conservation concern in Ireland (2020-2026) Redwing and Snipe were recorded, Redwing in occasional small foraging flocks and over the course of the surveys and 3 Snipe on-site. Three gull species listed in the amber wintering species category were recorded, these being Black-headed, Herring and Lesser black-backed Gull. Lesser black-backed Gull was noted passing through the site and not foraging on-site. Results from the surveys suggest that the site is not an ex-situ foraging or roosting site for species of qualifying interest from nearby Special protection areas (SPA's). In addition to the bird species noted during the wintering bird surveys the following species were noted during the Altamar assessments:

Table 5-4 Species of Birds noted during on-site surveys.

Common Name	Scientific Name	Conservation Status
Woodpigeon	<i>Columba palumbus</i>	Green
Robin	<i>Erithacus rubecula</i>	Green
Wren	<i>Troglodytes troglodytes</i>	Green
Pheasant	<i>Phasianus colchicus</i>	Green
Buzzard	<i>Buteo buteo</i>	Green
Great Tit	<i>Parus major</i>	Green
Wren	<i>Troglodytes troglodytes</i>	Green
Rook	<i>Corvus frugilegus</i>	Green
Jackdaw	<i>Corvus monedula</i>	Green
Hooded Crow	<i>Corvus cornix</i>	Green
Magpie	<i>Pica pica</i>	Green
Goldcrest	<i>Regulus regulus</i>	Green
Bullfinch	<i>Pyrrhula pyrrhula</i>	Green
Siskin	<i>Spinus spinus</i>	Green
Song Thrush	<i>Turdus philomelos</i>	Green
Blackbird	<i>Turdus merula</i>	Green
Blue Tit	<i>Cyanistes caeruleus</i>	Green
Pied Wagtail	<i>Motacilla alba</i>	Green
Goldfinch	<i>Carduelis carduelis</i>	Green
Listle thrush	<i>Turdus viscivorus</i>	Green
Barn swallow (overhead)	<i>Hirundo rustica</i>	Amber
Long-tailed tit	<i>Aegithalos caudatus</i>	Green

Bats

The bat assessment is seen in Appendix 5.I. There were no seasonal or climatic constraints as the surveys were undertaken within the active bat season in good weather conditions with daytime temperatures of greater than 10°C after dark. Winds were very light and there was no rainfall. Foraging activity of three

bat species (Soprano pipistrelle (*Pipistrellus pygmaeus*), Common pipistrelle (*Pipistrellus pipistrellus sensu lato*), and Leisler's Bat (*Nyctalus leisleri*)) was noted onsite. Foraging activity was noted primarily along treelines. Please see Appendix 5A for further information.

Discussion Species and Habitats

As can be seen from **Figure 5.9**, the proposed development site consists primarily of Improved agricultural grassland (GA1) and (Mixed) broad-leaf woodland (WD1), having smaller areas of (ED3) recolonising bare ground, (GS2) Dry meadows and Grassy Verges and Bare ground (ED2). There is also a watercourse that flows through the red line. No flora or fauna of National or International conservation importance were noted on site during the surveys. No invasive species of high impact were noted on site. However, cherry laurel (*Prunus laurocerasus*) and butterfly bush (*Buddleja davidii*) were noted. Data from Biodiversity Ireland showed records of red conservation status yellowhammers and curlews in a 2km radius from the site, although none were noted during site surveys. No flora species of conservation importance were noted on site during site surveys. No amphibians or reptiles were noted onsite. However, given the favourable habitat onsite for frogs, it would be expected that the watercourse habitat and ponds would be locally important. Mixed broadleaf woodland (triangular area on the west of the site boundary) would be locally important to biodiversity including bats. In relation to bird species, no bird species on Annex I of the EU Birds Directive were noted onsite.

5.7 Impact Assessment

This section provides a description of the potential impacts that the proposed development may have on biodiversity in the absence of mitigation. The proposed development will involve the removal of terrestrial habitats on site, re-profiling, excavations and the construction of roads, dwellings and associated services.

It should be noted that prior to the design of the proposed project, discussions took place between both Cairn Homes the design team and the engineers for the road project element and Altamar to retain and enhance biodiversity on site. The layout of the proposed project was designed around the retention of the as many mature trees within the woodland as possible, retain riparian and enhance corridors and develop a sensitive lighting strategy for bats on site. The retention of these areas involved numerous iterations of drawings and cross checking of drawings by the arborist and Altamar.

5.7.1 Construction Impacts

The construction of the proposed development, would potentially impact on the existing ecology of the site and the surrounding area. These potential construction impacts would include impacts that may arise during the site clearance, re-profiling of the site and the building phases of the proposed development. Construction phase mitigation measures are required on site particularly as reprofiling of the site is proposed which will remove or modify existing terrestrial habitats which can lead to silt laden and contaminated runoff entering the watercourse on site. In addition, the Deerpark Stream flows through the site and ultimately outfalls to the Poulaphouca Reservoir SPA. There is potential for silt laden runoff and contamination to enter the watercourse with potential for downstream impacts.

Designated Natura 2000 sites within 15km

The proposed development is not within a designated conservation site. It should be noted that the Deerpark Stream flows through the proposed development site, which ultimately outfalls to the Poulaphouca Reservoir. In addition, works are proposed on the road network, the surface water drainage of which leads to the Deerpark Stream. Given the proximity of the site to Poulaphouca Reservoir SPA (0.7 km) & Poulaphouca Reservoir pNHA (0.6 km), it is considered that there is a direct hydrological pathway to these conservation sites. In the absence of mitigation, runoff during site clearance, re-

profiling, the construction and operation of project elements could impact on the Deerpark Stream and surface water network, with water quality or downstream impacts on the Poulaphouca Reservoir. Impacts via this direct pathway would be seen as the primary vector for impacts on conservation sites. Ensuring water quality and compliance with Inland Fisheries Ireland procedures/ conditions and the Water Pollution Acts and compliance with Inland Fisheries Guildines would be seen as the primary method of ensuring no significant impact on designated conservation sites.

It should be noted that, given that mixing, settlement and dilution would occur within Poulaphouca Reservoir, no other Natura 2000 sites have a direct or indirect hydrological connection or pathway from the proposed development site and no impacts would be foreseen on these sites.

Impacts in the absence of mitigation: negative; imperceptible-slight; international, short term, not significant. Mitigation is required.

Terrestrial Ecology

No mammals of conservation importance would be impacted by the proposed development. Loss of habitat and habitat fragmentation may affect some common mammalian species including sika deer. There is potential for species of conservation importance to enter the proposed development site between the time of survey and the commencement of the development.

Impacts in the absence of mitigation: negative; slight, site, short term, not significant. Mitigation is required.

Amphibians and reptiles.

Frogs and reptiles were not observed on site. However, given the number of suitable habitats on site frogs are likely to occur on site. The common lizard may occur on site but, was not observed. There is potential for the works to impact on the habitats on site that could potentially support frogs either by direct destruction of the habitats or by onsite pollution or silt ingress.

Impacts in the absence of mitigation: negative; slight; short term, not significant. Mitigation is required

Bat Fauna.

There is no evidence of a confirmed bat roost in the trees that are to be removed on site.. Foraging activity was noted along woodland edges and treelines. The proposed lighting strategy has been discussed and modified to reduce the potential impact on bats. This has included only lighting areas where required and not lighting public open spaces unless necessary. There is potential for bats to utilise trees of bat roosting potential on site that are to be felled, between the time of survey and the commencement of the development. A derogation licence is not required to remove trees of bat roosting potential. However, a pre-construction inspection of trees to be felled will be carried out and a derogation licence acquired if a bat roost is present. Construction lighting has the potential to impact on foraging routes.

Impacts in the absence of mitigation: negative; slight, site, short term, not significant. Mitigation is required.

Avian Ecology

Site clearance will result in a reduction in the vegetation cover and removal of the mature and immature trees which would result in a nesting and foraging resource loss for the bird species noted on site, particularly in the northern road element of the project. Clearance works on site during bird nesting

season could impact on bird population within the proposed development site. Dust from reprofiling works could potentially impact on vegetation and nesting birds on site within the remaining hedgerows.

Impacts in the absence of mitigation: negative; moderate adverse, site, short term, not significant.

Mitigation is required.

Aquatic Ecology

The Deerpark Stream flows through the proposed development site and in stream works are proposed. In the absence of mitigation, in stream works, runoff during site clearance, re-profiling, the construction and operation of project elements could impact on the Deerpark stream and surface water network, with water quality within these watercourses with potential downstream impacts aquatic ecology within this watercourse network and the Poulaphouca Reservoir.

The contamination of watercourses and surfaces water networks could potentially impact negatively on the biodiversity within the watercourses and within the shallow marine environment.

Impacts in the absence of mitigation: negative; slight, short term, not significant. Mitigation is required.

5.7.2 Operational Impacts

Once constructed all onsite drainage will be connected to separate foul and surface water systems. Surface water runoff will comply with SUDS. The biodiversity value of the site would be expected to improve as the landscaping matures. It would be expected that the ecological impacts in the long term would be neutral, once landscaping has established.

Designated Conservation sites within 15km

In the absence of standard operational mitigation there is potential silt and petrochemicals to enter the onsite watercourse or surface water networks that lead to Poulaphouca Reservoir SPA & pNHA. The features of interest of the SPA are bird species (Greylag Goose and Lesser Black-backed Gull) and it would be expected that potential impacts would only be seen of the features of interest should a pollution event occur onsite with pollution/silt entering the Poulaphouca Reservoir via the onsite surface water drainage network.

Impacts in the absence of mitigation: negative; slight, long term, not significant. Mitigation is required.

Terrestrial Ecology

No terrestrial mammals of conservation importance would be impacted by the proposed development. Lighting and increased human presence/disturbance may impact on the potential for the site to accommodate terrestrial mammals of conservation importance. It should be noted that significant dialogue has gone into retaining biodiversity corridors on site and minimising light spill into open space areas, woodland and treelines on site. Landscaping on site will improve the biodiversity value of the site.

Impacts in the absence of mitigation: negative; slight, site, long term, not significant. Mitigation is required.

Amphibians and reptiles.

Frogs and reptiles were not observed on site. However, given the number of suitable habitats on site frogs are likely to occur on site. The common lizard may occur on site but, was not observed. Standard water pollution mitigation is in place in the design of the drainage strategy.

Impacts in the absence of mitigation: negative; slight; longterm term, not significant. Mitigation is required.

Bat Fauna.

There is potential for bat foraging to be impacted by the artificial lighting on site. The proposed lighting strategy has been discussed and modified to reduce the potential impact of the development on bats. This has included only lighting areas where required and not lighting public open spaces unless necessary and using warm lighting on the northern access road. In addition the lighting strategy has included significant planting of trees in openspace areas to encourage bat foraging on site.

Impacts in the absence of mitigation: neutral, site, long term, not significant. Mitigation is required.

Avian Ecology

There is potential for avian biodiversity to be impacted by the artificial lighting on site. The proposed lighting strategy has been discussed and modified to reduce the potential impact on biodiversity. This has included only lighting areas where required and not lighting public open spaces unless necessary. In addition the lighting strategy has included significant planting of native trees in openspace areas to encourage birds on site.

Impacts in the absence of mitigation: negative; minor adverse, site, long term, not significant. Mitigation is required.

Aquatic Ecology

In the absence of standard operational mitigation there is potential silt and petrochemicals to enter the onsite watercourse or surface water networks that lead to the Poulaphouca Reservoir. The contamination of watercourses and surfaces water networks could potentially impact negatively on the biodiversity within proximate watercourses.

Impacts in the absence of mitigation: negative; slight, short term, not significant. Mitigation is required.

Terrestrial Ecology

As the landscaping elements improve with maturity it would be expected that the biodiversity value of the site to birds and flora would also increase. Mitigation measures should be in place to offset the short term nesting resource.

Impacts in the absence of mitigation: negative; slight, short term, not significant. Mitigation is required.

5.8 Cumulative Impacts

A search of planning applications located within a 2km radius of the Proposed Development was conducted using online planning resources including the National Planning Applications Database (MyPlan.ie) and Wicklow County Council's online planning database. Any planning application listed as granted, application registered or application pending from within the last five years were assessed for their potential to act in-combination with the Proposed Development and cause likely significant effects on hydrology and hydrogeology. The larger-scale developments identified within the vicinity of the site of the Proposed Development and considered for potential cumulative effects are listed in Table 5-5.

Table 5-5: Potential Cumulative Impacts

Planning Ref No.	Status	Applicant Name	Summary of the Development
20/184 (ABP Ref. PL 27.308578)	Granted by ABP (with revised conditions 27.01.2022)	Glenveagh Homes Limited	Nursing care home and residential development comprising (a) nursing care home (4 no storeys of 120 no bedspaces (c7428 sqm) along with 60 no car parking spaces (at undercroft and basement level c2477 sqm), open space and all associated residential care facilities (b) construction of 77 no dwellings comprising 29 no 2 storey houses (10 no 2 bedroom houses (house type E) and 19 no 3 bedroom houses (house types C, D & F), and 48 no apartments / duplex apartments as follows: Block A & D, 3 storeys comprising 30 no apartments (15 no 2 bedroom apartments in each building), blocks B & C, 3 storeys comprising 12 no apartments (2 no 2 bedroom apartments and 4 no 3 bedroom apartments in each building), blocks E & F, 3 storeys comprising 6 apartments (3 no 2 bedroom apartments in each building), all apartment units to have balcony or terrace, (c) hard and soft landscaping (including public lighting) and open space (boundary treatment), communal open space for duplex apartments, regarding / reprofiling of site where required along with bicycle / bin stores and 100 no car parking spaces for dwellings (d) vehicular access from the west (from Blessington Inner Relief Road (BIRR) and south west along link road between the BIRR and Main Street with pedestrian accesses as well as works to roundabout and provision of road crossings (e) surface water attenuation measures and underground attenuation systems as well as connection to water supply, drainage, (f) all ancillary site development / construction works
20/362	Granted 09/10/20	Glenveagh Homes Limited	Development at a site (c.3.43 hectares) at Blessington Demesne, Blessington, Co. Wicklow bounded generally by Oak Drive and Blessington Inner Relief Road to the north and east, and Cocoon Crèche to the south, and Glenveagh Homes Ltd., Phase 1 lands (under Planning reg. ref. 20/184 for a proposed 120 bedroom Nursing Home and 77 no. dwellings) to the west. The proposal is for the second phase of development on the overall Glenveagh lands and will consist of: A) The construction of 96 no. dwellings providing 39 no. 2 storey 2 bedroom houses [House Types E1, G], 54 no. 2 storey 3 bedroom houses [House Types C, D, F], along with 3 no. 2 bedroom duplex/apartments in a 3 storey block (Block G) all apartment units to have balcony or terrace; B) Hard and soft landscaping (including public lighting) and open space (boundary treatment); communal open space for duplex apartments; well as regrading/re-profiling of site where required [including import and export of soil, if required] as well as bicycle/bin stores and 178 no. car parking spaces; C) Vehicular access from the west (from Blessington Inner Relief Road [BIRR]) and south west along link road between the BIRR and Main Street, with provision for pedestrian connection to Oak Park to the east; D)

Planning Ref No.	Status	Applicant Name	Summary of the Development
			Surface water attenuation measures (including underground attenuation systems) as well as connection to water supply, drainage; E) All ancillary site development/construction works
21/1068	Grant permission (subject to conditions) on 16/08/2022	Windlynn Limited & Two-Mile House Construction Ltd	To facilitate proposed residential development (69 no residential units) and proposed primary school (circa 2,334.70 sqm) on adjacent lands at Kilmalum, Blessington, Co. Kildare comprising of the upgrade to the Kilmalum Road from the Roundabout junction of Kilmalum Road with Kilmalum Crescent to the culvert over the Deepark Watercourse and these works are to comprise replacement of the existing dished curb and crossing with a new ramped pelican pedestrian crossing, improved pedestrian and cycle connections, new 'in-only' vehicular entrance onto the Kilmalum Road and underground connection to the existing watermain
19/1020 ABP 306425	Grant permission (subject to revised conditions) by ABP on 17/02/21	Glengolden Builders Ltd	Housing development to include (a) apartment block A (three - four storeys in height) consisting of 3 no 3 bedroom apartment, 14 no 2 bedroom apartments and 5 no 1 bed apartments (b) apartment block B (three - four storeys in height) consisting of 3 no 3 bedroom apartments, 14 no 2 bedroom apartments and 1 no 1 bed apartment (c) apartment block C (three - four storeys in height) consisting of 3 no 3 bedroom apartments, 4 no 2 bedroom apartments and 8 no 1 bed room apartments. The total number of apartments is 58 (d) connection to main services and all associated site development works including attenuation, foul drains, surface water drains, water main roads, car parking bicycle parking, footpaths, bin storage, boundaries, and boundary treatment, public lighting, mini pillars, open space and landscaping (e) 2 no new site entrances
19/940	Granted 02/04/20	Downshire Lodge Nursing Home Ltd & Downshire Place Independent Living Ltd	Demolition and removal works to include: removal of the single storey modern extension along the Main Street adjoining the Downshire Hotel, removal of the single storey shed to the rear of the site, removal of the existing single storey building to the rear of 'Foley's House' (house B), partial lowering of the existing wall along Kilbride Road with modifications to the existing vehicular access and removal of the extensive modern hotel structure to the rear of the existing vacant Downshire Hotel. The proposal includes the construction of a 104 no bed nursing home across Lower Ground to Second Floor level, all with associated plant areas, circulation area, ancillary spaces, day rooms, dining rooms, multi purposes activity rooms, kitchen, staff facilities with connection to the exiting retained property along the Main Street at Ground and First Floor levels, the conversion of the ground floor of the former Downshire Hotel into a café, nursing home reception, office and public WCs accessed from the Main Street, the 1st floor is proposed to accommodate 6 no nursing home bedrooms and a library, conversion of the

Planning Ref No.	Status	Applicant Name	Summary of the Development
			building to the church (north east) boundary to accommodate 1 no 3 bed and 1 no 1 bed unit for the purpose of nursing home staff accommodation, conversion of coach house B into mechanical and electrical plant area, upgrading of 'Foleys House' to a 6 no bedroom house for the purpose of nursing home staff accommodation, the consolidation of the facades of the former Downshire Hotel, Foleys House and both outbuildings (Coach House A and Coach House B) along the north east and south west boundaries, the proposal also includes the construction of 30 no 1 bed independent living units, across 2 no blocks, off 2-3 storey in height, vehicular access from Kilbride Road through a revised vehicular access point with Pedestrian access from Main Street, all with associated signage, landscaping, drainage, ambulance drop off zone, 66 no car parking spaces (including 3 no disabled car parking spaces), plant space, bin storage, cycle parking and site works
19/693	Grant by ABP 12/05/19	TD Housing Ltd	Demolition of existing agricultural shed (14 sqm) and the construction of 56 no residential units (2 no 4 bed houses, 49 no 3 bed houses, 3 no 2 bed houses and 2 no 2 bed apartments), 113 no ancillary car parking spaces, hard and soft landscaping, lighting, balconies facing northeast and southwest, solar panels, boundary treatments, ESB substation, changes in level, and all associated site development works above and below ground
20/108	Notification to grant 31/07/20	The Rectory, Kilbride Rd, Blessington	Demolition of a 1.5 storey derelict outbuilding (within the curtilage of a protected structure) and for the construction of 45 no residential units consisting of 24 no two storey 3 bed (5 person) terraced houses (101.6 sqm), 7 no two storey 3 bed (5 person) terraced houses (105.5 sqm) and 2 no two storey semi detached houses (101.6 sqm), 3 no 2 storey apartment blocks consisting of 12 no apartments consisting 6 no ground floor apartments, 2 bed (4 persons) (88 sqm) and 6 no 1st floor apartments 2 bed (4 persons) (75 sqm), maintaining the existing Rectory building (protected structure) as a residential house as is, maintaining the existing Mass Path, a communal pedestrian footpath extending towards Main Street, a communal cycle lane and a communal pedestrian footpath beyond the south eastern boundary wall and adjacent to Kilbride Road, 81 no car parking spaces, renovation and relocation of the derelict eastern entrance pier and wall (within the curtilage of a protected structure), widening of existing gate / entrance plus new pedestrian gate and improved access to existing Mass Path, new front boundary wall and railing, drainage infrastructure, landscaping, services and all associated works

The ecology assessments including the mitigation measures outlined for the above projects have been considered. No projects are proposed or currently under construction that could potentially cause significant cumulative effects on biodiversity.

5.9 Mitigation Measures

Mitigation measures will be incorporated into the proposed development project to minimise the potential negative impacts on biodiversity within the ZOI. Mitigation measures are outlined within the Land Soil and Geology (Chapter 6), Water (Chapter 7), and the Air and Climate (Chapter 8) of the EIAR. In addition to these mitigation measures mentioned elsewhere in the EIAR specific mitigation in relation to biodiversity need to be implemented having taken into account the measures outlined elsewhere in the EIAR:

5.9.1 Construction Phase

In addition to mitigation measures outlined elsewhere in the EIAR, the following measures will be implemented to protect biodiversity:

1. A project ecologist will be appointed prior to works or site clearance commencing on site. A project ecologist will oversee the project from prior to the commencement to the completion of the project including all landscaping, construction and drainage connections.
2. Tree retention will be carried out as outlined in the arborist report. Additional exclusion zones will be implemented by the project ecologist in order to protect biodiversity on site e.g. proximate to the watercourse.
3. A specific site clearance, reprofiling and phasing plan will be provided to the arborist and project ecologist for approval prior to any site clearance or works commencing on site. No site clearance works will commence on site until approval has been provided by the arborist and project ecologist for the works to commence.
4. All site clearance, reprofiling and enabling works will be approved and monitored by the arborist and project ecologist to ensure that the integrity of the remaining habitats on site are maintained.
5. All works in the riparian corridor will be carried out in consultation with and to the satisfaction of Inland Fisheries Ireland and the project ecologist, following the best practice guidelines for construction in the vicinity of watercourses. All works on site and in the riparian corridor will include mitigation measures to prevent silt from runoff during works as set out below.
6. All works in the riparian corridor will be approved by Inland Fisheries Ireland prior to works commencing.
7. Abstraction of water from the watercourse or springs will not be permitted.
8. Relevant legislation (Section 40 of the Wildlife Acts, 1976 to 2012) *"It shall be an offence for a person to cut, grub, burn or otherwise destroy during the period beginning on the 1st day of March and ending on the 31st day of August in any year, any vegetation growing on any land not then cultivated."* Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to

- ensure nesting birds are absent. If bird nests are present the woody vegetation will not be removed unless a derogation licence has been provided by NPWS and the conditions applied.
9. 50 Nest boxes placed on site during landscaping to compensate for resource loss.
 10. Light falling upon any areas of benefit to birds such as woodlands will not exceed 3 lux to ensure that resting and nesting species are not unnecessarily disrupted.
 11. A pre construction survey for invasive species, bats and terrestrial mammals will be carried out. This will include an inspection for resting and breeding places for both terrestrial mammals and bats. Should resting or breeding places be found a derogation licence will be acquired from NPWS and conditions followed prior to works commencing in the vicinity of the resting or breeding place.
 12. Lighting at all stages should be done sensitively on site as directed by the project ecologist, with no direct lighting of hedgerows and treelines.
 13. Replanting of the riparian corridor will be at the initial phase of the project.
 14. A pre-construction mammal and invasive species assessment will be carried out by the project ecologist.
 15. Lighting has involved mitigation through design and will be restricted to key areas and will not be within foraging zones. Lighting will be placed where necessary for mainlining movement within key areas of site and open space areas including the pond will not be lit.
 16. Landscaping has involved mitigation through design by increasing the number of trees on site and the inclusion of additional planting of trees along the link road. It would not be expected that the beneficial effects of these trees would not be seen until the medium to long term.
 17. Lighting during construction will be carried out in consultation with the project ecologist and treelines or wooded areas will not be lit.
 18. 10 bat boxes will be placed on site. These will be placed in discussion with the project ecologist and will be used to enhance existing foraging areas on site.
 19. A pre construction bat assessment will be carried out on all trees to be felled. In the majority of cases this will involve a ground based assessment. However, in relation to trees T510 and T500 and any other trees that may have become of moderate or high potential in the interim, primarily due to storm damage, these will need a detailed inspection. Should bats be found roosting in any trees to be felled a derogation licence will be required from NPWS and conditions, if any, complied with.
 20. Daily monitoring of the watercourse (pH, Oxygen, turbidity) in addition to daily photographs will be taken during enabling works until the drainage networks including mitigation and landscaping of the riparian corridor are in place.

5.9.2 Operational Phase

The biodiversity value of the site would be expected to improve as the landscaping matures. The retention of habitats on site was a key element of the project design. The proposed development has a sustainable drainage strategy and detailed landscape strategy and mitigation during operation will be

carried out as outlined elsewhere in the EIAR. The following operation mitigation measures will be carried out:

1. Post construction an inspection of drainage connections to the watercourse network will be carried out by the project ecologist.
2. A post construction lighting assessment will be carried out to ensure compliance with the proposed lighting and a bat survey will be carried out to ensure foraging is continuing on site. Should foraging be inhibited in key foraging areas on site the lighting will be locally revised in consultation with a bat ecologist to ensure foraging continues on site.

5.10 Residual Impacts

Based on the implementation of the mitigation measures above and in particular the Biodiversity (Chapter 5), Land Soil and Geology (Chapter 6), Water (Chapter 7), and the Air and Climate (Chapter 8) of the EIAR, there will be no significant long term impact on biodiversity as a result of the proposed development. The successful implementation of the measures outlined in the EIAR will be essential to the successful mitigation/offsetting of the loss of biodiversity on site.

The proposed development has satisfactorily addressed the current ecology on site into its design so that application of the mitigation measures outlined in this EIAR will help reduce its impact on the local ecology to an adequate level. Where possible biodiversity retention and enhancement measures have been implemented into design to enhance the overall biodiversity value of the site. Sensitive lighting and landscape strategies have been proposed. As a result of the loss of certain biodiversity features on site and the introduction of new buildings and increased human disturbance in addition to the implementation of a sensitive landscaping strategy, with biodiversity enhancement measures it is considered that the overall impact on the ecology of the proposed development will result in a long term minor adverse residual impact on the existing ecology of the site and locality overall. This is primarily as a result of the loss of some terrestrial habitats on site, supported by the retention of key biodiversity areas and the creation of additional terrestrial biodiversity features, mitigation measures and a sensitive lighting strategy.

In relation to the worst-case scenario event, there is a direct direct pathway to designated sites from the proposed development via the watercourse on site and surface water drainage. Impacts could include silt and pollution including petrochemical release. If the development took place and the detailed mitigation were not to function, it is possible that there could be significant short term water quality impacts on the Deepark Stream and Poulaphouca Reservoir, which contains the Poulaphouca Reservoir SPA & pNHA designated sites. In relation to additional biodiversity on site no additional worst case scenario impacts are foreseen beyond the impacts outlined above. Compliance with Water Pollution Acts would be seen as the principle way to prevent worst case scenario events on biodiversity. Unlikely, Negative, Slight, localised, Temporary.

The Biodiversity Chapter of the EIAR involved extensive surveys and interactions within the project team being carried out over several years. The flora, fauna and habitats within the proposed development area are outlined in detail and the potential impacts on biodiversity and designated sites were assessed. Detailed mitigation measures have been outlined and will be carried out during the construction and operational phases of the development. In conclusion, the proposed development has satisfactorily addressed the potential impacts on biodiversity on site and within the potential zone of influence. It is considered that the retention of key habitats on site and the robust mitigation and enhancement measures proposed significantly reduces the possible impact of the proposed development on

biodiversity. The overall impact on the biodiversity of the proposed development is a long term neutral residual impact on the existing biodiversity. However, the implementation of the proposed landscaping would provide significant on site biodiversity enhancement features and provide long term positive benefits to the biodiversity on site.

Do Nothing Scenario

Due to the zoning of the subject site, it would be expected that in the absence of this subject proposal a development of similar scale and nature would be progressed. Under this scenario, in the absence of specific development details, it is likely that the effect would be similar to this proposal as outlined below. However, in the absence of any development on the site it would be expected that the site would continue to be farmed.

5.11 Monitoring

Pre-construction surveys will be carried out for terrestrial mammals, invasive species and bats. During construction an Ecologist will monitor the site from pre-construction surveys, during Construction Phases and Post Construction.

5.12 Difficulties Encountered

No difficulties were encountered in the preparation of the proposed development.

5.13 References

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21. NPWS (2017) Conservation Objectives: Wicklow Mountains SAC 002122. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.
22. NPWS (2021) Conservation Objectives: Glenasmole Valley SAC 001209. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
23. NPWS (2022) Conservation objectives for Poulaphouca Reservoir SPA [004063]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.
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6. LAND, SOIL AND GEOLOGY

6.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) provides a description of the land, soils and geology within and immediately surrounding the Site of the Proposed Development, an assessment of the potential impacts of the Proposed Development on land, soils and geology and sets out any required mitigation measures where appropriate.

The principal objectives of this chapter are to identify:

- Land, soils, and geological characteristics of the receiving environment at the Site;
- Potential impacts that the Proposed Development may have on land, soils and geology including “worst case” scenario assessment;
- Potential constraints that the environmental attributes may place on the Proposed Development;
- Required mitigation measures which may be necessary to minimise any adverse impacts related to the Proposed Development; and
- Evaluate the significance of any residual impacts.

6.1.1 Quality Assurance

This chapter of the EIAR has been prepared by Gareth Carroll, a Principal Consultant of Enviroguide Consulting. Gareth Carroll holds a BA in Mathematics and a BAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. Gareth Carroll, a Member of the Institute of Environmental Sciences (MEnvSci) with over 10 years’ experience as an Environmental Consultant, has carried out environmental assessments for a range of project types and geological and hydrogeological Site settings.

6.1.2 Description of the Proposed Development

Cairn Homes Properties Limited intend to apply for permission for a Large-Scale Residential Development at this site c. 25.14 ha on lands within the townlands of Blessington Demesne, Newpaddocks and Santryhill, Blessington, Co. Wicklow. The proposed development will consist of 329 residential units (270 no. houses, 47 no. apartments and 12. Duplex units), 10.65 ha town park and the extension of the Blessington Inner Relief Road from the existing roundabout at Blessington Demesne to the N81, north of the Woodleigh residential estate. An Environmental Impact Assessment Report and a Natura Impact Statement have been prepared in respect of the proposed development.

The full description of the Proposed Development is outlined in Chapter 2 ‘Development Description’ of this EIAR.

The Site Layout for the Proposed Development is presented in Figure 6-1.

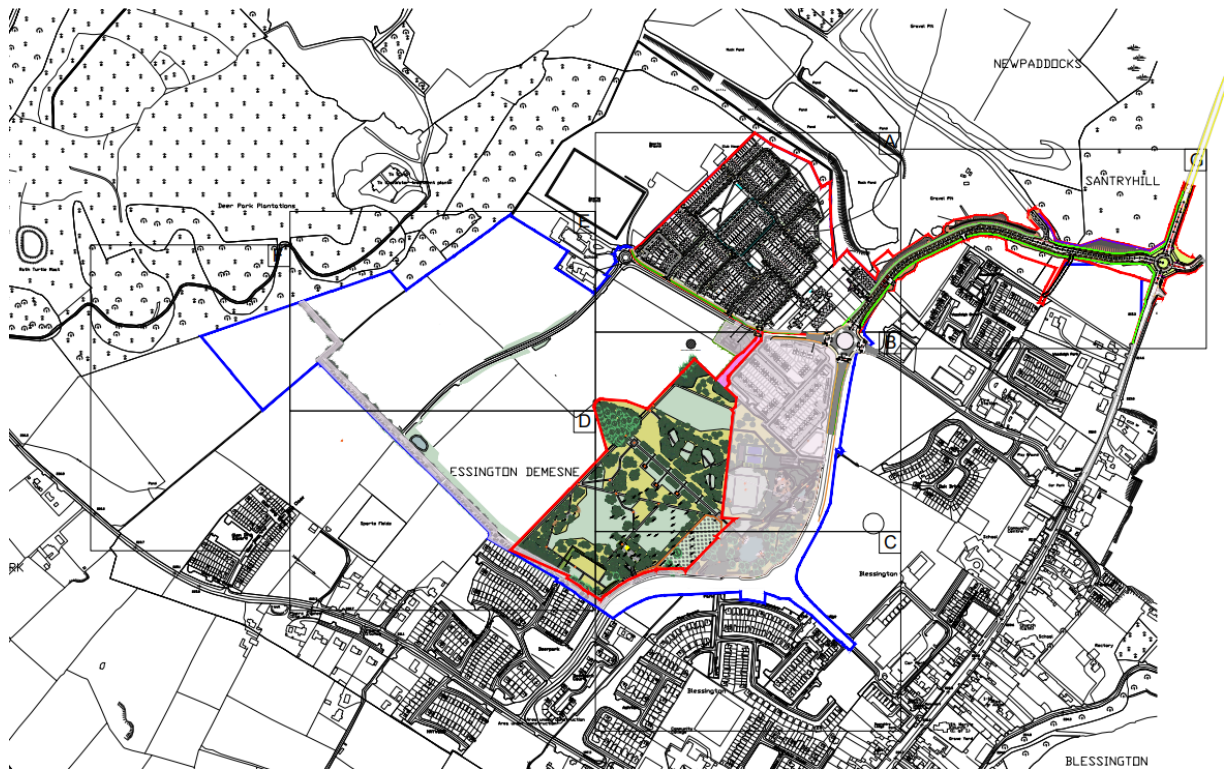


Figure 6-1: Proposed Development Site Layout Plan

6.2 Assessment Methodology

6.2.1 Relevant Legislation and Guidance

The methodology adopted for the assessment will take cognisance of relevant guidelines, in particular the following:

- S.I. No. 92 of 2011- European Parliament and of the Council on the assessment of the effects of certain public and private projects on the environment including amendments S.I. No. 52 of 2014;
- S.I. No. 98 of 2008- European Parliament and of the Council on waste and repealing certain Directives;
- Environmental Protection Agency, May 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Institute of Geologists of Ireland Guidelines, 2002. Geology in Environmental Impact Statements, A Guide (IGI, 2002);
- Institute of Geologists of Ireland Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013);
- National Roads Authority, 2009. Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2009);
- Wicklow County Council, 2022. Wicklow County Development Plan 2022-2028; and
- Wicklow County Council, 2012. Blessington Local Area Plan 2013-2019.

6.2.2 Desktop Research – Principal Data Sources

A phased approach was adopted for this EIAR in accordance with A phased approach was adopted for this EIAR in accordance with Environmental Protection Agency (EPA) and Institute of Geologists of Ireland (IGI) guidelines as set out above and is described in the following sections.

Element 1: An Assessment and Impact Determination stage was carried out by Enviroguide Consulting to establish the project location, type and scale of the development, the baseline conditions, and the type of land, soils and geological environment, to establish the activities associated with the Proposed Development and to undertake an assessment and impact determination. This element of the assessment also included developing the Conceptual Site Model (CSM) for the Site of the Proposed Development and receiving environment.

This stage of the assessment included a desk top study that comprised a review of the following sources of information:

- Environmental Protection Agency (EPA) webmapping 2023 (EPA, 2023);
- Geological Survey of Ireland (GSI) Datasets Public Viewer and Groundwater webmapping, 2023 (GSI, 2023);
- Google Earth Mapping and Imagery, 2023 (Google Earth, 2023);
- Ordnance Survey Ireland (OSI) webmapping, 2023 (OSI, 2023);
- National Parks and Wildlife Services (NPWS) webmapping, 2023 (NPWS, 2023);
- Teagasc webmapping, 2023 (Teagasc, 2023); and
- Information provided by the Applicant including:
 - ✓ Information pertaining to the design proposals for the Proposed Development;
 - ✓ Ground Investigation Ireland, 2020. Ground Investigation Report – Blessington Demesne (GII, 2020);
 - ✓ Ground Investigation Ireland, 2022. Ground Investigation Report – Proposed Development, Blessington Phase 3, Co. Wicklow (GII, 2022); and
 - ✓ Site Investigation Ltd. Report on a Site Investigation for Blessington – Phase 3 at Oak Road, Blessington, Co. Wicklow (SIL, 2023).

The study area, for the purposes of assessing the baseline conditions for the Land, Soils and Geology Chapter of the EIAR, extends beyond the Site boundaries and includes potential receptors with which there may be a pathway to/from the Proposed Development and receptors that may be indirectly impacted by the Proposed Development. The extent of the wider study area was based on the IGI, 2013 Guidelines which recommend a minimum distance of 2.0km from the Site.

A site walkover survey to establish the environmental site setting and baseline conditions at the Site of the Proposed Development relevant to the land, soil and geology environment was undertaken by Enviroguide Consulting on the 9th of January 2023.

Element 2: Involves Direct and Indirect Site Investigation and Studies stage where necessary to refine the CSM developed as part of Element 1 and evaluate the potential impacts associated with the Proposed Development. It was determined that there was adequate site-specific scientific data available

for the assessment and no additional ground investigation in relation to land, soils and geology was undertaken.

Element 3: Evaluation of Mitigation Measures, Residual Impacts and Final Impact Assessment were based on the outcome of the information gathered in Element 1 and of the assessment. Mitigation measures to address all identified adverse impacts that were identified in Element 1 of the assessment were considered in relation to the Construction and Phase and Operational Phase of the Proposed Development. These mitigation measures were then considered in the impact assessment to identify any residual impacts.

Element 4: Completion of the Land, Soil and Geology sections of the EIAR in this Chapter which includes all the associated figures and documents.

6.2.3 Description of Importance of Receiving Environment

The Transport Infrastructure Ireland (TII) criteria for rating of the importance of geological features at the Site as documented in the National Roads Authority Guidelines (NRA, 2009), are summarised in Table 6-1.

Table 6-1 Criteria for Rating Site Importance of Geological Features

Importance	Criteria	Typical Example
Very High	<p>Attribute has a high quality, significance, or value on a regional or national scale.</p> <p>Degree or extent of soil contamination is significant on a national or regional scale.</p> <p>Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale.</p>	<p>Geological feature rare on a regional or national scale (NHA).</p> <p>Large existing quarry or pit.</p> <p>Proven economically extractable mineral resource.</p>
High	<p>Attribute has a high quality, significance, or value on a local scale.</p> <p>Degree or extent of soil contamination is significant on a local scale.</p> <p>Volume of peat and/or soft organic soil underlying route is significant on a local scale.</p>	<p>Contaminated soil on-site with previous heavy industrial usage.</p> <p>Large recent landfill site for mixed wastes.</p> <p>Geological feature of high value on a local scale (County Geological Site).</p> <p>Well drained and/or high fertility soils.</p> <p>Moderately sized existing quarry or pit.</p> <p>Marginally economic extractable mineral resource.</p>

Medium	<p>Attribute has a medium quality, significance, or value on a local scale.</p> <p>Degree or extent of soil contamination is moderate on a local scale.</p> <p>Volume of peat and/or soft organic soil underlying route is moderate on a local scale.</p>	<p>Contaminated soil on-site with previous light industrial usage.</p> <p>Small recent landfill site for mixed wastes.</p> <p>Moderately drained and/or moderate fertility soils.</p> <p>Small existing quarry or pit.</p> <p>Sub-economic extractable mineral resource.</p>
Low	<p>Attribute has a low quality, significance, or value on a local scale.</p> <p>Degree or extent of soil contamination is minor on a local scale.</p> <p>Volume of peat and/or soft organic soil underlying route is small on a local scale.</p>	<p>Large historical and/or recent site for construction and demolition wastes.</p> <p>Small historical and/or recent landfill site for construction and demolition wastes.</p> <p>Poorly drained and/or low fertility soils.</p> <p>Uneconomically extractable mineral resource.</p>

6.2.4 Description of Assessment of Potential Impact

Impacts will vary in quality from negative, to neutral or positive. The effects of impacts will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'impact' significance and the corresponding 'effect' throughout this Chapter is described in Table 6-2 in accordance with EPA, 2022 guidelines on the information to be contained in EIARs.

Table 6-2: Assessment of Potential Terminology and Methodology

Quality of Effects/ Impacts	Definition
Negative	A change which reduces the quality of the environment
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment
Significance of Effects / Impacts	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	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.
Duration of Effects / Impacts	Definition
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration
Brief	Effects lasting less than a day

6.3 The Existing and Receiving Environment (Baseline Situation)

6.3.1 Site Location and Surrounding Land-Use

The Site of the Proposed Development is located within the townlands of Blessington Demesne, Newpaddocks and Santryhill, Co. Wicklow. The Site which is located to the northwest of Blessington Town Centre along Oak Drive, lies approximately 27.0km southwest of Dublin City Centre, approximately 12.0km southeast of Naas and approximately 24km east of Newbridge.

The area surrounding the Site is characterised by a mix of land uses. The site is bound to the west / northwest by the Blessington School, Blessington GAA Club and agricultural lands, to the south / southwest by a residential development, to the east / southeast by a mix of agricultural lands and commercial / residential developments and to the north / northeast by a sand and gravel quarry.

The Site Location is presented in Figure 6-2.

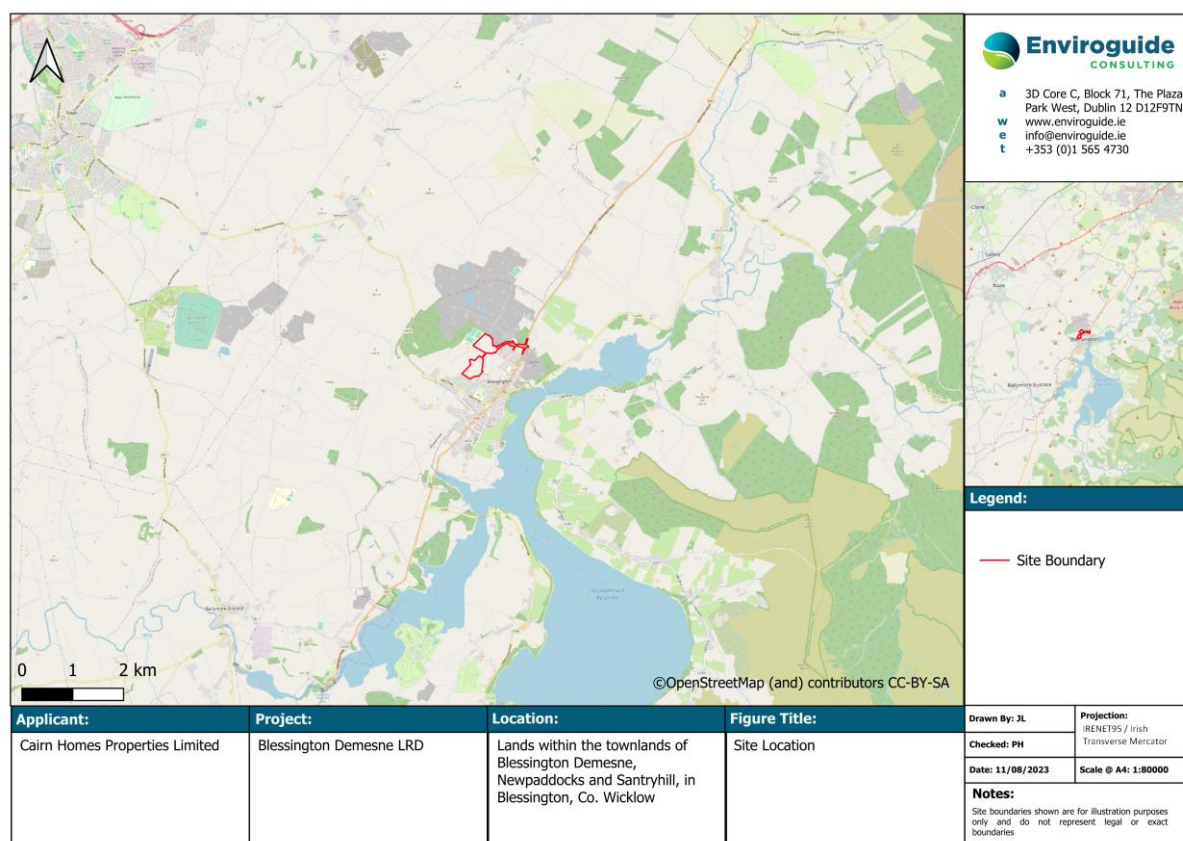


Figure 6-2: Site Layout

6.3.2 Current and Historical Land Uses

The primary land use at the Site is currently agricultural farmland. The current Site layout is presented in Figure 6-3.

The following land zonings and zoning objectives, set out in the Blessington Local Area Plan (LAP) (Wicklow County Council (WCC), 2012. Blessington Local Area Plan (LAP) 2013-2019), applicable to the Site:

- 'Proposed Residential' to 'protect, provide and improve residential amenities';
- 'Open Space' to 'preserve, provide and improve recreational amenity and passive open space'; and
- 'Employment / Proposed Employment' to 'provide for the development of enterprise and employment'.

It is noted that the proposed housing and open space elements of the Proposed Development are considered to meet the zoning objectives of the Blessington LAP 2013-2019.

Historical mapping and aerial photography available from the Ordnance Survey of Ireland website (OSI, 2023) and Google Earth (Google Earth, 2023) were reviewed and key observations on-site and off-site are summarised in Table 6-3.

Table 6-3: Historical Land Use

Date	Information Source	Site Description
1837-1842	OSI Map 6 inch	<p>On site: The Site is comprised of undeveloped grasslands separated by field boundaries and the woodlands associated with Downshire Houses. There is a pond feature located within the southern portion of the Site (i.e., the proposed town park).</p> <p>Off site: The surrounding lands are predominantly open fields divided by field boundaries. Blessington town development has begun and includes a schoolhouse and Church.</p>
1888-1913	OSI 25 Inch	<p>On site: Much of the forestry located within the Downshire House estate has been removed. The pond remains in the southern portion of the Site. There are no other significant changes.</p> <p>Off site: Blessington town has expanded. There is a quarry pit located to the east of the Site.</p>
1995	OSI Aerial Photograph	<p>On site: A road has been constructed in the northern portion of the Site (i.e., along part of the proposed Inner Link Road) to provide access to the quarry now identified to the north of the Site.</p> <p>Off-site: Extensive quarry activities are identified to the north of the Site. The Poulaphouca Reservoir has been constructed to the south.</p>
2001-2005	OSI Aerial Photograph	<p>On site: Downshire House is no longer identified. Oak Drive Road, which intersects the Site, has been constructed. There is evidence of ground disturbance within the southern portion of the Site (i.e., the proposed town park area).</p> <p>Off site: There is a residential development identified at the southwest boundary of the southern portion of the Site (i.e., the proposed town park area). There is some additional residential development identified to the east of the proposed access road to the Proposed Development (i.e., the proposed extension to the Blessington Inner Relief Road). Blessington Town has also been further developed.</p>
2023	Google Earth	<p>On site: No significant changes.</p> <p>Off site: Blessington School and Blessington GAA Club are identified to the northwest of the northern portion of the Proposed Development (i.e., the proposed residential area). There is some additional commercial and residential development identified to the east of the proposed access road to the Proposed Development (i.e., the proposed extension to the Blessington Inner Relief Road). Blessington Town has also been further developed.</p>

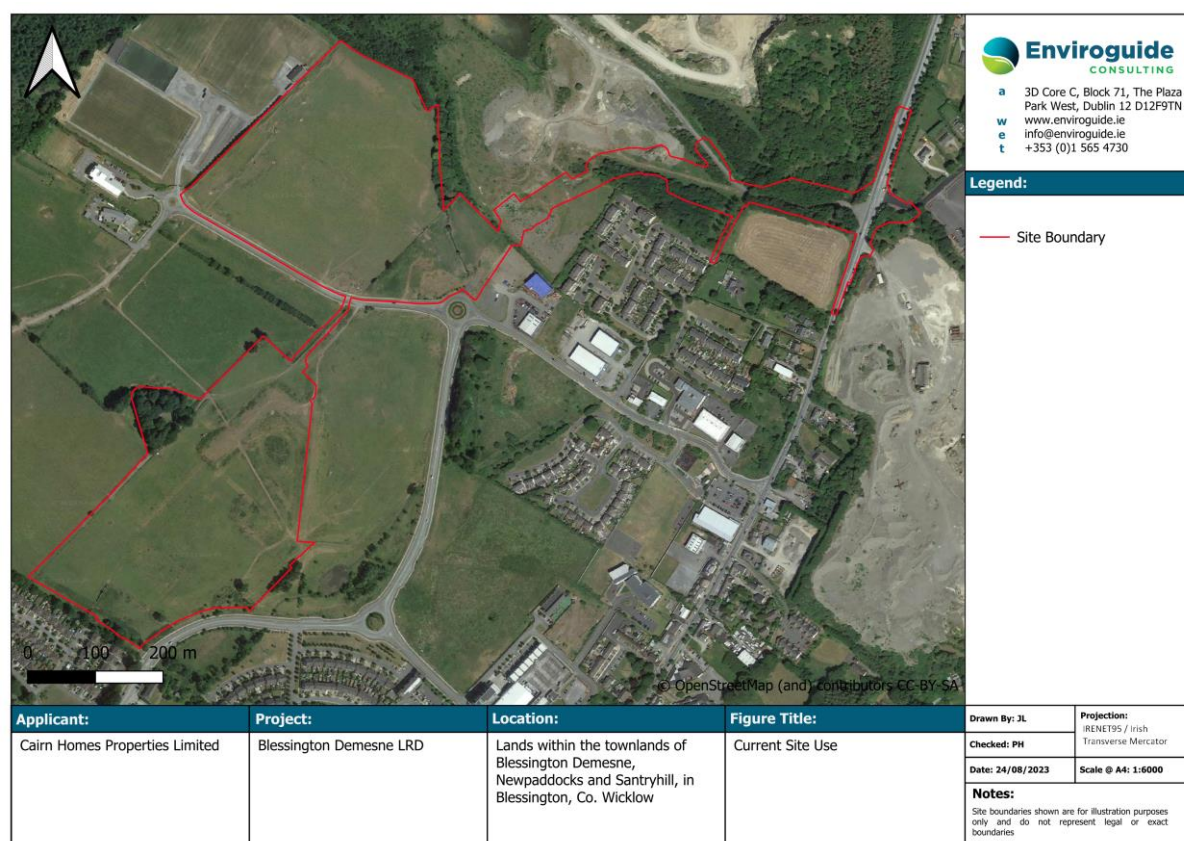


Figure 6-3: Site Layout

6.3.3 Licensed Sites

A review of the EPA database for EPA Licensed Sites (EPA, 2023) indicated that there are three (3No.) EPA licensed facilities within a 2km radius of the Site (refer to Table 6-4).

Table 6-4: Licensed EPA Facilities within a 2km Radius of the Site

Facility Name	Licence No.	Location and Distance	Activity
Roadstone Dublin Remediation Landfill	W0213-01	North (0.2km)	The waste license was surrendered in February 2012. The facility was licensed for Class 1 and Class 13 waste disposal activities and also Class 4, Class 10 and Class 13 waste recovery activities.
Dillonsdown	W0080-01	North (1km)	The site is licensed for Class 1 and Class 13 waste disposal activities and also Class 4, Class 10 and Class 13 waste recovery activities.
A.B. Group Packaging Ireland Limited	P0197-02	South-east (0.8km)	The site is licenced for the use of coating materials in processes with a capacity to use at least 10 tonnes per year of organic solvent and also the recovery and disposal of waste in a facility, within the meaning of the Act of 1996, which facility is connected or associated with another activity specified in the licence.

6.3.4 Topography

Two (2No.) topographical surveys were undertaken by Apex Surveys Ltd. in September 2019 and July 2021. The majority of the Proposed Development (i.e., the proposed residential and town park areas) portion of the site slopes from northwest to southeast at a steep gradient of 1:60 and towards the Blessington Inner Relief Road. The access road to the Proposed Development (i.e., the proposed extension to the Blessington Inner Relief Road) is uneven with some large embankments in the former roadstone lands.

6.3.5 Soils and Quaternary Deposits

The soils beneath the Proposed Development Site have been mapped by the GSI (GSI, 2023) Renzinas and Lithosols derived from mainly calcareous parent materials (IFS Soil Code: BminSW). The parent material is 'Glaciofluvial sands and gravels' (GLs). The GSI (GSI, 2023) mapped soils at the site are presented in Figure 6-4.

The quaternary sediments beneath the site are mapped by the GSI (GSI, 2023) as 'gravels derived from limestone' (GLs). The quaternary geology at the Site is presented in Figure 6-5.

The Blessington Delta, a deglacial landform, is mapped by the GSI (GSI, 2023) beneath the Site. There are also two (2No.) meltwater channels oriented in a southeast direction mapped by the GSI (GSI, 2023) to the north of the Site. Another meltwater channel, oriented in the northerly direction, is mapped by the GSI (GSI, 2023) to the west of the Site. There are also two (2No.) drumlins mapped by the GSI (GSI, 2023) to the east of Poulaphouca Reservoir.

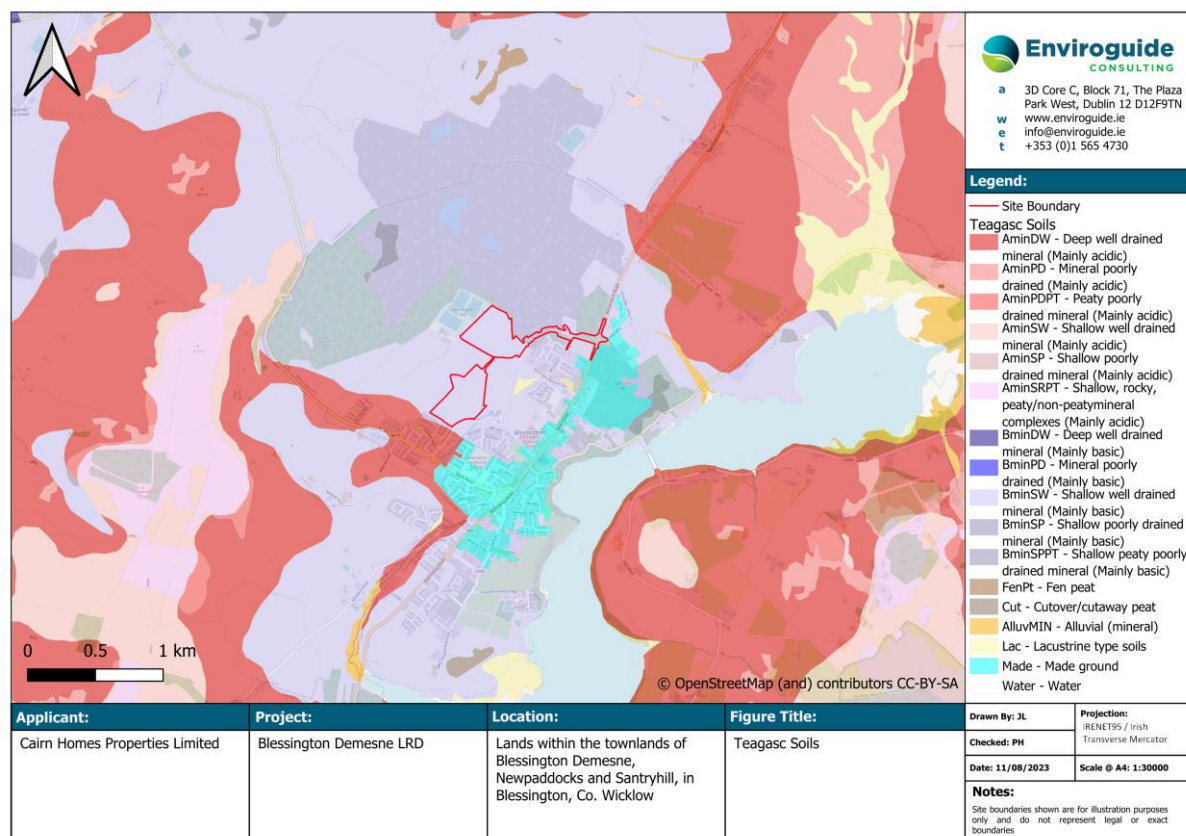


Figure 6-4: Teagasc Soils

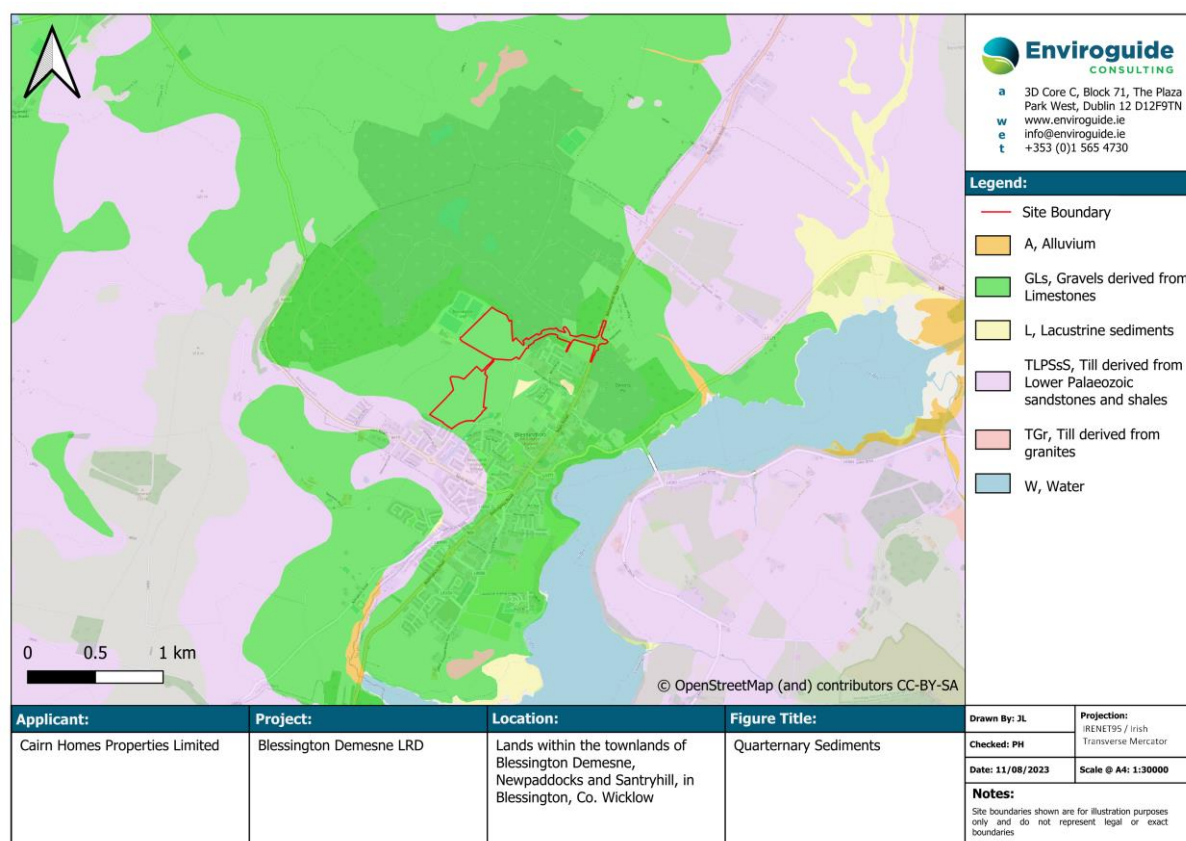


Figure 6-5: Quaternary Sediments

6.3.6 Bedrock and Geology

Based on the GSI database (GSI, 2023), the bedrock beneath the Site is mapped as the 'Poulaphouca Formation' (New Code: SLPLPH). The formation is comprised of 'coarse greywacke & shale'. There are no outcrops mapped within the Site boundary, however, there is a cluster of bedrock outcrops located approximately 1.4km to the west of the Site in the Glen Ding Formation. There is an east to west trending fault mapped to 0.9km to the north and 1.4km to the southwest of the Site (GSI, 2023). The GSI bedrock geology map is presented in Figure 6-6.

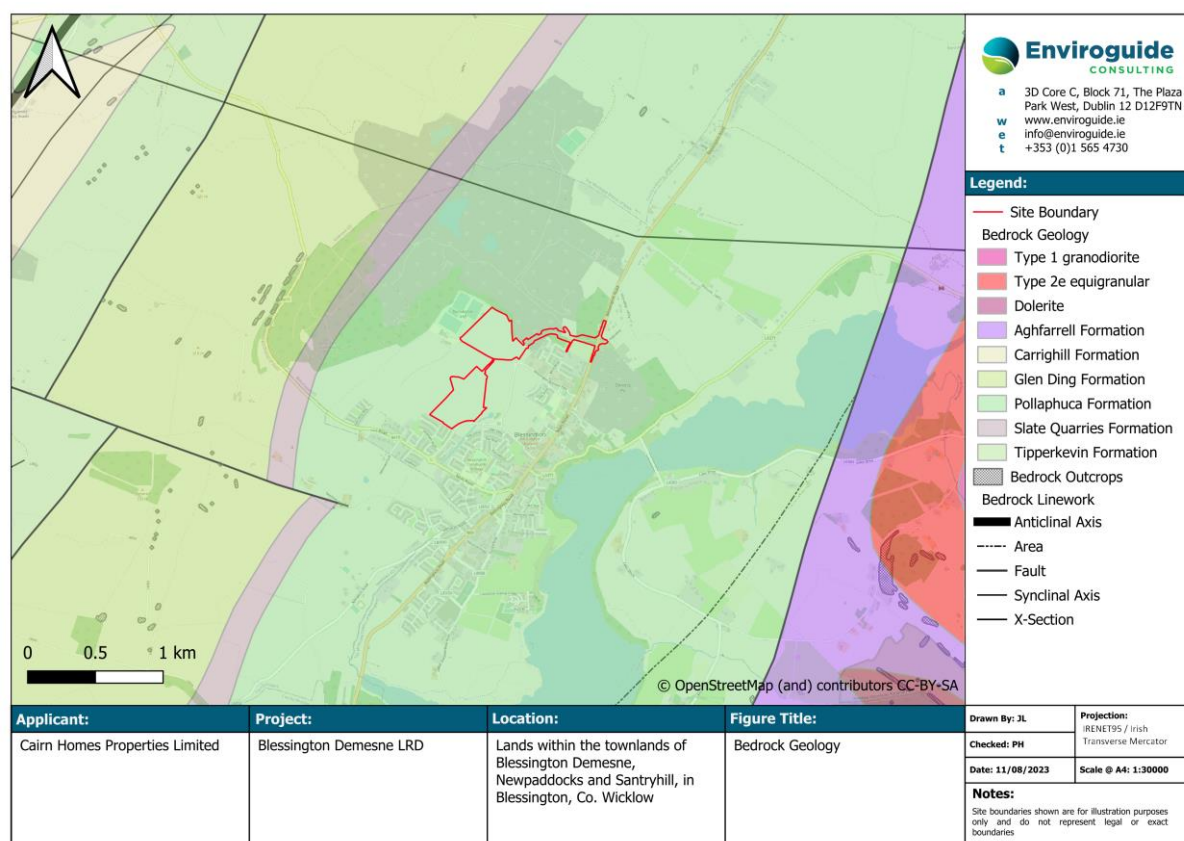


Figure 6-6: Bedrock Geology

6.3.7 Site Investigation Results

The soils and geology encountered during the previous site investigations (GII 2022 and SIL, 2023) are available in Volume 3 of this EIAR and are summarised as follows:

- Material described as 'Topsoil' was encountered at all trial pit locations to depths between 0.1 meters below ground level (mbGL) and 0.5mbGL;
- Made Ground comprising brown and grey, slightly sandy slightly gravelly SILT / CLAY with inclusions of anthropogenic material including plastic, scrap metal, rags and red brick fragments was encountered beneath the 'Topsoil' at thirteen (13No.) locations across the Site to a maximum depth of 3.0mbGL (IT03; GII, 2022);
- The 'Topsoil' and Made Ground (where encountered) were underlain by a variation of soil types to the final extent of investigation comprising brown slightly sandy slightly gravelly CLAY and brown clayey gravelly SAND and brown sandy GRAVEL with varying cobble content to the final extent of investigation;
- Bedrock was not encountered during the previous site investigations boreholes which extended to a maximum depth of 12.1mbGL.

Groundwater was not encountered during the previous site investigations. Groundwater is assessed in Chapter 7 of this EIAR. The detailed trail pit and borehole logs and the site investigation locations are provided in the previous site investigation reports (GII 2022 and SIL, 2023) available in Volume 3 of this EIAR.

6.3.8 Soils Analytics Results

Soil analytical data for soil samples collected across the Site are provided in the in the previous site investigation report (SIL, 2023) available in Volume 3 of this EIAR.

A total of eighty-eight (88) soil samples collected were analysed for a suite of parameters suitable to determine the suitability of soils for disposal to a landfill. The results of the analysis are presented in the previous site investigation reports (SIL, 2023) available in Volume 3 of this EIAR.

As documented in the SIL, 2023 site investigation report, the results of the eighty (80No.) soil and soil leachate analysis show all samples are classified as non-hazardous using HazWasteOnline™ software and are in compliance with the inert landfill limits as stipulated in the European Landfill Directive. (Council Directive 1999/31/EC of 26 April 1999). Therefore, the excavated soils would be considered as inert material for acceptance at landfill if removed from Site (SIL, 2023).

The analytical results for the eight (8No.) samples collected during the GII, 2019 site investigation were not classified as non-hazardous or hazardous using the HazWasteOnline™ software. However, it is noted that the results were in compliance with the inert landfill limits.

Based on a review of the results, there is little evidence of anthropogenic contamination in sampled soils:

- The reported concentration of benzene, toluene, ethylbenzene, m/p-xylene and o-xylene (BTEX), were less than the Limit of Detection (LOD);
- The reported concentration of Polycyclic Aromatic Hydrocarbons (PAHs) were below the LOD;
- The reported concentration of Polychlorinated Biphenyl (PCBs) were below the LOD;
- Low levels of Total Petroleum Hydrocarbons (TPH) and / or mineral oil were reported at eleven (11No.) sample locations with concentration ranging from 1.18mg/kg to 7.77mg/kg. The reported concentrations of TPH and / or mineral oil at remaining sample locations were below the LOD; and
- No asbestos was detected in the eight (8No.) samples screened (GII, 2019). The remaining eighty (80No.) samples were not screened for the presence of asbestos.

6.3.9 Geochemical Domain

The GSI (GSI, 2023) defined Geochemical Domains maps indicates that the Site of the Proposed Development is located within Domain 2 which is characterised as “carboniferous limestone, shale and related rocks”.

A summary of the metals values for Domain 2 are presented below in Table 6-5.

Table 6-5: Geochemically Appropriate Levels for Domain 2

Element	Units	Value
Arsenic	mg/kg	24.9
Cadmium	mg/kg	3.28
Chromium	mg/kg	50.3

Element	Units	Value
Copper	mg/kg	63.5
Mercury	mg/kg	0.36
Nickel	mg/kg	61.9
Lead	mg/kg	86.1
Zinc	mg/kg	197

6.3.10 Radon

The Site of the Proposed Development is mapped by the EPA (EPA, 2023) as being in an area where 'about 1 in 10 homes in this area is likely to have high radon levels'.

The EPA cite the reference level for radon as 200 Bq/m³ and a High Radon Area where more than 10% of homes may have more than the reference level of radioactivity. As up to 10% of the houses in the area are mapped by the EPA as being over this reference level it indicates that the Site is not considered a High Radon Area however, it is noted that a high radon level can be found in any home, in any part of the country.

6.3.11 Geohazards

Earthquakes are not likely to occur in the vicinity of the site at a sufficient intensity to pose a risk for the Proposed Development. The GSI database (GSI, 2023) indicated that the site is located within an area of 'low' on the landslide susceptibility classification map.

The GSI (GSI, 2023) records for karst features indicate that there are no karst features within a 2km radius of the Site.

6.3.12 Geological Heritage

A review of the GSI Geological Heritage Database (GSI, 2023) indicates that there are three (3No.) geological heritage sites located at the Site and / or within a 2km radius of the Site (refer to Table 6-6 and Figure 6-7).

Table 6-6: Geological Heritage Sites with a 2km Radius of the Site

Site Name	Site Code	Location from Site	Distance from Site (km)	Geological Importance
Blessington Delta	WW012	0.0km (Located within the Site)	N/A	A large accumulation of sands and gravel which has been quarried extensively. Geologically important as a high, striking example of a dry sand and gravel ridge, standing proud of the surrounding landscape.

Site Name	Site Code	Location from Site	Distance from Site (km)	Geological Importance
Glen Ding	WW022	West	0.9	A deep channel formed by meltwater erosion on the northwestern flank of the Wicklow mountains. Glen Ding is up to 50m deep and has a U-shaped profile typical of meltwater channels.
Glen Ding	KE006	West	1.0	A dry glacial channel. This heavily wooded glacial spillway displays a pronounced curved channel running approximately north south along the R410 road for about 1.5km. The surrounding area is reported to have extensive deltaic deposits.

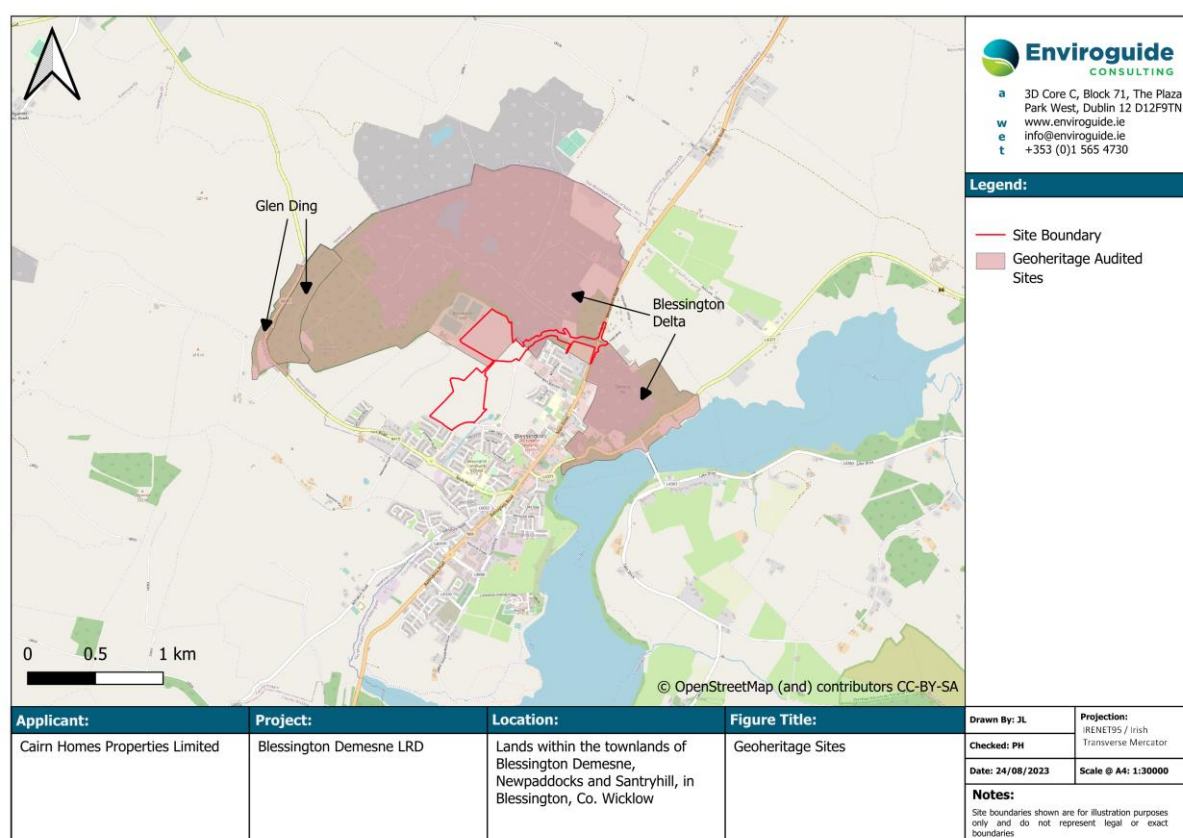


Figure 6-7: Geological Heritage Sites within a 2km Radius of the Site

6.3.13 Economic Geology

The lands beneath the majority of the Site are mapped by the GSI (GSI, 2023) to have a 'very high' granular aggregate potential (refer to Figure 6-8). However, the lands beneath part of the southern portion of the Site (i.e., the proposed town park area) have no mapped granular aggregate potential (GSI, 2023).

The bedrock beneath the Site has been identified by the GSI (GSI, 2023) as having a “low potential” for crushed rock aggregate. It is noted that bedrock was not encountered during previous site investigations undertaken at the Site (refer to Section 6.3.7).

There are ten (10No.) historical pits mapped by the GSI (GSI, 2023) within a 2km radius of the Site, seven (7No.) of which are located within the quarry identified immediately north of the Site.

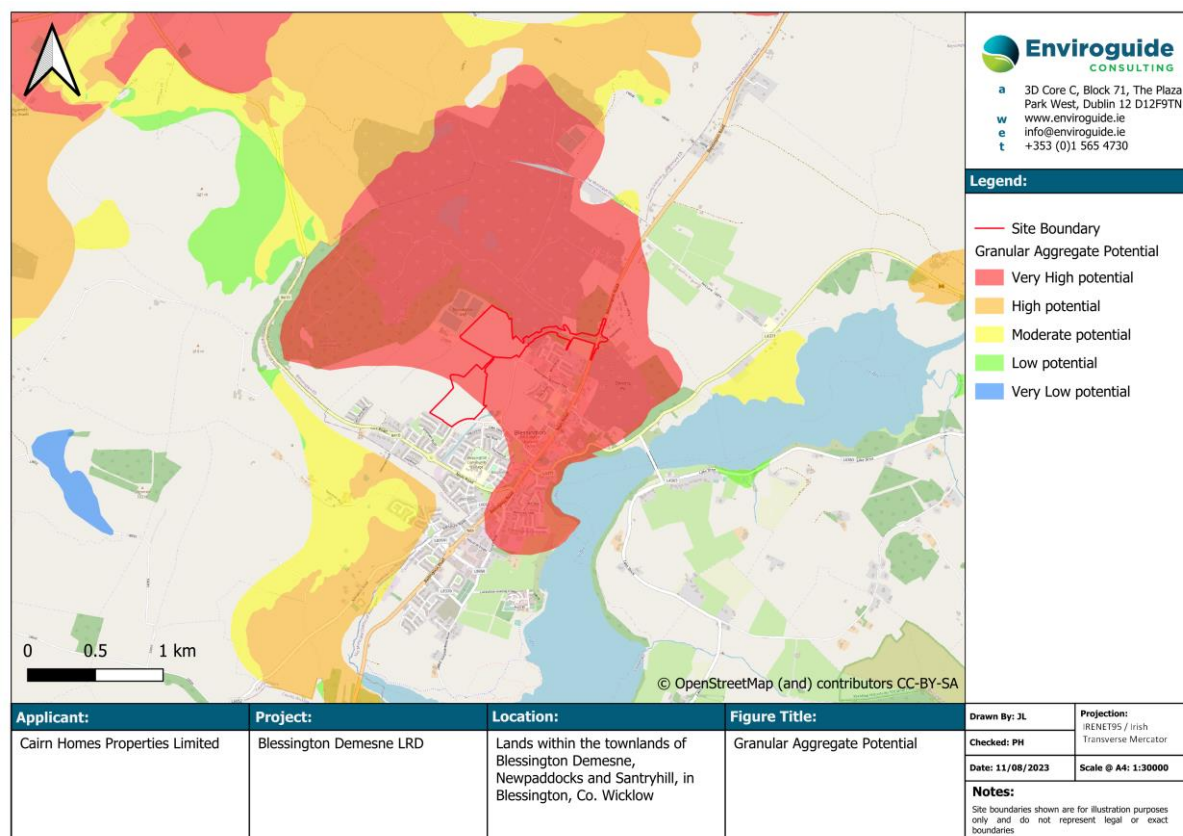


Figure 6-8: Granular Aggregate Potential

6.3.14 Importance of Baseline Environment

It is noted that, in accordance with the TII Guidance as documented by the NRA (NRA, 2009) and as outlined in Table 6-1, the soil and geology underlying the proposed development would be rated as attributes of ‘high’ importance as the majority of the Site is underlain by soil considered to have a ‘very high’ potential for granular aggregates. Furthermore, the Site of the Proposed Development is located within the Blessington Delta geological heritage site boundary which is classified based on the large accumulation of sands and gravel which have been quarried extensively and is considered of high value on a local scale.

6.4 Characteristics of the Proposed Development

The characteristics of the proposed development are set out in detail in Chapter 2 of this EIAR. The following components are of particular relevance with respect to land, soils and geology.

6.4.1 Construction Phase

The Construction Phase of the Proposed Development will include:

- Foundations will likely consist of reinforced concrete strip foundations, with piled foundations used for the concrete strip foundations.

- Excavation for the construction of building foundations to a maximum depth of approximately 1.2mbGL.
- Excavation for the construction of surface water and foul water drainage infrastructure to a maximum depth of approximately 4.0mbGL;
- Excavation for the construction of the Blessington Inner Relief Road extension to a maximum depth of approximately 4.5mbGL;
- There will be no requirement for the excavation of bedrock during the Construction Phase of the Proposed Development.
- The total volume of soil for excavation to construct the Proposed Development is estimated at 40,000m³. It is intended to reuse suitable excavated topsoil for landscaping and engineering use. However, it is estimated that approximately 4,000m³ of excavated soil will require removal offsite in accordance with all statutory legislation.
- Temporary stockpiling of excavated material pending re-use onsite.
- The construction of the Proposed Development will also require the importation of 12,000m³ aggregates for the construction of roadways and footpaths. It is anticipated that an additional 7,000m³ of aggregates will also be required for the construction of utility infrastructure.

6.4.2 Operational Phase

The Operational Phase of the Proposed Development consists of the typical activities in a residential development and with the exception localised gardening works by residents, there will be no bulk excavation of soils or bedrock or infilling of waste.

There will be no requirement for bulk storage of petroleum hydrocarbons-based fuels during the Operational Phase as the main operating system for heating will be air to water heat pump and further details are provided in Chapter 14 of this EIAR.

6.5 Potential Impact of the Proposed Development

The procedure for determination of potential impacts on the receiving land, soils and geology is to identify potential receptors within the Site boundary and surrounding environment and use the information gathered during the desk study and Site walkover to assess the degree to which these receptors will be impacted upon in the absence of mitigation.

The potential impacts associated with the Construction phase and Operation phase of the Proposed Development are summarised below.

6.5.1 Construction Phase

6.5.1.1 Land Take and Land Use

The Proposed Development will require land take of 25.05 hectares (HA) and will change from undeveloped land to residential, public open space and transport land uses. The change in land use is in accordance with the zoning objectives as set out in the Blessington Local Area Plan 2013-2019. There will be an unavoidable land take with loss of undeveloped lands and soil with a 'negative' 'significant' and 'permanent' impact taking account of the surrounding land and zoning objectives.

6.5.1.2 Excavation and Removal of Soil and Subsoil

There will be unavoidable loss of in-situ soils and subsoils from the Site during the construction of the Proposed Development.

The soils underlying the Proposed Development are considered to be of 'high' importance. The construction of the Proposed Development will require excavation of approximately 40,000m³ of soil and subsoils to depths of up to 4.5mbGL for the construction of building foundations, roadways and drainage infrastructure. Where possible, it is intended to retain and re-use the excavated soil and subsoil on the subject site for engineering fill and landscaping. However, it is anticipated that approximately 4,000m³ of material will require removal offsite. Accordingly, there will be a 'negative', 'moderate' and 'permanent' impact at the Site of the Proposed Development.

Any material not suitable for re-use onsite will be removed offsite in accordance with applicable statutory requirements. This may include where suitable, removal as by-products that meet the legislative requirements of Article 27 of the European Communities (Waste Directive) Regulations, 2011. The potential impact with removal offsite of surplus soil and other material as wastes is assessed in Chapter 13 of this EIAR.

6.5.1.3 Soil Quality and Contamination

The Site currently comprises undeveloped lands. The previous site investigation reports (GII, 2019 and SIL, 2023) have identified localised areas of made ground across the Site. There will be a requirement for the excavation and removal of soil including made ground with some localised soils in the upper 1.0mbGL impacted with low levels of anthropogenic contamination (i.e., petroleum hydrocarbons – refer to Section 6.3.7) and permanent removal off-site that will result in a 'positive', 'slight' and 'permanent' impact on the quality of shallow soils underlying the Site. It is noted that the excavation and re-use of soil onsite will be subject to control procedures which will include soil quality testing to ensure suitability for use onsite and in accordance with engineering and environmental specification for the Proposed Development.

There is a potential risk associated with the use of cementitious materials during construction of building foundations, utility infrastructure and other in ground works at the Site. It is considered that this may result in a 'negative', 'moderate' and 'long-term' impact on existing quality of soil within a localised area underlying the Site.

The potential accidental release of deleterious materials including fuels and other materials being used onsite, through the failure of secondary containment or a materials' handling accident on the Proposed Development could potentially result in a 'negative', 'moderate to significant', 'long-term' impact on the receiving soil and geology depending on the nature of the incident.

6.5.1.4 Geological Heritage

The Site is located within the Blessington Delta which is considered a geological heritage site described by the GSI (GSI, 2023) as 'a large accumulation of sands and gravel which has been quarried extensively' which is 'geologically important as a high, striking example of a dry sand and gravel ridge, standing proud of the surrounding landscape'. Given that the Blessington Delta has already been heavily quarried, and that it is intended to retain and re-use the excavated soil and subsoil on the subject site for engineering fill and landscaping (where possible), it is considered that the Proposed Development will have an unavoidable 'negative' 'moderate' and 'permanent' impact on the geological heritage site.

6.5.1.5 Dust Generation

There is a potential for creation of windblown dust generation from the temporary stockpiling of materials on site. There will be some exhaust emissions generated from use of excavators, HGVs and vibrating rollers during the construction phase of the Proposed Development. An assessment of the potential impact of the Proposed Development with regard to the generation of dust is addressed in Chapter 8 of this EIAR.

6.5.1.6 Soil Structure

The excavation and re-use of soil at the Site will result in the exposure of the materials to various elements including weather and construction traffic. The temporary stockpiling of soils and subsoils pending reuse onsite will have a potential 'negative,' slight' and 'long term ' impact' on the natural strength of the materials.

6.5.1.7 Importation of Fill Materials

The Proposed Development will require the importation of 19,000m³ of aggregates for the construction of roads and utility infrastructure. The potential impacts may include loss of attribute and changes in the geological regime at the source site. It is anticipated that the required aggregates identified for importation onsite will be 'indirect' and have a 'indirect', 'neutral', 'imperceptible' and 'permanent' impact on the source site taking account of the fact that the statutory consent process would have required the necessary environmental impacts to be assessed and mitigated as appropriate at the source site.

6.5.2 Operational Phase

During the operational phase of the Proposed Development there is a limited potential for any direct adverse impact on the receiving land, soil and geological environment at the site taking account of the design for the Proposed Development.

The design and construction of the proposed development in accordance with current Building Regulations will ensure that the site will be suitable for use for operational phase as a residential development taking account of the geological site setting.

The site has not been identified as being located within a high radon area. However, standard design measures including appropriate radon membranes will be incorporated into the design of building in accordance with relevant Building Regulations.

6.6 Cumulative Impacts

Cumulative Impacts can be defined as "impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A review of other off-site developments and Proposed Developments was completed as part of this assessment. The following projects and plans were reviewed and considered for possible cumulative effects with the Proposed Development.

Table 6-7 details the existing, proposed and granted planning permissions on record in the area:

Table 6-7: Potential Cumulative Impacts

Planning Ref No.	Status	Applicant Name	Summary of the Development
20/184 (ABP Ref. PL 27.308578)	Granted by ABP (with revised conditions 27.01.2022)	Glenveagh Homes Limited	Nursing care home and residential development comprising (a) nursing care home (4 no storeys of 120 no bedspaces (c.7428 sqm) along with 60 no car parking spaces (at undercroft and basement level c.2477 sqm), open space and all associated

Planning Ref No.	Status	Applicant Name	Summary of the Development
			residential care facilities (b) construction of 77 no dwellings comprising 29 no 2 storey houses (10 no 2 bedroom houses (house type E) and 19 no 3 bedroom houses (house types C, D & F), and 48 no apartments / duplex apartments as follows: Block A & D, 3 storeys comprising 30 no apartments (15 no 2 bedroom apartments in each building), blocks B & C, 3 storeys comprising 12 no apartments (2 no 2 bedroom apartments and 4 no 3 bedroom apartments in each building), blocks E & F, 3 storeys comprising 6 apartments (3 no 2 bedroom apartments in each building), all apartment units to have balcony or terrace, (c) hard and soft landscaping (including public lighting) and open space (boundary treatment), communal open space for duplex apartments, regarding / reprofiling of site where required along with bicycle / bin stores and 100 no car parking spaces for dwellings (d) vehicular access from the west (from Blessington Inner Relief Road (BIRR) and south west along link road between the BIRR and Main Street with pedestrian accesses as well as works to roundabout and provision of road crossings (e) surface water attenuation measures and underground attenuation systems as well as connection to water supply, drainage, (f) all ancillary site development / construction works
20/362	Granted 09/10/20	Glenveagh Homes Limited	Development at a site (c.3.43 hectares) at Blessington Demesne, Blessington, Co. Wicklow bounded generally by Oak Drive and Blessington Inner Relief Road to the north and east, and Cocoon Crèche to the south, and Glenveagh Homes Ltd., Phase 1 lands (under Planning reg. ref. 20/184 for a proposed 120 bedroom Nursing Home and 77 no. dwellings) to the west. The proposal is for the second phase of development on the overall Glenveagh lands and will consist of: A) The construction of 96 no. dwellings providing 39 no. 2 storey 2 bedroom houses [House Types E1, G], 54 no. 2 storey 3 bedroom houses [House Types C, D, F], along with 3 no. 2 bedroom duplex/apartments in a 3 storey block (Block G) all apartment units to have balcony or terrace; B) Hard and soft landscaping (including public lighting) and open space (boundary treatment); communal open

Planning Ref No.	Status	Applicant Name	Summary of the Development
			space for duplex apartments; well as regrading/re-profiling of site where required [including import and export of soil, if required] as well as bicycle/bin stores and 178 no. car parking spaces; C) Vehicular access from the west (from Blessington Inner Relief Road [BIRR]) and south west along link road between the BIRR and Main Street, with provision for pedestrian connection to Oak Park to the east; D) Surface water attenuation measures (including underground attenuation systems) as well as connection to water supply, drainage; E) All ancillary site development/construction works
21/1068	Grant permission (subject to conditions) on 16/08/2022	Windlynn Limited & Two-Mile House Construction Ltd	To facilitate proposed residential development (69 no residential units) and proposed primary school (circa 2,334.70 sqm) on adjacent lands at Kilmalum, Blessington, Co. Kildare comprising of the upgrade to the Kilmalum Road from the Roundabout junction of Kilmalum Road with Kilmalum Crescent to the culvert over the Deerpark_09 Watercourse and these works are to comprise replacement of the existing dishd curb and crossing with a new ramped pelican pedestrian crossing, improved pedestrian and cycle connections, new 'in-only' vehicular entrance onto the Kilmalum Road and underground connection to the existing watermain
19/1020 ABP 306425	Grant permission (subject to revised conditions) by ABP on 17/02/21	Glengolden Builders Ltd	Housing development to include (a) apartment block A (three - four storeys in height) consisting of 3 no 3 bedroom apartment, 14 no 2 bedroom apartments and 5 no 1 bed apartments (b) apartment block B (three - four storeys in height) consisting of 3 no 3 bedroom apartments, 14 no 2 bedroom apartments and 1 no 1 bed apartment (c) apartment block C (three - four storeys in height) consisting of 3 no 3 bedroom apartments, 4 no 2 bedroom apartments and 8 no 1 bed room apartments. The total number of apartments is 58 (d) connection to main services and all associated site development works including attenuation, foul drains, surface water drains, water main roads, car parking bicycle parking, footpaths, bin storage, boundaries, and boundary treatment, public lighting, mini pillars, open space and landscaping (e) 2 no new site entrances

Planning Ref No.	Status	Applicant Name	Summary of the Development
19/940	Granted 02/04/20	Downshire Lodge Nursing Home Ltd & Downshire Place Independent Living Ltd	Demolition and removal works to include: removal of the single storey modern extension along the Main Street adjoining the Downshire Hotel, removal of the single storey shed to the rear of the site, removal of the existing single storey building to the rear of 'Foley's House' (house B), partial lowering of the existing wall along Kilbride Road with modifications to the existing vehicular access and removal of the extensive modern hotel structure to the rear of the existing vacant Downshire Hotel. The proposal includes the construction of a 104 no bed nursing home across Lower Ground to Second Floor level, all with associated plant areas, circulation area, ancillary spaces, day rooms, dining rooms, multi purposes activity rooms, kitchen, staff facilities with connection to the exiting retained property along the Main Street at Ground and First Floor levels, the conversion of the ground floor of the former Downshire Hotel into a café, nursing home reception, office and public WCs accessed from the Main Street, the 1st floor is proposed to accommodate 6 no nursing home bedrooms and a library, conversion of the building to the church (north east) boundary to accommodate 1 no 3 bed and 1 no 1 bed unit for the purpose of nursing home staff accommodation, conversion of coach house B into mechanical and electrical plant area, upgrading of 'Foleys House' to a 6 no bedroom house for the purpose of nursing home staff accommodation, the consolidation of the facades of the former Downshire Hotel, Foleys House and both outbuildings (Coach House A and Coach House B) along the north east and south west boundaries, the proposal also includes the construction of 30 no 1 bed independent living units, across 2 no blocks, off 2-3 storey in height, vehicular access from Kilbride Road through a revised vehicular access point with Pedestrian access from Main Street, all with associated signage, landscaping, drainage, ambulance drop off zone, 66 no car parking spaces (including 3 no disabled car parking spaces), plant space, bin storage, cycle parking and site works

Planning Ref No.	Status	Applicant Name	Summary of the Development
19/693	Grant by ABP 12/05/19	TD Housing Ltd	Demolition of existing agricultural shed (14 sqm) and the construction of 56 no residential units (2 no 4 bed houses, 49 no 3 bed houses, 3 no 2 bed houses and 2 no 2 bed apartments), 113 no ancillary car parking spaces, hard and soft landscaping, lighting, balconies facing northeast and southwest, solar panels, boundary treatments, ESB substation, changes in level, and all associated site development works above and below ground
20/108	Notification to grant 31/07/20	The Rectory, Kilbride Rd, Blessington	Demolition of a 1.5 storey derelict outbuilding (within the curtilage of a protected structure) and for the construction of 45 no residential units consisting of 24 no two storey 3 bed (5 person) terraced houses (101.6 sqm), 7 no two storey 3 bed (5 person) terraced houses (105.5 sqm) and 2 no two storey semi-detached houses (101.6 sqm), 3 no 2 storey apartment blocks consisting of 12 no apartments consisting 6 no ground floor apartments, 2 bed (4 persons) (88 sqm) and 6 no 1st floor apartments 2 bed (4 persons) (75 sqm), maintaining the existing Rectory building (protected structure) as a residential house as is, maintaining the existing Mass Path, a communal pedestrian footpath extending towards Main Street, a communal cycle lane and a communal pedestrian footpath beyond the south eastern boundary wall and adjacent to Kilbride Road, 81 no car parking spaces, renovation and relocation of the derelict eastern entrance pier and wall (within the curtilage of a protected structure), widening of existing gate / entrance plus new pedestrian gate and improved access to existing Mass Path, new front boundary wall and railing, drainage infrastructure, landscaping, services and all associated works

Excavated soil and subsoil during the Construction Phase of the Proposed Development could potentially be directed to the same receiving waste facilities for recovery / disposal as excavated materials from other developments outlined in Table 6-9 and within the wider Wicklow area. All surplus soils and stone from the site will be removed offsite in accordance with all statutory legislation. Accordingly, it is considered that any cumulative impact on lands, soils and geology associated with the Proposed Development will be 'neutral', 'imperceptible' and 'permanent'.

There are no other cumulative impacts associated with land, soil and geology associated with the Construction and operational Phase of the Proposed Development.

6.7 'Do Nothing' Scenario

The 'Do Nothing' scenario assesses the potential impact on the receiving land, soils, and geological environment if the proposed development did not proceed.

It is considered that there would be no change or resulting impact on the nature of the subject site with respect to land, soil and geology at the Site would remain as undeveloped land.

However, the land-use is zoned as 'Proposed Residential', 'Open Space' and 'Employment / Proposed Employment' in accordance with the Blessington LAP 2013-2019. As such is reasonable to assume another similar residential development proposed for the lands could be brought forward for the Site. This would require a separate assessment or EIAR applicable to the relevant scheme design.

6.8 Avoidance, Remedial or Mitigation Measures

The mitigation measures as outlined below, will ensure that there will be no significant impact on the receiving land, soil and geology.

6.8.1 Construction Phase

A preliminary Construction Environmental Management Plan (CEMP) (DBFL, 2023a) and Resource and Waste Management Plan (RWMP) (Enviroguide Consulting, 2023) have been prepared as part of the planning application. Following appointment, the contractor will be required to further develop the CEMP and RWMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001).

The CEMP and RWMP will be implemented for the duration of the Construction Phase, covering construction and waste management activities that will take place during the Construction Phase of the Proposed Development.

6.8.1.1 Import of Aggregates

Contract and procurement procedures will ensure that all imported aggregates required for the proposed development will be sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity/compliance standards and statutory obligations. The importation of aggregates shall be subject to management and control procedures which shall include testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the proposed development. Therefore, any unsuitable material will be identified prior to unloading / placement onsite.

6.8.1.2 Airborne Dust Generation

Excavated soils will be carefully managed and maintained in order to minimise potential impact on soil quality and soil structure. Handling of soils will be undertaken in accordance with documented procedures that will be set out in order to protect ground and minimise airborne dust. As outlined in the CEMP (DBFL, 2023a), the measures required to prevent airborne dust emissions and associated nuisance arising from site work will be in place including measures to prevent uncovered soil drying out leading to wind pick up of dust and mud being spread onto the local road network and adjoining properties. This may require additional wetting at the point of dust release, dampening down during dry weather and wheel cleaning for any vehicles leaving the Site. Potential impacts and avoidance and mitigation measures associated with generation of dust are addressed in Chapter 8 of this EIAR.

6.8.1.3 Reuse of Soil

Soil and subsoil materials to be reused within the Proposed Development (i.e., for landscaping on site) will be subject assessment of the suitability of for use in accordance with engineering and environmental specification for the Proposed Development.

6.8.1.4 Management and Control of Soils and Stockpiles

Segregation and storage of soils for re-use on-site or removal off-site and waste for disposal off-site will be segregated and temporarily stored on-site pending removal or for reuse on-site in accordance with the CEMP (DBFL, 2023a) and RWMP (Enviroguide Consulting 2023).

Where possible, stockpiling of soils and subsoils onsite will be avoided. However, in the event that stockpiling is required, stockpiled materials, pending reuse on-site, will be located away from the location of any sensitive receptors (watercourses and drains). In accordance with Inland Fisheries Ireland guidelines, stockpiles will not be allowed within 30m of the open water where sufficient working areas are available within the Site boundary.

The re-use of suitable cut material on-site for the Proposed Development (i.e., landscaping, raising levels or engineering fill) will be undertaken in accordance with the engineered design of the Proposed Development. Surplus or unsuitable soils will be removed offsite.

Surplus material, not suitable for reuse onsite, will be segregated, and stockpiled appropriately for removal offsite. For any excavated material identified for removal offsite, while assessment and approval of acceptance at a destination re-use, recovery site or waste facility is pending, excavated soil for recovery/disposal shall be stockpiled as follows:

- A suitable temporary storage area shall be identified and designated;
- All stockpiles shall be assigned a stockpile number;
- Material identified for reuse on site, off site and waste materials will be individually segregated and all segregation, storage & stockpiling locations will be clearly delineated on the Site drawings.
- Soil stockpiles will be covered to prevent run-off from the stockpiled material generation and/or the generation of dust;
- Material identified for reuse on site, off site and waste materials will be individually segregated;
- Any waste that will be temporarily stored / stockpiled will be stored on impermeable surface high-grade polythene sheeting, hardstand areas or skips to prevent cross-contamination of the soil below or cross contamination with soil;
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust; and
- Stockpiles will be a minimum of 30m from drains.

6.8.1.5 Export of Resource (Soil and Subsoil) and Waste

All surplus materials and any waste will be removed off-site in accordance with the requirements outlined in the RWMP (Enviroguide Consulting, 2023) and will be managed in accordance with all legal obligations. It will be the contractor's responsibility to either; obtain a waste collection permit or, to engage specialist waste service contractors who will possess the requisite authorisations, for the collection and movement of waste off-site.

The re-use of soil and subsoil offsite will be undertaken in accordance with all statutory requirements and obligations including where appropriate re-use as by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended.

Any surplus material not suitable for re-use as a by-product and other waste materials arising from the Construction Phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities. As only authorised facilities will be used, the potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures.

Any waste soils will be transported under a valid waste collection permit issued under the Waste Management (Collection Permit) Regulations 2007, as amended and will be delivered to an appropriately authorised waste management facility.

Materials and waste will be documented prior to leaving the site. All information will be entered into a waste management register kept on the site.

Vehicles transporting material with potential for dust emissions to an off-site location shall be enclosed or covered with a tarpaulin at all times to restrict the escape of dust.

Public roads outside the Site will be regularly inspected for cleanliness and cleaned as necessary. The main contractor will carry out road sweeping operations, employing a suction sweeper or similar appropriate method, to remove any project related dirt and/or material deposited on the road by construction/ delivery vehicles. Wheel-wash systems will be set up at any site entrances / exits in the event there is a risk of debris deposited on the road as outlined in the CEMP (DBFL, 2023a).

6.8.1.6 Concrete Works

The cementitious grout and other concrete works during the Construction Phase, will avoid any contamination of ground through the use of appropriate design and methods implemented by the Contractor and in accordance with the CEMP (DBFL, 2023a) and relevant industry standards.

All ready-mixed concrete will be delivered to the site by truck. Concrete batching will take place offsite, wash down and wash out of concrete trucks will take place offsite and any excess concrete is not to be disposed onsite.

A suitable risk assessment for wet concreting shall be completed prior to works being carried out. Pumped concrete will be monitored to ensure there is no accidental discharge.

6.8.1.7 Handling of Fuels, Chemicals and Materials

Fuelling and lubrication of equipment will be carried out in accordance with the procedures outlined in the CEMP (DBFL, 2023a), in a designated area of the Site away from any watercourses and drains (where not possible to carry out such activities onsite).

Any diesel, fuel or hydraulic oils stored on-site will be stored in designated areas (DBFL, 2023a). These areas will be bunded and located away from surface water drainage and features. Bunds will have regard to Environmental Protection Agency guidelines 'Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities' (EPA, 2013). All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

The main contractor will maintain an emergency response action plan and emergency procedures will be developed by the appointed contractor in advance of any works commencing. Construction staff will be familiar with the emergency response plan (DBFL, 2023a).

As outlined in the CEMP (DBFL, 2023a), spill kits will be made available onsite and identified with signage for use in the event of an environmental spill or leak. A spill kit will be kept in close proximity to the fuel storage area for use in the event of any incident during refuelling or maintenance works. Heavy machinery used on the site will also be equipped with its own spill kit.

6.8.1.8 Emergency Procedures

Emergency procedures will be developed by the appointed Contractor in advance of works commencing and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements.

- Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the site;
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants;
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained;
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards;
- All construction works staff will be familiar with emergency procedures for in the event of accidental fuel spillages; and
- All construction works staff on-site will be fully trained on the use of equipment.

This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving land, soil and geological environment associated with the Construction Phase of the Proposed Development.

6.8.1.9 Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Foul drainage from temporary welfare facilities during the Construction Phase of the Proposed Development will be discharged to temporary holding tank(s) the contents of which will periodically be tankered off site to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by tankering of waste offsite by an appropriately authorised contractor.

6.8.2 Operational Phase

There is no requirement for mitigation measures for the Operational Phase taking account of the design measures for the Proposed Development.

6.9 'Worst Case' Scenario

In a 'Worst Case' scenario the potential accidental release of hazardous material including fuels, or other hazardous materials being used on-site during the construction Phase would present a 'negative', 'moderate' and 'long-term' impact on the receiving land, soils, and geology environment. However, this scenario would only occur through the failure of secondary containment or a major incident on the proposed development site. This worst-case scenario is deemed to be unlikely to occur.

6.10 Residual Impacts

Residual Impacts are defined as 'effects that are predicted to remain after all assessment and mitigation measures. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts.

The predicted impacts of the construction and operational phases are described in in terms of quality, significance, extent, likelihood, and duration. The relevant mitigation measures are detailed, and the residual impacts are determined which take account of the avoidance, remedial and mitigation measures.

Overall, there is no significant residual impact on land, soils and geology with the exception of change in land use and land take which is unavoidable and there are no mitigation measures.

Table 6-8: Residual Impacts

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Construction Phase								
Construction of the Proposed Development	Land Take and Land Use	The Proposed Development will require land take of 25.05 hectares (HA) and will change from undeveloped land to residential, public open space and transport land uses.	Negative	Significant	Permanent	Direct	Unavoidable and no mitigation. The Proposed Development is in line with the zoning objectives as set out in the Blessington Local Area Plan 2013-2019.	Significant
Excavation of In-situ soils and subsoil	Soils and Subsoil	There will be an unavoidable a loss of in-situ soil and subsoil through excavation works for the construction of building foundations, roadways and	Negative	Moderate	Permanent	Direct	None required. It is intended to retain and re-use the excavated soil and subsoil on the subject site for engineering fill and landscaping. The removal of all surplus soil will be undertaken in accordance with	Moderate

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
		drainage infrastructure.					applicable statutory requirements.	
Excavation of Made Ground	Soil Quality	The excavation of made ground including some soils impacted with low levels of anthropogenic contamination (i.e., petroleum hydrocarbons) and permanent removal off-site is a design requirement of the Proposed Development	Positive	Slight	Permanent	Direct	None required.	Positive
Accidental release of deleterious materials including cement, fuel and other material being used on-site.	Soils, Subsoils and Bedrock	Potential (albeit low) for uncontrolled release of deleterious materials including fuels, cement and other materials being used on-site, through the failure	Negative	Moderate to Significant	Long-term	Direct	Refuelling and lubrication of plant during the construction phase will only be carried out in designated impermeable areas on site.	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
		of secondary and tertiary containment or a materials handling accident, to the land, soil, and geological environment.					Any other diesel, fuel or hydraulic oils stored on-site or within fuel containing equipment will be stored in bunded storage tanks / drip trays. The cementitious materials will avoid contamination of using appropriate design and methods implemented by the appointed Contractor and in accordance with industry standards.	
Excavation of In-situ soils and subsoil	Geological Heritage	There will be an unavoidable loss of attribute to the Blessington Delta in which the site is	Negative	Moderate	Permanent	Direct	None required. It is intended to retain and re-use a substantial proportion of the	Moderate

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
		located through excavation works for the construction of building foundations, roadways and drainage infrastructure.					excavated soil and subsoil on the subject site for engineering fill and landscaping.	
Stockpiling of excavated soil and subsoils	Soil structure	The temporary stockpiling of excavated soils will result in exposure of the materials to various elements including weather.	Negative	Slight	Long-term	Direct	The segregation and stockpiling of soil and stone at the site pending reuse or removal offsite will be carefully managed and maintained in order to minimise potential impact on soil quality.	Slight
Import of required soil, subsoil and aggregates	Land, Soil and geology at the source Site	The Proposed Development will require the importation of 19,000m ³ of aggregates. The potential impacts may include loss of	Negative	Slight	Permanent	Indirect	Only certified materials from authorised sources will be used.	Imperceptible.

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
		attribute and changes in geological setting at the source site.						
Operational Phase								
There will be no direct or indirect impact on the receiving land, soils and geological environment associated with the Operational Phase of the Proposed Development.								

6.11 Monitoring

6.11.1 Construction Phase

During the Construction Phase of the Proposed Development the following monitoring measures will be considered:

- Routine monitoring and inspections during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures;
- Inspections and monitoring will be undertaken during excavations and other groundworks to ensure that measures that are protective of water quality are fully implemented and effective;
- Materials management and waste audits will be carried out at regular intervals to monitor the following:
 - Management of soils on-site and for removal offsite.
 - Record keeping.
 - Traceability of all materials, surplus soil and other waste removed from the site; and
 - Ensure records are maintained of material acceptance at the end destination

6.11.2 Operational Phase

There are no monitoring requirements specifically in relation to land, soil and geology during the Operational Phase of the Proposed Development.

6.12 Interactions

6.12.1 Population and Human Health

An assessment of the potential impact of the Proposed Development on human health is included in Chapter 4 of this EIAR. There is a potential risk of dust generated from excavation and stockpiling of soil during the Construction Phase of the Proposed Development posing a human health risk in the absence of standard avoidance and mitigation measures which will be implemented to be protective of human health.

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

6.12.2 Biodiversity

An assessment of the potential impacts of the Proposed Development on the Biodiversity of the site, with emphasis on habitats, flora and fauna which may be impacted as a result of the excavation and importation of materials to the Site are included in Chapter 5 of this EIAR. It also provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.

6.12.3 Hydrology and Hydrogeology

An assessment of the potential impact of the Proposed Development on the hydrological and hydrogeological environment is included in Chapter 7 of this EIAR. In the absence of avoidance, remedial and mitigation measures, there is a potential for sediment from excavated soils entering runoff and discharging into the site drainage during the Construction Phase. Procedures for the protection of receiving water environment are set out in Chapter 7 of this EIAR.

6.12.4 Air Quality and Climate

The excavation of soils across the site and the temporary stockpiling of soils pending reuse or removal offsite has the potential to generate nuisance impacts (i.e., dust) during the Construction Phase. An assessment of the potential impact of the Proposed Development on air quality and climate is included in Chapter 8 of this EIAR.

6.12.5 Landscape and Visual

During the construction phase and into the operational phase of the Proposed Development, the site landscape will undergo a change from greenfield to residential with landscaping and public open space. An assessment of the potential impact of the Proposed Development on the receiving landscape is included in Chapter 10 of this EIAR.

6.12.6 Material Assets- Waste and Traffic and Transportation

An assessment of the potential impact of the Proposed Development on the Material Assets (Traffic and Transportation) and Material Assets (Waste) and are included in Chapter 12 and Chapter 13 of this EIAR respectively.

Where possible, it is intended to retain and re-use the excavated soil and subsoil on the subject site for engineering fill and landscaping. However, it is anticipated that approximately 4,000m³ of material will require removal offsite. There is also a requirement to import approximately 19,000m³ of aggregates during the construction of the Proposed Development.

6.12.7 Cultural Heritage and Archaeology

An assessment of the potential impacts of the Proposed Development on Cultural Heritage and Archaeology is included in Chapter 11 of this EIAR. During construction of the Proposed Development there will be interactions between the land, soil and geology and the Archaeology during the excavations of soils across the Site with the potential for disturbance of archaeological remains.

6.13 Difficulties Encountered

No difficulties were encountered in the preparation of this Chapter.

6.14 References

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7. WATER

7.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides a description of the hydrology and hydrogeology (water) environment within and immediately surrounding the Site of the Proposed Development and an assessment of the potential impacts of the Proposed Development on hydrology and hydrogeology and sets out any required mitigation measures where appropriate.

The principal objectives of this chapter are to identify:

- Hydrological and hydrogeological characteristics of the receiving environment at the Proposed Development Site.
- Potential impacts that the Proposed Development may have on the receiving water environment.
- Potential constraints that the environmental attributes may place on the Proposed Development.
- Required mitigation measures which may be necessary to minimise any adverse impacts related to the Proposed Development; and
- Evaluate the significance of any residual impacts.

7.1.1 Quality Assurance

This chapter of the EIAR has been prepared by Gareth Carroll, a Principal Consultant of Enviroguide Consulting. Gareth Carroll holds a BA in Mathematics and a BAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. Gareth Carroll, a Member of the Institute of Environmental Sciences (MEnvSci) with over 10 years' experience as an Environmental Consultant, has carried out environmental assessments for a range of project types and geological and hydrogeological Site settings.

7.1.2 Description of the Proposed Development

Cairn Homes Properties Limited intend to apply for permission for a Large-Scale Residential Development at this site c. 25.14 ha on lands within the townlands of Blessington Demesne, Newpaddocks and Santryhill, Blessington, Co. Wicklow. The proposed development will consist of 329 residential units (270 no. houses, 47 no. apartments and 12. Duplex units), 10.65 ha town park and the extension of the Blessington Inner Relief Road from the existing roundabout at Blessington Demesne to the N81, north of the Woodleigh residential estate. An Environmental Impact Assessment Report and a Natura Impact Statement have been prepared in respect of the proposed development.

The full description of the Proposed Development is outlined in Chapter 2 'Development Description' of this EIAR.

The Site Layout for the Proposed Development is presented in Figure 7-1.

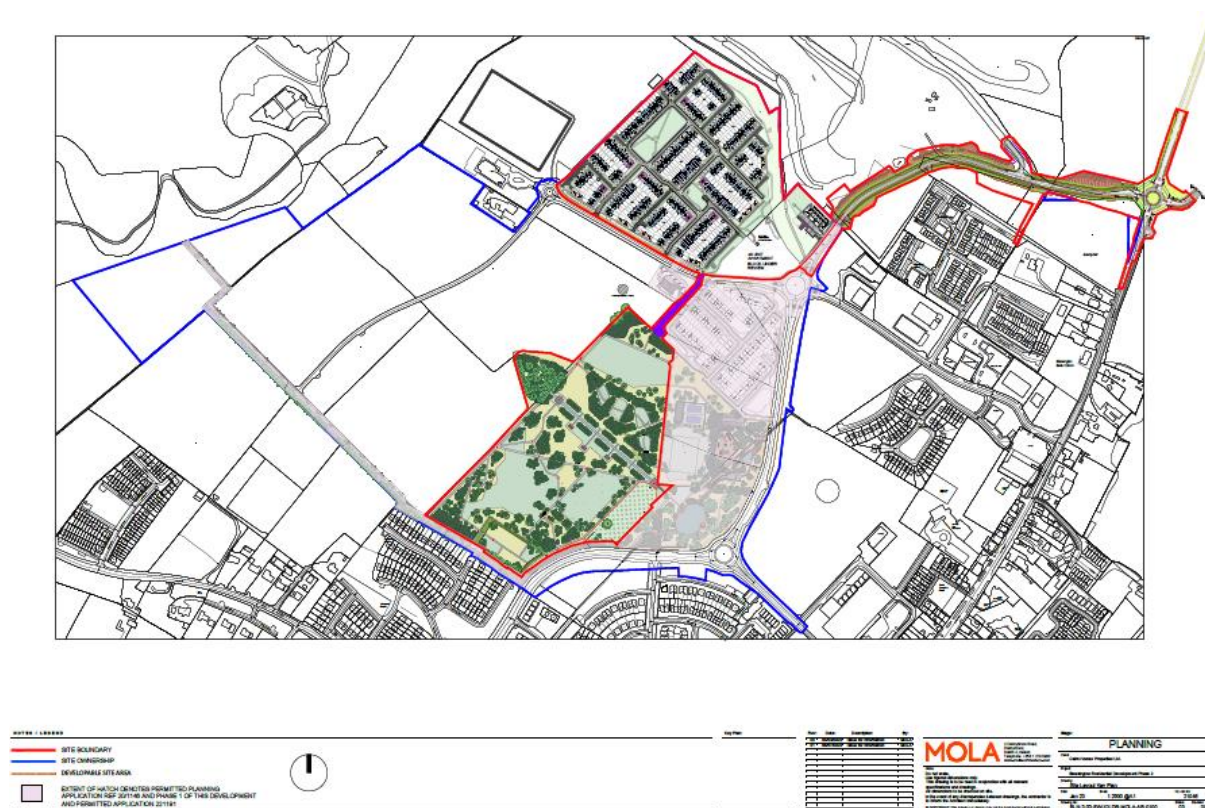


Figure 7-1: Proposed Development Site Layout Plan

7.2 Study Methodology

7.2.1 Relevant Legislation and Guidance

The methodology adopted for the assessment has regard to the relevant guidelines and legislation including:

- Council Directive 2006/118/EEC, 2006. On the protection of groundwater against pollution and deterioration. European Parliament and the Council of European Communities;
- 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 with amendments 2455/2001/EC, 2008/32/EC and 2008/105/EC (Water Framework Directive, WFD);
- European Commission, 2022. WFD Reporting Guidance 2022. Final Draft V4;
- Local Government, October 2021. No. 1.1977. Local Government (Water Pollution (Amendment) Act);
- Local Government, October 2007. No. 30.2007. Water Services Act 2007;
- Local Government, July 1990. No. 21.1990. Local Government (Water Pollution) (Amendment) Act, 1990;
- Local Government, March 1977. No. 01/1977. Local Government (Water Pollution) Act, 1977 with amendments;
- S.I. No. 722/2003 – European Communities (Water Policy) with amendment S.I. No. 413/2005;
- S.I. No. 489/2011 – European communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011;

- S.I. No. 122/2010 – European Communities (Assessment and Management of flood Risks) Regulations 2010 including amendment S.I. No. 495/2015;
- S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009 including amendments S.I. No. 327/2012, S.I. No. 386/2015 and S.I. No. 77/2019;
- S.I. No. 9 of 2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010 including amendments S.I. No. 149 of 2012 and S.I. No. 366 of 201; and
- WFD Working Group, 2005. Guidance on the Assessment of the Impact of Groundwater Abstractions (WFD, 2005).

Other guidance used in the assessment of potential impacts on the receiving water environment are referenced where relevant in this EIAR Chapter and include:

- Construction Industry Research and Information Association, 2001. Control of Water Pollution from Construction Sites (CIRIA – C532);
- Construction Industry Research and Information Association, 2015. Environmental Good Practice on Site Guide (CIRIA – C741);
- Construction Industry Research and Information Association, 2016. Groundwater Control: Design and Practice (CIRIA – C750);
- Department of the Environment, Heritage and Local Government, Environmental Protection Agency and Geological Survey of Ireland, 1999. Groundwater Protection Schemes (DEHLG/EPA/GSI, 1999);
- Department of the Environment, Heritage and Local Government, 2009. Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, 2009);
- Department of Housing, Planning and Local Government, August 2018. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DHPLG, 2018);
- Environmental Protection Agency, 2014. Guidance on the Authorisation of Direct Discharges to Groundwater;
- Environmental Protection Agency, 2013. Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites;
- Environmental Protection Agency, 2013. Storage and Transfer of Materials for Scheduled Activities;
- Environmental Protection Agency, May 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Wicklow County Council, 2022. Wicklow County Development Plan 2022-2028; and
- Wicklow County Council, 2012. Blessington Local Area Plan 2013-2019.

7.2.2 Phased Approach

A phased approach was adopted for this EIAR in accordance with Environmental Protection Agency (EPA) and Institute of Geologists of Ireland (IGI) guidelines as set out above and is described in the following sections.

Element 1: An initial Assessment and Impact Determination stage was carried out by Enviroguide Consulting to establish the project location, type and scale of the Proposed Development, the baseline conditions, and the type of hydrological and hydrogeological environment, to establish the activities associated with the Proposed Development and to undertake an initial assessment and impact

determination. This element of the assessment also included developing the Conceptual Site Model (CSM) for the Proposed Development Site and receiving environment.

This stage of the assessment included a desk top study that comprised a review of published environmental information for the Proposed Development Site. The study area, for the purposes of assessing the baseline conditions for the Hydrology and Hydrogeology Chapter of the EIAR, extends beyond the Site boundaries and includes a 2.0km radius of the Proposed Development Site and potential receptors outside of this radius that are potentially hydraulically connected with the Site were also considered. The extent of the wider study area was based on the Institute of Geologists of Ireland (IGI) Guidelines (IGI, 2013) that recommends a minimum distance of 2.0km radius from the Proposed Development Site. The purpose of this increased search radius was to ensure that any potential hydrogeological / hydrological connections to sensitive receptors including habitats were identified.

The desk study involved collecting all the relevant data for the Proposed Development site and surrounding area including published information and details pertaining to the Proposed Development provided by the applicant and design team.

A Site walkover survey to establish the environmental Site setting and baseline conditions at the Proposed Development Site relevant to the hydrological and hydrogeological environment was undertaken by Enviroguide Consulting on the 9th of January 2023.

The Element 1 stage of the assessment was completed by Enviroguide Consulting and included the review of the following sources of information:

- Environmental Protection Agency (EPA) web mapping (EPA, 2023).
- Geological Survey Ireland (GSI) Datasets Public Viewer and Groundwater web mapping (EPA, 2023).
- National Parks and Wildlife Services (NPWS) web mapping (NPWS, 2023).
- Ordnance Survey Ireland (OSI) web mapping (OSI, 2023).
- Water Framework Directive Ireland (WFD) web mapping (WFD, 2023).
- Teagasc web mapping (Teagasc, 2023).
- Office of Public Works (OPW) database on historic flooding and the Catchment Flood Risk Assessment and Management (CFRAM) maps (OPW, 2023); and
- Information provided by the Applicant including:
 - Information pertaining to the design proposals for the Proposed Development;
 - Ground Investigation Ireland, 2020. Ground Investigation Report – Blessington Demesne (GII, 2020);
 - Ground Investigation Ireland, 2022. Ground Investigation Report – Proposed Development, Blessington Phase 3, Co. Wicklow (GII, 2022); and
 - Site Investigation Ltd. Report on a Site Investigation for Blessington – Phase 3 at Oak Road, Blessington, Co. Wicklow (SIL, 2023).

Element 2: Involves Direct and Indirect Site Investigation and Studies stage where necessary to refine the CSM developed as part of Element 1 and evaluate the potential impacts associated with the Proposed Development. It was determined that there was adequate site-specific scientific data available for the assessment and no additional ground investigation in relation to hydrology and hydrogeology was undertaken.

Element 3: Evaluation of Mitigation Measures, Residual Impacts and Final Impact Assessment were based on the outcome of the information gathered in Element 1 of the assessment. Mitigation measures to address all identified adverse impacts that were identified in Element 1 of the assessment were considered in relation to the Construction and Phase and Operational Phase of the Proposed Development. These mitigation measures were then considered in the impact assessment to identify any residual impacts.

Element 4: Completion of the Hydrology and Hydrogeology sections of the EIAR in this Chapter which includes all the associated figures and documents.

7.2.3 Description of Importance of Receiving Environment

The National Roads Authority (NRA) criteria for estimation of the importance of hydrogeological features at the Proposed Development Site during the Environmental Impact Assessment (EIA) stage, as documented by IGI (IGI, 2013) are summarised in Table 7-1.

Table 7-1: Criteria for Rating Site Importance of Hydrogeological Features

Importance	Criteria	Typical Example
Extremely High	Attribute has a high quality or value on an international scale.	Groundwater supports river, wetland or surface water body ecosystem protected by European Union (EU) legislation e.g., SAC or SPA status.
Very High	Attribute has a high quality or value on a regional or national scale.	Regionally Important Aquifer with multiple wellfields. Groundwater supports river, wetland, or surface water body. ecosystem protected by national legislation – e.g., NHA status. Regionally important potable water source supplying >2500 homes Inner source protection area for regionally important water source.
High	Attribute has a high quality or value on a local scale.	Regionally Important Aquifer. Groundwater provides large proportion of baseflow to local rivers. Locally important potable water source supplying >1000 homes. Outer source protection area for regionally important water source. Inner source protection area for locally important water source.
Medium	Attribute has a medium quality or value on a local scale.	Locally Important Aquifer Potable water source supplying >50 homes. Outer source protection area for locally important water source.

Low	Attribute has a low quality. or value on a local scale.	Poor Bedrock Aquifer. Potable water source supplying <50 homes.
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7.2.4 Description and Assessment of Potential Impact

Impacts will vary in quality from negative, to neutral or positive. The effects of impacts will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'impact' significance and the corresponding 'effect' throughout this Chapter are described in Table 7-2.

Table 7-2: Criteria for Assessment of Potential Impacts Terminology and Methodology

Quality of Effects/Impacts	Definition
Negative	A change which reduces the quality of the environment
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment
Significance of Effects / Impacts	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration, or intensity significantly alters a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics.
Extend and Context of Effects	Definition
Extend	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

Probability of Effects	Definition
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration of Effects / Impacts	Definition
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration
Types of Effects	Definition
Indirect Effects	Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway
Cumulative Effects	he addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.
“Do-nothing” Effects	The environment as it would be in the future should the subject project not be carried out
“Worst-case” Effects	he effects arising from a project in the case where mitigation measures substantially fail.
Indeterminable Effects	When the full consequences of a change in the environment cannot be described.
Irreversible Effects	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost
Residual Effects	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

7.3 Characteristics of the Proposed Development

The characteristics of the proposed development are set out in detail in Chapter 2 of this EIAR. The following components are of particular relevance with respect to Hydrology and Hydrogeology.

7.3.1 Construction Phase

The Construction Phase of the Proposed Development will include:

- Excavation for the construction of building foundations to a maximum depth of approximately 1.2mbGL;
- Excavation for the construction of surface water and foul water drainage infrastructure to a maximum depth of approximately 4.0mbGL;
- Excavation for the construction of the Blessington Inner Relief Road extension to a maximum depth of approximately 4.5mbGL;
- There will be no requirement for the excavation of bedrock during the Construction Phase of the Proposed Development;
- The total volume of soil for excavation to construct the Proposed Development is estimated at 40,000m³. It is intended to reuse suitable excavated topsoil for landscaping and engineering use. However, it is estimated that approximately 4,000m³ of excavated soil will require removal offsite in accordance with all statutory legislation;
- Temporary stockpiling of excavated material pending re-use onsite;
- The construction of the Proposed Development will also require the importation of 12,000m³ aggregates for the construction of roadways and footpaths. It is anticipated that an additional 7,000m³ of aggregates will also be required for the construction of utility infrastructure;
- It is anticipated that groundwater will not be encountered during excavations and thus the requirement for dewatering during the Construction Phase of the Proposed Development is not anticipated;
- Construction of new foul and mains water connections in accordance with UE Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03), UE's Code of Practice for Water Infrastructure (IW-CDS-5020-03):
 - Foul water connection from the Proposed Development to the proposed 225mm proposed foul sewer to be constructed as part of the proposed Blessington Inner Relief Road extension; and
 - Foul water connection from the Proposed Development to the existing 225mm Uisce Eireann (UE) foul sewer located in the existing roundabout on Oak Drive;
 - Main water connection from the Proposed Development to the existing 150mm uPVC UE water main located in the existing roundabout on Oak Drive running towards Blessington GAA Club, the KARE facility and Blessington No. 1 School (DBFL, 2023b and DBFL, 2023c).
- Construction of a new 180mm watermain on both sides in the footpath along the proposed Blessington Inner Relief Road extension in accordance with UE's Code of Practice for Water Infrastructure (IW-CDS-5020-03);
- Construction of a new foul sewer network to provide an allowance for any future developments within zoned lands that are adjacent to the proposed Blessington Inner Relief Road extension in accordance with UE Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03); and

- Construction of new surface water drainage designed in accordance with the principles and objectives of Sustainable Drainage Systems (SuDS) and the Greater Dublin Sustainable Drainage System (GDSDS) and the requirements of Wicklow County Council.

7.3.2 Operational Phase

7.3.2.1 Surface Water Drainage

As outlined in the Infrastructure Design Reports (DBFL, 2023b and DBFL, 2023c included in Volume 3 of this EIAR) surface water at the proposed development will be managed in accordance with the principals and objectives of Sustainable Drainage Systems (SuDS) and the Greater Dublin Sustainable Drainage System (GDSDS) to treat and attenuate water prior to discharging offsite as follows:

- Surface water from the northern portion of the Proposed Development (i.e., the proposed residential area) will be attenuated and discharged at greenfield runoff rates to two (2No.) new outfalls along the Deerpark_09 Stream / River;
- Surface water from the southern portion of the Proposed Development (i.e., the proposed town park) will continue to discharge to ground; and
- Surface water runoff from the proposed Blessington Inner Relief Road extension will be divided into two catchments:
 - The southern section of the proposed Blessington Inner Relief Road will be attenuated discharged at greenfield runoff rates to one (1No.) new outfall along the Deerpark_09 Stream / River.
 - The northern section of the proposed Blessington Inner Relief Road will be attenuated and discharged at greenfield runoff rates to the existing surface water drainage network located in Woodleigh Avenue.

The surface water drainage for the proposed development has been designed to cater for surface water runoff from all hard surfaces including roadways, car parks, and roofs, and will adequately accommodate the 1 in 100year rainfall event plus 20% to account for the effects of climate change (DBFL, 2023b and DBFL, 2023c).

As detailed in the Infrastructure Design Reports (DBFL, 2023b and DBFL, 2023c), the following attenuation and SuDS measures will be incorporated into the proposed development to provide a sustainable manner in which to disperse surface water from the site, encourage groundwater recharge and provide treatment of run-off and subsequent improvement of discharge quality:

- Permeable Paving for driveways and for on-street parking under the control of the management company of the apartment blocks for the Proposed Development;
- Swales providing additional storage at source and also providing additional treatment of runoff.
- Surface water gullies discharging to tree pits;
- Pedestrian/green links to drain to surrounding landscape for reduction and treatment of runoff;
- Underground storage in the form of 'Stormtech' units or similar approved systems to store runoff from a 1 in 30-year event. The storage systems will be designed to maximise water quality;
- Overground detention/infiltration basin to store runoff from a 1 in 100-year event;
- A petrol interceptor to be provided before the outfall from each catchment of the Site; and
- A vortex flow control device (Hydrobrake or equivalent) will be used on the surface water outlet from each catchment.

7.3.2.2 Foul Water

As detailed in the Infrastructure Design Reports (DBFL, 2023b and DBFL, 2023c), foul water from the Proposed Development will be discharged to the existing 225mm UE foul sewer located in the existing roundabout on Oak Drive in accordance with the requirements from the UE Confirmation of Feasibility (CoF) letter dated the 15th of October 2021 (UE COF Reference: CDS20005303). The estimated peak wastewater loading generated by the Proposed Development's Dry Weather Flow is estimated at 10.24l/s.

The UE CoF letter (UE COF Reference: CDS20005303) states that the wastewater connection is feasible subject to infrastructure upgrades (i.e., 'upsizing approx. 750m of existing sewer from the development to the point at which the downstream sewer is 600mm in diameter'). These upgrades will be completed as per UE requirements in advance of any connection to UE infrastructure.

Foul water from the proposed development will be treated at the Blessington WWTP (EPA Licence No. D0063-01) before ultimately discharging to the River Liffey (EU Code: IE_EA_09L010400).

7.3.2.3 Water Supply

As detailed in the Infrastructure Design Reports (DBFL, 2023b and DBFL, 2023c), water supply to the Proposed Development will be from the existing 150mm uPVC UE water main located in the existing roundabout on Oak Drive in accordance with the requirements from the UE CoF letter dated the 15th of October 2021 (UE COF Reference: CDS20005303). The estimated peak hour water demand generated by the Proposed Development is 9.61l/s.

The UE CoF letter (UE COF Reference: CDS20005303) states that the water connection is feasible subject to infrastructure upgrades (i.e., '50m of new 200mm ID watermain'). These upgrades will be completed as per UE requirements in advance of any connection to UE infrastructure.

7.4 The Existing and Receiving Environment (Baseline Situation)

7.4.1 Site Location and Surrounding Land Use

The Site of the Proposed Development is located in Blessington Demesne, Blessington, Co. Wicklow. The Site which is located to the northwest of Blessington Town Centre along Oak Drive, lies approximately 27.0km southwest of Dublin City Centre, approximately 12.0km southeast of Naas and approximately 24km east of Newbridge.

The area surrounding the Site is characterised by a mix of land uses. The site is bound to the west / northwest by the Blessington School, Blessington GAA Club and agricultural lands, to the south / southwest by a residential development, to the east / southeast by a mix of agricultural lands and commercial / residential developments and to the north / northeast by a sand and gravel quarry.

The Site Location is presented in Figure 7-2.

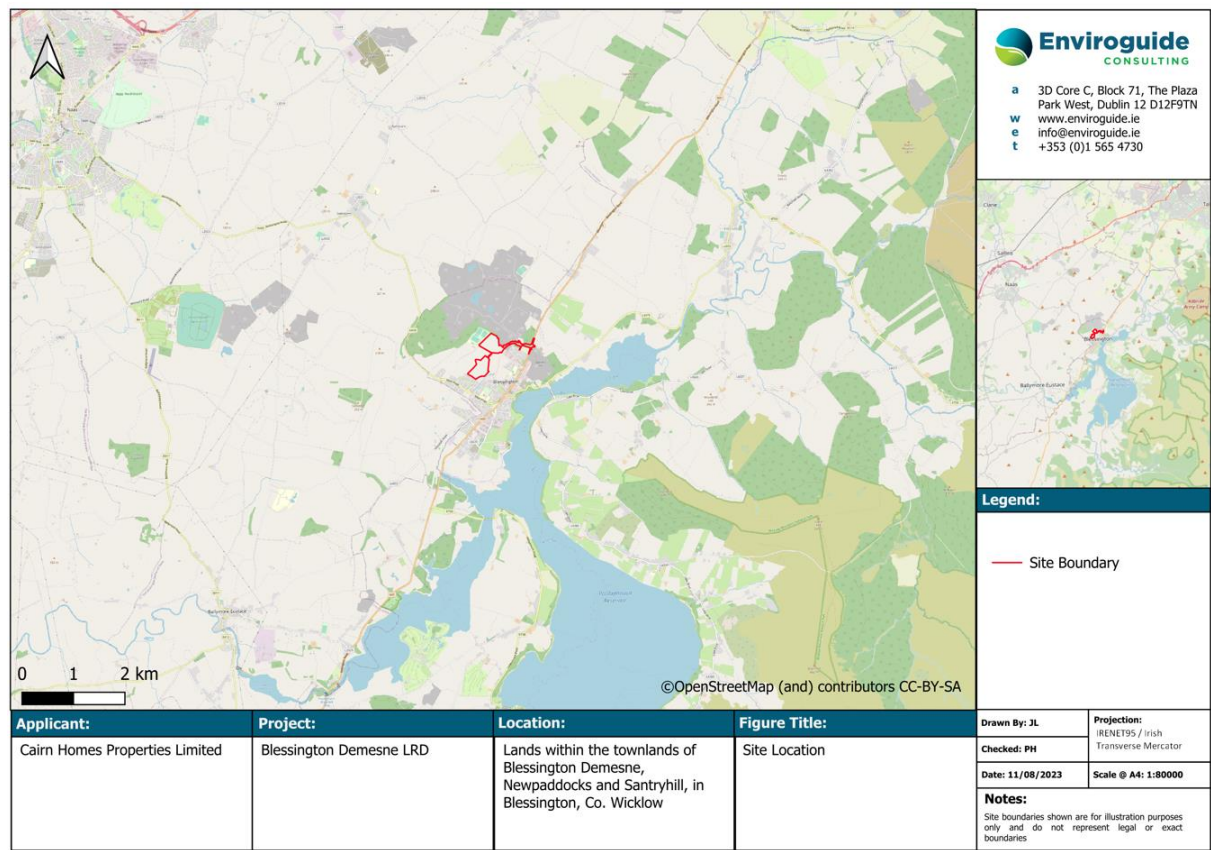


Figure 7-2: Site Location

7.4.2 Current Land Use

The primary land use at the Site is currently agricultural farmland. The current Site layout is presented in Figure 7-3.

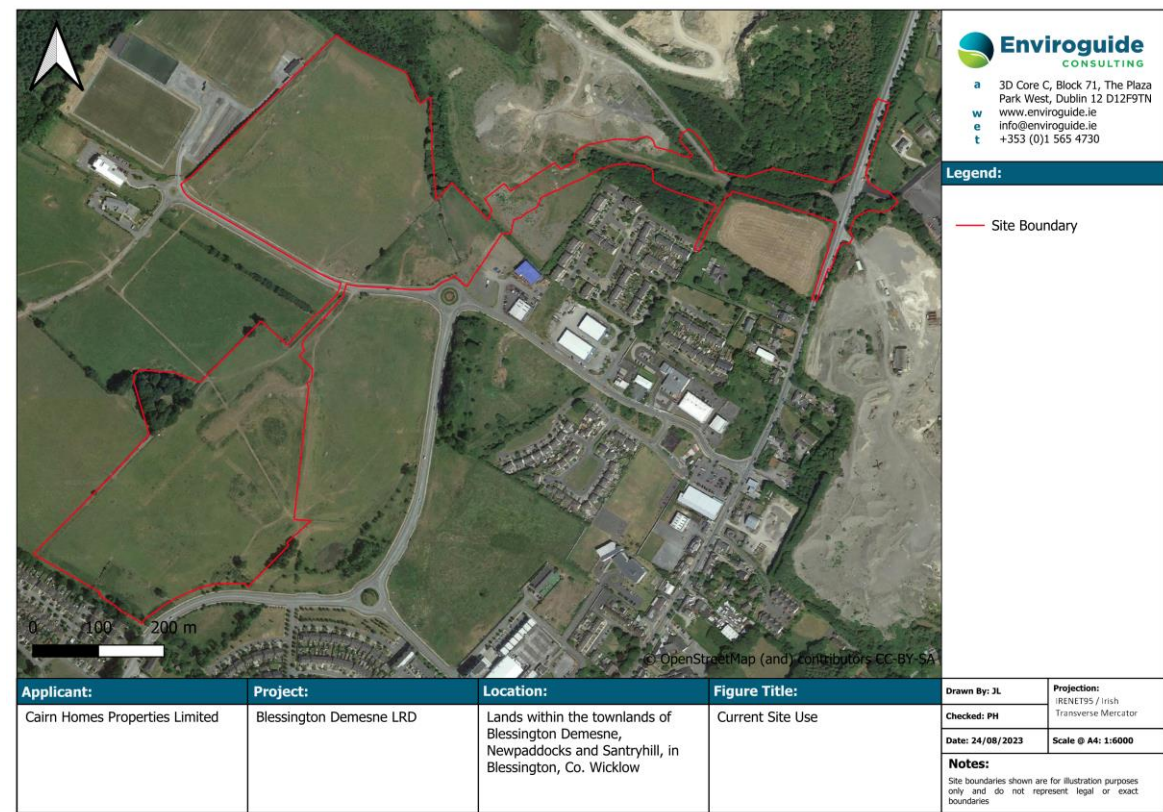


Figure 7-3: Site Layout

7.4.3 Topography

Two (2No.) topographical surveys were undertaken by Apex Surveys Ltd. in September 2019 and July 2021. The majority of the Proposed Development (i.e., the proposed residential and town park areas) portion of the site slopes from northwest to southeast at a steep gradient of 1:60 and towards the Blessington Inner Relief Road. The access road to the Proposed Development (i.e., the proposed extension to the Blessington Inner Relief Road) is uneven with some large embankments in the former roadstone lands.

7.4.4 Soil, Quaternary, Geology

The soils and geology at the subject site are described and assessed in Chapter 6 of this EIAR and summarised as follows:

- The soils beneath the Proposed Development Site have been mapped by the GSI (GSI, 2023) Renzinas and Lithosols derived from mainly calcareous parent materials (IFS Soil Code: BminSW). The parent material is 'Glaciofluvial sands and gravels' (GLs);
- The quaternary sediments beneath the site are mapped by the GSI (GSI, 2023) as 'gravels derived from limestone' (GLs);
- The bedrock beneath the Site is mapped by the GSI (GSI, 2023) as the 'Poulaphouca Formation' (New Code: SLPLPH). Bedrock was not encountered during previous site investigations (GII, 2019, GII 2022 and SIL, 2023) where boreholes extended to a maximum depth of 12.1mbGL.

7.4.5 Rainfall

Monthly rainfall data available for 1km x 1km grids (for the period 1981 to 2010) was sourced from Met Éireann (Walsh, 2012) and is presented in Table 7-3.

Table 7-3: Long Term Mean Monthly Rainfall Data

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
90	69	77	67	69	75	69	87	82	109	103	103	1001
Note: 1km x 1km Irish Grid Coordinated selected for the Site =X (Easting): 29800, Y (Northing): 215000												

The closest the synoptic meteorological station to the Proposed Development Site, Casement Aerodrome, is located approximately 14.8km north of the Site. A summary of the long-term average PE for the period 2020 to 2023 at Casement Aerodrome station (Met Éireann, 2023) is presented in Table 7-4.

Table 7-4: Average Potential Evapotranspiration

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
15.8	22.1	34.6	52.2	71.4	80.5	81.2	68.4	47.6	27.9	15.7	13.1	530.5

7.4.6 Regional Hydrogeology

7.4.6.1 Groundwater Body

The EPA (EPA, 2023) maps the groundwater body (GWB) beneath the Site as the Blessington Gravels (EU Code: IE_EA_G_047). The groundwater body descriptor for the water body (GSI, 2023) notes the waterbody is made of a locally important sand/gravel aquifer with an area of 7km². The gravels were deposited in a subaqueous environment by glacial meltwaters which drained into a glacial lake which

existed between the Wicklow Mountains and the margin of the ice sheet. The aquifer thickness varies but is generally between 10m and 35m thick.

The main recharge mechanism is from rainwater percolating through the topsoil and unsaturated sand and gravel deposits. Surface water runoff is low (at no more than 20% of effective rainfall). The presence of low permeability layers in the gravels, can create perched aquifers and prevent recharge to the true water table. Where streams overflow on the aquifer, there is likely some infiltration to the aquifer (GSI, 2023).

The main groundwater discharge mechanism will be discharge from the aquifer where the water table comes to the surface of the gravel deposits (e.g., at springs and at the southern boundary of the aquifer). The groundwater flow directions are generally to the southeast towards the Poullaphuca Reservoir but may vary locally based on topography.

The southern portion of the Site (i.e., the proposed town park area) extends within the outer source protection area (SPA) for the Blessington PWS. The inner source protection zone is located approximately 0.23km to the south of the Site.

7.4.6.2 Recharge

The GSI groundwater recharge map provides an estimate of the average amount of rainwater that percolates down through the subsoils to the water table over a year. The map accounts for rainfall that percolates diffusely through soils and subsoils it does not consider water that enters aquifers at points (e.g., at sinkholes) or along linear features (e.g., along sinking streams/rivers). Groundwater recharge amounts are estimated by considering soil drainage, subsoil permeability, thickness and type, the ability of the aquifer to accept the recharge, and rainfall.

The GSI (GSI, 2023) have calculated an average annual recharge of between 455mm/year and 518mm/year for the aquifer beneath the subject site based on a recharge coefficient of 85%. The high recharge potential is due to the presence of high permeability subsoil overlying the locally important gravel aquifer (Lg) and poor bedrock aquifer (PI).

7.4.6.3 Aquifer Classification

The underlying bedrock aquifer within the Poullaphuca Formation beneath the Site is classified by the GSI (GSI, 2023) as a poor aquifer which is generally unproductive except for local zones (PI). The bedrock aquifer map is presented in Figure 7-4 below.

A gravel aquifer is mapped by the GSI (GSI, 2023) beneath the Site and is classified as a locally important gravel aquifer (Lg). The gravel aquifer has a delineated area of 7.22km² (GSI, 2023). The gravel aquifer map is present in Figure 7-5 below.

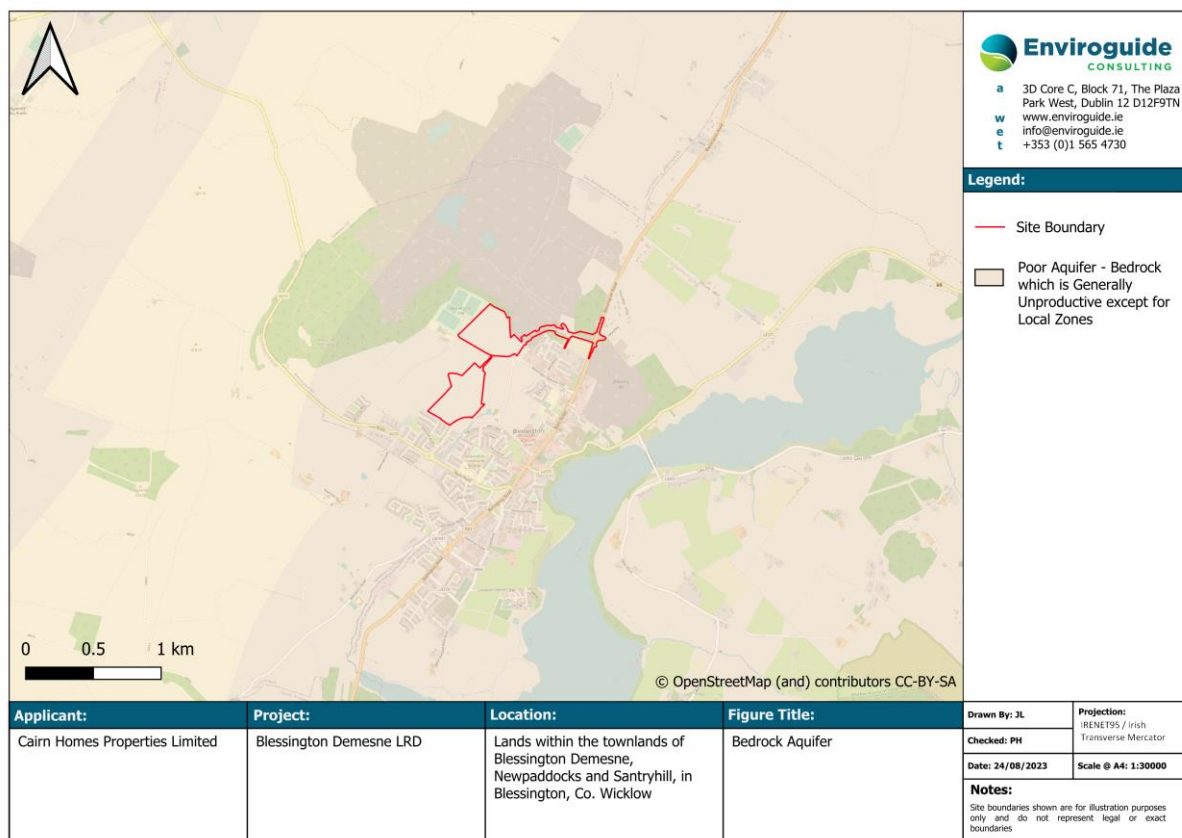


Figure 7-4: Bedrock Aquifer Map

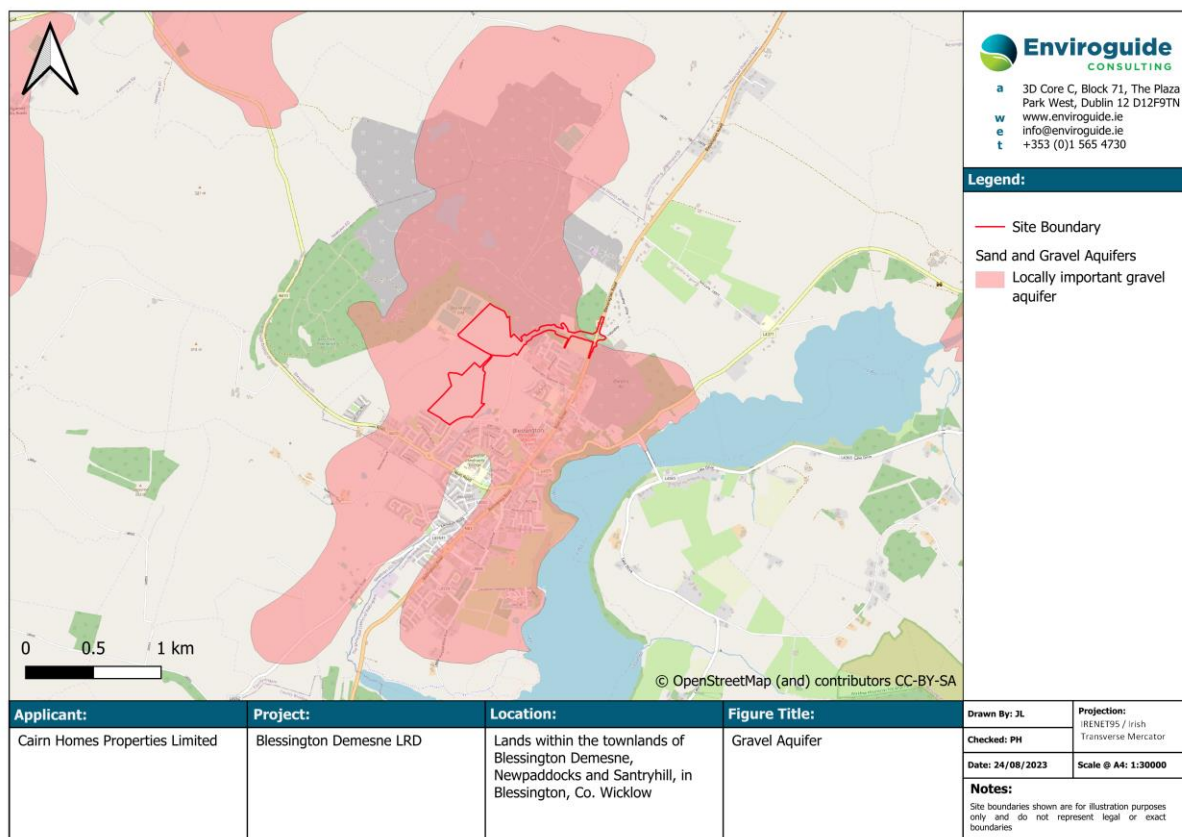


Figure 7-5: Gravel Aquifer Map

7.4.6.4 Groundwater Vulnerability

The vulnerability categories, and methods for determination, are presented in the Groundwater Protection Schemes publication (DEHLG/EPA/GSI, 1999) and summarised in Table 7-5. The publications state that 'as all groundwater is hydrologically connected to the land surface, it is the effectiveness of this connection that determines the relative vulnerability to contamination. Groundwater that readily and quickly receives water (and contaminants) from the land surface is considered to be more vulnerable than groundwater that receives water (and contaminants) more slowly and in lower quantities. The travel time, attenuation capacity and quantity of contaminants are a function of the following natural geological and hydrogeological attributes of any area.

Table 7-5: Vulnerability Mapping Criteria

Subsoil Thickness	Hydrogeological Requirements				
	Diffuse Recharge			Point recharge	Unsaturated Zone
	Subsoil Permeability & Type			(Swallow holes, losing streams)	(sand & gravel aquifers only)
	High permeability (sand & gravel)	Moderate permeability (sandy subsoil)	Low permeability (clayey subsoil, clay, peat)		
0-3m	Extreme	0-3m	Extreme	Extreme (30m radius)	Extreme
3-5m	High	High	High	N/A	High
5-10m	High	High	Moderate	N/A	High
>10m	High	Moderate	Low	N/A	High
Notes: (i) N/A = not applicable (ii) Permeability classifications relate to the material characteristics as described by the subsoil description and classification method.					

The GSI has assigned a groundwater vulnerability rating of 'High" (H) for the groundwater beneath the Site (GSI, 2023). The groundwater vulnerability rating map is provided in Figure 7-6.

The anticipated depth to bedrock based on the high vulnerability rating and the high permeability subsoil will range from 3.0mbGL to >10mbGL. It is noted that bedrock was not encountered during previous site investigations (GII, 2019, GII 2022 and SIL, 2023) where boreholes extended to a maximum depth of 12.1mbGL.

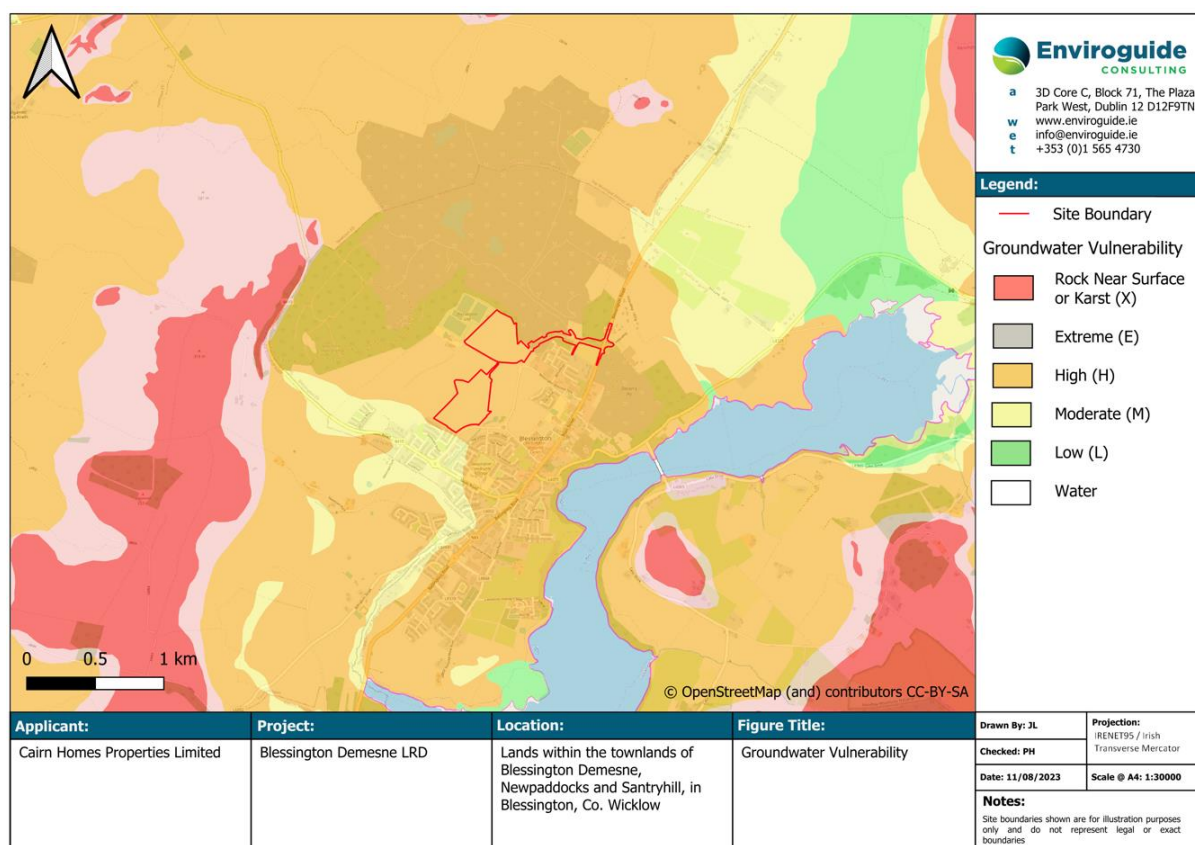


Figure 7-6: Groundwater Vulnerability

7.4.6.5 Site Hydrogeology

As documented in the ground investigation reports (GII, 2019, GII, 2022 and SIL, 2023 included in Volume 3 of this EIAR), groundwater / groundwater strikes were not encountered during trial pit excavations and drilling of boreholes advanced to a maximum depth of 12.1mbGL.

Infiltration tests were carried out at eleven (11No.) locations during the GII ground investigations (GII, 2019 and GII, 2022 included in Volume 3 of this EIAR) with infiltration rates ranging between 1.17×10^{-5} m/s and 4.4×10^{-4} m/s. Further infiltration tests were carried out at four (4No.) additional locations during the SIL ground investigation (SIL, 2023 included in Volume 3 of this EIAR), three (3No.) of which failed the infiltration test and the fourth with a calculated infiltration rate of 6.01×10^{-5} m/s.

7.4.7 Hydrology

The Site is located within the Liffey and Dublin Bay WFD Catchment (Catchment I.D.: 09), the Liffey_SC_020 WFD Sub-Catchment (Sub-catchment I.D.: 09_12) and the Liffey_040 River Sub-basin (EU Code: IE_EA_09L010400) (EPA, 2023).

The closest EPA mapped (EPA, 2023) surface waterbody to the Site is the Deerpark_09 Stream / River (River Waterbody Code: IE_EA_09L010400). The Deerpark_09 Stream / River flows in a southerly direction along the northeast boundary of the northern portion of the Site (i.e., the proposed residential area), crossing the Site near the existing roundabout on Oak Drive and continuing to flow southwest approximately 0.06km east of the southern portion of the Site (i.e., the proposed town park area) through an existing pond and wetland area before converging with the Silveroe River (River Waterbody Code: IE_EA_09L010400) approximately 2.015km downstream of the Site, and ultimately discharging to the Poullaphuca Reservoir (EU Code: IE_EA_09_71) a further 0.05km downstream.

The Poullaphuca Reservoir, which is located approximately 0.77km east of the Site at its closest point, receives water from two (2No.) main sources (i.e., the River Liffey at the northern end, and the Kings River at the southern end). The exit is into the River Liffey ((River Waterbody Code: IE_EA_09L010400) at the western end of the reservoir and approximately 6.5km southwest of the Site. The River Liffey discharges to the Liffey Estuary Upper (EU Code: IE_EA_090_0400), Liffey Estuary Lower (EU Code: IE_EA_090_0300) and ultimately into the Dublin Bay Coastal Waterbody (Eu Code: IE_EA_090_0000) approximately 31.88km northeast of the Site.

The EPA (EPA, 2023) records a number of other surface waterbodies with a potential hydraulic connection to the Site including the following:

- An unnamed stream (River Waterbody Code: IE_EA_09L010400) located approximately 0.25km southwest of the Site. This unnamed stream flows southeast before converging with the Deerpark_09 Stream / River approximately 0.23km downstream of the Site.
- Newtown Great Stream (River Waterbody Code: IE_EA_09L010400) located approximately 0.35km southwest of the Site. The Newtown Great Stream flows east before converging with the Deerpark_09 Stream / River approximately 0.34km downstream of the Site.
- The Edmondstown Stream (River Waterbody Code: IE_EA_09L010400) is located approximately 0.39km east of the Site at its closest point (i.e., the start of the proposed Blessington Inner Relief Road extension) . The Edmondstown Stream flows 0.67km downstream in a southeasterly direction before discharging to the Poullaphuca Reservoir.

The surface water courses and relevant other water bodies to the Site are presented in Figure 7-7.

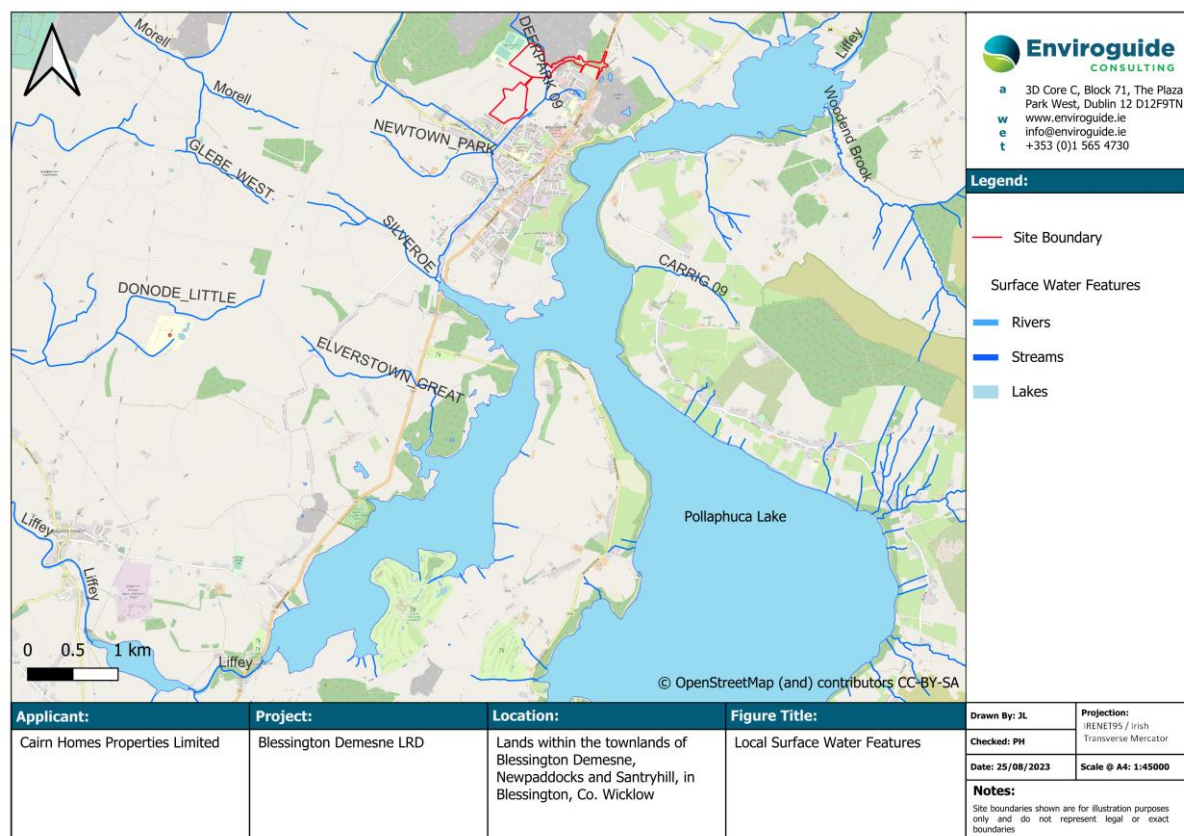


Figure 7-7: Site Hydrology

7.4.7.1 Site Drainage

As documented in the Infrastructure Drainage Reports (DBFL, 2023b and DBFL, 2023c included in Volume 3 of this EIAR), there is an existing 225mm surface water drain in the existing roundabout on Oak Drive as well as an existing 375mm concrete surface water drain located in that area. There is also an existing 225mm surface water drain located in Woodleigh Avenue to the south of the Site. These three (3No.) surface water drains discharge to an existing pond located in the wetland area near the existing section of the Blessington Inner Link Street in the former Downshire House lands to the east of the Site. This pond forms part of the Deerpark_09 Stream / River which ultimately discharges to the Poulaphouca Reservoir (refer to Section 7.3.7).

There is an existing 225mm foul sewer located to the east of the Site which serves Blessington GAA Club, the KARE facility and Blessington No. 1 School (DBFL, 2023b and DBFL, 2023c). This foul sewer runs toward the Blessington Inner Relief Road and ultimately discharges to the Blessington Wastewater Treatment Plant (WWTP) located approximately 1.16km southwest of the Site.

7.4.8 Flooding

The detailed flood risk assessment (FRA) reports produced by DBFL Consulting Engineers (DBFL, 2023d and DBFL 2023e included in Volume 3 of this EIAR) assess the potential flood risk associated with fluvial, groundwater, coastal and pluvial flooding for the Site and Proposed Development.

The FRAs (DBFL, 2023d and DBFL, 2023e), which take into account the impacts of climate change by allowing a 10% increase in rainfall to drainage, 20% increase in flood flow to rivers and a 0.5m sea level rise, identify that the majority of the Site is located within Flood Zone C where the probability of flooding is low (less than 0.1% or 1 in 1000 for fluvial flooding). A small area of the southern portion of the Site (i.e., the proposed town park area) was identified to be located within Flood Zone B where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for fluvial flooding).

As documented in the FRA, open space areas (i.e., the proposed town park area) are compatible with Flood Zone B. Furthermore, the FRA notes that the floor levels within the northern portion of the Proposed Development (i.e., the proposed residential area) will be set a minimum of 500mm above predicted 100-year flood levels.

The FRAs (DBFL, 2023d and DBFL, 2023e) conclude that the Proposed Development is not at risk of fluvial, tidal / coastal, pluvial or groundwater flooding and is considered Appropriate in accordance with guidelines set out in 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' (DEHLG, November 2009).

7.4.9 Water Use and Drinking Water Source Protection

A review of the GSI wells and springs database (GSI, 2023) has identified 93 sources within a 2km radius of the Site (refer to Figure 7-8). These are summarised in Table 7-6 below.

Table 7-6: Groundwater Wells and Springs within a 2km Radius of the Site

Property	Review of Data
Type	<ul style="list-style-type: none"> • 83No. Boreholes; • 5No. Springs; • 4No. Unknown; and • 1No. Dug Well.

Property	Review of Data
Source Use	<p>The source use for the 93No. supplies are:</p> <ul style="list-style-type: none"> • 9No. Domestic Use Only; • 4No Public Supply (Co Co); • 1No. Group Scheme; • 56No. Other; • 18No. Blank; and • 5 No. Unknown.
Yield	<p>Yield classifications are listed for 20No. of the 93No. GSI wells and springs. The yield classifications are summarised as follows:</p> <ul style="list-style-type: none"> • 5 No. are excellent; • 4 No. are good; • 2 No. are moderate; • 7 No are poor; • 1No. were failure; and • 1 No. low spring. <p>The yield is provided for 15No. of the supplies. The range in reported yield range from 11m³/day to 908 m³/day.</p> <p>The 4No. listed public supplies are summarised as follows:</p> <ul style="list-style-type: none"> • GSI Name 2921SWW292 in Hempstown. The well is listed as decommissioned; • GSI Name 2921SWW073 (BH1) by Cookehill Ltd. in Blessington Demesne. The yield class is listed as 'failure'; • GSI Name 291SWW074 (BH2) by Cookehill Ltd. in Blessington Demesne. The yield class is listed as 'excellent'; and • GSI Name 2921SWW093, Cookehill GW1 (PW1) by Cookehill Ltd. in Blessington Demesne. The yield class is not listed; <p>The 1No. group water scheme is summarised as follows:</p> <ul style="list-style-type: none"> • GSI name 2921SWW030, is located in Blessington Demesne. The Yield is listed as excellent.
Total Depth & Depth to Bedrock	<p>The available records (GSI, 2023) indicate the depth of the wells for the boreholes and dug well. The shallowest well was 1.7mbGL and the deepest was 77.0mbGL.</p> <p>The depth to bedrock was recorded for 19No. of the boreholes and ranged from 2.0mbGL to 74.0mbGL.</p>

The southern portion of the Site (i.e., the proposed town park area) extends within the outer source protection area (SPA) for the Blessington PWS. The inner source protection zone is located approximately 0.23km to the south of the Site.

There are a number of surface water drinking water sources, under Article 7 of the Water Framework Directive, identified by the EPA (EPA, 2023) within a 2km radius of the Site, the closest of which is the Liffey_040 (named by the EPA as the Deerpark_09 Stream / River; refer to Section 7.3.7) which flows in a southerly direction along the northeast boundary of the northern portion of the Site (i.e., the proposed residential area).

The location of the groundwater wells springs and SPAs and the surface water drinking water sources are presented in Figure 7-8.

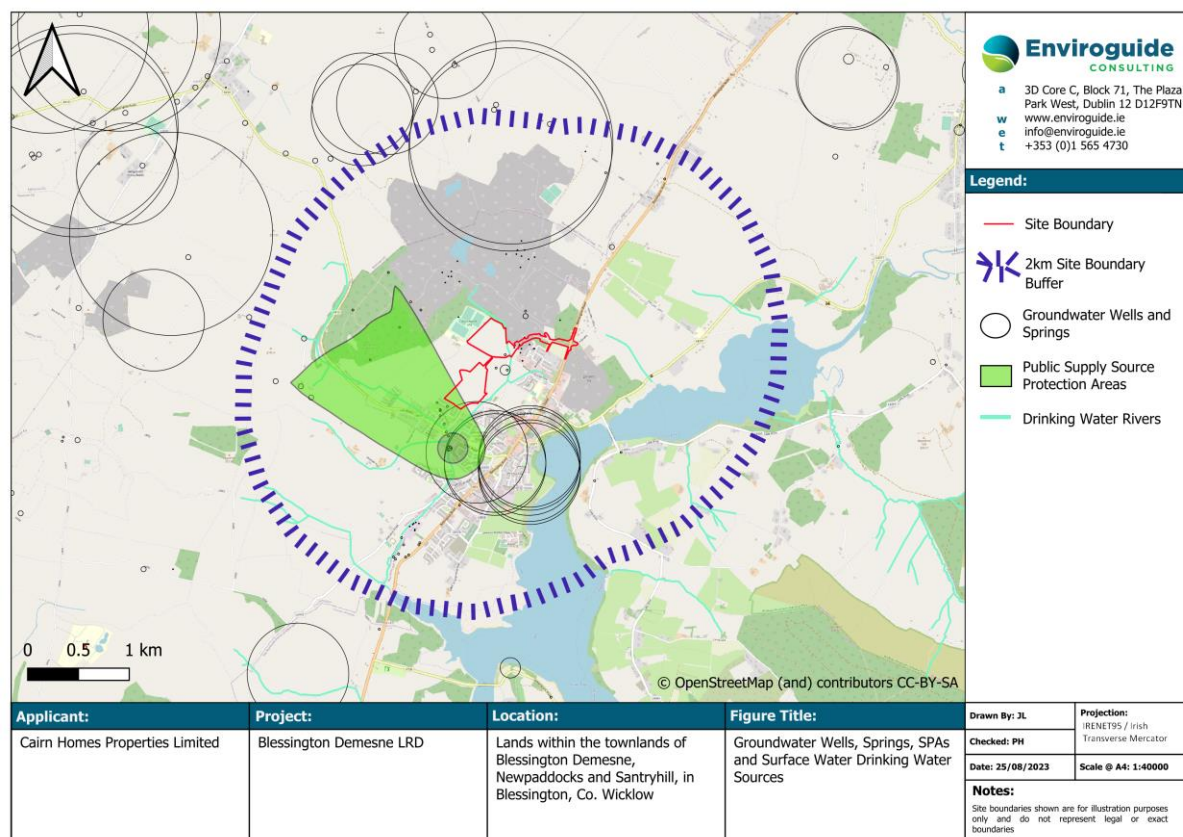


Figure 7-8: Groundwater and Surface Water Use

7.4.10 Water Quality Data

7.4.10.1 Published Regional Surface Water Quality

The EPA surface water quality monitoring database (EPA, 2023) was consulted and there is no available EPA water quality monitoring data published for the Deerpark_09 Stream / River which flows in a southerly direction along the northeast boundary of the northern portion of the Site (i.e., the proposed residential area) (refer to Section 7.3.7). However, there is available EPA water quality monitoring data (EPA, 2023) published for the Poulaphouca Reservoir and the River Liffey.

There is a total of seventeen (17No.) monitoring stations located within the Poulaphouca Reservoir. Station 'Poullaphuca Lake - Site A3' is the closest monitoring point downstream of the point where the water from the Deerpark_09 Stream / River ultimately discharges to the Poulaphouca Reservoir. Station 'Site 6' is the closest monitoring point located within the lake and upstream of the point of discharge to the Poulaphouca Reservoir. There is also available EPA water quality monitoring data for Station

'Ballymore Eustace Br' located along the River Liffey downstream of the point of exit from the Poulaphouca Reservoir.

A summary of the most recent EPA water quality monitoring data (EPA, 2023) published for the monitoring stations relevant to the Site is presented in Table 7-7.

Table 7-7: Surface Water Quality - Poulaphouca Reservoir

Station Name	Location	Parameter	Most Recent Year Sampled	Average Concentration (mg/l)
Site 6	Upstream	Ammonia- Total (as N)	2023	0.026
		Total Oxidised Nitrogen (as N)	2023	0.515
		Orthophosphate (as P) – unspecified	2020	0.012
Poullaphuca Lake - Site A3	Downstream	Ammonia- Total (as N)	2016	0.015
		Total Oxidised Nitrogen (as N)	2017	0.43
		Orthophosphate (as P) – unspecified	2014	0.01
Ballymore Eustace Br	Downstream	Ammonia- Total (as N)	2023	0.029
		Total Oxidised Nitrogen (as N)	2023	1.12
		Orthophosphate (as P) – unspecified	2022	0.014

7.4.10.2 Published Regional Groundwater Quality

The EPA (EPA, 2023) groundwater monitoring data base was consulted, and while the 'Blessington' and 'Blessington – Roadstone' national water monitoring stations are located within the Blessington Gravels GWB and approximately 0.41km southwest and 0.43km northwest of the Site respectively, there is no published water quality monitoring data available.

7.4.10.3 Receiving Waterbody Status- Blessington WWTP

The most recent available Annual Environmental Report (AER) for the Blessington Wastewater Treatment Plant (WWTP) is 2022 (Uisce Eireann, 2022). The AER identified the final effluent was compliant with the Emission Limit Values (ELV) specified in the discharge license (EPA Licence No. D0063-01). The AER confirms the capacity of the plant will not be exceeded in the next three years. Importantly, the AER notes the following in relation to significance of results:

'The ambient monitoring result meet the required EQS.

A deterioration in water quality has been identified, however it is not known if it is or is not caused by the WWTP. Other cause of deterioration in water quality in the area are unknown.

The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive Status.'

7.4.11 Water Framework Directive Status

The WFD status for river, lake, groundwater, transitional and/or coastal water bodies that have a potential hydraulic connection to the subject site as recorded by the EPA (EPA, 2023) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 7-8 and Figure 7-9.

Table 7-8: WFD Risk and Waterbody Status

Waterbody Name	Waterbody; EU code	Location from Site	Distance from Site (km)*	WFD water body status (for the period of 2016-2021)	WFD 3rd cycle Risk Status
River Waterbodies					
Liffey_040	IE_EA_09L010400	Along Site Boundary	0.0	Good	Not at risk
Liffey_050	IE_EA_09L010600	Southwest	7.2	Good	Not at risk
Liffey_060	IE_EA_09L010700	Southwest	11.6	Moderate	At risk
Liffey_070	IE_EA_09L010850	Southwest	14.3	High	Not at risk
Liffey_080	IE_EA_09L011000	West	16.1	Good	Not at Risk
Liffey_090	IE_EA_09L011050	West	15.8	Good	Not at Risk
Liffey_100	IE_EA_09L011200	Northwest	14.0	Good	Not at Risk
Liffey_110	IE_EA_09L011300	Northwest	12.6	Good	Review
Liffey_120	IE_EA_09L011500	Northwest	12.5	Good	Not at Risk
Liffey_130	IE_EA_09L011600	Northwest	15.3	Good	Not at Risk
Liffey_140	IE_EA_09L011700	Northwest	14.8	Good	Not at Risk
Liffey_150	IE_EA_09L011900	North	17.5	Good	Review
Liffey_160	IE_EA_09L012040	North	20.6	Poor	Review
Liffey_170	IE_EA_09L012100	North	20.3	Poor	At risk
Liffey_180	IE_EA_09L012350	North	21.1	Poor	At risk
Liffey_190	IE_EA_09L012360	North	22.5	Poor	At risk
Lake Waterbodies					
Poullaphuca	IE_EA_09_71	East	0.77	Good	Not at risk
Golden Falls	IE_EA_09_53	Southwest	7.0	Moderate	At risk
Leixlip Reservoir	IE_EA_09_69	North	18.8	Poor	Review

Waterbody Name	Waterbody; EU code	Location from Site	Distance from Site (km)*	WFD body water status (for the period of 2016-2021)	WFD 3rd cycle Risk Status
Groundwater Bodies					
Blessington Gravels	IE_EA_G_047	Underlying the Site	n/a	Good	Not at risk
Kilcullen	IE_EA_G_003	Underlying the Blessington Gravels	n/a	Good	At risk
Transitional Waterbodies					
Liffey Estuary Upper	IE_EA_090_0400	Northeast	23.7	Good	Review
Liffey Estuary Lower	IE_EA_090_0300	Northeast	26.7	Moderate	At risk
Coastal Waterbodies					
Dublin Bay	IE_EA_090_0000	Northeast	31.9	Good	Not at risk

*Distances are a bird eye measure from the Site, rather than a distance downstream

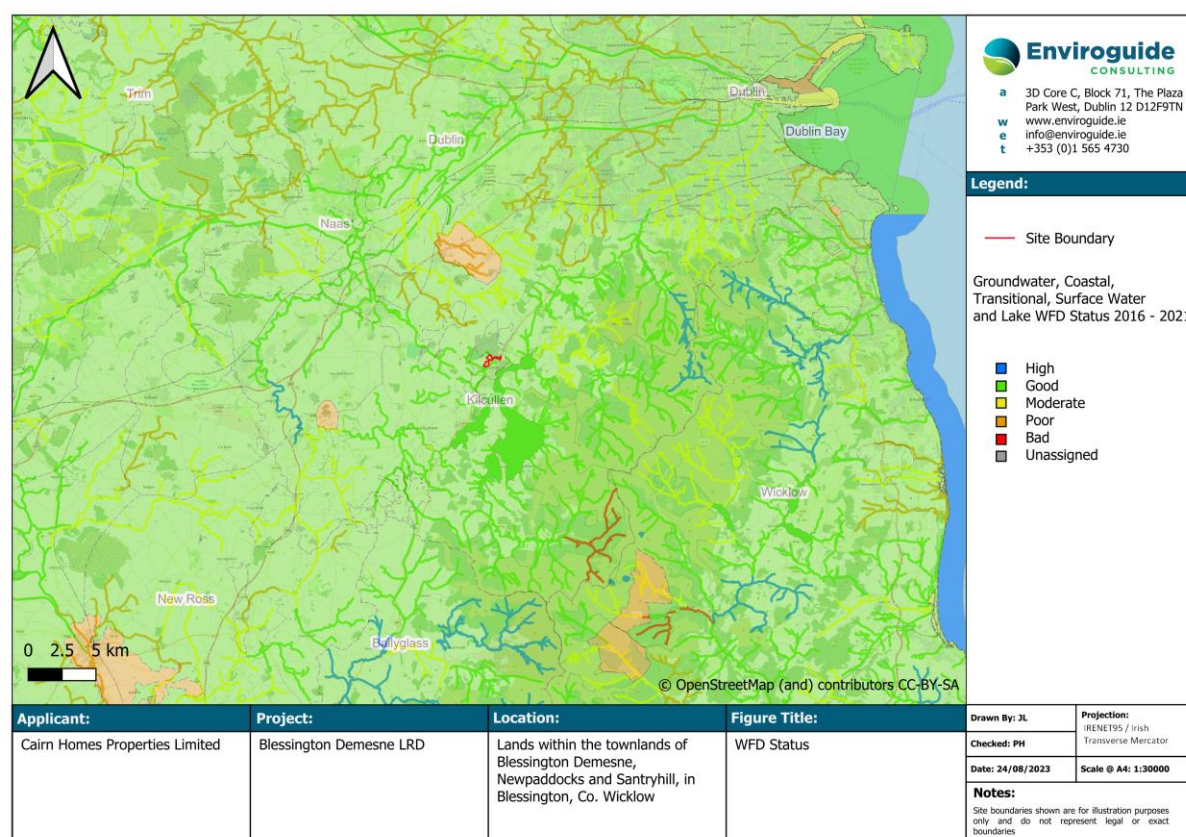


Figure 7-9: WFD Status

7.4.12 Designated and Protected Sites

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and wild fauna and flora by the designation of Special Areas of Conservation (SACs) and the Birds Directive (2009/147/EC) seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs). SACs and SPAs are collectively known as Natura 2000 or European sites (referred to hereafter as Natura 2000 site).

There are six (6No.) Natura 2000 sites that are identified with a potential hydraulic connection to the Site and Proposed Development (refer to Figure 7-10):

- Poulaphouca Reservoir SPA (Site Code: 004063);
- North Dublin Bay SAC (Site Code: 000206);
- North Bull Island SPA (Site Code: 004006);
- South Dublin Bay and River Tolka Estuary SPA (Site Code: 004024);
- South Dublin Bay SAC (Site Code: 000210); and
- Rockabill to Dalkey Island SAC (Site Code: 003000).

There are also six (6No.) proposed Natural Heritage Areas (pNHA) identified with a potential hydraulic connection to the Site and Proposed Development (refer to Figure 7-10):

- Poulaphouca Reservoir pNHA (Site Code: 000731);
- Liffey Valley Meander Belt (Site Code: 000393);
- Grand Canal pNHA (Site Code: 002104);
- Liffey Valley pNHA (Site Code: 000128);
- North Dublin Bay pNHA (Site Code: 000206); and
- South Dublin Bay pNHA (Site Code: 000210).

The SACs, SPAs, and pNHAs with a potential hydraulic connection to the subject site and proposed development are presented in Figure 7-10.

The Natura 2000 sites are described in further detail in Chapter 8 of this EIAR. For the purposes of this assessment, the closest hydraulically connected Natura 2000 site is considered to be the Poulaphouca Reservoir SPA.

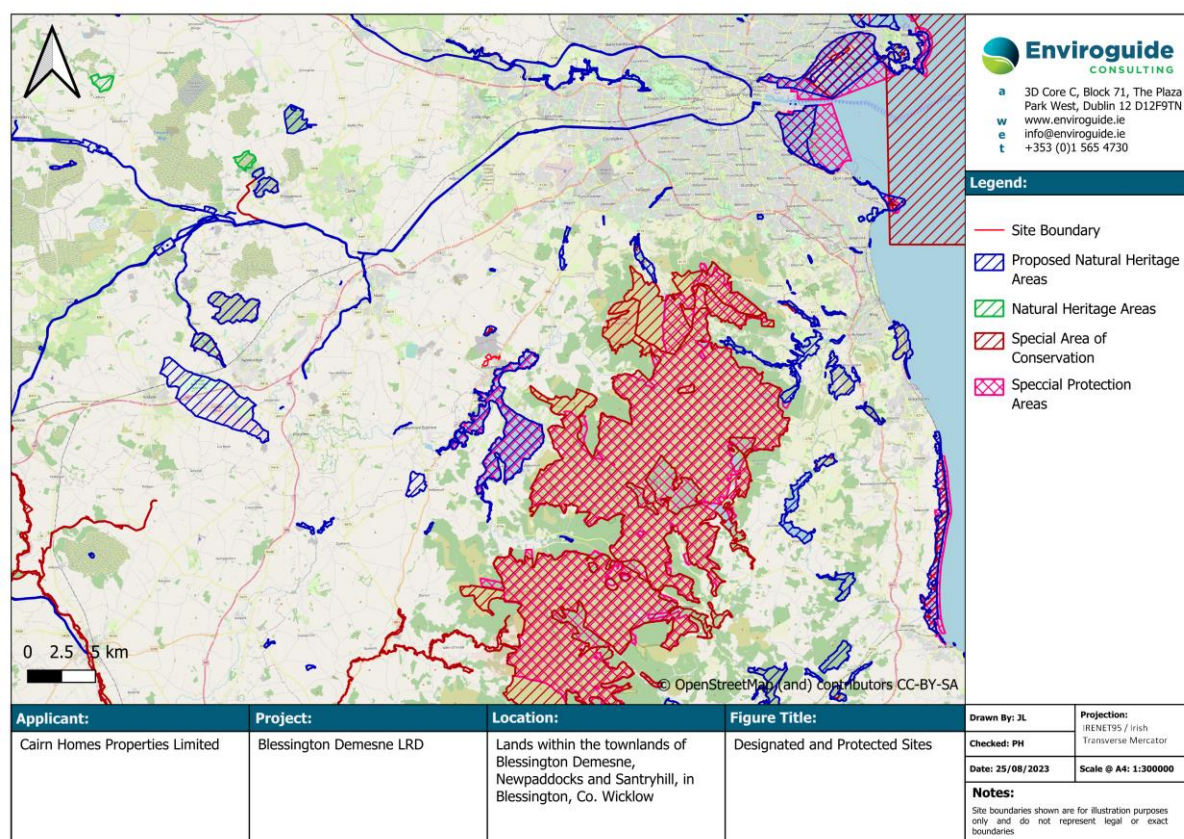


Figure 7-10: Designated and Protected Sites

7.4.13 Importance of the Receiving Environment

Taking account of the receiving hydrological and hydrogeological environment, the Site is considered to be of 'medium' hydrogeological importance (refer to Table 7-1) given that the Site is underlain by a locally important gravel aquifer and given that the southern portion of the Site (i.e., the proposed town park area) extends within the outer source protection area (SPA) for the Blessington PWS.

The WFD status has been assigned as 'good' for both the Blessington Gravels GWB and underlying Kilcullen GWB. The WFD status has been assigned as 'good' to the Liffey_040 (i.e., the Deerpark_09 Stream / River) which flows in a southerly direction along the northeast boundary of the northern portion of the Site (i.e., the proposed residential area) (refer to Section 7.3.7) and the downstream Poullaphuca Reservoir.

For the purposes of this assessment, the closet hydraulically connected Natura 2000 site is considered to be the Poulaphuca Reservoir SPA. The SACs, SPAs, and pNHAs with a potential hydraulic connection to the Site and Proposed Development are assessed in further detail in Chapter 8 of this EIAR.

7.5 Potential Impact of the Proposed Development

The procedure for determination of potential impacts on the receiving land, soils and geology is to identify potential receptors within the Site boundary and surrounding environment and use the information gathered during the desk study and Site walkover to assess the degree to which these receptors will be impacted upon in the absence of mitigation.

The potential impacts associated with the Construction Phase and Operation Phase of the Proposed Development are summarised below.

7.5.1 Construction Phase

7.5.1.1 Hydrological Flow regime

Based on the measured groundwater levels during previous site investigations (refer to Section 7.3.6.5), it is anticipated that excavations will be above groundwater. Therefore, all works will be undertaken above the existing groundwater level with no requirement for dewatering and no impact on the local groundwater resource and groundwater flow regime.

7.5.1.2 Water Quality

Sources of contamination that could impact on water quality arising from the construction of the Proposed Development include:

- Storage and use of fuels, oils and chemicals used during construction which in the event of an accidental release could infiltrate to the underlying groundwater or migrate via surface water runoff to offsite water bodies;
- Use of concrete and cementitious materials or other potentially hazardous materials (e.g., drilling fluids during piling) during construction in particular for below ground structures and foundations including piling where shallow groundwater may be encountered;
- Runoff with entrained sediment or other contaminants from groundworks areas and stockpiled soils onsite to downgradient receiving watercourses (i.e., the Deerpark_09 Stream / River);
- Release of sediment or other contaminants to the Deerpark_09 Stream / River during the construction of headwalls for the proposed surface water outfalls;
- Accidental release of wash-water or foul water from facilities at the subject site (e.g., wheel wash and temporary welfare facilities); and
- Release of foul water from existing foul water drainage during connection to live sewers;
- The potential pathway and pollutant linkages for the construction phase are identified as:
- Infiltration of contaminants to the substrate and bedrock aquifer via potential conduits introduced through groundworks;
- Infiltration through subsoils during excavations where the groundwater vulnerability is increased (i.e., the thickness of low permeability materials is reduced thus there is a more direct pathway for surface contaminants to underlying bedrock aquifer);
- Piled foundations creating a potential vertical conduit from the ground surface through subsoils and into the underlying aquifer;
- Lateral migration within the bedrock aquifer;
- Overland flow during rainfall events entering downgradient receiving watercourses (i.e., the Deerpark_09 Stream / River);
- Sediment released to the unnamed stream located at the eastern boundary of the subject site during the construction of headwalls for the proposed surface water outfalls;
- Discharge of water (groundwater / surface water runoff) to sewer, watercourses or groundwater in accordance with all statutory requirements and obligations. Unauthorised discharge of water during the construction phase of the proposed development will not be permitted.
- The potential receptors relevant to the Site include:

- The underlying gravel aquifer which is part of the Blessington Gravels GWB and the underlying Poullaphuca Formation bedrock aquifer which is part of the Kilcullen GWB;
- The Deerpark_09 Stream / River and downstream river waterbodies (including the Poullaphuca Reservoir and the River Liffey);
- The Poulaphouca Reservoir SPA;
- Groundwater users including downgradient private groundwater supplies and the Blessington PWS; and
- Surface water drinking water users including the Deerpark_09 Stream / River.

During excavation, there is a risk to the underlying bedrock aquifer due to any accidental release of deleterious materials (e.g., fuels, cementitious material or other hazardous materials), through the failure of secondary containment or a materials handling accident at the Site, to exposed granular subsoils or bedrock creating a direct pathway to the underlying gravel and bedrock aquifers. The groundwater vulnerability will temporarily be increased during the Construction Phase. In a worst-case scenario, and in the absence of mitigation, it is considered that this could result in a 'negative' 'moderate to significant' and 'medium-term' impact on the receiving hydrogeological and hydrological environment depending on the nature of the incident. The impact is considered to be medium-term as contamination will move quickly through the aquifer system due to the high permeability gravels and dilution.

Where piling is required, there is a potential to introduce a direct conduit for potential contaminant migration to the subsurface and groundwater. In the worst-case scenario drilling fluids used during piling could potentially be introduced to the subsurface and groundwater resulting in a 'negative' 'moderate to significant' and 'medium-term' impact to the underlying gravel and bedrock aquifers.

The southern portion of the Site (i.e., the proposed town park area) extends within the outer SPA for the Blessington PWS. Therefore, this is also a potential risk of contaminants which enter the groundwater to flow laterally towards the receiving water supply (i.e., the Blessington). In a worst-case scenario, and the absence of mitigation, it is considered that this could result in a 'negative' 'significant' and 'medium-term' impact on the receiving Blessington PWS and drinking water users depending on the nature of the incident.

There is a risk of runoff with entrained sediment or other contaminants from groundworks areas and stockpiled soils entering the Deerpark_09 Stream / River and tracking downstream. The appointed contractor will ensure that any run-off from the site will be managed for the duration of the Construction Phase to ensure that surface water runoff is contained, attenuated and treated onsite prior to discharge to surface water / groundwater. However, in the absence of mitigation measures, there is a potential 'negative', 'moderate', 'medium-term' impact on the receiving waterbodies including the Deerpark_09 Stream / River and downstream receptors (e.g., the Poulaphouca Reservoir). Based on the dilution which will occur within the Poulaphouca Reservoir, it is considered that there is no perceived risk to downstream waterbodies (i.e., the River Liffey).

There is the potential for some disturbance of the banks and bed of the Deerpark_09 Stream / River and increased suspended solids content of the receiving water during the construction of the headwalls for the proposed surface water outfalls. This may result in a 'negative', 'moderate', 'medium-term' impact on the receiving Deerpark_09 Stream / River and downstream receptors (e.g., the Poulaphouca Reservoir).

7.5.2 Operational Phase

7.5.2.1 Hydrological Flow Regime

The site is currently undeveloped greenfield lands. The construction of the proposed development will convert a percentage of the surface to impermeable surface due to the construction of building, roads and other infrastructure.

Infiltration tests carried out across the Site indicated there is infiltration potential. The SuDS measures adopted across the site will allow discharge of surface water run-off from the site to ground. Thus, the overall change in recharge to the underlying aquifer will be negligible. Overall, it is considered that the impact of the Proposed Development on the hydrogeological regime within the aquifer will be 'neutral' 'imperceptible' and 'permanent'.

7.5.2.2 Drainage and Flood Risk

The Infrastructure Design Reports (DBFL, 2023b and DBFL, 2023c) note the surface water drainage at the Proposed Development has been designed in accordance with SuDS and satisfies the requirements of the GSDSDS to meet the following design criteria:

- Criterion 1 – River Water Quality Protection;
- Criterion 2 – River Regime Protection;
- Criterion 3 – Level of Service (Flooding) / Flood Risk Assessment; and
- Criterion 4 – River Flood Protection.

The FRA Reports (DBFL, 2023d and DBFL, 2023e) identify that while the majority of the Site is located within Flood Zone C, a small area of the southern portion of the Site (i.e., the proposed town park area) was identified to be located within Flood Zone B. However, the FRAs conclude that given open space areas (i.e., the proposed town park area) are compatible with Flood Zone B and considering that the floor levels within the northern portion of the Proposed Development (i.e., the proposed residential area) will be set a minimum of 500mm above predicted 100-year flood levels the Proposed Development is not at risk of fluvial, tidal / coastal, pluvial or groundwater flooding and is considered Appropriate in accordance with guidelines set out in 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' (DEHLG, November 2009).

Therefore, it is considered that the potential flooding impacts associated with the proposed development are 'neutral', 'imperceptible' 'long-term'.

7.5.2.3 Water Quality

There will be no significant sources of contamination at site during the Operational Phase of the Proposed Development.

There will be no bulk storage of petroleum hydrocarbon- based fuels or other hazardous materials during the Operational Phase.

There will be no discharges to ground other than rainfall to unpaved landscaped areas (including the proposed town park area) and via limited recharge from SuDS measures incorporated into the surface water drainage network for the Proposed Development. As documented in the Infrastructure Design Reports (DBFL, 2023b and DBFL, 2023c), prior to discharging to the Deerpark_09 Stream / River, all surface water runoff will be treated and attenuated in accordance with the principals and objectives of SuDS as detailed in Section 7.4.2.1 (i.e., permeable paving, swales, gullies, underground storage, detention / infiltration basins petrol interceptors and vortex flow control devices). Therefore, it is

considered that there will be a 'neutral', 'imperceptible', 'long-term' impact on to the quality of receiving hydrological receptors including the Deerpark_09 Stream / River and the Poulaphouca Reservoir.

However, In the worst-case scenario of accidental spillage from a car engine and failure of SuDS there is a potential risk to water quality in the receiving environment. In the absence of mitigation measures, there is a potential 'negative', 'moderate' and 'medium-term' impact on the quality of the receiving water environment depending on the nature of the incident.

Foul water from the site will ultimately be treated at the Blessington WWTP. The WWTP is operated under existing statutory consents and the most recent available data in the 2022 AER verifies that discharge from the WWTP was compliant. Foul water from the Proposed Development will only be discharged to public sewer under agreement from UE and other applicable statutory consents verifying capacity at the WWTP for the Proposed Development. Therefore, on the basis that the foul effluent from the Proposed Development will be treated to the required standard in accordance with relevant statutory consents, it is considered that there will be a 'neutral', 'imperceptible', 'long-term' impact on receiving water quality associated with the discharge of foul water from the Proposed Development. Furthermore, as noted in the 2022 AER and detailed in section 6.6.10.3, the discharge of treated effluent from the Blessington WWTP will have no observable negative impact on the receiving WFD status.

7.6 Cumulative Impacts

Cumulative Impacts can be defined as "impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A search of planning applications located within a 2km radius of the Proposed Development was conducted using online planning resources including the National Planning Applications Database (MyPlan.ie) and Wicklow County Council's online planning database. Any planning application listed as granted, application registered or application pending from within the last five years were assessed for their potential to act in-combination with the Proposed Development and cause likely significant effects on hydrology and hydrogeology. The larger-scale developments identified within the vicinity of the site of the Proposed Development and considered for potential cumulative effects are listed in Table 7-9.

Table 7-9: Potential Cumulative Impacts

Planning Ref No.	Status	Applicant Name	Summary of the Development
20/184 (ABP Ref. PL 27.308578)	Granted by ABP (with revised conditions 27.01.2022)	Glenveagh Homes Limited	Nursing care home and residential development comprising (a) nursing care home (4 no storeys of 120 no bedspaces (c7428 sqm) along with 60 no car parking spaces (at undercroft and basement level c2477 sqm), open space and all associated residential care facilities (b) construction of 77 no dwellings comprising 29 no 2 storey houses (10 no 2 bedroom houses (house type E) and 19 no 3 bedroom houses (house types C, D & F), and 48 no apartments / duplex apartments as follows: Block A & D, 3 storeys comprising 30 no apartments (15 no 2 bedroom apartments in each building), blocks B & C, 3 storeys comprising 12 no apartments (2 no 2 bedroom apartments and 4 no 3 bedroom

Planning Ref No.	Status	Applicant Name	Summary of the Development
			apartments in each building), blocks E & F, 3 storeys comprising 6 apartments (3 no 2 bedroom apartments in each building), all apartment units to have balcony or terrace, (c) hard and soft landscaping (including public lighting) and open space (boundary treatment), communal open space for duplex apartments, regarding / reprofiling of site where required along with bicycle / bin stores and 100 no car parking spaces for dwellings (d) vehicular access from the west (from Blessington Inner Relief Road (BIRR) and south west along link road between the BIRR and Main Street with pedestrian accesses as well as works to roundabout and provision of road crossings (e) surface water attenuation measures and underground attenuation systems as well as connection to water supply, drainage, (f) all ancillary site development / construction works
20/362	Granted 09/10/20	Glenveagh Homes Limited	Development at a site (c.3.43 hectares) at Blessington Demesne, Blessington, Co. Wicklow bounded generally by Oak Drive and Blessington Inner Relief Road to the north and east, and Cocoon Crèche to the south, and Glenveagh Homes Ltd., Phase 1 lands (under Planning reg. ref. 20/184 for a proposed 120 bedroom Nursing Home and 77 no. dwellings) to the west. The proposal is for the second phase of development on the overall Glenveagh lands and will consist of: A) The construction of 96 no. dwellings providing 39 no. 2 storey 2 bedroom houses [House Types E1, G], 54 no. 2 storey 3 bedroom houses [House Types C, D, F], along with 3 no. 2 bedroom duplex/apartments in a 3 storey block (Block G) all apartment units to have balcony or terrace; B) Hard and soft landscaping (including public lighting) and open space (boundary treatment); communal open space for duplex apartments; well as regrading/re-profiling of site where required [including import and export of soil, if required] as well as bicycle/bin stores and 178 no. car parking spaces; C) Vehicular access from the west (from Blessington Inner Relief Road [BIRR]) and south west along link road between the BIRR and Main Street, with provision for pedestrian connection to Oak Park to the east; D) Surface water attenuation measures (including underground attenuation systems) as well as connection to water supply, drainage; E) All ancillary site development/construction works
21/1068	Grant permission (subject to	Windlynn Limited & Two-Mile House	To facilitate proposed residential development (69 no residential units) and proposed primary school (circa 2,334.70 sqm) on adjacent lands at Kilmalum, Blessington, Co. Kildare comprising of the upgrade

Planning Ref No.	Status	Applicant Name	Summary of the Development
	conditions) on 16/08/2022	Construction Ltd	to the Kilmalum Road from the Roundabout junction of Kilmalum Road with Kilmalum Crescent to the culvert over the Deerpark Watercourse and these works are to comprise replacement of the existing dishd curb and crossing with a new ramped pelican pedestrian crossing, improved pedestrian and cycle connections, new 'in-only' vehicular entrance onto the Kilmalum Road and underground connection to the existing watermain
19/1020 ABP 306425	Grant permission (subject to revised conditions) by ABP on 17/02/21	Glengolden Builders Ltd	Housing development to include (a) apartment block A (three - four storeys in height) consisting of 3 no 3 bedroom apartment, 14 no 2 bedroom apartments and 5 no 1 bed apartments (b) apartment block B (three - four storeys in height) consisting of 3 no 3 bedroom apartments, 14 no 2 bedroom apartments and 1 no 1 bed apartment (c) apartment block C (three - four storeys in height) consisting of 3 no 3 bedroom apartments, 4 no 2 bedroom apartments and 8 no 1 bed room apartments. The total number of apartments is 58 (d) connection to main services and all associated site development works including attenuation, foul drains, surface water drains, water main roads, car parking bicycle parking, footpaths, bin storage, boundaries, and boundary treatment, public lighting, mini pillars, open space and landscaping (e) 2 no new site entrances
19/940	Granted 02/04/20	Downshire Lodge Nursing Home Ltd & Downshire Place Independent Living Ltd	Demolition and removal works to include: removal of the single storey modern extension along the Main Street adjoining the Downshire Hotel, removal of the single storey shed to the rear of the site, removal of the existing single storey building to the rear of 'Foley's House' (house B), partial lowering of the existing wall along Kilbride Road with modifications to the existing vehicular access and removal of the extensive modern hotel structure to the rear of the existing vacant Downshire Hotel. The proposal includes the construction of a 104 no bed nursing home across Lower Ground to Second Floor level, all with associated plant areas, circulation area, ancillary spaces, day rooms, dining rooms, multi purposes activity rooms, kitchen, staff facilities with connection to the exiting retained property along the Main Street at Ground and First Floor levels, the conversion of the ground floor of the former Downshire Hotel into a café, nursing home reception, office and public WCs accessed from the Main Street, the 1st floor is proposed to accommodate 6 no nursing home bedrooms and a library, conversion of the building to the church

Planning Ref No.	Status	Applicant Name	Summary of the Development
			(north east) boundary to accommodate 1 no 3 bed and 1 no 1 bed unit for the purpose of nursing home staff accommodation, conversion of coach house B into mechanical and electrical plant area, upgrading of 'Foleys House' to a 6 no bedroom house for the purpose of nursing home staff accommodation, the consolidation of the facades of the former Downshire Hotel, Foleys House and both outbuildings (Coach House A and Coach House B) along the north east and south west boundaries, the proposal also includes the construction of 30 no 1 bed independent living units, across 2 no blocks, off 2-3 storey in height, vehicular access from Kilbride Road through a revised vehicular access point with Pedestrian access from Main Street, all with associated signage, landscaping, drainage, ambulance drop off zone, 66 no car parking spaces (including 3 no disabled car parking spaces), plant space, bin storage, cycle parking and site works
19/693	Grant by ABP 12/05/19	TD Housing Ltd	Demolition of existing agricultural shed (14 sqm) and the construction of 56 no residential units (2 no 4 bed houses, 49 no 3 bed houses, 3 no 2 bed houses and 2 no 2 bed apartments), 113 no ancillary car parking spaces, hard and soft landscaping, lighting, balconies facing northeast and southwest, solar panels, boundary treatments, ESB substation, changes in level, and all associated site development works above and below ground
20/108	Notification to grant 31/07/20	The Rectory, Kilbride Rd, Blessington	Demolition of a 1.5 storey derelict outbuilding (within the curtilage of a protected structure) and for the construction of 45 no residential units consisting of 24 no two storey 3 bed (5 person) terraced houses (101.6 sqm), 7 no two storey 3 bed (5 person) terraced houses (105.5 sqm) and 2 no two storey semi detached houses (101.6 sqm), 3 no 2 storey apartment blocks consisting of 12 no apartments consisting 6 no ground floor apartments, 2 bed (4 persons) (88 sqm) and 6 no 1st floor apartments 2 bed (4 persons) (75 sqm), maintaining the existing Rectory building (protected structure) as a residential house as is, maintaining the existing Mass Path, a communal pedestrian footpath extending towards Main Street, a communal cycle lane and a communal pedestrian footpath beyond the south eastern boundary wall and adjacent to Kilbride Road, 81 no car parking spaces, renovation and relocation of the derelict eastern entrance pier and wall (within the curtilage of a protected structure), widening of existing gate / entrance plus new pedestrian gate

Planning Ref No.	Status	Applicant Name	Summary of the Development
			and improved access to existing Mass Path, new front boundary wall and railing, drainage infrastructure, landscaping, services and all associated works

7.6.1.1 Water Resources:

The Proposed Development will be connected to the existing 225mm UE foul sewer located in the existing roundabout on Oak Drive subject to agreement with UE. The UE COF dated the dated the 15th of October 2021 (UE COF Reference: CDS20005303) states that the water supply connection is feasible subject to upgrades, which will be completed as part of the construction of the Proposed Development.

The mains water supply is operated in accordance with relevant existing statutory consents. Therefore there will be no cumulative impacts associated with the Proposed Development on the supply network and water resources.

7.6.1.2 Water Quality

As outlined in the Infrastructure Design Reports (DBFL, 2023b and DBFL, 2023c), foul water from the Proposed Development will be discharged to the existing 225mm UE foul sewer located in the existing roundabout on Oak Drive. The UE COF dated the dated the 15th of October 2021 (UE COF Reference: CDS20005303) states that the foul water connection is feasible subject to upgrades, which will be completed as part of the construction of the Proposed Development.

Foul water from the proposed development will be treated at the Blessington WWTP (EPA Licence No. D0063-01). The Blessington WWTP is operated with relevant statutory approvals and the available 2022 AER indicates that discharges from the WWTP were compliant with the ELVs specified in the discharge license. Therefore, there will be no identified impact on the receiving environment associated with foul discharges from the Proposed Development via Blessington WWTP individually or in-combination.

There will be no cumulative impacts on the receiving surface water environment in terms of water quality and flood risk associated with surface water runoff from the Proposed Development and considered offsite developments.

There are no other potential cumulative impacts associated with the Proposed Development.

7.6.2 The 'Do nothing' Scenario

The procedure for determination of potential impacts on the receiving hydrology and hydrogeology is to identify potential receptors within the Site boundary and surrounding environment and use the information gathered during the desk study and site walkover to assess the degree to which these receptors will be impacted upon in the absence of mitigation.

If the Proposed Development did not proceed the Site would remain as undeveloped lands. There would be no change to the drainage at the site or to the hydrological and hydrogeological regime at the Site.

7.7 Avoidance, Remedial or Mitigation Measures

The mitigation measures, as outlined below, will ensure that there will be no significant impact on the receiving groundwater and surface water environment. Hence, the Proposed Development will not have any impact on compliance with the EU Water Framework Directive, European Communities (Environmental Objectives) Surface Water Regulations, 2009 (SI 272 of 2009, as amended 2012 (SI No

327 of 2012), and the European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010), as amended 2012 (SI 149 of 2012) and 2016 (S.I. No. 366 of 2016).

7.7.1 Construction Phase

A preliminary Construction Environmental Management Plan (CEMP) (DBFL, 2023a) has been prepared as part of the planning application. Following appointment, the contractor will be required to further develop the CEMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001).

The CEMP will be implemented for the duration of the Construction Phase, covering construction and waste management activities that will take place during the Construction Phase of the Proposed Development.

Mitigation works will be adopted as part of the construction works for the Proposed Development. The measure will address the main activities of potential impact which include:

- Control and Management of water and surface runoff;
- Control of Management of works nears water courses;
- Control of Management of materials from off-site sources;
- Appropriate fuel and Chemical handling, transport and storage; and
- Management of accidental release of contaminants at the subject site.

The construction works will be managed in accordance with all statutory obligations and regulations and with standard international best practice. Good construction management practices will minimise the risk of pollution from construction activities at the subject site including but not limited to:

- Construction Industry Research and Information Association (CIRIA), 2001. Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.
- CIRIA, 2015. Environmental Good Practice on Site (C741);
- Enterprise Ireland Oil Storage Guidelines (BPGCS005);
- Environmental Protection Agency (EPA), 2013. IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities;
- CIRIA, 2007. The SuDS Manual (C697);
- UK Environment Agency, 2004. UK Pollution Prevention Guidelines (PPG);
- CIRIA, 2006. Control of Water Pollution from Linear Construction Projects: Technical Guidance (C648);
- National Roads Authority (now Transport Infrastructure Ireland), 2016. Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes; and
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

7.7.1.1 Control and Management of Works Near Water Courses

All necessary works carried out adjacent to the Deerpark_09 Stream / River for the construction of headwalls for the proposed surface water outfalls will follow the guidelines published by Inland Fisheries Ireland (IFI) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters

(IFI, 2016) and the National Roads Authority (now Transport Infrastructure Ireland) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA, 2008). All works will be carried out in accordance with an approved method statement prepared by an appropriately qualified Environmental /Ecological Clerk of Works employed by the appointed contractor.

A watching brief by an Environmental /Ecological Clerk of Works employed by the appointed contractor will be required during critical stages in particular during near stream works for the headwall and outfall at the Deerpark_09 Stream / River.

Field parameters (pH, temperature, and conductivity) are required to be collected directly downstream of the works prior to commencing works to confirm baseline and then at regular intervals during the works. The Environmental /Ecological Clerk of Works will visually inspect the water quality during the works, observant for release of suspended sediment or contaminations to the stream. Silt fences are required to be installed for the duration of works. Works for the headwall will not occur during periods of high rainfall.

7.7.1.2 Control and Management of Water and Surface Water Runoff

There will be no direct discharge to groundwater or surface water during the construction phase of the Proposed Development.

All run-off from the subject site or any areas of exposed soil will be managed as required with temporary pumping and following appropriate treatment as required. Dewatering to lower groundwater levels is not anticipated. However, where surface water runoff must be pumped from excavations, water will be managed in accordance with best practice standards (i.e., CIRIA C750), the CEMP and regulatory consents to minimise the potential impact on the local groundwater flow regime within the soil and bedrock.

Unauthorised discharge of water (groundwater / surface water runoff) to ground, drains or watercourses will not be permitted. works. The appointed contractor will ensure that the discharge of water to ground, drains or watercourses will be in accordance with the necessary discharge licences issued by UE under Section 16 of the Local Government (Water Pollution) Acts and Regulations for any water discharges to sewer or from Wicklow County Council under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water.

Where possible, a buffer zone of 30m will be maintained between nearby watercourse (i.e., the Deerpark_09 Stream / River) and any stockpiles of loose materials pending re-use onsite. Silt fences will be erected at the toe of stockpiles to prevent run-off. The silt fences will be monitored daily by the appointed contractor and silt will be removed from required.

A regular review of weather forecast will take place, insofar as possible, ground excavation works will be scheduled during period of dry weather to minimise potential for silt laden runoff.

7.7.1.3 Concrete Works

The use of cementitious grout used during the Construction Phase of the Proposed Development will avoid any contamination of the receiving hydrogeological environment through the use of appropriate design and methods implemented by the appointed contractor and in accordance with industry standards to prevent impact on groundwater and surface water quality such as the use of water compatible grout.

Pre-cast concrete will be used where technically feasible to meet the design requirements for the Proposed Development. Where cast-in-place concrete is required (i.e., building foundations), all work must be carried out in dry conditions and be effectively isolated from any groundwater.

All ready-mixed concrete will be delivered to the Proposed Development Site by truck. Concrete mixer trucks will not be permitted to wash out on-site with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal off-site in accordance with all relevant waste management legislation.

The piling methodology will minimise the potential for the introduction of any temporary conduit between any potential sources of contamination at the ground surface and underlying groundwater. The piling method will include procedures to ensure any potential impact to water quality is prevented including preventing surface runoff or other piling/drilling fluids from entering the pile bores and surrounding formation. Where there is a requirement to use lubricants, drilling fluids or additives the contractor will use water-based, biodegradable, and non-hazardous compounds under controlled conditions.

7.7.1.4 Handling of Fuels, Chemicals and Materials

Fuelling and lubrication of equipment will be carried out in accordance with the procedures outlined in the CEMP (DBFL, 2023a), in a designated area of the Site away from any watercourses and drains (where not possible to carry out such activities onsite).

Any diesel, fuel or hydraulic oils stored on-site will be stored in designated areas (DBFL, 2023). These areas will be bunded and located away from surface water drainage and features. Bunds will have regard to Environmental Protection Agency guidelines 'Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities' (EPA, 2013). All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

The main contractor will maintain an emergency response action plan and emergency procedures will be developed by the appointed contractor in advance of any works commencing. Construction staff will be familiar with the emergency response plan (DBFL, 2023a).

As outlined in the CEMP (DBFL, 2023a), spill kits will be made available onsite and identified with signage for use in the event of an environmental spill or leak. A spill kit will be kept in close proximity to the fuel storage area for use in the event of any incident during refuelling or maintenance works. Heavy machinery used on the site will also be equipped with its own spill kit.

7.7.1.5 Emergency Procedures

Emergency procedures will be developed by the appointed Contractor in advance of works commencing and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements.

- Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the site;
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants;
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained;

- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards;
- All construction works staff will be familiar with emergency procedures for in the event of accidental fuel spillages; and
- All construction works staff on-site will be fully trained on the use of equipment.

This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving land, soil and geological environment associated with the Construction Phase of the Proposed Development.

7.7.1.6 Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Foul drainage from temporary welfare facilities during the Construction Phase of the Proposed Development will be discharged to temporary holding tank(s) the contents of which will periodically be tankered off site to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by tankering of waste offsite by an appropriately authorised contractor.

7.7.2 Operational Phase

It is considered that the design of the Proposed Development is in line with the objectives of the Water Framework Directive (2000/60/EC as amended) (WFD) to prevent or limit any potential impact on water quality of the receiving environment.

Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures will be incorporated into the overall management strategy for the Proposed Development. This will ensure that there are no impacts on water quality and quantity (flow regime) during the Operational Phase of the Proposed Development.

With regard to the proposed discharge of treated operational surface water from the Proposed Development to the Deerpark_09 Stream / River, the potential for surface water generated at the Proposed Development to cause significant effects to downstream sensitivities during the operational phase would be considered negligible due in part to the SuDS measures and petrol interceptor incorporated in the overall design.

7.7.3 Water Framework Directive

There are identified potential impacts on the water quality associated with the Proposed Development in the absence of avoidance, remedial and reductive measures that could impact on the WFD Status of the receiving water bodies taking account of the worst-case scenario.

The Potential impact on WFD status for water bodies was assessed based on the worst-case scenario, taking account of the baseline hydrological and hydrogeological conditions at the Site, the WFD status assigned by the EPA (EPA, 2023) to the waterbodies namely the Liffey_040 river waterbody, the Poullaphuca lake waterbody, the Blessington Gravels GWB and the Kilcullen GWB.

In the absence of any mitigation measures, there could be a potential 'negative', 'significant' and 'long-term' impact to the WFD status or the potential to achieve 'good' status of the of the Liffey_040 river waterbody, the Poullaphuca lake waterbody, the Blessington Gravels GWB and the Kilcullen GWB.

Taking account of the distance downstream and the dilution which will occur, it is considered that there is no perceived impact on any further downstream waterbodies.

The mitigation measures as outline above, including the SUDS in accordance with the GDSDS and construction mitigation measures, will prevent any impact on the receiving groundwater and surface water environment. Hence, the proposed development will not have any impact on compliance with the EU Water Framework Directive, European Communities (Environmental Objectives) Surface Water Regulations, 2009 (SI 272 of 2009, as amended 2012 (SI No 327 of 2012), and the European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010), as amended 2012 (SI 149 of 2012) and 2016 (S.I. No. 366 of 2016).

Thus, the Proposed Development will not cause a deterioration in the status of waterbodies hydraulically connected with the Proposed Development, taking account of design avoidance and mitigation measures that will be implemented. The Proposed Development will not jeopardise objective to achieve 'good' surface water status or good ecological potential. Hydrocarbon interceptors on site will lead to a positive impact on water quality to downstream receptors including the Liffey_040 river waterbody and the Poullaphuca lake waterbody. Therefore, the impacts of the proposed development on the WFD will be 'neutral', 'imperceptible' and 'permanent'.

7.8 Residual Impacts

Residual Impacts are defined as 'effects that are predicted to remain after all assessments and mitigation measures. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts.

The predicted impacts of the construction phase and operational phase of the Proposed Development are described in Table 7-10 in terms of quality, significance, extent, likelihood, and duration. The relevant mitigation measures are detailed, and the residual impacts are determined which take account of the avoidance, remedial and mitigation measures.

Overall, there are no significant residual impacts on hydrology and hydrogeology anticipated regarding this Proposed Development.

Table 7-10: Residual Impacts

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Construction Phase								
Accidental release of deleterious materials including fuel and other materials being used on-Site.	Groundwater / Surface Water/ Groundwater Supply	Potential (albeit low) for uncontrolled release of deleterious materials including fuels and other materials being used on-site, through the failure of secondary and tertiary containment or a materials handling accident.	Negative	Moderate to Significant	Medium-Term	Direct / Worst Case	Procedures for the use and handling of all potentially hazardous compounds will be undertaken in accordance with the requirements and procedures outlined in the CEMP which will be updated by the appointed contractor.	Imperceptible
Piling Works	Groundwater / Groundwater Supply	Potential for migration of contaminants during piling works via direct conduit to subsurface.	Negative	Moderate to Significant	Medium-Term	Direct / Worst Case	Detailed design piling and method will be prepared by the appointed contractor. Where required, the appointed contractor will use water-based, biodegradable, and non-hazardous compounds under	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
							controlled conditions.	
Release of Suspended Solids / Sediments from Groundworks Areas and Stockpiles	Surface Water Quality	Potential for release of suspended sediments entrained in surface runoff from groundworks or indirectly tracked on vehicles / machinery entering the Deerpark_09 Stream / River and tracking downstream.	Negative	Moderate	Medium-Term	Direct	Appropriate measure including silt fences and buffer zones to be used to prevent fugitive runoff.	Imperceptible
Release of Suspended Solids / Sediments During Headwall Construction	Surface Water Quality	Potential for release of sediment to surface water (i.e., the Deerpark_09 Stream during the construction of the headwalls for the proposed surface water outfalls.	Negative	Moderate	Medium-Term	Direct	Detailed design and method will be prepared by the appointed contractor. All works carried out adjacent to the Deerpark_09 Stream / River will follow the IFI, 206 and NRA, 2008 guidelines.	Imperceptible
Operation Phase								
Recharge/ Discharge to Ground	Hydrogeological Flow Regime	There is no identified impact on the overall	Neutral	Imperceptible	Permanent	Direct	None Required. Ongoing maintenance of the	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
		hydrogeological flow regime of the Blessington Gravels GWB, the Kilcullen GWB or drinking water supply wells including the Blessington PWS.					SUDS and drainage network will be undertaken.	
Proposed Development Drainage	Flood Risk and Surface Water Regime	The design of the Proposed Development has been designed in accordance with SuDS and satisfies the requirements of the GDSDS. Furthermore, the FRA concludes that there is no identified flood risk.	Neutral	Imperceptible	Long-Term	Direct	None Required. Ongoing maintenance of the SUDS and drainage network will be undertaken.	Neutral
Surface Water Drainage	Water quality	All surface water runoff will be treated and attenuated in accordance with the principals and objectives of SuDS. Therefore, it is considered that the Proposed Development will not result in any	Neutral	Imperceptible	Long-Term	Direct	None Required.	Neutral

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
		impact on the receiving water quality.						
Surface Water Drainage and Management of SuDS	Surface Water Quality / WFD Status	In a worst-case scenario of accidental spillage of fuel from a car engine and failure of SuDS, there is a potential risk on water quality in the receiving environment.	Negative	Moderate	Medium-Term	Direct/ Worst Case	Surface water drainage at the proposed development has been designed in accordance with SuDS and therefore it is anticipated that there will be an overall positive impact on water quality of groundwater and surface water.	Imperceptible
Foul Water Drainage	Surface Water Quality	Foul water from the site will ultimately be treated at the Blessington WWTP is operated under existing statutory consents. Therefore, it is considered that the Proposed Development will not result in any impact on the receiving water quality.	Neutral	Imperceptible	Long-Term	Direct	None Required. Foul water from the Proposed Development will only be discharged offsite under agreement from UE.	Neutral

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Surface Drainage / Foul Drainage.	WFD Status	There is no identified risk to WFD Status for the Operational Phase.	Neutral	Imperceptible	Permanent	Direct	None required.	Imperceptible

7.9 Monitoring

7.9.1 Construction Phase

During the construction phase of the proposed development the following monitoring measures will be considered:

- The Contractor will carry out inspections and monitoring during excavations, piling and other groundworks to ensure that measures protective of water quality outlined in this EIAR, and the CEMP (DBFL, 2023a) are fully implemented and effective;
- The near stream works will be overseen by an appropriately qualified Environmental/ Ecological Clerk of Works engaged by the appointed contractor. Water quality monitoring of up and downstream locations is also recommended to determine whether any potential risk to water quality in the Deerpark_09 Stream / River and downstream associated water bodies during the near stream works;
- Discharges to surface water / foul sewers will be monitored where required in accordance with statutory consents (i.e., discharge licence); and
- Routine monitoring and inspections during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures.

7.9.2 Operational Phase

Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures will be undertaken throughout the lifetime of the operational phase of the proposed development.

7.10 Interactions

7.10.1 Population and Human Health

An assessment of the potential impacts of the Proposed Development on human health is included in Chapter 4 of this EIAR.

No public health issues associated with the water (hydrology and hydrogeology) conditions at the site have been identified for the construction phase or operational phase of the Proposed Development.

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

7.10.2 Biodiversity

An assessment of the potential impacts of the Proposed Development on the biodiversity of the subject site, with emphasis on habitats, flora and fauna which may be impacted as is included in Chapter 5 of this EIAR such as potential pollution of waterbodies impacting on flora and fauna in the absence of mitigation measures.

Chapter 5 addresses the impact of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.

7.10.3 Land, Soils and Geology

An assessment of the potential impact of the Proposed Development on the existing land, soils and geological environment during the construction phase and operational of the Proposed Development is set out in Chapter 6. In the absence of avoidance and mitigation measures, there is a potential for

sediments from excavated soils entering the drainage network and tracking downstream during the Construction Phase.

7.10.4 Material Assets- Site Services

An assessment of the potential impact on the Proposed Development on the material assets including built services and infrastructure has been set out in Chapter 14 of this EIAR.

During the Construction Phase of the Proposed Development discharge of water will be in accordance with the necessary discharge licences issued by UE under Section 16 of the Local Government (Water Pollution) Acts and Regulations for any water discharges to sewer or from Wicklow County Council under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water.

During the Operational Phase of the Proposed Development, any discharge to the public foul sewer and water supply will be under consent from UE.

7.11 Difficulties Encountered

No difficulties were encountered in the preparation of this Chapter.

7.12 References

Construction Industry Research and Information Association (2015) Environmental good practice on site guide (CIRIA -C741).

Construction Industry Research and Information Association, 2001. Control of Water Pollution from Construction Sites. Guidance for Consultants and Contractors (CIRIA – C532).

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8. AIR AND CLIMATE

8.1 Introduction

This Chapter describes and assesses the potential impacts on air quality and climate associated with the Proposed Development on lands within the townlands of Blessington Demesne, Newpaddocks and Santryhill, Blessington, Co. Wicklow.

Taking into account Ambient Air Quality Standards, the baseline air quality will be examined along with the potential for release of emissions to the atmosphere and associated effects prior to and following mitigation measures. This Chapter also describes and assesses the potential impacts on micro and macro-climate as a result of the Proposed Development. Attention will be focused on Ireland's obligations under the Paris Agreement in the context of the overall climatic impact of the presence and absence of the Proposed Development.

8.1.1 Quality Assurance and Competence

This Chapter was prepared by Laura Griffin, Environmental Consultant, Enviroguide. Laura has a Master of Science (Hons) in Climate Change from Maynooth University and a Bachelor of Arts (Hons) in English and Geography from Maynooth University. Laura has worked as an Environmental Consultant with Enviroguide since 2021 and has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Air Quality and Climate, Noise and Vibration and Material Assets (Waste and Utilities) Chapters of Environmental Impact Assessment Reports (EIAR)s.

8.1.2 Ambient Air Quality Standards

For the protection of health and ecosystems, EU directives apply air quality standards in Ireland and other EU member states for a range of pollutants. These rules include requirements for monitoring, assessment and management of ambient air quality. The first major instrument in tackling air pollution was the Air Quality Framework Directive 96/62/EC and its four daughter Directives. Each of these instruments was repealed with the introduction of Directive 2008/50/EC on ambient air quality and cleaner air for Europe in 2008 (as amended by Decision 2011/850/EU and Directive 2015/1480/EC) (the CAFE Directive), save for the "Fourth Daughter Directive" (Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air).

The CAFE Directive lays down measures aimed at:

- 1) defining and establishing objectives for ambient air quality designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole;
- 2) assessing the ambient air quality in Member States on the basis of common methods and criteria and, in particular, assessing concentrations in ambient air of certain pollutants;
- 3) providing information on ambient air quality in order to help combat pollution and nuisance and to monitor long-term trends and improvements resulting from national and Community measures;
- 4) ensuring that such information on ambient air quality is made available to the public;
- 5) maintaining air quality where it is good and improve it in other cases;
- 6) promoting increased cooperation between the Member States in reducing air pollution.

Ambient air quality monitoring and assessment in Ireland is carried out in accordance with the requirements of the CAFE Directive. The CAFE Directive has been transposed into Irish legislation by the Air Quality Standards Regulations (S.I. No. 180 of 2011). The CAFE Directive requires EU member states to designate 'Zones' reflective of population density for the purpose of managing air quality. Four zones were defined in the Air Quality Standards Regulations (2011) and subsequently amended

in 2013 to account for 2011 census population counts and to align with coal restricted areas in the Air Pollution Act (Marketing, Sale, Distribution and Burning of Specified Fuels) Regulations 2012. (S.I. No. 326 of 2012) (the 2012 Regulations).

The main areas defined in each zone are:

- ❖ **Zone A:** Dublin Conurbation
- ❖ **Zone B:** Cork Conurbation
- ❖ **Zone C:** Other cities and large towns comprising Limerick, Galway, Waterford, Drogheda, Dundalk, Bray, Navan, Ennis, Tralee, Kilkenny, Carlow, Naas, Sligo, Newbridge, Mullingar, Wexford, Letterkenny, Athlone, Celbridge, Clonmel, Balbriggan, Greystones, Leixlip and Portlaoise.
- ❖ **Zone D:** Rural Ireland, i.e., the remainder of the State excluding Zones A, B and C.

The Site of the Proposed Development is located in Blessington, Co. Wicklow and falls under the 'Zone D' category based on the Air Quality Standards Regulations.

The Cleaner Air for Europe (CAFE) Directive outlines certain limit or target values specified by the five published directives that apply limits to specific air pollutants. These limits, outlined in Table 8-1, will be referred to as part of the proposed facility assessment with respect to air quality.

Table 8-1: Limit Values of Cleaner Air for Europe (CAFE) Directive 2008/50/EC (Source: EPA, 2020)

Pollutant	Limit Value Objective	Averaging Period	Limit Value $\mu\text{g}/\text{m}^3$	Limit Value ppb	Basis of Application of the Limit Value	Limit Value Attainment Date
SO₂	Protection of Human Health	1 hour	350	132	Not to be exceeded more than 24 times in a calendar year	1 Jan 2005
SO₂		24 hours	125	47	Not to be exceeded more than 3 times in a calendar year	1 Jan 2005
SO₂	Protection of vegetation	Calendar year	20	7.5	Annual mean	19 July 2001
SO₂		1 Oct to 31 Mar	20	7.5	Winter mean	19 July 2001
NO₂	Protection of human health	1 hour	200	105	Not to be exceeded more than 18 times in a calendar year	1 Jan 2010
NO₂		Calendar year	40	21	Annual mean	1 Jan 2010

Pollutant	Limit Value Objective	Averaging Period	Limit Value $\mu\text{g}/\text{m}^3$	Limit Value ppb	Basis of Application of the Limit Value	Limit Value Attainment Date
NO + NO₂	Protection of ecosystems	Calendar year	30	16	Annual mean	19 July 2001
PM₁₀	Protection of human health	24 hours	50	-	Not to be exceeded more than 35 times in a calendar year	1 Jan 2005
PM₁₀		Calendar year	40	-	Annual mean	1 Jan 2005
PM_{2.5} - Stage 1		Calendar year	25	-	Annual mean	1 Jan 2015
PM_{2.5} - Stage 2		Calendar year	20	-	Annual mean	1 Jan 2020
Lead		Calendar year	0.5	-	Annual mean	1 Jan 2005
Carbon Monoxide		8 hours	10,000	8,620	Not to be exceeded	1 Jan 2005
Benzene		Calendar year	5	1.5	Annual mean	1 Jan 2010

The Environmental Protection Agency (EPA) is the competent authority for the purpose of the CAFE Directive and is required to send an annual report to the Minister for Environment and the European Commission. The regulations further provide for the distribution of public information. This includes information on any exceedances of target values, the reasons for exceedances, the area(s) in which they occurred, and the relevant information regarding effects on human health and environmental impacts.

8.1.3 Climate Agreements

Climate change is recognised as one of the most serious global environmental problems and arguably the greatest challenge facing humanity today. While natural variations in climate over time are normal, anthropogenic activities have interfered greatly with the global atmospheric system by emitting substantial amounts of greenhouse gases (GHGs). This has caused a discernible effect on our global climate system, with continued change expected due to current and predicted trends of GHG emissions. In Ireland this is demonstrated by rising sea levels, changes in the ecosystem, and extreme weather events.

In March 1994, the United Nations Framework Convention on Climate Change (UNFCCC) was established as an intergovernmental effort to tackle the challenges posed by climate change. The

Convention membership is almost universal, with 197 countries having ratified. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices. This information is then utilised to launch national strategies and international agreements to address GHG emissions. Following the formation of the UNFCCC, two major international climate change agreements were adopted: The Kyoto Protocol, and the Paris Agreement.

In April 1994, Ireland ratified the United Nations Framework Convention on Climate Change (UNFCCC) and subsequently signed the Kyoto Protocol in 1997. The Kyoto Protocol is an international agreement linked to the UNFCCC which commits its parties to legally binding emission reduction targets. In order to ensure compliance with the protocol, the Intergovernmental Panel on Climate Change (IPCC) has outlined detailed guidelines on compiling National Greenhouse Gas Inventories. These are designed to estimate and report on national inventories of anthropogenic GHG emissions and removals. Under Article 4 of the Kyoto Protocol, Ireland agreed to limit the net anthropogenic growth of the six named GHGs to 13% above the 1990 level, spanning the period 2008 to 2012.

The second commitment period of the Kyoto Protocol was established by the Doha amendment which was adopted in extremis on the 8th of December 2012, to impose quantified emission limitation and reduction commitments (QELRCs) to Annex I (developed country) Parties during a commitment period from 2013 to 2020. The Doha Amendment came into force on ratification on 31 December 2020. However, this has now been superseded by the Paris Agreement.

In December 2015, the Paris Climate Change Conference (COP21) took place and was an important milestone in terms of international climate change agreements. The Paris Agreement sets out a global action plan to put the world on track to mitigate dangerous climate change by setting a global warming limit not to exceed 2°C above pre-industrial levels, with efforts to limit this to 1.5°C. As a contribution to the objectives of the agreement, countries have submitted comprehensive national climate action plans (nationally determined contributions, NDCs). Under this agreement, governments agreed to come together every 5 years to assess the collective progress towards the long-term goals and inform Parties in updating and enhancing their nationally determined contributions. Ireland will contribute to the Agreement through the NDC tabled by the EU on behalf of Member States in 2020, which commits to a 55% reduction in EU-wide emissions by 2030 compared to 1990. This is considered to be the current NDC maintained by the EU and its Member States under Article 4 of the Paris Agreement.

The EU has set itself targets for reducing its GHG emissions progressively up to 2050, these are outlined in the 2020 climate and energy package and the 2030 climate and energy policy framework. These targets are defined to assist the EU in transitioning to a low-carbon economy, as detailed in the 2050 low carbon roadmap. The 2020 package is a set of binding legislation to ensure that the EU meets its climate and energy targets for the year 2020. There are three key targets outlined in the package which were set by the EU in 2007 and enacted in legislation in 2009:

- 20% reduction in GHG emissions from 1990 levels;
- 20% of EU energy to be from renewable sources;
- 20% improvement in energy efficiency.

The 2030 climate and energy framework builds on the 2020 climate energy package and was adopted by EU leaders in October 2014. The framework sets three key targets for the year 2030:

- At least 40% cuts in GHG emissions from 1990 levels;
- At least 32% share for renewable energy;
- At least 32.5% improvement in energy efficiency.

The EU has acted in several areas in order to meet these targets, including the introduction of the Emissions Trading System (ETS). The ETS is the key tool used by the EU in cutting GHG emissions from large-scale facilities in the power, industrial, and aviation sectors. Around 45% of the EU's GHG emissions are covered by the ETS.

As part of the European Green Deal, the Commission proposed in September 2020 to raise the 2030 greenhouse gas emission reduction target, including emissions and removals, to at least 55% compared to 1990. The European Climate Law came into force in July 2021 and writes into law the goal set out in the European Green Deal for Europe's economy and society to become climate-neutral by 2050. The law also sets the intermediate target of reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels.

8.1.4 National Policy and Greenhouse Gas Emissions in Ireland

National climate policy in Ireland recognises the threat of climate change to humanity and supports mobilisation of a comprehensive international response to climate change, and global transition to a low-carbon future.

The Climate Action and Low Carbon Development (Amendment) Act 2021 was enacted in 2021 and sets Ireland on a legally binding path to net-zero emissions no later than 2050, and to a 51% reduction in emissions by the end of this decade. The Act provides the framework for Ireland to meet its international and EU climate commitments and to become a leader in addressing climate change.

The Irish Government published its Climate Action Plan (2021) which provides a detailed framework for taking decisive action to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and setting Ireland on a path to reach net-zero emissions by no later than 2050, as committed to in the Programme for Government and as required by the Climate Act 2021. The plan lists the actions needed to deliver on national climate targets and sets indicative ranges of emissions reductions for each sector of the economy. It will be updated annually, next in 2022, to ensure alignment with Ireland's legally binding economy-wide carbon budgets and sectoral ceilings.

The Climate Action Plan 2023 (CAP23) is the second annual update to Ireland's Climate Action 2019. This plan is the first to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021, and following the introduction, in 2022, of economy-wide carbon budgets and sectoral emissions ceilings.

The plan was launched on 21 December 2022.

The supplementary Annex of Actions, approved by the Irish Government and published on 7 March 2023, provides the specific actions required to implement the targets set out in the Plan, and includes information regarding outputs, lead departments, timelines and stakeholders. The plan implements the carbon budgets and sectoral emissions ceilings and sets out a roadmap for taking decisive action to halve our emissions by 2030 and reach net-zero no later than 2050, as committed to in the Programme for Government. The Climate Action Plan 2023 sets out how Ireland can accelerate the actions that are required to respond to the climate crisis, putting climate solutions at the centre of Ireland's social and economic development.

The Climate Action Strategy (CAS) for County Wicklow was developed by Wicklow County Council (WCC) under the guidance of the Climate Action Regional Office (CARO). The CAS aims to:

- Make Wicklow a stronger county by reducing impacts of future climate change related events;
- Fully consider the mainstream climate adaptation in the day-to-day delivery of services by WCC; and

- Actively engage with and inform citizens and communities of Wicklow about the impacts of climate change. Public awareness is key to developing effective climate adaptation measures.

The actions of this CAS are set in a framework of six key themes with an overarching goal for each theme:

Table 8-2: WCC CAS Six Key Themes

Theme	Goal
Theme 1: Local Adaptation Governance and Business Operations	Climate change adaptation considerations are mainstreamed and integrated successfully into all functions and activities of the local authority ensuring operational protocols, procedures and policies implement an appropriate response in addressing the diversity of impacts associated with climate change
Theme 2: Infrastructure and Built Environment	Increased capacity for climate resilient structural infrastructure is centred around the effective management of climate risk, informed investment decisions and positive contribution towards a low carbon society
Theme 3: Land use and development	Sustainable policies and measures are devised influencing positive behavioural changes, supporting climate adaptation actions and endorsing approaches for successful transition to low carbon and climate resilient society
Theme 4: Drainage and Flood Management	Great understanding of risk and consequences of flooding and successful management of a coordinated approach to drainage and flooding
Theme 5: Natural Resources and Cultural Infrastructure	Fostering meaningful approaches to protecting natural and key cultural assets through an appreciation for the adaptive capacity of the natural environment to absorb the impacts of climate change
Theme 6: Community Health and Wellbeing	Empowered and cohesive communities with strong understanding of climate risks, increased resilience to impacts of climate change with capacity to champion climate action at local level

The implementation of the measures promoted in the CAS will enable County Wicklow to adapt to climate change and will assist in bringing Ireland closer to achieving its climate related targets in future years. New developments need to be cognisant of the CAS and incorporate climate friendly designs and measures where possible.

Ireland's latest greenhouse gas (GHG) emissions 1990-2022 are provisional figures based on the Sustainable Energy Authority Ireland's (SEAI's) final energy balance released in June 2023 (EPA, 2023). In 2022, Ireland's GHG emissions are estimated to be 60.76 million tonnes carbon dioxide equivalent (Mt CO₂ eq), which is 1.9% lower (or 1.19 Mt CO₂ eq) than emissions in 2021 (61.95 Mt CO₂ eq) and follows a 5.1% increase in emissions reported in 2021. Emissions are 4.6% below pre-COVID, 2019 figures.

In 2022, emissions in the stationary Emissions Trading Scheme (ETS) sector decreased by 4.3% and emissions under the ESR (Effort Sharing Regulation) decreased by 1.1%. When Land Use, Land Use Change and Forestry (LULUCF) is included, total national emissions decreased by 1.8%.

Decreased emissions in 2022 compared to 2021 were observed in the largest sectors except for transport, waste and commercial services. These 3 sectors showed increases in emissions (+6.0%, +4.9% and +0.2%, respectively).

Emissions per capita decreased from 12.4 tonnes CO₂ eq per person in 2021 to 11.9 tonnes CO₂ eq per person in 2022. Ireland's average tonnes of GHG per capita over the last ten years were 12.7 tonnes.

The GHG inventory for 2021 was the first of ten years over which compliance with targets set in the European Union's Effort Sharing Regulation (EU 2018/842) 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 was to reduce ESR emissions by 30% by 2030 compared with 2005 levels, with a number of flexibilities available to assist in achieving this. The ESR was amended in April 2023 and Ireland must now limit its GHG by at least 42% by 2030. The ESR includes the sectors outside the scope of the EU Emissions Trading System (ETS) (such as Transport, Residential, Public Services and Commercial Services and Waste).

Ireland's ESR emissions annual limit for 2022 is 42.36 Mt CO₂eq. Ireland's provisional 2022 GHG ESR emissions are 46.08 Mt CO₂eq, this is 3.72 Mt CO₂eq more than the annual limit for 2022. This value is the national total emissions less emissions generated by stationary combustion and aviation operators that are within the EU's emissions trading scheme. This indicates that Ireland is not in compliance with its 2022 Effort Sharing Regulation annual limit, exceeding the allocation by 1.82 Mt CO₂eq after using the ETS flexibility and 0.99Mt CO₂eq after using both ETS and LULUCF flexibilities. Agriculture and Transport accounted for 75.7% of total ESR emissions in 2022.

The latest projections (June 2023) indicate that currently implemented measures (With Existing Measures) will achieve a reduction of 10% on 2005 levels by 2030, significantly short of the 42% reduction target. If measures in the higher ambition (With Additional Measures) scenario are implemented, EPA projections show that Ireland can achieve a reduction of 30% by 2030, still short of the 42% reduction target.

In terms of the 2030 targets, the ESR provides two flexibilities (use of ETS allowances and credit from action undertaken in the land use, land use change and forestry (LULUCF) sector) to allow for a fair and cost-efficient achievement of the targets. The full LULUCF flexibility of 26.8 Mt CO₂ eq (theoretically available under the ESR) was adjusted to take into account new research that led to a revision to the emission factor associated with forestry on organic (peat) soils. This led to decreased removals/increased emissions associated with forest land for all periods, with an available LULUCF flexibility of 9.3 Mt CO₂ eq, significantly less than the theoretical flexibility available.

Ireland's GHG emissions have increased by 9.2% from 1990 to 2022. In relation to the GHG; carbon dioxide (CO₂) accounted for 60.4% of the total, with methane (CH₄) and nitrous oxide (N₂O) contributing 29.0% and 9.4% as CO₂ equivalent, respectively and F-gases contributing 1.2% of the total as CO₂ equivalent.

In 2022, the energy industries, transport and agriculture sectors accounted for 74.1% of total GHG emissions. Agriculture is the single largest contributor to overall emissions, at 38.4%. Transport, energy industries and the residential sector are the next largest contributors, at 19.1%, 16.6% and 10.0%, respectively (EPA, 2023).

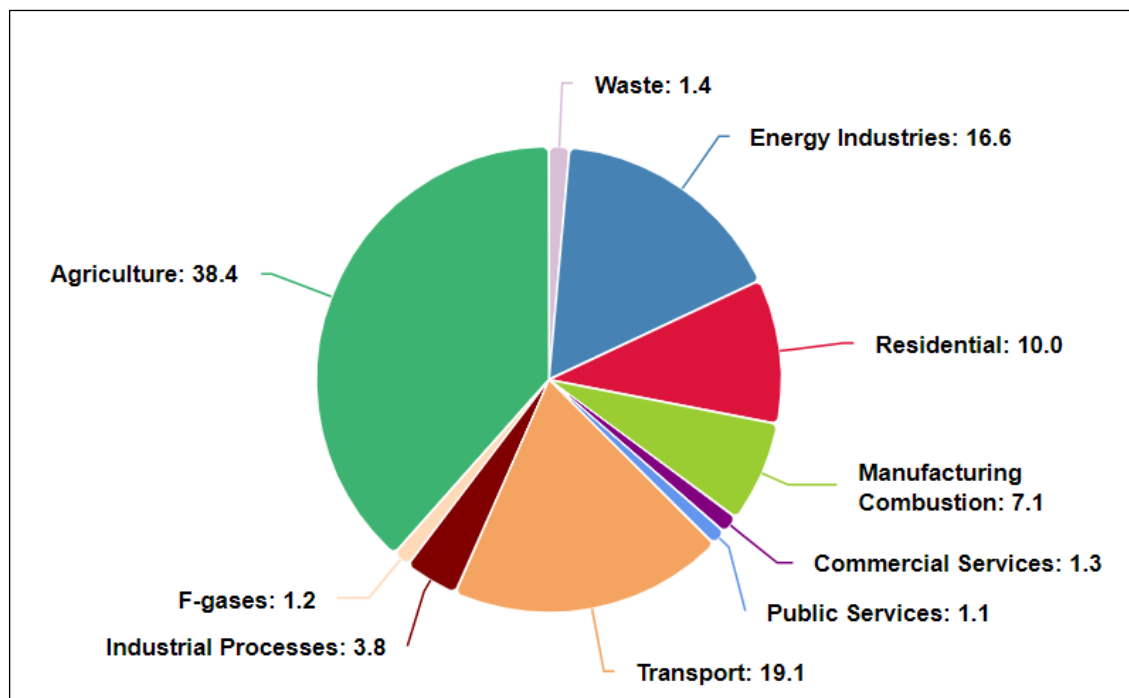


Figure 8-1: Ireland's Greenhouse Gas Emissions Share by Sector for 2022 (Source: EPA, 2023)

The Climate Change Advisory Council submitted their Annual Review 2023 to the Minister of the Environment, Climate and Communications on 21st of July 2023. Detailed key messages, including observations and recommendations for each sector (electricity; transport; built environment; enterprise and waste; agriculture, forestry and other land use; and biodiversity), can be found at the beginning of each chapter in the annual review. The overall recommendations are as follows:

- Government needs to identify and remove barriers to policy implementation by ensuring adequate funding and planning reform at scale and speed;
- Key actions need to be implemented now to prevent longer term drainage and increased costs to society and the economy;
- Government must adopt new approaches to address emission reductions, creating investment and enhancing skills across the economy, particularly in areas such as retrofitting and renewable energy;
- The establishment of a Just Transition Commission is recommended to ensure that Ireland achieves its climate objectives in a way that is fair and equitable and protects vulnerable people and communities; and
- The Government should support opportunities that reduce emissions and make Ireland better prepared for the impacts of climate change.

8.2 Study Methodology

This study methodology is best practice and understood approach. Taking into account Ambient Air Quality Standards, the baseline air quality of the site is examined using EPA monitoring data. Air quality impacts from the Proposed Development are then determined by a qualitative assessment of the nature and scale of dust generating activities associated with the Construction Phase of the Proposed

Development in accordance with relevant guidance (Transport Infrastructure Ireland (TII) 2011 Appendix 8; Institute of Air Quality Management (IAQM) 2014).

A desktop study involving various national and international documents on climate change and analysis of synoptic meteorological data from the nearest Met Éireann station (Casement Aerodrome Synoptic Station) was also carried out in order to compile this report. Attention has been focused on Ireland's obligations under the Paris Agreement in the context of the overall climatic impact of the presence and absence of the Proposed Development.

8.2.1 Construction Phase

According to Transport Infrastructure Ireland guidelines (TII, 2011), it is difficult to accurately quantify dust emissions arising from construction activities. Therefore, it is not possible to easily predict changes to dust soiling rates or PM₁₀ concentrations. TII recommend a semi-quantitative approach to determine the likelihood of significant impact in this instance. This should also be combined with an assessment of the proposed mitigation measures. Table 8-3 outlines the distance criteria which is recommended for use in assisting a semi-quantitative assessment:

Table 8-3: Assessment Criteria for the Impact of Dust Emissions from Construction Activities, with Standard mitigation in Place

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

In order to account for a worst-case scenario, the Proposed Development can be considered major in scale due to the size of the site and the duration of construction activities. Therefore, it can be assumed that there is potential for significant dust soiling 100m from the site. In light of this, sensitive receptors within 100m of the site boundary have been selected. Impacts from the Construction Phase traffic has been assessed using information from the Traffic Chapter and following the relevant guidance (TII, 2011; HA, 2007; EPA; UK DEFRA; IAQM). Construction traffic is not expected to result in a significant change (> 10%) in AADT flows near to sensitive receptors (see Appendix 8A for Construction Phase Traffic AADTs). Therefore, a detailed air quality assessment is not required.

8.2.2 Operational Phase

Operational Phase traffic impact assessment involved air dispersion modelling using the UK Design Manual for Roads and Bridges Screening Model (DMRB, UK Highways Agency 2007) (Version 1.03c), the NO_x to NO₂ Conversion Spreadsheet (UK Department for Environment, Food and Rural Affairs, 2017), and following all relevant guidance (TII, 2011; HA, 2007; EPA; UK DEFRA; IAQM).

In terms of associated impacts on air quality, Table 8-4 outlines the typical criteria that are prerequisite for an air quality assessment:

Table 8-4: Indicative Criteria for Requiring an Air Quality Assessment (Source: IAQM, 2017)

Potential Change resulting from Proposed Development	Indicative Criteria to Proceed to an Air Quality Assessment
Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors	A change of LDV flows of more than 1000 Annual Average Daily Traffic (AADT)
Cause a significant change in Heavy Duty Vehicle (HGV) flows on local roads with relevant receptors	A change of HGV flows of more than 100 Annual Average Daily Traffic (AADT)
Realign roads, i.e., changing the proximity of receptors to traffic lanes	Where the change is 5m or more
Cause a change in Daily Average Speed (DAS)	Where the DAS will change by 10 km/h or more
Cause a change in peak hour speed	Where the peak hour speed will change by 20km/h or more

The UK Highways Agency Design Manual for Roads and Bridges (DMRB) air quality guidance (LA 105) provides a framework for assessing, mitigating, and reporting the effects of road schemes on air quality; however, this can be adapted to any development which results in a change in traffic.

The criteria as set out in Table 8-5 have been used to determine the project's risk potential to the receiving environment, and whether a simple or detailed air quality assessment is required. If the receiving environment is determined to be of low sensitivity, then the project's risk potential is low.

Table 8-5: Receiving Environment Sensitivity (Source: DMRA LA 105)

Sensitivity	Features of receiving environment
High	<ol style="list-style-type: none"> 1) Large number of receptors (human and / or ecological) within 50m of roads triggering traffic screening criteria; 2) Baseline monitoring data indicates concentrations above the AQS Objective / EU limit value; 3) Monitoring indicates exceedances of short term AQS Objectives / EU limit value; 4) Projecting forward monitored concentrations to the opening year, indicates exceedances of AQS Objectives / EU limit value; 5) AQMA's or reported EU limit value exceedances within project's study area.
Medium	<ol style="list-style-type: none"> 1) Receptors (human or ecological) within 50m of roads triggering traffic change criteria;

Sensitivity	Features of receiving environment
	2) Baseline monitoring data illustrates annual mean NO ₂ concentrations >36µg/m ³ ; 3) Projections indicate annual mean NO ₂ concentrations >36µg/m ³ in opening year; 4) AQMAs or EU limit value exceedances within project's study area.
Low	1) Few receptors located close to roads triggering traffic change criteria; 2) Baseline monitoring data illustrates concentrations in base year below an annual mean of 36µg/m ³ ; 3) No AQMAs or EU limit value exceedances within project's study area.

There are a number of high-sensitivity receptors located within 200m of the affected road network.

The baseline pollutant concentrations are well below an annual mean of 36 µg/m³ and there are no exceedances of EU limit values within the study area. Therefore, in accordance with Table 8-5, it is considered that the receiving environment of the Proposed Development is of a 'Low Sensitivity' and the inclusion of the Proposed Development can be considered low risk. Therefore, in line with DMRB LA 105 guidance, it has been determined that simple air quality assessment is required in this case.

8.2.2.1 Traffic Generation Data

The estimated vehicle trips that will be generated by the Proposed Development has been estimated by the Transport Consultants DBFL Consulting Engineers; A full copy of the annual average daily traffic (AADT) generated during the Operational Phase of the Proposed Development can be found in Appendix 8A. Table 8-6 shows the AADTs from five roads which will have change of Light Duty Vehicle (LDV) flows of more than 1000 Annual Average Daily Traffic (see Table 8-4 for the typical criteria that are prerequisite for an air quality assessment).

Three different year scenarios are presented in Table 8-6 for the Operational Phase vehicle trip generation data. The Baseline Year Scenario (2023), the Opening Year 'Do Minimum' and 'Do Something' scenarios (2026) and the Design Year (which is Opening Year plus 15 years, as per TII Guidance) (2041).

Table 8-6: Operational Traffic Data Applied to the DMRB Model

Link Number	Road Name	Baseline Year (2023)	Opening Year (2026)		Design Year (2041)		Speed (Km/h)
			Do Nothing	Do Something	Do Nothing	Do Something	
		AADT	AADT	AADT	AADT	AADT	
A	Oak Drive (North)	2,650	3,105	4,533 (0.4% HGV)	3,451	4,879 (0.4% HGV)	50

Link Number	Road Name	Baseline Year (2023)	Opening Year (2026)		Design Year (2041)		Speed (Km/h)
			Do Nothing	Do Something	Do Nothing	Do Something	
		AADT	AADT	AADT	AADT	AADT	
		(0.2% HGV)	(0.2% HGV)		(0.3% HGV)		
B	Blessington Inner Relief Road Extension	0 (0.0% HGV)	0 (0.0% HGV)	3,112 (2.5% HGV)	0 (0.0% HGV)	3,307 (3.1% HGV)	50
D	N81 Main Street	12,194 (4.6% HGV)	14,609 (4.3% HGV)	12,349 (4.1% HGV)	16,201 (5.5% HGV)	13,732 (5.2% HGV)	60
E	Oak Drive (South)	4,619 (3.0% HGV)	6,153 (2.6% HGV)	4,389 (2.6% HGV)	6,756 (3.3% HGV)	4,853 (3.3% HGV)	50
G	Blessington Inner Relief Road (West)	6,759 (1.7% HGV)	7,705 (1.7% HGV)	8,722 (1.7% HGV)	8,588 (2.1% HGV)	9,676 (2.2% HGV)	50

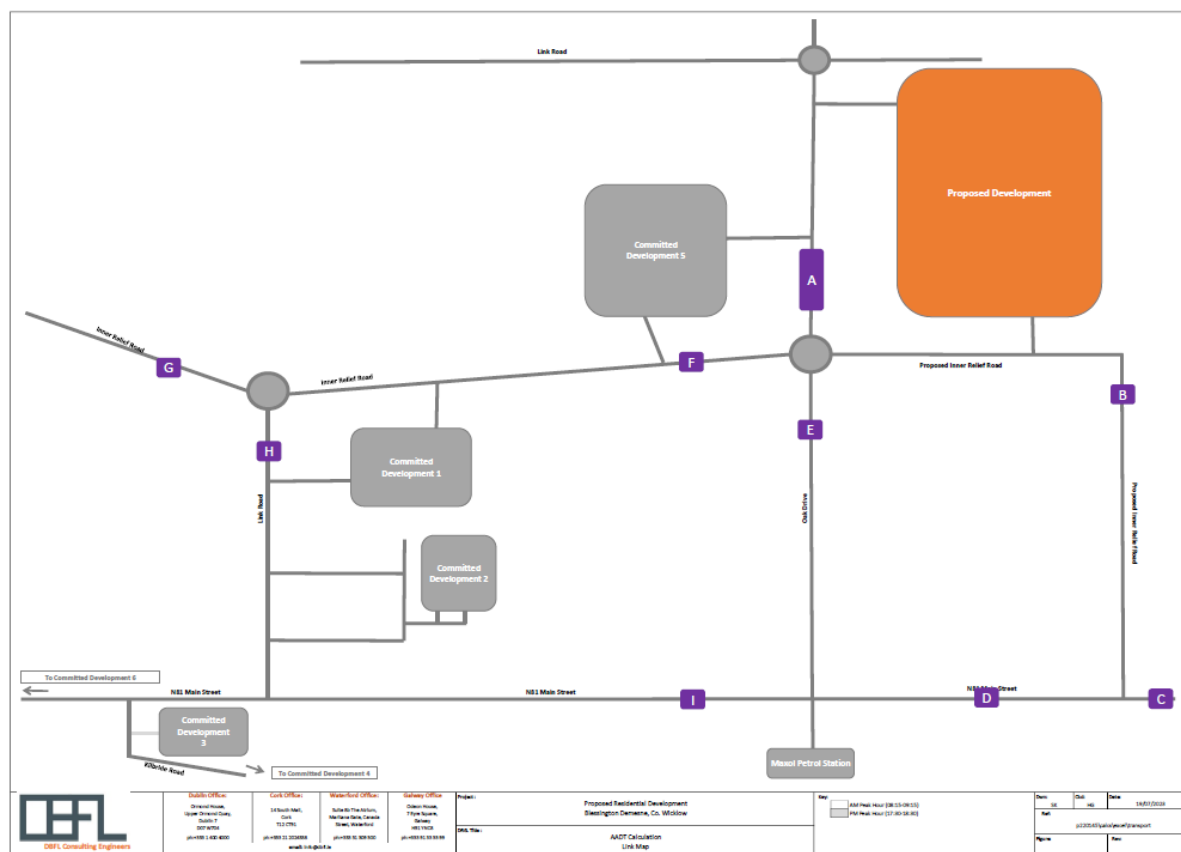


Figure 8-2: Link Roads Assessed by DBFL Consulting Engineers (Source: DBFL Consulting Engineers)

8.2.2.2 UK Design Manual for Roads and Bridges Screening Model (V. 103C 2007)

The impact of the Operational Phase of the Proposed Development has been assessed by use of the UK DMRB screening model (Version 1.03c 2007). The DMRB screening model provides a simple and straightforward means of predicting pollutant concentrations associated with road traffic emissions from the Proposed Development. According to Transport Infrastructure Ireland Guidelines (TII, 2011), this method is a suitable approach in circumstances where the predicted environmental concentrations (i.e., ambient background + predicted concentration) lie sufficiently below the air quality standards (<90% of the standard). Where predicted concentrations approach or exceed the air quality standards/limit values, a detailed air quality assessment must be carried out.

The DMRB modelling tool requires the following inputs to complete the assessment: road types, receptor locations, annual average daily traffic movements (AADT), percentage heavy goods vehicles (%HGV), annual traffic speeds and background pollutant concentrations. This input data is utilised by the model in predicting the Proposed Development's road traffic contribution to ambient ground level concentrations at the worst-case sensitive receptor. The DMRB modelling tool predicts annual mean concentrations of NO_x and PM₁₀. The road NO_x concentration is then converted to NO₂ using the latest-available version of the UK Department for Environment, Food and Rural Affairs (DEFRA) NO_x to NO₂ conversion spreadsheet (version 8.1). Concentrations of carbon monoxide (CO) and benzene (Bz) are consistently and significantly below their air quality limit values, even in urban centres, therefore modelling of these pollutants is no longer necessary (EPA Annual Air Quality Reports).

As the tool does not account for electric or hybrid vehicle use, vehicle emissions applied in this study are likely to overestimate the actual vehicle emissions experienced from the Proposed Development. The worst-case contributions predicted by the tool are added to the existing background concentration to provide a worst-case predicted ambient concentration. The predicted emissions from the Proposed

Development compared to the relevant ambient air quality standards is subsequently assessed by comparison with the worst-case ambient concentrations.

8.2.2.3 Sensitive Receptors

TII (2011) define 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. According to the DMRB LA 105 guidance, sensitive receptors shall be chosen within 200m of the Affected Road Network (ARN) and include residential properties, schools and hospitals for the assessment of annual mean air quality thresholds. Where there is a risk of the short-term air quality thresholds being exceeded, then sensitive receptor locations including gardens and playing fields shall be assessed. In the current assessment, a number of high-sensitivity receptors such as residential properties and schools were identified within 200m of the ARN.

According to the DMRB LA 105 guidance, it is not necessary to model all receptors within 200m or an excessive number of receptors in the same area to determine whether there is likely to be any exceedances in the do minimum or do something scenarios.

For the purpose of determining local air quality impacts, thirteen (13 No.) receptors were included in this modelling assessment, and these have been identified in Table 8-7. The receptors modelled will represent the worst-case locations in the vicinity the Proposed Development and were chosen based on proximity (within 200m) to the road links affected by the Proposed Development:

Table 8-7: Sensitive Receptors

Name	Type	ITM Coordinates	
		X	Y
R1	Residential	697374	714456
R2	Residential	697501	714551
R3	Residential	697737	714601
R4	Residential	698143	714804
R5	School	697444	715301
R6	Residential	698213	714902
R7	Residential	698413	714798
R8	Residential	698143	715170
R9	Residential	698259	715105
R10	Residential	698374	715046
R11	Residential	698492	714961
R12	Residential	698327	715177

Name	Type	ITM Coordinates	
		X	Y
R13	Residential	698474	715080

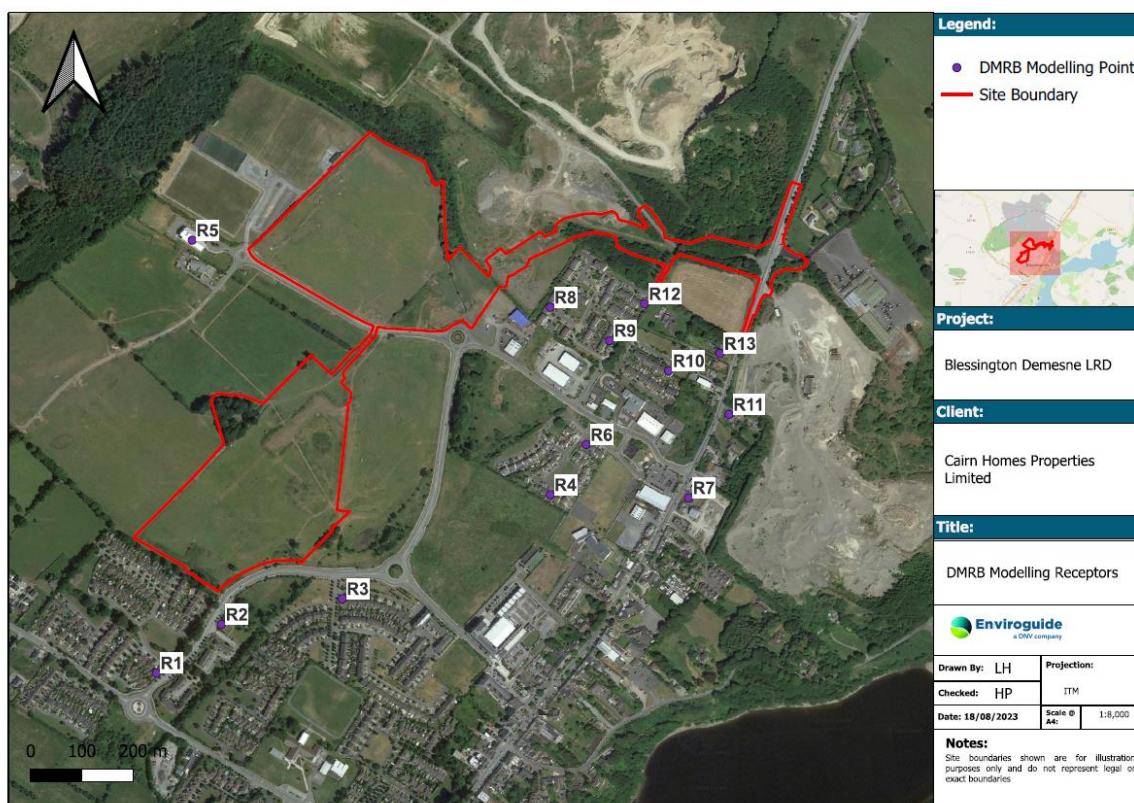


Figure 8-3: Sensitive Receptors

Designated sites of ecological conservation importance within 200m of the ARN are required to be included in the air quality assessment. This includes Special Protection Areas, Special Areas of Conservation, Natural Heritage Areas, and nature reserves. Only sites that are sensitive to nitrogen deposition are included in the assessment, it is not necessary to include sites such as those which have been designated as a geological feature. No sites of ecological conservation importance have been identified within 200m of the ARN; therefore, this analysis has been excluded in the air quality assessment.

8.2.2.4 Pollutants and Background Concentrations

The DMRB modelling tool predicts annual mean concentrations of NO_x and PM_{10} . The road NO_x concentration has then been converted to NO_2 using the latest published version of DEFRA's NO_x to NO_2 conversion spreadsheet (version 8.1). Concentrations of carbon monoxide (CO), and benzene (Bz) are consistently and significantly below their air quality limit values, even in urban centres, therefore modelling of these pollutants is no longer necessary (EPA Annual Air Quality Reports). According to the DMRB LA 105 guidance, it is only necessary to model PM_{10} for the base year to demonstrate that there is no impact on achievements of the PM_{10} air quality thresholds as a result of the project. Where air quality monitoring indicates exceedances of the PM_{10} air quality thresholds in the base year, PM_{10} should then be included in the model for both the 'do nothing' and 'do something' scenarios. As Ireland currently meets its legal requirements for the achievement of the $\text{PM}_{2.5}$ air quality thresholds, there is

no requirement to model this parameter. Additionally, the modelling of PM₁₀ can be used to demonstrate that the project does not impact on the PM_{2.5} air quality threshold.

Annual mean of NO₂ and PM₁₀ for the years 2020 and 2021 have been obtained for Zone D stations (see Section 8.3.1). For both parameters, annual limits are well below the threshold limits contained within the regulations.

Background concentrations for the opening year (2026) and design year (2041) have been predicted for the air quality assessment. Baseline year (2023) background concentrations have been used in combination with correction factors to estimate annual average NO₂ concentrations in future years. These factors have been adapted from both TII (2011) and DEFRA roadside NO₂ projection factors.

Adjustments to the verified modelled NO₂ concentrations are required to be made in order to account for future roadside NO₂ concentrations. An additional scenario known as the projected base year is to be included in the air quality modelling to enable a gap analysis to be completed. The gap analysis is the application of adjustment factors which take into consideration the assumed roadside rates of reduction in NO_x and NO₂ by DEFRA's modelling tools compared to observed roadside monitoring trend i.e., the gap between the predicted reductions and those observed (DMRB LA 105 guidance). This methodology has been applied to the current assessment in order to predict future NO₂ concentrations as a result of the Proposed Development and ensure that these concentrations are not under-estimated.

8.2.2.5 Determining the Impact

The TII guidance document 'Guidelines for the Treatment of Air Quality during the Planning and Construction of Road Schemes (2011)' outlines a clear methodology for determining the magnitude and significance of air quality impacts associated with road schemes; however, this remains applicable to any project which results in a change to traffic volumes. The TII significance criteria have been applied to the Proposed Development and adapted as necessary within Tables 8-8 to 8-11.

Tables 8-8 to 8-10 have been designed to assist in describing the air quality impacts at each receptor. They are applicable to the pollutants which are relevant to the Proposed Development and the standards or limit values against which they are being assessed (TII, 2011). The criteria focus on NO₂ and PM₁₀ as these pollutants are most likely to exceed the annual mean limit values (40 µg/m³).

The definition of 'impact magnitude' is exclusively related to the degree of change in pollutant concentrations, expressed as micrograms per cubic metre (µg/m³). 'Impact description' takes account of the impact magnitude and of the absolute concentrations and how they are linked to the air quality standards or limit values. The descriptors for the magnitude of change due to the Proposed Development are set out in Table 8-8:

Table 8-8: Definition of Impact of Magnitude in Changes in Ambient Pollutant Concentrations (Source: Adapted from TII, 2011)

Magnitude of Change	Annual Mean NO ₂ /PM ₁₀	No. days with PM ₁₀ concentration greater than 50 µg/m ³
Large	Increase/decrease ≥4 µg/m ³	Increase/decrease >4 days
Medium	Increase/decrease 2 - <4 µg/m ³	Increase/decrease 3 or 4 days
Small	Increase/decrease 0.4 - <2 µg/m ³	Increase/decrease 1 or 2 days

Magnitude of Change	Annual Mean NO ₂ /PM ₁₀	No. days with PM ₁₀ concentration greater than 50 µg/m ³
Imperceptible	Increase/decrease <0.4 µg/m ³	Increase/decrease <1 day

The subsequent impact descriptors are set out in Table 8-9 and 8-10.

Table 8-9: Air Quality Impact Descriptors for Changes to Annual NO₂ and PM₁₀ Concentrations at Receptors (Source: Adapted from TII, 2011)

Absolute Concentration in Relation to Objective/Limit Value	Changes in Concentration ¹		
	Small	Medium	Large
	Increase with Proposed Development		
Above Objective/Limit Value with Scheme (≥40 µg/m³ of NO₂ or PM₁₀)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just below Objective/Limit Value with Scheme (36-<40 µg/m³ of NO₂ or PM₁₀)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value with Scheme (30-<36 µg/m³ of NO₂ or PM₁₀)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value with Scheme (<30 µg/m³ of NO₂ or PM₁₀)	Negligible	Negligible	Slight Adverse
Decrease with Proposed Development			
Above Objective/Limit Value with Scheme (≥40 µg/m³ of NO₂ or PM₁₀)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial

¹ Where the Impact Magnitude is Imperceptible, then the Impact Description is Negligible

Just Below Objective/Limit Value with Scheme (36-<40 µg/m³ of NO₂ or PM₁₀)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value with Scheme (30-<36 µg/m³ of NO₂ or PM₁₀)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value with Scheme (<30 µg/m³ of NO₂ or PM₁₀)	Negligible	Negligible	Slight Beneficial

Table 8-10: Air Quality Impact Descriptors for Changes to Number of Days with PM₁₀ Concentration Greater than 50 µg/m³ at a Receptor (Source: Adapted from TII, 2011)

Absolute Concentration in Relation to Objective/Limit Value	Changes in Concentration ²		
	Small	Medium	Large
	Increase with Proposed Development		
Above Objective/Limit Value with Scheme (≥35 days)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value with Scheme (32-<35 days)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value with Scheme (26-<32 days)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value	Negligible	Negligible	Slight Adverse

² Where the Impact Magnitude is Imperceptible, then the Impact Description is Negligible

with Scheme (<26 days)			
Decrease with the Proposed Development			
Above Objective/Limit Value with Scheme (≥35 days)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value with Scheme (32-<35 days)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value with Scheme (26-<32 days)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value with Scheme (<26 days)	Negligible	Negligible	Slight Beneficial

In terms of 'significance of effects', professional judgment has been applied in making this determination. The TII Guidance (2011) outlines that the overall air quality impact of the Proposed Development should be described as either 'insignificant', 'minor', 'moderate', or 'major'; and a number of factors, as listed in Table 8-11, are set out which should be taken into account:

Table 8-11: Factors to Consider when Determining Air Quality Significance (Source: Adapted from TII, 2011)

Factors
Number of people affected by increases and/or decreases in concentrations and a judgement on the overall balance.
The number of people exposed to levels above the objective or limit value, where new exposure is being introduced.
The magnitude of the changes and the descriptions of the impacts at the receptors i.e., using the findings based on Boxes Tables 8-8 to 8-10.
Whether or not an exceedance of a standard or limit value is predicted to arise in the study area where none existed before, or an exceedance area is substantially increased.
Whether or not the study area exceeds a standard or limit value and this exceedance is removed, or the exceedance area is reduced.
Uncertainty, including the extent to which worst-case assumptions have been made.
The extent to which a standard or limit value is exceeded, e.g., an annual mean NO ₂ of 41 µg/m ³ should attract less significance than an annual mean of 51 µg/m ³ .

The modelling results are discussed in Section 8.5.1.2.1 of this Chapter.

8.3 Existing and Receiving Environment (Baseline Situation)

The Site is located in Blessington Demesne, Newpaddocks, Santryhill, Blessington, Co. Wicklow. It is situated near the Wicklow/Kildare border. The residential Site is currently a greenfield site and is bound primarily by a mix of agricultural and employment lands.

8.3.1 Air Quality

According to the 2012 Regulations (S.I. No. 326 of 2012) the proposed site falls into 'Zone D' of Ireland which is described by the EPA as 'Rural Ireland'. It is expected that existing ambient air quality in the vicinity of the site is characteristic of a rural location with the primary source air emissions (such as particulate matter (dust), NO₂, and hydrocarbons) likely to be of local domestic and agricultural origin. Local agricultural activities may exert a higher or lower influence on dust generation in the vicinity of the site on a seasonal basis.

In conjunction with individual local authorities, the EPA undertakes ambient air quality monitoring at specific locations throughout the country in the urban and rural environment; an Air Quality Report based on data from monitoring stations and a number of mobile air quality units is developed on an annual basis. The EPA's most recent publication 'Air Quality in Ireland, 2021' reports the quality of the air in Ireland based on the data from the National Ambient Air Quality Monitoring Network throughout the year 2021.

When assessing air quality, the EPA focuses on two main pollutants: particulate matter and nitrogen oxides. Measured concentrations of NO₂ for the years 2020 and 2021 are presented in Table 8-12 for Zone D monitoring stations. These results show that current levels of NO₂ are well below the annual mean and 1-hour maximum limit values. In the year 2020, annual mean concentrations of NO₂ ranged from 2 - 17 µg/m³ across all Zone D stations, with no exceedance of the maximum hourly limit (EPA, 2021). In the year 2021, annual mean concentrations of NO₂ ranged from 3.6 – 12.8 µg/m³ across all Zone D stations, with no exceedance of the maximum hourly limit (EPA, 2022).

During 2020, the restriction of movement in Ireland due to the COVID-19 Pandemic had an impact on air quality nationally with a large-scale reduction in vehicular traffic. It is noted that the decrease in NO₂ levels during that year is a direct result of the restrictions placed on movements and construction due to COVID-19.

EPA 2021 background concentrations have been used in combination with correction factors to estimate annual average NO₂ concentrations in the region of the Proposed Development for 2023. These factors have been adapted from both TII (2011) and DEFRA roadside NO₂ projection factors. Based on these correction factors, the estimated current background NO₂ concentration in the region of the Proposed Development is 6.7 µg/m³.

Table 8-12: Concentrations of NO₂ at Zone D Monitoring Stations

Station	Objective	Concentration (µg/m ³)		Limit or Threshold Value
		2020	2021	
Emo Court	Annual Mean NO ₂	4	3.6	40 µg/m ³
	Days >200µg/m ³	0	0	35 days
Birr	Annual Mean NO ₂	9	12.8	40 µg/m ³
	Days >200µg/m ³	0	0	35 days
Castlebar	Annual Mean NO ₂	6	6.3	40 µg/m ³

Station	Objective	Concentration ($\mu\text{g}/\text{m}^3$)		Limit or Threshold Value
		2020	2021	
	Days >200 $\mu\text{g}/\text{m}^3$	0	0	35 days
Carrick-On-Shannon	Annual Mean NO_2	17	11.2	40 $\mu\text{g}/\text{m}^3$
	Days >200 $\mu\text{g}/\text{m}^3$	0	0	35 days
Kilkitt	Annual Mean NO_2	2	2.4	40 $\mu\text{g}/\text{m}^3$
	Days >200 $\mu\text{g}/\text{m}^3$	0	0	35 days

Measured concentrations of PM_{10} for the years 2020 and 2021 are presented in Table 8-13 for Zone D monitoring stations. As is evident from these results, current levels of PM_{10} are well below the annual mean limit value. In the year 2020, annual mean concentrations of PM_{10} ranged from 7 – 15 $\mu\text{g}/\text{m}^3$ across all Zone D stations, with no exceedance of short-term limit values (EPA, 2021). In the year 2021, annual mean concentrations of PM_{10} ranged from 7.8 – 17.8 $\mu\text{g}/\text{m}^3$ across all Zone D stations, with no exceedance of short-term limit values (EPA, 2022).

EPA 2021 background concentrations have been used in combination with correction factors to estimate annual average PM_{10} concentrations in the region of the Proposed Development is for 2023. These factors have been adapted from both TII (2011) and DEFRA roadside PM_{10} projection factors. Based on these correction factors, the estimated current background PM_{10} concentration in the region of the Proposed Development is 11.4 $\mu\text{g}/\text{m}^3$.

Table 8-13: Concentrations of PM_{10} at Zone D Monitoring Stations

Station	Objective	Concentration ($\mu\text{g}/\text{m}^3$)		Limit or Threshold Value
		2020	2021	
Tipperary Town	Annual Mean PM_{10}	12	12.7	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	1	3	35 days
Carrick-On-Shannon	Annual Mean PM_{10}	10	9.4	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	0	0	35 days
Enniscorthy	Annual Mean PM_{10}	15	13.7	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	4	1	35 days
Birr	Annual Mean PM_{10}	10	12.2	40 $\mu\text{g}/\text{m}^3$
	Days >200 $\mu\text{g}/\text{m}^3$	0	2	35 days
Askeaton	Annual Mean PM_{10}	7	8.7	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	0	0	35 days
Macroon	Annual Mean PM_{10}	15	14.6	40 $\mu\text{g}/\text{m}^3$

Station	Objective	Concentration ($\mu\text{g}/\text{m}^3$)		Limit or Threshold Value
		2020	2021	
	Days > 50 $\mu\text{g}/\text{m}^3$	5	2	35 days
Castlebar	Annual Mean PM_{10}	14	9.8	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	2	0	35 days
Cobh Carrignafof	Annual Mean PM_{10}	-	12	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	-	1	35 days
Claremorris	Annual Mean PM_{10}	10	9.5	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	0	1	35 days
Kilkitt	Annual Mean PM_{10}	8	7.8	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	0	0	35 days
Cavan	Annual Mean PM_{10}	9	10.6	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	0	0	35 days
Roscommon Town	Annual Mean PM_{10}	11	10.3	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	0	0	35 days
Edenderry	Annual Mean PM_{10}	-	17.8	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	-	4	35 days
Mallow	Annual Mean PM_{10}	-	14.7	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	-	2	35 days
Longford	Annual Mean PM_{10}	-	13.9	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	-	1	35 days
Cobh Cork Harbour	Annual Mean PM_{10}	-	13.4	40 $\mu\text{g}/\text{m}^3$
	Days > 50 $\mu\text{g}/\text{m}^3$	-	1	35 days

8.3.2 Macroclimate

Ireland has a typical maritime climate, largely due to its proximity to the Atlantic Ocean and the presence of the Gulf Stream. Due to the moderating effects of the Gulf Stream, Ireland does not suffer the temperature extremes that are experienced by many other countries at a similar latitude. Mean annual temperatures generally range between 9°C and 10°C. Winters tend to be cool and windy while summers are mostly mild and less windy. The prevailing wind direction is between the south and west with average annual wind speeds ranging between 6 knots in parts of south Leinster to over 15 knots in the extreme

north. Rainfall in Ireland occurs throughout the year with reasonable frequency. The highest rainfall occurs in the western half of the country and on high ground; and generally, decreases towards the northeast. As the prevailing winds are from the west-southwest, the west of Ireland experiences the largest number of wet days. The area of least precipitation is along the eastern seaboard of the country.

8.3.3 Microclimate

The synoptic meteorological station at Baldonnel (Casement) Aerodrome is located approximately 15km northeast of the Proposed Development; and for the purposes of this Chapter, weather data collected here may be considered similar to that which is experienced in the area of the subject Site.

The weather in the area of the subject Site is generally dominated by cool oceanic air masses, with cool winters, mild humid summers, and a lack of temperature extremes. Based on meteorological data at Baldonnel (Casement) Aerodrome over the last 3 years, the mean January temperature is 5 °C, while the mean July temperature is 16.1°C. The prevailing wind direction is from a quadrant centred on the southwest. These are moderately warm winds from the Atlantic and they habitually bring rain. The expected annual rainfall for the eastern half of the country ranges between 750 and 1000mm. Easterly winds are less frequent, weaker, and tend to bring cooler weather from the northeast in spring and warmer weather from the southeast in summer.

Table 8-14 outlines the average climate conditions at Casement Aerodrome over a 30-year period:

Table 8-14: Latest 30-year Averages at Casement Aerodrome (1981-2010)(Source: Met Eireann)

Parameter	30 Year Average
Mean Temp (° C)	9.7
Mean Humidity at 0900UTC (%)	83.6
Mean Daily Sunshine (Hrs)	3.7
Mean Annual Rainfall (mm)	754.2
Mean Windspeeds (Knots)	10.7

8.3.3.1 Rainfall

Rainfall is a key indicator of changes in climate, as measurements of rainfall are fundamental to assessing the effects of climate change on the water cycle and water balance. Table 8-15 illustrates the monthly and annual rainfall data collected over a 3-year period (2020-2022) at Casement Aerodrome Station. The annual rates of precipitation ranged from 696.9 in 2021 to 820.0 in 2020 with distribution of the highest monthly rainfall values falling mainly in the autumn and winter months. This is broadly within the expected range of the eastern half of the country.

Table 8-15: Monthly Rainfall Values (mm) for Casement Aerodrome Weather Station from January 2020 to December 2022 (Source: Met Eireann)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2022	21.0	99.3	40.1	46.9	59.6	78.3	40.4	18.7	119.2	100.6	51.9	92.2	768.2
2021	95.8	69.7	29.6	17.9	112.7	17.8	94.0	47.3	42.1	77.2	16.4	76.4	696.9
2020	49.3	155.4	32.5	19.3	10.7	87.0	114.4	85.1	48.1	81.7	58.6	77.9	820.0

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	63.8	48.5	50.7	51.9	59.1	62.5	54.2	72.3	60.3	81.6	73.7	75.7	754.3

8.3.3.2 Wind

Wind at a particular location can be influenced by a number of factors, such as obstructions by trees or buildings, the nature of the terrain, and deflection by nearby mountains or hills. Wind blows most frequently from the south and west for open sites while winds from the northeast and north occur less often. The analysis of hourly weather data from Casement Aerodrome synoptic weather station over a period of 30 years suggests that the predominant wind direction blows from the southwest, with windspeeds of between 7 and 10 knots occurring most frequently.

Figure 8-4 provides a wind speed frequency distribution which represents wind speed classes and the frequency at which they occur (% of time) at Casement Aerodrome weather station over a period of 30 years. Wind speeds of 7 knots have the highest frequency, occurring approximately 6.7% of the time.

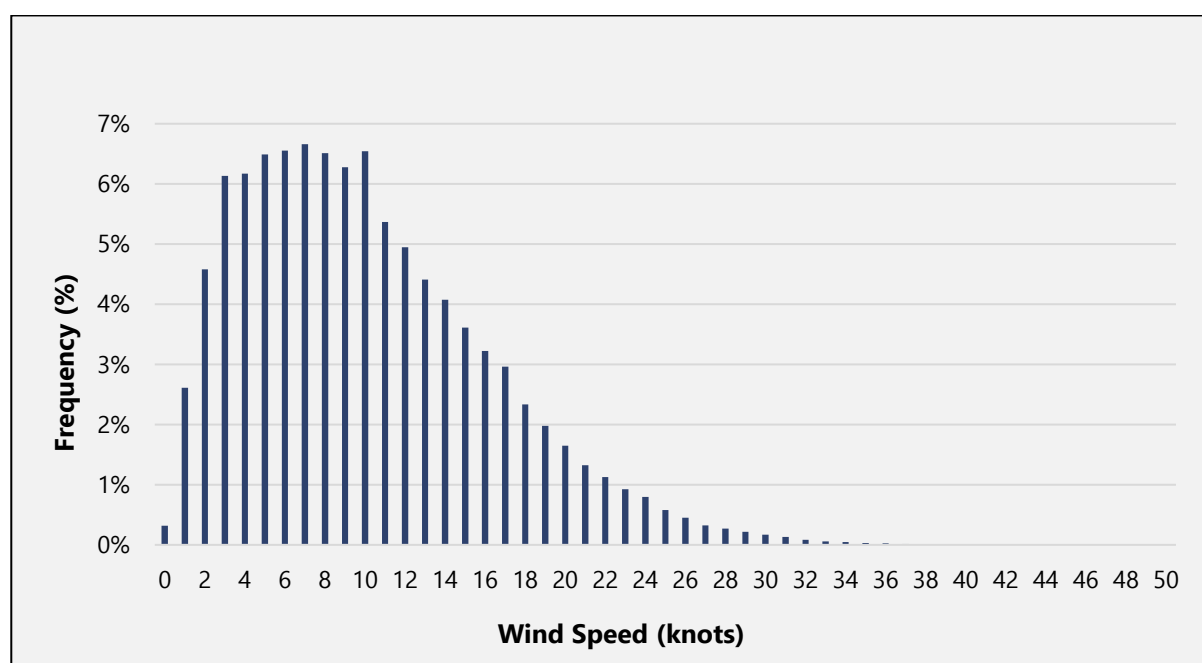


Figure 8-4: Wind Speed Distribution at Casement Aerodrome Synoptic Weather Station over 30 years (1991-2020)

Figure 8-5 provides a wind rose of the predominant wind directions and associated wind speeds at Casement Aerodrome. As is visible from Figure 8-4, the prevailing wind is from a south-westerly direction with an annual incidence of 45.86% for winds between 200 and 250 degrees. The most frequent wind speed associated with this wind direction is between 11 and 16 knots which is considered a 'moderate breeze' in terms of the Beaufort scale, this wind direction and wind speed occurs in combination approximately 15.45% of the time. The overall most common windspeed is between 7 and 10 knots, occurring in 25.98% of incidences, and wind speeds of between 11 and 16 knots occurring in 25.42% of incidences.

The lowest frequency is for winds blowing from the northern quadrant at approximately 2.4% of the time. The incidence of wind between 1 and 6 knots is about 32.53% with wind speeds of above 17 knots (8.7 m/s) occurring in just 15.53% of incidences. The influence of topography can be seen in the low frequency of winds from a southerly direction at Casement Aerodrome, which occur at 7.41% of the time; this is due to the sheltering effect of the mountains to the south. This wind rose is broadly representative of the prevailing conditions experienced at the subject Site.

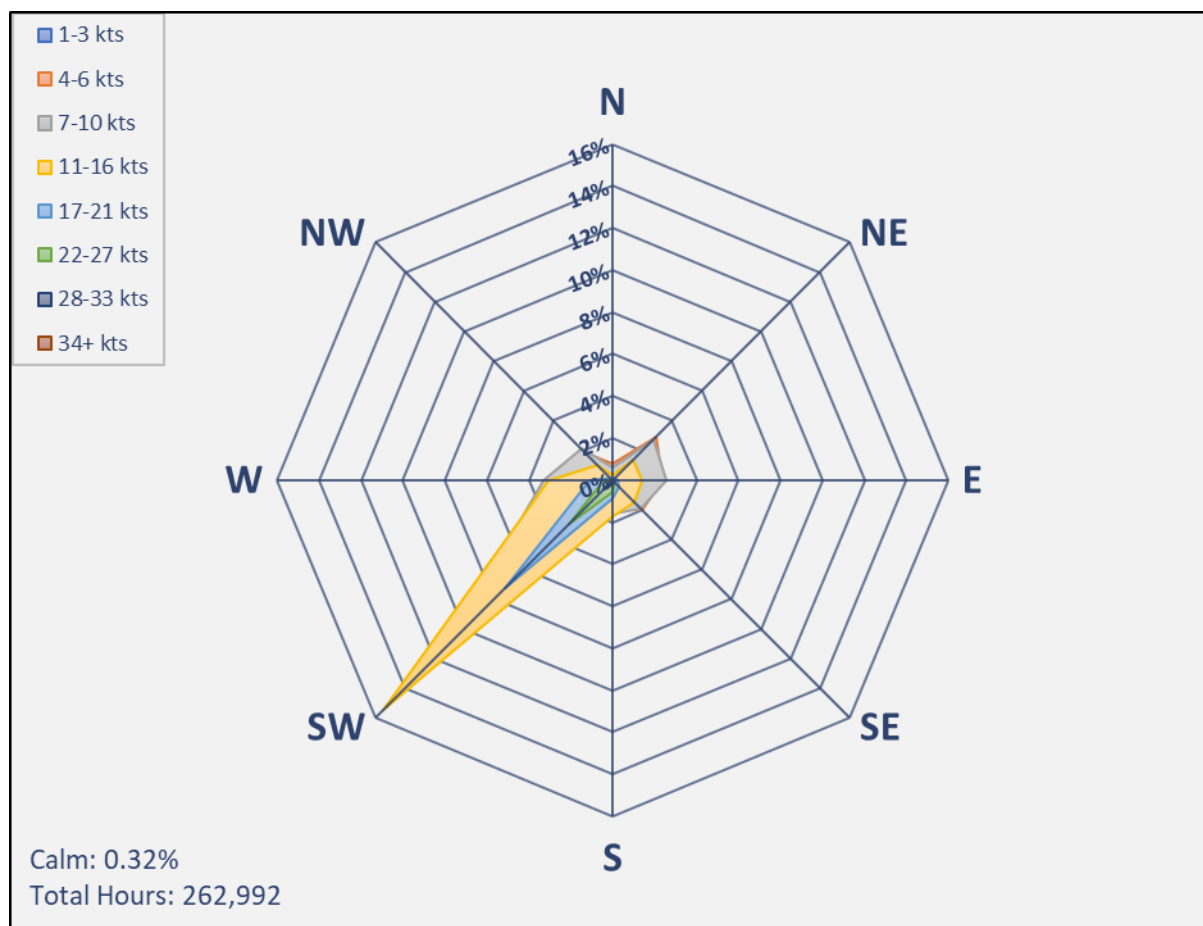


Figure 8-5: 30-year Windrose at Casement Aerodrome Weather Station 1991-2020 (Developed using Met Eireann Hourly Data)

8.4 Characteristics of Proposed Development

See Chapter 2 for a description of all components of the Proposed Development. The buildings have been designed to meet current building regulations. The materials selected have been chosen with regards to sustainable credentials of the manufacturers and products.

8.5 Potential Impact of the Proposed Development

8.5.1 Potential Impacts on Air Quality

8.5.1.1 Construction Phase

There is potential for construction related air emissions to impact on local air quality as a result of the Proposed Development. Potential impacts are expected to be short-term and of a temporary nature. The main air quality impacts that may arise during construction activities are:

- Dust deposition;
- Elevated particulate matter concentrations (PM₁₀ and PM_{2.5}) as a result of dust generating activities on site; and
- An increase in concentrations of airborne particles, volatile organic compounds, nitrogen oxides, and sulphur oxides due to exhaust emissions from diesel powered vehicles and equipment on site (non-road mobile machinery) and vehicles accessing the site.

Construction Dust

The greatest potential impact on air quality during this phase is from construction dust emissions and the potential for nuisance dust. The dust emissions from a construction site that may result in air quality impacts generally depend on:

- Site activities and duration;
- The size of the site;
- The meteorological conditions;
- The proximity of receptors to the activities;
- The adequacy of applied mitigation measures; and
- The sensitivity of receptors to dust.

The primary sources of dust identified include soil excavation and earthworks, temporary stockpiling of potentially dusty materials and use of unsurfaced haul roads, cutting and grinding of materials, demolition, bulk material transportation, loading and unloading, stockpiling materials, cutting and filling, and vehicular movements (HGVs and on-site machinery) and, during the latter phases of the Construction Phase, storage, handling and movement of materials generated during the associated works.

In order to account for a worst-case scenario, the Proposed Development can be considered major in scale due to the size of the site and the duration of construction activities. Therefore, it can be assumed that there is potential for significant dust soiling 100m from the Site.

There are a number of high-sensitivity receptors (residential dwellings and a school) located within 100m of the site boundary.

Table 8-16: Sensitive Receptors

Name	Type	ITM Coordinates		Orientation Relative to Site Boundary
		X	Y	
Blessington No 1 School	School	697458	715291	West
Woodleigh Grove	Residential	664924	5894883	East
Woodleigh Way	Residential	698172	715230	East
Woodleigh Way	Residential	698235	715258	South
Woodleigh Avenue	Residential	698268	715220	South



Figure 8-6: Sensitive Receptors to Dust

According to IAQM Guidance (2016), the primary factor influencing the Pathway is the distance between the sensitive receptor and the dust sources. However, other factors can cause a higher or a lower category to be assigned than would be the case based on distance alone. These factors include:

- Orientation of receptors relative to the prevailing wind direction; and
- Topography, terrain and physical features.

Meteorological conditions greatly affect the level of dust emissions and subsequent deposition downwind of the source; the most predominant being rainfall and wind speed. Adverse impacts can occur in any direction from a site; however, they are more likely to occur downwind of the prevailing wind direction and/or close to the site. Relatively high levels of moisture in the surrounding air, soils, and precipitation helps to suppress dust due to the cohesive properties of water between dust particles. The least favourable meteorological conditions for dust generation would typically be warm days with strong winds and low precipitation. Due to the variability of weather, it is impossible to predict the conditions that will occur during the Construction Phase of the development. However, wind direction is most likely to prevail from the southwest.

Table 8-17 outlines the hourly percentage distribution of wind speed and direction at Casement Aerodrome synoptic weather station over a 30-year period (1981-2020). This data is consistent with Figure 8-5 of this chapter and shows that the most frequent wind direction prevails from the southwest (45.86% frequency). The corresponding most frequent wind speed is between 11 and 16 knots which is considered a 'moderate breeze' in terms of the Beaufort scale; this wind direction and wind speed occurs in combination approximately 15.45% of the time.

Table 8-17: Percentage Distribution of Wind Speeds at Casement Aerodrome (1991-2020)

Wind speed (Knots)		<1	1 - 3	4 - 6	7 - 10	11-16	17-21	22-27	28-33	34+	% Dry Days
Wind Direction	Degrees										
North	350 - 10	.32	0.80	0.76	0.21	0.21	0.01	0.00	0.00	0.00	42%
North-east	20 - 70		2.36	2.90	2.77	1.33	0.19	0.03	0.00	0.00	
East	80 - 100		1.48	2.40	2.54	1.40	0.26	0.04	0.01	0.00	
South-east	110 - 150		1.81	1.97	1.89	1.48	0.42	0.16	0.04	0.01	
South	170 - 190		1.07	1.42	1.58	1.72	0.87	0.55	0.17	0.04	
South-west	200 - 250		2.67	5.63	11.15	15.45	7.27	2.97	0.63	0.09	
West	260 - 280		1.51	2.27	3.32	3.03	1.12	0.43	0.08	0.01	
North-west	290 - 340		1.63	1.87	2.12	1.00	0.12	0.02	0.00	0.00	

Dry days with moderate to high windspeeds (above 5m/s (7-10 knots)) are the conditions which are most likely to result in fugitive dust emissions. Sensitive receptors within 100m of the Proposed Development have been identified as a school and residential dwellings which are located to the west, east and south of the Site, (Figure 8-6 shows the locations of the identified air quality receptors).

Receptors located to the west of the Site would require prevailing winds from the east to be potentially impacted by fugitive dust emissions. At these receptors, the frequency of winds (>5m/s) occurring from the direction of the dust source on dry days is 1.79%. Receptors located to the east of the Site would require prevailing winds from the west to be potentially impacted by fugitive dust emissions. At these receptors, the frequency of winds (>5m/s) occurring from the direction of the dust source on dry days is 3.36%. And finally, receptors located to the south of the Site would require prevailing winds from the north to be potentially impacted by fugitive dust emissions. At these receptors, the frequency of winds (>5m/s) occurring from the direction of the dust source on dry days is 0.18%. Therefore, appropriate conditions for fugitive dust emissions at these receptors are highly infrequent and it is expected that adequate mitigation measures, as outlined in Section 8.6.1, will reduce nuisance dust emissions resulting in significant adverse impacts.

Construction vehicles and machinery during the Construction Phase will temporarily and intermittently generate exhaust fumes and consequently potential emissions of volatile organic compounds, nitrogen oxides, sulphur oxides, and particulate matter (dust). Dust emissions associated with vehicular movements are largely due to the resuspension of particulate materials from ground disturbance. According to the IAQM (2014), experience from the assessment of exhaust emissions from on-site machinery and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. Air pollutants may increase marginally due to construction-related traffic and machinery from the Proposed Development. However, any such increase is not considered significant and will be well within relevant ambient air quality standards. According to TII (2011), the significance of impacts due to vehicle emissions during the Construction Phase will be dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to site access routes. If construction traffic would lead to a significant change (> 10%) in Annual Average Daily Traffic (AADT) flows near to sensitive receptors, then concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} should be predicted in line with the methodology as outlined within TII guidance. Construction traffic is not expected to result in a significant

change (> 10%) in AADT flows near to sensitive receptors; the highest change in AADT flows near to sensitive receptors is 7.4% (see Appendix 8A for Construction Phase Traffic AADTs).

8.5.1.2 Operational Phase

The greatest potential effect on air quality during the Operational Phase of the Proposed Development is from traffic-related air emissions. The design and construction of all buildings in accordance with Building Regulations Technical Guidance Document (TGD) Part L 2021 will ensure that modern building materials are used and that they are designed to be thermally efficient resulting in a reduction in the volume of fossil fuels required to heat the buildings. It is predicted that fossil fuel combustion gas emissions including carbon dioxide, sulphur dioxide, nitrogen oxides, carbon monoxide and hydrocarbon particulate emissions will be minor and ongoing for the life of the development and will not have an adverse significant impact on the existing ambient air quality in the vicinity of the Proposed Development Site.

Operational traffic will use regional and local roads to access the facility with potential increases of traffic flow on some roads and subsequent associated emissions of VOCs, nitrogen oxides, sulphur dioxides and increased particulate matter concentrations.

The DMRB LA 105 guidance has been outlined in Section 8.2 of this Chapter; in accordance with Table 8-5, it is considered that the receiving environment of the Proposed Development is of a 'Low Sensitivity' and the inclusion of the Proposed Development can be considered low risk. Therefore, it has been determined that a simple air quality assessment is required in this case, as per Table 8-18.

Table 8-18: Table for Determination of Simple or Detailed Assessment (Source: DMRB LA 105 Guidance)

Risk Potential of Project	Receiving Environment Sensitivity			
	Risk	High	Medium	Low
	High	Detailed	Detailed	Simple
	Low	Detailed	Simple	Simple

8.5.1.2.1 Modelling Results

The impact of the Proposed Development has been determined by modelling traffic-related air emissions resulting from the presence or absence of the Proposed Development.

Table 8-19: Modelled Baseline NO₂ and PM₁₀ Concentrations (2023)

Receptor	ITM Coordinate	Receptor Type	Emission Type	Total	Road Traffic Component
R1	697374, 714456	Residential	PM ₁₀	11.83	0.43
			NO ₂	8.67	1.97
R2	697501, 714551	Residential	PM ₁₀	11.75	0.35
			NO ₂	8.3	1.6

Receptor	ITM Coordinate	Receptor Type	Emission Type	Total	Road Traffic Component
R3	697737, 714601	Residential	PM ₁₀	11.57	0.17
			NO ₂	7.49	0.79
R4	698143, 714804	Residential	PM ₁₀	11.41	0.01
			NO ₂	6.75	0.05
R5	697444, 715301	School	PM ₁₀	11.42	0.02
			NO ₂	6.79	0.09
R6	698213, 714902	Residential	PM ₁₀	11.50	0.10
			NO ₂	7.22	0.52
R7	698413, 714798	Residential	PM ₁₀	11.74	0.34
			NO ₂	8.5	1.8
R8	698143, 715170	Residential	PM ₁₀	11.42	0.02
			NO ₂	6.8	0.1
R9	698259, 715105	Residential	PM ₁₀	11.41	0.01
			NO ₂	6.76	0.06
R10	698374, 715046	Residential	PM ₁₀	11.47	0.07
			NO ₂	7.08	0.38
R11	698492, 714961	Residential	PM ₁₀	12.13	0.73
			NO ₂	10.78	4.08
R12	698327, 715177	Residential	PM ₁₀	11.41	0.01
			NO ₂	6.77	0.07
R13	698474, 715080	Residential	PM ₁₀	11.87	0.47
			NO ₂	9.37	2.67

Concentrations of NO₂ and PM₁₀ were modelled for the baseline year of 2023. As presented in Table 8-19, the model has indicated that concentrations for all pollutants achieved levels in compliance with the annual limit of 40 µg/m³. Therefore, in line with DMRB LA 105 guidance, further modelling of PM₁₀ for the opening and design years is not required. The highest road increment of PM₁₀ experienced at receptors was 0.73 µg/m³. When this is assessed in combination with the 2023 background

concentration levels of $11.4\mu\text{g}/\text{m}^3$ (total $\mu\text{g}/\text{m}^3$ is $12.13\mu\text{g}/\text{m}^3$) an overall impact of 30.33% of the annual limit ($40\mu\text{g}/\text{m}^3$) is experienced at the worst-case receptor.

The impact of NO_2 was predicted for the opening and design years at the nearest receptors to the affected road network (ARN). The degree of impact has been determined based on both the absolute and relative impact of the Proposed Development. A 'Do-Minimum Scenario', which assumes that the Proposed Development does not exist in future years, has also been assessed within the model and results have been compared in order to determine the degree of impact.

Table 8-20: Predicted Annual Mean Concentrations of NO_2 (Opening Year 2026)

Receptor	Background ($\mu\text{g}/\text{m}^3$)	Opening Year (2026) $\text{NO}_2\mu\text{g}/\text{m}^3$				Impact Description
		Do Minimum	Do Something	Proposed Development Contribution	Magnitude	
R1	5.7	8.72	9	0.28	Imperceptible	Negligible Increase
R2		8.26	8.53	0.27	Imperceptible	Negligible Increase
R3		7.92	8.1	0.18	Imperceptible	Negligible Increase
R4		6.91	6.89	-0.02	Imperceptible	Negligible Decrease
R5		6.97	7	0.03	Imperceptible	Negligible Increase
R6		7.64	7.42	-0.22	Imperceptible	Negligible Decrease
R7		9.44	8.89	-0.55	Small	Negligible Decrease
R8		7	7.2	0.2	Imperceptible	Negligible Increase
R9		6.94	6.92	-0.02	Imperceptible	Negligible Decrease

Receptor	Background (µg/m³)	Opening Year (2026) NO ₂ µg/m³				Impact Description
		Do Minimum	Do Something	Proposed Development Contribution	Magnitude	
R10		7.38	7.27	-0.11	Imperceptible	Negligible Decrease
R11		11.5	10.64	-0.86	Small	Negligible Decrease
R12		6.94	7	0.06	Imperceptible	Negligible Increase
R13		9.7	9.2	-0.5	Small	Negligible Decrease

Table 8-21: Predicted Annual Mean Concentrations of NO₂ (Design Year 2041)

Receptor	Background (µg/m³)	Design Year (2041) NO ₂ µg/m³				Impact Description
		Do Minimum	Do Something	Proposed Development Contribution	Magnitude	
R1	4.9	9.66	10.11	0.45	Small	Negligible Increase
R2		9	9.4	0.4	Imperceptible	Negligible Increase
R3		7.7	7.88	0.18	Imperceptible	Negligible Increase
R4		6.94	6.92	-0.02	Imperceptible	Negligible Decrease
R5		7.03	7.1	0.07	Imperceptible	Negligible Increase

Receptor	Background ($\mu\text{g}/\text{m}^3$)	Design Year (2041) NO_2 $\mu\text{g}/\text{m}^3$				Impact Description
		Do Minimum	Do Something	Proposed Development Contribution	Magnitude	
R6		7.36	7.1	-0.26	Imperceptible	Negligible Decrease
R7		9.57	9	-0.57	Small	Negligible Decrease
R8		7.1	7.27	0.17	Imperceptible	Negligible Increase
R9		7	6.97	-0.03	Imperceptible	Negligible Decrease
R10		7.02	6.93	-0.09	Imperceptible	Negligible Decrease
R11		12.29	11.46	-0.83	Small	Negligible Decrease
R12		6.99	7.07	0.08	Imperceptible	Negligible Increase
R13		10.91	10.37	-0.54	Small	Negligible Decrease

The impact of the Operational Phase on annual mean NO_2 concentrations in the opening year (2026) and design year (2041) scenarios has been assessed relative to the 'Do Minimum' scenario levels. The results shown in Tables 8-20 and 8-21 determine that there may be some 'imperceptible', and 'small' increases in concentrations of NO_2 at worst-case receptors assessed when compared with 'Do Minimum' levels; with the highest predicted increase of $0.28 \mu\text{g}/\text{m}^3$ and $0.45 \mu\text{g}/\text{m}^3$ measured at receptor R1 in the opening year and design year 'Do Something' scenarios, respectively.

The Proposed Development contribution in relation to the NO_2 objective/limit value, concentrations of NO_2 at all sensitive receptors are less than $12 \mu\text{g}/\text{m}^3$ with the inclusion of the Proposed Development in both the opening and design years, and as such, are well below the objective/limit value of $40 \mu\text{g}/\text{m}^3$. Therefore, it is considered that the impact of the Operational Phase is minor at sensitive receptors and insignificant in terms of overall ambient air quality standards.

Having regard to the assessment criteria set out in Section 8.2.2.5 and the modelling results outlined in Table 8-20 and Table 8-21, the impact of the Operational Phase of the Proposed Development on NO₂ concentrations in the locality is likely to be 'long-term', 'negative' and 'imperceptible'.

8.5.2 Potential Impact on Climate

8.5.2.1 Construction Phase

There is the potential for combustion emissions from onsite machinery and traffic derived pollutants of CO₂ and Nitrous Oxide (N₂O) to be emitted during the construction phase of the development. However, due to the size and duration of the Construction Phase, and the mitigation measures proposed, the effect on national GHG emissions will be insignificant in terms of Ireland's obligations under the Paris Agreement and therefore will have no considerable impact on climate. Overall, climatic impacts are considered to be short-term and imperceptible.

8.5.2.2 Operational Phase

Flood Risk

A Site- Specific Flood Risk Assessment (SSFRA) was undertaken by DBFL (2023) on behalf of the Applicant for the Proposed LRD Development. The SSFRA has been carried out in full compliance with the requirements of "The Planning System & Flood Risk Management Guidelines", published by the Department of the Environment in November 2009.

It was determined by the SSFRA that the vast majority of the Site is within Flood Risk Zone C as defined by the Guidelines. However, a very small area in the eastern area of the Site, designated as open space, is within the 1% AEP (Annual Exceedance Probability) fluvial extents (Flood Zone B). Open space areas are compatible with Flood Zone B. Floor levels within the development will be set at a minimum of 500mm above predicted 100-year flood levels. It is noted that the town park is located in Flood Zone C as defined by the guidelines and is therefore not at risk of flooding.

The SSFRA concluded that the:

- Proposed LRD Development is appropriate for the Site's flood zone category; and
- Planning System and Flood Risk Management Guidelines Sequential Approach is met and the 'Avoid' principal achieved.

The Proposed Development was concluded as having a good level of flood protection up to the 100-year return event. For pluvial floods exceeding the 100-year capacity of the drainage system then proposed flood routing mitigation measures are recommended.

A SSFRA has been undertaken for the Blessington Inner Relief Road by DBFL (2023) in accordance with the requirements of "The Planning System & Flood Risk Management Guidelines", published by the Department of the Environment in November 2009.

The SSFRA determined that the development is located in the pre-development Flood Zone C as defined by the requirements of "The Planning System & Flood Risk Management Guidelines" and its Technical Appendices and is therefore suitable for development.

The SSFRA concluded that the:

- The sequential approach outlined in The Planning System and Flood Risk Management Guidelines has been adhered to; and
- Based on the proposed mitigation measures, the proposed infrastructure is appropriate.

The development was concluded as having a robust level of flood protection up to the 100-year return event and a design complying with the GDSDS (Greater Dublin Strategic Drainage Study) design requirements. DBFL noted that additional enhancements have been provided in terms of attenuation provisions/volumes, SUDs etc. over and above standard GDSDS.

Both SSFRAs accompany this large-scale residential planning application.

Energy Analysis

Building energy has been long understood as contributing a major component of GHG emissions which was acknowledged within the 2030 Communication published by the European Commission (2014) which stated that “the majority of the energy-saving potential (for the EU) is in the building sector. The EU Energy Performance of Buildings Directive set out the target that all new developments should be Nearly Zero-Energy Buildings (NZEB) by the end of 2020.

An Energy Statement and Part L Compliance Approach report has been prepared for the Proposed Development by Waterman Moylan (2023) and has been included in this EIAR as Appendix 8B. This report identifies the energy standards with which the Proposed Development will have to comply and also sets out the overall strategy that will be adopted to achieve these energy efficiency targets.

The dwellings will be required to minimise overall energy use and to incorporate an adequate proportion of renewable energy in accordance with Building Regulations Part L 2022, Conservation of Energy & Fuel.

In developing the energy strategy for the Proposed Development, the incorporation of energy efficient strategies into the project deliverables will encourage the commitment to sustainable design at a very early stage and ensure that the Proposed Development will meet the principles of the Government’s ‘National Climate Change Policy’ and the NZEB criteria as set out in the Part L Regulations 2021 and will maximise the reduction in Carbon Dioxide (CO₂) emissions thus demonstrating the commitment to Climate Change.

GHG Emissions

Traffic

Increased LDV and HGV traffic flow as a result of the Proposed Development is likely to contribute to increases in GHG emissions such as CO₂ and N₂O. However, these contributions are likely to be marginal in terms of overall national GHG emission estimates and Ireland’s obligations under the Paris Agreement, and therefore unlikely to have an adverse effect on climate. Furthermore, it is widely anticipated that CO₂ emissions for the passenger car fleet will reduce in future years due to the increasing prevalence of electric or hybrid vehicle use.

8.5.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as “impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project”. Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor.

Cumulative air quality impacts have the potential to arise locally when construction activities associated with the Proposed Development take place at the same time as other developments in a specific location.

A review of other off-site developments was completed as part of this assessment. The following projects and plans were reviewed and considered for possible cumulative effects with the Proposed Development.

Table 8-22 details these projects which are the existing, proposed and granted planning permissions on record in the area:

Table 8-22: Potential Cumulative Impacts

Planning Ref No.	Status	Applicant Name	Summary of the Development
20/184 (ABP Ref. PL 27.308578)	Granted by ABP (with revised conditions 27.01.2022)	Glenveagh Homes Limited	Nursing care home and residential development comprising (a) nursing care home (4 no storeys of 120 no bedspaces (c7428 sqm) along with 60 no car parking spaces (at undercroft and basement level c2477 sqm), open space and all associated residential care facilities (b) construction of 77 no dwellings comprising 29 no 2 storey houses (10 no 2 bedroom houses (house type E) and 19 no 3 bedroom houses (house types C, D & F), and 48 no apartments / duplex apartments as follows: Block A & D, 3 storeys comprising 30 no apartments (15 no 2 bedroom apartments in each building), blocks B & C, 3 storeys comprising 12 no apartments (2 no 2 bedroom apartments and 4 no 3 bedroom apartments in each building), blocks E & F, 3 storeys comprising 6 apartments (3 no 2 bedroom apartments in each building), all apartment units to have balcony or terrace, (c) hard and soft landscaping (including public lighting) and open space (boundary treatment), communal open space for duplex apartments, regarding / reprofiling of site where required along with bicycle / bin stores and 100 no car parking spaces for dwellings (d) vehicular access from the west (from Blessington Inner Relief Road (BIRR) and south west along link road between the BIRR and Main Street with pedestrian accesses as well as works to roundabout and provision of road crossings (e) surface water attenuation measures and underground attenuation systems as well as connection to water supply, drainage, (f) all ancillary site development / construction works
20/362	Granted 09/10/20	Glenveagh Homes Limited	Development at a site (c.3.43 hectares) at Blessington Demesne, Blessington, Co. Wicklow bounded generally by Oak Drive and Blessington Inner Relief Road to the north and east, and Cocoon Crèche to the south, and Glenveagh Homes Ltd., Phase 1 lands (under Planning reg. ref. 20/184 for a proposed 120 bedroom Nursing Home and 77 no. dwellings) to the west. The proposal is for the second phase of development on the overall Glenveagh lands and will consist of: A) The construction of 96 no. dwellings providing 39 no. 2 storey 2 bedroom houses [House Types E1, G], 54 no. 2 storey 3 bedroom houses [House Types C, D, F], along with 3 no. 2 bedroom duplex/apartments in a 3 storey block (Block G) all apartment units to have balcony or terrace; B)

Planning Ref No.	Status	Applicant Name	Summary of the Development
			Hard and soft landscaping (including public lighting) and open space (boundary treatment); communal open space for duplex apartments; well as regrading/re-profiling of site where required [including import and export of soil, if required] as well as bicycle/bin stores and 178 no. car parking spaces; C) Vehicular access from the west (from Blessington Inner Relief Road [BIRR]) and south west along link road between the BIRR and Main Street, with provision for pedestrian connection to Oak Park to the east; D) Surface water attenuation measures (including underground attenuation systems) as well as connection to water supply, drainage; E) All ancillary site development/construction works
21/1068	Grant permission (subject to conditions) on 16/08/2022	Windlynn Limited & Two Mile House Construction Ltd	To facilitate proposed residential development (69 no residential units) and proposed primary school (circa 2,334.70 sqm) on adjacent lands at Kilmalum, Blessington, Co. Kildare comprising of the upgrade to the Kilmalum Road from the Roundabout junction of Kilmalum Road with Kilmalum Crescent to the culvert over the Deerpark Watercourse and these works are to comprise replacement of the existing dishd curb and crossing with a new ramped pelican pedestrian crossing, improved pedestrian and cycle connections, new 'in-only' vehicular entrance onto the Kilmalum Road and underground connection to the existing watermain
19/1020 ABP 306425	Grant permission (subject to revised conditions) by ABP on 17/02/21	Glengolden Builders Ltd	Housing development to include (a) apartment block A (three - four storeys in height) consisting of 3 no 3 bedroom apartment, 14 no 2 bedroom apartments and 5 no 1 bed apartments (b) apartment block B (three - four storeys in height) consisting of 3 no 3 bedroom apartments, 14 no 2 bedroom apartments and 1 no 1 bed apartment (c) apartment block C (three - four storeys in height) consisting of 3 no 3 bedroom apartments, 4 no 2 bedroom apartments and 8 no 1 bed room apartments. The total number of apartments is 58 (d) connection to main services and all associated site development works including attenuation, foul drains, surface water drains, water main roads, car parking bicycle parking, footpaths, bin storage, boundaries, and boundary treatment, public lighting, mini pillars, open space and landscaping (e) 2 no new site entrances
19/940	Granted 02/04/20	Downshire Lodge Nursing Home Ltd & Downshire Place	Demolition and removal works to include: removal of the single storey modern extension along the Main Street adjoining the Downshire Hotel, removal of the single storey shed to the rear of the site, removal of the existing single storey building

Planning Ref No.	Status	Applicant Name	Summary of the Development
		Independent Living Ltd	to the rear of 'Foley's House' (house B), partial lowering of the existing wall along Kilbride Road with modifications to the existing vehicular access and removal of the extensive modern hotel structure to the rear of the existing vacant Downshire Hotel. The proposal includes the construction of a 104 no bed nursing home across Lower Ground to Second Floor level, all with associated plant areas, circulation area, ancillary spaces, day rooms, dining rooms, multi purposes activity rooms, kitchen, staff facilities with connection to the exiting retained property along the Main Street at Ground and First Floor levels, the conversion of the ground floor of the former Downshire Hotel into a café, nursing home reception, office and public WCs accessed from the Main Street, the 1st floor is proposed to accommodate 6 no nursing home bedrooms and a library, conversion of the building to the church (north east) boundary to accommodate 1 no 3 bed and 1 no 1 bed unit for the purpose of nursing home staff accommodation, conversion of coach house B into mechanical and electrical plant area, upgrading of 'Foleys House' to a 6 no bedroom house for the purpose of nursing home staff accommodation, the consolidation of the facades of the former Downshire Hotel, Foleys House and both outbuildings (Coach House A and Coach House B) along the north east and south west boundaries, the proposal also includes the construction of 30 no 1 bed independent living units, across 2 no blocks, off 2-3 storey in height, vehicular access from Kilbride Road through a revised vehicular access point with Pedestrian access from Main Street, all with associated signage, landscaping, drainage, ambulance drop off zone, 66 no car parking spaces (including 3 no disabled car parking spaces), plant space, bin storage, cycle parking and site works
19/693	Grant by ABP 12/05/19	TD Housing Ltd	Demolition of existing agricultural shed (14 sqm) and the construction of 56 no residential units (2 no 4 bed houses, 49 no 3 bed houses, 3 no 2 bed houses and 2 no 2 bed apartments), 113 no ancillary car parking spaces, hard and soft landscaping, lighting, balconies facing northeast and southwest, solar panels, boundary treatments, ESB substation, changes in level, and all associated site development works above and below ground
20/108	Notification to grant 31/07/20	The Rectory, Kilbride Rd, Blessington	Demolition of a 1.5 storey derelict outbuilding (within the curtilage of a protected structure) and for the construction of 45 no residential units consisting of 24 no two storey 3 bed (5 person)

Planning Ref No.	Status	Applicant Name	Summary of the Development
			terraced houses (101.6 sqm), 7 no two storey 3 bed (5 person) terraced houses (105.5 sqm) and 2 no two storey semi detached houses (101.6 sqm), 3 no 2 storey apartment blocks consisting of 12 no apartments consisting 6 no ground floor apartments, 2 bed (4 persons) (88 sqm) and 6 no 1st floor apartments 2 bed (4 persons) (75 sqm), maintaining the existing Rectory building (protected structure) as a residential house as is, maintaining the existing Mass Path, a communal pedestrian footpath extending towards Main Street, a communal cycle lane and a communal pedestrian footpath beyond the south eastern boundary wall and adjacent to Kilbride Road, 81 no car parking spaces, renovation and relocation of the derelict eastern entrance pier and wall (within the curtilage of a protected structure), widening of existing gate / entrance plus new pedestrian gate and improved access to existing Mass Path, new front boundary wall and railing, drainage infrastructure, landscaping, services and all associated works

The cumulative effects on the air quality and climate of the Proposed Development and other permitted or existing developments have been considered, in particular through the generation of air pollutants and GHG emissions.

In terms of dust, no significant impacts are predicted; good construction practice, which incorporates mitigation measures and dust monitoring, will be employed at the Proposed Development site. Due to good construction practices at the site of the Proposed Development and these offsite permitted developments, it is not anticipated that significant cumulative impacts will occur during the Construction Phases.

Assessment of operational stage impacts on air quality involved traffic data which is inclusive of traffic associated with other existing and permitted developments on the road networks surrounding the site both in current and future years. Therefore, cumulative impacts have been assessed in this regard and the impact on ambient air quality has been determined as insignificant.

It is considered that there are no other potential significant cumulative impacts associated with the Proposed Development and considered offsite permitted developments.

8.5.4 'Do Nothing' Impact

A do-nothing scenario would result in the Site remaining undeveloped. If the Proposed Development were not to proceed there would be no immediate impact on the air quality in the area or the macro and microclimate.

8.6 Avoidance, Remedial and Mitigation Measures

8.6.1 Air Quality

8.6.1.1 Construction Phase

It is not expected that adverse air quality impacts are likely to occur at sensitive receptors as a result of the Proposed Development. However, appropriate mitigation measures, as outlined within the Construction and Environmental Management Plan (CEMP), which has been prepared by DBFL Consulting Engineers (2023), will be employed as necessary to further prevent such impacts occurring:

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;
- The name and contact details of a person to contact regarding air quality and dust issues will be displayed on the site boundary, this notice board should also include head/regional office contact details;
- Community engagement will be undertaken before works commence on-site explaining the nature and duration of the works to local residents and businesses;
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with construction activities, together with details of any remedial actions carried out;
- The contractor must demonstrate full compliance with the dust control conditions;
- At all times the procedures put in place are to be strictly monitored and assessed;
- Dust minimisation measures will be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed, and satisfactory procedures implemented to rectify the problem;
- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved haul roads;
- Construction access to the site will be directly from the existing road reservation on Oak Drive and is located close to sensitive receptors. Refer to DBFL drawing 220145-2-95-SW-XXX-DR-DBFL-CE-1201 for further information;
- Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period;
- 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;
- Furthermore, any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions;
- During periods of very high winds (gales), construction activities likely to generate significant dust emissions should be postponed until the gale has subsided;
- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the Site. Where possible storage piles should be located downwind of sensitive receptors;

- Where feasible, hoarding will be erected around site boundaries. This will have the benefit of reducing the impact of larger particles on nearby sensitive receptors;
- 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 such as rock blasting or earthworks are necessary during dry or windy periods;
- Before entrance onto public roads, trucks will be adequately inspected to ensure there is no potential for dust emissions and will be cleaned as necessary;
- In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations;
- Vehicles delivering or collecting material with potential for dust emissions will be enclosed or covered with tarpaulin at all times when practicable to restrict the escape of dust; and
- At the main site traffic exit, a wheel wash facility will be installed. All trucks leaving the Site must pass through the wheel wash. In addition, public roads outside the site will be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary.

8.6.2 Operational Phase

It has been determined that the Operational Phase air quality impact is negligible and therefore no site-specific mitigation measures are proposed.

8.6.3 Climate

As negative climatic impacts associated with the Construction and Operational Phases of the Proposed Development are negligible, no mitigation measures are proposed. Best practice measures will be implemented to minimise exhaust from construction and operational vehicles and machinery by avoidance of engines running unnecessarily, as idle engines will not be permitted for excessive periods. Furthermore, all proposals for development will seek to achieve the greatest standard of sustainable construction and design and will have regard to sustainable building design criteria.

8.6.4 'Worst-case Scenario'

A worst-case scenario has been applied to the Construction Phase air quality assessment in terms of scale of the source and potential dust nuisances by considering the Proposed Development 'major' in scale. Therefore, it has been assumed that there is potential for significant dust soiling 100m from the Site as per Table 8-3.

It is expected that adequate mitigation measures, as outlined in Section 8.6.1.1, will assist in preventing nuisance dust from resulting in any significant effects. In the event of a failure of such measures, it is not considered that significant dust related effects will occur.

A worst-case scenario has been applied to the Operational Phase traffic emissions assessment in terms of traffic volumes experienced on the surrounding road network and associated air emissions. The worst-case contributions predicted by the tool are added to the existing background concentration to provide a worst-case predicted ambient concentration. The compliance of the Proposed Development with the relevant ambient air quality standards is subsequently assessed by comparison with the worst-case ambient concentrations. Associated impacts have been determined as negligible in this case.

8.7 Residual Impacts

The traffic generated by the Proposed Development has been assessed for its impact on air quality and it has been determined to have an overall insignificant impact in terms of local air quality for both the Construction and Operational Phases with the implementation of the proposed mitigation measures. Furthermore, it is considered that the effects of the Proposed Development on climate is considered to be insignificant for both the Construction and Operational Phases. Therefore, no significant adverse residual impacts are anticipated from the proposed scheme in the context of air quality and climate during both the Construction and Operational Phases.

8.8 Monitoring

It is recommended that dust deposition monitoring be put in place during the Construction Phase of the Proposed Development to ensure dust mitigation measures are adequately controlling emissions. Dust monitoring should be conducted using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119.

Due to the negligible impact on air quality and climate from the Operational Phase of the Proposed Development, no specific monitoring is recommended.

8.9 Interactions

Interactions between Air Quality and Climate and other aspects of this EIAR have been considered in this Section of the Chapter.

8.9.1 Population and Human Health

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

8.9.2 Biodiversity

Interactions between Air Quality and Biodiversity have been considered as the Construction Phase has the potential to interact with flora and fauna in adjacent habitats and designated sites due to dust emissions arising from the construction works. However, the mitigation measures employed at the Proposed Development will ensure that the impacts to flora and fauna are not significant.

8.9.3 Traffic

There can be a significant interaction between air quality, climate and traffic. This is due to traffic-related pollutants that may arise. In the current assessment, traffic derived pollutants which may affect Air Quality and Climate have been deemed as insignificant. Therefore, the impact of the interaction between air quality and climate is insignificant.

8.10 Difficulties Encountered When Compiling

No difficulties have been encountered while compiling this Chapter.

8.11 References

- Air Pollution Act 2012 (S.I. No. 326 of 2012) Irish Statute Book.
- Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) Irish Statute Book.
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- Intergovernmental Panel on Climate Change (2006) IPCC Guidelines for National Greenhouse Gas Inventories.
- Intergovernmental Panel on Climate Change (2019) Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
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- UK Department for Environment, Food and Rural Affairs (2020) NO_x to NO₂ Conversion Spreadsheet (Version 8.1).
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UK Highways Agency (2019) UK Design Manual for Roads and Bridges (DMRB), Volume 11, Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1 LA 105 Air Quality.

United Nations Framework Convention on Climate Change (1998) Kyoto Protocol to the UNFCCC.

United Nations Framework Convention on Climate Change (2012) The Doha Amendment to the Kyoto Protocol.

United Nations Framework Convention on Climate Change (2015) The Paris Agreement.

9. NOISE AND VIBRATION

9.1 Introduction

This Chapter of the EIAR has considered the potential noise and vibration impacts associated with both the Construction and Operational Phases of a large-scale residential scheme at Blessington Demesne, Newpaddocks and Santryhill, Blessington, Co. Wicklow (hereafter referred to as the proposed Development). The proposed Development includes a 700m northern extension of the Blessington Inner Relief Road (BIRR).

The potential noise and vibration impacts associated with the construction phase of the proposed Development have been assessed. This includes construction activities such as earthworks, installation of services, building and road construction and landscaping associated with the proposed Development as well as consideration of issues such as construction traffic access routes.

During the Operational Phase, the main potential noise and vibration impacts associated with the proposed Development relate to the introduction of a new route (the 700m extension to the BIRR) and therefore road traffic noise in proximity to existing Noise Sensitive Locations (NSLs), especially where previously there had been no transportation sources. Secondly, altered traffic flows and patterns on existing surrounding roads that can also potentially lead to changes in road traffic noise which can be negative or positive in nature.

In addition to the assessment of impact on existing NSLs and as part of good practice, this chapter also assesses the noise exposure risk for the proposed future residents of the residential element and includes an Acoustic Design Statement.

9.1.1 Expertise

This Chapter was written by Ms. Siobhan Maher, whose qualifications include a B.Sc. in Analytical Science, M.Tech. in Environmental Management and a post graduate Diploma in Acoustics and Noise Control Engineering. Ms. Maher is a full Member of the Institute of Acoustics (MIOA) since 2003 and is also a Member of the Association of Acoustic Consultants Ireland (AACI).

Ms. Maher is the Managing Director of Redkite Environmental with over 20 years of experience providing environmental consultancy and environmental assessment services to business, industry and public sectors. In the area of acoustics, she has experience in a range of areas including noise and vibration impact assessment for new and Proposed Developments, environmental noise monitoring and prediction modelling and development of mitigation measures for noise abatement and control.

9.2 Assessment Methodology

The overall assessment approach utilised in this chapter is as follows:

- A detailed baseline study has been undertaken to characterise the existing soundscape at existing NSLs most likely to be affected by noise associated with the proposed Development and also to characterise the receiving environment in relation to future NSLs and noise exposure risk. This has been undertaken through a review of available published data and site-specific sound monitoring.
- A range of acceptable noise and vibration criteria for assessment have been developed for both the construction and operational phases of the proposed Development based on the best scientific

information available. This includes criteria for adequate internal living conditions and external amenity for future residents.

- Predictive calculations, impact magnitude rating and significance of noise effects have been completed for the construction phase at existing NSLs potentially affected.
- Empirical data with regards to potential vibration impacts during the construction phase of the Proposed Development has been reviewed where available.
- Predictive calculations using proprietary noise modelling software have been completed to assess the potential noise impacts associated with the new road traffic source and traffic alterations associated with the operation of the proposed Development at existing NSLs. The traffic noise model has also been used to calculate the noise exposure risk to future residents within the development.
- A schedule of mitigation measures has been developed to minimise, where necessary, identified impacts and effects.
- An Acoustic Design Statement has been prepared for the residential element of the proposed Development.

9.2.1 Desktop Research – Principal Data Sources

The following list of sources, representing best scientific information available, were used in the preparation of this chapter:

- BS5228-1:2009 +A1:2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites: Part 1: Noise and Part 2: Vibration.
- BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
- BS6472-1:2008: Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting.
- BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings.
- Calculation of Road Traffic Noise (CRTN), Department of Transport, Welsh Office, HMSO, 1988
- Converting the UK Traffic Noise Index $L_{A1018hr}$ to EU Noise Indices for Noise Mapping, TRL Ltd. 2005
- Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, Transport Infrastructure Ireland (TII), March 2014.
- Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Rev1, TII, (formerly National Roads Authority (NRA)), October 2004.
- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017) (the EU EIAR Guidance).
- Guidelines for Environmental Noise Impact Assessment, Institute of Environmental Management and Assessment (IEMA), Version 1.2, November 2014
- <https://gis.epa.ie/EPAMaps/>
- International Standards Organisation Document: ISO 1996 Acoustics – Description, Measurement and Assessment of Environmental Noise, Part 1, Basic Quantities and Assessment Procedures (2016) and Part 2 Determination of Environmental Noise Levels (2017).

- ISO 9613.-2 – 1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation.
- UK Highways Agency Design Manual for Roads and Bridges, Sustainability and Environmental Appraisal, LA11, Noise and Vibration, Rev 2, May 2020.
- UK ProPG: Planning & Noise, New Residential Development, May 2017
- Wicklow County Council Noise Action Plan, 2018 –2023, Version 1, October 2019
- World Health Organisation (WHO) Environmental Noise Guidelines for the European Region, 2018.

In addition, to the above specific noise and vibration guidance documents, the EPA Guidelines on information to be contained in Environmental Impact Statements (2022) (EPA, 2022) (the EPA Guidelines) were also considered in the preparation of this chapter.

9.2.2 Desktop Research – Existing Traffic Noise Mapping

Transportation noise mapping available on <https://gis.epa.ie/EPAMaps/> for the study area was reviewed as part of the characterisation of the local soundscape and road traffic noise on existing routes.

9.2.3 Baseline Surveys

A number of site visits and surveys were completed as part of the characterization of the receiving soundscape on the following dates and times:

- 27th March 2023 (10.00 – 16.00 hrs);
- 18th – 19th April 2023, 24-hour unattended monitoring;
- 25th April 2023 (10.30 – 14.00 hrs), and,
- 25th – 26th April 2023, 24-hour unattended monitoring.

The initial site visit, completed on the 27th, March 2023 was principally completed to:

- Evaluate the number and type of NSLs present in the vicinity of the proposed extension of the BIRR, review the residential site and also to review any existing topographical and screening features of note.
- Assess potential locations for placement of unattended meters for 24-hour monitoring.
- Complete initial short-term traffic noise measurements along the existing BIRR and at potentially affected existing NSLs in accordance with the TII Guidelines. The short-term measurements along the existing BIRR were also completed as part of the validation process for the traffic noise prediction model developed.

Where possible, the selection, number and types of surveys for the proposed BIRR extension element of the proposed Development were completed in line with the Guidance provided in the TII Noise Guidelines 2004 and 2014 survey methodology for linear projects taking account of the availability of secure locations in the study area.

Additional site visits were then completed to set up the unattended meters for 24-hour monitoring which is required for NSLs currently unaffected by traffic noise and where the short-term traffic noise measurement method is unsuitable. This location was within the proposed residential site and therefore also provided information on the existing soundscape with regards to the assessment of noise exposure

risk for future NSLs within the proposed Development. Overall, however, it should be noted that the assessment of noise exposure risk for proposed dwellings, in particular those close to Oak Drive and the proposed extension of the BIRR, will be based on the predicted future traffic noise levels as opposed to existing baseline monitoring. According to Pro-Pg, the noise exposure risk assessment for future residents should have regard to any reasonably foreseeable changes in existing and/or new sources of noise.

One additional 24-hour monitoring location was also chosen along the existing BIRR as part of the model validation process. Further short-term attended measurements were also completed on the 25th, April 2023.

The noise measurement methodology followed was in accordance with the recommendations of ISO 1996 Acoustics – Description, Measurement and Assessment of Environmental Noise, Part 1, Basic Quantities and Assessment Procedures (2016) and Part 2 Determination of Environmental Noise Levels (2017).

Attended measurements were undertaken in accordance with the shortened measurement procedure for road traffic noise measurements as described in the UK CRTN Guidance and the TII 2004 and 2014 Guidelines. The methodology involves the following:

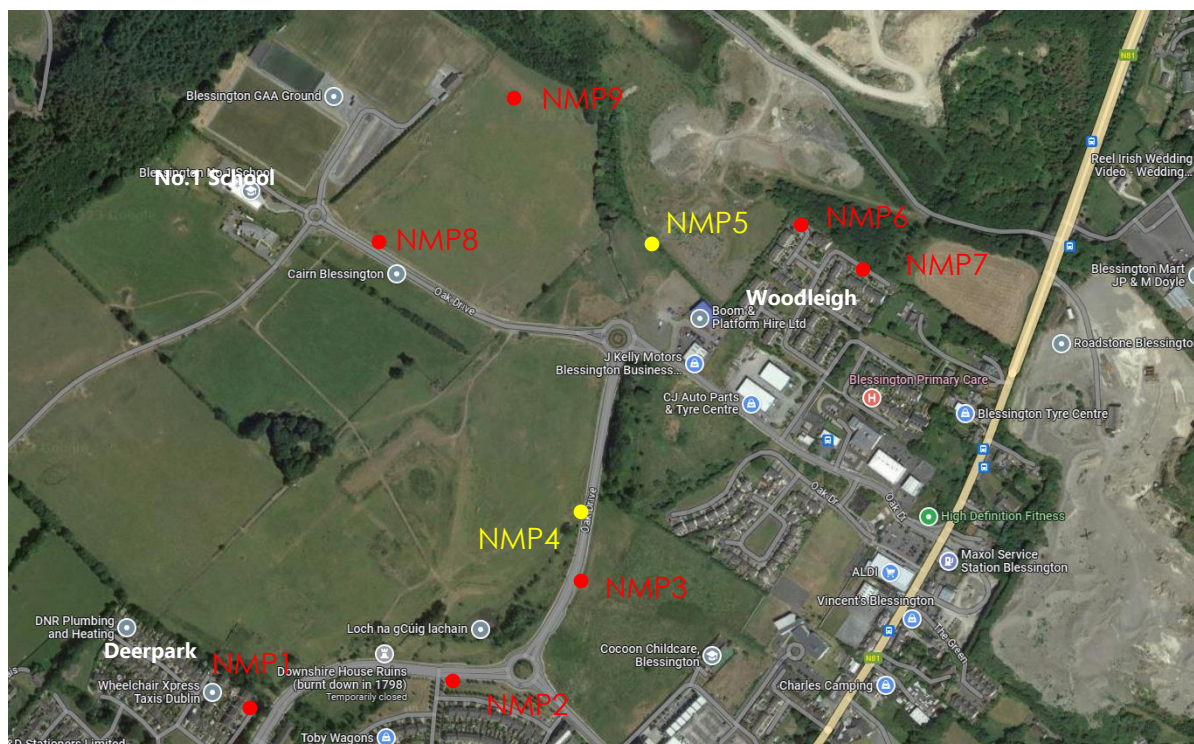
- Conduct 3 x 15-minute measurements at each attended location between the hours of 10.00-17.00hrs. Each 15-minute measurement is made within 3 consecutive hours.
- The $L_{A10,18hr}$ value is then derived for each location from these measurements by subtracting 1 dB from the arithmetic average of the 3 hourly sample values.
- L_{den} is then calculated from the $L_{A10,18hr}$.
- $L_{den} = 0.86 \times L_{A10,18hr} + 9.86 \text{ dB}$.

Attended and unattended ambient sound monitoring was undertaken at Noise Monitoring Points (NMPs) as described in Table 9-1 and illustrated on Figure 9-1 below and Plates 9-1 – 9.9 overleaf.

Table 9-1: Measurement Locations

Location Ref.	Grid Ref (latitude; longitude)	Description
NMP1	297531E; 214583N	Deerpark View. On estate footpath. Approx. 30m from the existing roadside.
NMP2	297798E; 214612N	Glenview. On amenity area. 7m from roadside.
NMP3	297973E; 214761N	Roadside. 2.2m from the roadside.
NMP4 (24-hour location)	29792E; 214836N	Roadside. 4.2m from the roadside and within an existing construction compound (Phase 1, Sorrel Wood).
NMP5 (24-hour location)	298068E; 215221N	Field location; close to proposed northern section of BIRR and proxy location for Woodleigh. 120m north of existing roundabout. Also, within LRD site.
NMP6	298252E; 215247N	Woodleigh Way. Approx. 20m south of line of proposed route.

Location Ref.	Grid Ref (latitude; longitude)	Description
NMP7	298361E; 215193N	Woodleigh Avenue. Approx. 80 south of line of proposed route.
NMP8	297692E; 215203N	On footpath beside LRD site. In proximity to school.
NMP9	297873E; 215411N	Northern portion of LRD site.



Source: Google Maps

Figure 9-1: Noise Monitoring Locations



Plate 9-1: NMP1 (view east)



Plate 9-2: NMP2 (view west)



Plate 9-3: NMP3 (view north)



Plate 9-4: NMP4 (view west)



Plate 9-5: NMP5 (view north)



Plate 9-6: NMP6 (view northwest)



Plate 9-7: NMP7 (view north)



Plate 9-8: NMP8 (view east)



Plate 9-9: NMP9 (view south)

Sound measurements were carried out using two Type 1 Sound Level Meters (SLMs) and associated hardware (calibrator and weather-proof outdoor kits). Software used includes Nti Extended Acoustic Pack and Noise Explorer Version 2.1 for post-processing and analysis. Attended microphones were placed at a minimum of 1.2m above ground level. Unattended microphones were placed at 4m above ground level. All locations were unscreened to ensure representative results as indicated in Plates 9-1 to 9-9 earlier.

The monitoring equipment was calibrated before and after use in the field. The observed drift was <0.1 dB. Sound levels were measured using the A-weighted network, and a fast-sampling interval. Wind speed was measured using a portable anemometer during attended measurements. Further details of the monitoring equipment used are set out in Table 9-2 below.

Table 9-2: Monitoring Equipment

Instrument Type	Manufacturer	Model Number	Serial Number(s)
Sound Level Meter	NTi Audio	XL2-TA	A2A-16311-E0 A2A-08898-E0
Microphone	NTi Audio	MA220	8567 5062
Acoustical Calibrator	Larson Davis	CAL 200	11728

The SLMs including the microphones and the calibrators have been externally calibrated in accordance with standard procedures. All tests are traceable in accordance with ISO/IEC 17025.

All primary noise sources contributing to the ambient sound environment were noted during the attended noise monitoring. Audio was recorded during the unattended events to aid with later analysis.

Overall weather conditions prevailing during the surveys were suitable for noise monitoring as follows:

- 27/3/2023 – Dry, sunny, mixed cloud average wind speed 2-3 m/sec from the south-east.
- 18/4/2023 – 19/4/2023 – Dry, warm with mixed cloud, wind speed 3-4 m/sec on average from the north-west.
- 25/4/2023 – 26/4/2023 – Dry, clear skies, wind speed 2m/sec from the east.

9.2.4 Assessment of Impacts

9.2.4.1 Construction Phase

Guidance relating to construction noise and vibration criteria and assessment specifically for roads in Ireland is set out within the TII Guidelines (2004 & 2014). In addition, international standards were used as part of the construction phase impact assessment for the entire Proposed Development including:

- BS5228-1:2009 +A1:2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites: Part 1: Noise contains details of sound power levels for typical plant that may be used in the road and LRD construction. The source data contained within the standard was used as part of the prediction of construction noise in accordance with the methodology set out in ISO 9613.-2 – 1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation.
- BS5228-1:2009 +A1:2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites: Part 2: Vibration contains empirical data on vibration levels measured at known distances from different plant under specified soil and other conditions. This data was reviewed as part of a desk-based study relating to vibration impact assessment.
- UK Highways Agency Design Manual for Roads and Bridges, Sustainability and Environmental Appraisal, LA11, Noise and Vibration, Rev 2, May 2020.

As part of this assessment, broad details on the construction methodology and schedule were supplied by the Project Engineers.

Section 9.5.1 contains a detailed discussion of standards and criteria applied.

9.2.4.2 Operational Phase

Proposed Extension of BIRR

The impact assessment methodology for the operational phase of the proposed extension of the BIRR was completed in accordance with the TII Guidelines (2004 & 2014).

Existing baseline and future traffic noise predictions were completed using SoundPLAN Noise Version 9.0 software loaded with the CRTN calculation methodology as set out in the TII Guidelines (2004 & 2014).

A 3D model of the existing baseline including existing roads, buildings and topography was primarily developed using Google Maps data. The design team provided details of the layout of the proposed road and topographical contours in the vicinity of it. Proposed levels for the proposed residential element and permitted development, Sorrel Wood (Planning File Ref No. 201146) were provided by the Design Team. Permitted development is considered as an NSL in accordance with the TII Guidelines.

The traffic input data in terms of AADT, % HGVs, relevant traffic speeds and proposed low noise road surface (stone mastic asphalt (SMA)) were supplied by the design team. Refer to Appendix 8A for traffic data provided. The TII diurnal profiles were applied to generate hourly flows over 24 hours from the AADT. A low flow correction factor was applied where necessary for some routes.

The model was validated against baseline traffic noise measurements where traffic noise is predominant. Correlations between predicted and measured traffic noise was within +/-3 dB.

The impact on existing NSLs in Woodleigh, Deerpark, Oak Drive, individual dwellings off the N81 and permitted development, Sorrel Wood (Planning File Ref No. 2011/46) was identified as required by the TII Guidelines. Further detail on the scope or extent of the model and permitted developments included in the 3D model is discussed in Section 9.5.3.1.

The traffic noise levels were calculated at the nearest NSLs affected by the operation of the proposed road segment for the following scenarios:

- Do Minimum (DM) Opening Year 2026 (i.e. the proposed road is not built);
- Do Something (DS) Opening Year 2026 (i.e. the proposed road is built);
- Do Minimum (DM) Future Year 2041, and,
- Do Something (DS) Future Year 2041.

The calculated noise levels at existing NSLs were then assessed to determine if the 3 conditions for noise mitigation for new roads are met as designated under the TII Guidelines (2004 & 2014) as follows:

- The combined expected free-field maximum traffic noise level, i.e. the relevant noise level from the proposed road and traffic noise from existing roads in the vicinity is greater than the absolute design goal of 60 dB L_{den} specified in the TII Guidelines;
- The relevant noise level is at least 1 dB more than the expected traffic noise level without the proposed road in place;
- The contribution to the increase in the relevant noise level from the proposed road development is at least 1 dB.

Where the 3 conditions for noise mitigation have been met, then a review of potential noise mitigation measures is conducted to reduce noise to within the design goal, where possible.

The design goal is applicable to new road schemes only i.e. the proposed extension of the BIRR and to existing NSLs in respect of the year of opening and the design year.

Proposed Residential

The traffic noise model prepared for assessing the impact of the proposed extension of the BIRR included the proposed layout of the residential element. This permitted the prediction of parameters such as L_{night} and $L_{Aeq,16hrs}$ required for assessment of future noise exposure risk in terms of internal living and external amenity criteria as set out in Pro-Pg (2017).

9.2.5 Definition of Study Area

The proposed extension of the BIRR comprises a 700m extension of the existing BIRR, extending from the existing 4-arm roundabout at Blessington Demesne Lands/Oak Drive, running north-west of Blessington Business Park, and north of the Woodleigh residential area to a new four-arm roundabout junction on the N81 Dublin Road. The new roundabout on the N81 will consolidate existing junctions with Hollyvalley, Doran's Pit and the Roadstone quarry site.

Indirectly, the proposed extension may alter traffic flows and patterns in the Blessington area, therefore the extent of the study area for the noise assessment extends beyond the line of the proposed road to incorporate the existing BIRR from the junction with the Naas Road (R410) Roundabout in the south to the existing 4-arm roundabout at Blessington Demesne lands.

Long-term road traffic noise effects can extend to 300m either side of a proposed or altered road. The study area therefore extends 300m either side of the existing BIRR and the proposed extension.

The main potential direct impacts from traffic noise changes will potentially occur at existing residential development, Woodleigh and indirectly at Oak Drive, Glenview, Deerpark and permitted developments along the existing Inner Relief Road.

The remainder of the study area incorporates all of the lands within the red-line boundary and extends to include Blessington No.1 school and the KARE centre at the western terminus of Oak Drive. Lands to the north and west of the red-line boundary do not contain any NSLs and are used for either agricultural or quarrying activities.

9.2.6 Consultation

Not applicable.

9.3 Characteristics of the Proposed Development

The area of the proposed Development is c. 25.14 ha on lands within the townlands of Blessington Demesne, Newpaddocks and Santryhill, Blessington, Co. Wicklow.

The proposed development will consist of:

- 329 residential units including:
 - 270 two storey houses (28 no. 2-bed, 218 no. 3-bed, 24 no. 4 bed.) comprising of semi-detached and terraced units
 - 47 no. apartments (22 no. 1 bed, 25 no. 2 bed) provided within 1 no. four-storey block.
 - 12 no. duplex units within 1 no. three-storey blocks (6 no. 2 bed and 6 no. 3 bed units).
- Car and bicycle parking spaces to include:
 - 518 no. car parking spaces for the houses, 54 no. spaces for the apartments and 22 no. spaces for the duplex units.
 - 167 bicycle spaces for the duplex units and for the apartments.
- 10.65 ha Town Park;
- 1.041 ha public open space including pocket parks and playgrounds;
- 1,514 sqm of communal open space (1,290 sqm at Apartments, 224 sqm at Duplex units);
- Two new vehicular access off Oak Drive and one new vehicular access off the Blessington Inner Relief Road
- infrastructure works to serve the housing development to include the internal road network;
- ESB substations/switchrooms, lighting, site drainage works and all ancillary site services and development works above and below ground; and
- temporary permission is also sought for the erection of three marketing signs (4.55 m high and 13.73 sqm each) and a marketing suite.

The development will also include:

- The extension of the Blessington Inner Relief Road (approx. 700m long) from the existing 4-arm roundabout at Blessington Demesne Lands, running north west of Blessington Business Park, and north of the Woodleigh residential area to a new four-arm roundabout junction on the N81 Dublin Road. The new roundabout will consolidate existing junctions with Hollyvalley, Doran's Pit and the Roadstone quarry site.

- A new junction will be provided to the Roadstone Quarry Access Road north of the road's alignment.
- The scheme will comprise a two-lane single carriageway road with cycle lanes and footpaths, landscaping and drainage works (including attenuation ponds & Sustainable Urban Drainage Systems (SUDS)); road signage and all ancillary site services and development works above and below ground.

The works associated with the proposed extension of the BIRR will take place in a 3.903 ha area within the overall site area of 25.14 ha.

9.3.1 Construction Phase

The total duration for construction of the Proposed Development is 36 months. The proposed extension of the BIRR will be completed over a 6-month period and within the 1st 12 months of development combined with Phase 1 of the residential and the Park elements. The remaining 4 phases of the residential element will then be completed.

The typical steps involved in construction for the residential element will be site clearance and setup, earthworks, drainage, SUDs and utilities, road capping, sub-base, tarring of roads, foundation, driveways, building construction, footpath and cycle track construction and landscaping.

The proposed road extension will involve similar steps including site clearance and earthworks (cut and fill) grading and compacting, installation of sub-base and base layers, paving and landscaping.

The existing site compound, currently serving the construction of Sorrel Wood (Planning File Ref No. 2011/46), located directly west of the roundabout junction of the existing Inner Relief Road and Oak Drive, will be used as the site compound for the Proposed Development.

No blasting, piling or rock-breaking are envisaged based on the site investigations undertaken.

No demolition works are required.

Construction traffic will access and exit the proposed Development site and existing site compound via the existing 4 arm-roundabout at the junction of Oak Drive and the existing BIRR.

The maximum number of HGVs entering the site is envisaged to be 5-6 per hour. Further detail on construction traffic is outlined in Section 9.5.1.3. Construction traffic will comprise excavation plant, dump trucks and material delivery.

The majority of construction workers are expected to arrive and depart between 08.00 – 16.00 hrs.

Proposed construction working hours will extend from 07.00 – 18.00 hrs Mon-Fri and 08.00 – 14.00 hrs Sat. There will be no construction on Sundays or public holidays.

Out of hours construction work may be required for foul drainage and water mains connections. In this regard, construction works for services connections extend into Woodleigh near No. 40 Woodleigh Avenue.

The proposed Development has been designed to minimise cut and fill. Excavated material will be re-used on site.

Pre-determined haul routes will be used within the site taking account of the location of existing NSLs.

9.3.2 Operational Phase

In the long term, the main characteristic of the proposed Development with potential to impact on the existing soundscape will be changes in traffic flows and patterns as discussed later in Section 9.5.2.

9.4 Baseline Description

9.4.1 Noise

The extent of the study area has been briefly described under Section 9.2.5 earlier. Further detail on the site context and existing NSLs is described below.

Proposed Extension of BIRR

The site of the proposed extension to the BIRR cuts through lands that were previously in the ownership of Roadstone. The lands were used for quarrying and for access to the quarry. At present the lands are mostly wooded or comprise made ground with sparse vegetation. During the site visits, access through the lands by quarry HGVs was noted. Otherwise, quarrying related noise was not audible at the nearest NSLs. The nearest NSLs to the proposed road are 3 storey duplexes in Woodleigh Way and Woodleigh Grove which overlook the proposed alignment. 2-storey terraced dwellings in Woodleigh Avenue also overlook the proposed alignment. The proposed service connections extend to No. 39 Woodleigh Avenue. A small number of detached dwellings are located close to the southern extent of the proposed road red-line boundary along or set back off the existing N81.

The existing N81 is the dominant road traffic noise source currently affecting the above NLSs varying from distant traffic noise at Woodleigh to dominating the ambient noise environment at receptors directly off the N81.

The existing BIRR is the main road traffic noise source to the south of the proposed extension area. Lands to the immediate west of the existing BIRR are currently under development. A relatively large construction operation by Cairn Homes was ongoing at Sorrel Wood (Planning File Ref No. 2011/46), however existing traffic noise was still the predominant noise source affecting the closest NSLs at Glenview, Deerpark and Hazelbrook. The main sensitive receptors potentially indirectly affected by the proposed road (positive, negative or neutral) through changes in traffic patterns are all currently affected to varying degrees by existing road traffic noise.

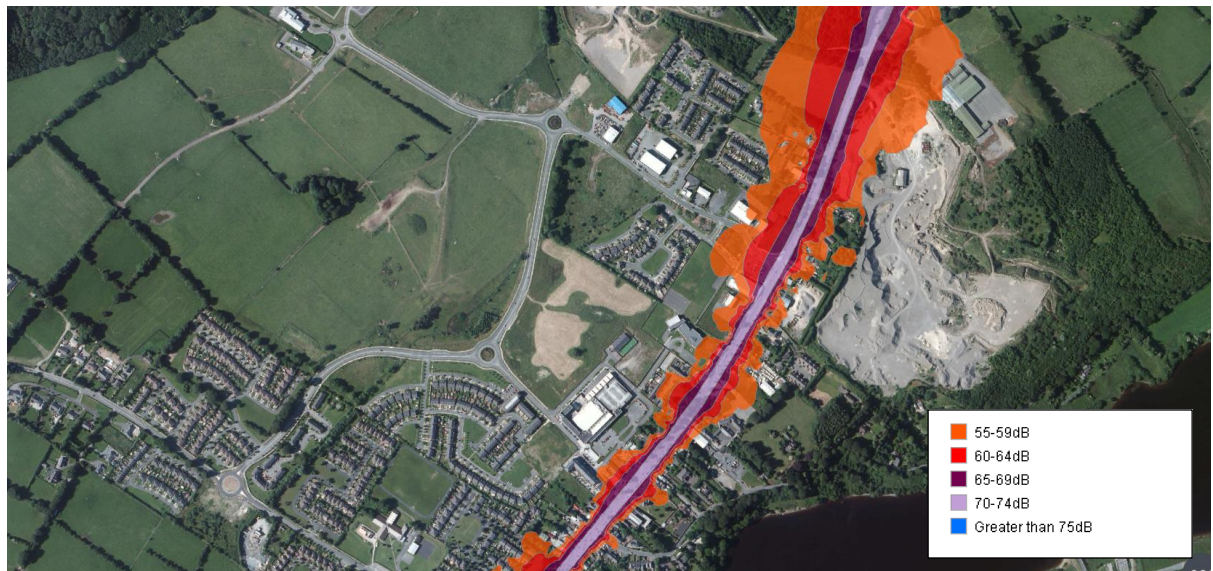
Proposed Residential

The proposed residential lands, for the most part, front onto Oak Drive west of the existing roundabout junction with the existing BIRR. The land is currently used for grazing. The construction works at Sorrel Wood were temporarily impacting on daytime noise levels in proximity to Oak Drive but reduced significantly into the site as expected. The site is generally flat with a gradual descent (at approx. 280m north from Oak Drive) to the stream bounding the north of the site. Large berms, outside of the red-line boundary screen the site from the quarry to the north. In the absence of construction works, the site is very quiet in nature with muffled sounds on occasion from quarry activities.

Further east, the topography of the residential lands, close to the existing roundabout connecting the existing BIRR and Oak Drive, is more varied, rising more sharply to the northern boundary with the quarry. This area is also screened by berms to the north within the quarry lands.

9.4.1.1 Desk-Based Study

A Noise Action Plan 2018 - 2023 has been prepared by Wicklow County Council for the county. Related traffic noise mapping is available on the EPA's website <https://gis.epa.ie/EPAMaps/> and includes the N81. Figures 9-2 and 9-3 below re-produce the Round 3 road noise mapping in the vicinity of the site. (Round 4 mapping is expected to be completed in 2023).



Source: <https://gis.epa.ie/EPAMaps/>

Figure 9-2: Round 3 Road Traffic Noise Mapping L_{den}



Source: <https://gis.epa.ie/EPAMaps/>

Figure 9-3: Round 3 Road Traffic Noise Mapping L_{night}

The existing BIRR has not been mapped as current traffic flows fall below the annual 3 million vehicle threshold defining a route as a "major road" under the Environmental Noise Directive 2002/49/EC.

The Noise Action Plan notes the following onset levels for assessment of noise mitigation measures:

70 dB(A) L_{den}
57 dB(A) L_{night}

Onset levels for assessment of Noise Level Preservation where they are good:

55 dB(A) L_{den}
45 dB(A) L_{night}

Round 4 of traffic noise mapping is currently ongoing and, the Noise Action Plan is likely to be updated soon.

It is noted in Chapter 15 of the County Development Plan 2022 – 2028 that the relevant Action Planning Authorities (APAs) i.e., the local authorities, are required to prepare noise action plans where:

“

the L_{den} 55 dB and the L_{night} 50 dB thresholds have been exceeded. These action plans are designed to manage noise issues and effects, and it involves the prevention and reduction of environmental noise. Each LA should identify their noise sensitive locations which may include drawing up a short list of potential areas for action, both above the recommended onset values for noise mitigation measures and below the recommended levels for preservation (to help identify quiet areas). Wicklow's current Noise Action Plan was adopted in 2019.

”

The EPA notes that the Environmental Noise Directive defines the L_{den} threshold of 55 dB and an L_{night} threshold of 50 dB for reporting on the numbers of people exposed to these minimum noise levels. Generally, it is considered that these thresholds apply to populations and not to individual receptors to which the TII Guidelines specifically apply for new road schemes.

The completion of the BIRR is seen as a regional road objective in the Wicklow County Development Plan 2022-2028. The CPD has been subject to strategic environmental assessment.

9.4.1.2 Survey Results

Tables 9.3, 9.4 and 9.5 below summarise the ambient sound environment at the monitoring locations.

Table 9-3: Summary Results (Attended Short-term Measurement Locations)

Location/ Start -time	L _{Aeq}	L _{A10}	L _{A90}	L _{AFmax}	L _{10,18hr}	L _{den}	Description of Ambient Noise Environment
NMP1 – Deerpark (27/3/2023)							
#1 12.40	55	59	43	68	58	60	Frequently intermittent passing cars on existing BIRR. Birdsong. Some internal car movements during #2. Council started roadworks during #3 increasing noise levels.
#2 13.22	56	59	46	68			
#3 14.26	57	59	50	68			
NMP2 - Glenview (27/3/2023)							
#1 12.14	64	69	46	79			Frequently intermittent passing cars on existing BIRR. Construction sources on Phase 1
#2 13.00	63	67	45	77			

Location/ Start -time	L _{Aeq}	L _{A10}	L _{A90}	L _{AFmax}	L _{10,18hr}	L _{den}	Description of Ambient Noise Environment
#3 12.37	64	68	47	80	67	67	Park construction and also an additional small-scale activity to the south in background but road traffic predominant.
NMP3 – Existing BIRR roadside (25/4/2023)							
#1 11.43	68	72	48	86	71	71	Road traffic predominant. Occasional overhead aircraft. Construction noise muted L _{AF} 50-55 dB.
#2 12.28	68	72	47	86			
#3 13.28	70	73	49	88			Low frequency rumbling/pulsing sound from construction site Sorrel Wood from roller on new internal roads construction during #3.
NMP6 Woodleigh Way (25/4/2023)							
#1 12.08	54	59	41	74	n/a	n/a	N81 audible in distance as a continuous traffic source. Roadstone trucks also audible intermittently. Birdsong elevating L _{Aeq} values. Occasional overhead aircraft.
#2 12.49	48	51	39	69			
#3 13.06	52	52	39	73			
NMP7 Woodleigh Avenue (27/3/2023)							
#1 11.27	47	51	39	60	n/a	n/a	N81 traffic audible as a continuous background source. Intermittent passing trucks on Roadstone access route to the north. Intermittent aircraft. Pigeons cooing, dogs barking and a squealing type noise from a commercial unit to the north during #1. Estate cars during #2 and 3, trucks on N81 and slight increase in wind speed increased noise levels.
#2 14.48	49	51	43	65			
#3 15.03	48	50	44	66			
NMP8 Oak Drive west (27/3/2023)							
#1 10.58	49	50	42	69	n/a	n/a	Quiet, except for construction noise (reverse beepers, excavators) on adjacent site elevating noise levels by 5 dB approx. above background.
#2 13.44	61	64	45	89			
#3 15.25	57	58	47	78			

Location/ Start -time	L _{Aeq}	L _{A10}	L _{A90}	L _{AFmax}	L _{10,18hr}	L _{den}	Description of Ambient Noise Environment
							A number of cars pass-by to and from school during #2 & #3 thus elevating the L _{Aeq} values. Construction still predominant as a continuous source.
NMP9 Northern Portion of LRD Site (25/4/2023)							
#1 10.47	45	47	42	58	n/a	n/a	Quarry activities slightly audible but muffled. Two overhead planes. Construction noise from Sorrel Wood and also some site investigation to east of site contributing to background noise.
#2 11.05	45	47	42	64			
#3 11.19	46	48	43	59			

Table 9-4: Summary Results NMP4 (roadside, existing BIRR)

Interval	L _{Aeq}	L _{A10}	L _{A90}	L _{AFmax}	Description of Ambient Noise Environment
L _{day} (07.00 – 19.00hrs)	68	73	52	88	Construction site works commence at approx. 07.00hrs and contribute to noise levels throughout the daytime period up to 18.00 hrs. Road traffic noise is a predominant noise source at this location however construction noise is likely to add up to 3 dB during the daytime period.
L _{evening} (19.00 – 23.00hrs)	65	71	37	84	
L _{night} Or L _{Aeq,8hr} (23.00 – 07.00hrs)	58	51	33	85	
L _{10,18hr}	69				It is likely that the L _{den} and L _{10,18hr} are both closer to a value of 67 dB(A).
L _{den}	68				

Table 9-5: Summary Results NMP5 (Proposed Residential and also proxy location for Woodleigh)

Interval	L _{Aeq}	L _{A10}	L _{A90}	L _{Afmax}	Description of Ambient Noise Environment
L _{day} (07.00 – 19.00hrs)	52	54	44	82	Distant continuous traffic noise from the N81. Construction site audible but not significant. No sound from the adjacent quarry.
L _{evening} (19.00 – 23.00hrs)	46	48	35	75	
L _{night} or L _{Aeq,8hr} (23.00 – 07.00hrs)	46	48	28	73	
L _{10,18hr}	51				
L _{Aeq,16hr}	51				
L _{den}	54				

It is clear from the preceding tables that the existing ambient sound environment is dictated by proximity to existing roads. The nearest NSLs to the proposed road (Woodleigh Way, Grove and Avenue) are currently relatively quiet locations with low traffic noise impact. The proposed residential site is also relatively quiet with an existing transportation noise exposure risk rating for future residential development of low to negligible.

9.5 Assessment of Effects

9.5.1 Construction Phase – Noise

9.5.1.1 Applicable Noise Criteria

The site development and construction phases can potentially give rise to temporary to short term noise and vibration impact and effects through the use of mobile and non-mobile heavy machinery and equipment. The following section discusses the applicable criteria applied to site development and construction phase noise.

There is no definitive published Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project.

BS5228:2009 + A1:2014: *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise* describes applicable noise level thresholds not to be exceeded at NSRs, depending upon existing ambient levels, as described in Table 9-8 below. This table is based upon report E3.2, Table E.1 of BS5228:2009 + A1:2014 Part 1.

Table 9-6: Threshold if Significant Effect at Dwelling

Assessment category and threshold value period (L_{Aeq})	Threshold value (dB)		
	Category A	Category B	Category C
Night-time (23:00-07:00)	45	50	55
Evening and Weekends	55	60	65
Daytime (07:00-19:00) and Saturday (07:00-13:00)	65	70	75

NOTE 1: A significant effect has been deemed to occur if the total L_{Aeq} noise level, including construction, exceeds the threshold level for the Category appropriate to the ambient noise level.

NOTE 2: If the ambient noise level exceeds the threshold values given, in the table (i.e. the ambient noise level is higher than the above values), then a significant effect is deemed to occur if the total L_{Aeq} noise level for the period increases by more than 3dB due to construction activity.

NOTE 3 Applied to residential receptors only.

- A) Cat A: Threshold values to use when ambient noise levels (rounded to nearest 5dB) are less than these values
- B) Cat B: Threshold values to use when ambient noise levels (rounded to the nearest 5dB) are the same as Cat A values
- C) Cat C: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than Cat A values
- D) 19:00-23:00 weekdays, 13:00-23:00 Saturday and 07:00-23:00 Sunday is deemed 'evening and weekend' period.

Generally, the Category A daytime threshold value can be applied to all NSLs potentially affected by the construction of the proposed Development based on the ambient sound levels recorded during the daytime baseline survey. It should be noted that this assessment method is only valid for residential properties and not commercial properties. The threshold values apply to the sum of both the ambient and construction noise levels.

In addition, the following acceptable levels are described in the TII Guidelines (2004 & 2014). These limits are applied during the construction of road infrastructure projects at the facades of NSLs:

Table 9-7: TII Indicative Levels for Acceptability of Construction Noise

Day	Working Hours	Level dB (L _{Aeq,1hr})	Level dB (L _{ASmax})
Mon-Fri	07.00 – 19.00	70	80
Mon-Fri	19.00 – 22.00	60*	65*
Saturday	08.00 – 16.30	65	75
Sundays & Bank Holidays	08.00 – 16.30	60*	65*

Note *: Construction activity at these times, other than emergency works, will normally require specific permission from the local authority.

Road projects are linear in nature and non-static in one location. Therefore, higher limits than those potentially derived from the used of BS5228 may be more acceptable.

There will be no requirement for night-time or evening (19.00 – 23.00 hrs) construction works associated with the residential element. However, the CEMP notes that out of hours construction work may be required for foul drainage and water mains connections for the proposed road element. In this regard, construction works for services connections extend into Woodleigh near No. 40 Woodleigh Avenue. The TII limits will apply in this instance as these works are associated with the road element.

Accordingly, based on current ambient sound levels and BS5228 methodology the following construction noise threshold is proposed for residential, educational and healthcare NSLs arising from the construction of the residential elements (excluding the proposed extension to the BIRR):

- 65 dB L_{Aeq,1hr}, Mon-Fri (07.00 – 19.00hrs) and Sat (07.00 – 13.00 hrs).

The NSLs to which this limit applies include:

- Blessington No.1 primary school and the KARE facility are the closest NSLs to the west of Phases 1-5 potentially affected by construction noise.
- Sorrel Wood (Planning File Ref No. 201146) is currently under construction and may be occupied at the time of construction of the proposed Development and constitutes the nearest NSL to the south.
- Existing duplexes in Woodleigh Grove and Way are the nearest NSLs east to Phases 1 and 5.
- Existing houses within Deerpark Walk are the closest NSLs to the proposed Park element.

The TII limits set out in Table 9-7 will apply at all NSLs during the construction of the road element. Construction of Phase 1 and Phase 5 of the residential element may potentially impact commercial NSLs to the east. As these are less sensitive, the TII higher limits are proposed.

The following should be noted in relation to the prediction of construction noise and to the use of the threshold values or limits:

Prediction of likely noise impact has been completed using data from BS5228:1 and is based on the prediction methodology set out in ISO9613-1:1996. However, it is important to note that the construction process is subject to change e.g. through a tendering process. Therefore, with regards to prediction of construction noise at NSLs the following factors are relevant:

- The sound power ratings (or sound pressure levels at known distance) used in the assessment may vary from the ratings for the actual equipment chosen by the contractor and used on site;
- Depending on conditions encountered in real-time, different types of equipment may be chosen and the number of units may vary. Usage may also vary in terms of length of time operating or in terms of intensity, character and location.

As a result, limits or threshold values, are typically applied to control construction noise. BS5228-1 notes that a potentially significant negative effect will occur if the predicted construction noise level at a NSL exceeds the applicable threshold value. BS5228-1 also notes that factors such as the number of receptors affected, and the duration and character of the impact may need to be considered to determine if there is an actual significant effect.

The recently published UK LA111 similarly notes that the magnitude of impact is major if the construction noise impact is greater than or equal to the threshold value (from BS5228-1) +5dB. A moderate impact magnitude is above or equal to the threshold value and below the threshold value +5 dB. Impacts of major and moderate magnitude are then considered to constitute a significant effect *depending* on duration.

In this regard, the standard notes that construction noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

- 10 or more days or nights in any 15 consecutive days or nights;
- A total number of days exceeding 40 in any 6 consecutive months.

The following summary table applies with regards to magnitude of impact and construction noise level:

Table 9-8: Magnitude of Impact and Construction Noise Descriptors

Magnitude of Impact	Construction Noise Description
Major	Above or equal to threshold value +5 dB
Moderate	Above or equal to threshold value and below threshold value +5 dB
Minor	Above or equal to baseline and below threshold value
Negligible	Below baseline.

LA111 also offers guidance on construction related traffic noise as follows:

Table 9-9: Magnitude of Impact at NSLs for Construction Traffic

Magnitude of Impact	Increase in Baseline Noise Level of Closest Public Road Used for Construction Traffic (dB)
Major	Greater than or equal to 5.0
Moderate	Greater than or equal to 3.0 and less than 5.0
Minor	Greater than or equal to 1.0 and less than 3.0
Negligible	Less than 1.0

The same durations apply as stated for construction noise.

9.5.1.2 Construction Noise Assessment

Typically, construction noise tends to be greatest within 40m of the activity and then reduces with distance. The threshold values derived from BS5228 do not tend to be potentially exceeded except at close distances (< 40m). In this regard, relatively moderate-scale construction works were ongoing at Sorrel Wood during the baseline studies however, as noted from Tables 9.3 and 9.5, this did not result in construction noise levels exceeding the threshold value at existing NSLs.

The following scenarios have been assessed with regards to the proposed Development:

- The impact of the proposed road extension on existing NSLs in close proximity i.e. at Woodleigh Grove, Way and Avenue.
- The impact of Phase 4 development on Blessington No. 1 School.
- The impact of the Park element of the LRD development on Deerpark Walk.

Construction of the Proposed Extension of the BIRR

Road Construction will be completed in a linear manner. Typical stages of construction include earthworks, laying of sub-base and base, paving and landscaping. Equipment needs can include the following:

- Earthworks - excavators, crawler loaders, dozers, scrapers, dump trucks and motor graders.
- Aggregate (laying of sub and base layers) – truck delivery of aggregate, motor graders, crawler loaders, dump truck, dozer.
- Paving – trucks delivery of asphalt mix, pavers and roller for compaction.

Table C.5. of BS5228 provides sound level data on equipment in use for road construction. As some of data is provided only as an L_{Amax} values arising from vehicle pass-bys, other values are also used from Table C.2 on site preparation and Table C.4. on general site activities. Refer to Table 9-10 below for source details used in the prediction of construction noise impact.

Table 9-10: Source Data Used for Construction Noise Impact Assessment

Source	Frequency (Hz)								SPL@ 10m
	63	125	250	500	1k	2k	4k	8k	
	dB(A)								
Earthworks									
Tracked Excavator	50	63	66	72	76	74	71	64	80
Tracked Excavator loading lorry	54	63	67	74	73	71	67	58	78
Articulated Dump Truck Tipping Fill	54	60	64	67	69	67	64	57	74
Spreading Aggregate									
Dozer Spreading Fill	56	68	67	72	78	77	71	61	82
Articulated Dump Truck Tipping Fill	54	60	64	67	69	67	64	57	74
Trenching									
Wheeled Excavator	46	50	53	67	63	63	58	52	70
Mini Tracked Excavator	45	55	57	56	59	59	55	47	65
Paving									
Asphalt paver and tipper lorry	52	61	63	69	71	70	63	55	76
Rolling and Compaction									
Vibratory Roller	64	66	64	69	70	66	60	53	75
Vibratory Compactor Asphalt	50	62	65	74	77	78	74	69	83

The proposed road construction represents the nearest construction activity to NSLs; - namely the existing Woodleigh development. The facades and balconies of duplexes in Woodleigh Way are the closest NSLs at approximately 35m distance from the red-line boundary of the road footprint at the closest point.

The proposed road is a single carriageway and not a national route, therefore the footprint is relatively small. It should therefore be noted that not all of the above equipment will be used or be in use at the same time for each stage. Due to logarithmic noise calculation methodology, predicted noise levels at NSLs will generally be as a result of the closest and/or noisiest piece of equipment for that activity.

The calculated noise levels at NSL1 (32 Woodleigh Way, beside NMP6 on Figure 9-1) are presented in Table 9-11 below for each phase during a typical 1-hour period and without mitigation.

Table 9-11: Conservative Estimated Construction Noise at NSL1

NSL1 (32 Woodleigh Way)		
Source & Assumptions	Source Data from BS5228 L _{Aeq,t} @ 10m	Predicted L _{Aeq,1hour} (dB)
Earthworks		
Tracked Excavator, 66% of time on @30m	80	68
Articulated Dump Truck, tipping fill, 20% of time on @60m	74	
Tracked excavator loading a lorry, 10% of time on @30m	78	
Spreading Aggregate		
Dozer spreading aggregate, 66% of time on @30m	82	71
Articulated Dump Truck, tipping fill, 20% of time on @30m	74	
Paving		
Asphalt paver and tipper lorry 66% of time on @30m	76	63
Rolling and Compaction		
Vibratory Compactor Asphalt 66% of time on @30m	83	70

As can be seen from Table 9-11, the TII acceptable limit of 70 dB ($L_{Aeq,1hr}$) may be exceeded at times by 1 dB during certain works associated with the road construction. The impact magnitude rating, based on Table 9-8 is temporary moderate negative in the absence of mitigation. However, in order to determine if a significant effect will occur, the duration of the impact should be considered. The total construction of the road element will take 6 months. However, each individual step will move away from NSLs as road construction is linear in nature. Therefore, the duration will be temporary and typically will not be above the following:

- 10 or more days or nights in any 15 consecutive days or nights;
- A total number of days exceeding 40 in any 6 consecutive months.

Accordingly, a significant effect on an individual NSL arising from the proposed road construction is not predicted to occur.

Some works relating to road service connections are proposed within 10m of NSLs in Woodleigh Avenue and may occur outside of normal working hours. This work is likely to involve some excavation however mini equipment types are likely to be used for this type of work e.g. mini tracked excavator as indicated under trenching in Table 9-10. These works are likely to exceed the TII acceptable limit of 60 dB ($L_{Aeq,1hr}$) for out of hours work. The impact magnitude rating, based on Table 9-8 is major negative in the absence of mitigation. However, these works will be very short in duration <1 week, therefore a significant effect is not predicted to occur.

Construction in proximity to Blessington No. 1 School

The boundary of Phase 4 is approximately 95m from the façade of Blessington No. 1 school (refer to Figure 9-1 earlier for location). It is possible that construction activities from earlier phases will still be ongoing and overlap with the start of Phase 4, however as noted earlier, potential noise levels experienced at NSLs will generally be dominated by the noisiest equipment operating in closest proximity. Earthworks tend to involve the heaviest noisy equipment which will predominate over other noise sources.

The calculated noise levels at NSL2 (Blessington No. 1 school) are presented in Table 9-12 below for earthworks during a typical 1-hour period and without mitigation.

Table 9-12: Conservative Estimated Construction Noise at NSL2

NSL2 (Blessington No. 1 School)		
Source & Assumptions	Source Data from BS5228 $L_{Aeq,t}$ @10m	Predicted $L_{Aeq,1hour}$ (dB)
Earthworks		
Tracked Excavator, 66% of time on @95m	80	60
Tracked excavator loading a lorry, 10% of time on @95m	78	
Tracked Excavator, 66% of time on @200m	80	
Tracked excavator loading a lorry, 10% of time on @200m	78	

As can be seen from Table 9-12, the threshold value of 65 dB ($L_{Aeq,1hr}$) will not be exceeded. The impact magnitude rating, based on Table 9-8 is temporary minor negative in the absence of mitigation.

Construction in proximity to Deerpark Walk

The proposed Park element is within 20m of existing NSLs at Deerpark (refer to Figure 9-1 earlier for location). The calculated noise levels at NSL3 (Deerpark Walk) are presented in Table 9-13 below for earthworks during a typical 1-hour period and without mitigation.

Table 9-13: Conservative Estimated Construction Noise at NSL3

NSL3 (8 Deerpark Walk)		
Source & Assumptions	Source Data from BS5228 LAeq,t @10m	Predicted LAeq,1hour (dB)
Earthworks		
Tracked Excavator, 66% of time on @20m	80	73
Tracked excavator loading a lorry, 10% of time on @20m	78	
Tracked Excavator, 66% of time on @100m	80	
Tracked excavator loading a lorry, 10% of time on @100m	78	

As can be seen from Table 9-13, the threshold value of 65 dB ($L_{Aeq,1hr}$) may be exceeded at times by 8 dB during certain works associated with park development directly at the site boundary. The impact magnitude rating, based on Table 9-8 is brief to temporary major negative in the absence of mitigation. However, in order to determine if a significant effect has occurred, the duration of the impact requires consideration. Construction works associated with the park element close to the boundary will be temporary in nature and the duration will typically not be above the following:

- 10 or more days or nights in any 15 consecutive days or nights;
- A total number of days exceeding 40 in any 6 consecutive months.

Accordingly, a significant effect is not expected to occur. Notwithstanding this, mitigation measures will be implemented as part of good practice to minimise construction noise to below the threshold value for NSLs through the selection of low noise equipment, careful timing of works and screening where possible etc. Further detail is outlined in Section 9.7.1.

9.5.1.3 Construction Traffic Noise

Construction traffic will access the site from the N81 onto Oak Drive to the existing site compound. The % increases in existing baseline traffic due to construction have been provided by the project engineers (refer to Appendix 8A) as follows:

Table 9-14: Construction Traffic Estimates

Route	Existing Baseline AADT	Total Construction Vehicles as a % of Existing Baseline AADT	AM Peak Flows Existing		PM Peak Flows Existing	
			Total	HGV	Total	HGVs
N81 north of Oak Drive	12,194	1.6	950	73	1130	23
Oak Drive west of junction with Inner Relief Road	2,650	7.4	214	1	238	0
Oak Drive east of junction with existing Inner Relief Road	4,619	4.2	402	21	386	3

The table above suggests that increased construction traffic noise based on the AADT will be negligible. However, during the AM and PM peaks, the total number of construction vehicles and HGVs on the designated routes will be 33 and 8 respectively. Baseline noise levels and predicted noise levels from construction traffic at 5m from these routes has been estimated using SELs for cars/LGVs and HGV pass-by. The SEL values used are 72 and 85 dB(A) respectively. The predicted AM and PM construction traffic impact magnitude rating is set out in Table 9.15 below. The highest magnitude rating is minor for Oak Drive west based on the criteria in Table 9-9 earlier. Therefore, the effect is deemed to be insignificant. NSLs along this route include Sorrel Wood only if occupied. There are no other NSLs present.

Table 9-15: Construction Traffic Noise Impact Magnitude

Route	Existing Baseline AM Peak Noise Levels @ 5m (dB(A))	Predicted AM Peak Noise Levels – Construction Traffic Only @5m (dB(A))	Combined Baseline and Construction Traffic @5m (dB(A))	Magnitude Rating
N81 north of Oak Drive	70.10	59.28	70.46	Negligible
Oak Drive west of junction with Inner Relief Road	60.11	59.28	62.73	Minor
Oak Drive east of junction with existing Inner Relief Road	65.47	59.28	66.40	Negligible

9.5.2 Construction Phase – Vibration

9.5.2.1 Applicable Vibration Criteria

Vibration impacts can typically potentially occur during site development and construction phases of development through the use of equipment such as rock breakers, piling, vibrating rollers or ground improvement methods. Vibration can affect both human beings and buildings (although most concern is with damage to buildings from site development and construction). Accordingly, there are separate criteria for both.

Guidance relevant to the protection of building structures is contained in the following documents:

- British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration, and;
- British Standard BS 5228: 2009+A1 2014: Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.

Both standards contain similar guidance relating to building damage criteria. Table 9.16 details the transient vibration guide values for cosmetic damage to buildings as set out in BS5228-2:

Table 9-16: Transient Vibration Guide Values for Cosmetic Damage

Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
	4 – 15 Hz	15 Hz and above
Reinforced or Framed Structures Industrial and Heavy Commercial Buildings	50mm/sec at 4 Hz and above	50mm/sec at 4 Hz and above
Unreinforced or Light-weight Structures Residential or Light Commercial Buildings	15mm/sec at 4Hz increasing to 20mm/sec at 20Hz	20mm/sec at 15Hz increasing to 50mm/sec at 40Hz

Note 1: Values Referred to are at the base of a building.

Note 2: For Line 2, at frequencies below 4Hz, a maximum displacement of 0.6 mm (zero to peak) is not to be exceeded.

The above values are for transient or intermittent vibrations which do not cause a resonant response in buildings. The criteria should be reduced by 50% for more sustained or continuous vibration which may occur during activities such as continuous piling methods. The values should also be reduced by 50% for listed buildings although they may not necessarily be more vulnerable than new builds.

The following limits therefore apply for continuous vibrations:

- Light Buildings – 7.5mm/sec
- Heavy Buildings – 25mm/sec

BS7385-2 indicates that the probability of damage tends towards zero at a component PPV of 12.5 mm/sec.

The TII Guidelines (2004 & 2014) suggest that vibration levels should be limited to 8 mm/sec at frequencies of <10Hz, to 12.5 mm/sec at frequencies 10 – 50Hz and to 20 mm/sec at 50Hz and above.

BS5228-2 also provides the following range of vibration values and associated potential effects on humans:

Table 9-17: Vibration Criteria Human Beings

Vibration Level mm/sec PPV	Effect
0.14	Vibration might just be perceptible in the most sensitive in the most sensitive situations for most vibration frequencies.
0.3	Vibration might just be perceptible in residential environments.
1	A vibration level of this magnitude is likely to cause complaint.
10	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

Source: BS5228-2

As can be seen from Table 9.17, the limits for humans are much lower than for cosmetic damage to buildings.

9.5.2.2 Construction Vibration Assessment

No piling or rock breaking are proposed. Vibratory rollers will likely be used during the road construction and HGVs travelling on uneven surfaces can also generate transient vibrations.

Prediction of vibration levels at receptors is complex and dependent on several variables such as the excavation method, the nature of the used equipment, the properties of the subsoil, the heterogeneity of the soil deposit, the distance to the receptor and the dynamic characteristic of the adjacent structures. Therefore, limits or threshold criteria as set out in BS5228-2 are applied for buildings and humans. As noted above, specific manufacturer limits will apply to sensitive equipment.

BS5228-2 provides some historic data on vibration levels measured on sites from different types of piling equipment under specific conditions e.g. soil type, however there is no data for other types of equipment.

Taking account of the distances to nearby receptors and notwithstanding ground conditions present, it is not anticipated that the vibration criteria in Tables 9-16 and 9-17 will not be exceeded. Nevertheless, precautionary vibration monitoring at the boundary with receptors such as Woodleigh Way is proposed to ensure compliance with the limits or threshold values outlined earlier in Section 9.5.2.1 and will be included in the CEMP as a preventative measure.

9.5.3 Operational Phase

9.5.3.1 Long-term Traffic Noise

The proposed Development can give rise to potential traffic noise impacts at existing NSLs as a result of the following:

- The introduction of a new route where previously there had been no traffic noise source.

- Changes in road traffic patterns and distribution on existing routes resulting in changes to traffic noise levels which can be positive, negative or neutral.

Predicted traffic flows have been provided by the project engineers for the following scenarios:

- Existing Baseline 2023
- DM 2026 Opening Year (OY) and DM Future Years (FY) 2031 and 2041.
- DSOY 2026 and DSFY 2031 and 2041.

The summary traffic data is contained within Appendix 8A.

A schematic for the routes for which traffic data have been provided is presented in Figure 9-4 below.

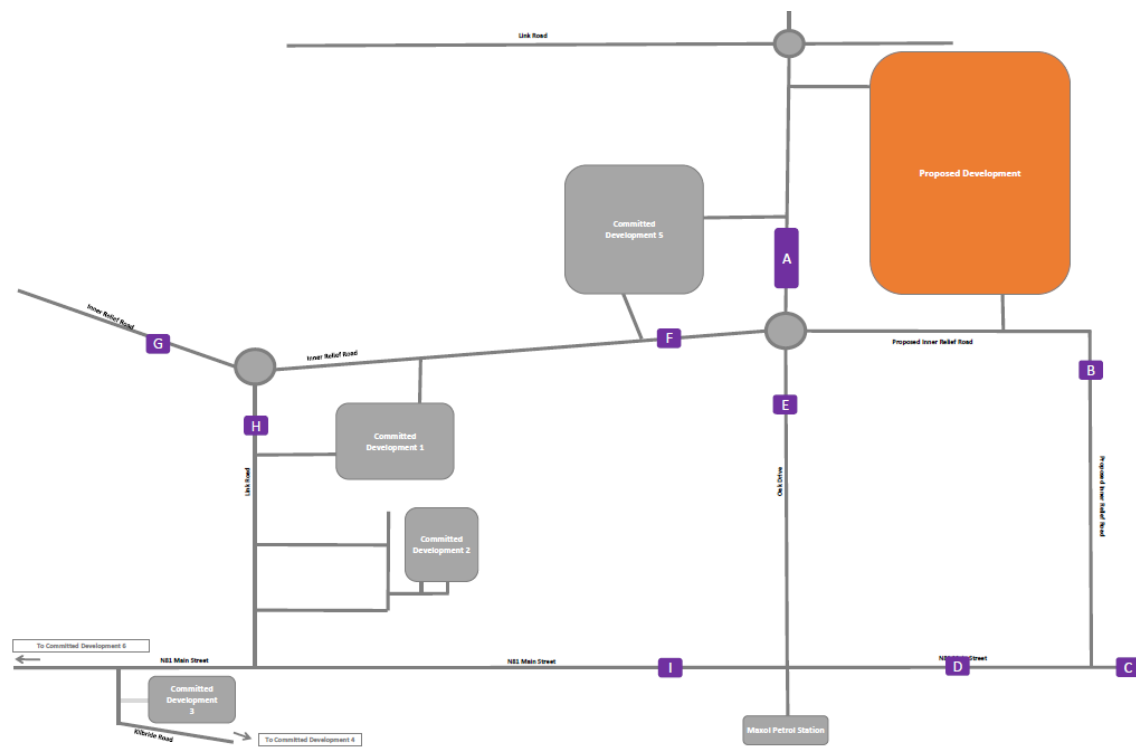


Figure 9-4: Routes Schematic

The key for the routes is as follows:

- A - Oak Drive West (to Blessington No. 1 School)
- B - Proposed extension of the BIRR
- C - N81 north of Blessington and proposed junction with B
- D - N81 north of Blessington and south of proposed junction with B to junction with Oak Drive east (E)
- E - Oak Drive east to existing roundabout junction with the existing BIRR (F)
- F - Existing BIRR north from junction with Downshire Park Road (H) to junction with E and A

G - Southern section of existing BIRR from Naas Road in the south linking to junction of F and H

H- Downshire Park Road west from the N81 to junction with F (existing BIRR)

I – N81 through Blessington town from junction with H to the south and D to the north

Noise prediction models have been prepared for the Existing Baseline, DMOY2026, DSOY2026, DMFY 2041 and DSFY2041. The output from the models as noise contours for the L_{den} parameter are contained in Appendix 9A. The L_{night} contours for DSFY2041 are also contained in Appendix 9A.

In addition, the changes in AADT on existing routes between the DM and DS scenarios are summarised in Table 9-18 below as part of the assessment of traffic noise impact:

Table 9-18: Comparison of DS and DM AADT on Existing Routes

Existing Route	Baseline 2023	DMOY 2026	DMFY 2041	DSOY 2026	DSFY 2041	Difference Between DMOY2026 and DSOY 2026	Difference Between DMOY 2026 and DSFY2041	% Difference Between DMFY2041 and DSFY 2041
A	2,650	3,105	3,451	4,533	4,879	+45.99	+57.13	+41.38
C	12,194	14,609	16,201	15,579	17,172	+6.64	+17.54	+5.99
D	12,194	14,609	16,201	12,349	13,732	-15.47	-5.87	-15.24
E	4,619	6,153	6,756	4,389	4,853	-28.67	-21.13	-28.17
F	5,580	6,832	7,561	7,738	8,522	+13.26	+24.74	+12.71
G	6,759	7,705	8,588	8,722	9,676	+13.20	+25.58	+12.66
H	2,960	3,457	3,844	3,583	3,969	+3.64	+14.81	+3.25
I	10,570	11,595	12,976	10,998	12,308	-5.15	+6.15	-5.15

A difference of 25% approximately equates to 1 dB for road traffic noise. This percentage change is referenced in the TII Guidelines (2004 & 2014) when considering route selection options for proposed national road schemes.

In addition to the TII Guidelines (2004 & 2014), the UK LA111 document offer guidance in relation to the scoping of more detailed traffic noise assessment. The following criteria are applied:

1. Is the project likely to cause a change in the baseline noise level of 1 dB $L_{A1018,hr}$ in the DSOY compared to the DMOY?
2. Is the project likely to cause a change in the baseline noise level of 3 dB $L_{A1018,hr}$ in the DSFY compared to the DMOY?
3. Does the project involve the construction of new road links within 600m of existing NSLs?
4. Would there be a reasonable stakeholder expectation that an assessment would be undertaken?

Taking account of the above and predicted % change in AADT on existing links it is clear that a more detailed assessment is required as a new route B will be introduced and the changes on existing route A between the DMOY and the DSOY (Column 7 in Table 9-20) are greater than 25%. However, changes on other routes equate to <1 dB.

For completeness (and to also identify acoustic design requirements for the proposed residential element), the traffic noise model was developed to include all routes.

The UK LAN111 document also offers guidance as to the likely noise impact magnitude of short-term medium term and long-term change due to operational traffic. Short term medium term is defined as noise change between the DMOY and the DSOY as set out in Table 9-19.

The magnitude of long-term change as set out in Table 9-20 is determined on the basis of change between the DMOY and the DSFY e.g.15 years after opening year.

Table 9-19: Magnitude of Change Short to Medium Term Traffic

Noise Change (dB $L_{A10.18hr}$ or L_{night})	Magnitude	Corresponding Effect
Greater than or equal to 5.0	Major	Significant
3.0-4.9	Moderate	Significant
1.0-2.9	Minor	Not significant
Less than 1	Negligible	Not significant

Column 7 of Table 9-18 indicates the % changes in AADT between the DMOY and DSOY. Excluding routes A and E, the changes equate to < 1 dB and therefore short to medium term negative negligible on routes C, F, G and H. Routes D and I are short to medium term negligible positive. Route A is short to medium term minor negative. Route E is short to medium term minor positive.

Table 9-20: Magnitude of Change Long Term Traffic

Noise Change (dB $L_{A10.18hr}$ or L_{night})	Magnitude	Corresponding Effect
Greater than or equal to 10.0	Major	Significant
5.0 – 9.9	Moderate	Significant
3.0-4.9	Minor	Not significant
Less than 3	Negligible	Not significant

Column 8 of Table 9-18 indicates the % changes in AADT between the DMOY and DSFY. The long-term changes to Routes D and E will be negligible positive, to Routes C, F, G, H and I negligible negative and to Route A minor negative.

Based on the criteria in Tables 9-19 and 9-20, the effects will not be significant at NSLs close to existing routes. The predicted traffic noise contours set out in Appendix 9A further indicate no significant changes as described above for NSLs on existing routes.

However, the following NSLs will experience an increase in road traffic noise levels, as a result of the construction of the new extension as currently they are set back and/or screened from existing routes:

Table 9-21: Existing NSLs Expected to Experience an Increase in Traffic Noise Levels (L_{den})(dB(A))

Location	DMOY 2026	DSOY 2026	DSFY2041	Increase in dB between DMOY & DSOY 2026	Increase in dB between DMOY & DSFY2041
13 – 27 Woodleigh Grove	45-50	50-55	50-55	Major	Moderate
24 – 32, 40 Woodleigh Way	45-50	50-55	50-55	Major	Moderate
32-39 Woodleigh Avenue	45-50	50-55	50-55	Major	Moderate
Rear Façade of Detached House on Red Lane Grid Ref. 298425E; 215127	45-50	50-55	50-55	Major	Moderate

Based on the UK LAN111 document, the effects are deemed to be significant. These effects are to be expected where a new road is introduced, however it is noted that in the future, further development may occur between existing NSLs and the route which will serve to screen traffic noise to existing NSLs. It should also be noted that the predicted absolute future noise levels are not excessively high.

No existing NSLs satisfy all 3 conditions for noise mitigation as defined by the TII Guidelines as follows:

- The combined expected free-field maximum traffic noise level, i.e. the relevant noise level from the proposed road and traffic noise from existing roads in the vicinity is greater than the absolute design goal of 60 dB L_{den} specified in the TII Guidelines;
- The relevant noise level is at least 1 dB more than the expected traffic noise level without the proposed road in place;
- The contribution to the increase in the relevant noise level from the proposed road development is at least 1 dB.

(It should be noted that the proposed road will have a low noise surface which has already been accounted for in the traffic noise predictions).

9.5.3.2 Future Residential Noise Exposure Considerations

Noise can have a significant effect on the health and well-being of individuals and communities. Therefore, noise is a material consideration in the planning process and a key aspect of sustainable development. This is recognised in the Noise Action Plan as discussed earlier in Section 9.4.1.1. The Plan makes reference to the UK ProPG: Planning & Noise, New Residential Development, May 2017 which is a guidance document now widely used to provide a methodology to assess the potential for transportation noise exposure risk future residents. This document outlines a systematic risk based 2 stage approach for evaluating noise exposure on prospective sites for residential development.

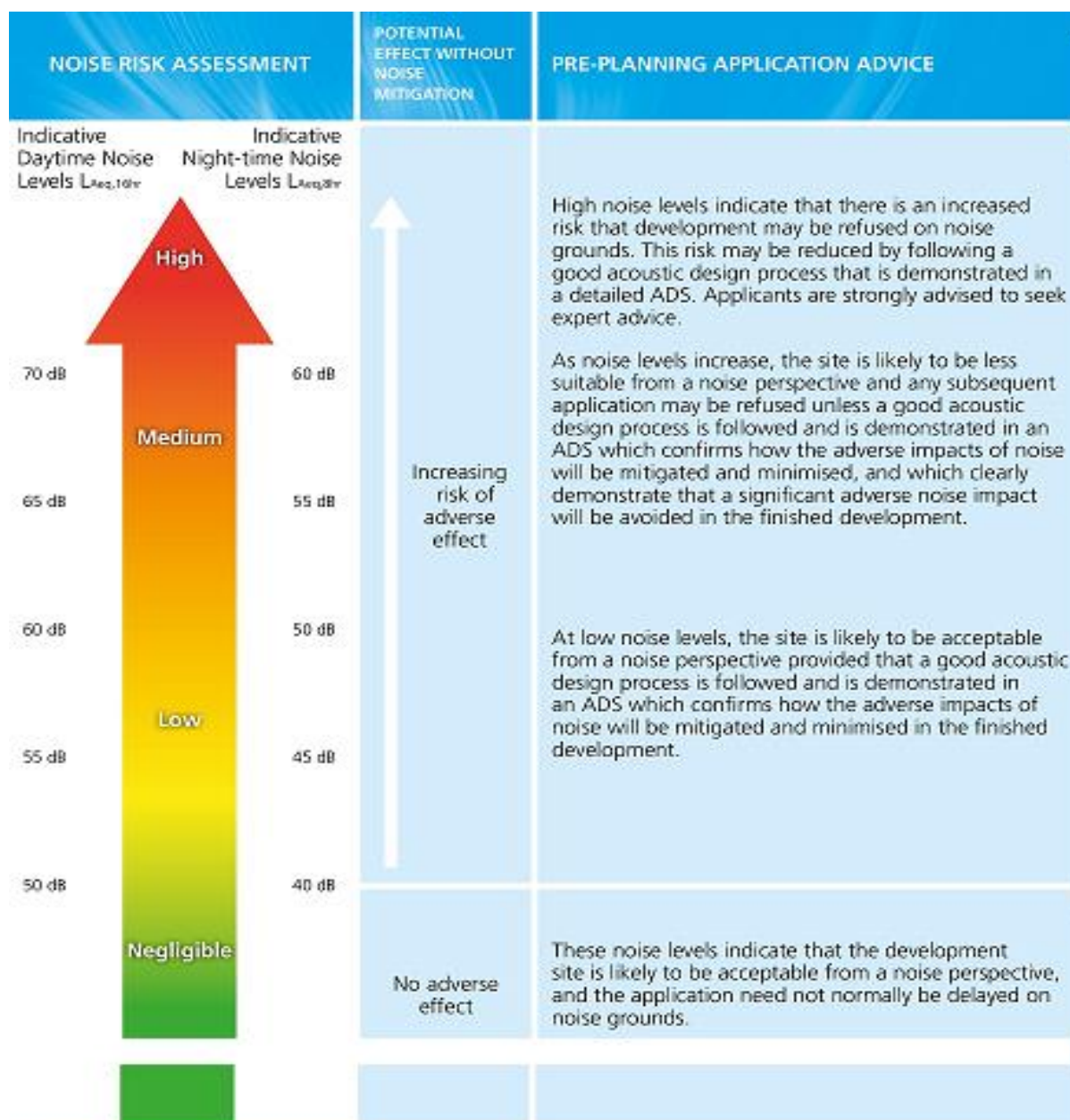
Stage 1 comprises an initial noise risk assessment of sites proposed for residential development considering either measured and/or predicted noise levels. A site is then characterised as negligible to high risk in terms of exposure to noise of future residents. A full stage 2 assessment including implementing a good acoustic design process is triggered depending on the existing ambient

noise/predicted future transportation noise environment and findings of the Stage 1 Noise Risk Assessment.

Figure 9-5, as shown overleaf, is taken from the UK ProPG Guidance and illustrates the potential noise exposure risk relative to indicative daytime ($L_{Aeq,16hr}$) and night-time ($L_{Aeq,8hr}$) noise levels.

ProPG requires that the site be assessed for noise exposure risk without any potential screening from existing buildings or structures (within the site) that do not form part of the proposed Development. Based on the site visits and the monitoring undertaken, the noise risk exposure of the site is currently classified as negligible to low as it is set back from any major roads or highly trafficked local routes with the exception of the lands in very close proximity to Oak Drive west and the existing roundabout junction of Oak Drive and the existing BIRR. Refer to Table 9-5 earlier for baseline monitoring results).

As required by Pro-PG, the risk assessment has regard to any reasonably foreseeable changes in existing and/or new sources of noise. The output from the traffic noise model for DSFY 2041 in terms of $L_{Aeq,16hr}$ and L_{night} across the LRD lands was prepared. Under this scenario, the majority of the site continues to fall under a negligible to low risk rating but approaching a low to medium risk rating closer to the roads.

**Figure 1 Notes:**

- Indicative noise levels should be assessed without inclusion of the acoustic effect of any scheme specific noise mitigation measures.
- Indicative noise levels are the combined free-field noise level from all sources of transport noise and may also include industrial/commercial noise where this is present but is "not dominant".
- $L_{Aeq,10hr}$ is for daytime 0700 – 2300, $L_{Aeq,8hr}$ is for night-time 2300 – 0700.
- An indication that there may be more than 10 noise events at night (2300 – 0700) with $L_{Amax,F} > 60$ dB means the site should not be regarded as negligible risk.

Source: UK ProPG: Planning & Noise, New Residential Development, May 2017

Figure 9-5: Stage 1 Risk Assessment

9.5.3.3 Internal Noise

Appropriate guidance in relation to noise intrusion in residential and other buildings is contained within BS8233:2014 – *Guidance on Sound Insulation and Noise Reduction for Buildings*. This British standard sets out recommended noise limits for indoor ambient noise levels and takes account of guidelines issued by bodies such as the WHO. Details taken from the standard are presented in Table 9-22 below.

Table 9-22: Recommended Indoor Ambient Noise Levels

Criteria	Typical Situation	Design Range $L_{Aeq, T}$	
		07.00-23.00	23.00 -07.00
Resting	Living Room	35 $L_{Aeq, 16hr}$	-
Dining	Dining Room	40 $L_{Aeq, 16hr}$	-
Sleeping (daytime resting)	Bedroom	35 $L_{Aeq, 16hr}$	30 $L_{Aeq, 8hr}$ 45 $L_{Amax, f*}$

Source: BS8233:2014 and Pro-PG

Column 4 in the table above includes for an additional $L_{Amax, f}$ value as per Pro-PG guidelines. The following is noted in this regard:

Note 4:



Regular individual noise events (for example scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax, f}$ depending on the character or number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night time (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB $L_{Amax, f}$ more than 10 times a night.



The site is currently not affected by individual transportation noise events during the night of any significance.

Pro-PG also notes the following with regards to achieving internal target levels:

Note 5:



Designing the site layout and the dwellings so that the internal target levels can be achieved with open windows in as many properties as possible, demonstrates good acoustic design. Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the open position, and, in this scenario, the internal L_{Aeq} target values subject to the further advice in Note 7.



The above has been taken into account and is discussed further overleaf.

Note 7:



Where development is considered necessary or desirable, despite external noise levels above WHO Guidelines, the internal L_{Aeq} target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.



Taking account of a 10 -15 dB reduction of external noise levels to internal across a partially open window, the following external noise levels apply:

Table 9-23: Derived External Ambient Noise Levels

Internal Condition	$L_{Aeq,16hr}$ (dB)	$L_{Aeq,8hr}$ (dB)
Good	50 - 55	45
Reasonable	55 - 60	50

The criteria for good internal conditions are applicable to the proposed Development lands and do not need to be relaxed taking account of location.

Based on the future predicted traffic flows (DSFY 2041) it is expected that the majority of units will meet the recommended good internal daytime ($L_{Aeq,16hr}$) conditions with partly opened windows with the exception of 5 units in the apartments on the eastern façade (A13.2 – A13.6) and 12 housing units south facing facades along Oak Drive (A1.12 – 14, A8.1, A8.29 – 30, A9.22 – 24, A10.1 and A10.29-30) where reasonable as opposed to good daytime conditions will be met with open windows.

During the night-time, the majority of units are expected to meet good internal conditions with partially open windows. The following units will not meet good to reasonable internal night-time conditions with partially open windows:

- 6 apartment units east facing facades (A13.1 – 6), 6 duplexes south facing facades (A14.1, 3,5,7,9,11) and 3 duplexes north facing facades (A14. 8,10,12).
- 20 housing unit facades facing onto Oak Drive west. These units are (A1.12 – 14, A8.1 – 2, A8.29-30, 29-30, A9.21 – 24, A10.1-2, A10.25 – A10.30).

The following section sets out how the good internal criteria can be achieved for all units with closed windows.

Glazed Elements and Ventilation

This section outlines the building envelope requirements based on the traffic noise predictions for DSFY2041 $L_{Aeq,16hr}$ and L_{night} . Refer to Appendix 9A for noise contours @4m. Window, wall, glazing, roof and ventilation specifications have been determined to achieve the recommended good internal noise level criteria as set out in Table 9-22 for the proposed Development. The specification has been determined in accordance with EN ISO 12354-3: 2017 based on the predicted façade day and night noise levels, the room and facade dimensions from the drawings provided by the design team.

The glazed elements and ventilation openings are typically the acoustically weakest elements of any façade. The required sound insulation performance of the façade glazed elements and ventilation openings is outlined in Table 9-24 below.

It is required that the glazing, frame and seals as a whole achieve the performance when the window is in the closed position. The performance requirements outlined in Table 9-24 below are considered to provide adequate sound insulation to achieve the relevant day and night internal design goals respectively.

Table 9-24: Sound Insulation Performance Requirements for Glazed Elements and Ventilation

Façade	Glazed Elements (Frame & Glazing) Sound Insulation Requirements (Indicative requirements equal or approved)							Façade Ventilation Requirement
	Octave Band Frequency Requirements ¹						Glazing Acoustic Performanc e R_w	
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz		
GREEN	21	20	26	35	37	30	31	33dB $D_{n,e,w}$ ²
BLUE	Standard Double Glazing ¹							30dB $D_{n,e,w}$ ²

- 1) Standard double glazing assumes a construction of two panes of 3mm glass with a 10mm cavity achieving a minimum 29dB R_w , equal or approved.
- 2) Natural ventilation assumed throughout. Should this change to mechanical ventilation the above specification may be reduced. Assumes vent is in the closed position. An acoustic consultant should be engaged to assess the level of reduction appropriate to maintain the internal noise level criteria.
- 3) The calculation assumes a maximum of 1 ventilation opening per room at the above specification.

It is important to note that the requirements outlined above are minimum requirements for the glazed element as a whole. The octave band values are indicative and specific to the assessed glazing type, equal or approved to meet the minimum project requirements is acceptable.

For the purposes of this assessment, it has been assumed that ventilation will be provided via natural ventilation system. Typically, the use of a natural ventilation strategy will lead to an enhanced glazing specification compared to a sealed mechanical ventilation system. This assessment is based on the windows in closed position and the natural vents in the open position. It should be noted that the above façade specification for glazing and ventilation units is intended for the purpose of habitable spaces and is not a requirement for WCs and communal space corridors. The marked-up performance requirements for the proposed Development is indicated below in Figures 9-6 to 9-8.



Figure 9-6: Glazed Elements Specification

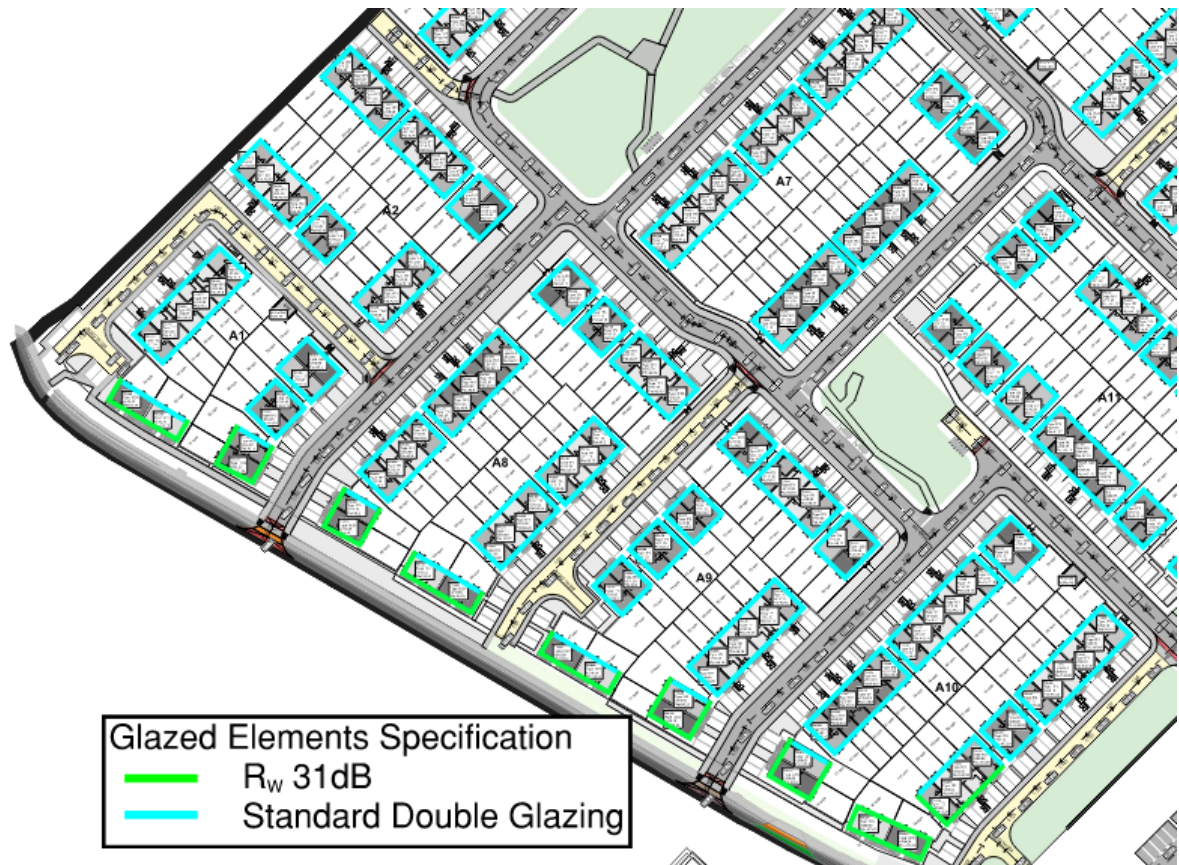


Figure 9-7: Glazed Elements Specification

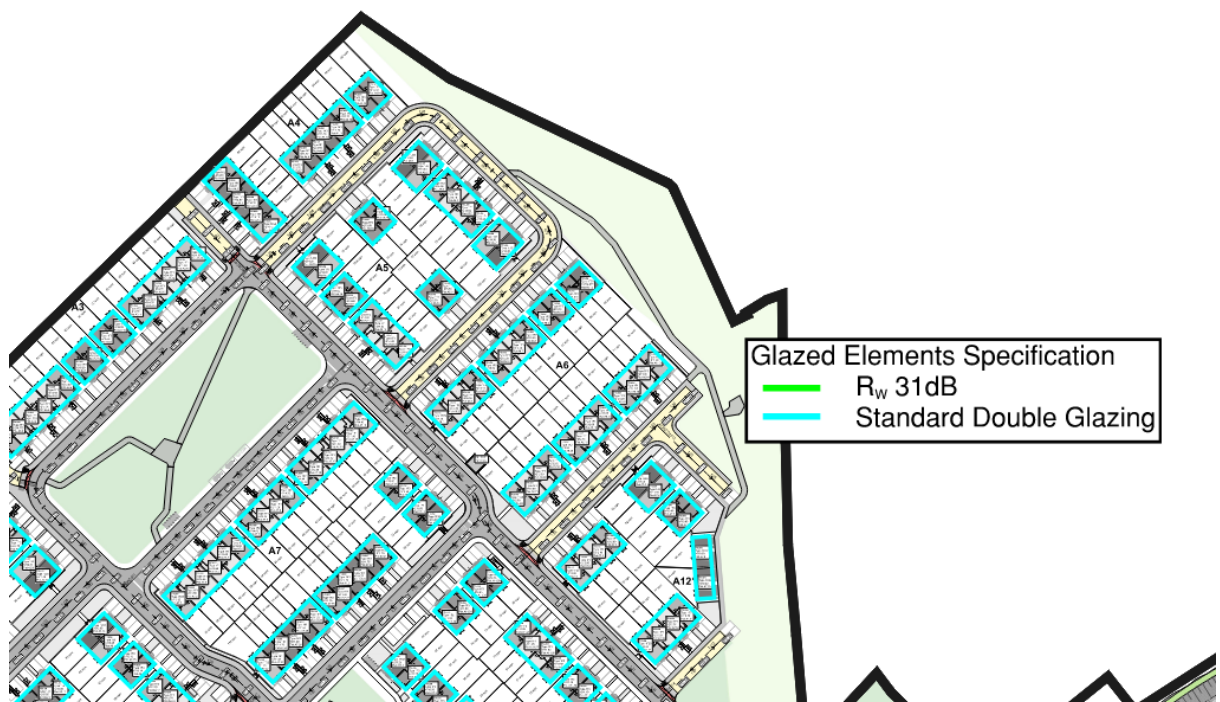


Figure 9-8: Glazed Elements Specification

External Wall Construction

The façade wall construction has been assumed to achieve a sound insulation performance of 55dB R_w . Typical façade construction such as concrete, blockwork, timber frame and brick offer high levels of sound insulation and will meet this requirement.

Roof Construction

The roof construction has been assumed to achieve a sound insulation performance of 50dB R_w . Any skylights and glazing in the roof system inside habitable spaces should be of standard double-glazed construction to meet a minimum of 29 dB R_w . If there are any skylights to habitable bedrooms, the glazing specification should match the façade requirements outlined in Table 9-24 and marked up above.

9.5.3.4 External Noise

BS8233:2014 states that:



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 $L_{Aeq,16hr}$



ProPG goes further to extend the advice contained within BS8233:2014 to include:



Whether or not external amenity spaces are an intrinsic part of the overall design, consideration of the need to provide access to a quiet or relatively quiet external amenity space forms part of a good acoustic design process.



Based on the predicted traffic noise contours for DSFY2041 $L_{Aeq,16hr}$, it is expected that the majority of gardens, apartment and duplex private open space and all of the public open space proposed will comply with the ideal range 50 -55 dB $L_{Aeq,16hr}$.

The balconies on the east façade of the apartment block, units (A13.2 – 6) will not meet the ideal range and are predicted to be in the 55 – 60 $L_{Aeq,16hr}$. However, there is ample external public space meeting the range that is part of the overall design, thus meeting the requirements of good acoustic design.

The gardens associated with housing units A1.12, A8.1, A9.22, A10.1 will partly meet the ideal range. Assuming, as expected, that the boundary treatment to these gardens facing the road will achieve a minimum surface density of 10kg/m², it is considered that the ideal external range will be met throughout these gardens.

9.6 Cumulative Impacts

9.6.1 Construction Phase

As noted earlier, potential construction impacts at NSLs are greatest within 40m of development works, after which they reduce as noise attenuates over distance. As addition of sources is logarithmic, the highest contributing sources i.e. generally those at close distances to NSLs predominate and tend to define the noise impact magnitude.

There is potential for overlap of the proposed Development construction phases and adjoining permitted Developments as indicated on Figure 9-9 below:



Figure 9-9: Committed Development

Table 9-25: Committed Development

Site	Details
1	WCC201146 – Cairn Homes Ltd. (Sorrel Wood) - residential development, townpark and greenway under construction
2	WCC20184 & 20362 – Glenveagh Homes, nursing care home, residential development and creche in 2 phases. Not under construction at present.
3	WCC191020 – Glengolden Builders – apartment residential development.
4	WCC19940 – Downshire Lodge Nursing Home and Downshire Lodge Place Independent Living Ltd – Demolition and conversions works to include a nursing home, café and offices at former Downshire Hotel
5	WCC 20108 – Blessington Rectory SPV – 45 residential units.

Committed Development Site 1 is currently under construction and will be substantially completed in the near future. It is feasible that the other committed sites may be developed at the same time as the proposed Development. However, the intervening distances between these sites and the proposed Development will ensure that no significant cumulative effects on existing NSLs (and if complete NSLs in committed Development Site 1) will occur.

Overlapping between phases within the proposed Development has also been considered. Phase 1 will be undertaken at the same time as the proposed road extension. However, due to distance, the cumulative impact magnitude is expected to be the same at Woodleigh as described earlier under Section 9.5.1.2.

9.6.2 Operational Phase

The cumulative short to medium and long-term traffic noise impacts have been identified earlier in Section 9.5.3.1.

9.7 Mitigation Measures

9.7.1 Construction Phase

The following noise and vibration management measures will apply to the proposed Development to ensure the daytime threshold values specified in this chapter are complied with:

- A Site Representative will be appointed for matters related to noise and vibration.
- Any complaints received will be thoroughly investigated.
- A written complaints log will be maintained by the Site Representative. This will, at a minimum, record complainant's details (where agreed) the date and time of the complaint, details of the complaint including where the effect was observed, corrective and preventative actions taken and any close-out communications. This will ensure that the concerns of local residents who may be affected by site activities are considered during the management of activities at the site.
- Noise monitoring with capability for real-time review both on-site and remotely will be conducted at the boundary with nearby NSLs when works are planned in close proximity including Woodleigh, Blessington No.1 School and Deerpark Walk.
- In the event of meeting or exceedance of the threshold values at NSLs, works will be ceased and measures implemented immediately to ensure that the limits are complied with.
- Temporary acoustic screening or hoarding will be placed along the boundaries of the residential site. As a general rule of thumb, it is recommended that temporary screening break the "line of sight" from the sources to the lower windows of the nearest NSLs where possible.
- The road element will be linear in nature and works will move on relatively quickly from one area to the next. It may be difficult to screen the upper floors of the duplexes in Woodleigh Grove and Way. Therefore, measures such as the use of low noise plant and/or the use of enclosures will be chosen to minimise construction noise impact.
- The operation of certain pieces of equipment, where substitution, enclosure etc. cannot be carried out will be managed through monitoring and timing of use to ensure that noise levels remain below the threshold values/criteria specified.
- During the construction phase all equipment will be required to comply with noise limits set out in EC Directive 2000/14/EC and the 2005/88/EC amendment on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors. The directive covers equipment such as compressors, welding generators, excavators, dozers, loaders and dump trucks.
- Haul routes will be placed away from Woodleigh to ensure that transient vibrations associated with HGVs operating on uneven surfaces are minimised.
- As a precautionary measure and as part of good practice, vibration monitoring will be carried out where works such as the use of rollers are in close proximity to Woodleigh.

The outline CEMP submitted with this application will include the noise and vibration management measures listed above.

9.7.2 Operational Phase

Existing NSLs

The proposed Development incorporates a low noise road surface as part of the finish on the proposed extension to the BIRR.

Future Residents

- The window supplier shall provide laboratory tests confirming the airborne sound insulation performance in the absence of suitable laboratory data a composite sound reduction index calculation undertaken by a suitably qualified acoustic consultant can be used to demonstrate compliance.
- Should the ventilation strategy change, an acoustic specialist shall be commissioned to review the glazing and ventilation grills specifications. A conservative estimate of requirements has been specified in this chapter.
- Balustrades on balconies for the apartment units (A13.1 – 6) shall be as high as possible to improve usability from a noise perspective. The balustrades shall be made from a solid material (surface density 10 kg/m²) with no gaps in the construction where possible, taking account of other requirements such as adequate daylight to apartments.
- Boundary treatment to gardens associated with units (A1.12, A8.1, A9.22, A10.1) shall be made from a solid material (surface density 10 kg/m²) with no gaps in the construction where possible.

9.8 Residual Impacts

9.8.1 Construction Phase

Construction noise arising from the proposed Development will cause a temporary to short term elevation of ambient sound levels in the vicinity of the existing NSLs at times especially when works are *close to the boundary*, but this will be controlled by mitigation measures to below the threshold values specified in this chapter for construction works. The threshold values, by necessity, are higher than existing ambient levels as construction works are temporary to short term in nature. Therefore, the construction phase activities are not expected to constitute a likely significant negative effect. As works move away from NSLs and/or as new buildings provide screening, it is expected that construction noise levels will reduce to below standard limit values for the majority of the duration of the total works.

Construction traffic accessing the proposed works will have at most, a likely minor short-term non-significant negative effect on Sorrel Wood (if occupied). Effects on other NSLs are not expected.

The cumulative effects are as described above.

9.8.2 Operational Phase

Existing NSLs

An assessment of the traffic noise impact associated with the proposed extension of the BIRR has been undertaken. The predicted changes in traffic noise levels at existing NSLs e.g. Deerpark, Glenview,

Hazelwood, dwellings off the N81 including permitted developments in the vicinity of existing routes range from negligible negative to minor positive in the short to medium term and from negligible negative to minor positive in the longterm. The effects are therefore not significant.

Existing NSLs with facades facing towards the proposed extension such as duplexes in Woodleigh Grove and Way, 2 storey houses in Woodleigh Avenue and an existing detached dwelling on Red Lane will experience changes in traffic noise levels that are rated as short to medium term major negative, reducing to moderate negative in the longterm. This is because these dwellings are currently set back from the N81 and Oak Drive. The predicted road traffic noise levels are not excessively high, however, the proposed extension represents a new traffic noise source in proximity to these NSLs. A low noise road surface is proposed as part of the design and has been accounted for in the magnitude ratings. It is noted that new development may be built in the intervening areas between the proposed extension and existing NSLs however at this juncture the effects are deemed to be significant.

No existing NSLs satisfy all 3 conditions for noise mitigation as defined by the TII Guidelines as follows:

- The combined expected free-field maximum traffic noise level, i.e. the relevant noise level from the proposed road and traffic noise from existing roads in the vicinity is greater than the absolute design goal of 60 dB L_{den} specified in the TII Guidelines;
- The relevant noise level is at least 1 dB more than the expected traffic noise level without the proposed road in place;
- The contribution to the increase in the relevant noise level from the proposed road development is at least 1 dB.

Future NSLs

The site of the proposed residential element is currently classified as negligible to low in terms of transportation noise exposure risk for future residents. The same classification applies in future years with the new road in place and expected growth in traffic with the exception of small areas of the site in proximity to roads which will approach a low to medium risk rating.

Based on the future predicted traffic flows (DSFY 2041) it is expected that the majority of units will meet the recommended good internal daytime ($L_{Aeq,16hr}$) conditions with partly opened windows with the exception of 5 units in the apartments on the eastern façade (A13.2 – A13.6) and 12 housing units south facing facades along Oak Drive (A1.12 – 14, A8.1, A8.29 – 30, A9.22 – 24, A10.1 and A10.29-30) where reasonable as opposed to good daytime conditions will be met with open windows.

During the night-time, the majority of units are expected to meet good internal conditions with partially open windows. The following units will not meet good to reasonable internal night-time conditions with partially open windows:

- 6 apartment units east facing facades (A13.1 – 6), 6 duplexes south facing facades (A14.1, 3,5,7,9,11) and 3 duplexes north facing facades (A14. 8,10,12).
- 20 housing unit facades facing onto Oak Drive west. These units are (A1.12 – 14, A8.1 – 2, A8.29-30, 29-30, A9.21 – 24, A10.1-2, A10.25 – A10.30).

Designing the site layout and dwellings so that the recommended internal criteria can be achieved with open windows in as many properties as possible demonstrates good acoustic design.

In addition, the building envelopes have been assessed and mitigation is specified in this chapter to ensure the recommended good internal conditions are met with closed windows and open natural vents in all units.

Based on the predicted traffic noise contours for DSFY2041 $L_{Aeq,16hr}$, it is expected that the majority of gardens, apartment and duplex private open space and all of the public open space proposed will comply with the ideal range 50 -55 dB $L_{Aeq,16hr}$.

The balconies on the east façade of the apartment block, units (A13.2 – 6) will not meet the ideal range and are predicted to be in the 55 – 60 $L_{Aeq,16hr}$. However, there is ample external public space meeting the range that is part of the overall design, thus meeting the requirements of good acoustic design.

The gardens associated with housing units A1.12, A8.1, A9.22, A10.1 will partly meet the ideal range. Assuming, as expected, that the boundary treatment to these gardens facing the road will achieve a minimum surface density of 10kg/m², it is considered that the ideal external range will be met throughout these gardens.

9.9 Monitoring

The contractor will be required by contractual obligation to ensure construction activities operate within the noise threshold values and vibration limits set out within this assessment. The contractor will be required to undertake real-time noise and vibration monitoring at locations representative of the closest NSLs to ensure that construction noise and vibration is maintained below the relevant threshold values.

9.10 Difficulties Encountered

Delays in completing baseline monitoring occurred due to weather conditions however this did not prevent the collation of representative data.

Site specific topographical mapping and building heights was not available for areas outside the red-line boundary, however Google Maps was used to provide further detail for build-up of the 3D traffic noise prediction model. Details on building uses and height estimates were also collated during the site visits. The model was validated against the baseline monitoring to ensure predictions were as accurate as possible.

9.11 References

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- UK Highways Agency (2020) Design Manual for Roads and Bridges, Sustainability and Environmental Appraisal, LA11, Noise and Vibration, Rev 2.
- UK Working Group comprising Acoustics and Noise Consultants (ANC), Institute of Acoustics (IOA) and Chartered Institute of Environmental Health (CIEH) (2017) ProPG: Planning & Noise, New Residential Development.
- Wicklow County Council (2019) Noise Action Plan, 2018 –2023, Version 1.
- World Health Organisation (WHO) (2018) Environmental Noise Guidelines for the European Region.

10. LANDSCAPE AND VISUAL ASSESSMENT

10.1 Introduction

This Landscape and Visual Impact Assessment (LVIA) describes the landscape at the location of the proposed development in Blessington, Co. Wicklow, and assesses the likely impacts of the proposed development on landscape and visual amenity.

10.1.1 Expertise

This assessment has been prepared by Jamie Ball, Senior Landscape Architect, BA Landscape Architecture (University of Gloucestershire), 1998; MLI, of Cunnane Stratton Reynolds, with oversight by Declan O’Leary, Director, B.Agr.Sc. (Land Hort) UCD 1986; Post Grad Dip in Landscape Architecture (University of Central England 1993); MLI; of Cunnane Stratton Reynolds. Declan has over 30 years’ experience in the design and analysis of landscape and the impacts of change, and the preparation of assessments for inclusion EIAR.

10.2 Assessment Methodology

10.2.1 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.

10.2.2 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 of 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, including the management of water and more extreme weather and rainfall patterns, is part of this.

10.2.3 Guidance

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 Assessment Reports, May 2022, published by the Environmental Protection Agency (EPA) (hereafter referred to as the 'EPA guidelines').
- The Wicklow County Development Plan 2022-2028.

The GLVIA (3rd Edition) outlines the assessment process, which combines judgements on the sensitivity of the resource and the magnitude of the change which it will undergo as a result of the proposed development. These are then combined to reach an assessment of the importance (or significance) of the effect. This guidance is authored by the Landscape Institute in the UK and the IEMA which contains a network of members in UK and Ireland and internationally. The guidance was prepared within the parameters of relevant EU directives at the time and is updated where necessary by Landscape Institute bulletins online. The GLVIA 3rd edition is used internationally and is the industry standard for LVIA in Ireland.

The EPA guidance (2022) refers to the use of topic specific guidance and specifically references the GLVIA 3 in relation to professional judgement. 3.7.2 Documenting the Process recognises that:

"Some uncertainty is unavoidable in EIA, especially about matters that involve an element of judgement, such as assigning a level of significance to an effect. Such judgements should be explicit and substantiated rather than presented as objective fact. This is best done using agreed referable approaches, e.g. the Guidelines on Landscape and Visual Impacts Assessment provide guidance on what constitutes a severe visual effect".

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, as well as a proposed road and public park. '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.

10.2.4 Methodology for Landscape Assessment

In Section 10.5 of this Chapter, the landscape effects of the proposed 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.

Definitions and descriptions of sensitivity, magnitude of change and quality and longevity of effects are derived from the GLVIA. The GLVIA does not set out specific definitions of descriptions used but contains key widely used principles and case studies / examples that are intended to inform a professional's methodology, supported by their experience and judgements in relation to landscape and landscape change. These descriptions expand and complement the EPA guidelines as intended in relation to topic specific guidance.

Sensitivity of the Landscape Resource

Landscape values can be identified by the presence of landscape designations or policies which indicate particular values, either on a national or local level. In addition, a number of criteria are used to assess the value of a landscape.

Landscape susceptibility is defined in the GLVIA as the ability of the landscape receptor to accommodate the proposed development without undue consequences for the maintenance of the baseline scenario and/or the achievement of landscape planning policies and strategies. Susceptibility also relates to the type of development – a landscape may be highly susceptible to certain types of development but have a low susceptibility to other types of development.

Sensitivity is therefore a combination of Landscape Value and Susceptibility.

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.

Table 10.1 Categories of Landscape Sensitivity

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 principal management objective for the area is protection of the existing character from change.
High	Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics. The 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 principal 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 principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change.
Low	Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character 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 principal 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 principal management objective for the area is to facilitate change in the landscape through development, repair or restoration.

Magnitude of Landscape Change

The magnitude of change is a function 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.

Table 10.2: 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.

10.2.4.1 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 provided in the EPA guidelines, namely: (1) imperceptible, (2) not significant, (3) slight, (4) moderate, (5) significant, (6) very significant, (7) profound.

The matrix in Table 10.3, below, is used as a guide only. Table 10.3 expands the number of classifications to a total of 25 classifications providing for more accuracy in describing the significance of effects and their relative or comparative value. 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 beneficial (positive), neutral or adverse (negative) (see definitions in Section 10.2.6). 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.

Table 10.3: Guide to Classification of Significance of Landscape Effects

Magnitude of change	Sensitivity of the landscape resource				
	Very high	High	Medium	Low	Negligible
Very high	Profound	Profound – very significant	Very significant – significant	Moderate	Slight
High	Profound – Very significant	Very significant	Significant	Slight - Moderate	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

10.2.5 Methodology for Visual Assessment

In Section 10.6 of this report, the visual effects of the proposed 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 proposed development.

Definitions and descriptions of sensitivity, magnitude of change and quality and longevity of effects are derived from the GLVIA. The GLVIA does not set out specific definitions of descriptions used but contains key widely used principles and case studies / examples that are intended to inform a professional's methodology, supported by their experience and judgements in relation to visual effects and landscape change. These descriptions expand and complement the EPA guidelines as intended in relation to topic specific guidance.

Table 10.4: Categories of Viewpoint Sensitivity

Magnitude of Change	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

Magnitude of Change	Description
	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.

10.2.5.1 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.

Magnitude of Change	Description
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.

10.2.5.2 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 10.3 above.

10.2.6 Quality & Timescale

10.2.6.1 Quality

The predicted impacts are also classified as beneficial (positive), neutral or adverse (negative). 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 follows:

- Adverse (Negative): 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 (Positive): Scheme 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.

10.2.6.2 Timescale

Impacts / effects are also categorised according to their longevity or timescale:

Table 10.5: Duration of Effects

Definition of duration of effects	
Duration	Description
CONSTRUCTION STAGE	
Temporary	Effects lasting one year or less*
OPERATIONAL STAGE	
Short Term	Effects lasting one to seven years

Definition of duration of effects	
Medium Term	Effects lasting seven to fifteen years
Long Term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years

* In this case construction is phased over 4 years across the Phase One or application site however in any given viewpoint or location construction may only be experienced for short period and across the overall site construction and operational stages may occur at the same time or overlap.

A summary of the combined assessment of the predicted landscape and visual effects is provided.

10.2.7 Desktop Research – Principal Data Sources

List principal data sources, guidelines, legislation. i.e.

- EPA Guidelines on information to be contained in Environmental Impact Statements (2022) (EPA, 2022) (the EPA Guidelines)
- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017) (the EU EIAR Guidance).
- 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');
- The Wicklow County Development Plan 2022-2028.

10.2.8 Monitoring, Surveys etc

No monitoring and/or surveys are required as part of this Landscape & Visual Impact Assessment.

10.2.9 Site Visit

Site visit and study area visit was carried out in September 2022 and June 2023.

10.2.10 Definition of Study area

According to Section 5.2 of the Guidelines for Landscape and Visual Impact Assessment (3rd Edition 2013):

“The study area should include the site itself and the full extent of the wider landscape around it, which the proposed development may influence in a significant manner.”

The study area extents for this LVIA derives from the balance between the nature of the site and the proposed development, in the context of peri-urban receiving environment (i.e. zones of transition from rural to urban land uses) that has been subject to settlement and cultivation for several centuries.



Figure 10.1: The 1km Study Area

Owing to the nature of the proposed development, there is a low capacity for significant impacts to arise beyond c. 500m from the site. However, out of an abundance of caution, a 1km study area will be used in this instance, but an emphasis will be placed on receptors within c. 500m of the site, as these are more/most likely to have the capacity to experience significant visual effects. It should not be inferred that the proposed development is unlikely to be visible from any location beyond the study area, but, more importantly, that the proposed development is unlikely to influence such receptors in a significant manner. Figure 10.1, above, sets out the extent of the 1km study area.

10.3 Characteristics of the Proposed Development

A brief description of the proposed development, which is also referred to as Blessington Demense West Phase 2 development, entails:

- 329 no. residential units.
- 10.65 ha Town Park.

- Extension of Blessington Inner Relief Road (BIRR) – approx. 700m long.
- All associated site and infrastructure works.

Key issues relating to landscape and visual impact include:

- The change from the existing semi-rural landscape in transition to a new built form, townscape and suburb.
- Building heights and their potential impact locally, as well as on the wider sensitive visual receptors / heritage sites.
- Impacts / loss of trees and hedgerows.
- Place-making in accordance with local policy and good practice.
- Interfaces with existing established residential areas and the wider town.
- New landscape structure, features and amenities / habitats including tree cover.

10.4 Baseline Description

This section sets out a review of landscape related Planning Policy as set out in the Wicklow County Development Plan and associated documents, and a description of the study area informed by desktop assessment.

The local planning and other policy in the Wicklow County Development Plan are reviewed, which identify development objectives and trends and also constraints on development, in terms of protections and sensitivities. Precedent planning decisions may be described if appropriate.

The receiving environment is described in terms of its character, physical characteristics and the various elements that make up the landscape, including cultural, recreational, residential, and other amenity values.

Cumulatively, this analysis informs a description of the landscape in terms of values that support its protection and conservation and/or its enhancement or change. This reflects best practice guidance under the GLVIA.

10.4.1 Relevant Planning Policy

10.4.1.1 Wicklow County Development Plan 2022 – 2028

The Wicklow County Development Plan 2022-2028 (hereafter referred to as Development Plan / The Plan) was adopted on 12th September 2022 by the Elected Members of Wicklow County Council.

The Development Plan contains a number of policies and objectives relating to landscape and protected views and prospects as well as zoning objectives.

Settlement Hierarchy (Chapter 3)

Chapter 3 covers Settlement Strategy for the county. In the settlement hierarchy for County Wicklow, Blessington is classified as Level 3 - Self Sustaining Growth Towns in the Core Region.

Level 3 Settlement Typology is described as *“Self-Sustaining Growth Towns with a moderate level of jobs and services – includes sub-county market towns and commuter towns with good transport links and capacity for continued commensurate growth to become more self-sustaining.”*

The Key Principles for Level 3 Towns include *“balanced growth, regeneration and revitalisation, compact growth, significant enhancement of employment opportunities, investment in sustainable transport and enhanced social infrastructure.”*

Tourism and Recreation (Chapter 11)

Chapter 11 of the Development Plan sets out a strategy for Tourism and Recreation recognising the unique assets that Wicklow offers. Strategic objectives include:

- CPO 11.29 In conjunction with Fáilte Ireland, to support the development of Bray, Wicklow-Rathnew, Arklow, Greystones - Delgany, Blessington, Baltinglass, Enniskerry, Kilcoole, Newtownmountkennedy, Rathdrum and Tinahely/ Shillelagh/Carnew (Southwest Wicklow) as tourism hubs.
- To ensure the effective management and enhancement of the appearance of the key settlements within the County.
- To protect Wicklow’s principal strengths and capitalise on the distinct tourism and recreational attractions that are on offer – scenic beauty, woodlands and waterways, coastal areas and beaches, and built and natural heritage.
- To preserve the character and distinctiveness of scenic landscape as described in the Landscape Categories of the County set out in Chapter 17.

Built Heritage (Chapter 8)

Chapter 8 Built Heritage includes a range of policies and objectives to preserve and protect Archaeological Heritage, Architectural Heritage and Vernacular Heritage including structures, items and places of historical and cultural heritage.



Figure 10.2: Extract of NIAH map showing protected structures

Architectural / Archaeological Heritage

Wicklow has a significant archaeological heritage, which provides a valuable cultural, educational and tourism resource. There are some national monuments located within the extent of the client's holding but outside the application site boundary.

The Downshire Demesne / Blessington Demesne is a former historical demesne in Wicklow / Ireland. A number of protected structures are spread out within the site and in the wider environs.

Relevant Objectives include:

CPO 8.2 No development in the vicinity of a feature included in the Record of Monuments & Places (RMP) or any other site of archaeological interest will be permitted which seriously detracts from the setting of the feature or which is seriously injurious to its cultural or educational value.

CPO 8.3 Any development that may, due to its size, location or nature, have implications for archaeological heritage (including both sites and areas of archaeological potential / significance as identified in Schedules 08.01 & 08.02 and Maps 8.01 & 8.02 of this plan) shall be subject to an archaeological assessment. CPO 8.4 To require archaeological assessment for all developments with the potential to impact on the archaeological heritage of riverine, intertidal or sub tidal environments.

CPO 8.5 To facilitate new or improved public access to and erection of appropriate interpretive signage at National Monuments, archaeological sites, castles, sites of historic interest and archaeological landscapes in State or private ownership, as identified in Schedule 08.02 and Map 8.02 of this plan, in co-operation with landowners.

CPO 8.10 To protect, conserve and manage the built heritage of Wicklow and to encourage sensitive and sustainable development to ensure its preservation for future generations.

CPO 8.11 To support the work of the National Inventory of Architectural Heritage (NIAH) in collecting data relating to the architectural heritage, including the historic gardens and designed landscapes, of the County.

CPO 8.13 To ensure the protection of all structures, items and features contained in the Record of Protected Structures.

CPO 8.15 All development works on or at the sites of protected structures, including any site works necessary, shall be carried out using best heritage practice for the protection and preservation of those aspects or features of the structures / site that render it worthy of protection.

Landscape Character (Chapter 17)

All locations designated as 'settlements' in the County settlement hierarchy are considered 'Urban Areas'. The proposed site falls within the development boundary of Blessington and hence falls within the 'Urban Area' Landscape Category. According to Section 17.6, 'Urban Areas':

"In terms of landscape classification, these settlements have already been deemed suitable for development (of the type allowed by the settlement strategy and the development standards of this plan) and the impacts on the wider landscape of such development has already been deemed acceptable. Therefore it will not be necessary for developments in urban areas to have regard to the surrounding landscape classification or to carry out landscape or visual impact assessment."

Relevant Objectives:

“CPO 17.1: To protect, sustainably manage and enhance the natural heritage, biodiversity, geological heritage, landscape and environment of County Wicklow in recognition of its importance for nature conservation and biodiversity and as a non-renewable resource.”

Natural Heritage & Biodiversity (Chapter 17)

Chapter 17 covers Natural Heritage and Biodiversity. Wicklow hosts a wealth of wildlife, including a range of threatened habitats and species which are protected by law and that are recognised as being of local, national and EU importance. Many habitats and species are designated for protection / preservation under national and/or EU legislation.

The site boundary lies within 1km northwest of Poulaphouca Reservoir Special Protection Area (SPA, site code: 004063) and Poulaphouca Reservoir Proposed Natural Heritage Area (pNHA, site code: 000731). However, at all points, these two protected areas are located more than 700m from the site, with a notable scale of development and/or quarrying between the site and these protected areas. Approx. 1.5km north of the site is the Red Bog SAC (site code 000397); the only other natural heritage designation within the study area. Relevant Objectives include:

CPO 17.4 To contribute, as appropriate, towards the protection of designated ecological sites including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); Wildlife Sites (including proposed Natural Heritage Areas); Salmonid Waters; Flora Protection Order sites; Wildfowl Sanctuaries (see S.I. 192 of 1979); Freshwater Pearl Mussel catchments; and Tree Preservation Orders (TPOs).

CPO 17.5 Projects giving rise to adverse effects on the integrity of European sites (cumulatively, directly or indirectly) arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall not be permitted on the basis of this plan.

CPO 17.6 Ensure that development proposals, contribute as appropriate towards the protection and where possible enhancement of the ecological coherence of the European Site network and encourage the retention and management of landscape features that are of major importance for wild fauna and flora as per Article 10 of the EU Habitats directive. All projects and plans arising from this Plan will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive.

CPO 17.7 To maintain the conservation value of all proposed and future Natural Heritage Areas (NHAs) and to protect other designated ecological sites in Wicklow.

CPO 17.8 Ensure ecological impact assessment is carried out for any proposed development likely to have a significant impact on proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, Annex I habitats, or rare and threatened species including those species protected by law and their habitats. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment.

Woodlands, Trees and Hedgerows

There are numerous trees within the site, set within a mature and semi-mature deciduous woodland context. There are no Tree Protection Orders (TPO) or Tress Considered for Preservation on site. There is only one known hedgerow on the site, which dissects the south-western extent of the site. According to Section 17.0 of the development plan:

"It is the overall strategy of this plan to:

- *To conserve and enhance biodiversity in recognition of the many ecosystem services provided to society.*
- *To avoid negative impacts upon the natural environment and promote appropriate enhancement of the natural environment as an integral part of any development.*
- *To promote an integrated approach to landscape planning and management in order to protect the County's unique landscape character.*
- *To conserve and enhance the County's geological heritage.*
- *To support the actions in the County Wicklow Heritage Plan which seek to enhance the understanding, appreciation and protection of Wicklow's biodiversity including the County Wicklow Biodiversity Action Plan."*

Section 17.2.2 states:

"Woodlands, trees and hedgerows are important natural habitats and groups and lines of trees/hedgerows are important wildlife corridors. Trees, individually or in groups, make a valuable contribution to the biodiversity and amenities of the town. Groups of trees in urban areas can act as an attractive visual relief to the built environment and as an absorber of carbon emissions.

"...Woodlands and trees also have an amenity function, providing not only important recreational areas but also adding to the overall beauty of the County. A sizeable proportion of the forestry estate in Wicklow consists of the remains of old demesne planting. In addition to being an environmental and forestry resource, these areas are also of significant amenity value."

Section 17.3 pertains to Landscape, which was informed by a detailed Landscape Character Assessment that identified numerous distinctive landscape categories within the county. The site and its vicinity, as well as the vast majority of the study area, are categorised as being within an 'Urban Area.' Of the six Wicklow landscape categories set out in Table 7.1 of the CDP, 'Urban Area' was deemed to be the lowest in the hierarchy (i.e. least sensitive). Please refer to Figure 10.3, below.

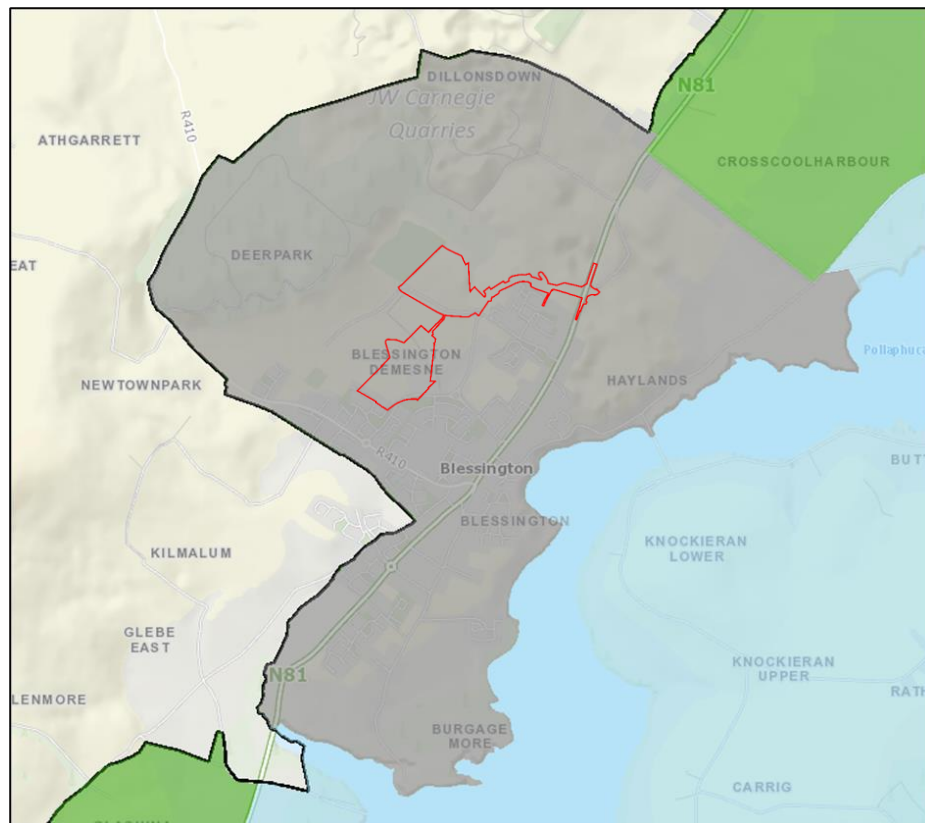


Figure 10.3: 'Wicklow Landscape Categories' data showing the site, it's vicinity and the vast majority of the study area being within the (dark-shaded) 'Urban Area' (Source: Heritagemaps.ie)

With regards to such 'Urban Areas':

"In terms of landscape classification, these settlements have already been deemed suitable for development (of the type allowed by the settlement strategy and the development standards of this plan) and the impacts on the wider landscape of such development has already been deemed acceptable. Therefore it will not be necessary for developments in urban areas to have regard to the surrounding landscape classification or to carry out landscape or visual impact assessment."

According to Figure 3.1 of the County Wicklow Landscape Character Assessment, the site, it's vicinity and the vast majority of the study area are deemed to be of Low Sensitivity.

Relevant Objectives of 'Sites & Corridors of Ecological & Biodiversity Value' include:

CPO 17.12 To protect non-designated sites from inappropriate development, ensuring that ecological impact assessment is carried out for any proposed development likely to have a significant impact on locally important natural habitats, species or wildlife corridors. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment.

CPO 17.13 To facilitate, in co-operation with relevant stakeholders, the ongoing identification and recording of locally important biodiversity areas and species in County Wicklow, not otherwise protected by legislation and ensure that consideration is given to these in the development management process.

CPO 17.14 Ensure that development proposals support the protection and enhancement of biodiversity and ecological connectivity within the plan area in accordance with Article 10 of the

Habitats Directive, including linear landscape features like watercourses (rivers, streams, canals, ponds, drainage channels, etc), woodlands, trees, hedgerows, road and railway margins, semi-natural grasslands, natural springs, wetlands, stonewalls, geological and geo-morphological systems, features which act as stepping stones, such as marshes and woodlands, other landscape features and associated wildlife where these form part of the ecological network and/or may be considered as ecological corridors or stepping stones that taken as a whole help to improve the coherence of the European network in Wicklow.

CPO 17.16 Require pollinator friendly landscape management and planting within new developments and on Council owned land.

Relevant Objectives of 'Woodlands, Trees and Hedgerows' include:

CPO 17.18 To promote the preservation of trees, groups of trees or woodlands, in particular native tree species, and those trees associated with demesne planting, in the interest of amenity or the environmental, as set out in Schedule 17.05 A and B, and Maps 17.05 and 17.05A-H of this plan.

CPO 17.20 Development that requires the felling of mature trees of environmental and/or amenity value, even though they may not have a TPO in place, will be discouraged.

CPO 17.21 To strongly discourage the felling of mature trees to facilitate development and encourage tree surgery rather than felling if such is essential to enable development to proceed.

CPO 17.22 To require and ensure the preservation and enhancement of native and semi-natural woodlands, groups of trees and individual trees, as part of the development management process, and require the planting of native broad leaved species, and species of local provenance in all new developments.

CPO 17.23 To require the retention, wherever possible, of hedgerows and other distinctive boundary treatment in the County. Where removal of a hedgerow, stone wall or other distinctive boundary treatment is unavoidable, provision of the same type of boundary will be required of similar length and set back within the site in advance of the commencement of construction works on the site (unless otherwise agreed by the Planning Authority).

Landscape, Views and Prospects

Please refer to Figure 10. 4, below. The protected views in the Blessington locality (i.e. within approx. 3km of the site) are:

- View 33: N81, Burgage More, South of Blessington - View of Poulaphuca Reservoir and inlet
- View 34: L4371 Threecastles, Blessington Liffey Valley – View of Threecastles (National Mon 532) & broken view of Poulaphuca Reservoir through trees.

However, it is worth noting that the site of the proposed development is somewhat peripheral to the orientation of these views, and there is a substantial degree of intervening mature trees between the site and these protected views, combined with a distance of more than 2km (i.e. outside the study area).

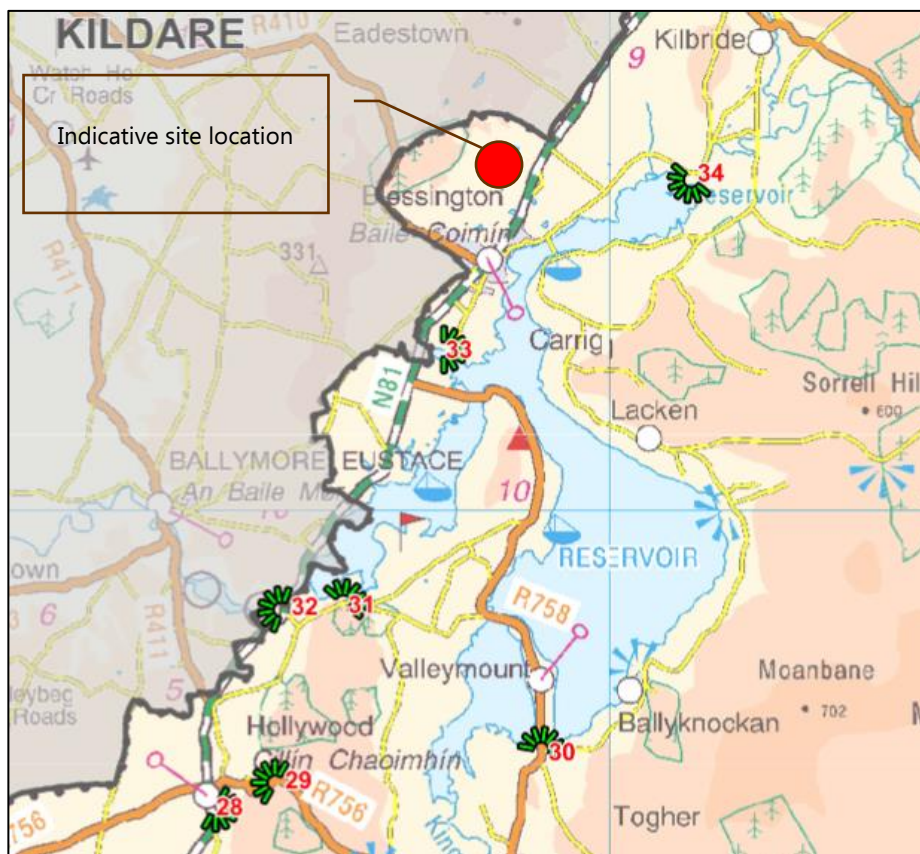


Figure 10.4: Extract of Map No. 17.10D from the Wicklow CDP, showing the 'views of special amenity value or special interest in the Blessington Lakes area.

Prospects of the Poulaphuca Reservoir are to be preserved. 'Prospect 20' is a designated prospect, where the views are oriented towards the lake and towards the site. The protected prospect is 'Prospect 20 - R758, L8369, L4364 & L4365, Lake Drive from the N81 at Glashina to Oldcourt - Prospect of Poulaphuca Reservoir.'

However, the site is not clearly visible from the prospect, owing to a substantial degree of intervening mature trees, combined with a distance of more than 1km. Please refer to Figure 10.5, below.

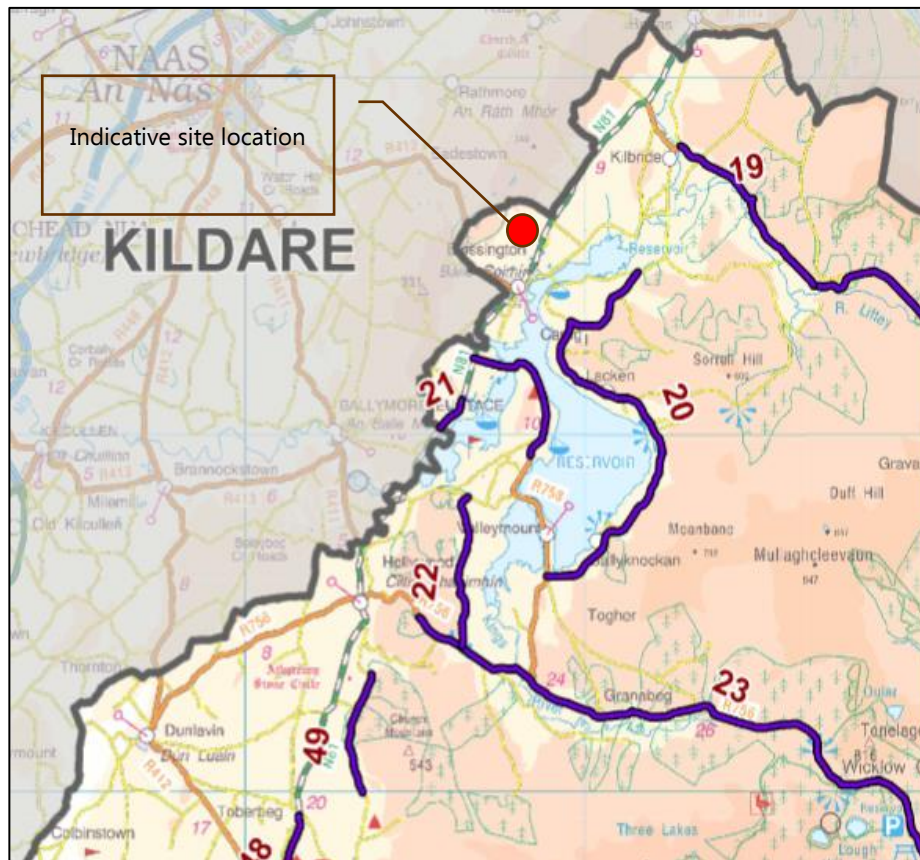


Figure 10.5: Extract of Map No. 17.11 of the Wicklow CDP, showing the 'Prospects of Special Amenity Value or Special Interest.'

Relevant Objectives:

CPO 17.35: All development proposals shall have regard to the County landscape classification hierarchy in particular the key landscape features and characteristics identified in the Wicklow Landscape Assessment (set in Volume 3 of the 2016 County Development Plan) and the 'Key Development Considerations' set out for each landscape area set out in Section 5 of the Wicklow Landscape Assessment.

CPO 17.38: To protect listed views and prospects from development that would either obstruct the view / prospect from the identified vantage point or form an obtrusive or incongruous feature in that view / prospect. Due regard will be paid in assessing development applications to the span and scope of the view / prospect and the location of the development within that view / prospect.

Green Infrastructure (Chapter 18)

Green Infrastructure (GI) can be broadly defined as 'an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations. Green Infrastructure is the ecological framework needed for environmental, social and economic sustainability –in short it is a nation's natural life sustaining system.

All new proposals seeking planning permission should address, as much as is reasonably possible, best practice sustainable solutions and a sustainable site design, with emphasis on the following:

- *The proposal should address how existing natural features of the site will inform sustainable design, by exploring the potential for the integration of existing natural features of merit such as watercourses, mature planting and topography. Such an approach ensures that the landscape character of the area is maintained whilst also assisting biodiversity maintenance and more natural forms of surface water drainage.*
- *The layout of the proposed development should be informed by the inherent natural characteristics of the site. Connectivity between proposed open spaces and adjoining existing open space or natural features should also be considered in the site design.*
- *Proposals in relation to larger sites should be cognisant of any ecologically sensitive areas where it may be appropriate to retain or integrate into a landscape plan.*

Relevant Objectives;

CPO 18.1: To recognise the importance and contribution of Green Infrastructure for the maintenance of biodiversity and ecosystem services, ensuring that the region and county will be better able to adapt and respond to climate change issues.

CPO 18.2: To protect existing green infrastructure resources and to facilitate, in consultation with relevant stakeholders, the development of green infrastructure that recognises the benefits that can be achieved with regard to the following:

- *provision of open space amenities,*
- *sustainable management of water,*
- *protection and management of biodiversity,*
- *protection of cultural heritage, and*
- *protection of protected landscape sensitivities.*

CPO 18.3 New development and redevelopment proposals shall wherever possible, integrate nature based solutions to the design, layout and landscaping of development proposals, and in particular to the delivery of linear parks and connected open spaces along watercourses in order to enhance the existing green infrastructure of the local area. All such proposals will be subject to ecological impact assessment.

CPO18.8 To require the integration of green infrastructure principles and inclusion of native planting schemes in all development proposals in landscaped areas, open spaces and areas of public space.

10.4.1.2 Blessington Local Area Plan 2013-2019

Blessington Local Area Plan 2013-2019 (hereafter referred to as the LAP) was drawn up by Wicklow County Council on 3 December 2012 and came into effect on 11 January 2013.

It is expected that a new Local Area Plan for Blessington will be prepared in the period 2022-2024 (Chapter 3, Section 3.5). Until such a time as new LAPs are adopted, the 2013-2019 LAP remains relevant with reference to the adopted zoning map and policy objectives.

Zoning

The site has split zoning:

- Lands to the east of Oak Drive and south of Blessington GAA Ground is zoned as "R1: New residential, To protect, provide and improve residential amenities".

- Lands to the west of Oak Drive are zoned as "OS: Open Space To preserve, provide and improve recreational amenity and passive open space".
- The BIRR site is shown as an indicative road.

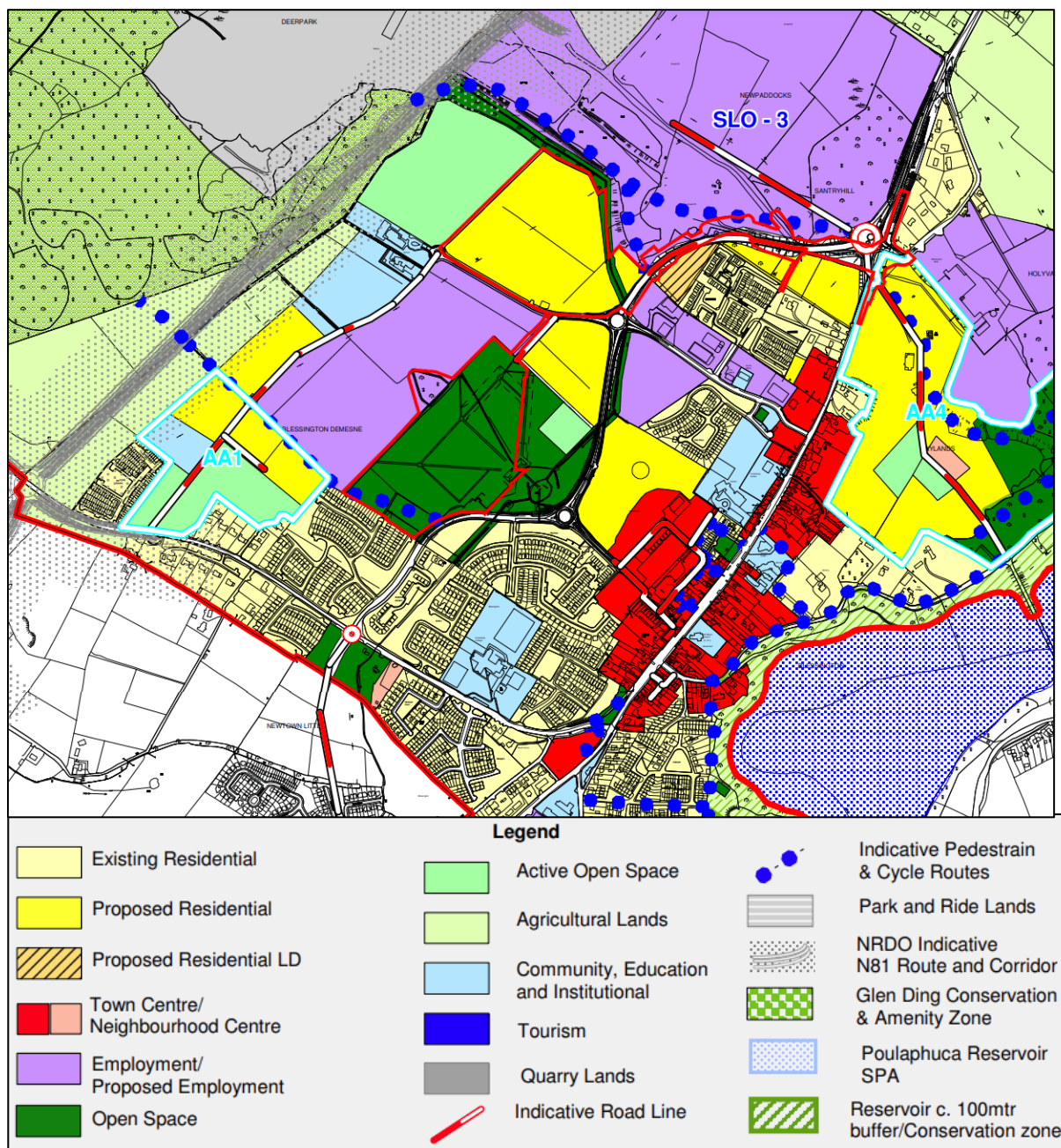


Figure 10.6: Extract of Land use zoning map

As evidenced in Figure 10.6, above, both proposed and existing residential development is zoned to the immediate south and east of the proposed road, while 'Employment/proposed employment' is zoned to the immediate north of BIRR.

The area north of the site is also subject to Specific Local Objective (SLO) 3. Page 36 of the LAP states:

"These lands located within the Roadstone Quarry to the west of the N81 shall be developed as a comprehensive (not piecemeal) integrated scheme providing for low density employment use, alongside the provision of an open public amenity/nature park, capable of facilitating pedestrian

and cycle access to the Glen Ding Woods from the N81 and the Blessington Inner Relief Road. The proposed employment units within this area shall be designed and finished in a manner capable of fully integrating into the surroundings of the amenity lands, whilst also providing passive supervision of surrounding walks and cycle routes."

Tourism (Section 5.1)

The Glen Ding Wood is recognised as a potential tourist attraction for the town. It is an objective of this plan to facilitate the development of increased linkages between this amenity area and the town, via the site and Roadstone lands.

Section 5.3 of the LAP outlines Tourism Objectives:

T2 To improve, as funding allows, the principal access routes and junctions linking Blessington town centre to surrounding tourist attractions such as the lakeshore and its associated villages, the Wicklow Mountains, Russborough House and Glen Ding.

T4 To require new developments in proximity to the reservoir / Glen Ding (or between the town centre and these areas) to provide / fund the development of new roads, and pedestrian / cycle linkages between the development and the existing town centre.

Roads (Section 7.4.2)

National Roads

The N81 passes directly through the site, before passing through the town centre, further south. The National Roads Design Office have published a preferred route corridor for the N81 realignment between Tallaght and Hollywood cross.

Blessington Inner Relief Road (BIRR)

The BIRR (i.e. the proposed development) is one of the primary objectives for the council to carry out the works at the earliest. This road has the potential, once completed, to remove significant quantities of through- and Naas bound- traffic from the town centre of Blessington.

Relevant Roads Objectives:

'S6 To facilitate the N81 (Tallaght to Hollywood) re-alignment and to work with the NRA road design office to ensure that amenity routes from the town centre to Glen Ding are facilitated in the final design of the road. Any development within the preferred route corridor will be assessed for acceptability having regard to potential affects on the future viability of the proposed road.

S7 To facilitate the completion of the Inner Relief Road.

S9 To improve / provide new footpaths and cycleways on existing roads as funding allows and to facilitate the provision of new roads, footpaths and cycleways as detailed in chapters 3, 5 and 10 of this plan.'

Heritage (Section 8)

Blessington has a rich and diverse natural and built heritage. The protection and enhancement of heritage assets through the plan will help to safeguard the local character and distinctiveness of the town of Blessington and its surroundings, providing local economic, social and environmental benefits.

'BD3 In the interests of the protection and enhancement of biodiversity in Blessington, it is an objective of this plan to:

- Protect trees, hedgerows and wooded areas (particularly those containing indigenous species), watercourses and other features of the natural landscape.*
- Require the planting of indigenous plant and tree species in new developments and in the restoration of former quarry lands.'*

10.4.1.3 Blessington Architectural Conservation Area Appraisal

The Blessington Architectural Conservation Area Appraisal covers the visual analysis of Blessington Town. This appraisal was prepared in 2006. The site does not fall within the ACA, but at all points lies more than 400m from it.

A number of views and prospects in and around Blessington have been identified in the appraisal to have special amenity value. These viewpoints are shown on the 'Visual Amenity and Public Spaces' map, an extract of which is set out in Figure 10.7, below.

There are four viewpoints looking north-east from the Main Street / ACA and these views are oriented towards the section of the site where a park is proposed to be constructed, more than 400m away.

To note again, the ACA was prepared in 2006 and since then the landscape has slightly evolved. Planning applications ref: 20/184, 20/362 and 20/1146 (Phase 1 – west) have already been granted planning permission that are in-between the viewpoint and the proposed site, and which greatly obscure and/or screen any potential views in the direction of the site.

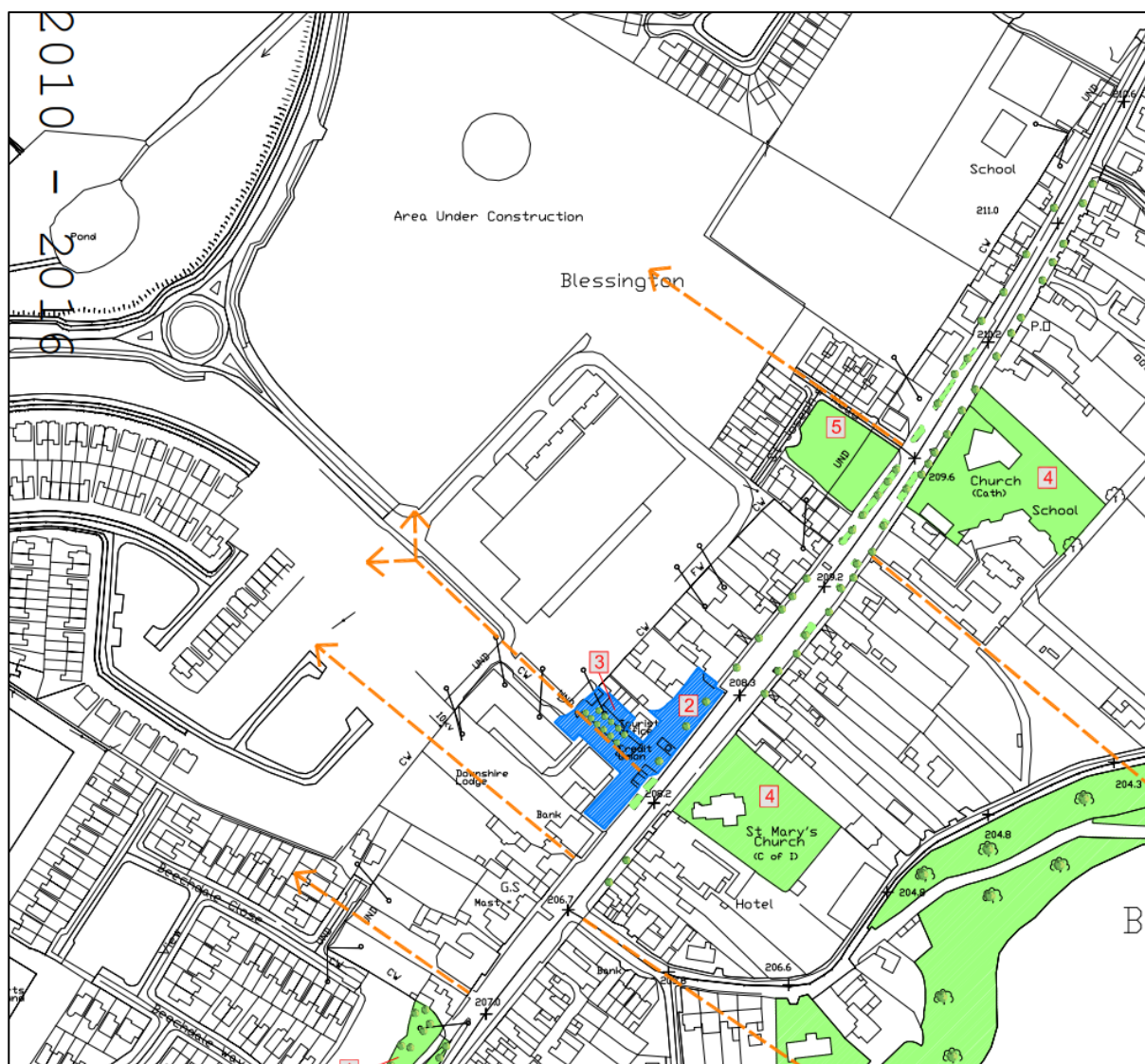


Figure 10.7: Extract of 'Visual Amenity and Public Spaces' map from ACA Appraisal

10.4.2 Previous significant residential development applications and permission

Planning applications of relevance entail:

- P.A Reg. Ref: 20/184 (Blessington Demesne East Phase 1) – Permission granted for development to the south / south-east for a nursing home and 77 units.
- P.A Reg. Ref: 20/362 (Blessington Demesne East Phase 2) – Permission granted for development to the south / south-east for 96 units.
- P.A. Reg. Ref: 20/1146 (Blessington Demesne West Phase 1) - This permission related to Phase 1 of the current development. Planning permission was granted for a development consisting of 91 houses, portion of town park and link to Glen Ding Woods.
- Blessington Inner Relief Road – the northern section is subject of this planning application.

The Blessington Inner Relief Road Project (BIRR) plans to build a purpose built route connecting existing sections of the Inner Relief Road to N81. The non-statutory public consultation was carried out between 12th May to 26th May 2022.

There are two primary sections of the Inner Relief Road yet to be completed. These are:

- *Southern Section* - The section of road to be constructed lies between the roundabout on the R410 Naas Road and Roundabout on the L8364 Kilmalum Road.
- *Northern Section* - The proposed route of this section of road heads northwards from the existing roundabout on the Blessington Inner Relief Road just to the west of Woodleigh Estate and traverses the quarry to emerge onto the N81 in the vicinity of the existing quarry entrance.



Figure 10.8: Planning Applications

Summary of Planning Section

- Blessington is classified as a 'Level 3 - Self-Sustaining Growth Towns'.
- The proposed development is supported in principle.
- The site, its vicinity and the majority of the study area are within an 'Urban Area' Landscape Category, and which is deemed to be of 'Low Sensitivity.'
- An objective of the LAP is "to facilitate the completion of the Inner Relief Road."
- There are a number of planned Public Infrastructure Projects, such as the BIRR and N81 Realignment, to significantly influence the landscape, and ease traffic and improve vehicular movement in Blessington. The northern section of the BIRR is subject of this planning application.
- There are also a number of planning applications, either granted or in the process of determination, that influence the landscape change.
- The Blessington Demense West Phase 1 (WCC reg. ref 20/1146) is under construction.

- The area is under transition and urbanisation, supported by the land use zoning objectives and development objectives for Blessington.
- The proposed site has few 'planning sensitivities,' i.e., there are no known Protected Structures on site or Tree Preservation Order, or Protected Views or Scenic Routes / Prospects.

10.4.3 Landscape Baseline: Description of the Study Area, Site and Environs

The town, and the site and its immediate settings are described below.

The Study Area:

Blessington is one of the biggest towns in County Wicklow. Blessington lies at the foothills of the Wicklow Mountains and is located on the Kildare / Wicklow border. The town is approximately 30kms southwest from Dublin and 11kms south-east of Naas.

The town is situated on the national secondary road N81, which links Dublin to Baltinglass. To the north-west, the regional road R410 links the town to Naas in Kildare.

The Poulaphouca Reservoir is also known as Blessington Lakes and lies to the east of the town. The reservoir was formed by building a dam across the River Liffey for hydroelectric purposes in the 1940s. The reservoir / lakes covers an area of approximately 5,000 acres. Hydroelectricity is generated at the dam, and the reservoir also supplies water to the Dublin region. Although Blessington Lakes lie within 300m downhill of the town centre, there is a negligible degree of the visibility of it from the town centre. The Wicklow Mountains lies further east and south and acts as an attractive backdrop to the town.



Plates 1 & 2: (left): Church on the Main Street, (right) Shopping Centre

The south-west boundary of the town is formed by the county boundary with Co. Kildare, and to the west of the town are the East Kildare Uplands and the locally elevated Glen Ding / Deerpark woodlands (see Figure 10.9, below). The town is bound by a large and sprawling quarry to most of the north and east. These lands have been extensively quarried for sand and gravel.



Figure 10.9: Blessington Town Context

Historical Context

Blessington used to be a linear settlement, taking its form along the Dublin Road / N81. The village was originally developed as an estate town in the late 17th Century, with predominantly terraced housing and a marketplace. The name Blessington was historically known as Ballycomeen, from the Irish '*Baile Coimin*' (townland of Coimin). There were three churches in this area: Kilmalum, Three Castles and Burgage, in the early times.

In the late 1660's, King Charles II granted the Manor of Blessington to the then Archbishop of Dublin, Michael Boyle, who laid out the main street. St Mary's Church is one of the oldest church in Blessington and was built in 1683. The town was originally constructed as an estate village to house the workers of Downshire House and Blessington Demense. The demesne comprised of 410 acres, including a large deer park, and was surrounded by a large wall. Downshire House burned down in 1798 and was never rebuilt.

The first edition Ordnance Survey Map (dating to 1837) indicates the remains of Downshire House as being in ruins, with its Grand Avenue, and views towards the Market Square and the Main Street from the front of the House. The landscape features remaining include the feature lakes and stands of mature trees. There also appears to be the remains of a farmyard or outbuildings that would have served this demesne.

By 1885, the town has largely taken on the urban form that we would recognise today. The 1885 Ordnance Survey map indicates that Downshire House had been removed at this date, but most of the landscape structure still remains intact at this point.

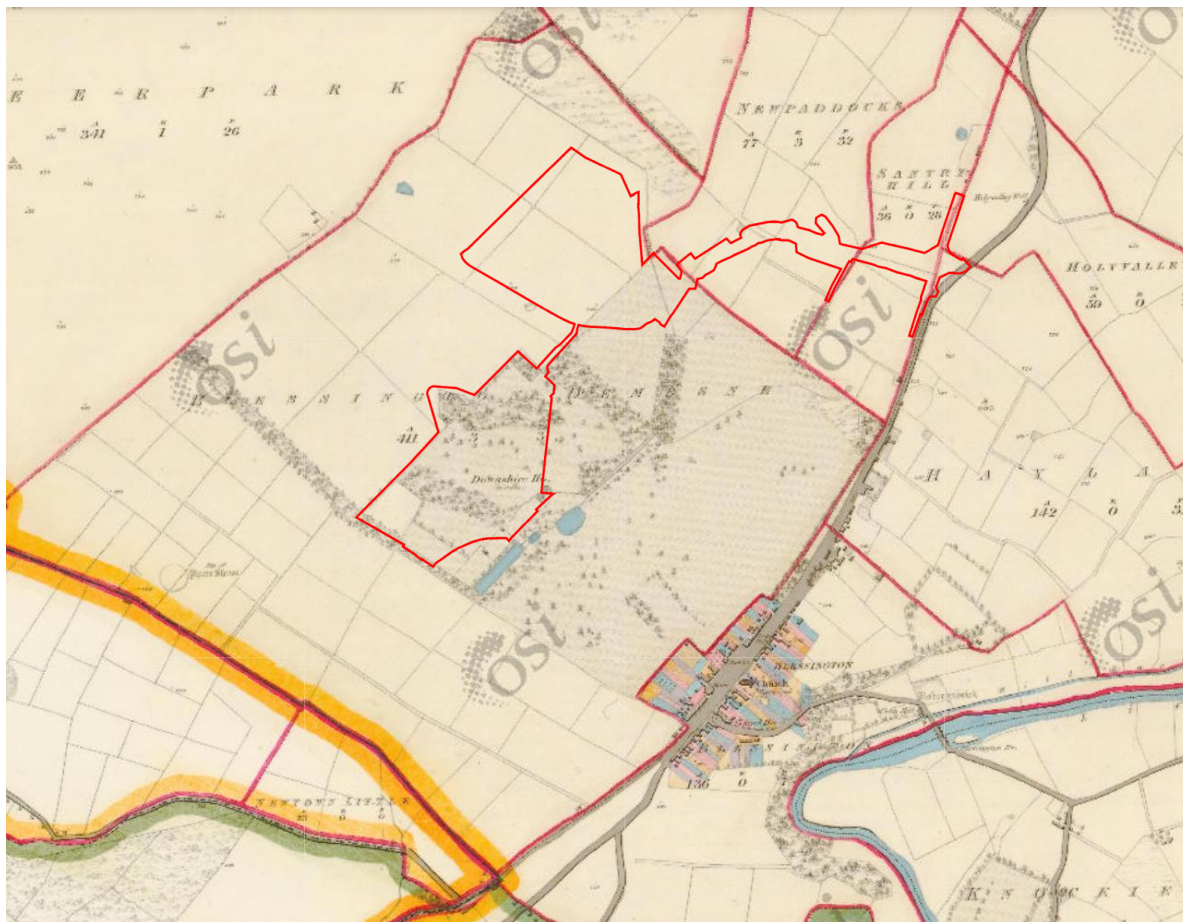


Figure 10.10: Extract of 6 inch Colour (1829-41) OSI Map

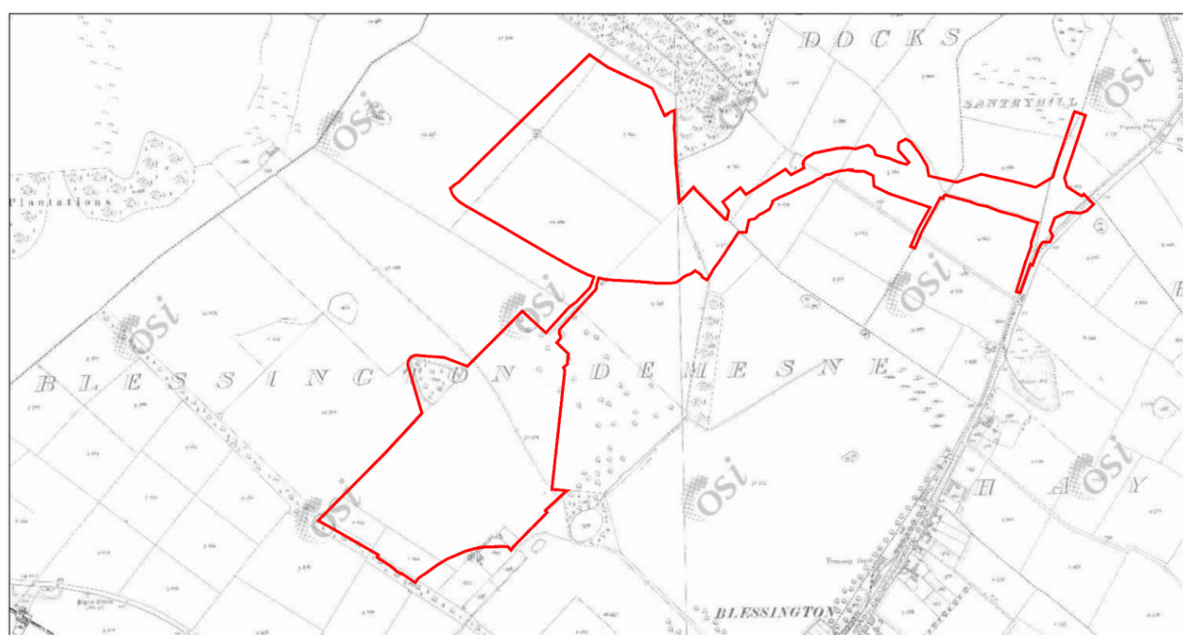


Figure 10.11: Extract of 25 Inch B&W (1897-1913) OSI Map

Over the last 25 years, the town has experienced considerable residential development to the north of the main street. This includes the central section of Inner Relief Road, extensive housing development

between it and the town centre, and peri-urban development to the south of the site of the proposed BIRR. It also includes the GAA Club grounds and the No. 1 School grounds, north of the residential site area. Up until approx. the year 2000, these areas were mostly used for pastoral farmland.

Description of the Overall Site and its Characteristics

The site can be divided into 3 parts / site areas:

- i. Residential development site area.
- ii. BIRR site area (700m in length).
- iii. The Town Park area.



Figure 10.12: Overall Site Area broken down in to 3 parts / site areas

i. Residential Development Site Area

The residential development site is situated north and east side of Oak Drive, through which it can be accessed. The site is bound by the Blessington GAA Ground to the northwest, woodland and quarry site to the north and Oak Drive Roundabout and fields to the east. The site is a greenfield site and was used for grazing up until 2022. The site is divided into two fields, the northern field being the largest.



Plates 3 & 4: (left) Site formerly used for grazing, and (right) view of Wicklow Mountains.



Figure 10.13: Site Context

Vegetation

The residential development site area is covered in grassland. The woodland to the north and east of the site is the only valuable vegetation on site. There is a field boundary with sparse vegetation along the fence between the fields.



Plates 5 & 6: (left) Blessington GAA Club, (right) Blessington No. 1 School

Topography and Drainage

The topography of the residential development site area lacks any distinctive features. However, there are gentle undulations across the site of 3-4m, gradually slopping southwards and eastwards. The highest point of the site is located along the northern corner of the site and the lowest point is located along the southern part of the site.

The water mostly flows eastwards and joins a small drainage ditch. The ditch runs along the eastern side of this area, within trees, and joins a culvert near the Oak Drive Roundabout to the south. This culvert then opens into the large pond, located within the former demesne, further south.



Plates 7 & 8: (left) Views of Eastern Uplands, (right) Views of the Parkland Setting

Landscape and Visual Amenity

A number of features of the surrounding landscape are visible from these lands, lending it context / legibility and a broadly benign / positive character.

- Towards north-west, the wooded ridge of Glen Ding Forest generates a high degree of visual enclosure and positive landscape character and visual amenity.
- Towards the west, the Kildare Eastern Uplands acts as a further scenic backdrop to the view.
- Towards the south and south-east, strong views of the Dublin / Wicklow Mountains are visible and serve as a backdrop to the town.
- Towards the east, the views are partly closed off by the woodlands and partly by the degraded, post-industrial landscape of the hilltop quarry.
- Towards the north, the hilltop quarry site is partly visible, where the landscape has been eroded and degraded due to quarrying.

Visibility

Sections of this residential development site area is visible from certain parts of the town, due to the slightly elevated nature of the site compared to its immediate settings and lack of vegetation and woodlands in the area. The site's visibility is expected to drop slightly, locally, as the permitted Phase 1 development (WCC reg. ref: 20/1146 and ref: 22/1191), located south of the Oak Drive, is being developed.

ii. BIRR Site Area

The BIRR site area is located to the east of the residential development site area. Owing to the presence of a chain-link gate and fence, the site is currently not accessible from the Oak Drive roundabout, although it is partially visible. However, it is accessible from its eastern end i.e. from N81 / quarry site entrance.

The area is bound by the N81 Dublin Road to the east, partially bound by the woodland to the north and south and partially bound by the quarry site to the west. The Woodleigh neighbourhood is adjacent to this area, to the south and east.

Vegetation

The eastern end of the BIRR site area is enclosed by mature woodland to either side, which engenders a broadly positive landscape character. The BIRR site area immediately north-east of the Woodleigh neighbourhood is degraded, owing to past quarrying activity, with numerous substantial hollows/depressions, as well spoilt heaps, and with an absence of tree cover. The lands of the BIRR site area near the Oak Drive Roundabout have some sparse vegetation.

Topography and Drainage

The lands of the BIRR site area are slightly undulating, with the lowest point being at the Oak Drive roundabout and the highest point at the junction of the existing quarry site entrance and N81. The lands gradually slope (down) westwards, with water draining into a ditch that runs along the woodland, situated south of the quarry access road.



Plates 9 & 10: (left) Quarry site entrance as seen from N81, (right) Views of the quarry site access road



Plates 11 & 12: (left) Quarry site and quarry related materials visible on site, (right) Looking east (through a chain-link fence) from Oak Drive Roundabout at the site

Landscape and Visual Amenity

The landscape is mixed in this BIRR site area. There are wooded areas, fallow/rewilding parcels and degraded landscape areas where quarry spoil is palpable. A large section of this area of the site (i.e. from its eastern end to near its centre) is brownfield in nature, in that it is occupied by the existing quarry road, with a highly regular number of Roadstone HGVs entering/leaving the site along it.

The views are limited from the eastern end of the BIRR site area due to the woodlands. There are some views along the northern part of the area, north of the Woodleigh neighbourhood, where there is little vegetation.

- Towards the north, the degraded quarry landscape is visible for much of this section of the site.
- Towards the west, the Kildare Eastern Uplands acts as a backdrop.
- Towards the north-west, the wooded ridge of Glen Ding Forest generates a high degree of visual enclosure and positive landscape character and views.
- Towards the south, there is partial visibility of the town's roofscape, some roofs of closer residential dwellings and the industrial area near Oak Drive roundabout.
- There are limited views elsewhere due to the woodlands.

Overall, there is a mixed landscape quality and character, as well as visual amenity, at this BIRR site area.

Visibility

The western end of the BIRR site area near the Oak Drive Roundabout is clearly visible from its immediate surroundings. The rest of the site area is hidden or has limited visibility from the surrounding areas due to the woodlands.

iii. Town Park Site Area

The Town Park site area is located north of the Inner Relief Road, north and east of Deerpark neighbourhood, and west of the Phase 1 permitted development site. The Park area is mostly within the former Downshire Demense. The site is bound by agricultural fields to the west / north-west.

Heritage

There are remains of the historical ruins of the Downshire House and Demense. Ruins of the house, boundary stone walls and outbuildings are visible overground.



Plates 13, 14 & 15: Remains of the ruins of Downshire House, as well as stone walls and remains of outbuildings.

Vegetation

There are clumps of mature woodlands which formed part of the demesne setting, which are still intact to this day. There are some mature trees at the location of the ruins of the Downshire House. The townland boundary to the west has mature trees and hedgerows along it. Most of the area is grassland and used for grazing until very recently.



Plates 16 & 17: (left) Historical Woodlands, (right) Glen Ding in the background of the view

Topography and Drainage

The lands gently slope eastwards, with the highest point being at the northern corner of the site and the lowest being at the southern end.

Landscape and Visual Amenity

A number of features of the surrounding landscape are visible from these lands, lending it context / legibility and positive character:

- Towards north-west, the wooded ridge of Glen Ding Forest generates a high degree of visual enclosure, a positive landscape character and a favourable visual amenity.
- Towards the west, the views are limited, due to the planting along the historical townland boundary. However, above/beyond these, the Kildare Eastern Uplands acts as a scenic backdrop to the view.
- Towards the east, south and south-east, splendid views of the Dublin / Wicklow Mountains are visible and acts as a backdrop to the town.
- Towards the north, beyond the residential development site, the quarry site is visible.

Visibility

This area is visible from the more recently developed residential parts of the town, due to the slightly elevated nature of the area. The Town Park site's local visibility is expected to drop slightly as the permitted Phase 1 development (WCC reg. ref: 20/1146 and ref: 22/1191), located south of the Oak Drive, is developed.

Summary

The landscape character and views are mixed. There is a mix of landscape types, such as former demesne, existing pasture and recently developed residential area.

10.4.4 Summary of Landscape Characteristics and Values

The values and characteristics of the site are listed below and can be categorised in two ways: values which should be conserved, and values that provide opportunity for enhancement. These values are summarised below in Sections 10.4.4.1 & 10.4.4.2.

The landscape qualities and elements of this area are not protected, but any development should consider the setting of the area and, where possible, be sympathetic to it.

10.4.4.1 Conservation Values

These are values to be conserved and indicate those aspects of the receiving environment which are valued and/or sensitive and could be negatively impacted on by the proposed development.

- Landscape resource and elements – historical townland boundaries, historical field boundaries, matured hedgerows, trees and ditches.
- The green interface between existing communities and the site, in terms of views, boundary treatments and character.
- The contribution of the current rural and green character of the site to the scenic qualities of the area.
- Historical remains and historical demesne setting of the site.
- The parklands setting of the pond and stream.
- The low-medium rise character of the town.

10.4.4.2 Enhancement Values

The values to be enhanced represent the site's capacity to accommodate change. These include:

- Zoning of lands for development.
- Mixed landscape quality and character of the overall site and environs.
- Phase 1 development approved by Wicklow County Council.

10.5 Predicted Landscape Impacts

10.5.1 Landscape Sensitivity

The proposed development directly affects the character of the site and its immediate environs. The subject site lies within an ostensibly suburban area that is classified as an 'urban area' in the Landscape Character Assessment of Wicklow County, which is deemed to be the lowest in the hierarchy (i.e. least sensitive). As previously covered in Section 10.4.1.1:

"... these settlements have already been deemed suitable for development (of the type allowed by the settlement strategy and the development standards of this plan) and the impacts on the wider landscape of such development has already been deemed acceptable..."

The subject site and the receiving environment were described and detailed in Section 10.4.3, above. The landscape resource of the subject site contains some valued elements, features or characteristics, such as a demesne setting; historical remains and ruins, parkland and trees. In addition, the site and environs are zoned for development. Within the development plan and the Blessington LAP, there are extensive policy objectives for the suitable development of the site area.

The subject site is located on the fringes of existing urban areas to the south. The landscape in this broader area is mixed and not particularly strong, i.e., there is a mix of land uses with varying character, including parklands, quarry site, urban and residential areas, educational and sporting facilities etc. There are permitted planning permissions in the immediate area that are yet to be constructed and therefore, the landscape character is evolving.

On balance of the multiple factors set out above, the landscape sensitivity of the subject lands is classified as 'Medium'. In Table 10.1, this is described as:

"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 principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change."

A review of the extent to which the proposed development will affect the views experienced from adjacent landscapes is carried out in Section 10.6, below.

10.5.2 Construction Stage

The construction phase of the proposed development will result in phased, ongoing infrastructure, building and related works for approximately four years. This will include:

- The temporary movement and stockpiling of earth and materials.
- The temporary movement of machinery in and out of the site.
- All engineering, building and landscape works required with associated site infrastructure, fencing and plant.

The construction stage will also involve the removal of some vegetation and the planting of new vegetation, across the site.

Within the BIRR area of the site, there will be the removal of 53 trees, two groups of trees and the partial removal of seven groups of trees, two hedgerows, as well as the protection of retained hedgerows and trees on site, where applicable. However, also within the BIRR area of the site, it is proposed to plant: 83 No. specimen trees; 5026m² of woodland planting; 1309m² of shrubs; 798 linear metres of hedgerow; 129m² of bulbs.

No trees will be removed as part of the proposed development within the Phase 2 residential area of the site, but it is proposed to plant in this area of the site: 1,683 trees; approx. 5000m² of ornamental

shrubs & groundcover; approx. 5000m² of woodland/woodland scrub; approx. 4000m² of wildflowers; approx. 3000m² of lawn/short-cut meadow.

In addition, no trees will be removed as part of the proposed development within the Phase 2 Park area of the site. However, it is proposed to plant in this area of the site: 622 trees; approx. 2,500m² of ornamental shrubs & groundcover; approx. 15,000m² of woodland/woodland scrub; approx. 20,000m² of wildflowers; approx. 25,000m² of lawn/short-cut meadow.

In summary, the vegetation lost - including trees - will be a minute fraction of the vegetation gained - including trees - as a result of the proposed development.

Overall, the effects during construction would be intensive across the site and immediate environs. The magnitude of change would be 'High', resulting in the loss of agricultural lands / grazing fields, as well as trees and some hedgerows across the overall site. This would change the character of the landscape and, in accordance with Table 10.3, when combined with a 'Medium' landscape sensitivity, it would generate a landscape effect that would be 'Significant' for construction-stage effects.

Qualitatively, it is expected that all construction works would have an adverse landscape impact, as set out in Section 10.2.6.1. Although valued features would be protected, the works would change and degrade the parts of the site until the construction of the proposed road, residential and neighbourhood infrastructure is completed.

The construction works are expected to take up to four years and, therefore, are considered to be short-term effects, in accordance with Table 3.4 of the aforementioned EPA Guidelines.

10.5.3 Operational Stage

The site's enhancement values (as set out in Section 10.4.4.2, above) reflect a significant body of policy that is supportive of major landscape change at this location. These will form residential neighbourhoods, a town park and road infrastructure to support this sustainable urban development. The landscape quality, integrity and character are mixed, with the site currently surrounded by landscape change, being adjacent to palpable urbanisation over the last quarter century. Nonetheless, it offers attractive characteristics to contribute to this new environment, which have been reflected in its conservation values, as set out in Section 10.4.4.3, above.

The impact of the proposed development would be the change of the site from a mostly greenfield/ partly brownfield landscape (i.e. in the latter case, of sections of the BIRR area of the site) to a new residential neighbourhood, a regional park and inner relief road infrastructure. However, the proposed development has been laid out to incorporate many of these existing landscape 'green infrastructure' features within its landscape structure of open spaces and networks, and particularly within the proposed park.

The operational stage will also experience the further growth and maturation of the substantial quantity of planting/vegetation associated with the proposed development, further engendering desirable place-making qualities.

The proposed development has been prepared in accordance with best practice national and regional guidelines and policies, including the Wicklow Development Plan, the 'Best Practice Urban Design Manual' (Department of Environment, Heritage and Local Government, 2009) and the 'Design Manual for Urban Roads and Streets' (Department of Transport, Tourism and Sport & Department of Housing, Planning and Local Government, 2013). The proposed development has been laid out to reflect existing landscape features such as topography and urban grain.

Phase 1 development has commenced construction on site. This phase of development has been sensitive to the landscape elements of value on the site, incorporating them into the development, adding value to them and enhancing their role. The site layout incorporates new landscape elements within the building cluster, contributing positively to the local streetscape and residential amenity for new and surrounding residents and reflecting best practice place making and green infrastructure delivery.

The proposal would introduce a residential development, a town park and inner relief road into the landscape, which, although may be new and prominent, is not uncharacteristic of the area. The proposed development achieves local policy objectives of Wicklow County Council and is in keeping with local land use zoning. Its scale and effect would be transformational along the northern edge of the town, but important to be so, in order to contribute positively to local place-making.

The magnitude of effect would be 'High'. As set out in Table 10.2, this is described as:

"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."

Thus, in accordance with Table 10.3, when combined with a 'Medium' landscape sensitivity, the effect would be 'significant' for the operational stage.

In terms of duration of effects, these are expected to be Permanent effects, in accordance with Table 3.4 of the aforementioned EPA Guidelines.

Qualitatively, it is expected that operational-stage works would have a Beneficial/Positive effect, as set out in Section 10.2.6.1.

10.6 Predicted Visual Impacts

10.6.1 Zone of Visual Influence and Potential Visual Receptors

This Section should be viewed in tandem with 'Appendix 10a – Verified Views & CGIs.'

Based on the assessment of the landscape characteristics, values and sensitivities, 14 representative viewpoints were selected to assess visual impact and effects. These represent a comprehensive range of receptors (i.e. people) from a variety of different contexts, angles and distances.

The assessed viewpoints are listed in Table 10.6 below.

Table 10.6: Selected Viewpoints for Visual Assessment

VP	Description of viewpoint	Rationale for selection
1	Oak Drive (adjacent to Blessington GAA Club & No. 1 School)	<ul style="list-style-type: none"> Receptors: local community views, especially those using the adjacent school and GAA club. Views of and proximity to the residential area of the site.
2	Oak Drive (near access road to Phase 1 Development)	<ul style="list-style-type: none"> Receptors: local community views, especially those using the adjacent school and GAA club, and future residents of Phase 1.

VP	Description of viewpoint	Rationale for selection
		<ul style="list-style-type: none"> Views of and proximity to the residential area of the site.
3	BIRR / Oak Drive Roundabout	<ul style="list-style-type: none"> Receptors: local community views, especially those using the adjacent school and GAA club, future residents of Phase 1. Views of and proximity to the residential and BIRR northern extension areas of the site.
4	Oak Drive (opposite J Kelly Motors)	<ul style="list-style-type: none"> Receptors: local community views, especially those using the adjacent school and GAA club, future residents of Phase 1. Views of and proximity to the residential and BIRR northern extension areas of the site.
5	Cul de sac of Woodleigh Way	<ul style="list-style-type: none"> Residents at Woodleigh. Proximity to BIRR northern extension.
6	Cul de sac of Woodleigh Avenue	<ul style="list-style-type: none"> Residents at Woodleigh. Proximity to BIRR northern extension.
7	Dublin Road N81 at quarry entrance	<ul style="list-style-type: none"> Road users & pedestrians on northern outskirts of Blessington. Proximity to BIRR northern extension.
8	N81 by Maxol Garage	<ul style="list-style-type: none"> Road users & pedestrians on northern outskirts of Blessington.
9	Central section of BIRR	<ul style="list-style-type: none"> Local community/ road users/ pedestrians.
10	Local road by Dunnes Stores	<ul style="list-style-type: none"> Local community/ road users/ pedestrians.
11	BIRR (by Glenview/The Green)	<ul style="list-style-type: none"> Local community/ road users/ pedestrians. Proximity to and views of Phase 2 Park.
12	Deerpark View	<ul style="list-style-type: none"> Local community/ road users/ pedestrians. Proximity to Phase 2 park
13	Bóthar an Náis	<ul style="list-style-type: none"> Local community/ road users/ pedestrians. Proximity to Phase 2 Park.
14	'Prospect 20' on local road at Rathnabo	<ul style="list-style-type: none"> Local community views. Recreational walkers/cyclists/motorist along this Co. Wicklow designated scenic route.

The viewpoint location map is set out in Figure 10.14, below.



Figure 10.14: Viewpoint Location Maps

10.6.2 Visual Impacts and Effects

Viewpoint 1: Oak Drive (adjacent to Blessington GAA Club & No. 1 School)		
Existing / baseline view	<p>This viewpoint is from the roundabout at the northern end of Oak Drive, (to the immediate south of Blessington No. 1 School and the GAA club). The viewpoint is looking east towards the residential area of the site and is representative of views experienced by vehicular and pedestrian receptors, as well as those enjoyed by pupils, visitors and employees of the school and the care unit, and those exiting the GAA grounds.</p> <p>The view is looking at the roundabout, road and footpath in the foreground. Visible in the middle-ground are mature evergreen trees along the Blessington GAA Club boundary are visible to the northeast, with the existing pastoral site with post and wire mesh fencing along the western boundary visible in the centre, where a 110kV overhead line on twin utility poles are apparent. To the southeast, Oak Drive road is prominent, with the rooflines of Blessington Business Park discernible.</p> <p>In the background, to the northeast, a spoil heap along the skyline of the quarry site is visible, as are treetops and vegetation within the woodland area to the east of the site. To the southeast, the Wicklow mountains act as a scenic backdrop to the view.</p> <p>The overall visual imprint of the existing view is that of evolving suburban fringe to an urban setting, set before a picturesque mountainous backdrop.</p>	
Sensitivity	Low	
Visual Impacts and Effects		
Construction Phase	<p><u>Description:</u></p> <p>During the construction stage, viewers at this location would temporarily witness construction activity such as moving HGVs, lifting machinery, scaffolding and/or extensive planting.</p>	
	Magnitude of Change	High
	Importance of Effect	Slight-Moderate
	Quality	Adverse
	Duration	Temporary
Operational Phase	<p><u>Description:</u></p> <p>The foreground and mid-ground will be appreciably transformed by the proposed development, which takes the form of a suitably designed and scaled two-storey residential development. There will be an abundance of aesthetic landscape measures (e.g. street trees, shrubbery, groundcover) introduced to this scene that will help soften the angular built form of development, while generating visual amenity in their own right. While distant views of the Wicklow Mountains to the southeast will be curtailed from this viewpoint (as will the unsightly quarry spoil heaps to the northeast), such scenic views will remain open to the viewer looking south, along Oak Drive, from this location.</p>	
	Magnitude of Change	High
	Importance of Effect	Slight-Moderate

Viewpoint 1: Oak Drive (adjacent to Blessington GAA Club & No. 1 School)

	Quality	Neutral
	Duration	Permanent

Viewpoint 2: Oak Drive (near access road to Phase 1 Development)

Existing / baseline view	<p>This view is from Oak Drive, near the access road to the Phase 1 development. This viewpoint is located along the western footpath of Oak Drive, looking east towards the residential area of the site. The viewpoint is representative of views experienced by vehicular and pedestrian receptors, as well as future residents of Phase 1 development.</p> <p>In the foreground is the road, grass verge and footpath, where upon an unsightly field boundary is made up of numerous fencing styles, heights and forms. Within the pastoral field behind it, livestock are grazing. Beyond this, a mature treeline precludes several more distant views, although the large quarry spoil heaps are noticeable on the skyline. Residences within Woodleigh neighbourhood are partially visible to the southeast. To the east, the Wicklow mountains acts as a backdrop between trees, but they are not prominent. Indeed, more extensive views of the mountains are on offer due south, for viewers at this location.</p> <p>By way of context, the receptors include people involved in activities or travelling at a medium to slow speed. The Phase 1 development is still under construction and will be located to the immediate west of this location, and in a <i>de facto</i> suburban context (zoned 'Urban') where development has been commonplace over the last quarter century.</p>	
Sensitivity	Low	
Visual Impacts and Effects		
Construction Phase	<p><u>Description:</u></p> <p>During the construction stage, viewers at this location would temporarily witness construction activity such as moving HGVs, lifting machinery, scaffolding and/or extensive planting.</p>	
	Magnitude of Change	High
	Importance of Effect	Slight-Moderate
	Quality	Adverse
	Duration	Temporary
Operational Phase	<p><u>Description:</u></p> <p>Similar to VP1, the proposed development will introduce considerable visual change in this scene, but such visual change is not tantamount to visual impact. It takes the form of a suitably designed and scaled two-storey residential development, with strong landscape measures (e.g. street trees, shrubbery, groundcover) to the fore that will generate visual amenity in their own right. The housing will not curtail any more distant views of notable visual amenity, the main source of which will remain</p>	

Viewpoint 2: Oak Drive (near access road to Phase 1 Development)		
	to the south towards the Wicklow Mountains. The proposed development will be received in the context of a <i>de facto</i> suburban context (zoned 'Urban') where development has been commonplace over the last quarter century.	
	Magnitude of Change	High
	Importance of Effect	Slight-Moderate
	Quality	Neutral
	Duration	Permanent

Viewpoint 3: BIRR / Oak Drive Roundabout		
Existing / baseline view	<p>The existing view is from the BIRR / Oak Drive Roundabout, looking north-east, and is representative of pedestrians and motorists, as well as future residential receptors of Phase 1. This is the northern-most location with BIRR currently extends to, with the proposed northern extension site located in the centre of this view.</p> <p>In the context of the wider study area, it is a scene of notably low visual amenity and sensitivity, made up of a foreground roundabout, disparate fencing, parked vehicles and construction materials and rubble, and more distant spoil heaps, with mature trees also visible. The roofs of two residential dwellings situated in the Woodleigh neighbourhood are also visible. The context is one in which the Phase 1 construction is unfolding to the immediate west of this roundabout, while the is considerable per-urban development along Oak Drive to the east.</p>	
Sensitivity	Low	
Visual Impacts and Effects		
Construction Phase	<p><u>Description:</u></p> <p>During the construction stage, viewers at this location would temporarily witness construction activity such as moving HGVs, lifting machinery, scaffolding and/or extensive planting.</p>	
	Magnitude of Change	High
	Importance of Effect	Not significant
	Quality	Adverse
	Duration	Temporary
Operational Phase	<p><u>Description:</u></p> <p>The proposed BIRR northern extension will occupy the centre ground of this view, where it will read as a ‘natural’ and consistent part of the wider BIRR scheme. It’s planted verge with ornate street trees and adjacent cycle path/footpath will engender a strong sense of placemaking to the formerly discordant setting. To the north of the BIRR there will be four-storey residential housing blocks, similar in scale and appearance to that within the nearby Woodleigh Estate. Such blocks are unlikely to draw the eye, as they’re appropriate in form, function and scale to this <i>de facto</i></p>	

Viewpoint 3: BIRR / Oak Drive Roundabout

	suburban setting (zoned 'Urban') on the northern fringe of Blessington town and will read as a fitting extension to the less-aesthetic peri-urban commercial development further southeast along Oak Drive. While introducing a distinct visual change to the scene, the proposed development will present a benign and fitting development for the context and setting.	
	Magnitude of Change	High
	Importance of Effect	Not significant
	Quality	Beneficial
	Duration	Permanent

Viewpoint 4: Oak Drive (opposite J Kelly Motors)

Existing / baseline view	<p>The existing view is from Oak Drive (opposite J Kelly Motors) and is looking north. The viewpoint is located along the western side footpath of the road and is representative of vehicular and pedestrian receptors.</p> <p>By way of context, this section of Oak Drive is peri-urban in nature, with moderately-sized commercial/industrial premises (e.g. car garage; construction plant hire; tyre company etc) instilling a functional use but unappealing sense of place. Indeed, the access road to J Kelly Motors is in the foreground. In the middle-ground, views are blocked by existing vegetation to the left/south. At and north of the Oak Drive roundabout, the site is visible in the form of a non-descript pastoral field, with construction materials at its lower sections.</p> <p>In the background, views are blocked to the left/south, but the Blessington GAA Clubs’ nets, poles and Club House are partially visible. Behind this, the Glen Ding Forest acts as a backdrop, as does the large spoil heaps within the neighbouring quarry. The Glen Ding Forest acts as an enclosure and is an attractive backdrop to the view, whose foreground and midground is considerably less attractive.</p>	
Sensitivity	Low	
Visual Impacts and Effects		
Construction Phase	<u>Description:</u> During the construction stage, viewers at this location would temporarily witness construction activity such as moving HGVs, lifting machinery, scaffolding and/or extensive planting.	
	Magnitude of Change	Medium
	Importance of Effect	Slight
	Quality	Adverse
	Duration	Temporary
Operational Phase	<u>Description:</u>	

Viewpoint 4: Oak Drive (opposite J Kelly Motors)

	<p>Aside from an upgraded Oak Drive roundabout, along with some partially visible street trees and streetlights, the proposed BIRR northern extension will be difficult to discern from here. More apparent will be a couple of four-storey residential blocks, which will curtail more distant views. More distant rooflines of two storey residences will be discernible, set among mature trees.</p> <p>Similar to VP3, such blocks are unlikely to draw the eye, as they're appropriate in form, function and scale to this peri urban setting (zoned 'Urban') on the northern fringe of Blessington town and will read as a fitting extension to the less-aesthetic commercial development currently in existence along Oak Drive. Be that as it may, the proposed residential blocks will also curtail views of the more distant Glen Ding forest skyline, while generating a sense of enclosure and intensity that was hitherto not present.</p>	
	Magnitude of Change	Medium
	Importance of Effect	Slight
	Quality	Adverse
	Duration	Permanent

Viewpoint 5: Cul de sac of Woodleigh Way

Existing / baseline view	<p>The existing view is from the cul-de-sac of Woodleigh View and looking north-west. The viewpoint is situated along the eastern side of the road, in a residential setting. The viewpoint is representative of view experience by residential receptors and road users.</p> <p>In the view, the road is visible in the foreground; in the middle-ground, the two storey-over-basement duplex and associated landscaping are visible to the left, as well as a grass verge with sparse vegetation, footpath and parking area. There is thick vegetation to the right of the view. In the background, views are limited to the left and right, and to the centre thick vegetation is visible and limited mid- or long-distance views.</p>	
Sensitivity	High	
Visual Impacts and Effects		
Construction Phase	The proposed development and site works would not be visible from this location.	
	Magnitude of Change	Negligible
	Importance of Effect	Negligible
	Quality	Neutral
	Duration	Temporary
Operational Phase	The proposed development would not be visible from this location.	

Viewpoint 5: Cul de sac of Woodleigh Way		
	Magnitude of Change	Negligible
	Importance of Effect	Negligible
	Quality	Neutral
	Duration	Permanent

Viewpoint 6: Cul de sac of Woodleigh Avenue		
Existing / baseline view	<p>The existing view is from the cul-de-sac of Woodleigh Avenue and looking north-east. The viewpoint is situated at the cul-de-sac. The viewpoint is representative of views experience by residential receptors alone.</p> <p>In the view, the terminus of Woodleigh Avenue road, footpath and grass verges are apparent. An overground post and wire fence is tangled with mid height vegetation, beyond which taller trees are located in the direction of the site. Such vegetation limits any long distance views from this location.</p>	
Sensitivity	High	
Visual Impacts and Effects		
Construction Phase	<p><u>Description:</u></p> <p>During construction, a narrow trench will be excavated in the fore- to mid-ground to cater for an underground attenuation and a drainage connection associated with the proposed development.</p>	
	Magnitude of Change	Low
	Importance of Effect	Slight
	Quality	Adverse
	Duration	Temporary
Operational Phase	<p><u>Description:</u></p> <p>Following the infilling of the aforementioned service trench, the landscape will be restored to the baseline scenario, and the proposed development will not be discernible, long-term. The proposed BIRR northern extension will be located more than 100m north of this location, with mature treelines between it and this viewpoint.</p>	
	Magnitude of Change	Negligible
	Importance of Effect	Negligible
	Quality	Neutral
	Duration	Permanent

Viewpoint 7: Dublin Road N81 at quarry entrance		
Existing / baseline view	<p>The existing view is from N81 / Dublin Road looking west, situated and opposite the Roadstone quarry site entrance. The quarry entrance and access road are heavily used by regularly HGVs entering/existing the quarry. The foreground scene is one of a heavily arterial tone.</p> <p>Stone-clad, mid-height entrance walls mark the entrance to the quarry. The entrance, like the tarmacked road beyond it, is lined with a rich, mature woodland thicket. This thicket precludes any more distant views and allows for a modest degree of visual amenity along this busy, heavily used national road.</p> <p>The view is from along a busy main road, where viewers are not focused on the landscape that is peripheral to their line of sight.</p>	
Sensitivity	Low	
Visual Impacts and Effects		
Construction Phase	<p><u>Description:</u></p> <p>During the construction stage, viewers at this location would temporarily witness construction activity such as moving HGVs, lifting machinery, scaffolding and/or extensive planting.</p>	
	Magnitude of Change	High
	Importance of Effect	Moderate
	Quality	Adverse
	Duration	Temporary
Operational Phase	<p><u>Description:</u></p> <p>The proposed roundabout, with associated planting, will serve to greatly soften the foreground scene, aided by suitable landscape measures adjacent to, and beyond, the former quarry entrance. Such is the presence and quality of landscape design in this view (e.g. street trees, ground cover, shrubbery), the proposed BIRR northern extension will be less palpable than the richness of vegetation in this view. However, road users are not focused on the landscape that is peripheral to their line of sight.</p>	
	Magnitude of Change	High
	Importance of Effect	Moderate
	Quality	Beneficial
	Duration	Permanent

Viewpoint 8: N81 by Maxol Station	
Existing / baseline view	<p>The existing view is from the heavily used N81, Dublin Road, looking north, located on the southern footpath by a busy petrol station. The views are representative of those experienced by pedestrians and motorists.</p>

Viewpoint 8: N81 by Maxol Station		
	<p>Beyond the foreground road, a distinct urban grain is apparent in the mid-ground, with numerous, relatively recent commercial/industrial premises visible (i.e. Blessington Business Park). In the distance, below a skyline marked by Glen Ding wood and (further to the northeast) spoil heaps from the neighbouring quarry, the site is discernible in the form of a thin pastoral strip.</p> <p>Overall, the view is from a busy suburban main road, where receptors are not focused on the surrounding landscape, let alone more distant features.</p>	
Sensitivity	Low	
Visual Impacts and Effects		
Construction Phase	<p><u>Description:</u></p> <p>During the construction stage, viewers at this location would temporarily witness construction activity such as moving HGVs, lifting machinery, scaffolding and/or extensive planting.</p>	
	Magnitude of Change	Low
	Importance of Effect	Not Significant
	Quality	Adverse
	Duration	Temporary
Operational Phase	<p><u>Description:</u></p> <p>The only aspect of the proposed development that will be discernible from this location will be the upper couple of storeys of two proposed four-storey residential blocks, perceptible to the northeast of the foreground commercial/industrial buildings (within the Blessington Business Park). This will be located more than 500m away and set within a suburban context. Crucially, the proposed development will not noticeably detract from the Glen Ding forested skyline beyond it and remains at an oblique angle to road users at this location.</p>	
	Magnitude of Change	Low
	Importance of Effect	Not significant
	Quality	Neutral
	Duration	Permanent

Viewpoint 9: Central section of BIRR	
Existing / baseline view	<p>The existing view is from Oak Drive / Blessington Inner Relief Road and is looking north. The viewpoint is situated along the eastern side footpath of the road and is representative of views experienced by pedestrians.</p> <p>In the foreground, the road, the grass verges, footpaths and fencing on both sides are apparent. In the middle-ground, to the left and middle, the Phase 1 development, which is under construction, is prominent. In the background to the north/northwest, Glen Ding Forest is discernible between trees/houses.</p>

Viewpoint 9: Central section of BIRR		
	Overall, the view is from a road and where people are travelling in cars or walking. There are limited valued elements in the view.	
Sensitivity	Low	
Visual Impacts and Effects		
Construction Phase	<u>Description:</u> During the construction stage, viewers at this location would temporarily witness construction activity such as moving HGVs, lifting machinery, scaffolding and/or extensive planting.	
	Magnitude of Change	Low
	Importance of Effect	Not Significant
	Quality	Adverse
	Duration	Temporary
Operational Phase	<u>Description:</u> Over 300m to the north, the proposed development would be partially visible in the form of a semi-screened, four-storey residential block. However, in the context of this evolving and developed suburban context, such development is highly unlikely to draw attention to itself and even if noticed, will not detract from the inherent visual amenity of the scene.	
	Magnitude of Change	Low
	Importance of Effect	Not significant
	Quality	Neutral
	Duration	Permanent

Viewpoint 10: Local road by Dunnes Store		
Existing / baseline view	<p>The existing view is from a local road / town centre road located close to the large Dunnes Stores shopping centre, looking north. The viewpoint is situated along the western footpath of the road, on the fringe of a heavily developed locale (i.e. to the immediate south and west of this location). The viewpoint is representative of views experienced by pedestrians and motorists.</p> <p>Beyond the foreground road and footpath, a rolling meadow-like fields with some sparse vegetation is apparent. In the background of the view, to the left, vegetation within the Phase 1 Park and pond area are visible, and further behind the Glen Ding Forest acts as a backdrop to the view.</p> <p>Phase 1 development under construction and associated site plant are partially visible, and further behind the degraded landscape within the quarry site is perceptible above the rooftops.</p>	
Sensitivity	High	

Viewpoint 10: Local road by Dunnes Store		
Visual Impacts and Effects		
Construction Phase	<u>Description:</u> During the construction stage, viewers at this location would temporarily witness construction activity such as moving HGVs, lifting machinery, scaffolding and/or extensive planting.	
	Magnitude of Change	Low
	Importance of Effect	Slight
	Quality	Neutral
	Duration	Temporary
Operational Phase	<u>Description:</u> Over 600m to the north, the proposed development would be partially visible in the form of the upper floor of a semi-screened, four-storey residential block that will be mostly obscured by closer, more apparent Phase 1 development. However, in the context of this evolving and developed suburban context, such development is highly unlikely to draw attention to itself and even if noticed, will not detract from the inherent visual amenity of the scene. Indeed, the additional trees proposed as part of the Phase 2 Park scheme is likely to marginally improve the inherent visual amenity of this setting.	
	Magnitude of Change	Low
	Importance of Effect	Slight
	Quality	Positive
	Duration	Permanent

Viewpoint 11: BIRR (by Glenview/The Green)	
Baseline/ existing view	<p>The existing view is from Blessington Inner Relief Road (BIRR). The viewpoint is situated along the southern side footpath of the road and close to the pond area of the former demesne. The viewpoint is representative of views experienced by pedestrians and motorists.</p> <p>In the view, the viewer is looking at the road, grass verge, footpath and railings in the foreground. Behind it vegetation to the left and right are visible, while towards the centre is the low, barely-discernible remains of a historical stone wall. In the background, the Phase 1 development under construction is perceptible, including a large spoil heap of excavated soil. However, views are blocked by the existing vegetation to the east and west.</p>
Sensitivity	Low
Visual Impacts and Effects	

Viewpoint 11: BIRR (by Glenview/The Green)		
Construction Phase	<u>Description:</u> During construction stage, the viewers may experience some construction activity including vehicles and lifting machinery temporarily from this location. However, from this location the construction phase is more likely to take the form of the mass planting of the Phase 2 Park area.	
	Magnitude of Change	Low
	Importance of Effect	Slight
	Quality	Adverse
	Duration	Temporary
Operational Phase	<u>Description:</u> The Phase 2 Park development will screen out more distant views. Rather than being cut off from the foreground road/footpath, pedestrian access into the park, along with high-quality landscape design within the park, will help create strong community-focused placemaking. This will also increase the visual amenity at this setting.	
	Magnitude of Change	Medium
	Importance of Effect	Slight
	Quality	Positive
	Duration	Permanent

Viewpoint 12: Deerpark View		
Existing/ baseline description	The existing view is from an open space at Deerpark View residential development. The viewpoint is situated within the open space and is looking north-east from this location. The viewpoint is representative of views experienced by pedestrians, motorists, residential receptors and users of the open space. The site is not visible from this location. The two storey housing and the tall treelines to the rear of the housing prevent more distant views in the direction of the site.	
Sensitivity	High	
Visual Impacts and Effects		
Construction Phase	<u>Description:</u> The proposed development and site works would not be visible from this location.	
	Magnitude of Change	Negligible
	Importance of Effect	Negligible
	Quality	Neutral
	Duration	Temporary

Viewpoint 12: Deerpark View

Operational Phase	<u>Description:</u> The proposed development would not be visible from this location.	
	Magnitude of Change	Negligible
	Importance of Effect	Negligible
	Quality	Neutral
	Duration	Permanent

Viewpoint 13: Bóthar an Náis

Baseline/ existing description	The existing view is from a local road and cul-de-sac located to the northwest of the town. The viewpoint is situated at the cul-de-sac and looking east from this location. The viewpoint is chiefly representative of views experienced by residential receptors. The site is not visible from this location, owing to a distance of over 400m and intervening mature trees.	
Sensitivity	High	
Visual Impacts and Effects		
Construction Phase	<u>Description:</u> The proposed development and site works would not be visible from this location.	
	Magnitude of Change	Negligible
	Importance of Effect	Negligible
	Quality	Neutral
	Duration	Temporary
Operational Phase	<u>Description:</u> The proposed development would not be visible from this location.	
	Magnitude of Change	Negligible
	Importance of Effect	Negligible
	Quality	Neutral
	Duration	Permanent

Viewpoint 14: 'Prospect 20' on local road at Rathnabo

Baseline/ existing description	The existing view is from a local road in an elevated area approx. 2.6km east of Blessington. This view is from along the aforementioned 'Prospect 20' scenic route (refer to Figure 10.5), that allows for views across the Blessington Lakes. However, owing to topography and vegetation, the lake is not visible at this location; a location that was selected to allow for the 'worst case scenario' of potential visibility	
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Viewpoint 14: 'Prospect 20' on local road at Rathnabo		
	<p>of the proposed development from Co. Wicklow scenic designations. The views are representative of views enjoyed by residential receptors and road users.</p> <p>In the middle-ground to the left, the rooflines of the town are partially visible; to the middle and right thick vegetation covers the view. The site, GAA club and the school are barely visible in the distance. In the background, the Glen Ding Forest is visible to the left, as well as the degraded landscape of the quarry site upon the skyline.</p>	
Sensitivity	High	
Visual Impacts and Effects		
Construction Phase	<p><u>Description:</u></p> <p>The proposed site works would be faintly visible from this location - over 2.5km from the site. However, these are highly unlikely to be noticed.</p>	
	Magnitude of Change	Low
	Importance of Effect	Low
	Quality	Adverse
	Duration	Temporary
Operational Phase	<p><u>Description:</u></p> <p>The proposed development is likely to be faintly visible from this location and will chiefly take the form of some of the residential houses and/or blocks being faintly visible. However, these will be located well below the skyline, and in the context where other built development in Blessington will also be partially visible. However, at a distance of more than 2.5km from this location, the proposed development is likely to have a notably low impact on the inherent visual amenity at this setting.</p>	
	Magnitude of Change	Low
	Importance of Effect	Low
	Quality	Adverse
	Duration	Permanent

10.6.3 Summary

For the 'construction stage,' while a 'High' magnitude of change with an 'Adverse' quality of effect is to be expected in the general proximity to the proposed development, these will be 'temporary' in duration, and is broadly reflective of the construction period of the vast majority of proposed developments. However, as receptors move further away from the construction site, the magnitude of change accordingly lowers, while the quality and duration of impact remain similar (i.e. 'Adverse' and 'temporary').

The operational phase (i.e. post-construction) of the proposed development, however, allows for a more revealing insight into the longer-term/permanent likely effects generated by the proposed development.

Out of 14 no. viewpoints, the 'magnitude of change' varied from 'High', where the receptors were in proximity to the site, to 'negligible', where no views of the proposed development are likely to be visible. However, it is worth noting that in the majority of cases, the 'magnitude of change' was deemed to be no higher than 'Low' in the majority of cases (i.e. 8 out of the 14 viewpoints).

In terms of 'Importance of effect,' in all cases the operational stage was deemed to be not significant, and 'permanent' in duration.

In terms of the 'quality of effect', it is striking that just two of the 14 viewpoints were deemed to have an 'Adverse' operational stage quality of effect. In four viewpoints, the operational stage quality of effect was deemed to be 'beneficial', while in the remaining 8 viewpoints, the operational stage quality of effect was deemed to 'neutral.'

In summary, such notably low visual effects are an apt reflection on the comprehensive and suitable design, scale and siting of the proposed development.

10.7 Cumulative Impacts

10.7.1 Landscape

A number of permitted and proposed developments in the vicinity of the proposed development site are listed in Section 10.4.2 of this chapter.

This would reflect the change on the proposed lands and, to a lesser extent, in the wider Blessington lands. The Phase 1 development has already begun construction and will be nearing completion in the near future. The sites south the BIRR and north of the shopping centre, are expected to start construction soon on further residential development.

These changes are all part of a policy to deliver an expanded urban area and consolidation of Blessington, and the road infrastructure in the form of the BIRR (northern section) to support these developments. In addition, the proposed changes will all be unfolding in the context of a suburban locale that is zoned 'Urban', and which is deemed to be of 'Low Sensitivity.'

While the scale of the site is considerable, the nature of the proposed development does not reflective this, while results in a lower cumulatively impact than may otherwise be the case for a site of this size that is zoned 'Urban.' This is chiefly because the nature of the proposed development is spread between a low rise housing development with considerable landscape/planting measures proposed; an extension to an existing inner relief road; and local/community park. Of these three elements, only the proposed residential scheme and BIRR northern section could have a capacity to generate a high landscape cumulative impacts.

The cumulative landscape effect of all these changes will be transformational for the lands involved. They will see mostly greenfield areas become more urbanised with planned amenities, landscaped streets, and a variety of housing styles and materials, along with a town park and the BIRR.

The magnitude of cumulative change to the landscape ranges from '**Medium**' to '**High**', depending on the context of the receiving environment combined with the nature of the proposed development at that section of the site, as well as the proximity to the proposed change.

The cumulative localised landscape effect would be '**Medium to Significant**', depending on the context of the receiving environment combined with the nature of the proposed development at that section of the site, as well as the proximity to the proposed change.

Qualitatively, the landscape effect will range from **'Neutral' to 'Adverse' to 'Beneficial'**, depending on the context of the receiving environment, the nature of the proposed development at that section of the site, as well as the proximity to the proposed change.

In all instances, the duration of the cumulative landscape change will be **'Permanent.'**

10.7.2 Visual

Viewpoints were described under Section 10.6.2. This section assesses the cumulative visual effects of the proposed development along with other proposed or permitted development.

As with the cumulative landscape effects, when it comes to the cumulative visual impacts of the proposed development, the nature of the proposed development is spread between a low rise housing development with considerable landscape/planting measures proposed; an extension to an existing inner relief road; and local/community park. Of these three elements, only the proposed residential scheme could have a capacity to generate a high visual cumulative impacts.

In relation to the proposed residential development within the site, the highest potential for cumulative visual impacts to occur will be in conjunction with the Phase 1 residential development currently under construction.

The cumulative visual effect of all these changes will see mostly greenfield areas become more urbanised with planned amenities, landscaped streets, and a variety of housing styles and materials, along with a town park and the BIRR. However, receptors will view these changes in the context of a suburban locale that is zoned 'Urban', and which is deemed to be of 'Low Sensitivity,' and on the northern edge of a Co. Wicklow 'Self-Sustaining Growth Town,' that has seen steady growth and development over the last quarter century.

Thus, the magnitude of cumulative visual change will range from **'Negligible' to 'High'**, depending on the context of the receiving environment combined with the nature of the proposed development at that section of the site, as well as the proximity to the proposed change.

The cumulative visual effect would be **'Negligible' to 'High'**, depending on the context of the receiving environment combined with the nature of the proposed development at that section of the site, as well as the proximity to the proposed change.

Qualitatively, the visual effect will range from **'Neutral' to 'Adverse' to 'Beneficial'**, depending on the context of the receiving environment, the nature of the proposed development at that section of the site, as well as the proximity to the proposed change.

In all instances, the duration of the cumulative visual change will be **'Permanent.'**

In addition, there are no known significant interactions between the likely landscape & visual effects and those of other chapters e.g. 'Population and Human Health' etc.

10.8 Mitigation Measures

The following recommendations are put forward to mitigate against the negative impacts mentioned above and to reinforce the positive impacts of the proposed development. Mitigation measures are proposed and considered only on the lands of the subject site.

10.8.1 Construction Phase

During construction there will be a change to the landscape and there will be negative visual impacts for residents and visitors to the areas adjacent to the site associated with construction activity.

The remedial measures proposed revolve around the implementation of appropriate site management procedures, such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc. Visual impact during the construction phase will be mitigated somewhat through 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.

Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate. To reduce the potential negative impacts during the construction phase, good site management and housekeeping practices will be adhered to. The visual impact of the site compound and scaffolding visible during the construction phase are of a temporary nature only and therefore require no remedial action other than as stated above.

It is noted that a Construction Environmental Management Plan has been prepared by the project engineer, which incorporates the above site management procedures. This Management Plan will inform a revised Construction Environmental Management Plan to be prepared by the appointed contractor prior to the commencement of development and agreed with the Planning Authority.

Existing trees and woodlands to be retained are shown in the Landscape Design Report and Arboricultural drawings prepared by Charles McCorkell Arboricultural Consultancy & CSR (included separately as part of this planning submission).

Existing trees to be retained are particularly sensitive to negative impacts during the construction phase if proper protection measures are not adhered to. With regard to the protection of the retained trees on site during proposed construction works, reference should be made to BS5837: Trees in relation Design, Demolition and Construction – Recommendations (BSI, 2012). Tree protection details have been included in the Arboricultural drawings and report (included separately as part of this planning submission).

Adverse impacts both during construction and at operation phases could be mitigated through undertaking the following site works early on in the construction process in order to soften and screen views as early on as possible.

Reducing the footprint of all construction works wherever feasible and ensuring the remainder of the land is retained as green field will also limit any adverse effects during the construction phase.

Table 10.7: Table of Mitigation Measures – Construction Phase

Character of potential impact	Mitigation measure
Construction Phase	
Visual Impact of construction works	To follow appropriate site management procedures, such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc
Landscape Character	Maintain the character of the site by implementing the proposed planting and landscape measures in accordance with the proposed landscape plans by KFLA and CSR Landscape Architects, included separately as part of this planning submission.
Existing Vegetation	To protect trees to be retained. For trees to be removed, grind out stumps in accordance with BS5837:2012;

10.8.2 Operational Phase

The scheme design incorporates significant consideration in respect of best practice layouts and to successfully integrate it into the receiving environment.

The architectural layout aims to address visual impacts by proposing variety in scale of buildings. Elevations and materiality complement local styles and character.

The retention of hedgerows and trees, where feasible, and the planting of additional trees and shrubs throughout the site and open spaces, where possible, will reduce any potential visual mass of the buildings, and will soften and partially/fully screen the development over time from various viewpoints, as identified in the assessment, thereby minimising the visual impacts whilst creating a quality of place and residential amenity.

Landscape works necessary for creation of a development of quality are proposed with the effect of also eliminating adverse effects generated due to the proposed development. The planting of substantial numbers of new trees and other planting in the open spaces, the site boundaries and internal roads, both native and ornamental varieties, will enhance the overall appearance of the new development and will more than compensate for the removal of hedgerows and trees where needed for the construction works. It will also increase the overall landscape capacity of the site to accommodate development.

Native and appropriate planting for biodiversity has been incorporated into the scheme in accordance with the advice of the Project Ecologist.

Public open spaces have been designed as part of an overall design strategy that focuses on creating a 'sense of place' and individual character for the development area. The quality of the public realm scheme is of a high standard and the quality of materials proposed is similarly high and robust. The design of public open space will form part of a network of spaces that includes areas for passive and active recreation, social / community interaction and play facilities catering for all ages. Application of best practice horticultural methods will ensure that mitigation measures establish and grow appropriately.

In summary, the mitigation of operational effects will be through the delivery of a comprehensive, quality design, rather than in addressing residual effects post design and implementation.

10.9 Residual Impacts

Given the planning policy for the area, the intensification of land use, as it changes from now mixed-use, farmland and former quarry site into a residential development and road infrastructure is a change that cannot be mitigated. However, these proposals reflect best practice in residential area layout and connectivity, reflect the concepts in the wider masterplan and will consolidate the urban area here with an overall beneficial effect locally and to the wider surrounding area.

No significant residual impacts are predicted in relation to landscape and visual amenity.

10.10 Monitoring

10.10.1 Construction Phase

Landscape tender drawings and specifications will be produced to ensure that the landscape work is implemented in accordance with best practice. This document will include tree work procedures, soil handling, planting and maintenance. The contract works will be supervised by a suitably qualified landscape architect.

The planting works will be undertaken in the next available planting season after completion of the main civil engineering and building work.

10.10.2 Operational Phase

This will consist of weed control, replacement planting, pruning etc. All landscape works will be in an establishment phase for the initial three years from planting. The company responsible for site management of the scheme will be responsible for the ongoing maintenance of the site after this three-year period is complete.

10.10.3 Reinstatement

The proposed landscape development works in the form of tree and shrub planting will be used to re-instate the site, post-construction. These works will be carried out by an appointed landscape contractor and will be supervised by a suitably qualified landscape architect or manager.

10.11 Difficulties Encountered

There were no specific difficulties encountered during the preparation of the landscape and visual impact assessment.

10.12 References

- 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 Assessment Reports (May 2022), published by the Environmental Protection Agency.
- Wicklow County Development Plan 2022-2028.

11. CULTURAL HERITAGE

11.1 Introduction

IAC Archaeology has prepared this chapter to assess the impact, if any, on the archaeological, architectural, and cultural heritage resource of a proposed development at Blessington Demesne, Co. Wicklow.

This study determines, as far as reasonably possible from existing records, the nature of the archaeological, architectural and cultural heritage resource in and within the study area of the proposed development using appropriate methods of study. Desk-based assessment is defined as a programme of study of the historic environment within a specified area or site that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic, and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage assets. This leads to the following:

- Determining the presence of known archaeological/architectural heritage assets that may be affected by the proposed development;
- Assessment of the likelihood of finding previously unrecorded archaeological remains during the construction programme;
- Determining the effect upon the setting of known cultural heritage sites in the surrounding area; and
- Suggested mitigation measures based upon the results of the above research.

11.1.1 Expertise

The assessment was undertaken by Faith Bailey (MA, BA (Hons), MIAI, MCIfA) of IAC Archaeology and has been informed by a programme of geophysical survey (Nicholls 2020, Licence Ref.: 20R0236) and a programme of archaeological testing (Licence Ref.: 21E0133), undertaken by Muireann Ní Cheallacháin of IAC Archaeology. Faith has 19 years of post-graduate experience in the production of archaeological and built heritage assessments and EIAR chapters for a range of developments nationwide. These include large scale residential developments, industrial developments and roads and infrastructure schemes. Faith has been working on the development of Blessington Demense since 2020 and is very familiar with the history and archaeology of the landscape.

11.2 Assessment Methodology

Research for this assessment has been undertaken in four phases. The first phase comprised a paper survey of all available archaeological, architectural, historical and cartographic sources. The second phase involved a field inspection of the proposed development area. The third phase comprised a programme of archaeological geophysical survey and the fourth phases a programme of archaeological testing. Additional field inspections have been carried out since the completion of archaeological fieldwork.

11.2.1 Desktop Research – Principal Data Sources

The following sources were examined and a list of areas of archaeological, architectural and cultural heritage potential was compiled:

- Record of Monuments and Places for County Wicklow;
- Sites and Monuments Record for County Wicklow;
- National Monuments in State Care Database;
- Preservation Orders List;
- Topographical files of the National Museum of Ireland;
- Cartographic and written sources relating to the study area;
- Wicklow County Development Plan 2022–2028;
- Blessington Local Area Plan, 2013-2019;
- Aerial photographs;
- Place name analysis;
- Excavations Bulletin (1970–2023); and
- National Inventory of Architectural Heritage.

Record of Monuments and Places (RMP) is a list of archaeological sites known to the National Monuments Section, which are afforded legal protection under Section 12 of the 1994 National Monuments Act and are published as a record.

Sites and Monuments Record (SMR) holds documentary evidence and field inspections of all known archaeological sites and monuments. Some information is also held about archaeological sites and monuments whose precise location is not known e.g. only a site type and townland are recorded. These are known to the National Monuments Section as ‘un-located sites’ and cannot be afforded legal protection due to lack of locational information. As a result, these are omitted from the Record of Monuments and Places. All recorded archaeological sites are also listed on a website maintained by the Department of Housing, Local Government, and Heritage (DoHLGH) – www.archaeology.ie.

National Monuments in State Care Database is a list of all the National Monuments in State guardianship or ownership. Each is assigned a National Monument number whether in guardianship or ownership and has a brief description of the remains of each Monument. The Minister for the DoHLGH may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

Preservation Orders List contains information on Preservation Orders and/or Temporary Preservation Orders, which have been assigned to a site or sites. Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

The topographical files of the National Museum of Ireland are the national archive of all known finds recorded by the National Museum. This archive relates primarily to artefacts but also includes references to monuments and unique records of previous excavations. The find spots of artefacts are important sources of information on the discovery of sites of archaeological significance.

Cartographic sources are important in tracing land use development within the development area as well as providing important topographical information on areas of archaeological potential and the development of buildings. Cartographic analysis of all relevant maps has been made to identify any topographical anomalies or structures that no longer remain within the landscape.

Documentary sources were consulted to gain background information on the archaeological, architectural and cultural heritage landscape of the proposed development area.

Aerial photographic coverage is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its likely potential for archaeology. A number of sources were consulted including aerial photographs held by the Ordnance Survey, Bing Maps, and Google Earth.

Place Names are an important part in understanding both the archaeology and history of an area. Place names can be used for generations and in some cases have been found to have their root deep in the historical past.

Development Plans contain a catalogue of all the Protected Structures and archaeological sites within the county. The Wicklow County Development Plan (2022-2028) and Blessington Local Area Plan (2013-2019) were consulted to obtain information on cultural heritage sites in and within the immediate vicinity of the proposed development area.

The National Inventory of Architectural Heritage (NIAH) is a government-based organisation tasked with making a nationwide record of locally, regionally, nationally and internationally significant structures, which in turn provides county councils with a guide as to what structures to list within the Record of Protected Structures. The NIAH have also carried out a nationwide desk-based survey of historic gardens, including demesnes that surround large houses.

Excavations Bulletin is a summary publication that has been produced every year since 1970. The hard copy publication summarises every archaeological excavation that has taken place in Ireland during that year up until 2010 and since 1987 has been edited by Isabel Bennett. This information is vital when examining the archaeological content of any area, which may not have been recorded under the SMR and RMP files. The information is also available online and includes years from 2011 to the present (www.excavations.ie).

The following legislation, standards and guidelines were consulted as part of the assessment.

- National Monuments Acts, 1930-2014;
- Planning and Development Act, 2000 (as amended);
- Heritage Act, 1995 (as amended);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EIAR) (EPA 2022). Dublin: Government Publications Office;
- 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); and
- Architectural Heritage Protection Guidelines for Planning Authorities (2011).

11.2.2 Field Inspections

Field inspection is necessary to determine the extent and nature of archaeological, architectural, and historical remains and can also lead to the identification of previously unrecorded or suspected sites and portable finds through topographical observation and local information.

The field inspection entailed:

- Inspecting the proposed development area and its immediate environs;
- Noting and recording the terrain type and land usage;
- Noting and recording the presence of features of archaeological, architectural, or cultural heritage significance;
- Verifying the extent and condition of any recorded sites; and
- Visually investigating any suspect landscape anomalies to determine the possibility of their being anthropogenic in origin.

The proposed development area was initially inspected in September 2020. Additional site visits have been carried out since that date, in January, March and June of 2023.

11.2.3 Geophysical Survey

Geophysical survey is used to create 'maps' of subsurface archaeological features. Features are the non-portable part of the archaeological record, whether standing structures or traces of human activities left in the soil. Geophysical instruments can detect buried features when their electrical or magnetic properties contrast measurably with their surroundings. In some cases, individual artefacts, especially metal, may be detected as well. Readings, which are taken in a systematic pattern, become a dataset that can be rendered as image maps. Survey results can be used to guide excavation and to give archaeologists insight into the pattern of non-excavated parts of the site. Unlike other archaeological methods, the geophysical survey is not invasive or destructive.

A geophysical survey was undertaken within the proposed development in December 2020 in order to inform the overall development of the lands under the ownership of the applicant (Nicholls 2020, Licence Ref.: 20R0236). The results of the geophysical survey relevant to the proposed development area are provided in this assessment.

11.2.4 Archaeological Testing

Archaeological Test Trenching can be defined as 'a limited programme... of intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site on land or underwater. If such archaeological remains are present test trenching defines their character and extent and relative quality' (ClfA 2020a, 4). A programme of archaeological testing based on the results of the geophysical survey was carried out within the proposed development and surrounding environs in March 2021 (Ní Cheallacháin 2021, Licence Ref.: 21E0133). The results of the test trenching relevant to the proposed development area are provided in this assessment.

11.2.5 Definition of Study area

The study area is defined as an area measuring c. 500m from the proposed development area.

11.2.6 Consultation

Following the initial research, a number of statutory and voluntary bodies were consulted to gain further insight into the cultural background of the background environment and study area, as follows:

- Department of Housing, Local Government and Heritage (DoHLGH) – the Heritage Service, National Monuments: Record of Monuments and Places; Sites and Monuments Record; Monuments in State Care Database and Preservation Orders;
- National Museum of Ireland, Irish Antiquities Division: topographical files of Ireland;
- Wicklow County Council: Planning Section;
- Trinity College Dublin, Map Library: Historical and Ordnance Survey Maps

11.2.7 Definition of Study area

In order to assess, distil and present the findings of this study, the following definitions apply:

‘Cultural Heritage’ where used generically, is an over-arching term applied to describe any combination of archaeological, architectural, and cultural heritage features, where –

- the term ‘archaeological heritage’ is applied to objects, monuments, buildings or landscapes of an (assumed) age typically older than AD 1700 (and recorded as archaeological sites within the Record of Monuments and Places)
- the term ‘architectural heritage’ is applied to structures, buildings, their contents and settings of an (assumed) age typically younger than AD 1700
- the term ‘cultural heritage’, where used specifically, is applied to other (often less tangible) aspects of the landscape such as historical events, folklore memories and cultural associations.

11.3 Characteristics of the Proposed Development

Please refer to chapter 2 of the EIAR for the characteristics of the proposed development.

11.4 Baseline Description

11.4.1 Introduction

As noted in Section 11.3, the proposed development comprises three elements that are formed by the proposed parkland, the proposed residential development and the northern section of the proposed distributor road. These elements are referred to where applicable throughout the description and analysis within this section of the assessment.

The overall proposed development area is located within the townlands of Blessington Demesne, Newpaddocks, Santryhill and Holyvalley. These townlands are located in the parish of Blessington and barony of Talbotstown Lower, County Wicklow. There are a number of recorded archaeological sites located within the overall proposed development area. Three sites are located within the proposed park, that comprise the site of Downshire House (RMP WI005-018) and an ornamental lake (RMP WI005-016). A redundant record is also located in the northeast corner (RMP WI005-017). The northern section of an early medieval ringfort is located within the proposed residential portion of the development area (RMP WI005-023). The sites are described in detail in Appendix 11A. There are a further 12 sites recorded within the 500m study area (Figure 11.1).

There are no protected structures, nor structures listed in the NIAH, within the overall proposed development area. A group of structures listed in the RPS and NIAH, which form the historic core of Blessington Village are located on the periphery of the study area. The closest protected structure is the former Market House (RPS 05-05), located c. 495m to the southeast. The closest NIAH structure is a house (NIAH 16303026), located c. 245m to the south-southwest (Figure 11.1).

The proposed park element of the development occupies the former demesne landscape associated with Downshire House. It is not a recorded monument in its own right, but contains the buried and upstanding remains associated with the late 17th century geometric gardens that were originally established when the house was constructed. The house was burnt in 1798 and was in ruins for a number of years before being demolished. It is important to note that as part of a permitted residential development, residential development has commenced to the immediate east of the proposed park, with the southern portion of the original demesne incorporated into phase 1 of the park.

11.4.2 Archaeological and Historical Background

11.4.2.1 Prehistoric Period

Until recently the Mesolithic period (7000-4000 BC) was believed to have been the earliest time for human occupation of the island of Ireland; however, recent research suggests there may have been human activity in the southern half of Ireland as early as the Upper Palaeolithic (Dowd and Carden 2016). The Mesolithic period is still accepted as the first time there is evidence for widespread occupation in Ireland, as a large portion of the north of the country would have been beneath extensive glaciation earlier than this. During the Mesolithic Period, people lived transient lives, hunting, fishing, and foraging for subsistence. Coastal and riverine resources were of key importance to these communities. As a result of this mobile lifestyle, there is little settlement evidence in the archaeological record from this period. Often the only trace of these groups are lithic scatters and shell middens.

Although there is no direct evidence for Mesolithic activity within this proposed development area, c. 770m to the east an emerging Mesolithic presence has recently been identified in the form of an extensive lithic assemblage. The assemblage was uncovered along the shores of modern Poulaphuca Reservoir and contains a number of Bann Flakes, along with other locally sourced stone points, blades and axes.

During the Neolithic period (4000-2500 BC) communities became less mobile and their economy became based on the rearing of stock and cereal cultivation. This transition was accompanied by major social change. Agriculture demanded an altering of the physical landscape. Forests were rapidly cleared, and field boundaries constructed. There was a greater concern for territory, which saw the construction of large communal ritual monuments called megalithic tombs, which are characteristic of the period. Whilst there are no sites of this date recorded within the immediate vicinity of the development area, a stone hammer-head is noted within the NMI files as being recovered from the townland of Blessington (NMI 1959:521), which has the potential to be Neolithic in date.

An extensive Neolithic lithic assemblage including over 100 stone axes along with saddle querns and sherds of Neolithic Pottery has also been recovered around the shores of the modern Poulaphuca Reservoir. Two Neolithic Houses were excavated by Chris Corlett c. 6.1km and c. 6.7km to the south of the proposed development area, located either side of the Valkeymount Bridge (Robert Hanbidge pers comms). This evidence of Neolithic settlement coupled with the lithics and quern stones indicates a significant Neolithic presence in the wider area.

The Bronze Age (2500-800 BC) was marked by the production and use of metals in Ireland for the first time. As with the earlier Mesolithic–Neolithic transition, the Neolithic–Bronze Age transition was accompanied by significant change in material culture and society. The construction of megalithic tombs ceased after the wedge tombs of the early Bronze Age with a focus on individual burials emerging.

Bronze Age burials occurred in subterranean cist or pit burials that were either in isolation or in small cemeteries. These burials contained inhumed or cremated remains and were often accompanied by a pottery vessel (Buckley and Sweetman 1991). There are two recorded barrows (WI005-019/21) located c. 260m and c. 315m to the southeast of the proposed development area along with a ring ditch located c. 25m to the north (WI005-131), identified during the recent geophysical survey. A burial cairn (WI005-025) is also recorded c. 212m to the southeast. This monument was removed by sand quarrying but comprised of three cists that contained an unprotected cremation and two crouched inhumations.

The proximity of a stone circle (WU005-014) located c. 400m to the west-southwest of this proposed development, represents a Bronze Age ritual or ceremonial monument within area. When viewed in conjunction with other surrounding monuments such as the several barrows and other burial sites that are located within and around the proposed development area, there is likely to have been a substantial Bronze Age presence in the area.

A significant gold artefact, known as the Blessington Gold Lunula is held now by the British Museum (Ref. WG.31) and dates to the transition between the Neolithic and Bronze Age period (2400BC-2000BC). The item consists of a flat-sheet crescent of beaten gold with quadrangular terminals. It is decorated with a finely incised and complex geometric pattern and is likely to have been worn around the neck. Unfortunately, the exact location of the find is unknown, and it was gifted to the British Museum in 1909. Further attesting to the significance of Bronze Age metalworking within the wider surrounding area was the discovery of the hoard of metal working tools; the Bishopsland Hoard. Found c. 7.3km to the southwest, the hoard dates from the middle Bronze Age 1200-1000BC and is on display at the Museum of Archaeology (NMI:1942: 1750-1771).

Compared to the rest of Irish prehistory, there is very little evidence in Ireland as a whole, representing the Iron Age (800 BC-AD 500). As in Europe, there are two phases of the Iron Age in Ireland: the Hallstatt and the La Tène. The Hallstatt period generally dates from 800BC onwards and spread rapidly from Austria, across Europe, and then into Ireland. It saw the rise and fall of elite hierarchical dynasties that derived their wealth from control of trade with the Mediterranean. It is only represented in Ireland by a small number of bronze swords and other items of Hallstatt type (Raftery 1994, 107). The later Iron Age, or La Tène, also originated in Europe during the middle of the 5th century BC, so called after the site of a significant votive deposit on Lake Neuchâtel in Switzerland. For a number of centuries, the La Tène Celts were the dominant people in Europe, until they were finally overcome by the Roman Empire. La Tène art is defined by its curvilinear design, which has flowing abstract compositions. There are no recorded Iron Age sites located within the study area of the proposed development.

11.4.2.2 Early Medieval Period (AD 500-1100)

The early medieval period is depicted in the surviving sources as entirely rural characterised by the basic territorial unit known as *túath*. Byrne (1973) estimates that there were at least 150 kings in Ireland at any given time during this period, each ruling over his own *túath*. During this sometimes-violent period, roughly circular defensive enclosures known as ringforts were constructed to protect farmsteads. Although most of the ringforts that have been excavated are shown to date to this period, some have earlier origins and may have been originally constructed during the Iron Age, or possibly even earlier.

The ringfort or rath is considered to be the most common indicator of settlement during the early medieval period (Stout 1997). One of the most recent studies of early medieval settlement enclosures has suggested that there is potential for at least 60,000 such sites to have existed on the island

(O'Sullivan et al. 2014, 49). Ringforts were often constructed to protect rural farmsteads and are usually defined as a broadly circular enclosure delineated by a bank and ditch. Ringforts can be divided into three broad categories – univallate sites, with one bank or ditch; multivallate sites with as many as four levels of enclosing features and platform or raised ringforts, where the interior of the ringfort has been built up. These enclosed sites were intimately connected to the division of land and the status of the occupant. When the radiocarbon and dendro-chronological dates from ringfort excavations are compared (Stout 1997, 22-31), not only is the ringfort clearly an early medieval phenomenon, but a strong case emerges for dating the phase of ringfort construction to a period between the 7th and 9th centuries AD. The most common structures found within ringforts, usually through excavation, are the remains of buildings, generally houses, either circular or rectangular.

The northern part of a recorded ringfort is located within the proposed residential element of the proposed development. The site was initially identified during geophysical survey in 2020 and is truncated by the constructed distribution road that runs through the development area. The southern portion of the enclosure and an associated annex were subject to archaeological testing in 2021 and then archaeological excavation (preservation by record) in 2022 (Licence 21E0133, Ni Cheallachain 2021/2022). A number of artefacts were recorded comprising ignite/jet bracelet, flint lithics, stone tools, metalworking waste of iron and possible non-ferrous metals, kiln or furnace furniture and a possible crucible fragment. Testing in 2021 confirmed that the enclosure extends into the residential portion of the proposed development, although part of the route of the enclosing ditch has been subject to ground disturbance in this area.

A further possible ringfort site is located to the immediate north of the proposed distribution road (WI005-023). It is noted as being identified from an aerial photograph, but the historic OS maps show a pond in this area. The site has since been removed by extensive quarrying.

11.4.2.3 Medieval Period (AD 1100-1600)

The beginning of the medieval period is characterised by political unrest that originated from the death of Brian Borumha in 1014. Diarmait MacMurchadha, deposed King of Leinster, sought the support of mercenaries from England, Wales and Flanders to assist him in his challenge for kingship. Norman involvement in Ireland began in 1169, when Richard de Clare and his followers landed in Wexford to support MacMurchadha. Two years later de Clare (Strongbow) inherited the Kingdom of Leinster and by the end of the 12th century the Normans had succeeded in conquering much of the country (Stout and Stout 1997, 53). The Normans established their administrative system throughout their conquered territories with the introduction of medieval manors and boroughs. An example of such a borough is Burgage, c. 2km to the south of the proposed development area (Trant 2004). The development area was situated within the Lordship of the Three Castles at this time. Evidence of Anglo-Norman occupation in the area is recorded at Rath Turtle Moat (WI005-012), c. 1.05Km northwest. It is thought that the Anglo-Normans adapted this site into a defensive ringwork.

11.4.2.4 Post Medieval Period (AD 1600-1900)

Michael Boyle, the Archbishop of Dublin and Lord Chancellor of Ireland, purchased the Lordship of the Three Castles in 1667 for £1,000 from the Cheevers, an Anglo-Norman family (Trant 2004). Boyle was subsequently granted a royal charter to establish the town of 'Blesinton' (Blessington) in the townland of 'Munfine' during the reign of Charles II in 1669. The charter appointed a sovereign, two bailiffs, and twelve burgesses and enabled Blessington to hold court and send two members to parliament (Lewis 1837).

Archbishop Boyle began works on Downshire House (RMP WI005-018) in 1673. The house itself was a two-storey brick mansion situated in a geometric designed landscape comprising avenues and a formal garden, as was the style during the 17th century. Today vestiges of the original geometric landscape survive, which itself appears to have been subject to slight redesign over the years. A view of the house is presented in Plate 11.1, which is taken from a mid-18th century engraving.

Downshire House was described by Bence-Jones (1978, 44) as a 'House of two storeys with dormered attic in its high-pitched roof; of brick and built on an "H"-plan. Principal front with five-bay centre recessed between two three-bay projecting wings joined by a single-storey balustraded colonnade. Roof on bracket cornice; single-storey wing at one side. The house stood at the end of an avenue in a fine demesne with a deer park'. The northeast facing elevation, as shown in Plate 11.1, is the elevation described by Bence-Jones and would have overlooked the extensive gardens. It is probable that the southern elevation (approached from Blessington) would have been equally impressive in terms of detail.

The house was recorded as having a length of 106 feet and a width of 61 feet, with external walls that were 10 feet high. The cellar was 60 feet in length and 28 feet wide. Excavations from 2003 state that footprint of the house was investigated, and the outline recorded, although no plans are presented of the house within the reports. Today, the only surviving portion of the cellar consists of a brick-built stairwell leading down, with one return, to a barrel-vaulted chamber (dims. c. 8m x 5m). This formed part of the original cellar, the majority of which was likely backfilled with the remains of the house once it had been demolished.

The house was burnt down during the rebellion of 1798 and was never rebuilt. It is marked as being in ruins on the first edition OS map of 1838 and whilst the H-shape plan is visible, the single-storey wings that once flanked the main structure, are not marked as present.

During the late 17th century, the main entrance avenue to the house directly connected the mansion to Blessington, as it was aligned with St. Mary's Church (Trant 2004). Rocque's small map of the landscape, which dates to 1760, shows this main avenue, with additional diagonal and geometric avenues to the north, west, and east (Figure 11.2). This can be described as 'crows-foot' avenues and were characteristic within 17th century designed landscapes. Today, the main avenue is occupied by a modern link road with Blessington, whereas the south-eastern avenue runs through a shallow valley. The south-western avenue is echoed in the design of a distribution road within a residential development and the north-eastern avenue may have once been visible in the landscape but has been wholly covered by dumped material, which was deposited during the construction of the Blessington Relief Road. The Relief Road has resulted in significant truncation of the original demesne, with associated dumped material in the original geometric gardens affecting a large portion of the gardens within the proposed development. The demesne itself has been used for farming since the destruction of the main house in 1798 and Plate 11.2 shows much of the demesne prior to development in 1955. Whilst the landscape is covered in snow, the original access drive from Blessington is visible, along with an ornamental pond and structures within the former yard to the southwest of the main house. The outline of the geometric gardens to the north of the main house are also visible as earthworks in the image.

Archaeological monitoring of ground works associated with the permitted development to the immediate east of the proposed park (Licence 21E0133) has revealed poorly preserved remains of features associated with the former gardens, including brick footpaths, drains and dumps of demolition

material. During the course of these works the remains of two buried individuals were recorded c. 145m east of the proposed park that could be dated to the post medieval period due to the presence of bone buttons found on one individual, consistent with fastenings on trousers. This individual was also buried with a hair piece, fragments of which survived. The skeletal remains were both male, aged between 18 and 24. Analysis of the remains is ongoing, but given Downshire House was destroyed during the rebellion of 1798, it is tempting to think that these individuals met their end during this sequence of events and were not accorded burial within consecrated ground, as would have been expected.

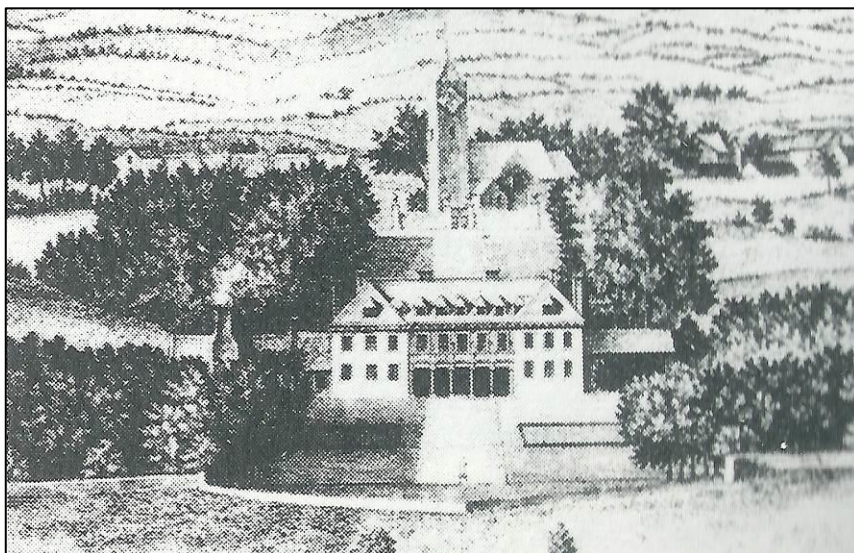


Plate 11.1 *Downshire House (RMP WI005-018), facing southeast with the bastion in the foreground*



Plate 11.2 *Blessington Demesne (1955), facing north*

11.4.3 Summary of Previous Archaeological Fieldwork

In 2002 archaeological testing was carried out to the immediate east and southeast of the proposed development, prior to the construction of the Blessington relief road and associated retail, educational and leisure facilities (Licence 02E1748, Bennett 2002:1958). Trenches were opened within a farmyard adjacent to the former demesne outbuildings and along the main avenue from Blessington Church to the remains of Downshire House (RMP WI005-018). The crows-foot avenue extending east from Downshire House was also investigated. The foundations of an enclosing wall of the farmyard, contemporary with the demesne walls, was identified. Testing of the main avenue revealed that it formerly consisted of deposits of stone and gravel. The stratigraphy of the crows-foot avenue was not as distinct with a number of layers of gravel present. Additional trenches were opened within the

constraint of a possible rectangular enclosure (RMP WI005-020), c. 360m southeast of the proposed development; however, nothing of archaeological significance was identified and it was interpreted as a designed landscape feature.

Later monitoring of groundworks for the development identified a path feature consisting of a dump of stone in a wet area to allow access for horses and carts (Licence 02E1748, Bennett 2003:2069). The remains of an old garden path, post-medieval agricultural furrows and the foundations of the demesne wall were also uncovered within the former demesne. The foundations ran 20m north-south parallel to the to the surviving demesne wall 1.2m below ground level and were preserved in-situ beneath the relief road.

A second phase of assessment was carried out in 2003 within Blessington Demesne and the proposed development area. Seven test-trenches were excavated to a depth of 0.5m at the site of Downshire House (RMP WI005-018). The investigation recorded the original layout of Downshire House, and all the features identified were surveyed and recorded (Licence 03E0453, Bennett 2003:2070). Monitoring of topsoil stripping for the construction of houses (to the south of the development area) identified evidence of 18th/19th century agricultural activity in the townland (Licence 03E0453 ext., Bennett 2004:1851). The final phase of monitoring uncovered three 17th/19th century rubbish pits, signifying domestic activity in the townland and a 19th century linear drainage feature (Licence 03E0453 ext., Bennett 2007:2003). This later phase of archaeological monitoring included the roundabout and the northern arm of what will form part of the proposed distribution road.

A geophysical survey was undertaken c. 150m east of the proposed development during March 2019 (McCormack 2019, Licence 19R0024). The survey successfully identified instances of ridge and furrow cultivation within the site, and the recorded barrow (RMP WI005-019) was visible in the survey data as a circular feature of disturbed ground. No additional sites or features archaeological potential were identified within the survey area. The site was later subject to archaeological testing (Licence 20E0163), but nothing of archaeological significance was identified.

During the 1940s, investigations were carried out at the site of a circular mound (WI005-013), located c. 165m to the southeast of the proposed development. The mound was surrounded by a shallow ditch and interpreted as an 18th/19th century landscape feature. Medieval and post-medieval pottery were recovered in vicinity of the mound (Roe 1946, 1-12), although no definitive archaeological features were identified. The pottery sherds have since been catalogued within the NMI topographical files as stray finds.

Post-medieval tillage features were revealed c. 250m to the south of the proposed development area during testing in 1998 (Licence 98E0425, Bennett 1998:AD8). Some of the furrows, drills, and ridges were deemed to be contemporary with the occupation of Downshire House.

In 1996 test trenching was carried out c. 450m to the southeast of the proposed development area, which revealed substantial dumps of post-medieval industrial waste in the form of redbrick rubble and cinder (Licence 96E0328, Bennett 1996:409). The area to the north of the area contained a number of derelict brick-firing kilns and so the industrial waste likely derived from local brick-manufacturing.

Unlicensed monitoring was carried out to shallow ground works in 2019 ahead of the construction of the Sensory Garden and its associated pathways located c. 315m southwest (beside Aldi). This project was located adjacent to recorded barrow WI005-021. This barrow features a raised interior

platform/mound (with a sunken centre) and is surrounded by a ditch with an external bank. The shallow ground works revealed no features of archaeological significance (Liz Gardner pers comms). A single topsoil find of one sherd of possibly medieval/early-post medieval pottery was recovered from the redeposited topsoil within the development.

11.4.4 Geophysical Survey

A geophysical survey was undertaken in December 2020 by John Nicholls of Target Geophysics under licence 20R0236. The geophysical survey covered an area of 44.19ha and comprised high-resolution magnetometry within eight of the 11 fields of the overall land holding, focusing on the well-maintained pasture lands situated within the site boundary. Approximately c. 7.5ha of land was excluded as it was unsuitable for geophysical investigation due to poor terrain. This included the designed landscape feature of the Bastion and a substantial portion of the geometric gardens associated with Downshire House (within the area of the proposed development), due to the deposition of substantial mounds of spoil from the construction of the ring road.

The surveyed anomalies identified within the proposed development area (park and residential elements) are included below and shown in Figures 11.6 and 11.7a-c.

Table 11-1: Geophysical Survey Results

Response(s)	Location	Interpretation	Description
22	Proposed park	Designed landscape	Circular arrangement of weakly positive/negative responses c. 20-25m across corresponding to a large sub-circular depression, representing the remains of ornamental lake RMP WI005-016.
23	Southeast	? Burnt/fired Designed landscape Trend	Possible foundation remains of outbuildings associated with Downshire House (RMP WI005-018), indicated in this approximate location by the baseline resources.
24-27	Proposed park	Designed landscape Trends	Intricate network of linear/rectilinear features, lines of probable planting pits and trends, representing the partial remains of the geometric gardens/designed landscape attached to Downshire House. These responses extend over an area c. 150m x 250m in size.
28-29	Proposed park	? Burnt/fired	Strongly magnetic positive/negative sub-circular responses c. 10m (28) and c. 6m (29) in diameter. 28-29 may indicate a) burnt/fired debris representing foundation/structural features associated with the geometric gardens/designed landscape attached to Downshire House; b) burnt/fired remains of fulachta fiadh; or c) concentrations of modern ferrous material

Response(s)	Location	Interpretation	Description
			exhibiting strongly magnetic positive/negative patterns of response.
43	Proposed residential	Enclosure	Northern/north-eastern portion of a large enclosure (RMP WI005-130).
44-45	Proposed residential	?? Archaeology	Possible small sub-rectangular enclosure and linear ditch remains. Interpretation of 45 to the NW is uncertain due to adjacent modern disturbance from a former boundary and overhead power cables.
46-47	Proposed residential	?? Archaeology	Possible early field system remains (interpretation tentative).
48-52	Proposed residential	?? Archaeology	Clusters of discrete positives, potentially indicating pit remains and associated features. Interpretation is tentative. The potential that 48-52 represent near surface igneous inclusions in the bedrock should not be ignored.
53-54	Proposed residential	? Early field system	Poorly defined linear interlinking responses indicative of early field system remains.
55	Proposed residential	?? Archaeology trend	Possible small circular enclosure/ring-ditch indicated by pair of weakly magnetic curving trends. Interpretation is cautious, and a natural soil/geological and/or recent landuse origin should also be considered.

11.4.5 Archaeological Testing

The archaeological testing across the whole landholding, was undertaken by Muireann Ní Cheallacháin under licence 21E0133 in March/April 2021. A total of 148 trenches were excavated across the entire site measuring 6820 linear metres (Figure 11.6). Archaeological testing identified ten Archaeological Areas (AA) within the overall lands (AA1–10). Of the 10 potential archaeological areas that were identified, six are located within the proposed development area. AA10 comprises the 17th–18th century activity associated with Downshire House (RMP WI005-018) and its designed landscape/gardens. AA1 comprises the northern side of the recorded ringfort (RMP WI005-130) and AA6-9 comprises smaller areas scattered throughout the site of the proposed residential development element.

AA10: This area contained the remains of the 17th–18th century geometric gardens and demesne features that are associated with Downshire House (RMP WI005-018) (Figures 11.7a-b). The trench results across this area have been cross referenced with the detailed potential reconstruction of the layout of the geometric gardens from aerial photographic analysis (Figure 11.5).

Downshire House (RMP WI005-018)

Wall foundations, possibly associated with Downshire House, were recorded within Trench 120 located directly to the northeast of the only identifiable remains of Downshire House (an entrance well into a sub-surface cellar) and just outside of the eastern boundary of the proposed park. The cut of a possible external wall foundation C120.3 was aligned northwest–southeast. It had steep to vertical sides and a flat base. It contained a greyish brown silty sand fill mixed with crushed mortar, brick and slate fragments which were underlying limestone fragments and occasional in-situ cut limestone blocks which were located along the edge of the foundation cut.

The fragmented remains of a possible internal red-brick wall C120.2, was recorded 13.5m to the southwest of external wall C120.3. It measured 0.5m wide in the centre and splayed out to the southeast to a width of 1m at either end. The foundation cut measured 0.2m deep with steep sloped sides and a flat base. It comprised of crushed red-brick, a powdery pinkish mortar and stone mixed through a grey silty sand. A possible extant portion of red-brick wall was visible in eastern trench baulk. A pit/dump of crushed mortar and red-brick C120.4, was recorded directly to the southwest of wall C120.3. Here it measured 3.5m long, 1.5m wide and was up to 0.3m deep and was mixed with a grey silty sand. A spread of mottled yellowish grey compact clayey sand C120.1 with concentrations of in-situ burning and charcoal (measuring 1.9m long and 1.12m wide) was recorded at the southwest of the trench adjacent to a dump of demolition debris including brick and mortar.

Outbuildings

Trench 123 identified features that aligned with geophysical linear trends interpreted as possible foundation remains of outbuildings associated with and possibly abutting the Downshire House. A northwest–southeast aligned wall foundation C123.1 that measured 1m in width and consisted of a layer of compacted mid-grey lime mortar with frequent crushed slate, limestone fragments and crushed red-brick. The wall footing underlay a 0.23m thick rubble layer of small stone red-brick and mortar. A 13.3m long and 1m deep rubble infilled area C123.2, was recorded in the centre of the trench and was flanked by mixed gravel natural subsoil on either side. The rubble consisted of purple and blue roof slates, large rounded cobbles, red-brick fragments, red tile fragments, render, lime mortar and a variety of stone. A cobbled surface C123.3, which consisted of small and medium sized cobbles was recorded at the southwest end of the trench. The cobbles (0.08 x 0.05m) were mainly installed in a random pattern with the exception of a patch of herringbone laid cobbles at the northeast (Plate 11.3). A central gully running northwest–southeast was delineated by larger cobbles (0.17 x 0.12m) forming an edge to the cobbled surface. A northwest–southeast aligned, 1.8m wide and 0.45m thick layer of rubble C123.4 that consisted of small and medium sized stone, red-brick fragments and mortar may correspond to a collapsed wall. The rubble layer abutted the cobbled surface to the northeast and aligned with a segment of wall that extended northwest–southeast from the demesne wall at the southeast and may represent the collapsed north-western position of the same wall.



Plate 11.3 *Cobbled surface C123.3 of outbuilding in AA10, facing southeast*

Ornamental lake (RMP WI005-016)

Trench 140 was aligned across the ornamental lake (WI005-016) within the geometric gardens/designed landscape attached to the Downshire House (Plate 11.4). A northwest–southeast aligned linear feature C140.1 was recorded on the southwestern upper lip of the pond and aligned with one of the targeted designed landscape trends. It measured 0.8m wide and 0.3m deep with steep sides and a concave base. It was filled with a dark brown clayey silt with occasional brick fragments and rare charcoal inclusions. A 3.4m wide spread of rubble material that consisted of cobbles and crushed brick C140.3 was recorded 5m to the northeast. A smaller 1.8m wide spread of rubble material that consisted of crushed mortar and brick C140.2, was located on the north-eastern upper lip of the pond and aligns with one of the targeted designed landscape trends. A sherd of medieval pottery was recovered from the topsoil.



Plate 11.4 *Trench 140 across ornamental lake in AA10, facing north*

Limestone walls

A northwest–southeast aligned limestone wall C125.1, was recorded at the southwest of Trench 125 and corresponded with one of the linear geophysical trends that represented the geometric gardens/designed landscape. It may represent the western wall of the central sub-divided parterre as depicted on the plan of the possible extent of the gardens. The wall extended to the southeast and was recorded in Trenches 139 (C139.1), 144 (C144.1) and 124 (C124.3) (Plate 11.5). The top of the wall was encountered under 0.4–0.75m of topsoil while the natural subsoil was recorded at 1.53–1.7m depth.

C125.1 measured 0.57m wide and 0.75–0.82m deep and was constructed of randomly coursed roughly hewn limestone blocks bound together with a grey lime mortar. Evidence of a possible limewash was noted on the southwest face of the wall in Trench 125. The bottom 0.25–0.5m of the wall extended out by 0.12m and the wall itself and is placed on a 0.2m thick layer of mortar that may have acted as a binding agent during construction. A 0.18m thick layer of possible relict topsoil lies beneath this mortar layer indicating that the low wall has no foundation cut associated with it. A c. 0.28m thick layer of crushed mortar and limestone was noted abutting the wall in each of the trenches, which may represent the remains of a path on either side of the wall.



Plate 11.5 *Limestone wall C124.3 in AA10, facing north*

A northwest–southeast aligned wall C133.1 and a northeast–southwest aligned wall C133.2 were recorded in the middle of Trench 133 and corresponded with garden walls located at the northwest extent of the garden as depicted on the plan of the possible extent of the gardens (Plate 11.6). The top of wall C133.1 was located directly beneath the sod and it measures 0.6m wide and 0.55m deep and was constructed of randomly coursed roughly hewn limestone blocks bonded with whiteish grey mortar. A possible wall cut was recorded along the northeast edge of the wall and measured 0.12m wide and 0.15m deep. A 0.6m gap was recorded in the wall where it abuts and interacts with wall C133.2. A layer of crushed brick and mortar abutted the northern edge of the wall (probable remains of a footpath) and the surface ground level appeared raised along the alignment of C133.1. Wall C133.2 was located perpendicular to C133.1 and was constructed in the same manner and measured 6.2m in length, 0.6m in width and 0.4m in depth. A rubble layer that consisted of crushed mortar and occasional ceramic tile fragments was recorded across the top of the wall.



Plate 11.6 *Limestone walls C133.1 & C133.2 in AA10, facing south*

Linear garden features

Several wall footings or denuded foundation slots were recorded across AA10, which potentially correspond with the plan of the possible extent of the gardens and targeted linear geophysical trends representing the geometric gardens/designed landscape. These may represent more ornamental walls that would have been used to delineate flower beds or paths rather than enclose an area. The wall slots were recorded in Trenches 127, 132, 135, 139, 143, 145 and 146 and consisted of linear features of 0.5–0.8m width and 0.2–0.4m depth filled with crushed mortar and limestone block fragments with occasional slate and red-brick recorded in Trench 115 and post-medieval pottery sherds recorded in Trench 146.

Several linear garden features that did not contain rubble inclusions were recorded across AA10 included two parallel southwest–northeast aligned features that were recorded in Trenches 134, 135, 129 and 128. C134.4/135.2/129.1/128.1 measured 1.3m wide and 0.5m deep with steep sloped sides and a concave base. It was filled with a greyish brown clayey silt. C128.2/129.2/135.3/134.3 lay 3.2m to the southeast and measured 0.75m wide, 0.28m deep with steep to vertical sides and a flat base. It was filled with a mid-greyish brown clayey silt and moderate small stone inclusions. These features may be interpreted as agricultural in nature; however, due to their location they may also be associated with the partial remains of the geometric gardens/designed landscape. A 42m segment of a northwest–southeast aligned linear feature C134.1 was recorded along the southern extent of Trench 134 (Plate 11.7). It measured 1m wide and 0.3m deep and was filled with a mid-brown sandy silt. It corresponded with a linear geophysical trend and sherds of post-medieval pottery were retrieved from the investigative slot. A northeast–southwest aligned linear feature C137.2 was recorded in Trench 137. It measured 1.22m wide and 0.43m deep with steep sides and a concave base and was filled by a mid-brown gravelly clayey silt with occasional flecks and chunks of charcoal and small stone.



Plate 11.7 *Linear garden feature C134.1 in AA10, facing northwest*

Two possible garden paths were recorded in AA10 including a northwest–southeast aligned 8.3m wide ridge of gravel and sand C127.4/126.2 which, were recorded at 0.19m below topsoil in Trenches 126 and 127 and have been interpreted as a wide gravel pathway (Plate 11.8). Based on the detailed reconstruction of a plan of the geometric gardens, it appears that it represented the main central axis avenue through the geometric garden linking Downshire House and the Bastion feature to the north. A compacted surface (C137.1) or segment of a northeast–southwest aligned pathway was recorded in Trench 137. It consisted of a 3.5m wide spread of compacted mottled mid-grey clayey silt with frequent iron panning and with discrete irregular deposits of cream coloured mortar spread throughout. A linear spread of light grey brown silty clay with occasional charcoal delimits the north western extent of the surface in a straight northeast–southwest running line. This surface may represent the highly degraded northeast–southwest aligned pathway that ran through the gardens, perpendicular to the main central access path as depicted on the plan of the possible extent of the gardens.



Plate 11.8 *Possible garden path C127.4 in AA10, facing north*

A northwest–southeast aligned culvert C144.2 was recorded in the southwest of Trench 144 that aligned with one of the targeted designed landscape trends. It measured 0.6m wide, 0.3m deep and is stone-

lined with limestone capstones of 0.4m diameter placed along the top over a central void. It was also recorded 18m to the northwest in Trench 139 (C139.8).

Circular and oval garden features

Five circular and oval pits were identified across AA10 in Trenches 127, 139 and 146 which, contained a sandy silt fill and ranged in size from 0.5–1.4m diameter and 0.07–0.24m depth (Plate 11.9). Three of the circular features C139.4–6, had a shallow concave profile and were positioned in a northeast–southwest row in Trench 139. When cross-referenced with the plan of the possible extent of the gardens the two possible pits identified in Trench 127 appear to represent the highly degraded remains of two designed features that were aligned with the central avenue.

Four non-linear pits were recorded across AA10 in Trenches 124, 127, 132 and 141 that contained occasional rubble inclusions in the form of red-brick, mortar, roof slate, glass, corroded iron, charcoal and rounded stone/pebbles. They measured on average 2.2m in diameter and 0.2m deep; however, a sub-circular pit C141.1 that was located in the centre of Trench 141 measured 3.9m long and 0.6m deep. It extended outside the trench on both sides and corresponded with one of the targeted designed landscape anomalies. It had gradually sloped sides, a concave base and was filled with a basal mid to dark brown clayey sand with frequent brick fragments and pebbles and a top light to mid-brown clayey silt that surrounded frequent rubble material. The rubble material consisted of moderate amount of handmade red-brick with a large amount showing signs of vitrification along with frequent crushed mortar, shattered stone and limestone chips and occasional charcoal flecks and animal bone.

The smaller of these features may be backfilled tree pits or may have been used as bases for garden features, such as statues.



Plate 11.9 *Circular garden feature C127.5 in AA10, facing east*

A pit that was used to dump demolition rubble in the form of crushed mortar, roof slate and red-brick was recorded in Trench 131 that corresponded with a targeted large burnt/fired anomaly. The 8m wide pit C131.1, recorded in Trench 131 was backfilled with rounded cobbles and stone.

AA1: This area is formed by the northern portion of the ringfort WI005-130 (Figure 11.7c), initially recorded during the geophysical survey in 2020. Since archaeological testing, the southern portion of

the ringfort and an associated annex, have been subject to archaeological excavation as part of permitted residential development. Trenches 86, 87 and 89 targeted the northern enclosure ditch.

Trench 86 (Plate 11.10) confirmed the location of the northern extent of the enclosure ditch (C86.3: 4m wide and 1m+ deep). At this location it contained at least two sandy clay fills with stone, charcoal and animal bone inclusions. An intact cattle skull with horns was present on the surface of the ditch at the eastern end. The enclosure ditch was also identified in Trench 87 (C87.2: 2.3m+ wide). Due to its proximity to a working farmyard area the top dark brown clayey silt fill is extremely compacted but moderate amounts of charcoal were noted on the surface.



Plate 11.10 *Rectangular enclosure ditch C86.3 in AA 1, facing northwest*

Several internal enclosure features were identified in Trench 86 including shallow pits (C86.4, C86.8, C86.10, C86.11, C86.14) with charcoal rich fills and an average depth of 0.10m, possible hearth features (C86.9, 86.12, C86.19), a possible kiln of 0.22m depth (C86.20), a charcoal rich spread (C86.13), and possible structural features including postholes and stakeholes (C86.6, C86.7, C86.15–C86.18). A gap of 2.5m was recorded between the ditch and the first internal feature recorded (C86.4), which may suggest an internal bank was once associated with the enclosure.

No archaeology was identified in Trench 89, which was excavated to a depth of 1.1m. This was due to a large amount of dumped material in the area and modern disturbance, likely associated with the construction of the branch of the relief road to the immediate south. Trench 88 was not excavated due to the level of dumped spoil in the area.

AA6: This area comprised two smaller areas of archaeology (AA6a,b). AA6a: Trench 81 identified a west-east aligned linear feature (C81.1), which corresponds with the southern arm of a C-shaped geophysical anomaly that was targeted (Figure 11.7c). It is interpreted as a slot trench of a 10m diameter C-shaped feature, filled with a basal light brown sandy silt with occasional charcoal flecks. This underlies a concave band of mid black sandy silt with moderate charcoal inclusions and a top greyish brown sandy silt with occasional charcoal flecks.

A northwest-southeast linear feature C81.2 was located in the central area created by the C-shaped slot trench. It may represent a modern field drain as it aligns with multiple parallel 0.34m wide agricultural

features noted throughout the trench. The northern arm of the C-shaped slot trench C81.3 lies c. 7.5m to the north of C81.1 and was filled with a basal light brown sandy silt with occasional charcoal and an upper charcoal rich grey clayey silt (Plate 11.11).



Plate 11.11 Features C81.1–C81.3 in AA6a, facing north

Two intercutting northwest–southeast aligned linear features C82.1 and C82.2, were identified at the western end of Trench 82, which corresponded with a geophysical anomaly that was targeted. C82.1 was truncated by C82.2 at the east and was filled by a basal soft whiteish grey silt with rare charcoal inclusions, underlying a band of peach coloured silt that may suggest in-situ oxidisation and a top dark brown charcoal rich clayey silt. C82.2 was filled with a basal mid greyish brown clayey silt with occasional charcoal and a lump of red oxidised clay underlying a thin black charcoal rich lens and a top mottled greyish brown clayey silt with occasional charcoal. The targeted geophysical anomaly extended to the northwest and it is possible that the features can be interpreted as flues of a kiln. Due to the proximity of the trenches, it is likely that the activity recorded here is associated with the C-shaped enclosure identified in Trench 81.

AA6b: Trench 83 identified a kidney shaped spread of light brown silty sand, occasional charcoal and intense in-situ oxidisation (C83.1) that partially aligned with a geophysical anomaly, extending outside the trench to the south. A possible pit C83.2 was recorded directly to the west measuring 1m in diameter filled with a light brown sandy silt with occasional charcoal. A sherd of medieval pottery was found in the topsoil.

AA7: This area comprises three smaller areas numbers AA7 a,b,c (Figure 11.7c).

AA 7a: Trench 75 identified a cluster of features associated with possible industrial activity that correspond with the targeted geophysical trends and anomalies. A northwest–southeast aligned ditch C75.1 delimited and truncated the industrial activity at the northeast and was interpreted as a 3m wide ditch associated with a field boundary as seen on the geophysical survey and on the field surface.

The ditch truncated the eastern edge of a firm grey charcoal rich clayey silt deposit C75.2. A northwest–southeast aligned slot trench C75.3 abutted deposit C75.2 at the west. C75.3 was filled with a dark grey brown clayey silt and appears to curve slightly to the east at the northern end. A charcoal rich brown clayey silt deposit with a band of oxidised soil noted along the south eastern edge C75.4, was located

directly to the west of the southern part of slot trench C75.3. At the north-western end, the 0.05m deep deposit overlay a very compact clay that has been interpreted as a possible floor surface.

An irregular shaped feature C75.5 consisted of three elements including a central sub-oval deposit consisting of a dark brown clayey silt surrounded by a band of charcoal with moderate fragments of light, porous, slightly vitrified coral-like material, which has been tentatively interpreted as possible glass working waste material (Plate 11.12). A narrow linear extended north from the central deposit filled with a light to mid brown clayey silt, which may represent a flue. A sub-rectangular spread of light brown clayey silt with inclusions of charcoal, ash, oxidised clay and more possible glass slag material was located at the west of the central deposit.



Plate 11.12 *Possible glass-working waste from pit C75.5 in AA7a*

A short northwest–southeast aligned slot trench C75.6 was filled by a basal mid brown clayey silt with occasional stone inclusions and a top black charcoal rich clayey silt fill. It truncated a sub-circular pit/posthole C75.7 located directly to the west. The northernmost element of a stone-lined kiln or furnace C75.8 was recorded 0.4m to the southwest of C75.7. The geophysical survey shows an anomaly extending outside the trench to the south and southwest at this location. The stone elements of the feature are located at only 0.1m beneath topsoil and the central fill consists of a mid to dark brown clayey silt with frequent charcoal while the fill outside the stone elements consists of a loose mid brown clayey sand.

AA7b: Trench 76 confirmed the presence of a northwest–southeast aligned ditch C76.1 associated with a possible historic field system. It measured 1.9m wide and 0.4m deep with gradually sloping sides, a flat base and was filled with a greyish brown sandy silt.

AA7c: Trench 150 identified a circular kiln feature C150.2 that corresponds with one of the geophysical anomalies. C150.2 measured 1.2m long, 0.8m wide up to the baulk and at least 0.3m deep (not fully bottomed) with steep sides with possible in-situ oxidation present. It was filled by a top yellowish brown silty sand overlying a black charcoal rich silt.

AA8 comprised two smaller areas of activity labelled AA8a,b. AA8a (Figure 11.7c): Trench 70 identified a circular pit C70.1 filled with a mid-brown sandy silt fill with frequent roots, small stones and occasional

charcoal flecks. An oval pit/hearth C70.2 was located 1.8m to the east that contained a mid-brown silty sand with frequent charcoal, moderate stone and occasional heat shattered stone. The pits correspond with the targeted circular geophysical anomalies. Trench 68 identified the northern extent (C68.1 and C68.2) of the two pits recorded in Trench 70. Two possible postholes C68.3 and C68.4 were also recorded directly to the north of the pits. C68.3 was circular in plan with a diameter of 0.2m and filled with a dark brown silt with occasional charcoal inclusions. Possible posthole C68.4 lay 1.6m to the north and was oval in plan measuring 0.4m long and 0.3m wide filled with a greyish brown sandy silt. An east–west aligned linear feature C68.5 was recorded to the south of the trench that aligned with a linear geophysical trend. It may represent an earth cut field drain.

AA 8b: Trench 66 identified an oval pit/heath (C66.1) that corresponded with one of the targeted circular geophysical anomalies. It measured 1.7m long by 0.7m wide and 0.25m deep with steep sloping sides and a flat possibly slightly oxidised base. It contained a mid-brown sandy silt with occasional stone, moderate flecks of charcoal and a discrete concentration of charcoal chunks noted at the northeast.

AA9 comprised two smaller areas of activity labelled AA9a,b. AA9a (Figure 11.7c): Trench 72 identified a burnt spread of black silt and heat shattered stone C72.1 under 1m of topsoil and plough soil (Plate 11.13). It corresponded with a targeted circular geophysical anomaly and measured 5.6m in length and at least the width of the trench with a depth of 0.3m. An east–west aligned linear feature C72.2 measuring 1.65m wide and 0.4m deep was recorded at the northeast of the trench that may represent an earth cut field drain.

AA 9b: Trench 80 identified an oval waste pit C80.2 filled with a dark brown sandy silt with moderate stone, occasional charcoal chunks and rare animal bone inclusions. A 2.2m diameter spread of topsoil like material C80.1, with occasional charcoal flecks was recorded 9m to the southwest. The features corresponded with the targeted circular geophysical anomalies.



Plate 11.13 *Burnt spread C72.1 in AA9a, facing northeast*

11.4.6 Archaeological Excavation

In 2022 archaeological excavation was carried out prior to the construction of a permitted residential development and phase 1 of a park. This was carried out by Muireann Ní Cheallacháin under licence 21E0133. The excavation addressed the recording of the southern portion of the ringfort (WI005-130) and annex, identified as AA1a in the testing assessment. Additional archaeological features were also

identified during the monitoring of topsoil removal across the excavation area and within the proposed compound area. The core of the archaeological activity comprised the enclosure, internal features and the external annex and associated activity. The enclosure has provisionally been dated to the 8th-10th century and as such is early medieval in date. Scattered prehistoric activity was also identified within the site, including three probable late Neolithic and early Bronze age isolated token cremation pits. Plate 11.14 shows an aerial view of the excavation area close to the completion of works. The path of the constructed road through the centre of the enclosure, which has led to a large amount of disturbance, is clearly illustrated.



Plate 11.14 A south-easterly aerial view of the excavated remains of WI005-130 (IAC, 2022)

11.4.7 Cartographic Analysis

William Petty, Down Survey, the Lordship of the Three Castles, c. 1655 (1787 copy)

A 1787 copy of William Petty's Down Survey, the Lordship of the Three Castles in the Barony of Talbotstown depicts the Norman Lordship (Figure 11.2). It depicts Threecastles Castle (WI005-031) to the northeast of the proposed development area, which at this time is situated in the townland of Munfine. There are no structures depicted in the townland, which comprises 555 acres.

John Rocque, Map of County Dublin, 1760

Although this map predominantly depicts County Dublin, the cartographer did visit some significant sites immediate adjacent to Dublin and this included Downshire House (RMP WI005-018). The village of Blessington is shown along with Downshire House (RMP WI005-018) and associated gardens, to the northwest of the Main Street (Figure 11.2). The main entrance avenue is marked, along with the smaller crows-foot avenues. The main house is shown as being accessed via an avenue running from Blessington Village, with outbuildings marked to the southwest of the main structure and a possible linear pond. Diagonal 'crow's feet' avenues are marked to the south and north of the house and the gardens and surroundings are shown as a planted landscape. The rectangular area of the gardens to the northwest of the house is defined within this map, along with a secondary entrance (southwest, presumably to the outbuildings) along the western edge of the demesne. This entrance (as described later in this report) also provided access to the Deerpark, which is not depicted within this map. No detail of the landscape to the east of Downshire House is illustrated.

Alexander Taylor, Map of County Kildare, 1783

As with the above map, this map was designed to depict County Kildare, but captures significant locations that were immediately adjacent to the county boundary. Blessington Village is shown, along with Downshire House (RMP WI005-018). The main house is marked within a planted demesne landscape annotated as "Blefsington Park", but no elements relating to the geometric layout of the garden are indicated (Figure 11.3). Two entrances are shown to the main house, which travel from the northeast and southeast. A third entrance is situated to the west of the house. The 17th century deer park is marked as 'Old Deer Park' and is situated to both sides of the road to Naas.

John Longfield, Map of Blessington Demesne and Deerpark, 1804

This map illustrates an accurate plan of the Downshire House and demesne within this proposed development area (Figure 11.3). The house (RMP WI005-018) was ruined by a fire in 1798 and so would have been derelict at this time. The main structure remains present and is shown to the north of a circular pond, which is situated between the main house and the eastern access avenue that ran from Blessington. A portion or a raised section of one of the former diagonal avenues (northern most) is indicated to the north of this access, but no other avenues are marked.

The secondary entrance into the deer park is marked to the southwest of the house. A linear pond and a number of outbuilding ranges are shown to the southwest of the main house. Possible walled gardens are shown to the west of these structures, adjacent to the secondary entrance. A square area annotated as 'Lawn' is marked to the northwest of the main house and this is surrounded by trees that are located within the extents of the original designed geometric landscape. The 'bastion' or garden mount, which is triangular in plan (and visible in Plate 11.1) is marked on a direct alignment with the main house and access avenue from the southeast.

The path of the northern section of the proposed distribution road is not illustrated within this map.

First Edition Ordnance Survey Map, 1838, scale 1:10,560

By the time of this map Downshire House (RMP WI005-018) is annotated in as being in ruins, although the footprint of the structure is clearly marked (Figure 11.4). Vestiges of the original geometric landscape survive to the northwest of the house and the proposed park, including the outline of the geometric gardens and the bastion feature. The circular pond to the southeast of the house is also present, along with the linear ponds adjacent to the outbuildings. Very few outbuildings are marked as present when compared to the 1804 estate map. The main entrance to the house is no longer marked, but an indication of the secondary entrance is shown, along with what was a trackway, running along the western edge of the demesne (to the deer park).

The demesne landscape outside proposed park development area is depicted with irregular clumps and belts of demesne planting, which is characteristic of the more naturalised landscapes adopted from the late 18th century onwards. Whilst the demesne itself was still actively farmed at this time; the mapping does indicate a gradual dereliction. The northern part of the demesne is marked as open fields adjacent to the deer park.

The northern element of the proposed distribution road runs from the demesne in an easterly direction to join the main road, which is present at this time. The road crosses parts of five fields, although no structures or features are marked within the proposed footprint.

Ordnance Survey Map, 1907, scale 1:2,500

By the time of this map Downshire House (RMP WI005-018) has been demolished, but the main access route has been re-established from Blessington to the circular pond. Additional outbuildings are shown within the proposed development area to the south (Figure 11.4). The outer boundaries of the geometric landscape, including the 'bastion' remain present, and the eastern and southern corners of the garden are visible to the east of the proposed park development area. A track is now shown running through the demesne from the circular pond to the vernacular farm located within Deer Park, to the north-northwest of the proposed development area. The secondary access to the demesne has now gone out of use, though its line is marked by a belt of trees.

There are no major changes within the cartography that relate to the route of the proposed distribution road.

11.4.8 County Development Plan

11.4.8.1 Record of Monuments and Places

The Wicklow County Development Plan (2022-2028) recognise the statutory protection afforded to recorded monuments as does the Blessington Local Area Plan (2013-2019). The plan states that when Wicklow County Council deals with proposals for development that would impact upon archaeological sites and/or features, there will be presumption in favour of the 'preservation in-situ' of archaeological remains and settings, in accordance with Government policy (Appendix 11B).

There are 16 groups or individual recorded archaeological sites located within the 500m study area of the proposed development, of which three are classed as redundant records (WI005-015, WI005-017, WI005-022). These sites are described below in Table 11.2 (Figure 11.1).

Table 11-2: Recorded Archaeological Sites within the Study Area

RMP No.	Townland	Classification	Distance from site	Statutory Protection
WI005-018	Blessington Demesne	House - 16th/17th century	0m	RMP
WI005-016	Blessington Demesne	Designed landscape - ornamental lake	0m	Proposed SMR
WI005-017	Blessington Demesne	Redundant record	0m	SMR
WI005-130	Blessington Demesne	Ringfort - rath	0m	Proposed RMP
WI005-023	Newpaddocks	Enclosure	To the immediate north	Proposed SMR
WI005-131	Blessington Demesne	Ring-ditch	c. 25m north	Proposed RMP
WI005-024	Holyvalley	Holy well	c. 130m east	RMP

RMP No.	Townland	Classification	Distance from site	Statutory Protection
WI005-013	Blessington Demesne	Habitation site	c. 165m southeast	RMP
WI005-022	Blessington Demesne	Redundant record	c. 200m southeast	SMR
WI005-025	Haylands	Cairn	c. 212m southeast	Proposed SMR
WI005-019	Blessington Demesne	Barrow - unclassified	c. 260m southeast	RMP
WI005-015	Blessington Demesne	Redundant record	c. 300m west-northwest	SMR
WI005-021	Blessington Demesne	Barrow - unclassified	c. 315m southwest	RMP
WI005-020	Blessington Demesne	Designed landscape feature	c. 360m southeast	Proposed SMR
WI005-014	Blessington Demesne	Stone circle	c. 400m west-southwest	RMP
WI005-123	Deerpark	Deer park	c. 400m northwest	Proposed RMP

11.4.8.2 Protected Structures

There are no protected structures, nor structures listed in the NIAH, within the overall proposed development area. A group of structures listed in the RPS form the historic core of Blessington Village and are located on the periphery of the study area. The closest protected structure is the former Market House (RPS 05-05), located c. 495m to the southeast.

The county development plan lists a number of objectives in relation to the built heritage resource (Appendix 11C).

11.4.8.3 Architectural Conservation Areas (ACA)

The historic core of Blessington Village is designated as an ACA. The northwestern boundary of the area is located c. 462m southeast of the proposed development.

11.4.9 National Inventory of Architectural Heritage

11.4.9.1 Building Survey

The closest NIAH structure is a house (NIAH 16303026), located c. 245m to the south-southwest of the proposed distribution road element of the development. The remaining structures, as with the RPS, are located within the historic core of the Village centre, which is also designated as an ACA.

11.4.9.2 Garden Survey

The demesne associated with Downshire House is listed within the Garden Survey as Site ID 4263. It is noted as 'buildings indicated, not named'. The survey notes that modern houses have been constructed in the northern section of the site and that the entrances and drive position has changed.

Today the demesne has been significantly truncated by the Blessington Relief Road and recent residential construction has been carried out in the eastern portion of the original demesne lands.

11.4.10 Topographical Files of the NMI

Information on artefact finds from the study area in County Wicklow has been recorded by the National Museum of Ireland since the late 18th century. Location information relating to these finds is important in establishing prehistoric and historic activity in the study area.

Table 11.3 *Topographical Files of the NMI*

NMI Ref.	Find Place	Description
1945:187-258	Blessington Demesne – site of WI005-013	Medieval pottery sherds
1956:521	Blessington	Stone hammer-head
Record only	Haylands	Scattered fragments of human remains
1932:6577,6578	Haylands	Several secondary interments (WI005-025).

11.4.11 Townlands

The townland is an Irish land unit of considerable longevity as many of the units are likely to represent much earlier land divisions. However, the term townland was not used to denote a unit of land until the Civil Survey of 1654. It bears no relation to the modern word 'town' but like the Irish word *baile* refers to a place. It is possible that the word is derived from the Old English *tun land* and meant 'the land forming an estate or manor' (Culleton 1999, 174). The proposed park and residential elements of the development area located within the townland of Blessington Demesne, whereas the distribution road runs from this townland, through Newpaddocks, Santryhill and Holyvalley.

Gaelic land ownership required a clear definition of the territories held by each sept and a need for strong, permanent fences around their territories. It is possible that boundaries following ridge tops, streams or bogs are more likely to be older in date than those composed of straight lines (ibid. 179).

The vast majority of townlands are referred to in the 17th century when land documentation records begin. Many of the townlands are mapped within the Down Survey of the 1650s, so called as all measurements were carefully 'laid downe' on paper at a scale of forty perches to one inch. Therefore, most are in the context of pre-17th century landscape organisation (McErlean 1983, 315).

In the 19th century, some demesnes, deer parks or large farms were given townland status during the Ordnance Survey and some imprecise townland boundaries in areas such as bogs or lakes were given more precise definitions (ibid.). Larger tracks of land were divided into a number of townlands, and named Upper, Middle or Lower, as well as Beg and More (small and large) and north, east, south, and west (Culleton 1999, 179). By the time the first Ordnance Survey had been completed a total of 62,000 townlands were recorded in Ireland.

Blessington Demesne, as a townland or parcel of land, dates to the establishment of Downshire House and gardens. This is also the origin of Deerpark, which is located to the immediate northwest. Prior to this date the lands were noted as having the name 'Munfine'. Newpaddocks and Santryhill formed part of the wider estate (logainm.ie). The origins of the name Holyvalley remain unclear, although the name may directly relate to the holy well recorded in the townland (RMP WI005-024).

11.4.12 Aerial Photographic Analysis

Inspection of the aerial photographic coverage of the proposed development area held by the Ordnance Survey (1995-2018), Bing Maps and Google Earth (2009-2022) was been carried out as part of this assessment.

The information derived from the data sets has allowed for the detailed reconstruction of a plan of the late 17th century geometric gardens associated with Downshire House, which forms a large portion of the proposed Park. This information is shown in Figure 11.5 and includes features identified during the aerial review, along with elements that remain upstanding, such as sections of the demesne walling. Despite the deposition of large amounts of material within the site in 2005, the main paths associated with the garden are particularly clear as parch marks in the 2018 Google Earth coverage (background of Figure 11.5).

The main elements of the gardens were located within a rectangular area with the central axis running along the main avenue from Blessington, to the northwest of Downshire House, to the bastion feature. Numerous paths extend either side of the main central axis and it appears that the sub-divided parterres were established to the immediate northwest of the house. It is probable that some of the path ways were lined with low walls and that the rectangular area containing the gardens was originally bounded by a stone wall. Archaeological testing has identified some of the garden features, but not all potential remains (as identified within the aerial coverage) possessed a definitive archaeological signature.

The position of the crow's feet avenues to the southeast of the main house is relatively clear but neither the northern or western avenues are clear and are also not as symmetrical as the other elements. The northern avenue location has been covered by spoil. It seems more likely that the parterre elements post-date the crow's feet to the northwest of the house, although this is not definite. The date of the ornamental pond/lake (RMP WI005-016) is also unclear, as there does not appear to be a corresponding feature to the northeast of the gardens. It is possible that whilst the feature is not marked within the historic mapping, that it post-dates the geometric layout.

It appears that during the mid-18th century, the area surrounding the main section of the gardens was well planted with trees, as indicated within Plate 1 and in Rocque's map of 1760 (Figure 11.2). This indicates that there was a move away from the geometric layout that was established during the late 17th century, which saw it almost disappear by the time of the 1804 estate map shown in Figure 11.3.

The layout of this garden is reminiscent to the, albeit larger, 17th century landscape associated with Carton House in County Kildare. An early 18th century painting of the house shows three 'crow's feet' avenues converging on the main elevation of the house, with geometric gardens arranged within a rectangular area to the rear of the property. These included a central parterre and adjacent sub-divided plots access via numerous linear paths from the main central axis.

No previously unrecorded sites of archaeological potential were noted within the proposed residential development area. The remains identified during archaeological testing possess no surface expression.

No previously unrecorded sites of archaeological potential were noted within the proposed road development area. The coverage clearly illustrates the quarry that is located within a section of the road, along with the existing quarry access route that the road will utilize. These have been present since at least 1995. A portion of the road will cross an area planted with trees that have been present since at least 1996. The 2001 OSI coverage particularly illustrates the level of disturbance in the landscape relating to the construction of the relief road and the dumping of spoil within the geometric gardens and on the northern side of WI005-130, which appears to have previously been in use as a compound.

11.4.13 Field Inspection

The proposed development area was initially inspected in September 2020. Additional site visits have been carried out since that date, in January, March and June of 2023.

Proposed Park Development

This area contains much of the former geometric gardens associated with Downshire House and the site of the house itself (RMP WI005-018). The area is defined to the northwest and southeast by demesne walling that is likely to be contemporary with the construction of the main house and therefore 17th century in date. The southwest boundary is formed by modern residential development.

The area containing the main gardens and house occupies a relatively level landscape, which has been heavily impacted upon by the dumping of spoil, the extent of which is shown on Figure 11.5. This has created linear banks of material partially covering the site of Downshire House and the eastern portion of the geometric gardens (Plates 11.15-16). The spoil has been 'landscaped' and a large portion of the deposition appears to follow the outline of eastern portion of the geometric gardens, suggesting earthworks associated with same survive beneath the deposited material.

The only identifiable remains of Downshire House (RMP WI005-018) consist of a denuded stairwell that leads down to a portion of the cellar below the surface (Plate 11.17). This is of stone, brick and mortar construction and has been partially capped by a piece of masonry with red-brick reveals from a former doorway.



Plate 11.15 *Ridges of dumped material within the proposed park, facing east*



Plate 11.16 *Dumped material partially covering Downshire House (RMP WI005-018), facing southwest*



Plate 11.17 *Remains of cellar associated with Downshire House (RMP WI005-018), facing east*

A substantial track crosses the site of the geometric gardens, which is marked on the 1907 OS map. This has a distinct cambered profile and runs into the fields to the immediate north.

The western section of the site of the geometric gardens is under pasture. Whilst the site of the ornamental lake (RMP WI005-016, Plate 11.18) is clearly visible at ground level, the remaining elements of the landscape that are detectable with the aerial photographic coverage, do not possess obvious surface expression. A broad bank, which may represent a portion of the western boundary to the garden was noted, although it is possible that this relates to a later land division (Plate 11.19).



Plate 11.18 *Site of ornamental lake (WI005-016), facing southeast*



Plate 11.19 *Linear earthwork within the proposed park, facing northwest*

To the southwest of Downshire House, was an area formerly occupied by outbuildings, linear ponds, a walled garden and secondary entrance. Elements of this landscape survive today, although the location of some of the outbuildings has been truncated by the relief road, along with part of the walled garden and the secondary entrance. The site of the linear ponds is located to the south of the relief road. A demesne wall, likely to be 17th century in date survives in varying states. Plate 11.20 shows the location of outbuildings as marked on the 1804 estate map. Whilst indications of building footings in this area is apparent within the aerial coverage, no surface expression was noted during the field inspection. The demesne wall apparent in Plate 11.20 is currently undergoing restoration as part of the permitted park development to the immediate southeast.

To the southwest of this area are the remains of further outbuildings, marked on the more recent 19th century OS maps. The demesne wall travels around the remains of these structures, which have also been disturbed by the dumping of material (Plate 11.21). The ground level in this area has been disturbed with the introduction of material and it is difficult to ascertain footprint of the structures. The demesne wall does continue in a westerly direction before it is truncated by the relief road (Plate 11.22). Further west, also truncated by the relief road, is the remains of a probable walled garden. This covers

a relatively small area and whilst some elements of the stone walls survive in reasonable conditions, other portions have collapsed (Plates 11.23-24). To the west of the walled garden is the remains of a wide secondary entrance to the demesne, which is partially bordered by the walled garden and a bank to the west that also provides a boundary to residential development (Plate 11.25).



Plate 11.20 *Demesne wall and site of outbuildings, facing southwest*



Plate 11.21 *Remains of outbuildings, facing northeast*



Plate 11.22 *Demesne wall, facing southwest*



Plate 11.23 *Walled garden, facing northwest*



Plate 11.24 *Walled garden, facing southeast*



Plate 11.25 *Former secondary entrance to the demesne, facing southeast*

The north-western boundary of the proposed park is formed by a wall, that also formed the edge of the geometric gardens and dates to the late 17th century. The wall remains extant for the majority of its extent, although a section of the western portion is no longer present (Plates 11.26). The wall is only present as footings adjacent to the landscape feature known as the bastion (Plate 11.27). It is unlikely that the wall possessed full height at this location, as pedestrian access to the bastion was important in order to view the landscape. To the east of the bastion the wall survives in reasonable condition (Plate 11.28), until it is truncated by the distribution road.



Plate 11.26 *Demesne wall to northwest of park, facing southwest*

With the exception of the sections of demesne wall, the bastion, is the best-preserved portion of the late 17th century geometric gardens associated with the Downshire House. Today it survives as a heavily wooded triangular feature, surrounded by a stone revetting wall and ditch. It is aligned directly with the site of Downshire House and the central axis through the geometric gardens, this central axis is followed through to the east of the Downshire House and extended along the main approach avenue and ended with the focal point on St. Marys Church, the view to which is depicted on the 18th century engraving shown in Plate 11.1. The purpose of this feature was to provide a location to view the landscape without upstanding walls, as the stone revetment and ditch around the bastion prevented livestock from

accessing the gardens, but allowed a person to see out from the gardens and back towards the house and gardens from the higher ground to the north.



Plate 11.27 *Boundary between the proposed park and the bastion, facing northeast*



Plate 11.28 *Demesne wall, to east of bastion, facing northeast*

Today the revetting walls of the bastion are heavily denuded for the most part and the interior overgrown with mature trees, including sycamore and some oak. It is likely that it possessed interior paths, but none of the former interior features possess surface expression (Plates 11.29-31).

Two gates are present along the demesne wall bordering the proposed park. The first is located to the southwest of the bastion and aligns with the outer edge of the geometric gardens. The gateway is formed by two pillars of roughly dressed masonry with curving capstones (Plate 11.32). The dimensions of each pillar are not consistent and it is likely that this gate is a later insertion. The gate to the northeast of the bastion was likely constructed when the track apparent on the 1907 map was established. The gate has been modified with concrete, but the remains of a stone style are present, constructed with roughly dressed stone (Plate 11.33).



Plate 11.29 *Interior of the bastion, facing northwest*



Plate 11.30 *A section of intact bastion revetment wall, facing south*



Plate 11.31 *Denuded section of bastion revetment wall, facing southeast*



Plate 11.32 *Gateway to the southwest of the bastion, facing north*



Plate 11.33 *Stone style adjacent to gateway northeast of bastion, facing northwest*

Proposed Residential Development

This area consists of a large field of level pasture (Plate 11.34). The northern side of the area, which slopes slightly to the north, is bounded by a belt of trees and a stream. The remains of the demesne wall (truncated by the distribution road) run across the area in a southwest-northeast direction. The remains of a denuded and partially collapsed gateway are present along the wall. The southern boundary is formed by the distribution road and the northern-western boundary by a modern fence that separates the area from sports pitches. Evidence of dumping is located along the north-western boundary and within the southern corner of the site (Plate 11.35). The spoil that has been dumped partially conceals the remains of the northern enclosing ditch of RMP WI005-130. AA6-9, located within this area (as identified during testing), possess no above ground remains.

Proposed Distribution Road

The northern arm of the partially constructed road, running from the roundabout along the Blessington Relief Road, is located to the east of the proposed residential development. The section of the road running to the townland boundary has been partially stripped of topsoil (Plate 11.36).



Plate 11.34 *Proposed residential development area, facing north-northeast*



Plate 11.35 *Dumped ridges of spoil in the southeast corner of the proposed residential area, facing west*



Plate 11.36 *Southern section of distribution road, facing southwest*

The area to the west of the proposed road and northeast of the existing stream, will contain a number of smaller houses and car parking. This area comprises a section of grazed pasture that slopes slightly towards to the stream. The demesne wall borders this area to the northeast and the proposed road will run through an overgrown section, before entering a quarry to the immediate north (Plate 11.37). The wall is in poor condition and is of random rubble masonry.



Plate 11.37 *Demesne wall to be impacted by the proposed distribution road, facing northeast*

To the north of the demesne wall is a modern berm associated with the quarry lands, which the proposed road will run through. Quarrying has removed any potential archaeological remains in this area, including recorded monument WI005-023, located to the immediate north. The route then passes through a heavily wooded field before utilizing the existing quarry access road and entrance to join the N80. The existing entrance and site of the proposed junction at the N80 is heavily disturbed by existing ground works and additional quarrying to the southeast. Very little of the proposed road will cross previously undisturbed ground.

11.4.14 Conclusions

The overall proposed development area is located within the townlands of Blessington Demesne, Newpaddocks, Santryhill and Holyvalley. There are a number of recorded archaeological sites located within the overall proposed development area. Three sites are located within the proposed park, that comprise the site of Downshire House (RMP WI005-018) and an ornamental lake (RMP WI005-016). A redundant record is also located in the northeast corner (RMP WI005-017). The northern section of an early medieval ringfort is located within the proposed residential portion of the development area (RMP WI005-023). There are a further 12 sites recorded within the 500m study area.

There are no protected structures, nor structures listed in the NIAH, within the overall proposed development area. A group of structures listed in the RPS and NIAH, which form the historic core of Blessington Village are located on the periphery of the study area. The closest protected structure is the former Market House (RPS 05-05), located c. 495m to the southeast. The closest NIAH structure is a house (NIAH 16303026), located c. 245m to the south-southwest. The historic core of Blessington is also designated as an ACA, the boundary of which is located c. 462m southeast of the proposed development area.

The proposed park element of the development occupies the former demesne landscape associated with Downshire House. It is not a recorded monument in its own right, but contains the buried and upstanding remains associated with the late 17th century geometric gardens that were originally established when the house was constructed. The house was burnt in 1798 and was in ruins for a number of years before being demolished. Part of the cellar survives, along with sections of the demesne wall, walled gardens and a bastion landscape feature that was designed to provide a viewing point to and from the main house. The original demesne has been heavily truncated by the construction of the Blessington Relief Road.

The proposed development area has been subject to geophysical survey in 2020 and a programme of archaeological testing in 2021. The investigations identified ten archaeological areas (AA1-10), six of which are located within the overall proposed development area. AA1 comprises the northern portion of an early medieval ringfort (RMP WI005-130), located within the proposed residential development. AA6-9 are also located in this area and comprise a scatter of smaller archaeological remains comprising pits, ditches and kilns. AA10 is located within the proposed park and comprises the remains of the 17th century geometric gardens associated with Downshire House (RMP WI005-018).

Part of the recorded ringfort WI005-130 was subject to archaeological excavation in 2022, prior to a permitted residential development. Monitoring of topsoil stripping was also carried out as part of this development and revealed scattered prehistoric remains, along with fragmentary remains associated with the gardens of Downshire House. Two post medieval burials were also identified during this work, who may have been victims during the rebellion of 1798, which led to the firing of Downshire House.

The proposed northern section of the distribution road will impact on a section of the original demesne wall before traveling through a quarry and a section of heavily wooded landscape. The road will then utilize the existing quarry entrance before joining the N80 at a new junction. The southern part of this road was stripped in 2003 and the quarrying activity has removed the original ground surface, included RMP WI005-023 (located to the immediate north). It is proposed to construct a number of houses to the immediate west of the road, within Blessington Demesne. At the time of writing this assessment, the author was awaiting the granting of an excavation licence from the DoHLGH to excavate four additional test trenches within this area, although no obvious archaeological remains were noted in this area during the course of this assessment (Figure 11.1).

Overall, when considering the presence of the designed landscape established in the late 17th century (AA10) and the identified archaeological remains within the proposed residential element, the archaeological potential of these two areas is considered high. The relatively disturbed path of the proposed distribution road extension means that this portion of the development is considered to have low archaeological potential.

It is considered significant that as part of the proposals that almost the entirety of the 17th century geometric landscape will be incorporated into a green open space for recreational use by local residents. In terms of the overall cultural landscape this marks a new phase of use for the lands, which have been redundant and denuded by agriculture for over 200 years. The new phase of use echoes the original purpose of the landscape, although public access to the gardens would not have been a feature of the 17th and 18th centuries. Many of the landscape features, such as walling and the bastion, will be maintained and the design of the park has been created with reference to the past garden layout. The design represents a significant contribution to the overall cultural heritage narrative of this landscape, which encompasses not just archaeological remains, but the heritage form, layout and significance of

its original purpose, whilst also creating a space that is functional and will provide significant community benefit.

11.5 Assessment of Effects

11.5.1 Construction Phase

11.5.1.1 Park Development

- The site of Downshire House (RMP WI005-131) and the adjacent site of outbuildings, along with the ornamental lake (RMP WI005-016) will be preserved in-situ as part of the park development. Any paths that cross the site of the house will be constructed by means of a no-dig method. The remains of the extant cellar and the site of outbuildings will be fenced off and preserved in-situ with an appropriate grill placed across the cellar void to prevent access. The preservation of the house site, lake site and associated archaeology and the re-use of the original recreational landscape as a park is considered to represent a very significant direct positive impact for the heritage of the area.
- As part of the establishment of the park the excavation of tree boxes will be required that will range in depth from 300mm, 400mm, 600mm to 1000mm. The areas of planting are indicated in green within Figure 11.8a. These works may have a negative direct impact on sub-surface features associated with the geometric gardens, which have been identified at a depth that varies from 0.3m to 0.8m below the current ground level. The impact may vary from moderate to very significant prior to the application of mitigation.
- Ground disturbances associated with the proposed car park area and associated potential services (including drainage and lighting) may have a direct negative impact on sub-surface features associated with the geometric gardens, which have been identified at a depth that varies from 0.3m to 0.8m below the current ground level. The impact may vary from moderate to very significant prior to the application of mitigation.
- Where 'no dig' footpaths are not required, concrete footpaths for the park will be constructed that will have a 200mm foundation deposit supporting a 100mm concrete slab (either poured in-situ or precast). Excavation of trenches to c. 3000mm in depth and may have a direct negative impact on sub-surface features associated with the geometric gardens, which have been identified at a depth that varies from 0.3m to 0.8m below the current ground level. The impact may vary from moderate to very significant prior to the application of mitigation.
- As part of the proposed development, some areas will require excavation and the removal and re-use of the existing spoil heaps that currently characterise the site. Spoil will be used for localised landscaping, up to 1.5m in depth across the park. Where spoil is required for landscaping, the levels containing the remains of the geometric gardens will be preserved in-situ. This represents a significant direct positive impact for the heritage of the area.
- Garden features such as the bastion, existing boundary walls and elements of the walled garden in the southern part of the site, will be retained as part of the development, but will require repair and conservation. If works are not carried out with the correct conservation input, negative direct impacts may occur in relation to the structures, which would be very significant.
- Overall ground works associated with any remaining elements of the proposed park development may have a direct negative impact on previously unrecorded archaeological feature or deposits that have the potential to survive beneath the current ground level, which may relate to the former

geometric gardens and/or earlier archaeological features. The impact may vary from moderate to very significant prior to the application of mitigation.

11.5.1.2 Residential Development

- The layout, density, engineering and attenuation requirements of the proposed residential development (Figure 11.8b) means that it is not possible to avoid direct impacts on AA1 and AA6-9. Preservation in-situ of the archaeological areas was explored by the design team but it was not possible to preserve the remains without materially affecting the density requirements for the residential element. As such, ground disturbances associated with the development will result in direct negative impacts on the identified archaeological remains. Prior to the application of mitigation impacts on Ringfort WI005-130 will be significant (as small section of this site will be preserved in-situ). Impacts on AA6-9 will be very significant.
- A section of demesne wall that crosses this area will be retained as part of the development, but will require repair and conservation. If works are not carried out with the correct conservation input, negative direct impacts may occur in relation to the structure, which would be significant.
- The stream that runs through this portion of the proposed development area will be retained with an appropriate set back to development. Ground disturbances associated with the small section of housing proposed to the east of the stream, has the potential to directly and negatively impact archaeological remains that may survive in the area, with no surface remains. The impacts may vary from moderate to very significant prior to the application of mitigation and dependant on the nature of any such remains that are identified.
- Overall ground works associated with any remaining elements of the proposed residential development may have a direct negative impact on previously unrecorded archaeological feature or deposits that have the potential to survive beneath the current ground level. The impacts may vary from moderate to very significant prior to the application of mitigation.

11.5.1.3 Road Development

- The construction of the road development will result in the removal of a short section of demesne wall associated with Downshire House demesne. This represents a direct, negative impact of moderate significance.
- Whilst the footprint of the road development is already heavily disturbed, it is possible that ground disturbances associated with the scheme may have a direct and negative impact on small or isolated archaeological remains that have the potential to survive beneath the current ground level with no surface expression. The impacts may vary from moderate to significant prior to the application of mitigation.

11.5.2 Operational Phase

11.5.2.1 Park Development

- The operation of the proposed park will result in an overall direct positive impact on the archaeological, architectural and cultural heritage resource, due to the recreation of a park that references the historic landscape and the retention of key elements such as the preservation of the site of Downshire House (WI005-018), original walling and bastion landscape feature and the reinstallation of the central avenue. The axis between Saint Mary's Church and the landscape bastion will once again be in use and publicly accessible.

11.5.2.2 Residential Development

- No impacts upon the archaeological, architectural or cultural heritage landscape are predicted as a result of the operation of the residential development.

11.5.2.3 Road Development

- No impacts upon the archaeological, architectural or cultural heritage landscape are predicted as a result of the operation of the road development.

11.6 Cumulative Impacts

A permitted (phase 1) residential and park development (WCC.201146), located to the immediate east of the proposed development has been considered within the baseline of this assessment, due to the archaeological excavations that have taken place there, which in turn inform this baseline. The development is currently under construction, but has resulted in (now mitigated) impacts upon archaeological features and areas that will also be impacted by the proposed development. Potential cumulative impacts are detailed below:

- Downshire House (WI005-018) and geometric gardens.

In order to mitigate impacts upon the site of Downshire House, the phase 1 development ensured (under archaeological supervision) the preservation in-situ of the site of Downshire House. A section of demesne wall was also subject to repair and reconstruction, whilst another section was removed under archaeological supervision. All works within the phase 1 site were monitored (in relation to the first phase of the park) and any archaeological remains (including features associated with the garden and two post medieval burials) were preserved by record. All works were carried out in consultation with the DoHLGH and under archaeological licence.

The proposed development will also see the preservation in-situ of the site of Downshire House (WI005-018) and the incorporation of the remaining gardens into phase 2 of the public park. The cumulative impact of both developments on the site of the house is directly positive to a significant extent, as the site of the house will form part of the wider park landscape and conservation and retention of heritage assets. Similarly, the cumulative impact of both of both the developments on the geometric gardens is directly positive to a significant extent, as the whole park will represent an active public space that utilises and regenerates a historic recreational space.

- Ringfort WI005-130

The southern enclosing element of this site, along with an associated annex, was initially identified during geophysical survey and confirmed during archaeological testing. As part of the permitted phase 1 development, the archaeological remains were subject to preservation by record in 2022, under licence from the DoHLGH. All topsoil stripping was also archaeologically monitored (including an associated compound area) and any further archaeological remains were preserved by record. All potential impacts on the archaeological resource were fully mitigated with the programme of archaeological investigation that was implemented. A large portion of this site, included much of the centre of the site, was impacted by the construction of the road that crosses it during c. 2000.

The proposed development will result in a direct negative impact on the northern element of the enclosing ditch (that has not been previously disturbed by the road construction and associated compound). The impact is designated as significant negative. Although the southern section of the site has been preserved by record, the remains of the site have been removed (i.e not preserved in-situ). Therefore, cumulatively, the impact of both developments on WI005-130 is considered to be very significant negative, albeit that mitigation to reduce impacts has already been undertaken in

relation to the portion of the site that is located within the phase 1 development. It remains unknown as to whether any surviving archaeological remains survive beneath the road that was constructed through the centre of WI005-130.

All remaining proposed and permitted development within the study area (as detailed in Chapter 16) have been considered and no other potential cumulative impacts upon the archaeological, architectural or cultural heritage resource have been identified.

11.7 Mitigation Measures

11.7.1 Construction Phase

11.7.1.1 Park Development

- All construction works within the park will be monitored, including any 'no-dig' works across the site of Downshire House (WI005-018). The site of the ornamental lake (WI005-016) and the extent of structures associated with the main house will be cordoned off to prevent inadvertent impacts on buried remains.
- All ground disturbances associated with the construction of the park (tree boxes, footpaths, services, car park etc) will be subject to archaeological monitoring under licence from the National Monuments Service of the DoHLGH. As it is likely that garden features associated with the geometric landscape will be exposed, a strategy to record and excavate same (or preserve in-situ) will be developed as part of the excavation licence and in consultation with the DoHLGH. If any features of archaeological potential that predate the gardens are discovered during the course of the works further archaeological mitigation and consultation may be required, such as preservation in-situ or by record. Any further mitigation in relation to earlier archaeological features will require specific approval from the National Monuments Service of the DoHLGH.
- All built elements that relate to the former gardens, which will be retained as part of the park (bastion, walled garden area, boundary walls) will be repaired/reconstructed in accordance with advice and a methodology provided by a conservation specialist/ contractor. These works will also be archaeologically monitored and full photographic records of the structures will be made in advance of works commencing.

11.7.1.2 Residential Development

- It is acknowledged that preservation in-situ is the preferred manner in which to conserve the archaeological resource. As described in section 11.5.1.2, it was not possible to avoid direct impacts on AA1 and AA6-9 due to design and density requirements. As such, all the identified archaeological remains within AA1 and AA6-9 will be preserved by record (archaeological excavation) prior to the commencement of construction. This will be carried out under licence to the National Monuments Service of the DoHLGH. Full resolution will be provided to allow for the preservation by record of the archaeological remains.
- The section of the demesne wall crossing the site will be repaired/reconstructed in accordance with advice and a methodology provided by a conservation specialist/ contractor. These works will also be archaeologically monitored and a full photographic record of the structure will be made in advance of works commencing.
- At the time of writing the author was awaiting the granting of an archaeological licence from the DoHLGH in order to excavate four test trenches at the site of proposed house to the east of the stream within the development area. Once the licence is granted, test excavations will be carried

out. Dependant on the results of the assessment, further mitigation may be required, such as preservation in-situ or by record. Any additional mitigation arising from this exercise will be subject to the agreement of the National Monuments Service of the DoHLGH.

- All topsoil stripping associated with the residential development will be subject to archaeological monitoring. This will be carried out under licence to the DoHLGH. If any additional archaeological remains are identified, further mitigation may be required, such as preservation in-situ or by record. Any additional mitigation arising from this exercise will be subject to the agreement of the National Monuments Service of the DoHLGH.

11.7.1.3 Road Development

- A written and photographic record will be made of the section of demesne wall to be impacted by the construction of the road. This will be carried out by a suitably qualified professional and the removal of the wall will be subject to archaeological monitoring.
- The removal of any remaining topsoil associated with the road development will be subject to archaeological monitoring. This will be carried out under licence to the DoHLGH. If any additional archaeological remains are identified, further mitigation may be required, such as preservation in-situ or by record. Any additional mitigation arising from this exercise will be subject to the agreement of the National Monuments Service of the DoHLGH.

11.7.2 Operation Phase

11.7.2.1 Park Development

- As part of the overall presentation of the park and to ensure its heritage is fully incorporated as a landscape narrative, a series of information panels relating to the landscape and archaeological/historic context will be erected in the park. These will include information on the history of the area, archaeological discoveries and illustrations presenting how aspects of the landscape may have appeared during the 17th century.
- An archaeological management plan will be compiled, in consultation with the local authority and the National Monuments Service of the DoHLGH, to inform the ongoing use, maintenance and any future development of the park. This will ensure that the archaeological resource is considered and activity managed as part of the landscape into the future, including the preservation of the site of Downshire House (WI005-018).

No mitigation is required with regards to the proposed residential and road development as part of the operation of the proposed development.

Further detail on the definition of mitigation measures described above is given in Appendix 11D.

11.8 Residual Impacts

Following the completion of mitigation measures in relation to the proposed residential and road development, there will be no significant residual impacts on the archaeological, architectural and cultural heritage resource.

Following the completion of mitigation measures laid out for the proposed park development, there will be a significant positive residual impact on the archaeological, architectural and cultural heritage resource. This is due to the restoration of the designed landscape to an active public park, which retains and promotes the heritage of the landscape, which will be in use for generations to come.

11.9 Monitoring

The mitigation measures detailed above would also function as a monitoring system during construction and operation to allow the further assessment of the scale of the predicted impacts and the effectiveness of the mitigation measures.

11.10 Difficulties Encountered

No difficulties were encountered during the compilation of this assessment.

11.11 References

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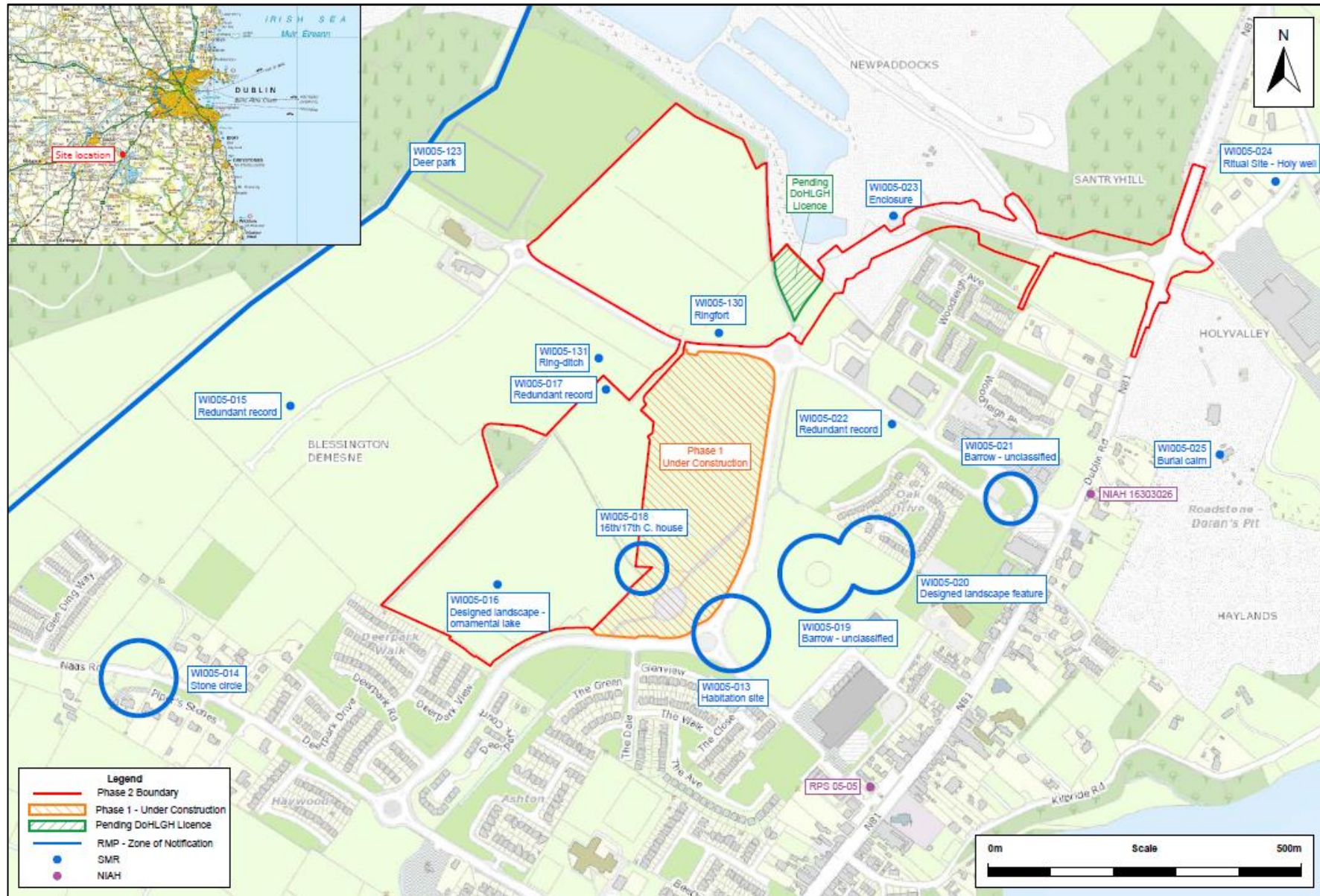


Figure 11-1: Proposed development area showing recorded archaeological and architectural sites within the study area

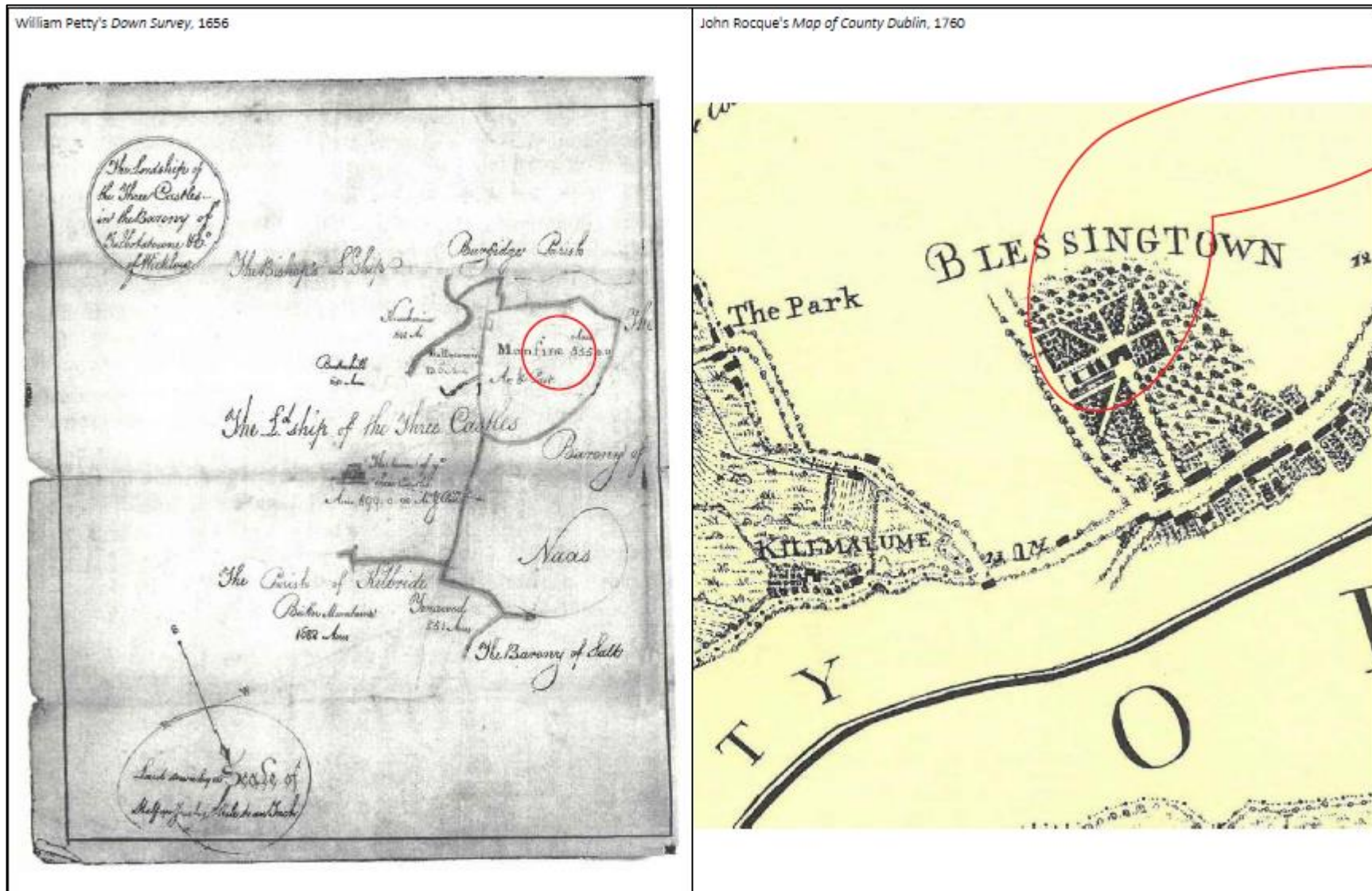


Figure 11-2 Extract from 17th and 18th century maps showing the approximate location of the proposed development

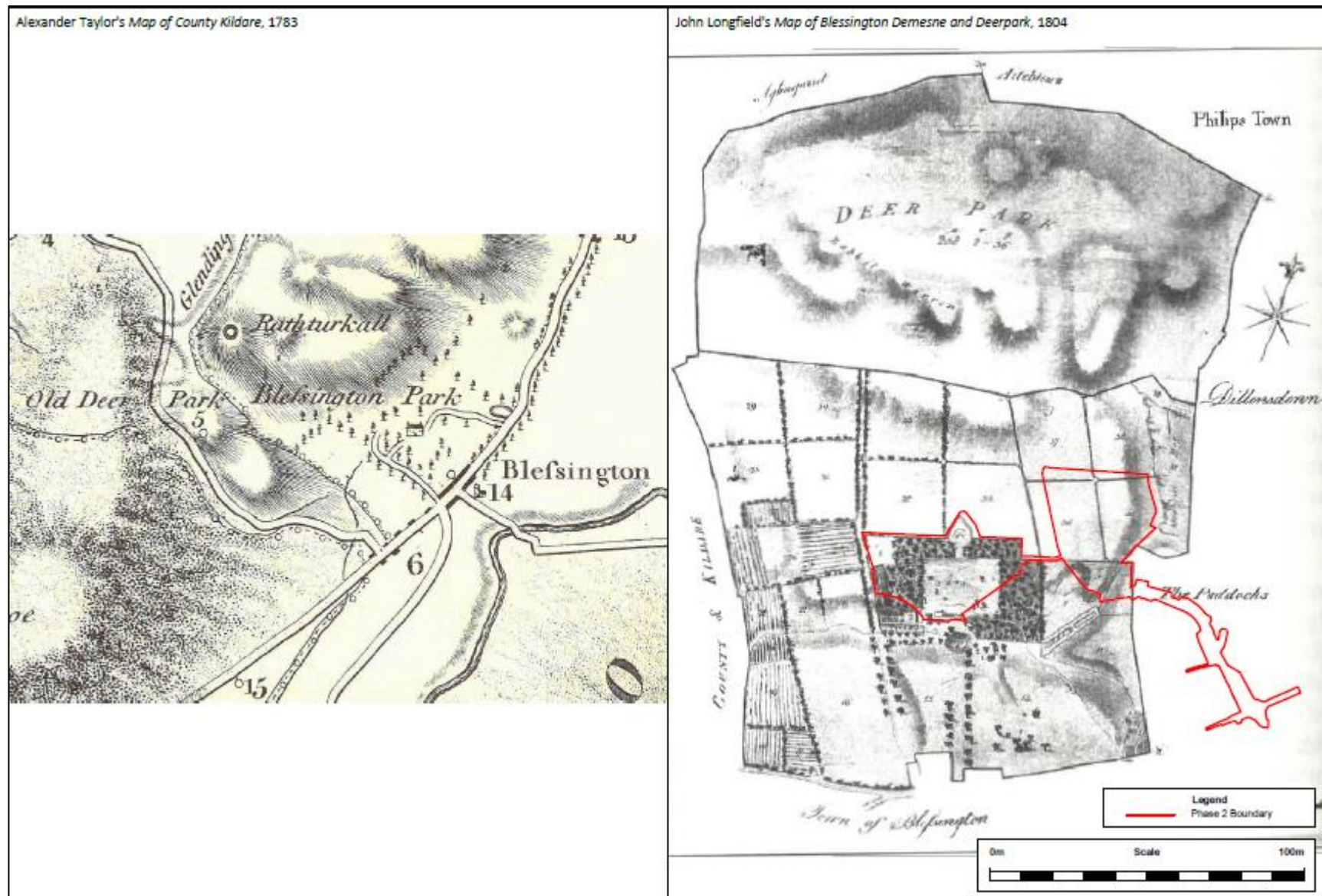


Figure 11-3: Extract from 18th and 19th century maps showing the approximate location of the proposed development

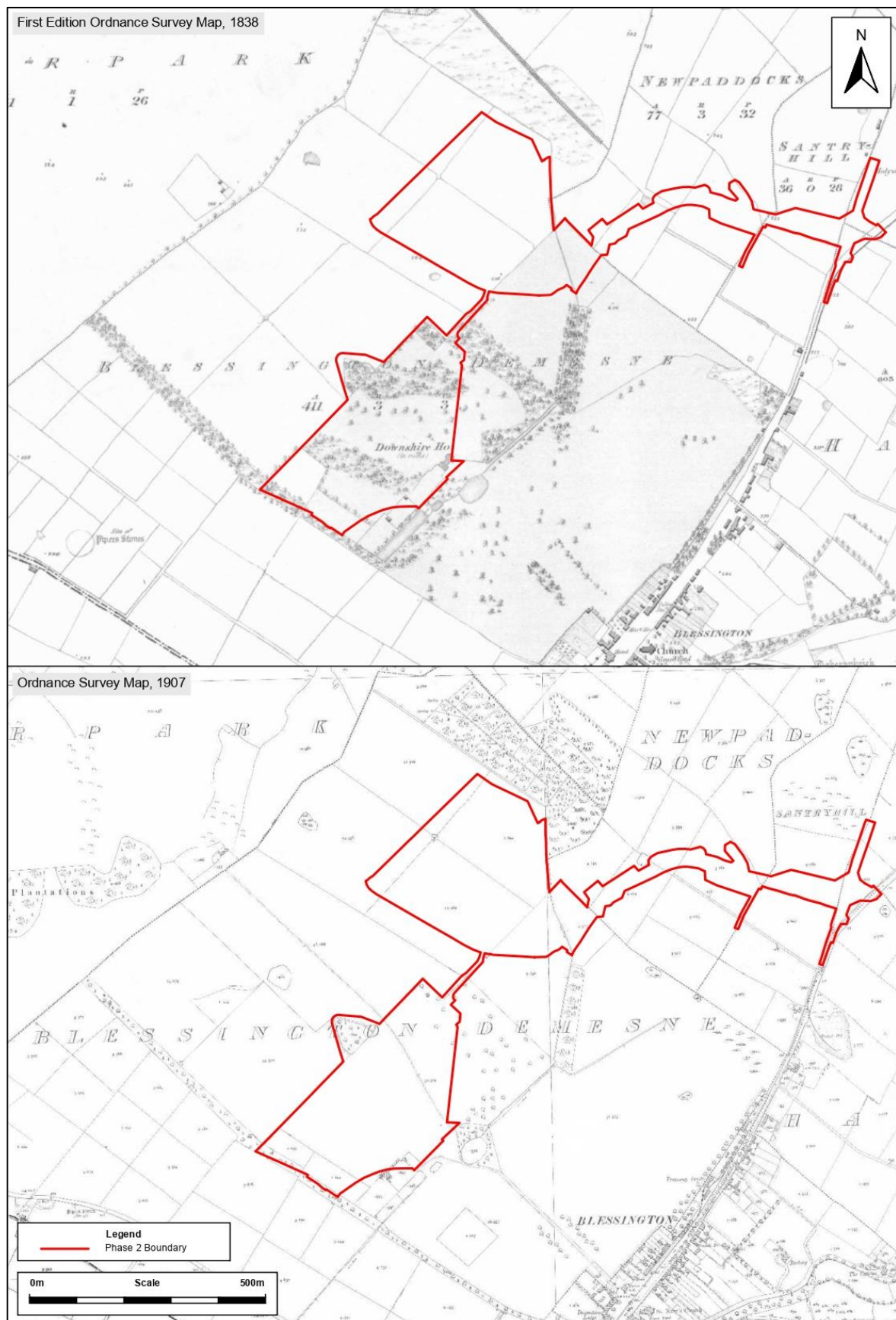


Figure 11-4: Extract from the historic OS maps showing the approximate location of the proposed development



Figure 11-5: Aerial photographic coverage showing layout of geometric gardens

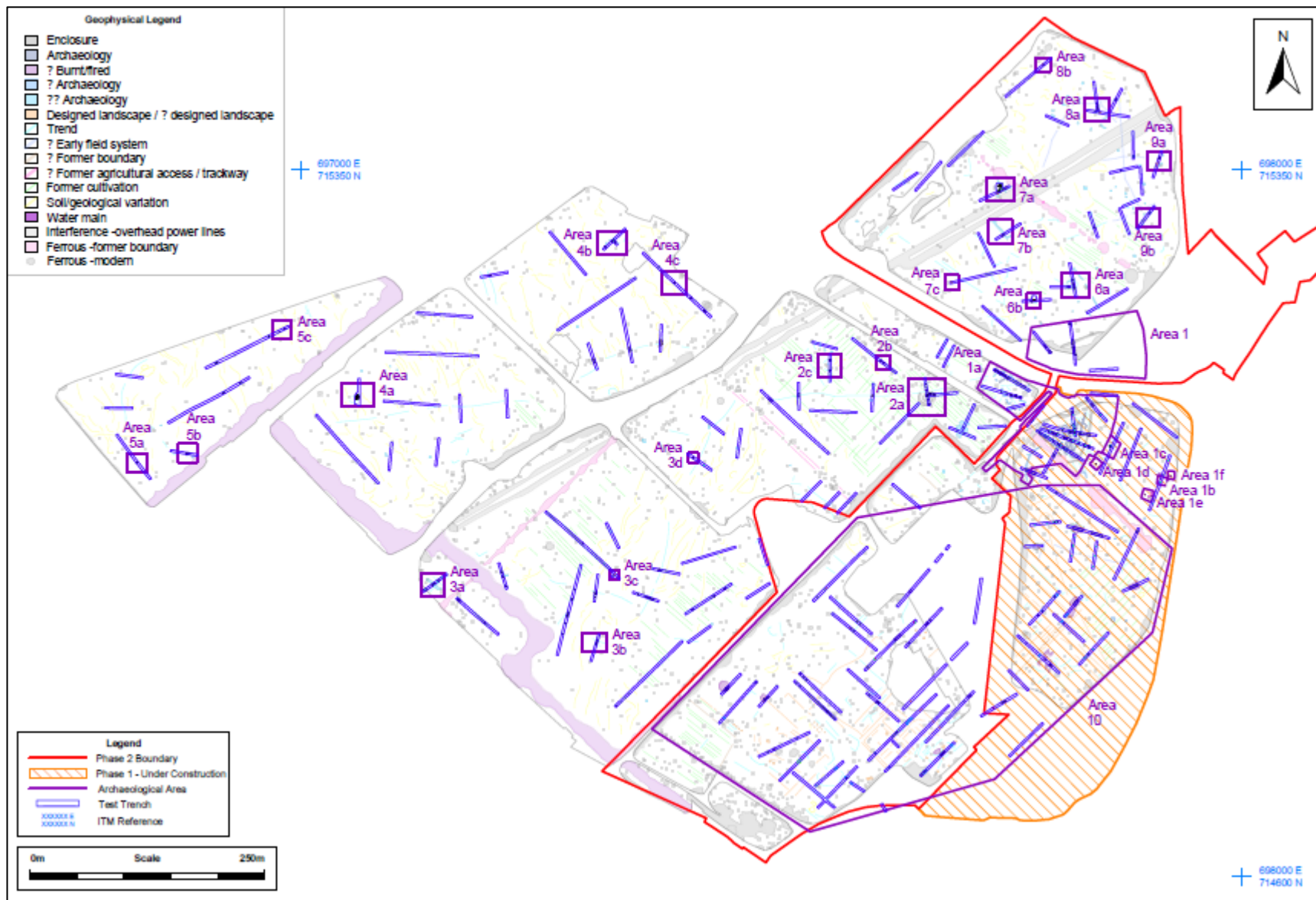


Figure 11-6: Results of geophysical survey and archaeological testing within the proposed development and immediately adjacent

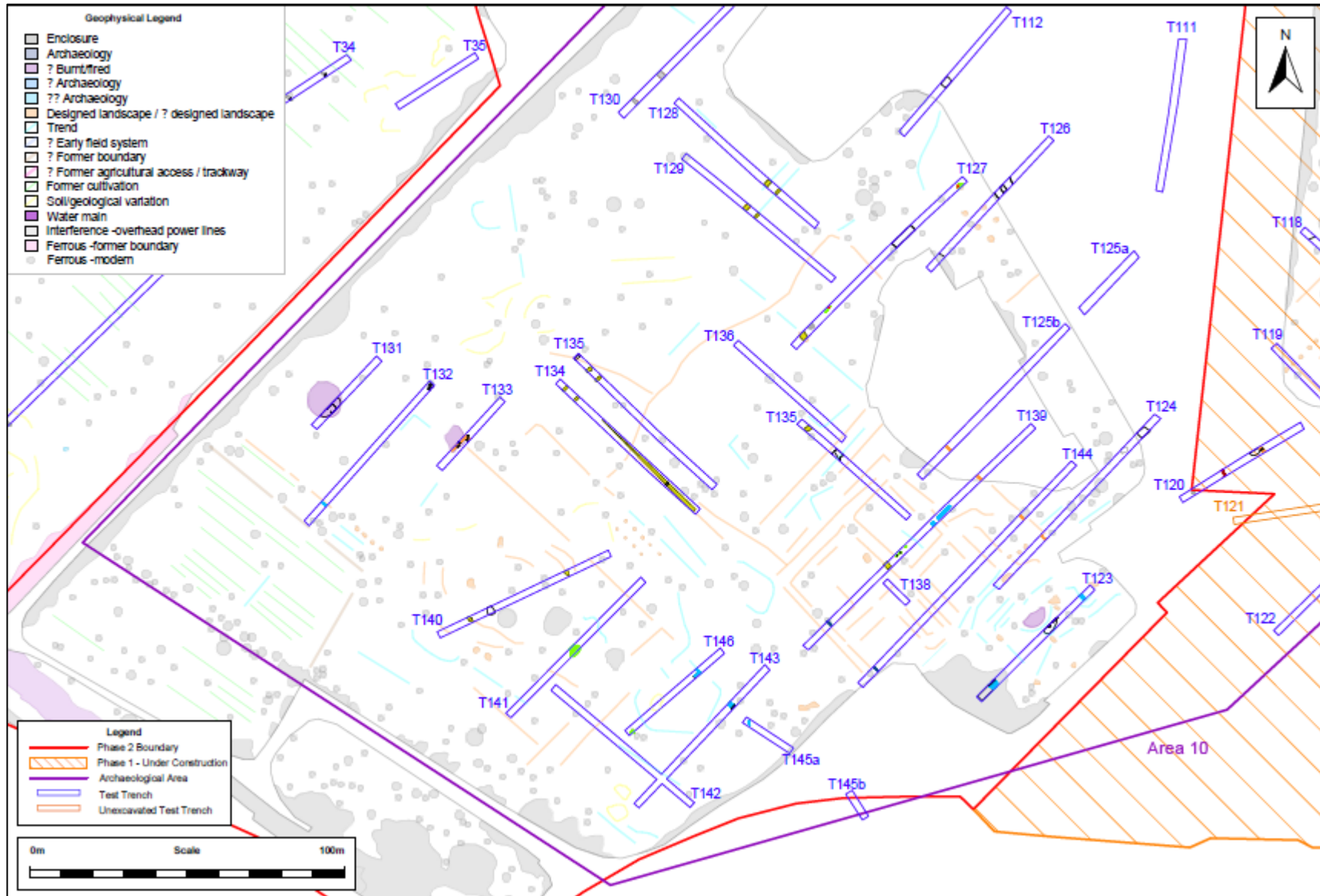


Figure 11-7: Results of geophysical survey and archaeological testing within AA10 (southern portion of proposed park)



Figure 11-8: Results of geophysical survey and archaeological testing within AA10 (northern portion of proposed park)

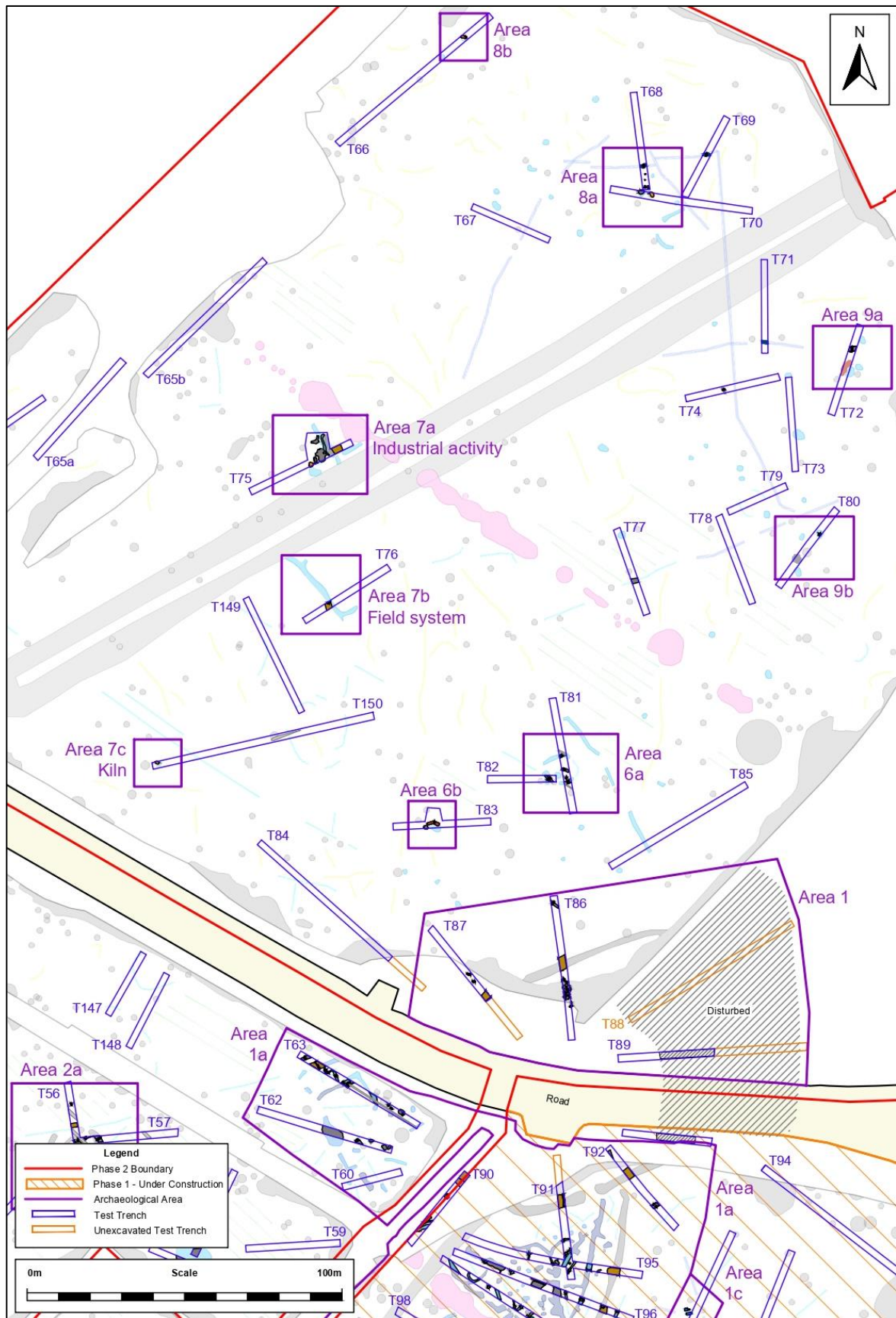


Figure 11-9: Results of geophysical survey and archaeological testing within the proposed residential development



Figure 11-10: Plan of proposed park within AA10

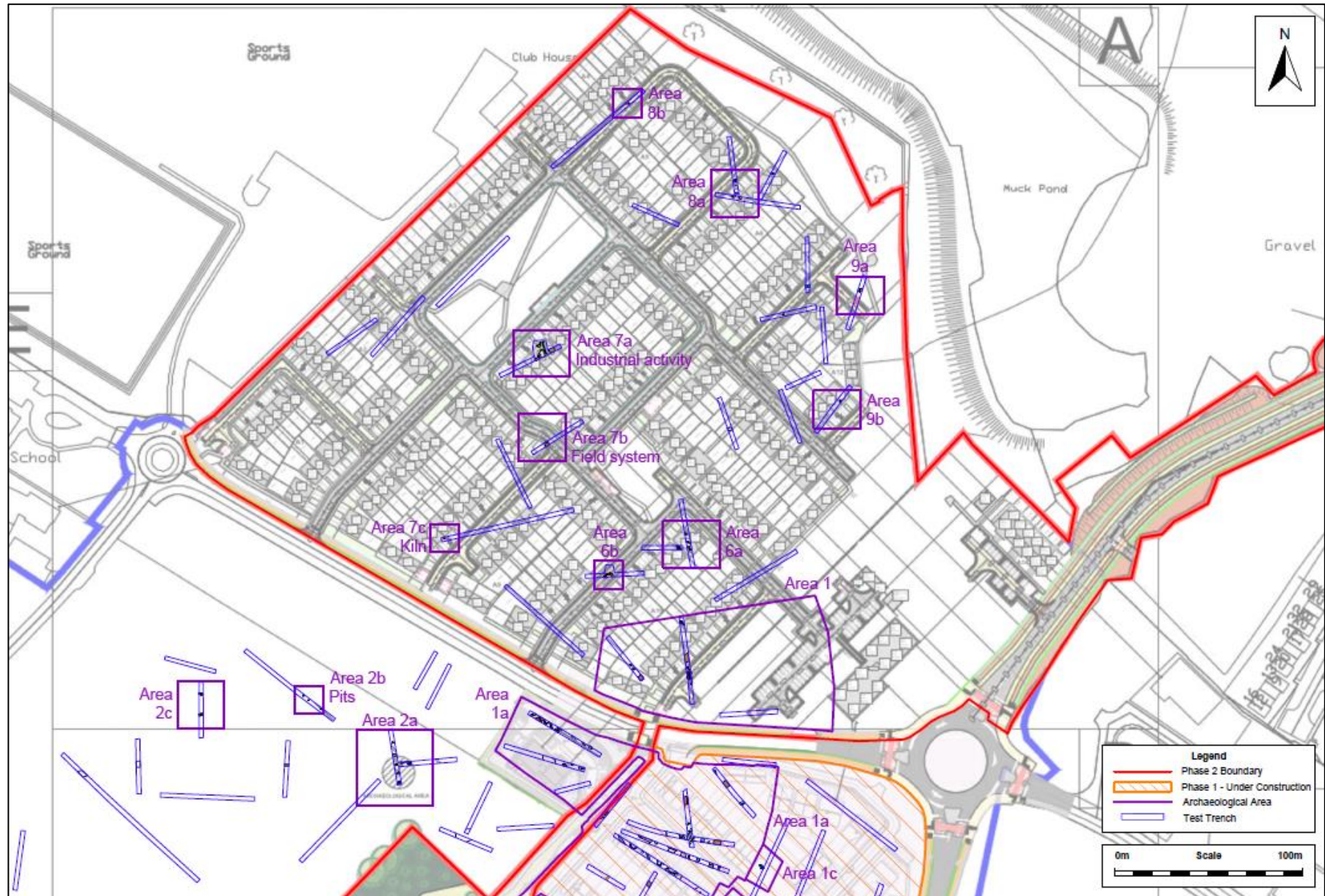


Figure 11-11: Plan of proposed residential development showing AA1 and AA6-9

12. TRANSPORTATION AND TRAFFIC

12.1 Introduction

This chapter has been produced to assess and evaluate the likely impact of the proposed residential and road development on the local transportation network, as well as identifying proposed mitigation measures to minimise any identified impacts.

Traffic surveys were commissioned for this assessment with the objective of providing background information relating to the existing traffic movement patterns across the local road network.

The purpose of this chapter is to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of any transport impact generated as a result of the proposed residential development. The scope of the assessment covers transport and related sustainability issues including means of vehicular access, pedestrians, cyclists and local public transport connections

12.1.1 Expertise

This Chapter of the EIAR has been prepared by Shauna Kelly, Transportation Engineer, who holds a BAI and MAI in Civil, Structural & Environmental Engineering from Trinity College Dublin 2021 and Helen Gendy, Transportation Engineer, who holds a BAI and MAI in Civil, Structural & Environmental Engineering from Trinity College Dublin 2018. The chapter has been reviewed and approved by Danny Pio Murphy, a Transportation Engineer/Planner with over 10 years' industry experience and is an Associate in DBFL Consulting Engineers. Danny Pio holds a BEng (Hons) in Civil and Environmental Engineering from University College Cork, a MEng in Civil Engineering from University College Dublin and PGradDip in Project Management from Trinity College Dublin. He is a chartered engineer (CEng) and member (MIEI) with Engineers Ireland and also has professional memberships with the Transport Planning Society (MTPS) and the Chartered Institute of Highways and Transport (MCIHT).

12.2 Assessment Methodology

This assessment is being carried out in accordance with the following guidance and established best practice:

- Environmental Protection Agency (EPA) Guidelines on the information to be contained in the EIAR;
- Transport Infrastructure Ireland (TII) Traffic and Transportation Assessment Guidelines.

Reference has also been made to the Wicklow County Development Plan 2022 – 2028.

The approach to the study accords with policy and guidance at EU, 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:

- 'Traffic and Transport Assessment Guidelines' (May 2014) National Road Authority;
- 'Traffic Management Guidelines' Dublin Transportation Office & Department of the Environment and Local Government (May 2003);
- 'Guidelines for Traffic Impact Assessments', The Institution of Highways and Transportation (1994);

- 'Design Standards for New Apartments – Guidelines for Planning Authorities' Department of Housing, Local Government and Heritage (December 2020);
- 'Wicklow County Development Plan 2022 - 2028'; and
- 'Blessington Local Area Plan 2013-2019' Wicklow County Council
- EPA Guidelines on information to be contained in Environmental Impact Statements (2022) (EPA, 2022) (the EPA Guidelines)
- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017) (the EU EIAR Guidance).

Our methodology incorporated a number of key inter-related stages, including;

- **Traffic Counts:** Junction 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 both the existing traffic characteristics and the network layout in addition to the spatial / land use configuration and density of the urban structure across the catchments area of the development, a distribution exercise has been undertaken to assign site generated vehicle trips across the local road network.
- **Network Analysis:** Further to quantifying the predicted impact of vehicle movements across the local road network for the adopted optimum site access strategy, more detailed computer simulations have been undertaken to assess the operational performance of key junctions in the post development 2026, 2031 and 2041 development scenarios.

12.3 Characteristics of the Proposed Development

In summary, the proposed development will consist of 329 residential units (270 no. houses, 47 no. apartments and 12. Duplex units), 10.65 ha town park and the extension of the Blessington Inner Relief Road from the existing roundabout at Blessington Demesne to the N81, north of the Woodleigh residential estate. An Environmental Impact Assessment Report and a Natura Impact Statement have been prepared in respect of the proposed development.

With regard to the generation of development trips, during both Construction Phase and Operational Phase, these are as follows:

Construction Phase: Approximately 8 vehicular movements per hour (8 hour working period)

Operational Phase: Approximately 105 AM peak hour vehicular movements, 145 PM peak hour vehicular movements.

Details of the generated Construction Phase and Operational Phase trips are outlined in Section 12.5.1 and Section 12.5.2 respectively.

The proposed development will also include the following associated engineering infrastructure:

- Provision of internal site roads including associated footpaths and crossings;
- Provision of surface water drainage, foul drainage and water supply infrastructure.

A total of 594 car parking spaces have been proposed within the development, these are outlined as follows:

- Surface Parking: Houses – 518 no. spaces;
- Surface Parking: Duplexes – 22 no. spaces;
- Surface Parking: Apartments – 54 no. spaces; and

The car parking provision has also provided 5 no. mobility impaired spaces, in line with the Wicklow County Development Plan 2022 – 2028 standards. These spaces are intended to serve the duplex units that have been provided with on-street parking. Mobility impaired parking for the houses is catered for with in-curtilage parking.

A total of 167 no. cycle parking spaces have been proposed within the development. Of these, 102 no. spaces have been allocated as long-term spaces for the duplex and apartment units while 65 no. spaces have been allocated as short term visitor spaces. The number of cycle parking spaces proposed complies with the requirements for the WCC Development Plan standards which requires cycle parking provision to be 1 long term space per bedroom and one short term space per 5 units. The houses within the proposed development have all been designed with rear gardens which provides them with ample opportunity for the storage of bicycles. This provision is 53 no. spaces over the minimum requirement set by the Development Plan and 35 no. spaces over the minimum requirement set by the DHLGH Design Standards.

In terms of site access, the subject site will benefit from 3 no. vehicle access locations along the School Link Road and the proposed extension to the Blessington Inner Relief Road, shown in Figure 12-1 below. The vast majority of the development (270 no. houses, 54 no. apartments) will be accessible via the 2 no. vehicular entrances provided along the School Link Road. The remaining 12 no. duplexes will access the development via the entrance along the Blessington Relief Road. A pedestrian and cycle bridge over the existing stream is proposed to provide a connection to the wider development. This corresponds to approximately 3% of all estimated vehicle trips generated by the proposed residential development. This is equivalent to 2 no. two-way trips in the AM peak hour and 4 no. 2 way trips in the PM peak hour. There will be no through access to the rest of the development via this entrance.

Although pedestrians and cyclists can make use of the vehicular accesses, an additional dedicated pedestrian and cycle access points connecting to the Blessington Inner Relief Road has been provided.



Figure 12-1 Proposed Access Locations for Residential Element of the Proposed Development

12.4 Baseline Description

The subject site, shown in Figure 12-2 below, is located in the town of Blessington in Co. Wicklow, immediately west of the Blessington Lakes. Blessington is located on the Kildare / Wicklow border, approximately 27km southwest of Dublin and 11km from Naas, the county town of Kildare.

The development lands are zoned "Proposed Residential" as part of the Blessington Local Area Plan 2013-2019. The areas to the north of the subject site are zoned for "Employment / Proposed Employment". Lands to the east and south are zoned as a mixture of residential and employment uses. Land zoned for "Active Open Space" can be found to the north west of the subject site.

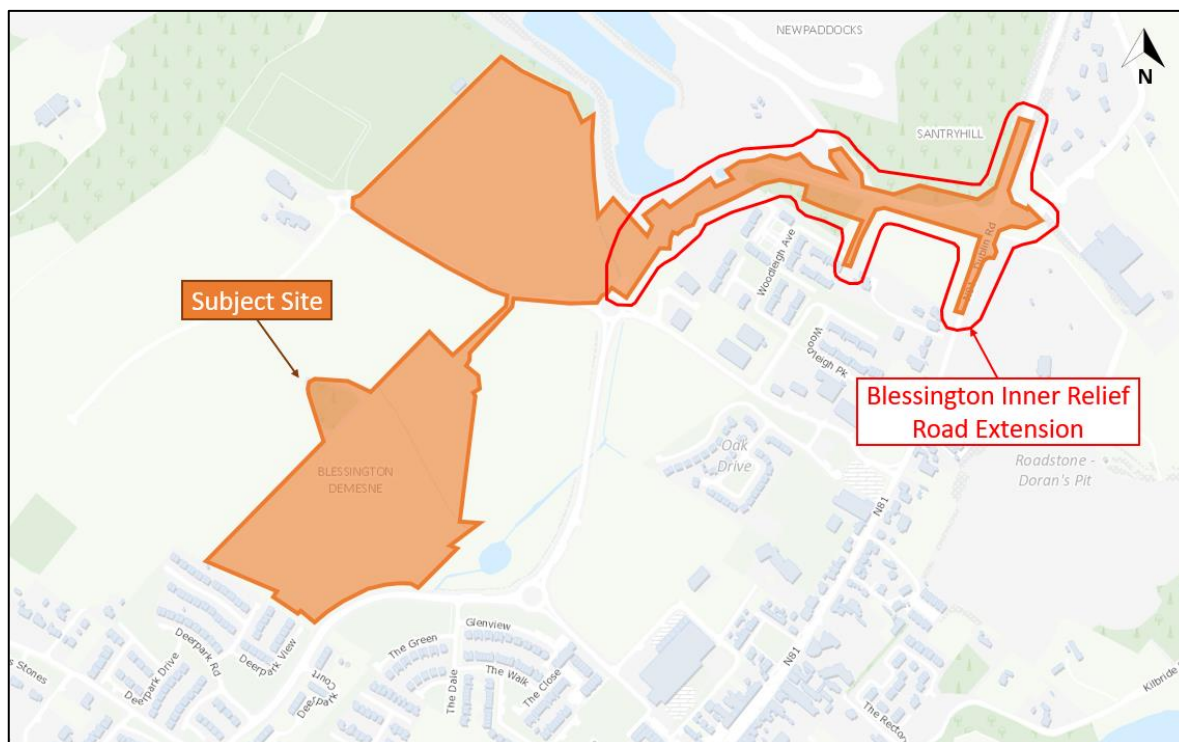


Figure 12-2 Proposed Site Location

12.4.1 Existing Road Network

Access into Blessington from the north (Dublin) and the south (Baltinglass and south-west Wicklow) is gained via the N81 national secondary road. The N81 is a single carriageway road, passing directly through the Main Street and the town centre.

The N81 national road is subject to a speed limit of 60 km/h on approach to Blessington. As the road passes through the town centre, the speed limit is reduced to 50 km/h. The R410 Naas Road enters Blessington from the northwest, meeting the N81 Main Street south of the town centre. In the vicinity of the town, the R410 single carriageway road is subject to a speed limit of 50 km/h.

The Poulaphouca Reservoir along with the Dublin and Wicklow Mountains restrict transportation connections to the east of Blessington. Regions routes R759, R758 and R756 facilitate linkages via the Sally Gap and Wicklow Gap.

The existing road network in the environs of the subject site is illustrated in Figure 12-3 below. Once completed, the Blessington Inner Relief Road is proposed to remove significant quantities of through traffic and Nass bound traffic from the N81 Main Street, through Blessington Town Centre. The newly built Link Road connects the Inner Relief Road to the town centre and N81 Main Street.



Figure 12-3 Existing Road Network (Source: Google Maps)

12.4.2 Existing Cycling and Pedestrian Facilities

In the immediate vicinity of the subject site, pedestrians benefit from existing public lighting on one side of the road along the School Link Road. The road also benefits from footpaths and segregated cycle tracks on both sides, as illustrated in Figure 12-4. At present, the only cycleways in Blessington are the previously mentioned facilities along the School Link Road, along the newly constructed Inner Relief Road and on the Link Road off the N81 Main Street.



Figure 12-4 Existing Pedestrian and Cyclist Facilities in the Vicinity of the Subject Site

12.4.3 Existing Public Transport Facilities – Bus

Dublin Bus route number 65 connects Blessington to Tallaght, Terenure, Rathmines and Dublin City Centre. Bus Éireann service number 132 currently connects Blessington with Tallaght and Dublin to the northeast and to Baltinglass, Tullow, Ballon, Kildavin and Bunclody to the south. Both of these routes operate daily, with services running both during the week and at weekends. A third route, route number 885 is operated by Local Link Kildare and provides a connection between Blessington and Sallins Rail Station from Monday to Friday. Table 12-1 below summaries the number of services

per day on each of these routes.

Table 12-1 No. of Bus Services Per Day (Source: Transport for Ireland)

Operator	Route No.	Route	Mon-Fri	Sat	Sun
Dublin Bus	65	Dublin – Rathmines – Templeogue – Tallaght – Blessington	15	12	10
Bus Éireann	132	Dublin – Baltinglass – Tullow – Ballon – Kildavin – Bunclody	4	2	3
Local Link Kildare	885	Ballymore Eustace – Sallins Rail Station	4	-	-

There are 3 no. bus stops located along the N81 Blessington Main Street serving both the inbound and outbound services for routes 65, 132 and 885. These bus stops are located between 820m and 1km from the subject site, as shown in Figure 12-5.



Figure 12-5 Bus Stop Locations Closest to the Subject Site (Source: GeoHive)

12.4.4 Existing Traffic on Surrounding Road Network

With the objective of quantifying the existing traffic movements across the local road network, junction turning counts were undertaken. The surveys were taken at a number of locations and junctions and an excel traffic model was developed to quantify the results. These surveys were undertaken by IDASO in April 2023 at the locations shown in Figure 12-6 which includes the following junctions:

- Junction 1 – Inner Relief Road / Link Road Roundabout;
- Junction 2 – N81 Main Street / Oak Drive / Maxol Petrol Station Access; and
- Junction 3 – Inner Relief Road / Oak Drive Roundabout.

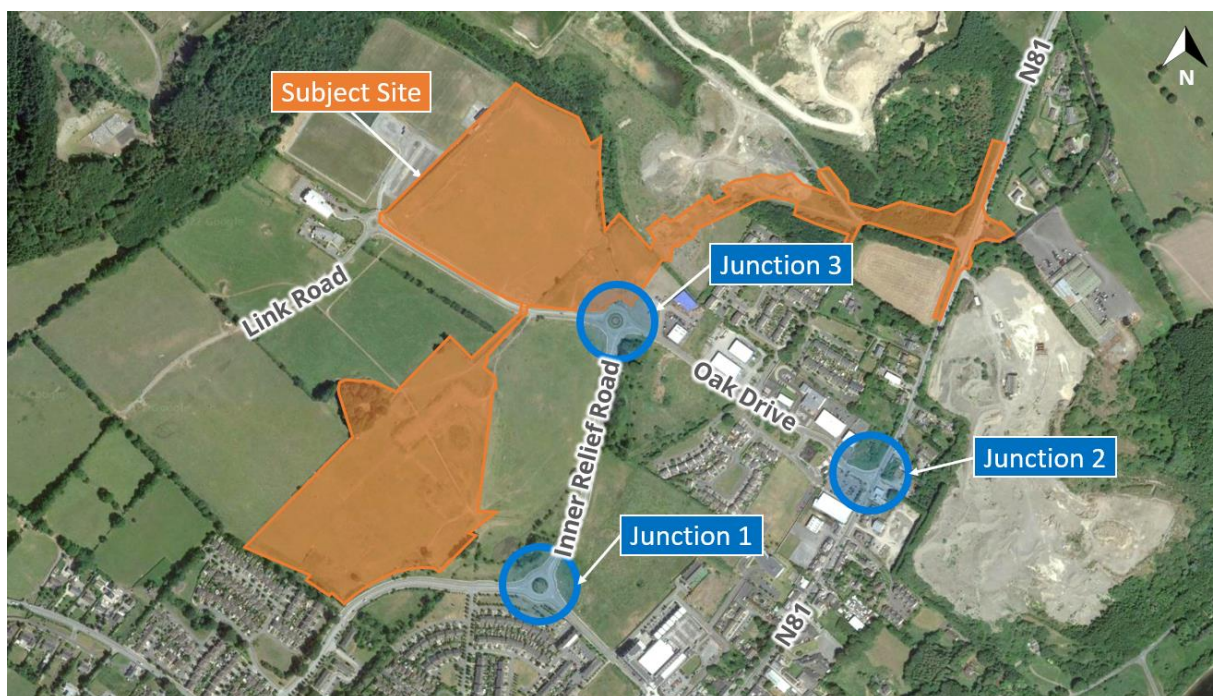


Figure 12-6 Location of Traffic Surveys undertaken within Proximity of the Subject Site

12.4.5 Cycle Network Proposals

The Greater Dublin Area Cycle Network 2022 was published alongside the Greater Dublin Area Transport Strategy 2022-2042 in January 2023. The 2022 cycle network builds upon the original 2013 cycle network to “set out a comprehensive cycle network for development during the period of the transport strategy”.

As part of the GDA Cycle Network, secondary routes are proposed in the immediate vicinity of the subject site along Oak Drive and the Blessington Inner Relief Road. Additional secondary routes are proposed along both the R410 Naas Road and N81 Main Street, which both connect to Blessington Town Centre. Branching off these secondary routes are a number of inter urban routes and leisure greenways. The proposed facilities in the vicinity of the subject site, as presented in the GDA Cycle Network, are shown in Figure 12-7.

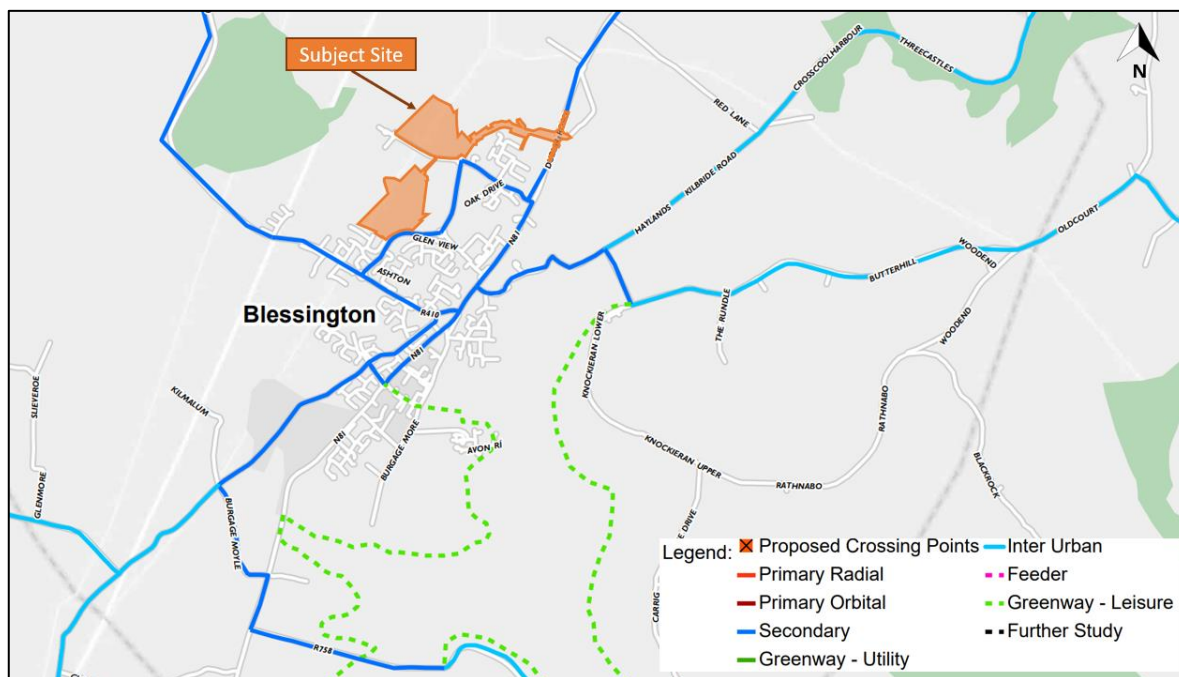


Figure 12-7 Proposed Cycle Network (Source: GDA Cycle Network 2022)

12.4.6 Public Transport Proposals – BusConnects

BusConnects is an initiative launched by the National Transport Authority with the aim of overhauling the bus system in the Dublin Region. This initiative includes review of the bus services, the definition of a core bus network which comprises radial, orbital, and regional core bus corridors. It also includes enhancements to ticketing and fare systems as well as transition to a new low emission vehicle fleet.

Under the BusConnects proposals, the following routes will serve Blessington and the subject site;

- Local Route L44: Ballymore Eustace – Blessington – Tallaght

This route will provide a connection to the Luas Red Line and BusConnects routes A3, D2, D4, D5 and F1 which all provide connections to Dublin City Centre. It is expected that route L44 will operate with a frequency of 60 minutes on both weekdays and weekends.

Although not currently in use, two new bus stops have also been built along the Blessington Inner Relief Road, south of the subject site, to facilitate greater public transport accessibility for residential developments located nearby and along the Blessington Inner Relief Road.

12.4.7 Public Transport Proposals – Connecting Ireland

In 2021, the National Transport authority (NTA) unveiled the Connecting Ireland rural public transport initiative. The project aims to improve existing public transport services across rural Ireland while increasing the number of services and rolling out Demand Responsive Transport to meet the needs of those living in rural locations.

As part of Connecting Ireland there are two new bus routes proposed to serve the town of Blessington. These include:

- Route 183: Sallins to Arklow – Serving Nass, Blessington, Wicklow and Avoca.

- Route 884: Carlow to Sallins – Serving Baltinglass, Blessington and Naas

12.5 Assessment of Effects

An analysis of the predicted impacts of the proposed development on the traffic and transportation network during and after the construction phase is presented in the following section.

The impact assessment was undertaken using the following considerations, as described in The EPA's 'Guidelines On The Information To Be Contained In Environmental Impact Assessment Reports' May 2022:

- Quality of an Impact: Described as being Positive, Neutral or Negative/Adverse.
- 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 momentary, brief, temporary, short-term, medium-term, long-term, permanent or a reversible impact. Momentary impacts can last from seconds to minutes, 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. Reversible impacts are considered those that can be undone through remediation or restoration.

12.5.1 Construction Phase

12.5.1.1 Construction Traffic

The likely impact on the transport network during the construction phase will be low in nature. The number of staff on site will fluctuate over the implementation of the subject scheme. Nevertheless, based upon the experience of similar projects, it would be expected that approx. 40 staff will be on site at any one time, subsequently generating low levels of two-way vehicle trips during the peak AM and PM periods over the period of the construction works (construction workers will use shared transport). On-site employees will arrive before 08:00, thus avoiding the morning peak hour traffic. These employees will depart after 16:00.

Likely deliveries to the site will arrive at a steady rate during the course of the day, the majority of which will be lorries that will be brought onto the site over the excavation period of the construction stage of the development. The number of vehicles per day is not yet known, however, basing this assessment on previous schemes, it can be assumed, as a conservative assessment, that there will be 8 loads per hour. With an 8 hour working day, this equates to 48 loads per day approximately. This results in 96 vehicular movement per day over an 8 hour period, which equates to 12 vehicle movements per hour. It is therefore considered that the effect on the local road network is low as a result of HGV vehicle deliveries.

The proposed haul routes for the lorries will enter and exit the site via the School Link Road. It is envisaged that the main access route will be through the N81 National Road.

12.5.1.2 Public Environment

The likely impact on the pedestrian and cycle environment during the construction phase will be short term in nature. During the construction stage, there will be an impact on the existing pedestrians and cyclists in the surrounding area, including possible diversions and impact on air quality.

Taking the above into consideration, the impacts on the surrounding transportation environments during the Construction Stage are assessed as follows:

- **Increase in Vehicular Traffic on Road Network:** There will be an increase in construction vehicular traffic on the surrounding road network, including employee vehicles and HGV vehicles. Without the consideration of mitigation measures, this impact will be negative, slight and short term in nature and will terminate with the completion of the construction stage.
- **Pedestrian & Cycle Environment:** Without the consideration of mitigation measures, the impact on the pedestrian and cycle environment during construction works will be negative, slight and short term in nature

12.5.2 Operational Phase

A detailed assessment has been undertaken with regard to the generation of Development Traffic and the impact that this will have on the surrounding road network.

12.5.2.1 Trip Generation

Once the subject development is fully complete and occupied, there are two distinct peak arrival and departure times that are expected during a typical weekday. Specifically, there is expected to be a morning peak between 08:15 – 09:15 when people are leaving for work or educational purposes, and an evening peak between 17:30 – 18:30 when people are returning from work or school.

Once in operation, the proposed development is expected to establish permanent travel patterns and trip generation onto the surrounding road network.

With regard to generating trips for this development, the TRICS database was referenced as part of this assessment. TRICS data is primarily UK based, however, a number of Irish sites have been included within the last few years with these continuing to expand. The TRICS database provides a reasonable estimation of traffic generation from the proposed development based on previous similar development types of this nature.

Table 12-2 below includes the predicted trip generations and our estimate of the likely traffic flows in and out of the proposed development during the morning and evening peak hour periods using data from TRICS. The TRICS outputs are outlined in detail in **Appendix 12.A**.

Table 12-2 Proposed Development Trip Rates (from TRICS)

Land Use	Unit	AM Peak Hour (08:15-09:15)			PM Peak Hour (17:30-18:30)		
		Arr	Dep	Two-way	Arr	Dep	Two-way
Houses	Per Unit	0.137	0.214	0.351	0.291	0.174	0.465
Apartments / Duplexes	Per Unit	0.083	0.087	0.170	0.203	0.143	0.346

Based on the above trip rates, potential peak hour traffic generation is calculated based on 270 houses, 54 apartments and 12 duplexes. Table 12-3 summarises the predicted AM and PM peak hour traffic generated by the proposed development.

Table 12-3 Proposed Development Vehicle Trips

Land Use	Unit	AM Peak Hour (08:15-09:15)			PM Peak Hour (17:30-18:30)		
		Arr	Dep	Two-way	Arr	Dep	Two-way
Houses	Per Unit	36	80	116	79	47	125
Apartments	Per Unit	3	8	11	11	7	18
Duplexes	Per Unit	0	1	1	1	1	2
Total		39	89	128	90	55	145

A number of committed developments in the vicinity of the subject site have also been assessed within the impact analysis and were also taken into consideration within the excel traffic generation model. Further details of this can be found in Section 12.6 of this report.

12.5.2.2 Trip Distribution

The distribution of the proposed development's generated vehicle movements as proposed by DBFL is presented in Figure 24a as included in **Appendix 12B** of this report. The associated residential vehicle trips have been assigned to the surrounding road network based on the surveyed traffic movements passing the site based on the following assumptions. A simplified version of this diagram is presented in Figure 12-8.

In the Opening Year 2026, we have assumed that all 270 houses, 12 duplexes and 54 apartments will be complete and occupied and that the full length of the Blessington Inner Relief Road will be completed. In this 2026 scenario we have assumed the following distribution for the subject residential development:

- 1% of all vehicle trips will travel south west along the Blessington Inner Relief Road via the site access along the Blessington Inner Relief Road;
- 2% of all vehicle trips will travel north east along the Blessington Inner Relief Road via the site access along the Blessington Inner Relief Road;
- 64% of all vehicle trips will access the development via the southern site access along the School Link Road;
- 33% of all vehicle trips will access the development via the northern site access along the School Link Road;
- After exiting the proposed development via the School Link Road, 34% of all vehicle trips will travel south west along the Blessington Inner Relief Road;

- After exiting the proposed development via the School Link Road, 43% of all vehicle trips will travel north east along the Blessington Inner Relief Road;
- After exiting the proposed development via the School Link Road, 20% of all vehicle trips will travel along Oak Drive towards the N81

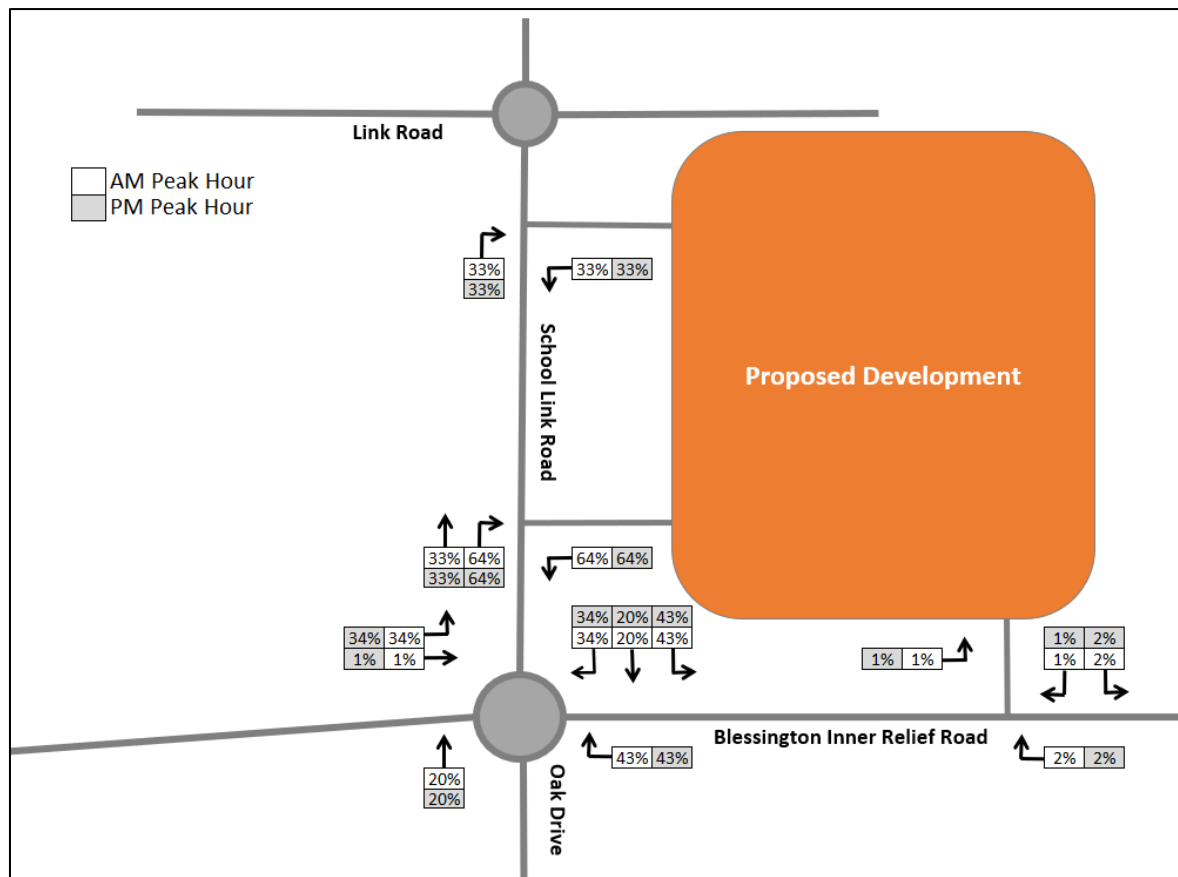


Figure 12-8 Development Trip Distribution

12.5.2.3 Traffic Growth

An Opening Year of 2026 was assumed for this assessment. In accordance with TII Guidance, Future Design years (+5 and +15 years) of 2031 and 2041 have also been adopted.

The TII Project Appraisal Guidelines (PAG) have been utilised to determine the traffic growth forecast rates. The traffic growth forecast rates within the PAG ensures local and regional variations and demographic patterns are accounted for.

Table 6.2 within the PAG provides Annual National Traffic Growth Factors for the different regions within Ireland. The subject site lies within 'Wicklow' with the growth factors as outlined within Table 12-4 below.

Table 12-4 Link-Based Growth Rates (PAG Unit 5.3)

Wicklow	Low Sensitivity Growth						Central Growth						High Sensitivity Growth					
	2016-2030		2030-2040		2040-2050		2016-2030		2030-2040		2040-2050		2016-2030		2030-2040		2040-2050	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
	1.0140	1.0361	1.0033	1.0153	1.0029	1.0185	1.0157	1.0377	1.0051	1.0173	1.0047	1.0204	1.0189	1.0415	1.0091	1.0211	1.0110	1.0305

12.5.2.4 Assessment Scenarios

In summary, a total of six different traffic scenarios have been investigated including three Base 'Do-Minimum' and three potential 'Do-Something' scenarios as follows;

- 'Base' (Do-Minimum) traffic characteristics – 2026 Base Traffic Flows + Committed Developments (WCC Refs. 20184, 20362, 191020, 20108, 201146, 211404, Future Blessington Masterplan Development)
- 'Base' (Do-Minimum) traffic characteristics – 2031 Base Traffic Flows + Committed Developments (WCC Refs. 20184, 20362, 191020, 20108, 201146, 211404, Future Blessington Masterplan Development)
- 'Base' (Do-Minimum) traffic characteristics – 2041 Base Traffic Flows + Committed Developments (WCC Refs. 20184, 20362, 191020, 20108, 201146, 211404, Future Blessington Masterplan Development)
- 'Post development' (Do-Something) traffic characteristics – 2026 Do-Minimum (A1) + Redistribution with BIRR + Proposed Residential Development (329 no. units)
- 'Post development' (Do-Something) traffic characteristics – 2031 Do-Minimum (A2) + Redistribution with BIRR + Proposed Residential Development (329 no. units)
- 'Post development' (Do-Something) traffic characteristics – 2041 Do-Minimum (A3) + Redistribution with BIRR + Proposed Residential Development (329 no. units)

12.5.2.5 Impact of Proposals

The Institution of Highways and Transportation document 'Guidelines for Traffic Impact Assessments' states that the impact of a proposed development upon the local road network 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. These same thresholds are reproduced in the NRA/TII document entitled Traffic and Transport Assessment Guidelines (2014).

The following key junctions were assessed in terms of percentage impact resulting from the implementation of the proposed development (Figure 12-6):

- Junction 1 – Inner Relief Road / Link Road Roundabout;
- Junction 2 – N81 Main Street / Oak Drive / Maxol Petrol Station Access; and
- Junction 3 – Inner Relief Road / Oak Drive Roundabout.

Shown below in Table 12-5 is the percentage impact for each junction for the 2026, 2031 and 2041 year scenarios for the AM and PM peak hour periods.

Table 12-5 Network Impact of Key Junctions

No.	Location	2026 DS		2031 DS		2041 DS	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1	Inner Relief Road / Link Road Roundabout	13.24%	14.06%	12.88%	13.64%	12.62%	13.35%
2	N81 Main Street / Oak Drive / Petrol Station	-12.90%	-12.85%	-12.81%	-12.72%	-12.74%	-12.63%
3	Inner Relief Road / Oak Drive Roundabout	23.64%	25.11%	22.73%	24.08%	22.07%	23.34%

As junction 1 and 3 will experience an impact greater than 10%, a junction performance analysis was conducted. This analysis will be assessed in the next chapter. Despite not surpassing the 5% impact threshold for congested network, junction 2 will also be analysed in further detail due to historic local concerns about the performance of the junction. However, as seen in Table 12-5 above, the completion of the northern link of the Blessington inner Relief Road is anticipated to significantly reduce the volume of traffic at the junction, resulting in an improved performance compared to the 'Do-Minimum' scenario.

The operational performance of the proposed N81 / inner Relief Road roundabout junction has also been assessed (junction 4).

A PICADY model was developed for Junction 2 while an ARCADY model was developed for Junctions 1, 3 and 4 (the proposed N81 / Inner Relief Road roundabout) with the junctions subject to detailed analysis in order to determine the operational performance with and without development trips on the road network. The junctions were modelled and assessed with regard to the Ratio of Flow to Capacity (RFC) for each arm, the Average Queue length on each arm of the junction as well as the Average Delay for each arm. The RFC is a measure of the capacity levels on each arm and within the junctions. An RFC of greater than 85% (0.85) would indicate a junction to be approaching capacity.

12.5.2.6 Junction Analysis – Junction 1, Inner Relief Road / Link Road

The existing three arm roundabout junction has been analysed for all modelling scenarios using the Junction 9 ARCADY software package. The results of the operational assessment of this junction during the weekday morning and evening peak hours for the Do Minimum and Do Something scenarios are summarised in Table 12-6 and Table 12-7.

Do-Minimum Scenario

The ARCADY results (Table 12-6) indicate that the Inner Relief Road / Link Road junction will operate within capacity for the 2026 "Do-Minimum" AM peak hour with a maximum Ratio Flow to Capacity (RFC) value of 0.32 and a corresponding queue of 0.5 Passenger Car Units (pcus) being recorded. For the corresponding PM peak hour, a maximum RFC value of 0.21 will occur with a corresponding queue of 0.3 pcus.

For the 2041 Future Horizon Year “Do-Minimum” scenario the ARCADY results indicate that the Inner Relief Road / Link Road roundabout junction will operate within capacity for the 2041 “Do-Minimum” AM peak hour with a maximum RFC value of 0.36 and a corresponding queue of 0.6 pcus being recorded. For the 2041 “Do-Minimum” PM peak hour a maximum RFC value of 0.23 occurs with a corresponding queue of 0.3 pcus.

Table 12-6 2026, 2031 and 2041 Do-Minimum ARCADY Results for Junction 1

Scenario	Period	Arm	Description	Queue (PCUs)	Delay (s)	RFC
2026 DM	AM Peak	1	Link Road (S)	0.1	3.09	0.10
		2	Inner Relief Road (W)	0.5	3.88	0.32
		3	Inner Relief Road (NE)	0.2	2.92	0.14
	PM Peak	1	Link Road (S)	0.2	3.37	0.14
		2	Inner Relief Road (W)	0.3	3.31	0.21
		3	Inner Relief Road (NE)	0.3	3.10	0.21
2031 DM	AM Peak	1	Link Road (S)	0.1	3.13	0.11
		2	Inner Relief Road (W)	0.6	4.02	0.34
		3	Inner Relief Road (NE)	0.2	2.93	0.14
	PM Peak	1	Link Road (S)	0.2	3.44	0.15
		2	Inner Relief Road (W)	0.3	3.37	0.22
		3	Inner Relief Road (NE)	0.3	3.16	0.22
2041 DM	AM Peak	1	Link Road (S)	0.1	3.15	0.11
		2	Inner Relief Road (W)	0.6	4.12	0.36
		3	Inner Relief Road (NE)	0.2	2.99	0.15
	PM Peak	1	Link Road (S)	0.2	3.49	0.16
		2	Inner Relief Road (W)	0.3	3.42	0.23
		3	Inner Relief Road (NE)	0.3	3.21	0.23

Do-Something Scenario

The ARCADY results (Table 12-7) indicate that the Inner Relief Road / Link Road junction will operate within capacity for the 2026 “Do-Something” AM peak hour with a maximum Ratio Flow to Capacity (RFC) value of 0.36 and a corresponding queue of 0.6 Passenger Car Units (pcus) being recorded. For the corresponding PM peak hour, a maximum RFC value of 0.25 will occur with a corresponding queue of 0.4 pcus.

Table 12-7 2026, 2031 and 2041 Do-Something ARCADY Results for Junction 1

Scenario	Period	Arm	Description	Queue (PCUs)	Delay (s)	RFC
2026 DS	AM Peak	1	Link Road (S)	0.1	3.15	0.11
		2	Inner Relief Road (W)	0.6	4.15	0.36
		3	Inner Relief Road (NE)	0.2	3.01	0.16
	PM Peak	1	Link Road (S)	0.2	3.45	0.15
		2	Inner Relief Road (W)	0.4	3.53	0.25
		3	Inner Relief Road (NE)	0.3	3.21	0.24
2031 DS	AM Peak	1	Link Road (S)	0.1	3.19	0.11
		2	Inner Relief Road (W)	0.7	4.32	0.39
		3	Inner Relief Road (NE)	0.2	3.06	0.17
	PM Peak	1	Link Road (S)	0.2	3.52	0.16
		2	Inner Relief Road (W)	0.4	3.61	0.27
		3	Inner Relief Road (NE)	0.4	3.28	0.25
2041 DS	AM Peak	1	Link Road (S)	0.1	3.22	0.12
		2	Inner Relief Road (W)	0.7	4.47	0.41
		3	Inner Relief Road (NE)	0.2	3.09	0.18
	PM Peak	1	Link Road (S)	0.2	3.58	0.17
		2	Inner Relief Road (W)	0.4	3.67	0.28
		3	Inner Relief Road (NE)	0.4	3.33	0.26

For the 2041 Future Horizon Year “Do-Something” scenario the ARCADY results indicate that the Inner Relief Road / Link Road roundabout junction will operate within capacity for the 2041 “Do-Something” AM peak hour with a maximum RFC value of 0.41 and a corresponding queue of 0.7 pcus being recorded. For the 2041 “Do-Minimum” PM peak hour a maximum RFC value of 0.28 occurs with a corresponding queue of 0.4 pcus.

12.5.2.7 Junction Analysis – Junction 2, N81 Main Street / Oak Drive / Petrol Station

The existing four arm priority junction has been analysed for all modelling scenarios using the Junctions 9 PICADY software package. The results of the operational assessment of this junction during the weekday morning and evening peak hours for the Do Minimum and Do Something scenarios are summarised in Table 12-8 and Table 12-9.

Do-Minimum Scenario

The PICADY results (Table 12-8) indicate that the N81 Main Street / Oak Drive priority controlled junction will operate within capacity for the 2026 “Do-Minimum” AM peak hour with a maximum Ratio Flow to Capacity (RFC) value of 0.56 and a corresponding queue of 1.3 Passenger Car Units (pcus) being

recorded. For the corresponding PM peak hour, a maximum RFC value of 0.46 will occur with a corresponding queue of 1.3 pcus.

For the 2041 Future Horizon Year "Do-Minimum" scenario the PICADY results indicate that the N81 Main Street / Oak Drive priority controlled junction will operate within capacity for the 2041 "Do-Minimum" AM peak hour with a maximum RFC value of 0.66 and a corresponding queue of 2.0 pcus being recorded. For the 2041 "Do-Minimum" PM peak hour a maximum RFC value of 0.51 occurs with a corresponding queue of 1.7 pcus.

Table 12-8 2026, 2031 and 2041 Do-Minimum PICADY Results for Junction 2

Scenario	Period	Stream	Description	Queue (PCUs)	Delay (s)	RFC
2026 DM	AM Peak	B – CD	Oak Drive (to Arm C)	1.3	15.76	0.56
		B – AD	Oak Drive (to Arm A & D)	0.5	17.92	0.32
		A – BCD	N81 Main Street South	0.0	6.59	0.03
		D – ABC	Maxol Petrol Station	0.2	10.44	0.14
		C – ABD	N81 Main Street North	0.5	8.48	0.32
	PM Peak	B – CD	Oak Drive (to Arm C)	0.5	9.75	0.32
		B – AD	Oak Drive (to Arm A & D)	0.5	20.02	0.34
		A – BCD	N81 Main Street South	0.0	8.68	0.02
		D – ABC	Maxol Petrol Station	0.2	15.22	0.17
		C – ABD	N81 Main Street North	1.3	7.43	0.46
2031 DM	AM Peak	B – CD	Oak Drive (to Arm C)	1.6	18.27	0.61
		B – AD	Oak Drive (to Arm A & D)	0.5	20.52	0.36
		A – BCD	N81 Main Street South	0.0	6.66	0.03
		D – ABC	Maxol Petrol Station	0.2	11.14	0.16
		C – ABD	N81 Main Street North	0.6	8.79	0.35
	PM Peak	B – CD	Oak Drive (to Arm C)	0.6	10.55	0.35
		B – AD	Oak Drive (to Arm A & D)	0.6	22.94	0.38
		A – BCD	N81 Main Street South	0.0	8.99	0.02
		D – ABC	Maxol Petrol Station	0.2	16.96	0.20
		C – ABD	N81 Main Street North	1.5	7.58	0.49
2041 DM	AM Peak	B – CD	Oak Drive (to Arm C)	2.0	21.20	0.66
		B – AD	Oak Drive (to Arm A & D)	0.7	23.63	0.41
		A – BCD	N81 Main Street South	0.0	6.71	0.04
		D – ABC	Maxol Petrol Station	0.2	11.74	0.17

Scenario	Period	Stream	Description	Queue (PCUs)	Delay (s)	RFC
	PM Peak	C – ABD	N81 Main Street North	0.7	9.05	0.37
		B – CD	Oak Drive (to Arm C)	0.6	11.40	0.38
		B – AD	Oak Drive (to Arm A & D)	0.7	26.10	0.43
		A – BCD	N81 Main Street South	0.0	9.25	0.02
		D – ABC	Maxol Petrol Station	0.3	18.90	0.23
		C – ABD	N81 Main Street North	1.7	7.72	0.51

Do-Something Scenario

The PICADY results (Table 12-9) indicate that the N81 Main Street / Oak Drive priority controlled junction will operate within capacity for the 2026 “Do-Something” AM peak hour with a maximum Ratio Flow to Capacity (RFC) value of 0.38 and a corresponding queue of 0.7 Passenger Car Units (pcus) being recorded. For the corresponding PM peak hour, a maximum RFC value of 0.28 will occur with a corresponding queue of 0.5 pcus.

For the 2041 Future Horizon Year “Do-Something” scenario the PICADY results indicate that the N81 Main Street / Oak Drive priority controlled junction will operate within capacity for the 2041 “Do-Something” AM peak hour with a maximum RFC value of 0.45 and a corresponding queue of 0.8 pcus being recorded. For the 2041 “Do-Something” PM peak hour a maximum RFC value of 0.34 occurs with a corresponding queue of 0.7 pcus.

Table 12-9 2026, 2031 and 2041 Do-Something PICADY Results for Junction 2

Scenario	Period	Stream	Description	Queue (PCUs)	Delay (s)	RFC
2026 DS	AM Peak	B – CD	Oak Drive (to Arm C)	0.7	10.99	0.38
		B – AD	Oak Drive (to Arm A & D)	0.4	14.83	0.28
		A – BCD	N81 Main Street South	0.0	6.39	0.03
		D – ABC	Maxol Petrol Station	0.1	9.39	0.13
		C – ABD	N81 Main Street North	0.3	7.58	0.22
	PM Peak	B – CD	Oak Drive (to Arm C)	0.3	8.31	0.21
		B – AD	Oak Drive (to Arm A & D)	0.4	15.37	0.28
		A – BCD	N81 Main Street South	0.0	7.97	0.01
		D – ABC	Maxol Petrol Station	0.2	12.58	0.14
		C – ABD	N81 Main Street North	0.5	6.36	0.28
2031 DS	AM Peak	B – CD	Oak Drive (to Arm C)	0.7	11.84	0.41
		B – AD	Oak Drive (to Arm A & D)	0.4	16.11	0.31

Scenario	Period	Stream	Description	Queue (PCUs)	Delay (s)	RFC
		A – BCD	N81 Main Street South	0.0	6.45	0.03
		D – ABC	Maxol Petrol Station	0.2	9.85	0.14
		C – ABD	N81 Main Street North	0.4	7.76	0.24
	PM Peak	B – CD	Oak Drive (to Arm C)	0.3	8.74	0.22
		B – AD	Oak Drive (to Arm A & D)	0.5	16.87	0.31
		A – BCD	N81 Main Street South	0.0	8.20	0.02
		D – ABC	Maxol Petrol Station	0.2	13.60	0.17
		C – ABD	N81 Main Street North	0.6	6.39	0.30
2041 DS	AM Peak	B – CD	Oak Drive (to Arm C)	0.8	12.81	0.45
		B – AD	Oak Drive (to Arm A & D)	0.5	17.44	0.34
		A – BCD	N81 Main Street South	0.0	6.49	0.04
		D – ABC	Maxol Petrol Station	0.2	10.25	0.15
		C – ABD	N81 Main Street North	0.4	7.92	0.25
	PM Peak	B – CD	Oak Drive (to Arm C)	0.3	9.16	0.24
		B – AD	Oak Drive (to Arm A & D)	0.5	18.33	0.34
		A – BCD	N81 Main Street South	0.0	8.39	0.02
		D – ABC	Maxol Petrol Station	0.2	14.67	0.19
		C – ABD	N81 Main Street North	0.7	6.40	0.32

12.5.2.8 Junction Analysis – Junction 3, Inner Relief Road / Oak Drive Roundabout

The existing four arm roundabout junction has been analysed for all modelling scenarios using the Junctions 9 ARCADY software package. The results of the operational assessment of this junction during the weekday morning and evening peak hours for the Do Minimum and Do Something scenarios are summarised in Table 12-10 and Table 12-11.

Do-Minimum Scenario

The ARCADY results (Table 12-10) indicate that the Inner Relief Road / Oak Drive roundabout junction will operate within capacity for the 2026 “Do-Minimum” AM peak hour with a maximum Ratio Flow to Capacity (RFC) value of 0.25 and a corresponding queue of 0.4 Passenger Car Units (pcus) being recorded. For the corresponding PM peak hour, a maximum RFC value of 0.22 will occur with a corresponding queue of 0.3 pcus.

For the 2041 Future Horizon Year “Do-Minimum” scenario the ARCADY results indicate that the Inner Relief Road / Oak Drive roundabout junction will operate within capacity for the 2041 “Do-Minimum” AM peak hour with a maximum RFC value of 0.28 and a corresponding queue of 0.4 pcus being recorded.

For the 2041 “Do-Minimum” PM peak hour a maximum RFC value of 0.24 occurs with a corresponding queue of 0.3 pcus.

Table 12-10 2026, 2031 and 2041 Do-Minimum ARCADY Results for Junction 3

Scenario	Period	Arm	Description	Queue (PCUs)	Delay (s)	RFC
2026 DM	AM Peak	1	Oak Drive	0.2	2.69	0.13
		2	Inner Relief Road (S)	0.4	3.11	0.25
		3	School Link Road	0.1	2.37	0.07
	PM Peak	1	Oak Drive	0.3	3.00	0.22
		2	Inner Relief Road (S)	0.2	2.85	0.18
		3	School Link Road	0.1	2.23	0.06
2031 DM	AM Peak	1	Oak Drive	0.2	2.71	0.13
		2	Inner Relief Road (S)	0.4	3.18	0.26
		3	School Link Road	0.1	2.40	0.08
	PM Peak	1	Oak Drive	0.3	3.05	0.23
		2	Inner Relief Road (S)	0.3	2.89	0.19
		3	School Link Road	0.1	2.25	0.06
2041 DM	AM Peak	1	Oak Drive	0.2	2.74	0.14
		2	Inner Relief Road (S)	0.4	3.24	0.28
		3	School Link Road	0.1	2.42	0.08
	PM Peak	1	Oak Drive	0.3	3.09	0.24
		2	Inner Relief Road (S)	0.3	2.93	0.19
		3	School Link Road	0.1	2.26	0.07

Do-Something Scenario

The ARCADY results (Table 12-11) indicate that the Inner Relief Road / Oak Drive roundabout junction will operate within capacity for the 2026 “Do-Something” AM peak hour with a maximum Ratio Flow to Capacity (RFC) value of 0.31 and a corresponding queue of 0.5 Passenger Car Units (pcus) being recorded. For the corresponding PM peak hour, a maximum RFC value of 0.24 will occur with a corresponding queue of 0.3 pcus.

For the 2041 Future Horizon Year “Do-Something” scenario the ARCADY results indicate that the Inner Relief Road / Oak Drive roundabout junction will operate within capacity for the 2041 “Do-Something” AM peak hour with a maximum RFC value of 0.34 and a corresponding queue of 0.6 pcus being recorded. For the 2041 “Do-Something” PM peak hour a maximum RFC value of 0.26 occurs with a corresponding queue of 0.4 pcus.

Table 12-11 2026, 2031 and 2041 Do-Something ARCADY Results for Junction 3

Scenario	Period	Arm	Description	Queue (PCUs)	Delay (s)	RFC
2026 DS	AM Peak	A	Oak Drive	0.1	3.04	0.11
		B	Inner Relief Road (S)	0.5	3.29	0.31
		C	School Link Road	0.2	3.56	0.18
		D	Inner Relief Road Extension (N)	0.1	2.91	0.06
	PM Peak	A	Oak Drive	0.3	3.47	0.19
		B	Inner Relief Road (S)	0.3	3.05	0.24
		C	School Link Road	0.2	3.14	0.13
		D	Inner Relief Road Extension (N)	0.2	2.92	0.12
2031 DS	AM Peak	A	Oak Drive	0.2	3.08	0.12
		B	Inner Relief Road (S)	0.5	3.39	0.33
		C	School Link Road	0.3	3.64	0.19
		D	Inner Relief Road Extension (N)	0.1	2.94	0.06
	PM Peak	A	Oak Drive	0.3	3.54	0.21
		B	Inner Relief Road (S)	0.4	3.11	0.25
		C	School Link Road	0.2	3.18	0.14
		D	Inner Relief Road Extension (N)	0.2	2.95	0.13
2041 DS	AM Peak	A	Oak Drive	0.2	3.10	0.13
		B	Inner Relief Road (S)	0.6	3.46	0.34
		C	School Link Road	0.3	3.69	0.19
		D	Inner Relief Road Extension (N)	0.1	2.97	0.07
	PM Peak	A	Oak Drive	0.3	3.60	0.22
		B	Inner Relief Road (S)	0.4	3.16	0.26
		C	School Link Road	0.2	3.21	0.14
		D	Inner Relief Road Extension (N)	0.2	2.98	0.13

12.5.2.9 Junction Analysis – Junction 4, Proposed N81 / Inner Relief Road Roundabout

The proposed four arm roundabout junction has been analysed for all modelling scenarios using the Junctions 9 ARCADY software package. The results of the operational assessment of this junction during the weekday morning and evening peak hours for the Do Something scenarios are summarised in Table 12-12. The 'Do-Minimum' scenario has not been analysed as this roundabout will only be constructed should the subject development receive planning permission.

Do-Something Scenario

The ARCADY results (Table 12-12) indicate that the proposed N81 / Inner Relief Road roundabout junction will operate within capacity for the 2026 “Do-Something” AM peak hour with a maximum Ratio Flow to Capacity (RFC) value of 0.73 and a corresponding queue of 2.9 Passenger Car Units (pcus) being recorded. For the corresponding PM peak hour, a maximum RFC value of 0.46 will occur with a corresponding queue of 3.5 pcus.

For the 2041 Future Horizon Year “Do-Something” scenario the ARCADY results indicate that the N81 / Inner Relief Road roundabout junction will operate within capacity for the 2041 “Do-Something” AM peak hour with a maximum RFC value of 0.82 and a corresponding queue of 4.6 pcus being recorded. For the 2041 “Do-Something” PM peak hour a maximum RFC value of 0.51 occurs with a corresponding queue of 1.1 pcus

Table 12-12 2026, 2031 and 2041 Do-Something ARCADY Results for Junction 4

Scenario	Period	Arm	Description	Queue (PCUs)	Delay (s)	RFC
2026 DS	AM Peak	1	Local Road	0.0	5.11	0.01
		2	N81 (S)	2.9	14.46	0.73
		3	Inner Relief Road (W)	0.4	7.49	0.28
		4	N81 (N)	0.6	4.50	0.35
	PM Peak	1	Local Road	0.0	7.35	0.01
		2	N81 (S)	0.9	7.39	0.46
		3	Inner Relief Road (W)	0.2	5.47	0.17
		4	N81 (N)	3.5	12.44	0.77
2031 DS	AM Peak	1	Local Road	0.0	5.18	0.01
		2	N81 (S)	3.7	17.37	0.78
		3	Inner Relief Road (W)	0.5	7.93	0.30
		4	N81 (N)	0.6	4.64	0.37
	PM Peak	1	Local Road	0.0	7.72	0.01
		2	N81 (S)	1.0	7.82	0.49
		3	Inner Relief Road (W)	0.2	5.61	0.18
		4	N81 (N)	4.5	15.37	0.81
2041 DS	AM Peak	1	Local Road	0.0	5.25	0.01
		2	N81 (S)	4.6	20.76	0.82
		3	Inner Relief Road (W)	0.5	8.32	0.32
		4	N81 (N)	0.7	4.77	0.39
	PM Peak	1	Local Road	0.0	8.03	0.02
		2	N81 (S)	1.1	8.18	0.51

Scenario	Period	Arm	Description	Queue (PCUs)	Delay (s)	RFC
		3	Inner Relief Road (W)	0.2	5.72	0.19
		4	N81 (N)	5.7	18.68	0.85

12.6 Cumulative Impacts

12.6.1 Committed Developments

This assessment considers cumulative impacts that are:

1. Likely;
2. Significant; and
3. Relating to an event which has either occurred or is reasonably foreseeable together with the impacts from this development.

Third Party developments currently under construction and other committed developments in the vicinity of the site have been considered. The following committed development has been reviewed and included within the traffic analysis:

1. WCC Refs. 20184 & 20362: Construction of 173 no. residential units (122 no. houses and 51 no. apartments) along with a 120-bed nursing home. This development was granted conditional permission in October 2020. To provide an inclusive assessment, it is assumed that the committed development will receive full permission from Wicklow County Council.
2. WCC Ref. 191020: Construction of 58 no. residential apartments. This development was granted conditional permission in December 2019. To provide an inclusive assessment, it is assumed that the committed development will receive full permission from Wicklow County Council.
3. WCC Ref. 19940: Construction of a 104-bed nursing home. This development was granted conditional permission in April 2020. To provide an inclusive assessment, it is assumed that the committed development will receive full permission from Wicklow County Council.
4. WCC Ref. 20108: Construction of 45 no. residential units (33 no. houses and 12 no. apartments). This development was granted conditional permission in July 2020. To provide an inclusive assessment, it is assumed that the committed development will receive full permission from Wicklow County Council.
5. WCC Ref. 201146: Construction of 91 no. residential houses. This development forms Phase 1 of the overall masterplan area. This development was granted conditional permission in June 2021. To provide an inclusive assessment, it is assumed that the committed development will receive full permission from Wicklow County Council.
6. WCC Ref. 211404: Construction of 106 no. residential units (70 no. houses and 36 no. duplexes) along with a 200 sqm creche.

The location of the above committed developments in relation to the subject site is shown in Figure 12-9. Any future developments in the vicinity of the subject site would have to similarly undergo Traffic and Transport Assessments to assess the potential cumulative impacts to the transport network.

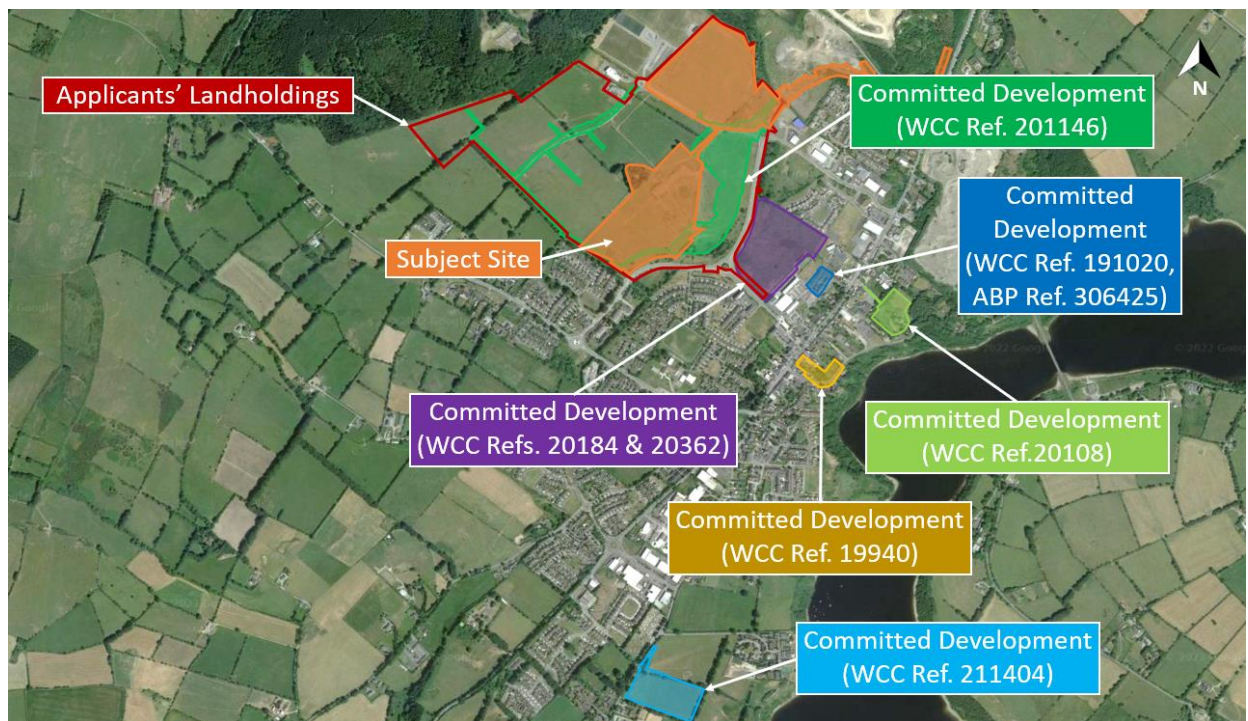


Figure 12-9 Location of Committed Developments

12.6.2 Interactions Arising

12.6.2.1 Noise and Vibration

Construction Phase

The projected increase in heavy vehicle traffic during the construction stage may lead to a slight increase in noise and vibration levels along the adopted construction haul route along the N81 and Oak Drive. However, such effects will be temporary in nature.

Quality of Effect: Negative

Significance of Effect: Slight

Operational Phase

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 describes under section 12.7 will prevent and minimise the potential impacts of this interaction.

Quality of Effect: Negative

Significance of Effect: Slight

12.6.2.2 Air Quality

Construction Phase

During the construction phase, construction traffic will contribute to increased traffic volumes with majority of construction vehicles being HGVs. This will impact negatively on the surrounding air quality. This will be short term in nature and will be managed by means of an effective Construction Environmental Management Plan (CEMP), which has been developed and is submitted alongside this application.

Quality of Effect: Negative

Significance of Effect: Imperceptible

Operational Phase

During the operational phase, development traffic will contribute to increased traffic volumes on the surrounding network which in turn will impact air quality in terms of additional emissions. Implementation of the mitigation measures described in Chapter 9 –Air, Dust and Climatic Factors will minimise the potential impacts of this interaction. This will be long term in nature.

Quality of Effect: Negative

Significance of Effect: Imperceptible

12.6.2.3 Population and Human Health

Construction Phase

During the Construction Stage, impact on the population and human health may be negatively impacted with construction works contributing to an increase in noise and traffic volumes as well as a reduction in air quality. The scheme will be developed in line with the Preliminary Construction Management Plan (PCMP) to ensure any impacts on local traffic, including health of pedestrians and cyclists along the School Link Road and Inner Relief Road are minimised during the construction stage. Impact during the Construction Phase will be short term in nature.

Quality of Effect: Negative

Significance of Effect: Medium

Operational Phase

During the Operational Stage, the provision of good quality cycle and pedestrian facilities within the development and along the School Link Road and Inner Relief Road will provide improvements in health and wellbeing for the residents, visitors and general population. This impact will be long term in nature.

Quality of Effect: Positive

Significance of Effect: Medium

12.6.2.4 Land and Soil

Construction Phase

Delivery of materials to site (e.g. aggregates for road construction, concrete for foundations, delivery of construction plant to site) will lead to potential impact on the surrounding road network. As noted previously, the scheme will be developed in line with the separately enclosed Preliminary Construction Management Plan (PCMP) to ensure any impacts on local traffic is minimised during the construction stage. This impact will be short term in nature.

Quality of Effect: Negative

Significance of Effect: Slight

Operational Phase

On completion of the Construction Phase, there will be no further impact on soils and the geographical environment.

12.7 Mitigation Measures

12.7.1 Construction Phase

All construction activities will be governed by a Construction Traffic Management Plan (CTMP), the details of which will be agreed with the local roads authority 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 requirements 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 Construction Traffic Management Plan (CTMP) will incorporate a range of integrated control measures and associated management initiatives with the objective of mitigating the impact of the proposed developments on-site construction activities.

All construction related parking will be provided on site. Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site staff and management;
- Construction vehicles e.g. excavation plant, dump trucks;
- Materials delivery vehicles involved in site development works.

It is anticipated that the generation of HGVs during the construction period will be evenly spread throughout the day and as such will not impact significantly during the peak traffic periods.

Truck wheel washes will be installed at construction entrances and any specific recommendations with regard to construction traffic management made by Wicklow County Council will be adhered to.

Table 12-13 Mitigation Measures for the Construction Phase of the Proposed Development

Character of Potential Impact	Mitigation Measure
Increase in vehicular Traffic on Road Network	Construction workers will share transportation vehicles to and from the site in order to reduce the number of vehicles arriving and departing the site. HGVs will be distributed evenly across the working day in order to reduce the number of HGV activity over peak periods,
Public Environment	A detailed Construction Traffic Management Plan will be implemented with appropriate measures for accommodating the public during the construction works. Dedicated walkways and appropriate barriers and protections will be put in place in order to prevent accidents and incidents for all.

12.7.2 Operational Phase

A Package of integrated mitigation measures has been identified and will be implemented to off-set the additional local demand that the proposed development could potentially generate as a result of the forecast increase in vehicle movements by residents of the scheme.

A Framework Mobility Management Plan has been included within the Traffic and Transport Assessment prepared as part of this planning application. The Framework Mobility Management Plan (MMP) ultimately seeks to encourage sustainable travel practices for all journeys by residents and visitors traveling to and from the proposed development. It involves the incorporation of a wide range of possible “hard” and “soft” tools from which to choose from with the objective of influencing travel choices. The measures in the MMP comprise a number of different categories including;

- Management & Monitoring
- Walking Strategy
- Cycling Strategy
- Public Transport Strategy
- Private Car Strategy
- Marketing & Promotion Strategy

As part of the subject development, it is proposed to complete the northern section of the Blessington Inner Relief Road. This stretch of road will begin north of the existing Inner Relief Road / Oak Drive roundabout and continue north east, connecting to the N81. The completion of this inner relief road will result in a reduction in traffic travelling through Blessington town centre, making the main street a more attractive place for pedestrians and cyclists.

In order to reduce the number of private vehicles to and from the development, a number of walking and cycling connection points are proposed to encourage more active travel. The majority of these are situated along the site's western frontage, along the School Link Road. These access locations will connect to the existing pedestrian footways and segregated cycle tracks found along the School Link Road. The proposed town park includes a large number of pedestrian and cycle paths connecting to the permitted phase 1 development and Glen Ding greenway (WCC Ref: 201146). The proposed extension to the Blessington Inner Relief Road will also feature high quality pedestrian and cycle facilities on both sides of the corridor. Upgrades to the existing Inner Relief Road / Oak Drive roundabout and the provision of the N81 / Inner Relief Road roundabout will provide safe crossing facilities for both pedestrian and cyclists.

A large number of cycle parking spaces are proposed for both residents and visitors to the development to encourage reduction in private car use. A total of 167 no. cycle parking spaces are proposed within the development for the duplex units. The houses are provided with ample opportunity for the storage of bicycles in their rear gardens. The reduction of private car use is also encouraged by the site's convenient location in close proximity to a number of local amenities. The Blessing No 1 School and Blessington GAA can both be found less than 200m north of the subject site. Blessington Town Centre can be reached in approximately 5 minutes by bike.

Table 12-14 Mitigation Measures for the Operational Phase of the Proposed Development

Character of Potential Impact	Mitigation Measure
Increase in Vehicular Traffic on the Surrounding Road Network	<p>In order to decrease the number of residents utilising the private car, the development has incorporated a number of pedestrian and cycle links between the development and surrounding road network. A large number of cycle parking spaces are proposed for both residents and visitors to the development to encourage reduction in private car use. A total of 167 no. cycle parking spaces are proposed within the development for the duplex units. This is 53 no. spaces above the minimum required under the Wicklow County Development Plan 2021-2027 and 36 no. spaces above the minimum requirement under the DHLGH Design Standards. The houses are provided with ample opportunity for the storage of bicycles in their rear gardens.</p> <p>A Framework Mobility Management Plan has been prepared as part of the Traffic and Transport Assessment submitted with this planning application which contains a number of measures to encourage sustainable travel practices for all journeys by residents and visitors traveling to and from the proposed development. The measures contained within the plan cover a number of categories including Management & Monitoring, Walking Strategy, Cycling Strategy, Public Transport Strategy, Private Car Strategy and Marketing & Promotion Strategy.</p>

12.8 Residual Impacts

12.8.1 Construction Stage

Increase in Vehicular Traffic on Road Network

Implementing the proposed mitigation measures that employees will share vehicular transport and HGVs will be evenly distributed across the working day, the residual impact is considered to be neutral, slight and short term.

Public Environment

Implementing the proposed mitigation measures of a detailed Construction Traffic Management Plan, the residual impact is considered to be neutral, slight, and short term.

12.8.2 Operational Stage

Increase in Vehicular Traffic on Surrounding Road Network

There will be a permanent change on vehicle patterns along the Inner Relief Road and School Link Road, however, detailed junction assessments undertaken show that this will result in only slight impact, with junctions continuing to operate within capacity. The implementation of the mitigation measures outline in section 12.7 will result in the residual impact to be considered as neutral, slight, and permanent.

12.9 Monitoring

During the construction stage the following monitoring exercises are likely to be required. The specific compliance exercises to be undertaken in regard to the range of measures detailed in the final construction management plan will be agreed with the planning authority:

- Compliance with construction vehicle routing practices;

- Internal and external road conditions;
- Timing of construction activities.

The EPA EIAR Guidelines 2022 states the EIAR, or sections of an EIAR, should avoid including a 'Conclusions' section. Instead, an EIAR can include a summary of effects, a mitigation and monitoring measures compendium.

Please consider including summary table. i.e.

Nature of Effect	Impact	Mitigation	Monitoring
Increase in vehicular traffic on the road network	Negative short-term impact	Construction staff will car pool. HGV trips will be distributed across the day	Timing of construction activities
Pedestrian and Cycle Environment	Neutral, slight, short-term impact	Compliance with CTMP	Compliance with construction vehicle routing practices
Increase in vehicular traffic on surrounding road network	Neutral, slight, permanent impact	Pedestrian and Cycle links to external road network provided. Ample cycle parking available for residents and visitors	Internal and external road conditions

Monitoring measures for all Chapters are summarised in Chapter 17 Summary of Mitigation and Monitoring.

12.10 Difficulties Encountered

There were no material difficulties encountered in compiling and assessing the data for this EIAR to prevent modelling of the likely transport effects of the proposed development. The traffic analysis reported within this chapter is based upon the traffic survey data specifically commissioned for this appraisal and undertaken in April 2023. These surveys were conducted as an update to original surveys conducted in 2020 which were deemed unreliable due to the covid-19 travel restrictions and subsequent traffic conditions.

12.11 References

- Department of Housing, Local Government and Heritage. (2022). Sustainable Urban Housing: Design Standards for New Apartments - Guidelines for Planning Authorities.
- Dublin Transportation Office & Department of the Environment and Local Government. (2003). Traffic Management Guidelines.
- EPA. (2022). Guidelines on Information to be contained in Environmental Impact Assessment Reports. EPA.
- National Transport Authority. (2014). Traffic and Transport Assessment Guidelines. NTA.
- National Transport Authority. (2022). Greater Dublin Area Cycle Network. NTA.

- National Transport Authority. (2023). Dublin Initiatives. Retrieved from BusConnects: <https://busconnects.ie/cities/dublin/>
- National Transport Authority. (2023). Getting Around. Retrieved from Transport for Ireland: <https://www.transportforireland.ie/getting-around/>
- The Institution of Highways and Transportation. (1994). Guidelines for Traffic Impact Assessments.
- Wicklow County Council. (2013). Blessington Local Area Plan 2013-2019.
- Wicklow County Council. (2022). Wicklow County Development Plan 2022-2028.

13. MATERIAL ASSETS (WASTE)

13.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the potential impacts of the Proposed Development on Waste Management.

13.1.1 Quality Assurance

This Chapter was prepared by Laura Griffin, Environmental Consultant, Enviroguide. Laura has a Master of Science (Hons) in Climate Change from Maynooth University and a Bachelor of Arts (Hons) in English and Geography from Maynooth University. Laura has worked as an Environmental Consultant with Enviroguide since 2021 and has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Air Quality and Climate, Noise and Vibration, and Material Assets (Waste and Utilities) Chapters of EIARs.

13.2 Assessment Methodology

The methodology adopted for the assessment will take cognisance of relevant guidelines, in particular the following:

- Environmental Protection Agency (EPA) (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)
- EPA (2021) Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects
- Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste) as amended by Directive (EU) 2018/851.
- European Union (Waste Directive) Regulations 2020, S.I. No. 323 of 2020
- Waste Management Acts 1996 (as amended)
- Eastern Midlands Region (EMR) Waste Management Plan 2015-2021
- Wicklow County Development Plan 2022-2028
- Wicklow County Council Litter Management Plan 2019 - 2024

The scope of work undertaken for the impact assessment will include a desk-based study of waste management services within the defined study area. The desk study will involve collecting all the relevant data for the Proposed Development site and surrounding area including published information and details pertaining to the Proposed Development provided by the Applicant and design team. Information on waste management in the vicinity of the Site of the Proposed Development will be assembled by reviewing the following information:

- Construction and Demolition Waste Management Plan (Construction Phase) (Enviroguide, August 2023)
- Operational Waste Management Plan (Operational Phase) (Enviroguide, August 2023)
- Construction Environmental Management Plan
- <http://mywaste.ie>

13.3 Prediction and Assessment of Potential Impacts

Impacts were predicted and assessed based on the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022), and by using the definitions detailed in Section 1.10 of the Introduction Chapter of this EIAR. Impacts vary from negative to neutral or positive, and also vary in significance on the receiving environment.

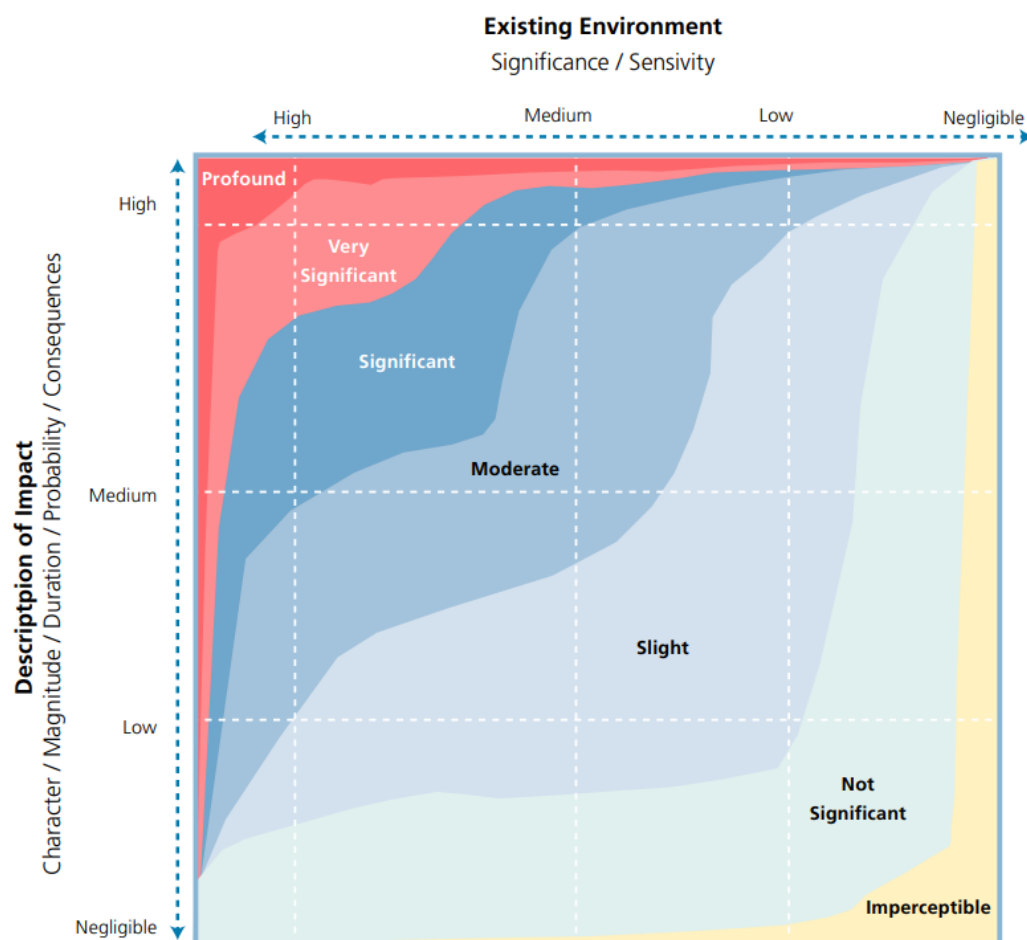


Figure 13-1: Typical classifications of the significance of impacts (EPA, 2022, Guidelines on the information to be Contained in Environmental Impact Assessment Reports)

13.4 Local and National Waste Action Plans

The Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021 provides the structure for prevention, reduction and management of waste in 12 local authority areas, including Wicklow County Council. Wicklow County Council (WCC) is the local authority responsible for setting and administering waste management activities in the area of the Proposed Development. The EMR hosts a number of permitted and licensed waste facilities for management of construction and demolition (C&D), and municipal waste. These include soil recovery facilities, inert C&D waste facilities, hazardous waste treatment facilities, material recovery facilities, waste transfer stations, two waste-to-energy facilities and municipal waste landfills.

The EMR Waste Management Plan 2015-2021 has set out the following targets for waste management in the region:

- Prevent waste: a reduction of one percent per annum in the amount of household waste generated over the period of the plan.

- More recycling: increase the recycle rate of domestic and commercial waste from 40 to 50 percent by 2020.
- Further reduce landfill: eliminate all unprocessed waste going to landfill from 2016.

The Department of Communications, Climate Action and Environment (DCCAE) published 'A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020-2025' in September 2020 (updated in January 2021), which focuses on the prevention of waste disposal by maximising the value of material resources and reducing waste generation. In a circular economy, waste and resource use are minimised; the value of products and materials is maintained for as long as possible through good design, durability and repair; and when a product has reached the end of its life, its parts are used again and again to create further useful products 'A Waste Action Plan for a Circular Economy'.

In order to comply with the targets set out in the EMR Waste Management Plan and to achieve the objectives set out in 'A Waste Action Plan for a Circular Economy', it is imperative that robust resource and waste management plans are developed for and designed into the pre-construction, construction and operational phases of the Proposed Development.

13.5 Article 27 of the European Communities (Waste Directive) Regulations 2011

Under Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended (referred to hereafter as Article 27), uncontaminated soil and stone free from anthropogenic contamination which is excavated during the Construction Phase of a development can be considered a by-product and not a waste, if (a) further beneficial use of the material is certain, (b) it can be used directly without any further processing, (c) it is produced as an integral part of the development works and (d) the use is lawful and will not have any adverse environmental or human health impacts (EPA, 2019). For Article 27 to apply, the beneficial use mentioned in point (a) above must be identified for the entirety of the excavated soil from the Proposed Development prior to its production, with that use taking place within a definite timeframe, for it to be regarded as certain.

13.6 The Existing and Receiving Environment (Baseline Situation)

The Site is located in Blessington Demesne, Blessington, Co. Wicklow. It is situated near the Wicklow/Kildare border. The Site is currently a greenfield site and is bound primarily by a mix of agricultural and employment lands.

13.7 Characteristics of the Proposed Development

The characteristics of the Proposed Development are set out in Chapter 2 of this EIAR.

The waste management objectives for the Proposed Development are as follows, and will facilitate material reuse and recycling, where possible, and seek to divert waste from landfill:

- Prevention: The Contractor will prevent and minimise waste generation where possible by ensuring large surpluses of construction materials are not delivered to the Site through coordination with the suppliers, operating a 'just-in-time' delivery scheme and ensuring sub-contractors conform to the Construction Environmental Management Plan;
- Reuse: Reusing wastes and surplus materials where feasible and in as many high value uses as possible;
- Recycle: Recycling wastes where possible such as introducing on-site crushers to produce waste derived aggregates which, subject to appropriate testing and approvals, may be re-used in the Proposed Development;

- Disposal: Where disposal of waste is unavoidable, this will be undertaken in accordance with the Waste Management Act 1996, as amended.

13.7.1 Construction Phase

The Construction Phase will give rise to the requirement to remove and bring quantities of various materials to and from the Site of the Proposed Development. Construction and excavation related wastes will be created during the Construction Phase.

It is estimated that a total of 40,000m³ of inert / non-hazardous soil and stone will be generated during the ground clearance and levelling works undertaken across the Site. An allowance of approximately 4,000m³ has been allowed for removal offsite. The surplus inert / non-hazardous soil and stone for offsite recovery/ disposal will not be removed from the Site until properly classified, assigned a correct List of Waste (LoW) code and all appropriate tracking and disposal documentation is in place. The remaining 36,000m³ will be re-used on-site.

13.7.2 Operational Phase

The Operational Phase of the Proposed Development will consist of the normal day-to-day operations necessary for the management of a residential development and the ongoing maintenance of the residential units and the relief road.

An Operational Waste Management Plan (OWMP) has been prepared by Enviroguide (2023) and has been submitted with this planning application. Implementation of the OWMP will ensure that a high level of recycling, reuse, and recover at the Proposed Development during the Operational Phase.

13.8 Potential Impact of the Proposed Development

13.8.1 Construction Phase

The Construction Phase will give rise to the requirement to remove and bring quantities of various materials to and from the Site of the Proposed Development. Construction and excavation related wastes will be created during the Construction Phase. This has the potential to impact on the local waste management network.

A Resource Waste Management Plan (RWMP) (Enviroguide, 2023) has been prepared for the Construction Phase of the Proposed Development and will be submitted with the planning application.

It is intended, where possible, to maximise the reuse of clean/non-hazardous excavation material as landscaping or engineering fill following appropriate material testing and risk assessment to ensure the material is suitable for its proposed end use, to avoid importing raw materials. Excavated soil and stone pending reuse in the Proposed Development will be temporarily stockpiled in designated areas onsite during the Construction Phase.

Offsite removal of surplus clean soil and topsoil will be undertaken in accordance with the RWMP and relevant waste management legislation. The site management team will keep records of the removal and certification on file on site. The offsite re-use of material will be prioritised to minimise the potential loss of valuable good quality soil and subsoil to landfill as a waste. The re-use of soil offsite will be undertaken in accordance with all statutory requirements and obligations including where appropriate re-use as by-product in accordance with Article 27. Any surplus soil not suitable for re-use as a by-product and other waste materials arising from the Construction Phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities. As only authorised facilities will be used, the potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures.

The Contractor will vet the source of aggregate, fill material and topsoil imported to the Site in order to ensure that it is of a reputable origin and that it is “clean” (i.e., it will not contaminate the environment). The Contractor and/or Wicklow County Council will implement procurement procedures to ensure that aggregate, fill material and topsoil are acquired from reputable sources with suitable environmental management systems as well as regulatory and legal compliance.

Waste will be generated during the construction of the dwelling units at the Site. There will be a surplus of material such as off-cuts of timber, broken concrete blocks, plasterboard, tiles, and packaging waste. The waste materials will be segregated at source and stored in suitably size receptacles and transferred offsite for appropriate processing, recycling and recovery. Waste materials generated from the Construction Phase that are unsuitable for reuse or recovery will be separately collected. Disposal of construction generated wastes will be considered a last resort, once recycling or recovery options have been ruled out. Waste will be collected as appropriate by suitably qualified and permitted nominated waste management contractors.

It is not envisaged that there will be any hazardous waste generated throughout the construction works however if generated, on-site storage of any hazardous wastes produced (i.e., waste fuels/chemicals) will be kept to a minimum, with compliant removal off-site organised on a regular basis. Offsite removal of hazardous waste will be an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste treatment facilities and will be undertaken in accordance with the RWMP (Enviroguide, 2023) and relevant waste management legislation. As only authorised facilities will be used, the potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures.

Waste will also be generated from construction workers e.g., organic/food waste, dry mixed recyclables (wastepaper, newspaper, plastic bottles, packaging, aluminium cans, tins and cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the Construction Phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices. Office and canteen waste, including food waste, will be stored in wheelie bins on site and it will be collected by an appropriately authorised waste collector. All wastes generated on site will be sent for recycling, recovery, or disposal to a suitably licensed or permitted waste facility.

The potential impact from the Construction Phase on waste recovery and disposal is likely to be short-term, negative and minor in nature.

13.8.2 Operational Phase

WCC is the local authority responsible for setting and administering waste management activities in the area of the Proposed Development. WCC's waste management activities are governed by the requirements set out in the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021. During the Operational Phase, waste management at the Site of the Proposed Development will be managed according to the EMR Waste Management Plan 2015-2021 and the WCC Litter Management Plan 2019 – 2024. The Litter Management Plan is a statutory plan prepared as prescribed in Section 10 of the Litter Pollution Act 1997 (as amended), which details the active measures being taken by WCC in relation to litter prevention and control in their jurisdiction. Local authorities are responsible for keeping public places under their control clear of litter. Their duties include street cleaning and providing and emptying litter bins.

An Operational Waste Management Plan (OWMP) has been prepared by Enviroguide (August, 2023) and has been submitted with this planning application.

The Operational Phase of the Proposed Development will result in an increase in the production of municipal waste in the region and will increase demand on waste collectors and treatment facilities, however, as the surrounding area is highly residential in nature, waste collection is commonplace. Anticipated wastes arising from the day-to-day operations at the Proposed Development are summarised in Table 13-1.

Table 13-1: Expected Waste Types and List of Waste Codes

Waste Description	List of Waste Code
Mixed Municipal Waste	20 03 01
Dry Mixed Recyclables	20 03 01
Biodegradable Kitchen Waste	20 01 08
Glass	20 01 02
Bulky wastes	20 03 07
Waste electrical and electronic equipment*	20 01 35* 21 01 36
Batteries and accumulators*	20 01 33* 20 01 34
Textiles	20 01 11
Fluorescent tubes and other mercury containing waste*	20 01 21
Chemicals (solvents, pesticides, paints & adhesives, detergents, etc.)¹	20 01 13/19/27-28/29-30
Plastic	20 01 39
Metals	20 01 40
Paper and Cardboard	20 01 01

Municipal waste is made up of household waste and commercial waste that is compositionally comparable to household waste. It includes residual, recyclables, organic, bulky, and waste electrical and electronic equipment.

An Operational Waste Management Plan (OWMP) has been prepared by Enviroguide (2023) and has been submitted with this planning application. A waste strategy is presented in the OWMP which considers legal requirements, policies and best management guidelines. This plan also demonstrates that the Waste Storage Area (WSA) has been incorporated within the design of the Proposed Development.

Implementation of the OWMP will ensure that a high level of recycling, reuse, and recover at the Proposed Development during the Operational Phase. All materials that are considered recyclable will be segregated and separated at source to reduce costs from the waste collector and ensure maximum diversion of material from landfill. The waste strategy presented in the OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated WSA will provide sufficient room for the required receptacles in accordance with the details of this strategy.

¹ Individual waste type may contain hazardous materials

The likely effect of the Operational Phase of the Proposed Scheme on waste management will be a permanent, neutral and not significant in the long term.

13.9 Cumulative Impacts

Cumulative Impacts can be defined as “impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project”. Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A review of other off-site developments and Proposed Developments was completed as part of this assessment. The following projects and plans were reviewed and considered for possible cumulative effects with the Proposed Development.

Table 13-2 details the existing, proposed and granted planning permissions on record in the area:

Table 13-2: Potential Cumulative Impacts

Planning Ref No.	Status	Applicant Name	Summary of the Development
20/184 (ABP Ref. PL 27.308578)	Granted by ABP (with revised conditions 27.01.2022)	Glenveagh Homes Limited	Nursing care home and residential development comprising (a) nursing care home (4 no storeys of 120 no bedspaces (c7428 sqm) along with 60 no car parking spaces (at undercroft and basement level c2477 sqm), open space and all associated residential care facilities (b) construction of 77 no dwellings comprising 29 no 2 storey houses (10 no 2 bedroom houses (house type E) and 19 no 3 bedroom houses (house types C, D & F), and 48 no apartments / duplex apartments as follows: Block A & D, 3 storeys comprising 30 no apartments (15 no 2 bedroom apartments in each building), blocks B & C, 3 storeys comprising 12 no apartments (2 no 2 bedroom apartments and 4 no 3 bedroom apartments in each building), blocks E & F, 3 storeys comprising 6 apartments (3 no 2 bedroom apartments in each building), all apartment units to have balcony or terrace, (c) hard and soft landscaping (including public lighting) and open space (boundary treatment), communal open space for duplex apartments, regarding / reprofiling of site where required along with bicycle / bin stores and 100 no car parking spaces for dwellings (d) vehicular access from the west (from Blessington Inner Relief Road (BIRR) and south west along link road between the BIRR and Main Street with pedestrian accesses as well as works to roundabout and provision of road crossings (e) surface water attenuation measures and underground attenuation systems as well as connection to water supply, drainage, (f) all ancillary site development / construction works
20/362	Granted 09/10/20	Glenveagh Homes Limited	Development at a site (c.3.43 hectares) at Blessington Demesne, Blessington, Co. Wicklow

Planning Ref No.	Status	Applicant Name	Summary of the Development
			bounded generally by Oak Drive and Blessington Inner Relief Road to the north and east, and Cocoon Crèche to the south, and Glenveagh Homes Ltd., Phase 1 lands (under Planning reg. ref. 20/184 for a proposed 120 bedroom Nursing Home and 77 no. dwellings) to the west. The proposal is for the second phase of development on the overall Glenveagh lands and will consist of: A) The construction of 96 no. dwellings providing 39 no. 2 storey 2 bedroom houses [House Types E1, G], 54 no. 2 storey 3 bedroom houses [House Types C, D, F], along with 3 no. 2 bedroom duplex/apartments in a 3 storey block (Block G) all apartment units to have balcony or terrace; B) Hard and soft landscaping (including public lighting) and open space (boundary treatment); communal open space for duplex apartments; well as regrading/re-profiling of site where required [including import and export of soil, if required] as well as bicycle/bin stores and 178 no. car parking spaces; C) Vehicular access from the west (from Blessington Inner Relief Road [BIRR]) and south west along link road between the BIRR and Main Street, with provision for pedestrian connection to Oak Park to the east; D) Surface water attenuation measures (including underground attenuation systems) as well as connection to water supply, drainage; E) All ancillary site development/construction works
21/1068	Grant permission (subject to conditions) on 16/08/2022	Windlynn Limited & Two Mile House Construction Ltd	To facilitate proposed residential development (69 no residential units) and proposed primary school (circa 2,334.70 sqm) on adjacent lands at Kilmalum, Blessington, Co. Kildare comprising of the upgrade to the Kilmalum Road from the Roundabout junction of Kilmalum Road with Kilmalum Crescent to the culvert over the Deerpark Watercourse and these works are to comprise replacement of the existing dishd curb and crossing with a new ramped pelican pedestrian crossing, improved pedestrian and cycle connections, new 'in-only' vehicular entrance onto the Kilmalum Road and underground connection to the existing watermain
19/1020 ABP 306425	Grant permission (subject to revised conditions) by ABP on 17/02/21	Glengolden Builders Ltd	Housing development to include (a) apartment block A (three - four storeys in height) consisting of 3 no 3 bedroom apartment, 14 no 2 bedroom apartments and 5 no 1 bed apartments (b) apartment block B (three - four storeys in height) consisting of 3 no 3 bedroom apartments, 14 no 2 bedroom apartments and 1 no 1 bed apartment (c) apartment block C (three - four storeys in height) consisting of 3 no 3 bedroom apartments, 4 no 2

Planning Ref No.	Status	Applicant Name	Summary of the Development
			<p>bedroom apartments and 8 no 1 bed room apartments. The total number of apartments is 58 (d) connection to main services and all associated site development works including attenuation, foul drains, surface water drains, water main roads, car parking bicycle parking, footpaths, bin storage, boundaries, and boundary treatment, public lighting, mini pillars, open space and landscaping (e) 2 no new site entrances</p>
19/940	Granted 02/04/20	Downshire Lodge Nursing Home Ltd & Downshire Place Independent Living Ltd	<p>Demolition and removal works to include: removal of the single storey modern extension along the Main Street adjoining the Downshire Hotel, removal of the single storey shed to the rear of the site, removal of the existing single storey building to the rear of 'Foley's House' (house B), partial lowering of the existing wall along Kilbride Road with modifications to the existing vehicular access and removal of the extensive modern hotel structure to the rear of the existing vacant Downshire Hotel. The proposal includes the construction of a 104 no bed nursing home across Lower Ground to Second Floor level, all with associated plant areas, circulation area, ancillary spaces, day rooms, dining rooms, multi purposes activity rooms, kitchen, staff facilities with connection to the exiting retained property along the Main Street at Ground and First Floor levels, the conversion of the ground floor of the former Downshire Hotel into a café, nursing home reception, office and public WCs accessed from the Main Street, the 1st floor is proposed to accommodate 6 no nursing home bedrooms and a library, conversion of the building to the church (north east) boundary to accommodate 1 no 3 bed and 1 no 1 bed unit for the purpose of nursing home staff accommodation, conversion of coach house B into mechanical and electrical plant area, upgrading of 'Foleys House' to a 6 no bedroom house for the purpose of nursing home staff accommodation, the consolidation of the facades of the former Downshire Hotel, Foleys House and both outbuildings (Coach House A and Coach House B) along the north east and south west boundaries, the proposal also includes the construction of 30 no 1 bed independent living units, across 2 no blocks, off 2-3 storey in height, vehicular access from Kilbride Road through a revised vehicular access point with Pedestrian access from Main Street, all with associated signage, landscaping, drainage, ambulance drop off zone, 66 no car parking spaces (including 3 no</p>

Planning Ref No.	Status	Applicant Name	Summary of the Development
			disabled car parking spaces), plant space, bin storage, cycle parking and site works
19/693	Grant by ABP 12/05/19	TD Housing Ltd	Demolition of existing agricultural shed (14 sqm) and the construction of 56 no residential units (2 no 4 bed houses, 49 no 3 bed houses, 3 no 2 bed houses and 2 no 2 bed apartments), 113 no ancillary car parking spaces, hard and soft landscaping, lighting, balconies facing northeast and southwest, solar panels, boundary treatments, ESB substation, changes in level, and all associated site development works above and below ground
20/108	Notification to grant 31/07/20	The Rectory, Kilbride Rd, Blessington	Demolition of a 1.5 storey derelict outbuilding (within the curtilage of a protected structure) and for the construction of 45 no residential units consisting of 24 no two storey 3 bed (5 person) terraced houses (101.6 sqm), 7 no two storey 3 bed (5 person) terraced houses (105.5 sqm) and 2 no two storey semi detached houses (101.6 sqm), 3 no 2 storey apartment blocks consisting of 12 no apartments consisting 6 no ground floor apartments, 2 bed (4 persons) (88 sqm) and 6 no 1st floor apartments 2 bed (4 persons) (75 sqm), maintaining the existing Rectory building (protected structure) as a residential house as is, maintaining the existing Mass Path, a communal pedestrian footpath extending towards Main Street, a communal cycle lane and a communal pedestrian footpath beyond the south eastern boundary wall and adjacent to Kilbride Road, 81 no car parking spaces, renovation and relocation of the derelict eastern entrance pier and wall (within the curtilage of a protected structure), widening of existing gate / entrance plus new pedestrian gate and improved access to existing Mass Path, new front boundary wall and railing, drainage infrastructure, landscaping, services and all associated works

With regard to other developments under construction and proposed in the vicinity of the Site of the Proposed Development, including the aforementioned recently permitted applications, there will be a greater demand on existing local waste management services and on regional waste acceptance facilities.

The capacity of waste collection companies and waste management facilities in the Eastern Midlands Region have been designed with forward planning and expansion in mind to cater for a growing population. It is necessary that all the developments provide the infrastructure and services to assist residents to segregate domestic waste at source, in order to reduce the generation and disposal of non-recyclable mixed waste. Existing waste collections currently take place in the local area and during the Operational Phase, the Proposed Development will be added to an existing collection route. The likely effect will be neutral and not significant on waste management facilities in the area in the long term.

13.10 Ameliorative, Remedial or Reductive Measures

13.10.1 Construction Phase

On appointment of a contractor, a detailed Construction Management Plan (CMP) will be prepared. The detailed CMP will incorporate the requirements of Best Practice Guidelines in the preparation of Waste Management Plans for Construction and Demolition Projects (DOEHLG, 2021). The following mitigation measures are recommended for the Construction Phase of the Proposed Development regarding Waste Management:

- Waste materials will be separated at source and will follow the RWMP
- Prior to the commencement of the Construction Phase detailed calculations of the quantities of topsoil, subsoil and green waste will be prepared, and soils will be tested to confirm they are clean, inert or non-hazardous.
- Beneficial use must be identified for the entirety of the excavated soil from the Proposed Development prior to its production for the excavated soil and stone to be considered as a by-product under Article 27 of the European Communities (Waste Directive) Regulations, 2011.
- A suitably competent and fully permitted waste management company will be employed to manage all waste arising for the Construction Phase. The appointed waste contractor must have the relevant authorisations for the collection and transport of waste materials, issued by the National Waste Collection Permit Office (NWCPO).
- Similarly, all waste materials will be transported to an appropriately authorised facility, which must have the relevant authorisations for the acceptance and treatment of the specific waste streams, i.e., a Certificate of Registration (COR) or a Waste Facility Permit (WFP) as granted by a Local Authority, or a Waste/Industrial Emission Licence as granted by the Environmental Protection Agency.
- All waste quantities and types will be recorded and quantified, and records will be retained onsite for the duration of the Construction Phase.

Furthermore, the following mitigation measures, as outlined in the Construction Environmental Management Plan (CEMP) (DBFL, 2023) will be implemented during the Construction Phase in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle waste in such a manner as to minimise the effect on the environment:

- Copies of the final CMP will be made available to all relevant personnel on-site. All site personnel and sub-contractors will be instructed on the objectives of the CMP and informed of their responsibilities;
- The nominated Construction Waste Manager responsible for implementation of this CMP will arrange for a waste audit for the Proposed Development once construction has fully commenced on-site (and of any facilities to which waste from the Proposed Development is delivered as required);
- Building materials should be chosen with an aim to 'design out waste';
- On-site segregation of non-hazardous waste materials into appropriate categories. All waste material will be stored in skips or other suitable receptacles in a designated area on-site;
- On-site segregation of hazardous waste materials into appropriate categories. Hazardous waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate waste collection licence holder;
- All wastes segregated at source where possible

- Beneficial use must be identified for the entirety of the excavated soil from the Proposed Development prior to its production for the excavated soil and stone to be considered as a by-product under Article 27 of the European Communities (Waste Directive) Regulations, 2011.
- A suitably competent and fully permitted waste management company will be employed to manage all waste arising for the Construction Phase. The appointed waste contractor must have the relevant authorisations for the collection and transport of waste materials, issued by the National Waste Collection Permit Office (NWCPO).

13.10.2 Operational Phase

The installation of additional litter and recycling bins with built-in cigarette receptacles, and the provision of adequate resources to service the bins, will reduce potential impacts from waste management on the Operational Phase of the Proposed Development.

As outlined in the OWMP for the Proposed Development, it is intended to ensure that the highest possible levels of waste reduction, waste reuse and waste recycling are achieved for the Proposed Development. The OWMP will set out measures targeted at waste prevention, maximum recycling and recovery of waste with a focus on diversion of waste from landfill wherever possible.

13.11 Residual Impacts

No significant residual waste related impacts are anticipated, this is due to:

- The prevention and mitigation measures proposed within this and other chapters of the EIAR;
- Compliance with national legislation and the allocation of adequate time and resources dedicated to efficient waste management practices; and
- Continued use of permitted/licensed waste hauliers and facilities. Waste removed from the facility will be managed appropriately and will avoid environmental impacts or pollution. In addition, the correct management and storage of waste will avoid litter or pollution issues at the Site.

13.12 Monitoring

Materials and waste generated during the Construction Phase will be carefully monitored by the Construction Environmental Site Manager, and/or an appointed Waste Officer, to ensure compliance with relevant local authority requirements and effective implementation of the RWMP, including maintenance of waste documentation.

Waste management during the Operational Phase will be carried out in line with council requirements and duties for municipal waste collection and disposal.

13.13 'Do Nothing' Scenario

In the 'Do Nothing' scenario the Proposed Development does not proceed and there is no additional demand or loading on waste management infrastructure locally or nationally.

13.14 Interactions

Waste management interacts with other environmental receptors as follows:

- Population and Human Health: The improper removal, handling and storage of hazardous waste could negatively impact on the health of construction workers. Potential impacts on population and human health are addressed in Chapter 4.

- Biodiversity: The improper handling and storage of waste during the Construction and Operational Phases could negatively impact on biodiversity. Potential impacts on biodiversity are addressed in Chapter 5 (Biodiversity).
- Land and Soil and Geology: Improper handling and segregation of hazardous or contaminated wastes could lead to the contamination of soil and stones excavated from the Site. Potential impacts on land and soils are addressed in Chapter 6.
- Traffic: Waste collection activities at the Proposed Development have the potential to impact upon traffic movements in the Blessington area. Potential impacts on traffic are addressed in Chapter 12.

13.15 Difficulties Encountered

No difficulties were encountered in the preparation of this Chapter.

13.16 References

Department of Communications, Climate Action and Environment (DCCAE) (2021) A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020-2025

Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021.

Environmental Protection Agency, 2022, Guidelines on the Information to Be Contained in Environmental Impact Assessment Reports.

Environmental Protection Agency, 2021, Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects

Environmental Protection Agency, 2019, Guidance on Soil and Stone By-products in the context of article 27 of the European Communities (Waste Directive) Regulations 2011, Version 3.

Environmental Protection Agency, 2003, Advice Notes on Current Practice in the preparation of Environmental Impact Statements.

Environmental Protection Agency, 2002, Guidelines on the information to be contained in Environmental Impact Statements.

Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste) as amended by Directive (EU) 2018/851.

Waste Management Acts 1996-2011 (as amended).

Wicklow County Council Litter Management Plan 2019 – 2024.

14. MATERIAL ASSETS UTILITES

14.1 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.

14.1.1 Expertise

This Chapter of the EIAR has been prepared by Jack Butler, Civil Engineer, who holds a BE in Civil, Structural & Environmental Engineering from University College Cork in 2018. The chapter has been reviewed and approved by Brendan Manning, a Civil Engineer with over 10 years' industry experience and is an Associate Director in DBFL Consulting Engineers. Brendan holds a BEng (Hons) in Civil and Environmental Engineering from Edinburgh University. He is a chartered engineer (CEng) and member (MIEI) with Engineers Ireland.

14.2 Assessment 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.

14.3 Characteristics of the Proposed Development

14.3.1 Surface Water Drainage

A surface water drainage network plan is shown in DBFL Consulting Engineers drawing 2-94-SW-XXX-DR-DBFL-CE-1300 is included in **Appendix 14.A**,bv showing the location of existing surface water drainage services in the vicinity of the site.

The site is predominantly greenfield and discharges in a southerly direction to the Deerpark Stream. It is proposed to outfall the attenuated surface water collected from the main residential development to the existing Deerpark Stream via a hydrobrake manhole and petrol interceptor which ultimately discharges to the Blessington Lakes. It is proposed to outfall the attenuated surface water collected from the Blessington Inner Link Street (BILS) to the existing surface water network located in Woodleigh Avenue via a hydrobrake manhole and petrol interceptor which ultimately discharges to the Deerpark Stream.

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 for the proposed residential development are based on an allowable outflow / greenfield runoff rate of 27.7 l/sec resulting in a total attenuation volume of 2,250 m³. Surface water calculations for the proposed B are based on an allowable outflow / greenfield runoff rate of 5.7 l/sec resulting in a total attenuation volume of 910 m³.

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 stormtech attenuation facilities and infiltration basins before discharging to the Deerpark Stream via a hydrobrake manhole and a petrol interceptor. 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). Surface water run off from the link street will first pass through tree pits and rain gardens before discharging to the surface water network in the road area. These tree pits and rain gardens will provide additional attenuation storage as well as providing additional treatment of run off.

14.3.2 Foul Water Drainage

A foul water drainage network plan is shown on DBFL drawing drawing 2-94-SW-XXX-DR-DBFL-CE-1300 is included in **Appendix 14.A**. There is an existing 225mm foul sewer network located along the sites western boundary which runs in a southerly direction towards Blessington town center via the existing section of the Blessington Inner Relief Road. This 225mm concrete sewer ultimately discharges to the Blessington Waste Water Treatment Plant approximately 2km south west of the subject site.

The proposed internal foul drainage network comprises of a network of 150/225mm diameter sewers designed based on the topography of the site. The foul drainage system will be completely separate from the surface water drainage system. The internal foul drainage network will discharge to the existing 225mm foul sewer already constructed to the west of the site.

Individual houses will be connected to the proposed 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 147.2 m³ and a maximum total Biological Oxygen Demand (BOD) loading of 62 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 in **Appendix 14.B**.

14.3.3 Water Supply

A watermain plan is shown on DBFL drawing 2-93-SW-XXX-DR-DBFL-CE-1310 which is included in **Appendix 14.C**, showing the location of existing surface watermain services in the vicinity of the site.

There is an existing 150mm uPVC watermain located in the western boundary of the proposed development and will serve as a connection for the proposed site.

The internal watermain layout will consist of 160mm/180mm PE watermains with a number of 110mm/125mm PE loops supplied along Local Streets.

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 133.7m³ and an average day in peak week demand of 167.1m³ 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 in **Appendix 14.B**.

14.3.4 Power Supply

Blessington 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 14.D** showing the location of existing electrical services in the vicinity of the site.

There are records of medium and high voltage overhead power lines traversing through the site. These overhead lines will be relocated underground and will be located in green space areas and underneath footpaths within the proposed development. Two 38kV lattice mast structures will be erected in the at the sites boundaries to facilitate the transition from underground cable to overhead line infrastructure. Exact routing and location of sub-stations to be agreed with ESB. ESB will produce proposed layouts prior to construction. There are also medium and low voltage underground cable routes along the sites western boundary.

14.3.5 Gas Supply

Gas Networks Ireland (GNI) plans are included in **Appendix 14.E** 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 along the sites western boundary. 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.

14.3.6 Telecommunications

Eir plans are included in **Appendix 14.F** and Virgin Media network plans are included in **Appendix 14.G** which indicates existing telecommunications infrastructure in the vicinity of the site.

Eir have an existing network running along the road to the west of the subject site while Virgin Media records show that there are no networks located in the vicinity of the 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.

14.4 Difficulties Encountered

There were no difficulties encountered in compiling and assessing the data for this section of the EIAR.

14.5 Assessment of Effects

14.5.1 Do Nothing Scenario

There are no predicted impacts should the proposed development not proceed.

14.5.2 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/Adverse.
- **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 momentary, brief, temporary, short-term, medium-term, long-term, permanent or a reversible impact. Momentary impacts can last from seconds to minutes, 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. Reversible impacts are considered those that can be undone through remediation or restoration.

14.5.3 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) retain right of access for maintenance purposes along the Deerpark 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.

14.5.4 Operational Phase

A detailed assessment has been undertaken with regard to the generation of Development Traffic and the impact that this will have on the surrounding road network.

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 = 147.2m³).
- Increased potable water consumption (Average Day / Peak Week Demand = 133.7m³/167.1m³).
- 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.

14.5.5 Human Health

From the perspective of the end user of the networks the risks to human health include:

- Contamination of potable water supply.
- 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.

14.5.6 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.

14.6 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 of a water connection is feasible.

There are 2 No. granted planning applications in close proximity to the development granted under WCC Ref. 201146 (106 No. units) and WCC Refs. 20184 & 20362 (173 No. Units). They are likely to have similar impacts during the construction phase in relation to Material Assets - Built Services. Should the construction phase of these developments coincide with the development of this proposed site, potential cumulative impacts are not anticipated once similar mitigation measures are implemented. It is anticipated that any construction overlap will likely be in the short term as the Sorrell Wood residential development (WCC Ref. 201146) is currently under construction. At the time of writing the development is substantially completed with the majority of dwellings being occupied at present.

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.

14.7 Mitigation Measures

14.7.1 Construction Phase

Please refer to Water Hydrogeology and Hydrology chapter 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.

14.7.2 Operational Phase

Please refer to Water Hydrogeology and Hydrology section 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.

14.8 Residual Impacts

14.8.1 Construction Stage

Implementation of the measures outlined in Water Hydrogeology and Hydrology 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. Refer to table 3.3 of the EPA document 'Guidelines on the information to be contained in Environmental Impact Assessment Reports (2017)' for more information.

14.8.2 Operational Stage

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.

14.8.3 Worst 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.

14.9 Monitoring

Please refer to section 4.6 – Water Hydrogeology and Hydrology for the proposed monitoring in relation to the surface water.

No specific monitoring is proposed in relation to the remaining material assets infrastructure.

14.10 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)

15. MAJOR ACCIDENTS AND DISASTERS

15.1 Introduction

This chapter of the EIAR sets out the assessment of the vulnerability of the Proposed Development to risks of major accidents and/or disasters. It assesses the expected effects of the project to risk of major accidents and disasters relevant to the project. It includes the methodology used for the assessment. The Interactions and Cumulative Effects and Mitigation and Monitoring Measures are included in Chapters 16 and 17, respectively.

15.1.1 Expertise

This Chapter was prepared by Louise Hewitt, Environmental Consultant in Enviroguide. Louise has a Master of Science (Hons) in Environmental Resource Management from University College Dublin and a Bachelor of Science (Hons) in Biology from Maynooth University. Louise has worked as an Environmental Consultant with Enviroguide since 2021 and has experience preparing Environmental Impact Assessment (EIA) Screening Reports and EIAR Chapters for projects of a similar nature and scale to the Proposed Development.

15.2 Assessment Methodology

15.2.1 Scope and Context

The relevant legislation that applies to this Chapter is the Planning and Development Regulations 2001, as amended, and in particular Schedule 6 – Information to be contained in EIAR. The following paragraph of Schedule 6, Paragraph 2(e)(i)(IV), specifically refers to *"a description of the likely significant effects on the environment of the proposed development resulting from ... the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)"*.

Paragraph 2(h) further expands with *"a description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it. Relevant information available and obtained through risk assessments pursuant to European Union legislation such as the Seveso III Directive or the Nuclear Safety Directive or relevant assessments carried out pursuant to national legislation may be used for this purpose, provided that the requirements of the Environmental Impact Assessment 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, emergencies arising from such events."*

Additionally, the Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the "COMAH Regulations"), which implement the Seveso III Directive (2012/18/EU), and which revoked the 2006 Major Accident Regulations also applies to this Chapter.

15.2.2 Guidelines and Reference Material

Cognisance has been taken of the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022). This document follows the requirements laid out in the Directive 2014/52/EU.

Specifically, the EPA Guidelines state that the EIAR must take account of *"the vulnerability of the project to risk of major accidents and /or disasters relevant to the project concerned and that the EIAR therefore*

explicitly addresses this issue. The extent to which the effects of major accidents and / or disasters are examined in the EIAR should be guided by an assessment of the likelihood of their occurrence (risk)... The potential for a project to cause risks to human health, cultural heritage or the environment due to its vulnerability to external accidents or disasters is considered where such risks are significant, e.g. the potential effects of floods on sites with sensitive plants. Where such risks are significant then the specific assessment of those risks in the form of a Seveso Assessment (where relevant) or Flood Risk Assessment may be required. The EIAR should refer to those separate assessments while avoiding duplication of their contents."

Reference has also been made to the Department of the Environment, Heritage & Local Government (DoEHLG) Publication 'Guide to Risk Assessment in Major Emergency Management 2010' and the Office of Emergency Planning, Department of Defence (DOD) Publication 'A National Risk Assessment for Ireland 2020'. A consolidated list of national hazards for Ireland identified in the DOD document are identified in Table 15-1.

Table 15-1: Consolidated List of National Hazards (Source: A National Risk Assessment for Ireland (2020) Department of Defence)

Hazard: Civil	Hazard: Natural
<ul style="list-style-type: none"> • Large Crowd Event • Pandemic • Water Supply Distribution and Contamination • Food Chain Contamination • Animal Disease • Terrorist Incident 	<ul style="list-style-type: none"> • Storm • Snow and Ice (including prolonged low temperature) • Flooding (including pluvial, fluvial and coastal)
Hazard: Transportation	Hazard: Technological
<ul style="list-style-type: none"> • Maritime Incident • Air Incident • Transport Hub (including Airports, Ports and Rail Stations) 	<ul style="list-style-type: none"> • Structural Collapse (including Dam, Tunnel, Bridge and Building) • Nuclear Incident (Abroad) • Cyber Incident • Disruption of Energy Supply (including oil, gas, electricity and communications)

15.2.3 Risk Assessment Methodology

The risk assessment methodology has been supported by general risk assessment methods. Hazard analysis and risk assessment are accepted internationally as essential steps in the process of identifying the challenges that may have to be addressed by society, particularly in the context of emergency management. Mitigation as a risk treatment process involves reducing or eliminating the likelihood and/or the impact of an identified hazard (DoEHLG, 2010).

Table 15-2: Classification of National Likelihood Criteria (Source: A National Risk Assessment for Ireland (2020) Department of Defence)

National Likelihood Criteria		
Rating	Classification	Average Recurrence Interval
1	Extremely Unlikely	500 or more years between occurrences
2	Very Unlikely	100-500 year between occurrences
3	Unlikely	10-100 years between occurrences
4	Likely	1-10 years between occurrences
5	Very Likely	Less than 1 year between occurrences

15.3 Predicted Impacts

The EIAR chapters within this report identify that the Proposed Development has been designed in accordance with best practice and that the Proposed Development can be safely undertaken without risk to health.

In order to understand the potential consequences and predicted impacts of any major accident or disaster due to the Proposed Development and the vulnerability of the project a desk study was undertaken. The assessment reviewed:

- The vulnerability of the project to major accidents or disasters.
- The potential for the project to cause risks to human health, cultural heritage and the environment, as a result of that identified vulnerability.

A methodology has been used including the following phases:

Phase 1 Assessment:

The DOD Consolidated List of National Hazards was used to identify a preliminary list of potential major accident and disasters. Receptors covered by legislation were not included within the assessment e.g., construction workers.

Phase 2 Screening:

The list was screened and major events such as volcanoes were not included given the unlikely event of one occurring. Elements already addressed as a key part of the design e.g. risks of building collapse, are not repeated.

Phase 3: Mitigation and Evaluation

In the event that mitigation measures included did not mitigate against the risk, then, the potential impacts on receptors are identified in the relevant chapter. Table 13-3 lists the major accidents and/or disasters reviewed.

Major Accident or Disaster	Relevant for this Proposed Development?	Why relevant?	Potential Receptor	Covered within EIAR?
<u>Civil</u>				
Large Crowd Event (An event with over 5,000 people)	No	Not considered vulnerable due to the nature of the Proposed Development,	N/A	N/A
Water Supply Contamination	No	Waterborne diseases can be caused by consuming contaminated drinking water.	<ul style="list-style-type: none"> Local residents 	As documented in Chapter 7 (Hydrology and Hydrogeology), the Proposed Development will be connected to the existing 225mm Uisce Eireann (UE) foul sewer located in the existing roundabout on Oak Drive, subject to agreement with UE. Therefore, the mains water supply is operated by UE in accordance with relevant statutory consents.
Food Chain Contamination	No	Not considered vulnerable	N/A	N/A
Animal Disease	No	Not considered vulnerable	N/A	N/A
Terrorist Incident	No	Not considered vulnerable	Not considered vulnerable	N/A
<u>Transportation</u>				
Maritime Incident	No	The Proposed Development is located approximately 29.5km southwest of the closest port; Dublin Port. The Proposed Development is not considered vulnerable.	N/A	N/A

Air Incident	No	The Proposed Development is located approximately 33km southwest of the nearest airport which is Dublin Airport. The Proposed Development is not considered vulnerable.	N/A	Public Safety Zones for Dublin Airport are assessed in Section 15.4 of this chapter.
Transport Hub (Includes Airports, Ports and Rail Stations)	No	As above in relation to air incidents. Not considered vulnerable. The Proposed Development is not considered a transport hub.	N/A	N/A
<u>Natural</u>				
Cultural, Archaeological and Architectural Heritage	Yes	There is potential for the Construction Phase to have a direct negative impact on previously unrecorded archaeological feature or deposits that have the potential to survive beneath the current ground level.	Cultural Heritage	Chapter 11 (Archaeology and Cultural Heritage) of this EIAR assesses impact of the Proposed Development on the Archaeological and Cultural Heritage and proposes mitigation measures where required
Landslides	No	The GSI database (GSI, 2023) indicated that the site is located within an area of 'low' on the landslide susceptibility classification map.	N/A	Chapter 6 (Land and Soils) of this EIAR assessed the vulnerability of the Proposed Development to landslides.
Sinkholes	No	Not considered vulnerable.	N/A	N/A
Earthquakes	No	Area is not geologically active.	N/A	Chapter 6 (Land and Soils) of this EIAR assessed the vulnerability of the Proposed Development to landslides.

Floods/ Storm surge/tidal flooding	No	The Proposed Development Site is located within Flood Zone C where the probability of flood from river and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding).	Proposed Development	Chapter 7 (Hydrology) of this EIAR and the Site-Specific Flood Risk Assessment (DBFL, 2023) identifies the vulnerability of the Proposed Development to flooding.
Severe weather such as storms, blizzards, droughts, tornados, heatwaves	No	Not considered vulnerable. In the event of severe weather events, the national meteorological service, Met Éireann, provides advance notice of severe weather, usually several days in advance. When appropriate, colour-coded weather warnings are issued. The Office of Emergency Planning works with the government departments and other key public authorities in order to ensure the best possible use of resources and compatibility across different emergency planning requirements.	N/A	N/A
Air Quality events	Yes	Dust emissions during the construction phase and vehicular emissions during the construction and operational phase.	<ul style="list-style-type: none"> Local residents Construction workers 	Chapter 8 (Air Quality and Climate) of this EIAR identifies the impact of the construction and operation of the development on ambient air quality.
Wildfires	No	Not considered vulnerable due to the location of the Site of the Proposed Development.		
Fire		The risk of fire might lead to loss of life.	Residents, service users, members of the public and nearby properties.	Section 15.4.1 of this chapter details fire prevention measures.
Invasive species	No	There were no high impact or legally controlled invasive plant species identified at the Site during the field surveys carried out by Altamar Marine & Environmental Consultancy	Native species / local biodiversity	Chapter 5 Biodiversity identifies the vulnerability of the project to invasive species.
<u>Technological</u>				

Structural Collapse (Building)	No	This will be taken into consideration in the building design. All buildings will be designed to modern standards. No further assessment is required.	N/A	The design criteria of the buildings will be in accordance with all relevant building design standards.
Structural Collapse (Dam, Bridge, Tunnel)	No	Not considered vulnerable as no dams, bridges or tunnels are proposed as part of the development.	N/A	N/A
Flood defence failure	No	Appropriate drainage design, SuDS and attenuation design, have all been included in the design of the Proposed Development and will be installed according to appropriate regulations and guidelines.	<ul style="list-style-type: none"> Residents Service users Members of the public Nearby properties. 	Chapter 7 (Hydrology) of this EIAR and the Site-Specific Flood Risk Assessment (DBFL, 2023) identifies the vulnerability of the Proposed Development to flooding.
Nuclear incident	No	Not considered vulnerable due to a lack of nuclear power plants	N/A	N/A
Cyber incident	No	Not considered vulnerable due to the nature of the Proposed Development.	N/A	N/A
Disruption of energy supply (oil, gas, electricity)	No	Not considered vulnerable. ESB Networks maintain the electricity network in Ireland. Gas Networks Ireland maintain the natural gas network in Ireland.	N/A	Chapter 14 (Material Assets - Utilities) contains information on energy supply.
Utilities failure (communications)	No	Not considered vulnerable. In Ireland, the fixed-line communications market is dominated by Eir; while Eir, Three, and Vodafone own Ireland's mobile telecommunications infrastructure.	N/A	Chapter 14 (Material Assets - Utilities) contains information on communications.
Utilities failure (water supply)	No	Not considered vulnerable.	N/A	Chapter 7 (Hydrology) and Chapter 12 (Material Assets) of this EIAR contain information on water supply.

Utilities failure (wastewater, sewage)	No	Not considered vulnerable.	N/A	Chapter 7 (Hydrology) and Chapter 12 (Material Assets) of this EIAR contain information on water supply.
Utilities failure (solid waste)	No	Not considered vulnerable.	N/A	Chapter 7 (Hydrology) and Chapter 14 (Material Assets - Utilities) of this EIAR contain information on water supply.
Industrial accidents (defence, energy, oil and gas refinery, food industry, chemical industry, manufacturing, quarrying, mining)	No	There are no Upper Tier Seveso sites located near the Proposed Development. The closest is Johnston Logistics which is located approximately 8km north of the Site.	N/A	N/A

15.4 Management Plan

15.4.1 Fire Safety / Emergency Response Plan

The design criteria of the buildings are in accordance with all relevant building and fire safety standards. Fire alarms, fire extinguishers and fire blankets will be installed in all internal areas. All fire alarms will be in accordance with the current IS3218:2013 + A1 2019 and the Fire Certificate, and all fire extinguishers will meet the requirements of I.S 291:2015 – Selection, Commissioning, Installation, Inspection and Maintenance of Portable Fire Extinguishers.

A fire evacuation strategy will be put in place in advance of dwelling occupancy. Appropriate means of escape in case of fire involving multiple escape stairs, ventilated corridors and sprinkler systems have been designed into each of the apartment blocks and the creche. Fire safety checks and fire drills will be employed by the Management Company once the Proposed Development is operational. Access routes serving the Proposed Development have been designed to provide adequate space for the Fire Brigade.

15.4.2 Flood Risk Assessment

A Site-Specific Flood Risk Assessment was carried out by DBFL Consulting Engineers. The Proposed Development is located in Flood Zone C, as defined by the requirements of *"The Planning System and Flood Risk Management, Guidelines for Planning Authorities"*, where the probability of flood from river and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). The Proposed Development is therefore not at risk from flooding.

15.4.3 Tree Protection Measures

An Arboricultural Report containing a Tree Survey, Arboricultural Impact Assessment and Arboricultural Method Statement has been prepared by Charles McCorkell Arboricultural Consultancy. All retained trees can be successfully protected during the Proposed Development works by using robust fencing measures which comply with the recommendations outlined within BS 5837:2012. The location and specification of all tree protection measures are highlighted on the Tree Protection Plan in Appendix B of the Arboricultural Report.

15.4.4 Public Safety Zone

Public Safety Zones (PSZs) are mapped out around airport runways to protect the public on the ground from possible aircraft crashes in populated area. PSZs are used to prevent inappropriate use of land where the risk to the public is greatest, e.g., by limiting the type and allowable height of buildings and structures within the zones.

The Site of the Proposed Development is located approximately 30-35 km from the nearest PSZ associated airport: Dublin Airport. Based on the distance of the Proposed Development from Dublin Airport and the PSZs, an aircraft strike disaster is not considered relevant to this Proposed Development.

15.4.5 Potential Major Emergency Management Sites and Seveso Sites

The Proposed Development is located within the Garda Division of Wexford / Wicklow. The closest Upper Tier SEVESO site is Dachser Ireland Ltd (formerly Johnston Logistics) which is located 8km north¹.

¹ The Garda Mapping Section was last updated on the 16th of September 2021. The Health and Safety Authority (HSA) has a more up to date list of SEVESO sites which was last updated on the 29th June 2023. Therefore, there are some sites on the more dated map (Figure 15-1) which are no longer listed as SEVESO sites by the HSA.

The Casement Aerodrome or Baldonnell Aerodrome is a potential SEVESO site located 16km north of the Proposed Development². Another potential SEVESO site is the Red Cow Luas Stop located approximately 19km northeast of the Proposed Development.

Based on the distance of the Proposed Development from any SEVESO Sites and Potential SEVESO Sites the risk of a potential major emergency is not considered relevant to this Proposed Development.



Figure 15-1: Seveso Sites located within 50km of the Proposed Development (Site location)

15.5 Residual Impacts

Control measures will put in place for health and safety and environmental management as per conditions of the planning permission, relevant code of practices and relevant legislation. The residual impacts will be negligible once all control, mitigation and monitoring measures have been implemented. The potential for dust or noise from the Site operations to cause any nuisance to nearby receptors is deemed to be negligible and the adherence and full implementation of the appropriate control and mitigation measures will ensure there is no potential for cumulative impacts to arise.

² (Note: the Garda Mapping Section also refers to Potential SEVESO Sites as Potential Major Emergency Management Sites)

15.6 Monitoring

There is no monitoring required with regards to risk management. All monitoring proposals for the interacting chapters have been detailed in the relevant technical chapters and are included in Chapter 15 Mitigation Measures and Monitoring.

15.7 Difficulties Encountered when Compiling

No difficulties were encountered in completing this Risk Chapter.

15.8 References

- Chapters 4-14 of Volume 2 of this EIAR
- Environmental Resources Management Ireland Ltd (2005) Public Safety Zones Report
- Environmental Protection Agency (2022) Guidelines on the Information to be contained in Environmental Impact Assessment Reports.
- Garda Mapping Section – Seveso Sites Ireland WebMap <https://www.arcgis.com/home/item.html?id=a01b5a0a6ff24f10adff30beaa3b6fd0>
- Health and Safety Authority (2023) [https://www.hsa.ie/eng/Your Industry/Chemicals/Legislation Enforcement/COMAH/List of Establishments/](https://www.hsa.ie/eng/Your_Industry/Chemicals/Legislation_Enforcement/COMAH/List_of_Establishments/)
- Irish Water Greater Dublin Area water restrictions chart <https://www.water.ie/help/supply/water-shortages/>
- Office of Emergency Planning (2020) 'A National Risk Assessment for Ireland 2020' Department of Defence Publication
- Statutory Instrument (SI). No. 296/2018 - European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018

16. SUMMARY OF INTERACTIONS AND CUMULATIVE EFFECTS

16.1 Introduction

In addition to the assessment of impacts on individual topics presented in the previous chapters of this Environmental Impact Assessment (EIAR), the interaction between these factors has also been considered as part of the environmental impact assessment.

This chapter analyses the Interrelationships and cumulative effects and main interactions between different aspects of the environment likely to be significantly affected by the Proposed Development.

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.

The first type is the assessment of effects on receptors or receptor groups, such as local residents, which may be affected by different environmental elements generated by the proposed residential development simultaneously or concurrently. This is sometimes referred to as the 'interrelationships' or 'in combination effects' between different environmental effects. The assessment includes consideration of particular locations/receptors where several effects for example noise, air and landscape may all occur.

The second type is the assessment of effects of the proposed residential development together with other past, present or reasonably foreseeable projects, where there is potential for overlap spatially or temporally, often referred to as cumulative effects.

16.1.1 Expertise

This chapter was prepared by prepared and collated by Richard Hamilton, BA, MSc, PGDip EMAE (Environmental Monitoring Assessment and Engineering), MIPI, MRTPI, Director, MacCabe Durney Barnes.

16.2 Assessment Methodology

16.2.1 Statutory Requirements

The requirements to address interactions of effects and cumulative impacts is set out in Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment. This Directive has been amended by Council Directive 97/11/EC, Directive 2003/35/EC and Directive 2009/31/EC and is now codified in Directive 2011/92/EU which has now been amended in 2014 by Directive 2014/52/EU.

Article 3 of the EIA Directive outlines the information to be contained in an EIAR as follows;

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

- (a) 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; and*
- (e) the interaction between the factors referred to in points (a) to (d)."*

Annex IV of the amended Directive states that a description of impacts should include:

"...the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the project"

The aforementioned Directive was transposed into Irish Legislation through the Planning and Development Regulations 2018.

The relevant interactions and interdependencies between specific environmental aspects have been summarised in the matrix set out in Table 16-1.

This chapter has been prepared in accordance with the following guidelines;

- EPA (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2022.
- European Commission Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.

16.3 Interaction of Effects

The major interactions between the recorded environmental impacts are assessed within the individual chapters of the EIAR. Table 16-1 provides a matrix summarising the interactions between the various parameters outlined in this EIAR from Chapters 5 to 15, inclusive.

The matrix highlights the potential for the topic or issue in the left-hand column to have an effect on the environmental issue mentioned in the top row of the matrix. If there is a "☒" in a box this means that there is potential for an effect during the operational or construction phase of the proposed project. If there is considered to be no significant potential for an effect, or if the interaction is more relevant to a different issue pair, the box will be left blank.

The purpose of the effects matrix is to identify potential significant effects on different environmental issue. Actual effects and their significance are dealt with in the most relevant chapter.

This assessment was based on information contained within this EIAR, the outcome of workshops and consultation with the relevant sub-consultants. The main environmental interactions anticipated as they relate to the Proposed Project are also summarised in the following sections.

Table 16-1: Matrix to Summarise Key Inter-relationships.

Key Environmental Interaction Matrix	Population and Human Health	Biodiversity	Land, Soil and Geology	Water	Air and Climate	Noise and Vibration	Landscape and Visual Impact	Cultural Heritage, including Archaeology	Material Assets – Transportation & Traffic	Material Assets – Waste	Material Assets – Utilities	Major Accidents and Disasters
Population and Human Health		X	X	X	X	X	X	X	X	X		
Biodiversity	X		X	X	X	X	X					
Land, Soil and Geology	X	X		X				X		X		
Water	X	X	X					X	X		X	
Air and Climate	X	X							X		X	
Noise and Vibration	X	X							X			
Landscape and Visual Impact	X	X						X				
Cultural Heritage, including Archaeology	X		X				X					
Material Assets – Transportation and Traffic	X			X	X	X				X		
Material Assets – Waste	X		X						X			
Material Assets – Utilities				X		X						
Major Accidents and Disasters												

16.4 Description of Significant Interactions

The following are the interactions anticipated from the proposed development:-

16.4.1 Population and Human Health

Chapter 4 assesses the likely impacts on Population and Human Health arising from the proposed development.

During Construction

Noise and Vibration Construction activities may result in an increase in noise which has the potential to negatively impact on local populations.

Land, Soil and Geology Construction activities may result in an increase in earth movements (excavation and stockpiling of soil) and dust which has the potential to negatively impact on local populations.

Transportation and Traffic Construction activities may result in an increase in traffic levels which has the potential to negatively impact on local populations.

Biodiversity Construction activities have potential to affect habitats which may be a source of amenity for local populations.

During Operation

Landscape and Visual Operation of development activities may result in a change in views which has the potential to negatively impact on local populations.

Transportation and Traffic Operation activities may result in an increase in traffic levels which has the potential to negatively impact on local populations.

With mitigation measures in place, no significant residual negative impacts are predicted.

16.4.2 Biodiversity

'Chapter 5 assesses the likely impacts on Biodiversity arising from the proposed development.

During construction Biodiversity has potential to interact with activities affecting;

Landscape and Visual Construction activities may affect landscape features (hedgerows, trees, streams, laneways) that are also biodiversity features.

Land Soil and Geology Construction activities giving rise to earth movements (excavation and stockpiling of soil) may potentially interact with sensitive habitats.

Water (Hydrology); Construction activities have potential to affect water bodies or water courses that have ecological value as well as hydrological significance.

The Environmental Impact Assessment process involved extensive surveys and interactions within the project team being carried out over several years. The flora, fauna and habitats within the proposed development area are outlined in detail and the potential impacts on biodiversity and designated sites were assessed. Detailed mitigation measures have been outlined and will be carried out during the construction and operational phases of the development. In conclusion, the proposed development has satisfactorily addressed the potential impacts on biodiversity on site and within the potential zone of influence. It is considered that the retention of key habitats on site and the robust mitigation and enhancement measures proposed significantly reduces the possible impact of the proposed development on biodiversity.

The overall impact on the biodiversity of the proposed development is a long term neutral residual impact on the existing biodiversity. However, the implementation of the proposed landscaping would provide significant on site biodiversity enhancement features and provide long term positive benefits to the biodiversity on site.

16.4.3 Land, Soils & Geology

Chapter 6 assesses the likely impacts on Land, Soils & Geology arising from the proposed development. During Construction;

Population Construction activities may result in an increase in earth movements and dust which has the potential to negatively impact on local populations.

Biodiversity Construction activities may result in an interactions with existing habitats and species. Any negative impacts on water quality such as increased discharge of silt or sediment to surface water may result in impacts to biodiversity downstream of the site.

Water Construction activities may result in interactions with existing water courses on the subject site.

Waste The management of construction of activity gives rise to potential impacts and interactions.

With mitigation measures in place, no significant residual negative impacts are predicted.

16.4.4 Water (Hydrology)

Population and Human Health

An assessment of the potential impacts of the Proposed Development on human health is included in Chapter 4 of this EIAR.

No public health issues associated with the water (hydrology and hydrogeology) conditions at the site have been identified for the construction phase or operational phase of the Proposed Development.

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

Biodiversity

An assessment of the potential impacts of the Proposed Development on the biodiversity of the subject site, with emphasis on habitats, flora and fauna which may be impacted as is included in Chapter 5 of this EIAR such as potential pollution of waterbodies impacting on flora and fauna in the absence of mitigation measures.

Chapter 5 addresses the impact of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.

Land, Soils and Geology

An assessment of the potential impact of the Proposed Development on the existing land, soils and geological environment during the construction phase and operational of the Proposed Development is set out in Chapter 6. In the absence of avoidance and mitigation measures, there is a potential for sediments from excavated soils entering the drainage network and tracking downstream during the Construction Phase.

Material Assets- Utilities (Site Services)

An assessment of the potential impact on the Proposed Development on the material assets including built services and infrastructure has been set out in Chapter 14 of this EIAR.

During the Construction Phase of the Proposed Development discharge of water will be accordance with the necessary discharge licences issued by UE under Section 16 of the Local Government (Water Pollution) Acts and Regulations for any water discharges to sewer or from Wicklow County Council under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water.

During the Operational Phase of the Proposed Development, any discharge to the public foul sewer and water supply will be under consent from UE.

16.4.5 Air Quality and Climate

Chapter 8 assesses the likely impacts on Air Quality and Climate arising from the proposed development. During the construction phase, the following aspects would interact with Air Quality and in the absence of mitigation may give rise to likely significant effects.

Population and Human Health: Interactions between Air Quality and Population and Human Health have been considered as the Proposed Development has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected. Furthermore, traffic-related

pollutants have been assessed and determined as insignificant, therefore air quality impacts from the Proposed Development are not expected to have a significant impact on population and human health.

Biodiversity Interactions between Air Quality and Biodiversity have been considered as the Construction Phase has the potential to interact with flora and fauna in adjacent habitats and designated sites due to dust emissions arising from the construction works.

During operation, the potential interactions are:

Population and Human Health: Air dispersion modelling of operational traffic emissions was undertaken to assess the impact of the scheme with reference to ambient air quality standards which are based on the protection of human health. As demonstrated by the modelling results, emissions as a result of the proposed scheme are compliant with all National and EU ambient air quality limit values and, therefore, will not result in a significant impact on human health.

No potential operational interactions were identified, and no other potential significant interactions have been identified other than those already described. The potential significant impacts to Air Quality have been considered within the relevant discipline and mitigation measures outlined where required.

With mitigation measures in place, no significant residual negative impacts are predicted.

16.4.6 Noise and Vibration

Chapter 9 assesses the likely impacts on Noise and Vibration arising from the proposed development. During the construction phase, the following aspects would interact with Noise and Vibration and in the absence of mitigation may give rise to likely significant effects.

During Construction

Population and Human Health: increased levels of noise and vibration during construction activities may result in negative impacts to the amenity of local residents.

Biodiversity: Construction noise has the potential to temporarily impact on fauna. This has been specifically addressed in Chapter 5 dealing with biodiversity and is outside the scope of this chapter.

Material Assets: Construction vibration has the potential to impact on the buildings as described in chapter 9. Limits specified in chapter 9 will be complied with. The contractor will be required to contractually comply with these limits.

During operation

Population and Human Health: The World Health Organisation (WHO) identifies that noise is a public health issue. It has negative impacts on human health and well-being and is a growing concern. In particular, the effects from long term exposure to anthropogenic sources including transportation sources (road, air and rail), wind turbines and leisure have been identified in the WHO Environmental Noise Guidelines for the European Region, 2018, as sources of concern as they potentially contribute to sleep loss and deprivation.

No other potential significant interactions have been identified other than those already described. The potential significant impacts of Noise and Vibration have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative impacts are predicted.

16.4.7 Landscape and Visual Assessment

Chapter 10 assesses the likely impacts on landscape, and the visual impacts arising from the proposed development. During the construction phase, the following aspects would interact with Landscape and in the absence of mitigation may give rise to likely significant effects.

Population and Human Health: Potential effects to visual amenity within the locality or the wider study area as a result of the visibility of construction activities such as works, the construction of buildings, associated scaffolding, site traffic and construction compounds.

During operation the potential interactions are:

Population and Human Health: Potential effects of the development on views and visual amenity such as the potential for the development to alter (beneficial or adverse) the composition of the view from a viewpoint. Design of public open space that forms part of a network of spaces that includes areas for passive and active recreation, social / community interaction and play facilities catering for all ages.

Biodiversity Potential impacts on biodiversity may arise due to planting and amenity proposals (for parkland, open spaces and linear open space along stream).

With mitigation measures in place, no significant residual negative impacts are predicted.

16.4.8 Archaeological, Architectural and Cultural Heritage

Chapter 11 assesses the likely impacts on Archaeological, Architectural and Cultural Heritage arising from the proposed development. During the construction phase, the following aspects in the absence of mitigation may give rise to likely significant effects.

Land, Soil and Geology Earth works and construction activities have potential to interact with archaeological sites. It is acknowledged that preservation in-situ is the preferred manner in which to conserve the archaeological resource. As described in section 11.5.1.2, it was not possible to avoid direct impacts on AA1 and AA6-9 due to design and density requirements. As such, all the identified archaeological remains within AA1 and AA6-9 will be preserved by record.

During operation

Population and Human Health: Once the development is fully occupied the population has an opportunity to interact with archaeological sites with potential positive cultural and amenity impacts.

Landscape and Visual Assessment Landscaping and amenity proposals have potential to affect the presentation and interpretation of archaeological sites. As part of the overall presentation of the park and to ensure its heritage is fully incorporated as a landscape narrative, a series of information panels relating to the landscape and archaeological/historic context will be erected in the park.

With mitigation measures in place, no significant residual negative impacts are predicted.

16.4.9 Traffic and Transportation

Chapter 12 assesses the likely impacts on Traffic and Transportation arising from the proposed development. The following aspects would interact with Traffic and Transport and in the absence of mitigation may give rise to likely significant effects.

Population and Human Health: Construction stage traffic and traffic management measures have the potential to affect journey amenity or economic activity as a result of congestion or access restrictions.

Air Quality and Climate: Emissions from construction traffic may result in a decrease in local air quality. Increased greenhouse gas emissions from construction traffic may contribute to climate change.

Noise and vibration: The projected increase in heavy vehicle traffic during the construction stage may lead to a slight increase in noise and vibration levels along the adopted construction haul route along the N81 and Oak Drive. However, such effects will be temporary in nature.

Water: (Hydrology): Construction vehicles at the site may give rise to hydrocarbon spills.

Waste: Construction stage traffic have the potential to be impacted by waste generation and resource management on site.

During operation the potential interactions are:

Population and Human Health: Operational stage traffic and traffic management measures have the potential to affect journey amenity or economic activity as a result of congestion or access restrictions

Noise and vibration: The projected increase in vehicle traffic during the operational stage may lead to a slight increase in noise levels during peak trip generation periods,

Air Quality and Climate: Emissions from traffic may result in a decrease in local air quality.

Water (Hydrology): Increased traffic and parking at the site may give rise to hydrocarbon spills from vehicles.

The potential significant impacts of Traffic and Transport have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative impacts are predicted.

16.5 Cumulative Effects

The EU Guidelines define cumulative effects/impacts as:

"Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project. For Example;

- *Incremental noise from a number of separate developments;*
- *Combined effect of individual impacts, e.g. noise, dust and visual, from one development on a particular receptor; and*
- *Several developments with insignificant impacts individually but which together have a cumulative effect."*

The EPA guidelines on the information to be contained in EIAR's mirrors this approach and defines cumulative impacts/effects as **'The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects'**.

Therefore, the assessment of cumulative impacts considers the total impact associated with the Proposed Project when combined with other past, present and reasonably foreseeable future developments.

An examination of the potential for other projects to contribute cumulatively to the impacts from this Proposed Project was undertaken during the preparation of this EIAR. This assessment has considered cumulative impacts that are:

1. Likely;

2. Significant; and
3. Relating to an event which has either occurred or is reasonably foreseeable together with the impacts from this development.

A search in relation to plans and projects that may have the potential to result in cumulative impacts was carried out. Data sources included the following:

- Wicklow County Council (planning and roads section);
- An Bord Pleanála website;
- Wicklow County Development Plan 2012-2028;
- Blessington Local Area Plan (LAP) 2013-2019;
- EIAR Portal.

16.6 Cumulative Impacts

16.6.1 Population

The proposed development will introduce a new residential population on a greenfield site in a suburban area of Blessington. Applying the average household size for Blessington in 2016 (2.75 persons) to the 329 units of the proposed development could generate an indicative population of 905 persons upon completion and operation. Through the provision of public parkland and BIRR road link to the N81, the proposed development is integral to the sustainable development of Blessington. The provision of roads, community social infrastructure is integral to the scheme. The provision of good quality cycle and pedestrian facilities within the development and along the School Link Road and Inner Relief Road will provide improvements in health and wellbeing for the residents, visitors and general population.

Overall, the development supports the sustainable long-term development of Blessington in accordance with strategic plans for the area. The cumulative impact is considered to be moderate, long-term and positive.

16.6.2 Biodiversity

There are several development proposals located in the areas surrounding the subject site that have been granted permission. The ecology assessments for the above projects have been considered. No projects are proposed or currently under construction that could potentially cause significant cumulative effects on biodiversity.

16.6.3 Land, Soil and Geology

Excavated soil and subsoil during the Construction Phase of the Proposed Development could potentially be directed to the same receiving waste facilities for recovery / disposal as excavated materials from other developments outlined in Table 6-9 and within the wider Wicklow area. All surplus soils and stone from the site will be removed offsite in accordance with all statutory legislation. Accordingly, it is considered that any cumulative impact on lands, soils and geology associated with the Proposed Development will be 'neutral', 'imperceptible' and 'permanent'.

There are no other identified cumulative impacts on land, soil and geology associated with the Proposed Development.

16.6.4 Water

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.

During Construction, the Proposed Development will be connected to the existing water main serving the Blessington area which is supplied by the connection to Irish Water mains supply operated in accordance with relevant existing statutory consents therefore there will be no cumulative impacts associated with the Proposed Development on water resources. 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 of a water connection is feasible.

As capacity within the existing foul sewer network has been confirmed and Blessington WwTP operates under existing statutory consents there will be no cumulative impacts on the receiving water environment associated with discharges from the Proposed Development.

There are no cumulative impacts on the receiving water environment associated with the Proposed Development and considered offsite developments. There are no potential other cumulative impacts associated with the Proposed Development.

16.6.5 Air Quality and Climate

The cumulative effects on the air quality and climate of the Proposed Development and other permitted or existing developments have been considered, in particular through the generation of air pollutants and GHG emissions.

In terms of dust, no significant impacts are predicted; good construction practice, which incorporates mitigation measures and dust monitoring, will be employed at the Proposed Development site. Due to good construction practices at the site of the Proposed Development and these offsite permitted developments, it is not anticipated that significant cumulative impacts will occur during the Construction Phases.

Assessment of operational stage impacts on air quality involved traffic data which is inclusive of traffic associated with other existing and permitted developments on the road networks surrounding the site both in current and future years. Therefore, cumulative impacts have been assessed in this regard and the impact on ambient air quality has been determined as insignificant.

It is considered that there are no other potential significant cumulative impacts associated with the Proposed Development and considered offsite permitted developments.

16.6.6 Water (Hydrology)

Water Resources:

The Proposed Development will be connected to the existing 225mm UE foul sewer located in the existing roundabout on Oak Drive subject to agreement with UE. The UE COF dated the dated the 15th of October 2021 (UE COF Reference: CDS20005303) states that the water supply connection is feasible subject to upgrades, which will be completed as part of the construction of the Proposed Development.

The mains water supply is operated in accordance with relevant existing statutory consents. Therefore there will be no cumulative impacts associated with the Proposed Development on the supply network and water resources.

Water Quality

As outlined in the Infrastructure Design Reports (DBFL, 2023b and DBFL, 2023c), foul water from the Proposed Development will be discharged to the existing 225mm UE foul sewer located in the existing roundabout on Oak Drive. The UE COF dated the 15th of October 2021 (UE COF Reference: CDS20005303) states that the foul water connection is feasible subject to upgrades, which will be completed as part of the construction of the Proposed Development.

Foul water from the proposed development will be treated at the Blessington WWTP (EPA Licence No. D0063-01). The Blessington WWTP is operated with relevant statutory approvals and the available 2022 AER indicates that discharges from the WWTP were compliant with the ELVs specified in the discharge license. Therefore, there will be no identified impact on the receiving environment associated with foul discharges from the Proposed Development via Blessington WWTP individually or in-combination.

There will be no cumulative impacts on the receiving surface water environment in terms of water quality and flood risk associated with surface water runoff from the Proposed Development and considered offsite developments.

There are no other potential cumulative impacts associated with the Proposed Development.

16.6.7 Noise and Vibration

Potential construction impacts at NSLs are greatest within 40m of development works, after which they reduce as noise attenuates over distance. As addition of sources is logarithmic, the highest contributing sources i.e. generally those at close distances to NSLs predominate and tend to define the noise impact magnitude. There is potential for overlap of the proposed Development construction phases and adjoining permitted Developments as indicated on Figure 9-9:

Committed Development Site 1 is currently under construction and will be substantially completed in the near future. It is feasible that the other committed sites may be developed at the same time as the proposed Development. However, the intervening distances between these sites and the proposed Development will ensure that no significant cumulative effects on existing NSLs (and if complete NSLs in committed Development Site 1) will occur.

Overlapping between phases within the proposed Development has also been considered. Phase 1 will be undertaken at the same time as the proposed road extension. However, due to distance, the cumulative impact magnitude is expected to be the same at Woodleigh.

The potential long term cumulative impact of traffic related noise has been addressed in the assessment of traffic related noise emissions arising from the proposed development. Refer to Section 9.5.3.1.

16.6.8 Landscape and Visual Assessment

A transition to the character of the landscape in the vicinity of the subject site has already begun. The lands of the immediate west, the Phase 1 development has already begun construction and will be nearing completion. Glenveagh sites, south the BIRR and north of the shopping centre is expected to start construction soon.

These changes are all part of policy to delivery an expanded urban area and consolidation of Blessington, and the road infrastructure in the form of the BIRR (northern section) to support these developments.

The cumulative effect of all these changes will be transformational and see the semi-rural current landscape become urban with planned amenities, landscaped streets, and a variety of housing styles

and materials, along with a large regional / town park and the BIRR. A new place / landscape / townscape is being created here.

The magnitude of change cumulatively would be 'very high', i.e. 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.

The cumulative effect locally would be 'Moderate to Very Significant', depending on the proximity to the change. Qualitatively the landscape effect is Neutral to Beneficial.

16.6.9 Cultural Heritage

A permitted (phase 1) residential and park development (WCC.201146), located to the immediate east of the proposed development has been considered within the baseline of this assessment, due to the archaeological excavations that have taken place there, which in turn inform this baseline. The development is currently under construction, but has resulted in (now mitigated) impacts upon archaeological features and areas that will also be impacted by the proposed development. Potential cumulative impacts are detailed below:

- Downshire House (WI005-018) and geometric gardens.

In order to mitigate impacts upon the site of Downshire House, the phase 1 development ensured (under archaeological supervision) the preservation in-situ of the site of Downshire House. A section of demesne wall was also subject to repair and reconstruction, whilst another section was removed under archaeological supervision. All works within the phase 1 site were monitored (in relation to the first phase of the park) and any archaeological remains (including features associated with the garden and two post medieval burials) were preserved by record. All works were carried out in consultation with the DoHLGH and under archaeological licence.

The proposed development will also see the preservation in-situ of the site of Downshire House (WI005-018) and the incorporation of the remaining gardens into phase 2 of the public park. The cumulative impact of both developments on the site of the house is directly positive to a significant extent, as the site of the house will form part of the wider park landscape and conservation and retention of heritage assets. Similarly, the cumulative impact of both of both the developments on the geometric gardens is directly positive to a significant extent, as the whole park will represent an active public space that utilises and regenerates a historic recreational space.

- Ringfort WI005-130

The southern enclosing element of this site, along with an associated annex, was initially identified during geophysical survey and confirmed during archaeological testing. As part of the permitted phase 1 development, the archaeological remains were subject to preservation by record in 2022, under licence from the DoHLGH. All topsoil stripping was also archaeologically monitored (including an associated compound area) and any further archaeological remains were preserved by record. All potential impacts on the archaeological resource were fully mitigated with the programme of archaeological investigation that was implemented. A large portion of this site, included much of the centre of the site, was impacted by the construction of the road that crosses it during c. 2000.

The proposed development will result in a direct negative impact on the northern element of the enclosing ditch (that has not been previously disturbed by the road construction and associated compound). The impact is designated as significant negative. Although the southern section of the site has been preserved by record, the remains of the site have been removed (i.e not preserved in-situ). Therefore, cumulatively, the impact of both developments on WI005-130 is considered to be very

significant negative, albeit that mitigation to reduce impacts has already been undertaken in relation to the portion of the site that is located within the phase 1 development. It remains unknown as to whether any surviving archaeological remains survive beneath the road that was constructed through the centre of WI005-130.

All remaining proposed and permitted development within the study area (as detailed in Chapter 16) have been considered and no other potential cumulative impacts upon the archaeological, architectural or cultural heritage resource have been identified.

16.6.10 Transport and Traffic

Through the provision of the BIRR road link to the N81, the proposed development is integral to the sustainable development of Blessington. The provision of good quality cycle and pedestrian facilities within the development and along the School Link Road and Inner Relief Road will provide improvements in health and wellbeing for the residents, visitors and general population. The development will enable and facilitate residential and employment projects located along the link road reservation and Oak Drive.

There will be a permanent change on vehicle patterns along the Inner Relief Road and School Link Road, however, detailed junction assessments undertaken show that this will result in only slight impact, with junctions continuing to operate within capacity. The implementation of the mitigation measures outlined in section 12.7 will result in the residual impact to be considered as neutral, slight, and permanent.

16.6.11 Material Assets - Utilities

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 of a water connection is feasible.

There are 2 No. granted planning applications in close proximity to the development granted under WCC Ref. 201146 (106 No. units) and WCC Refs. 20184 & 20362 (173 No. Units). They are likely to have similar impacts during the construction phase in relation to Material Assets - Built Services. Should the construction phase of these developments coincide with the development of this proposed site, potential cumulative impacts are not anticipated once similar mitigation measures are implemented. It is anticipated that any construction overlap will likely be in the short term as the Sorrell Wood residential development (WCC Ref. 201146) is currently under construction. At the time of writing the development is substantially completed with the majority of dwellings being occupied at present.

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.

16.6.12 Material Assets -Waste

With regard to other developments under construction and proposed in the vicinity of the Site of the Proposed Development, including the aforementioned recently permitted applications, there will be a greater demand on existing local waste management services and on regional waste acceptance facilities.

The capacity of waste collection companies and waste management facilities in the Eastern Midlands Region have been designed with forward planning and expansion in mind to cater for a growing population. It is necessary that all the developments provide the infrastructure and services to assist

residents to segregate domestic waste at source, in order to reduce the generation and disposal of non-recyclable mixed waste. Existing waste collections currently take place in the local area and during the Operational Phase, the Proposed Development will be added to an existing collection route. The likely effect will be neutral and not significant on waste management facilities in the area in the long term.

16.6.13 Major Accidents

The residual impacts will be negligible once all control, mitigation and monitoring measures have been implemented. The potential for dust or noise from the Site operations to cause any nuisance to nearby receptors is deemed to be negligible and the adherence and full implementation of the appropriate control and mitigation measures will ensure there is no potential for cumulative impacts to arise.

16.7 References

- Environmental Protection Agency (2022), Guidelines on the Information to Be Contained in Environmental Impact Assessment Reports. EPA. Wexford
- European Commission (1999), Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions. European Commission, Luxembourg.

17. SUMMARY OF INTERACTIONS AND CUMULATIVE EFFECTS

17.1 Introduction

This chapter presents a summary of the key mitigation measures identified within Chapters 5 to 15 of this Environmental Impact Assessment Report (EIAR). Mitigation describes the measures proposed in order to avoid, reduce and where practicable remedy significant adverse effects. It is also a means by which design decisions for the Proposed Project are modified to avoid, reduce or remedy the adverse environmental effects that are identified.

Mitigation measures have been incorporated into the design of the Proposed Project and will be applied during the construction and operation of the Proposed Project. All mitigation measures are based on the Proposed Project as described in Chapter 2, 'Description of the Scheme. Individual chapters of the EIAR should be referred to for context and detail of specific mitigation measures however a summary has been presented in the tables below. The mitigation measures for both the construction and operational phases are detailed as appropriate.

An Outline Construction and Environmental Management Plan (CEMP) prepared by DBFL has been prepared as part of the LRD planning application package.

17.1.1 Expertise

This chapter has been prepared and collated by Richard Hamilton, BA, MSc, PGDip EMAE (Environmental Monitoring Assessment and Engineering), MIPI, MRTPI, Director for MacCabe Durney Barnes.

17.2 Mitigation

The EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022) identifies that there are 4 established strategies for the mitigation of effects; avoidance, prevention, reduction and offsetting.

Mitigation by Avoidance: Avoidance usually refers to strategic issues, such as site selection, site configuration or selection of process technology. This may be the fastest, cheapest and most effective form of effect mitigation. In some cases mitigation by avoidance may also be considered as part of the "consideration of alternatives".

Mitigation by Prevention: This usually refers to technical measures. Where a potential exists for unacceptable significant effects to occur (such as noise or emissions) then measures are put in place to limit the source of effects to a permissible and acceptable level.

Mitigation by Reduction: This is a very common strategy for dealing with effects which cannot be avoided. It tends to concentrate on the emissions and effects and seeks to limit the exposure of

the receptor. This is regarded as a less sustainable, though still effective, approach, implemented through reducing the effect and/or reducing exposure to the effects.

Mitigation by Offsetting: This is a strategy used for dealing with adverse effects which cannot be prevented or reduced. Remedy is compensating for or counteracting adverse effects. Examples include increased planting of specific trees/shrubs to replace unavoidable loss of vegetation, or provision of a new amenity area to compensate for the unavoidable loss of access to the grounds of an old house. Examples of Offsetting include reinstating buildings, walls or features, or the introduction of tunnels to enable wildlife to access other comparable habitats.

17.3 Mitigation Measures

Table 17-1 provides a summary of Mitigation measures provided for in Construction and Operation phases as presented in the specialist Chapters in this EIAR.

Table 17-1: Description General Mitigation Measures

Chapter	No.	Construction	Operation
Population and Human Health	4	<p>A range of construction related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics examined and the inter-relationships between each topic. These remedial and mitigation measures are likely to result in any significant and likely adverse environmental impacts on population and during the construction phases being avoided.</p> <p>In order to protect the amenities enjoyed by nearby residents, premises and employees a Construction Environmental Management Plan (including traffic management) shall be submitted by the contractor and implemented during the construction phase. This will mitigate potential local disturbance or severance to local populations that may arise from construction activity.</p> <p>With reference to the construction phase of the proposed development, the objective of the Construction Waste Management Plan prepared by Envirogude is to ensure that waste generated during the proposed construction and operation phases will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 - 2013 are complied with.</p> <p>A Construction and Environmental Management Plan prepared by DBFL also accompanies the LRD planning application to support the management of construction activities within appropriate environmental operational standards. The operational phase is considered to have likely significant positive impacts on human beings in</p>	<p>During the operational phase of the development the design of the scheme has undergone a Road Safety Audit and has had regard to Design Manual for Urban Roads and Streets (DMURS) during its design. This will promote a pedestrian friendly environment, promoting sustainable development and reducing the influence of cars. This has the potential to reduce accidents within the proposed development.</p>

		relation to the provision of additional residential units, open space, community facilities, active open space (sports field) childcare provision, to cater for the demands of a growing population in accordance with the residential zoning objectives pertaining to the site.	
Biodiversity	5	<ol style="list-style-type: none"> 1. A project ecologist will be appointed prior to works or site clearance commencing on site. A project ecologist will oversee the project from prior to the commencement to the completion of the project including all landscaping, construction and drainage connections. 2. Tree retention will be carried out as outlined in the arborist report. Additional exclusion zones will be implemented by the project ecologist in order to protect biodiversity on site e.g. proximate to the watercourse. 3. A specific site clearance, reprofiling and phasing plan will be provided to the arborist and project ecologist for approval prior to any site clearance or works commencing on site. No site clearance works will commence on site until approval has been provided by the arborist and project ecologist for the works to commence. 4. All site clearance, reprofiling and enabling works will be approved and monitored by the arborist and project ecologist to ensure that the integrity of the remaining habitats on site are maintained. 5. All works in the riparian corridor will be carried out in consultation with and to the satisfaction of Inland Fisheries Ireland and the project ecologist, following the best practice guidelines for construction in the vicinity of watercourses. All works on site and in the riparian corridor will include mitigation measures to prevent silt from runoff during works as set out below. 6. All works in the riparian corridor will be approved by Inland Fisheries Ireland prior to works commencing. 7. Abstraction of water from the watercourse or springs will not be permitted. 8. Relevant legislation (Section 40 of the Wildlife Acts, 1976 to 2012) "It shall be an offence for a person to cut, grub, burn or otherwise destroy during the period beginning on the 1st day of March and ending on the 31st day of August in any year, any vegetation growing on any land not then cultivated." Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent. If bird nests are present the woody vegetation will not be removed unless a derogation licence has been provided by NPWS and the conditions applied. 9. 50 Nest boxes placed on site during landscaping to compensate for resource loss. 10. Light falling upon any areas of benefit to birds such as woodlands will not exceed 3 lux to 	<ol style="list-style-type: none"> 1. Post construction an inspection of drainage connections to the watercourse network will be carried out by the project ecologist. 2. A post construction lighting assessment will be carried out to ensure compliance with the proposed lighting and a bat survey will be carried out to ensure foraging is continuing on site. Should foraging be inhibited in key foraging areas on site the lighting will be locally revised in consultation with a bat ecologist to ensure foraging continues on site.

		<p>ensure that resting and nesting species are not unnecessarily disrupted.</p> <p>11. A pre construction survey for invasive species, bats and terrestrial mammals will be carried out. This will include an inspection for resting and breeding places for both terrestrial mammals and bats. Should resting or breeding places be found a derogation licence will be acquired from NPWS and conditions followed prior to works commencing in the vicinity of the resting or breeding place.</p> <p>12. Lighting at all stages should be done sensitively on site as directed by the project ecologist, with no direct lighting of hedgerows and treelines.</p> <p>13. Replanting of the riparian corridor will be at the initial phase of the project.</p> <p>14. A pre-construction mammal and invasive species assessment will be carried out by the project ecologist.</p> <p>15. Lighting has involved mitigation through design and will be restricted to key areas and will not be within foraging zones. Lighting will be placed where necessary for mainlining movement within key areas of site and open space areas including the pond will not be lit.</p> <p>16. Landscaping has involved mitigation through design by increasing the number of trees on site and the inclusion of additional planting of trees along the link road. It would not be expected that the beneficial effects of these trees would not be seen until the medium to long term.</p> <p>17. Lighting during construction will be carried out in consultation with the project ecologist and treelines or wooded areas will not be lit.</p> <p>18. 10 bat boxes will be placed on site. These will be placed in discussion with the project ecologist and will be used to enhance existing foraging areas on site.</p> <p>19. A pre construction bat assessment will be carried out on all trees to be felled. In the majority of cases this will involve a ground based assessment. However, in relation to trees T510 and T500 and any other trees that may have become of moderate or high potential in the interim, primarily due to storm damage, these will need a detailed inspection. Should bats be found roosting in any trees to be felled a derogation licence will be required from NPWS and conditions, if any, complied with.</p> <p>20. Daily monitoring of the watercourse (pH, Oxygen, turbidity) in addition to daily photographs will be taken during enabling works until the drainage networks including mitigation and landscaping of the riparian corridor are in place.</p>	
Land, Soil and Geology	6	A preliminary Construction Environmental Management Plan (CEMP) (DBFL, 2023a) and Resource and Waste Management Plan (RWMP) (Enviroguide Consulting, 2023) have been	There is no requirement for ameliorative, remedial or reductive measures for the Operational Phase of the Proposed Development.

	<p>prepared as part of the planning application. Following appointment, the contractor will be required to further develop the CEMP and RWMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001).</p> <p>The CEMP and RWMP will be implemented for the duration of the Construction Phase, covering construction and waste management activities that will take place during the Construction Phase of the Proposed Development.</p> <p>Import of Aggregates Contract and procurement procedures will ensure that all imported aggregates required for the proposed development will be sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity/compliance standards and statutory obligations. The importation of aggregates shall be subject to management and control procedures which shall include testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the proposed development. Therefore, any unsuitable material will be identified prior to unloading / placement onsite.</p> <p>Airborne Dust Generation Excavated soils will be carefully managed and maintained in order to minimise potential impact on soil quality and soil structure. Handling of soils will be undertaken in accordance with documented procedures that will be set out in order to protect ground and minimise airborne dust. As outlined in the CEMP (DBFL, 2023a), the measures required to prevent airborne dust emissions and associated nuisance arising from site work will be in place including measures to prevent uncovered soil drying out leading to wind pick up of dust and mud being spread onto the local road network and adjoining properties. This may require additional wetting at the point of dust release, dampening down during dry weather and wheel cleaning for any vehicles leaving the Site.</p> <p>Reuse of Soil Soil and subsoil materials to be reused within the Proposed Development (i.e., for landscaping on site) will be subject assessment of the suitability for use in accordance with engineering and environmental specification for the Proposed Development.</p> <p>Management and Control of Soils and Stockpiles</p>	
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		<p>requirements outlined in the RWMP (Enviroguide Consulting, 2023) and will be managed in accordance with all legal obligations. It will be the contractor's responsibility to either; obtain a waste collection permit or, to engage specialist waste service contractors who will possess the requisite authorisations, for the collection and movement of waste off-site.</p> <p>The re-use of soil and subsoil offsite will be undertaken in accordance with all statutory requirements and obligations including where appropriate re-use as by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended.</p> <p>Any surplus material not suitable for re-use as a by-product and other waste materials arising from the Construction Phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities. As only authorised facilities will be used, the potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures.</p> <p>Any waste soils will be transported under a valid waste collection permit issued under the Waste Management (Collection Permit) Regulations 2007, as amended and will be delivered to an appropriately authorised waste management facility.</p> <p>Materials and waste will be documented prior to leaving the site. All information will be entered into a waste management register kept on the site.</p> <p>Vehicles transporting material with potential for dust emissions to an off-site location shall be enclosed or covered with a tarpaulin at all times to restrict the escape of dust.</p> <p>Public roads outside the Site will be regularly inspected for cleanliness and cleaned as necessary. The main contractor will carry out road sweeping operations, employing a suction sweeper or similar appropriate method, to remove any project related dirt and/or material deposited on the road by construction/ delivery vehicles. Wheel-wash systems will be set up at any site entrances / exits in the event there is a risk of debris deposited on the road as outlined in the CEMP.</p> <p>Concrete Works The cementitious grout and other concrete works during the Construction Phase, will avoid any contamination of ground through the use of appropriate design and methods implemented by</p>	
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	<p>the Contractor and in accordance with the CEMP (DBFL, 2023a) and relevant industry standards.</p> <p>All ready-mixed concrete will be delivered to the site by truck. Concrete batching will take place offsite, wash down and wash out of concrete trucks will take place offsite and any excess concrete is not to be disposed onsite.</p> <p>A suitable risk assessment for wet concreting shall be completed prior to works being carried out. Pumped concrete will be monitored to ensure there is no accidental discharge.</p> <p>Handling of Fuels, Chemicals and Materials</p> <p>Fuelling and lubrication of equipment will be carried out in accordance with the procedures outlined in the CEMP (DBFL, 2023a), in a designated area of the Site away from any watercourses and drains (where not possible to carry out such activities onsite).</p> <p>Any diesel, fuel or hydraulic oils stored on-site will be stored in designated areas (DBFL, 2023a). These areas will be bunded and located away from surface water drainage and features. Bunds will have regard to Environmental Protection Agency guidelines 'Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities' (EPA, 2013). All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:</p> <ul style="list-style-type: none"> • 110% of the capacity of the largest tank or drum within the bunded area; or • 25% of the total volume of substance that could be stored within the bunded area. <p>The main contractor will maintain an emergency response action plan and emergency procedures will be developed by the appointed contractor in advance of any works commencing. Construction staff will be familiar with the emergency response plan (DBFL, 2023a).</p> <p>As outlined in the CEMP spill kits will be made available onsite and identified with signage for use in the event of an environmental spill or leak. A spill kit will be kept in close proximity to the fuel storage area for use in the event of any incident during refuelling or maintenance works. Heavy machinery used on the site will also be equipped with its own spill kit.</p> <p>Emergency Procedures</p> <p>Emergency procedures will be developed by the appointed Contractor in advance of works commencing and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in</p>	
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		<p>accordance with industry standards and legislative requirements.</p> <ul style="list-style-type: none"> Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the site; Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants; Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained; In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards; All construction works staff will be familiar with emergency procedures for in the event of accidental fuel spillages; and All construction works staff on-site will be fully trained on the use of equipment. <p>This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving land, soil and geological environment associated with the Construction Phase of the Proposed Development.</p> <p>Welfare Facilities</p> <p>Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Foul drainage from temporary welfare facilities during the Construction Phase of the Proposed Development will be discharged to temporary holding tank(s) the contents of which will periodically be tankered off site to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by tankering of waste offsite by an appropriately authorised contractor.</p>	
Water	7	<p>A preliminary Construction Environmental Management Plan (CEMP) (DBFL, 2023a) has been prepared as part of the planning application. Following appointment, the contractor will be required to further develop the CEMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground with regard to the relevant industry standards</p> <p>Control and Management of Works Near Water Courses</p> <p>All necessary works carried out adjacent to the Deerpark_09 Stream / River for the construction of headwalls for the proposed surface water outfalls</p>	<p>It is considered that the design of the Proposed Development is in line with the objectives of the Water Framework Directive (2000/60/EC as amended) (WFD) to prevent or limit any potential impact on water quality of the receiving environment.</p> <p>Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures will be incorporated into the overall management strategy for the Proposed Development. This will ensure that there are no impacts on</p>

		<p>will follow the guidelines published by Inland Fisheries Ireland (IFI) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016) and the National Roads Authority (now Transport Infrastructure Ireland) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA, 2008). All works will be carried out in accordance with an approved method statement prepared by an appropriately qualified Environmental /Ecological Clerk of Works employed by the appointed contractor.</p> <p>A watching brief by an Environmental /Ecological Clerk of Works employed by the appointed contractor will be required during critical stages in particular during near stream works for the headwall and outfall at the Deerpark_09 Stream / River.</p> <p>Field parameters (pH, temperature, and conductivity) are required to be collected directly downstream of the works prior to commencing works to confirm baseline and then at regular intervals during the works. The Environmental /Ecological Clerk of Works will visually inspect the water quality during the works, observant for release of suspended sediment or contaminations to the stream. Silt fences are required to be installed for the duration of works. Works for the headwall will not occur during periods of high rainfall.</p> <p>Control and Management of Water and Surface Water Runoff</p> <p>There will be no direct discharge to groundwater or surface water during the construction phase of the Proposed Development.</p> <p>All run-off from the subject site or any areas of exposed soil will be managed as required with temporary pumping and following appropriate treatment as required. Dewatering to lower groundwater levels is not anticipated. However, where surface water runoff must be pumped from excavations, water will be managed in accordance with best practice standards (i.e., CIRIA C750), the CEMP and regulatory consents to minimise the potential impact on the local groundwater flow regime within the soil and bedrock.</p> <p>Unauthorised discharge of water (groundwater / surface water runoff) to ground, drains or watercourses will not be permitted. works. The appointed contractor will ensure that the discharge of water to ground, drains or watercourses will be in accordance with the necessary discharge licences issued by UE under Section 16 of the Local Government (Water Pollution) Acts and Regulations for any water discharges to</p>	<p>water quality and quantity (flow regime) during the Operational Phase of the Proposed Development.</p> <p>With regard to the proposed discharge of treated operational surface water from the Proposed Development to the Deerpark_09 Stream / River, the potential for surface water generated at the Proposed Development to cause significant effects to downstream sensitivities during the operational phase would be considered negligible due in part to the SuDS measures and petrol interceptor incorporated in the overall design.</p>
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		<p>Handling of Fuels, Chemicals and Materials</p> <p>Fuelling and lubrication of equipment will be carried out in accordance with the procedures outlined in the CEMP (DBFL, 2023a), in a designated area of the Site away from any watercourses and drains (where not possible to carry out such activities onsite).</p> <p>Any diesel, fuel or hydraulic oils stored on-site will be stored in designated areas (DBFL, 2023). These areas will be bunded and located away from surface water drainage and features. Bunds will have regard to Environmental Protection Agency guidelines 'Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities' (EPA, 2013). All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:</p> <ul style="list-style-type: none"> • 110% of the capacity of the largest tank or drum within the bunded area; or • 25% of the total volume of substance that could be stored within the bunded area. <p>The main contractor will maintain an emergency response action plan and emergency procedures will be developed by the appointed contractor in advance of any works commencing. Construction staff will be familiar with the emergency response plan.</p> <p>As outlined in the CEMP, spill kits will be made available onsite and identified with signage for use in the event of an environmental spill or leak. A spill kit will be kept in close proximity to the fuel storage area for use in the event of any incident during refuelling or maintenance works. Heavy machinery used on the site will also be equipped with its own spill kit.</p> <p>Emergency Procedures</p> <p>Emergency procedures will be developed by the appointed Contractor in advance of works commencing and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements.</p> <ul style="list-style-type: none"> • Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the site; • Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants; • Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained; 	
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		<ul style="list-style-type: none"> • In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards; • All construction works staff will be familiar with emergency procedures for in the event of accidental fuel spillages; and • All construction works staff on-site will be fully trained on the use of equipment. <p>This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving land, soil and geological environment associated with the Construction Phase of the Proposed Development.</p> <p>Welfare Facilities</p> <p>Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Foul drainage from temporary welfare facilities during the Construction Phase of the Proposed Development will be discharged to temporary holding tank(s) the contents of which will periodically be tankered off site to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by tankering of waste offsite by an appropriately authorised contractor.</p>	
Air and Climate	8	<p>It is not expected that adverse air quality impacts are likely to occur at sensitive receptors as a result of the Proposed Development. However, the following mitigation measures are recommended in order to further prevent such impacts occurring. Additional measures have been outlined within the Construction Environmental Management Plan (CEMP) for the Site and these will be employed as necessary.</p> <ul style="list-style-type: none"> • Enclosed vehicles or tarpaulins shall be used to transport debris, aggregates, and fine materials to and from the site to prevent blow-off of such materials; • Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind and shorten the length of time for which material will be stockpiled; • Hard surfaced areas shall be swept regularly to remove mud and aggregate materials; • Watering can also be utilised to keep unpaved areas moist, preventing dust generation. The required application frequency will vary according to soil type, weather conditions and vehicular use; 	<p>It has been determined that the Operational Phase air quality impact is negligible and therefore no site-specific mitigation measures are proposed.</p>

		<ul style="list-style-type: none"> • Dust suppression techniques will include employment of water bowsters to dampen the Site and haul roads, and temporary ceasing of specific operations during unfavourable weather conditions; • Wheel washing stations will be available to trucks exiting the site where necessary; • Public roads should be inspected on a daily basis (at a minimum) for cleanliness and cleaned as necessary in order to avoid causing a hazard to road users; • Exhaust emissions of volatile organic compounds, nitrogen oxides, and sulphur oxides from vehicles and machinery will be minimised by avoidance of engines running unnecessarily as idle engines shall not be permitted for excessive periods; • Unnecessary vehicle movement and manoeuvring will be avoided, and speed limits will be in place so as to prevent resuspension of particulate matter. • Daily visual observations will be made on fugitive dust levels; in the event of high dust levels, operations giving rise to such emissions will be ceased or curtailed. 	
Noise and Vibration	9	<ul style="list-style-type: none"> • A Site Representative will be appointed for matters related to noise and vibration. • Any complaints received will be thoroughly investigated. • A written complaints log will be maintained by the Site Representative. This will, at a minimum, record complainant's details (where agreed) the date and time of the complaint, details of the complaint including where the effect was observed, corrective and preventative actions taken and any close-out communications. This will ensure that the concerns of local residents who may be affected by site activities are considered during the management of activities at the site. • Noise monitoring with capability for real-time review both on-site and remotely will be conducted at the boundary with nearby NSLs when works are planned in close proximity including Woodleigh, Blessington No.1 School and Deerpark Walk. • In the event of meeting or exceedance of the threshold values at NSLs, works will be ceased and measures implemented immediately to ensure that the limits are complied with. • Temporary acoustic screening or hoarding will be placed along the boundaries of the residential site. As a general rule of thumb, it is recommended that temporary screening break the "line of sight" from the sources to the lower windows of the nearest NSLs where possible. • The road element will be linear in nature and works will move on relatively quickly from one area to the next. It may be difficult to screen the upper floors of the duplexes in Woodleigh Grove and Way. Therefore, measures such as the use of 	<p>Existing NSLs</p> <p>The proposed Development incorporates a low noise road surface as part of the finish on the proposed extension to the BIRR.</p> <p>Future Residents</p> <ul style="list-style-type: none"> • The window supplier shall provide laboratory tests confirming the airborne sound insulation performance in the absence of suitable laboratory data a composite sound reduction index calculation undertaken by a suitably qualified acoustic consultant can be used to demonstrate compliance. • Should the ventilation strategy change, an acoustic specialist shall be commissioned to review the glazing and ventilation grills specifications. A conservative estimate of requirements has been specified in this chapter. • Balustrades on balconies for the apartment units (A13.1 – 6) shall be as high as possible to improve usability from a noise perspective. The balustrades shall be made from a solid material (surface density 10 kg/m²) with no gaps in the construction where possible, taking account of other requirements such as adequate daylight to apartments. • Boundary treatment to gardens associated with units (A1.12, A8.1, A9.22, A10.1) shall be made from a solid material (surface density 10

		<p>low noise plant and/or the use of enclosures will be chosen to minimise construction noise impact.</p> <ul style="list-style-type: none"> • The operation of certain pieces of equipment, where substitution, enclosure etc. cannot be carried out will be managed through monitoring and timing of use to ensure that noise levels remain below the threshold values/criteria specified. • During the construction phase all equipment will be required to comply with noise limits set out in EC Directive 2000/14/EC and the 2005/88/EC amendment on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors. The directive covers equipment such as compressors, welding generators, excavators, dozers, loaders and dump trucks. • Haul routes will be placed away from Woodleigh to ensure that transient vibrations associated with HGVs operating on uneven surfaces are minimised. • As a precautionary measure and as part of good practice, vibration monitoring will be carried out where works such as the use of rollers are in close proximity to Woodleigh. <p>The outline CEMP submitted with this application will include the noise and vibration management measures listed above.</p>	<p>kg/m²) with no gaps in the construction where possible.</p>
Landscape and Visual Impact	10	<p>During construction there will be a change to the landscape and there will be negative visual impacts for residents and visitors to the areas adjacent to the site associated with construction activity.</p> <p>The remedial measures proposed revolve around the implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc. Visual impact during the construction phase will be mitigated somewhat through 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.</p> <p>Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate. To reduce the potential negative impacts during the construction phase, good site management and housekeeping practices will be adhered to. The visual impact of the site compound and scaffolding visible during the construction phase are of a temporary nature only and therefore require no remedial action other than as stated above. It is noted that a Construction Environmental Management Plan has been prepared by the project engineer, DBFL which incorporates the above site management procedures. This Management Plan will inform a</p>	<p>The scheme design incorporates significant consideration in respect of best practice layouts and to successfully integrate it into the receiving environment.</p> <p>The architectural layout aims to address visual impacts by proposing variety in scale and massing of buildings. Elevations and materiality complement local styles and character.</p> <p>The retention of hedgerows and trees where feasible and the planting of additional trees and shrubs throughout the site and open spaces where possible will reduce the visual mass of the buildings, soften and partially screen the development over time from various viewpoints, as identified in the assessment, thereby minimising the visual impacts whilst crating a quality of place and residential amenity.</p> <p>Landscape works necessary for creation of a development of quality are proposed with the effect of also eliminating adverse effects generated due to the proposed development. The planting of substantial numbers of new trees and other planting in the open spaces, the site boundaries and internal roads, both native and ornamental varieties, will enhance the overall appearance of the new development and compensate for the removal of hedgerows</p>

		<p>revised Construction Environmental Management Plan to be prepared by the appointed contractor prior to the commencement of development and agreed with the Planning Authority.</p> <p>Existing trees and woodlands to be retained and are shown in the Landscape Design Report prepared by Kevin Fitzpatrick Landscape Architecture (included separately as part of this planning submission) and Arboriculture drawings and report prepared by Cunnane Stratton Reynolds and Charles McCorkell (included separately as part of this planning submission). Existing trees to be retained are particularly sensitive to negative impacts during the construction phase if proper protection measures are not adhered to. With regard to the protection of the retained trees on site during proposed construction works, reference should be made to BS5837: Trees in relation Design, Demolition and Construction – Recommendations (BSI, 2012). Tree protection details have been included in the Arboricultural drawings and report (included separately as part of this planning submission).</p> <p>Adverse impacts both during construction and at operation phases could be mitigated through undertaking the following site works early on in the construction process in order to soften and screen views as early on as possible.</p> <p>Reducing the footprint of all construction works wherever feasible and ensuring the remainder of the land is retained as green field will also limit any adverse effects during the construction phase.</p>	<p>and trees where needed for the construction works and increase the overall landscape capacity of the site to accommodate development.</p> <p>Native and appropriate planting for biodiversity has been incorporated into the scheme in accordance with the advice of the Project Ecologist.</p> <p>Public open spaces have been designed as part of an overall design strategy that focuses on creating a 'sense of place' and individual character for the development area. The quality of the public realm scheme is of a high standard and the quality of materials proposed is similarly high and robust.</p> <p>Design of public open space that forms part of a network of spaces that includes areas for passive and active recreation, social / community interaction and play facilities catering for all ages.</p> <p>Application of best practice horticultural methods to ensure that mitigation measures establish and grow appropriately.</p> <p>In this regard Mitigation of effects is through the delivery of a quality design rather than in addressing residual effects post design and implementation</p>
Cultural Heritage, including Archaeology	11	<p>Park Development</p> <ul style="list-style-type: none"> • All construction works within the park will be monitored, including any 'no-dig' works across the site of Downshire House (WI005-018). The site of the ornamental lake (WI005-016) and the extent of structures associated with the main house will be cordoned off to prevent inadvertent impacts on buried remains. • All ground disturbances associated with the construction of the park (tree boxes, footpaths, services, car park etc) will be subject to archaeological monitoring under licence from the National Monuments Service of the DoHLGH. As it is likely that garden features associated with the geometric landscape will be exposed, a strategy to record and excavate same (or preserve in-situ) will be developed as part of the excavation licence and in consultation with the DoHLGH. If any features of archaeological potential that predate the gardens are discovered during the course of the works further archaeological mitigation and consultation may be required, such as preservation in-situ or by record. Any further mitigation in relation to earlier archaeological features will require specific 	<p>Park Development</p> <p>As part of the overall presentation of the park and to ensure its heritage is fully incorporated as a landscape narrative, a series of information panels relating to the landscape and archaeological/historic context will be erected in the park. These will include information on the history of the area, archaeological discoveries and illustrations presenting how aspects of the landscape may have appeared during the 17th century.</p> <p>An archaeological management plan will be compiled, in consultation with the local authority and the National Monuments Service of the DoHLGH, to inform the ongoing use, maintenance and any future development of the park. This will ensure that the archaeological resource is considered and activity managed as part of the landscape into the future, including the preservation of the site of Downshire House (WI005-018).</p>

	<p>approval from the National Monuments Service of the DoHLGH.</p> <ul style="list-style-type: none"> • All built elements that relate to the former gardens, which will be retained as part of the park (bastion, walled garden area, boundary walls) will be repaired/reconstructed in accordance with advice and a methodology provided by a conservation specialist/ contractor. These works will also be archaeologically monitored and full photographic records of the structures will be made in advance of works commencing. <p>Residential Development</p> <ul style="list-style-type: none"> • It is acknowledged that preservation in-situ is the preferred manner in which to conserve the archaeological resource. As described in section 11.5.1.2, it was not possible to avoid direct impacts on AA1 and AA6-9 due to design and density requirements. As such, all the identified archaeological remains within AA1 and AA6-9 will be preserved by record (archaeological excavation) prior to the commencement of construction. This will be carried out under licence to the National Monuments Service of the DoHLGH. Full resolution will be provided to allow for the preservation by record of the archaeological remains. • The section of the demesne wall crossing the site will be repaired/reconstructed in accordance with advice and a methodology provided by a conservation specialist/ contractor. These works will also be archaeologically monitored and a full photographic record of the structure will be made in advance of works commencing. • At the time of writing the author was awaiting the granting of an archaeological licence from the DoHLGH in order to excavate four test trenches at the site of proposed house to the east of the stream within the development area. Once the licence is granted, test excavations will be carried out. Dependant on the results of the assessment, further mitigation may be required, such as preservation in-situ or by record. Any additional mitigation arising from this exercise will be subject to the agreement of the National Monuments Service of the DoHLGH. • All topsoil stripping associated with the residential development will be subject to archaeological monitoring. This will be carried out under licence to the DoHLGH. If any additional archaeological remains are identified, further mitigation may be required, such as preservation in-situ or by record. Any additional mitigation arising from this exercise will be subject to the agreement of the National Monuments Service of the DoHLGH. <p>Road Development</p> <ul style="list-style-type: none"> • A written and photographic record will be made of the section of demesne wall to be impacted by the construction of the road. This will be carried 	<p>Residential and Road Development</p> <p>No mitigation is required with regards to the proposed residential and road development as part of the operation of the proposed development.</p>
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		<p>out by a suitably qualified professional and the removal of the wall will be subject to archaeological monitoring.</p> <ul style="list-style-type: none"> The removal of any remaining topsoil associated with the road development will be subject to archaeological monitoring. This will be carried out under licence to the DoHLGH. If any additional archaeological remains are identified, further mitigation may be required, such as preservation in-situ or by record. Any additional mitigation arising from this exercise will be subject to the agreement of the National Monuments Service of the DoHLGH. 	
Material Assets – Transportation and Traffic	12	<p>All construction activities will be governed by a Construction Traffic Management Plan (CTMP), the details of which will be agreed with the local roads authority 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 requirements 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.</p> <p>The Construction Traffic Management Plan (CTMP) will incorporate a range of integrated control measures and associated management initiatives with the objective of mitigating the impact of the proposed developments on-site construction activities.</p> <p>All construction related parking will be provided on site. Construction traffic will consist of the following categories:</p> <ul style="list-style-type: none"> Private vehicles owned and driven by site staff and management; Construction vehicles e.g. excavation plant, dump trucks; Materials delivery vehicles involved in site development works. <p>It is anticipated that the generation of HGVs during the construction period will be evenly spread throughout the day and as such will not impact significantly during the peak traffic periods.</p> <p>Truck wheel washes will be installed at construction entrances and any specific recommendations with regard to construction traffic management made by Wicklow County Council will be adhered to.</p>	<p>In order to decrease the number of residents utilising the private car, the development has incorporated a number of pedestrian and cycle links between the development and surrounding road network. A large number of cycle parking spaces are proposed for both residents and visitors to the development to encourage reduction in private car use. A total of 168 no. cycle parking spaces are proposed within the development for the duplex units. This is 54 no. spaces above the minimum required under the Wicklow County Development Plan 2021-2027 and 36 no. spaces above the minimum requirement under the DHLGH Design Standards. The houses are provided with ample opportunity for the storage of bicycles in their rear gardens.</p> <p>A Framework Mobility Management Plan has been prepared as part of the Traffic and Transport Assessment submitted with this planning application which contains a number of measures to encourage sustainable travel practices for all journeys by residents and visitors traveling to and from the proposed development. The measures contained within the plan cover a number of categories including Management & Monitoring, Walking Strategy, Cycling Strategy, Public Transport Strategy, Private Car Strategy and Marketing & Promotion Strategy.</p>
Material Assets – Waste	13	<p>On appointment of a contractor, a detailed Construction Management Plan (CMP) will be prepared. The detailed CMP will incorporate the requirements of Best Practice Guidelines in the preparation of Waste Management Plans for</p>	<p>The installation of additional litter and recycling bins with built-in cigarette receptacles, and the provision of adequate resources to service the bins, will reduce potential impacts from waste management</p>

	<p>Construction and Demolition Projects (DOEHLG, 2021). The following mitigation measures are recommended for the Construction Phase of the Proposed Development regarding Waste Management:</p> <ul style="list-style-type: none"> • Waste materials will be separated at source and will follow the RWMP • Prior to the commencement of the Construction Phase detailed calculations of the quantities of topsoil, subsoil and green waste will be prepared, and soils will be tested to confirm they are clean, inert or non-hazardous. • Beneficial use must be identified for the entirety of the excavated soil from the Proposed Development prior to its production for the excavated soil and stone to be considered as a by-product under Article 27 of the European Communities (Waste Directive) Regulations, 2011. • A suitably competent and fully permitted waste management company will be employed to manage all waste arising for the Construction Phase. The appointed waste contractor must have the relevant authorisations for the collection and transport of waste materials, issued by the National Waste Collection Permit Office (NWCPO). • Similarly, all waste materials will be transported to an appropriately authorised facility, which must have the relevant authorisations for the acceptance and treatment of the specific waste streams, i.e., a Certificate of Registration (COR) or a Waste Facility Permit (WFP) as granted by a Local Authority, or a Waste/Industrial Emission Licence as granted by the Environmental Protection Agency. • All waste quantities and types will be recorded and quantified, and records will be retained onsite for the duration of the Construction Phase. <p>Furthermore, the following mitigation measures, as outlined in the Construction Environmental Management Plan (CEMP) (DBFL, 2023) will be implemented during the Construction Phase in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle waste in such a manner as to minimise the effect on the environment:</p> <ul style="list-style-type: none"> • Copies of the final CMP will be made available to all relevant personnel on-site. All site personnel and sub-contractors will be instructed on the objectives of the CMP and informed of their responsibilities; • The nominated Construction Waste Manager responsible for implementation of this CMP will arrange for a waste audit for the Proposed Development once construction has fully commenced on-site (and of any facilities to which waste from the Proposed Development is delivered as required); • Building materials should be chosen with an aim to 'design out waste'; 	<p>on the Operational Phase of the Proposed Development.</p> <p>As outlined in the OWMP for the Proposed Development, it is intended to ensure that the highest possible levels of waste reduction, waste reuse and waste recycling are achieved for the Proposed Development. The OWMP will set out measures targeted at waste prevention, maximum recycling and recovery of waste with a focus on diversion of waste from landfill wherever possible.</p>
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		<ul style="list-style-type: none"> • On-site segregation of non-hazardous waste materials into appropriate categories. All waste material will be stored in skips or other suitable receptacles in a designated area on-site; • On-site segregation of hazardous waste materials into appropriate categories. Hazardous waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate waste collection licence holder; • All wastes segregated at source where possible • Beneficial use must be identified for the entirety of the excavated soil from the Proposed Development prior to its production for the excavated soil and stone to be considered as a by-product under Article 27 of the European Communities (Waste Directive) Regulations, 2011. • A suitably competent and fully permitted waste management company will be employed to manage all waste arising for the Construction Phase. The appointed waste contractor must have the relevant authorisations for the collection and transport of waste materials, issued by the National Waste Collection Permit Office (NWCPO). 	
Material Assets – Utilities	14	<p>Please refer to Water Hydrogeology and Hydrology chapter for mitigation measures associated with the surface water treatment.</p> <p>Mitigation measures proposed in relation to the drainage and water infrastructure include the following:</p> <ul style="list-style-type: none"> • 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. <p>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</p>	<p>Please refer to Water Hydrogeology and Hydrology section for mitigation measures associated with the surface water treatment.</p> <p>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.</p> <p>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.</p> <p>On completion of the construction phase no further mitigation measures are proposed in relation to the electrical, gas and telecommunications infrastructure.</p>

		<p>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.</p> <p>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.</p>	
Major Accidents and Disasters	15	With the implementation of the proposed mitigation measures and monitoring, no plausible major accidents or disaster hazards were identified, to which the proposed development will be vulnerable. No plausible potential risks were identified which would result in the proposed development causing a major accident or disaster on or outside the site of the proposed development during construction.	None applicable

17.4 Monitoring

The following are the interactions anticipated from the proposed development:-

17.4.1 Population and Human Health

Measures to avoid negative impacts on Population and Human Health have been integrated into the design and layout of the proposed development. Compliance with the proposed design and layout will be a condition of any permitted development. Monitoring will be undertaken by the Building Regulations certification process and by the requirements of specific conditions of a planning permission. Monitoring of compliance with Waste and Environmental controls requirements will be in accordance with the CEMP and CDWMP.

The following monitoring measures have regard to population and Human Health.

- Housing completion statistics
- Census data
- Compliance with planning permission and development phasing
- Creche and school enrolment

17.4.2 Biodiversity

Pre-construction surveys will be carried out for terrestrial mammals, invasive species and bats. During construction an Ecologist will monitor the site from pre-construction surveys, during Construction Phases and Post Construction.

17.4.3 Land, Soils & Geology

During the Construction Phase of the Proposed Development the following monitoring measures will be considered:

- Routine monitoring and inspections during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures;
- Inspections and monitoring will be undertaken during excavations and other groundworks to ensure that measures that are protective of water quality are fully implemented and effective;
- Materials management and waste audits will be carried out at regular intervals to monitor the following:
 - Management of soils on-site and for removal offsite.
 - Record keeping.
 - Traceability of all materials, surplus soil and other waste removed from the site; and
 - Ensure records are maintained of material acceptance at the end destination

There are no monitoring requirements specifically in relation to land, soil and geology at Operation Phase.

17.4.4 Water (Hydrology)

During the construction phase of the proposed development the following monitoring measures will be considered:

- The Contractor will carry out inspections and monitoring during excavations, piling and other groundworks to ensure that measures protective of water quality outlined in this EIAR, and the CEMP (DBFL, 2023a) are fully implemented and effective;
- The near stream works will be overseen by an appropriately qualified Environmental/ Ecological Clerk of Works engaged by the appointed contractor. Water quality monitoring of up and downstream locations is also recommended to determine whether any potential risk to water quality in the Deerpark_09 Stream / River and downstream associated water bodies during the near stream works;
- Discharges to surface water / foul sewers will be monitored where required in accordance with statutory consents (i.e., discharge licence); and
- Routine monitoring and inspections during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures.

During the Operation phase, ongoing regular operational monitoring and maintenance of drainage and the SuDS measures will be undertaken throughout the lifetime of the operational phase of the proposed development.

17.4.5 Air Quality and Climate

It is recommended that dust deposition monitoring be put in place during the Construction Phase of the Proposed Development to ensure dust mitigation measures are adequately controlling emissions. Dust monitoring should be conducted using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119.

Due to the negligible impact on air quality and climate from the Operational Phase of the Proposed Development, no specific monitoring is recommended.

17.4.6 Noise and Vibration

The contractor will be required by contractual obligation to ensure construction activities operate within the noise threshold values and vibration limits set out within this assessment. The contractor will be required to undertake real-time noise and vibration monitoring at locations representative of the closest NSLs to ensure that construction noise and vibration is maintained below the relevant threshold values.

17.4.7 Landscape and Visual Assessment

In the Construction Phase, landscape tender drawings and specifications will be produced to ensure that the landscape work is implemented in accordance with best practice. This document will include tree work procedures, soil handling, planting and maintenance. The contract works will be supervised by a suitably qualified landscape architect.

The planting works will be undertaken in the next available planting season after completion of the main civil engineering and building work.

Monitoring in the Operational Phase will consist of weed control, replacement planting, pruning etc. All landscape works will be in an establishment phase for the initial three years from planting. The company responsible for site management of the scheme will be responsible for the ongoing maintenance of the site after this three-year period is complete.

17.4.8 Archaeological, Architectural and Cultural Heritage

The mitigation measures detailed above would also function as a monitoring system during construction and operation to allow the further assessment of the scale of the predicted impacts and the effectiveness of the mitigation measures.

17.4.9 Traffic and Transportation

During the construction stage the following monitoring exercises are likely to be required. The specific compliance exercises to be undertaken in regard to the range of measures detailed in the final construction management plan will be agreed with the planning authority:

- Compliance with construction vehicle routing practices;
- Internal and external road conditions;

- Timing of construction activities.

The EPA EIAR Guidelines 2022 states the EIAR, or sections of an EIAR, should avoid including a 'Conclusions' section. Instead, an EIAR can include a summary of effects, a mitigation and monitoring measures compendium.

17.4.10 Waste Management

Materials and waste generated during the Construction Phase will be carefully monitored by the Construction Environmental Site Manager, and/or an appointed Waste Officer, to ensure compliance with relevant local authority requirements and effective implementation of the RWMP, including maintenance of waste documentation.

Waste management during the Operational Phase will be carried out in line with council requirements and duties for municipal waste collection and disposal.

17.4.11 Material Assets - Utilities

No specific monitoring is proposed in relation to the remaining material assets infrastructure.

17.4.12 Major Accidents and Disasters

There is no monitoring required with regards to risk management.